

Japan International Cooperation Agency (JICA)

Local Government of Mangistau Oblast
Government of the Republic of Kazakhstan

MASTER PLAN STUDY
ON
INTEGRATED REGIONAL DEVELOPMENT
FOR
MANGISTAU OBLAST
IN
THE REPUBLIC OF KAZAKHSTAN

FINAL REPORT
VOLUME I
EXECUTIVE SUMARRY

August 2008

RECS International Inc.
Yachiyo Engineering Co., Ltd.

Currency Equivalents (average Interbank rates as of January 6, 2008)

US\$1.00=KZT 122.200

US\$1.00=JPY 108.652

JPY 1=KZT 1.12570

Source: OANDA.COM, <http://www.oanda.com>.

PREFACE

In response to the request from the Government of the Republic of Kazakhstan, the Government of Japan decided to conduct the Master Plan Study on Integrated Regional Development for Mangistau Oblast in the Republic of Kazakhstan. The execution of the Study was entrusted to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched the Study Team headed by Dr. Tsuyoshi Hashimoto of RECS International Inc., consisting of experts nominated by RECS International Inc. and Yachiyo Engineering Co., Ltd., to the Republic of Kazakhstan for a series of fieldworks from June 2007 through May 2008.

The Study Team held discussions with the officials concerned of Mangistau Oblast and conducted the Study in close collaboration with the Kazakh counterpart experts. Upon return to Japan from the last fieldwork, the Study Team has compiled the Final Report from the study results through work in Japan.

I hope that this report will contribute to the development of the Kazakhstan's socio-economy and the enhancement of friendly relationship between the two countries. Finally, I wish to express my sincere appreciation for all the officials concerned of the Government of the Republic of Kazakhstan and other experts for their cooperation with the Study.

August 2008

Eiji Hashimoto
Vice President
Japan International Cooperation Agency

Mr. Eiji Hashimoto
Vice President
Japan International Cooperation Agency (JICA)

August 1, 2008

Letter of Transmittal

Dear Mr. Hashimoto:

It is our pleasure to submit herewith the Final Report of Master Plan Study on Integrated Regional Development for Mangistau Oblast in the Republic of Kazakhstan. A team of experts organized by RECS International inc. in collaboration with Yachiyo Engineering Co., Ltd. was contracted with JICA as the JICA Study Team to carry out the Study. The Study has been conducted through a series of field works from June 2007 through May 2008 as well as works in Japan for a total of 13 months with 56 person-months.

In Kazakhstan, the JICA Study Team established and maintained its office in the Mangistau Oblast Government, working in tandem with the experts of the Oblast on a daily basis. The JICA Study Team and its Kazakh counterpart team held weekly meetings throughout the fieldwork periods, sharing views and ideas for the development of Mangistau oblast; conducted surveys jointly; and cooperated in data collection, compilation and analyses.

The Study has established a master plan for the integrated development of Mangistau oblast, reflecting the position of the region in the socio-economic development of Kazakhstan in relation to other oblasts and surrounding countries. The master plan includes complementary projects and related institutional measures formulated under the planning objectives of well balanced economic, social and environmental enhancement, to be attained through four initiatives, namely: Regional Spatial Structure Strengthening Initiative, Industrial Cluster Development Initiative, Living Environment Improvement Initiative, and Mangistau Environmental Initiative.

It has been our honor to serve the people and the country of Kazakhstan through the execution of this important study. I would like to take this opportunity to express our deepest gratitude for all involved in this undertaking. I sincerely wish that the Study and the Final Report would continue to serve as an important base for further cooperation between Kazakhstan and Japan.

Very truly yours,

Tsuyoshi Hashimoto
Team Leader
JICA Study Team



Kazakhstan with Administrative Divisions



Location of Mangistau Oblast in the Pan-Caspian Sea Economic Cooperation Area

Table of Contents

1	Socio-economy of Kazakhstan.....	1
2	Position of Mangistau Oblast in Kazakhstan’s Development	2
2.1	Present Position	2
2.2	Prospects of Mangistau Oblast	3
3	Objectives and Strategy for Mangistau Regional Development	4
3.1	Objectives and Basic Strategy	4
3.1.1	Problem structure of Mangistau Oblast	4
3.1.2	Regional development objectives	5
3.1.3	Basic strategy for regional development	5
3.2	Strategy by Sector.....	7
3.2.1	Development administration	7
3.2.2	Spatial development	8
3.2.3	Social development	9
3.2.4	Agriculture.....	10
3.2.5	Oil products transportation	11
3.2.6	Manufacturing industry	13
3.2.7	Logistics industry	14
3.2.8	Services	15
3.2.9	Environment	16
4	Development Alternatives.....	17
4.1	Implications of the Regional Development Objectives	17
4.2	Development Prospects by Sector	18
4.3	Development Alternatives	19
5	Development Frameworks and Scenario.....	21
5.1	Socio-economic Framework.....	21
5.2	Spatial Development Framework	22
5.3	Development Scenario for Mangistau Regional Development	26
5.3.1	Phase 1: 2008-11	26
5.3.2	Phase 2: 2012-15	27
5.3.3	Phase 3: beyond 2016.....	28
6	Integrated Regional Development Master Plan for Mangistau Oblast.....	28
6.1	Structure of Mangistau Integrated Regional Development Plan	28
6.2	Regional Spatial Structure Strengthening Initiative	29
6.2.1	Artery roads improvement projects	29
6.2.2	Railway network development projects	31
6.2.3	Ports and airports development	34
6.2.4	Aktau city development projects	36
6.3	Industrial Cluster Development Initiative	37
6.3.1	Logistics cluster support program	37
6.3.2	Linkage industries cluster support program	38
6.3.3	Derivative industries support program	40
6.3.4	Tourism cluster support program.....	41
6.4	Living Environment Improvement Initiative.....	41
6.4.1	Rural livelihood development	41
6.4.2	Social services improvement.....	43

6.4.3	Urban and rural water supply expansion	44
6.4.4	Wastewater treatment improvement	45
6.5	Mangistau Environmental Initiative	45
7	Institutional Measures for Mangistau Regional Development	47
7.1	Institutional Arrangements for Infrastructure Development and Maintenance	47
7.2	Measures for Capacity Development	48
7.3	Measures to Improve Business and Investment Climate	50
8	Implementation Program	51
8.1	Stage-wise Development Plan	51
8.2	Indicative Investment Schedule	51

List of Tables

Table 1	Position of Mangistau Oblast in Kazakhstan, 2006	2
Table 2	Oil transport Facilities to Foreign Countries.....	12
Table 3	Comparison on Growth Performance under Alternative 1 and Alternative 2	20
Table 4	Comparison of Three Alternatives for Policy Instruments.....	21
Table 5	Projection of GRDP by Sector/Sub-sector, 2007-15	22
Table 6	Criteria for Classification of Existing Settlements.....	23
Table 7	Results of Settlement Analysis by Score.....	22
Table 8	Functions of Settlements at Different Tiers	24
Table 9	Settlements with Higher Functional Expectations	24
Table 10	Functions of Roads by Category	25
Table 11	Broad Correspondence between Development Initiatives and Regional Development Objectives.....	29
Table 12	Project Outline of Aktau International Airport.....	35
Table 13	Indicative Investment Schedule	53

List of Figures

Figure 1	Existing and Planned Pipelines	12
Figure 2	Strategy for Oil Development and Transport	13
Figure 3	Future Hierarchical Structure of Settlements	25
Figure 4	Future Transport Network	26
Figure 5	Locations of Project Roads.....	30
Figure 6	Missing Railway Links for Major Settlements.....	32
Figure 7	New Rail Link for TRACECA Corridor.....	32
Figure 8	Location of Railway Projects	33
Figure 9	Logistic Triangle.....	37
Figure 10	Planned Routes for Mangistau Tours.....	42
Figure 11	Implementation Schedule for Infrastructure and Utilities Projects	52

Abbreviations

AISCP	Aktau International Sea Commercial Port
BTC	Baku Tbilisi Ceyhan Pipeline Company
CDM	Clean development mechanism
CIS	Commonwealth of Independent States
CNP	China National Petroleum
CPC	Caspian Pipeline Consortium
CTID	Committee for Transport Infrastructure Development
DNR&WM	Department of Natural Resources and Wildlife Management
DOA	Department of Agriculture
DOCS	Department of Community Services
DOE	Department of Education
DOH	Department of Health
EBRD	European Bank of the Reconstruction and Development
EU	European Union
FDI	Foreign direct investment
FFHC	Forestry, Fishing and Hunting Committee
GDP	Gross domestic product
GRDP	Gross regional domestic products
ICT	Information, communication technology
IRDMP	Integrated regional development master plan
JICA	Japan International Cooperation Agency
JSC	Join stock company
KAZINVEST	Kazakhstan Investment Promotion Center
KMG	KazMunaiGaz
KTO	KazTransOil
KTZ	Kazakhstan Temir Zholy (Kazakhstan Railways)
MAEK	Mangyshlak Atomic Energy Combine
MOE	Ministry of Energy
MOEP	Ministry of Environmental Protection
MTC	Ministry of Transport and Communication
OJT	On-the-job training
PCM	Project cycle management
PPP	Public-private partnership
pcu	Passenger car unit
PVC	Polyvinyl chloride
R&D	Research and development
SEZ	Special economic zone
SME	Small and medium sized enterprise
TRACECA	Transport Corridor: Europe-Caucasus-Asia
TSV&V	Heat, Water Supply and Sewerage Network
WTO	World Trade Organization

1 Socio-economy of Kazakhstan

(1) Macro economy

The Kazakhstan's economy realized respectable growth in recent years to attain the per capita GDP close to US\$10,000 in terms of purchasing power parity, ranked at the 88th in the world. The GDP itself ranks at the 55th out of over 200 countries and economies in the world. This growth has been supported largely by the increase in the production of oil, gas and other mineral resources and the escalating prices of hydrocarbon resources.

The promotion policy for foreign direct investment (FDI) especially in the mining and energy sectors led to the large influx of external fund into Kazakhstan. The influx includes not only foreign direct investments into these sectors but also revenues from hydrocarbon exports and related private banks' foreign borrowings. Consequently, the total foreign direct investment corresponds to 27% of the GDP more or less in recent years, quite high by international standard, and in fact ranked at the 30th in the world.

The external trade of Kazakhstan has developed rapidly in recent years again supported mainly by the export of oil, gas and other mineral resources and the import of machinery and materials to support these export activities. Export commodities are dominated by resources with low levels of processing, both mineral resources and grains. Export destinations, however, are reasonably well diversified. Excluding mineral fuels, the largest trade partner of Russia has a 23.5% share in the total export value in 2006, while EU with 25 countries has a combined share of 37.8%, and Asian countries 24.5%.

Import destinations are less diversified with Russia having a dominant share of around 38% in 2003-06. Import commodities are mainly machinery, vehicles, electrical equipment, transport equipment, and optical and medical instruments necessary for high value manufacturing and services activities. This indicates the weakness of the industrial structure of Kazakhstan.

(2) Economic sectors

Kazakhstan is one of the main grain producers in the world and the only crop exporting country in the CIS. Agricultural production in Kazakhstan, however, decreased drastically after the independence, and has not fully recovered yet. Livestock is comparatively more important in the agricultural sector as the Kazakh society is originally nomadic. It also suffered from the post independence turmoil.

The dominance of oil and gas industries constrains the development of more balanced industrial structure in Kazakhstan. The division of works established during the Soviet era still affects the production and distribution patterns among the CIS countries, resulting in the lack of effective industrial linkages within the Country. Due to the privatization of state enterprises and the promotion of FDI's, large enterprises have decreased whereas small enterprises have increased in number. Deliberate policies to support small enterprise development have just started to be taken by the Government.

The development of demand-driven services is constrained by the stagnant agriculture and non-diversified industries. Also, the large enterprises, especially those remaining state enterprises, tend to undertake all the related services by themselves or through their affiliated entities, thus limiting the opportunities for small indigenous service industries to develop. Resource-based services such as those related to tourism have not developed much despite the large potentials. Even these services tend to be constrained by the large state enterprises undertaking them within their affiliated groups, respectively.

(3) Social and other aspects

Kazakhstan is ranked rather low by some social indices as seen above. Especially, health conditions appear to be less than adequate for the Kazakh people. This situation may reflect partly the lifestyle of originally nomadic people with their culture and value, which may not be amenable to a monetary or economic value. Still, there seems to be much room for improving the health conditions of the Kazakh people in view of its low position even among the CIS countries. The literacy rate and the primary education completion rate are almost 100% in Kazakhstan.

It is more disturbing that Kazakhstan ranks low by indices related to the information and communication drive in the world and even among the CIS countries. Typically, Kazakhstan ranks lower than all the countries of similar income levels for the number of Internet users per population. Considering the policy to accelerate the development of transport and communication infrastructure established by the “Kazakhstan 2030”, this phenomenon may also be socially rooted.

2 Position of Mangistau Oblast in Kazakhstan’s Development

2.1 Present Position

Mangistau Oblast is compared with Kazakhstan in Table 1 by using several macro indices. The population of Mangistau has a 2.46% share in the national population, much smaller than the share of land, although the share of urban population is larger at 3.02%. The contribution of Mangistau to the national production is quite unique. The industrial production has a significant share of 14.6%, while the agricultural production is almost negligible. The share of sheep & goats population in Mangistau in the total sheep and goats’ population in Kazakhstan is larger than the population share in the national population. The industrial production is supported mainly by mining, particularly fuel & energy production, which has a 23.6% share in the national mining production. There exist comparatively more large and medium entities in Mangistau.

Table 1 Position of Mangistau Oblast in Kazakhstan, 2006

	Unit	Kazakhstan	Mangistau	Share (%)
Total population	1,000	15,219.3	374.4	2.46
Urban population	1,000	8,696.5	263.0	3.02
Land area	10 ³ km ²	2,724.9	165.6	6.08
Agricultural production value added	10 ⁶ tenge	859, 500	2, 507	0, 29
Industrial production* – total	10 ⁹ tenge	5,253.0	767.8	14.62
- Mining	10 ⁹ tenge	3,121.1	735.6	23.6
- Manufacturing	10 ⁹ tenge	1,851.6	15.9	0.86
- Utilities	10 ⁹ tenge	280.4	16.3	5.81
Registered entities – total	no.	226,908	6,044	2.66
- Small entities	no.	213,347	5,612	2.63
- Medium entities	no.	11,512	336	2.92
- Large entities	no.	2,049	56	2.73
Cattle population*	1,000	5,203.9	4.2	0.08
Sheep & goats population*	1,000	13,409.1	447.1	3.33
GDP/GRDP	10 ⁹ tenge	10, 139.5	585.5	5.78
Per capita GDP/GRDP	10 ³ tenge	659	1, 564	-
Fixed capital investment*	10 ⁹ tenge	2,420.9	143.1	5.91

*2005

Source: Statistical Yearbook of Kazakhstan, 2006; Statistical Yearbook of Mangistau Oblast, 2006

Owing to the large mining production, the gross regional domestic product (GRDP) of Mangistau has a share of 5.78% in the gross domestic product (GDP) of Kazakhstan, significantly larger than

the population share. Consequently, the per capita GRDP of Mangistau is more than twice as large as the per capita GDP of Kazakhstan. Mangistau contributes to 5.91% of the fixed capital formation in the Country. Also, the contribution of Mangistau to the transfer of local tax revenues to the Central Government is the third largest, next only to Almaty and Atyrau Oblasts.

2.2 Prospects of Mangistau Oblast

(1) National context

The recent economic growth and the rapid increase in per capita incomes in Kazakhstan are largely due to the increase in quantity of oil export combined with high prices of oil and metals. Mangistau Oblast has contributed to the increase in oil export. Naturally, the Government of Kazakhstan would like to reduce the Country's vulnerability to international price fluctuations. In the immediate future, the emphasis is on increasing the efficiency of production and distribution to enhance the competitiveness of existing firms. In the medium term, diversification would become the main thrust of socio-economic development of Kazakhstan. This would include the development of new types of industries as well as downstream industries processing hydrocarbon and mineral resources, and support industries for parts and services provision for increased domestic value-added.

These new industries would have to compete in the increasingly open economy that Kazakhstan pursues. One of the main objectives of Kazakhstan is to become one of major players in the global market, as evidenced by the emphasis placed on joining WTO. Further opening the domestic market to international competition and increasing the export orientation for production and services will reshape the structure of the economy.

(2) Prospects

Mangistau at present is a very unique resources region in Kazakhstan, specialized almost exclusively in oil and gas resources. Consequently, the fuel & energy production sub-sector has a 25.5% share in the national production. The only other sub-sector with a share significantly larger than the population share is electricity accounting for 6.2%, which is again supported by oil and gas production. Other resources' contributions are almost negligible, including other mineral resources and agricultural products. Other resources-based processing and related economic activities are difficult to establish in the short to medium terms, except the expansion of those already established such as those based on shell rock, and sheep and camel milk, wool and leather as well as oil and gas related industries.

The regional development of Mangistau Oblast should be based on the locational advantages of the Oblast. Mangistau is a natural gateway to the Caspian Sea region and further to the West. It is centrally located in the conceived Pan-Caspian Sea economic zone. It may play a key role in integration of Kazakhstan with the global economy.

To realize such potentials, transport infrastructure needs to be much improved as currently conceived. If the transport links are improved with the central part of Kazakhstan, particularly with new railway lines, Mangistau is expected to become the trade and distribution center in a larger geographic context even beyond Kazakhstan. This prospect may be realized in steps over medium and long terms. Import processing type industries may establish earlier in the capital area of Aktau to process imported raw materials and intermediate goods for domestic market. Some of them would effectively substitute existing industries in the more developed areas of the Country. Development of the import processing type industries may trigger the development of related services to pave the way for more broad-based logistics industry development.

Centering on Aktau, Mangistau should specialize also in high-grade services, including advanced

education and researches, and specialized health care. The Aktau city itself should be developed into an internationally recognized center of excellence for these services, cultural services, and urban amenities. Some of these services would cater for neighboring regions and countries as well. These high-grade services together with the cosmopolitan atmosphere would help to attract the skilled labor required by firms serving the international market.

Mangistau would continue to be important as a popular destination for domestic tourists attracted to the unique opportunities offered by the Caspian Sea. Tourism potentials in Mangistau, however, would go beyond the beach resorts and domestic tourism. Particularly in Karakiya, opportunities for experience/action-oriented tourism abound, including the Ustyurt state reserve and the sacred Biketata site, that may attract international tourists as well. To realize such potentials, transport infrastructure should be strategically developed to establish attractive tour itineraries. Also, planned urban development particularly of Aktau and Zhanaozen would be essential to make them attractive tourism bases.

The availability of water is and will continue to be the critical constraint to regional and urban development of Mangistau Oblast. The water sources presently used are the water transferred from the Volga river in Russia, local groundwater mainly in plateau areas, and desalinization plants. Alternative sources of water may be established to enhance the water security. Possibilities include re-use of treated sewage, and water transfer from other regions or countries. The latter may take a form of water diversion from the Ural river or water shuttles utilizing oil tankers or lorries returning otherwise empty from oil receiving regions/countries. Groundwater extraction may be increased in plateau areas, which do not suffer from salt-water intrusion or soil salinity.

Land productivity in Mangistau may be enhanced through grazing land and pastures management and tree planting in selected areas. Areas currently categorized as reserve lands may be selectively utilized for tree planting by the Oblast initiative to reduce wind erosion of top soil and enhance water retention capacity of land. This may have significant long-term effects, including expansion of forage production and possibly also crop cultivation.

3 Objectives and Strategy for Mangistau Regional Development

3.1 Objectives and Basic Strategy

3.1.1 Problem structure of Mangistau Oblast

A problem structure analysis is applied to Mangistau Oblast. As the focus of the planned regional development of Mangistau Oblast is the diversification of the regional socio-economy, problems inside the dominant oil and gas industries are not included in the analysis here. First, problems facing Mangistau Oblast are enumerated, and then more important ones expressed in generic terms. Finally, causal relationships between the identified problems are determined to construct the problem structure.

Major problem phenomena

The problem structure analysis has clarified that many problems are rooted in the three inherent problems: limited water resource endowments, vast land of low productivity, and distance from the capital and the Almaty regions. These inherent problems cannot be solved directly by planned development efforts. Other than these, major problem phenomena may be identified in the economic, social and environmental sectors. The main problem of the economic sector is the limited employment opportunities for unskilled labor, caused directly by the dominance of large enterprises having weak links with local economy and the mismatch of labor demand and supply. These, in turn, are due to the over-reliance on the fossil fuel –based economy.

The main problem of the social sector is the large disparities between urban and rural areas in various aspects including income levels, living conditions and social services availability. Again, the over-reliance on the fossil fuel-based economy is responsible as well as the widespread poverty in rural areas due to underdevelopment of agriculture, fishery and small enterprises.

The main problem of the environmental sector is summarized as the deteriorating living environment and the increasing health risks. The former may be a combined outcome of inadequate infrastructure facilities, underdeveloped economic activities as indicated above, and possibly environmental hazard. Negative environmental heritage from the Soviet era is at the root of these problems.

Problem factors

From the problem structure analysis, four fundamental factors at the bottom of various problems have been identified in addition to the inherent problems. These are the negative environmental heritage, limited capacity of local administrations, small and dispersed population, and lack of effective farmers' organizations.

The negative environmental heritage may be a cause of the high infant mortality rates and the increasing health risks, and certainly a factor for the deteriorating living environment. The limited capacity of local administrations shows typically in the insufficient artery transport network, inadequate maintenance of existing facilities, and deteriorating desalinization, water supply and sewerage facilities, which degraded during the economic crisis in 1995-97 and thereafter. It causes also the insufficient information dissemination and the insufficient and irregular environmental monitoring necessary for early identification of environmental problems.

The problem of small and dispersed population together with the inherent problem of the distance from the capital and the Almaty regions are responsible for the small local market for various goods. As mentioned above, this problem may be overcome to some extent through planned development of urban centers and transport infrastructure.

The collapse of the Soviet Union with the subsequent land reform and introduction of market economy has resulted in the insufficiency of effective farmers' organizations. Collective farms were divided into individual farms, peasant farms and agricultural enterprise, and the first two categories need to be newly organized on a voluntary base.

3.1.2 Regional development objectives

Based on the problem phenomena identified in the economic, social and environmental sectors, the regional development objectives of Mangistau Oblast may be established as follows, each corresponding to the identified problem phenomenon in the respective sector.

- (1) Objective 1 (Economic): To generate more lucrative employment opportunities for the expanding labor force through converting the regional economic structure away from the fossil fuel-dominant one to more diversified one
- (2) Objective 2 (Social): To reduce the disparities between urban and rural areas, and between different segments of the society and improve the living conditions for all
- (3) Objective 3 (Environmental): To improve the living environment and reduce health risks of people through managing various environmental problems for better human security and improved human resource base for regional development

3.1.3 Basic strategy for regional development

The basic strategy for regional development of Mangistau Oblast may be established based on the

fundamental problem factors identified by the problem structure analysis. The basic strategy has the following three components:

- (1) Increasing the capacity of local administrations for more effective management of various environmental problems, better planning, maintenance and management of transport infrastructure and utilities and more adequate social services delivery
- (2) Promoting the urban development and strengthening urban functions to improve linkages between the regional and the global economy, and improve social services delivery to rural areas
- (3) Developing industrial clusters through organizing people and small and medium firms and providing integrated supports to them to link their livelihood activities to viable economic activities that are competitive in the global economy

Capacity development

The capacity development for local administrations is most essential in overcoming various problems to realize the regional development through effective project planning, implementation and management. An effective environmental monitoring and evaluation system should be established to enhance the capacity for environmental management. Involvement of stakeholders is another essential condition for effective environmental management.

Urban development

The availability of water is a serious constraint to further urban development. While the amount of water for urban use can be technically increased by expanding the capacity of desalinization, it would apply pressure on the environment and also undermine the viability of urban-based economic activities due to high costs. Besides, the exclusive dependence on the single source of water makes the urban life and economy vulnerable. It is desirable, therefore, to establish another source of water. Possibilities include reuse of treated sewage and water transfer from other regions/countries. The latter may take the form of water transfer from the Ural river basin or water shuttles by oil tankers and/or tank lorries returning otherwise empty from oil receiving regions/countries.

Reuse of treated sewage represents recycle-oriented urban development, which should be pursued in the current century as against resource-exploiting urban development in the previous century. Solid wastes management with waste separation and recycling/reuse is becoming increasingly the norm in the 21st century urbanization.

To effectively utilize limited urban centers of small scale, complimentary development of larger urban centers should be pursued, in which each urban center should specialize in different functions. In particular, the triangle linking Aktau city, together with its new city, Zhanaozen city and Beineu may form the core development area of the Oblast, each specialized in different functions centering on logistics functions. Aktau city may specialize as a logistics and/or diversified industrial center, the Aktau New City as a commercial and financial center, Zhanaozen as the inland service base for agriculture, tourism and logistics industry as well as the oil and gas industries, and Beineu as the inland logistics center.

Industrial cluster development

By the industrial cluster development, a set of economic activities is promoted to establish comparative advantage for these activities collectively. For this purpose, not only these activities encompassing primary production, processing, packaging and transport activities but also support activities should be included in the cluster for marketing, training, R&D and others.

Institutional measures may also be introduced to facilitate the establishment of core activities of the

cluster such as specialized incentives. Improvement of transport infrastructure as well as urban development would be instrumental to foster linkages between the related activities.

3.2 Strategy by Sector

3.2.1 Development administration

(1) Clarification of division of responsibilities between administrative levels

For Mangistau Oblast with a relatively small population for its large territory, even its capital city administration may be an Oblast matter rather than a city matter. Then, a question arises as to what administrative responsibilities the city should have. Probably, the city should be primarily responsible for matters more directly related to the daily lives of its residents. They include traffic management, solid waste collection and street cleaning, maintenance of utilities supply systems, provision of social services, and environmental monitoring. Planning for medium and long-term city development may be dealt with by the Oblast in line with the development vision and plans for the Oblast as a whole, while the implementation of individual developments remains the city responsibility.

(2) Strengthening of project planning, implementing and managing capabilities

Along the line described above, the planning capacity may rest in the Oblast administration. The implementation of key infrastructure projects is also the Oblast responsibility. The city administrations of Aktau and Zhanaozen would be responsible for implementing and managing local projects serving the city residents, respectively. Given the limited planning capacity, concentrating the capacity development at the Oblast level seems to be a sensible strategy. In strengthening the implementing and managing capacity at the city level, the participation of residents would be essential.

(3) Establishment of environmental monitoring and evaluation system

The participation of residents would be indispensable for monitoring and evaluation of enterprises engaging in industrial production and construction activities. This is discussed further in a broader context under the environment sector strategy.

(4) Outsourcing of planning and environmental monitoring works

Given the limited administrative and technical capacity, it is reasonable to outsource the planning and environmental monitoring works as much as relevant to local enterprises and experts. A prerequisite is, of course, to ensure proper supervision and control of the outsourced works. In outsourcing the planning works, experts and enterprises in the subject settlements should be mobilized as much as possible. This will help to ensure that the residents of such settlements would be involved in the implementation phase for monitoring and management facilitated by those enterprises and experts.

(5) Development of mechanisms to mobilize the private sector for infrastructure

Many transport infrastructure projects are planned in Mangistau Oblast, and some of them are expected to be implemented by concessions to private enterprises. This is a viable mechanism to mobilize the private sector resources for infrastructure development. Other mechanisms should be developed to enhance the private sector participation in infrastructure development. They may include joint venture arrangements for specialized land development such as industrial estates, and development of rural infrastructure as part of social programs by enterprises undertaking major

exploration activities such as oil and gas, and mineral resources. Other mechanisms may also be invented.

3.2.2 Spatial development

(1) Strengthening of settlement hierarchy

To provide a wide range of urban and rural services effectively to all the residents in the vast territory of Mangistau Oblast, a hierarchical structure of settlements should be strengthened with functional division among them. The hierarchy may consist of the Aktau city as the regional center, followed by the Zhanaozen cities and a few other cities as regional sub-centers specialized in different sets of urban functions respectively, several rural service centers to cover the vast Oblast territory effectively, and social service centers to provide basic services for even the remotest areas.

(2) Establishment of regional artery transport network

Within the artery transport network of Kazakhstan, a regional artery transport network should be established in Mangistau Oblast, consisting of primary and secondary arteries. The primary arteries link the existing and future cities at the higher tiers of the hierarchical structure, and constitute a multi-modal transport network in most parts. The secondary arteries provide links from the primary arteries to rural service centers, commonly by roads.

(3) Strengthening of terminal facilities

The artery network of Mangistau Oblast constitutes part of international, inter-modal transport system linking Kazakhstan with neighboring countries. To improve the links between road, rail, air and sea transport within the network, terminal facilities should be much strengthened. In addition to the Aktau port, the Aktau airport and other ports already planned to be improved/established, other terminal facilities need to be developed or improved.

The railways are and will continue to be the dominant mode for long-haul cargo transportation in Kazakhstan. To develop the long-haul cargo transport, however, local transport demand should be effectively developed by improving the truck transport by road. Thus, a truck terminal, container depot and related facilities and equipment need to be established at key transshipment points in both inland and port areas. Also, an exclusive cargo terminal should be established at the Aktau international airport as planned.

Conversely, passenger terminals should be provided at the existing and future ports planned mainly for cargo transport. The railways in Mangistau will be used increasingly for passengers transport as well, both for commuting and tourism purposes. Major railway stations need to be improved for passengers together with facilities for transport services to and from each station.

(4) Preparation of updated urban development plans

General plans for cities at the upper tiers of the settlement hierarchy should be updated in line with the main functions expected for each according to the Oblast master plan. They apply to the cities of Aktau and Zhanaozen, the future cities of Beineu and Shetpe, and Fort Shevchenko with Bautino for the dual city development.

(5) Creation of core development area linking Aktau, Zhanaozen and Beineu

The Aktau city will continue to serve as the regional capital of Mangistau Oblast. The Zhanaozen city will become the main service center in the inland area to support agriculture, tourism and

social services as well as the oil and gas industries. The settlement of Beineu is expected to develop into a major urban center at the crossroads between the north-south and the east-west arteries. For Mangistau Oblast to develop as the major distribution center of Kazakhstan, these urban centers should be much strengthened.

To strengthen these urban centers, links between them should also be strengthened for complementary development of the three centers. Moreover, the area formed by the three centers as nodes may be defined as the logistic triangle for intensive development of various related activities. Agro-related and other resource based processing industries should be located in the logistic triangle as well as warehouses, distribution facilities, and large regional markets.

3.2.3 Social development

(1) Insurance of equal access to basic services

Access to basic and general education is favorable in Mangistau Oblast as in Kazakhstan as a whole, as shown in almost 100% adult literacy rate and very high enrollment rates at primary and secondary education. Access to preventive health services, however, is generally inadequate in Mangistau as represented by high infant and maternal mortality rates. While the health referral system is well established in the Oblast, the availability of clinics and aid posts as most accessible health facilities for residents is biased towards the Aktau city.

As the inflow of returned Kazakh continues for some time, the provision of basic social services will have to continue to be expanded, extending the ongoing efforts. Also, as the demographic structure and settlement patterns change rapidly along with the economic growth, continual efforts need to be made to ensure the equal access to basic social services for all in terms of number and distribution of general education schools, teachers, medical facilities and personnel.

(2) Expansion of social welfare program

As the economy of Mangistau Oblast develops, opportunities for new businesses and employment expand naturally for the majority of residents. However, the provision should be made for those who cannot make access to such business and employment opportunities due to lack of basic conditions. They include some of the returned Kazakh, especially those coming back outside the quota system, and also some of the out-of-school youth and women who do not have basic skills, and the elderly. A separate program should be developed for them, including the training in basic skills, re-training and re-education as well as guidance and orientation.

(3) Improvement of training programs and curricula

The existing mismatch between what local enterprises demand and what residents can supply needs to be resolved. First, the training in the primary and medium skill levels should be further strengthened to meet the immediate needs of local enterprises. This may be undertaken by existing training institutes to be designated under the Oblast program, but should expand the coverage to include the returned Kazakh. Also, the program to support the on-the-job training by private firms should be strengthened. Second, the curricula at the existing higher education and training institutes should be improved to meet the requirements for higher skill levels. Third, new education and research institutes should be developed for advanced education and research to meet the evolving needs of the coming decades as described below.

(4) Establishment of new education and research institutes

The Caspian State University of Technology and Engineering is planned to be established to meet the technological requirements of the coming decades. In addition to engineering and economic

expertise planned to be accommodated at this new institute, more post-industrial era technology and skills should be strengthened. They include broad environmental technology such as genetic engineering, biotechnology and ecology as well as pollution abatement technology. More application-oriented research should also be emphasized such as tissue culture for crops and trees, and genetic engineering for improved livestock and fish species suited to local conditions.

As the Aktau city is expected to pursue more service oriented development, education and research in service support technology need to be strengthened as well. ICT technology is essential for all the services and particularly for logistics services. Also, the Aktau city may be the center for some specialized health care such as radio-therapeutics and biogenetic treatment. For such a function, a separate education and research institute may be established.

(5) Participatory rural development

A fundamental way to solve various social problems in rural areas represented by poverty in a broad sense is to support livelihood activities there and develop them into viable economic activities. To realize this, basic infrastructure should be improved in areas having more favorable potentials, organize rural residents to undertake livelihood/economic activities jointly, and provide a package of support measures for production technology, procurement of production input, management of land, water and financial resources, and marketing of products.

The key to the success of such rural development is the participation of rural residents from the beginning. In fact, organizing the rural residents is the most critical step. Participatory rural development projects should be formulated in areas where there already exists a strong farmers' organization or people organizing is easier to undertake. The accessibility from the designated rural service centers is another important condition for the site selection.

3.2.4 Agriculture

(1) Support for farmers' organizations

The agricultural production, both crop production and livestock, declined significantly after the collapse of the Soviet Union, and it has not fully recovered. Some large collective farms effectively maintained their control over the agricultural land to ensure transition to a market economy. Some farmers are locked into the existing farm units, deprived of opportunities to establish independent production, procurement and marketing operations respectively. To enhance agricultural productivity, voluntary associations of farmers should be formed or strengthened, and supported with a package of measures to establish viable production systems.

Support measures will cover the procurement of certified seed, fertilizer and agrochemicals for crop production, concentrate feed and medicament for livestock, technical extension and marketing of products. As the development of independent operators for these services will take time, the Oblast supports will be necessary until the critical production level is reached to justify such operations.

(2) Development of new livestock models

The livestock particularly for sheep and goats in Mangistau have some favorable conditions. It suffers, however, from limited water availability and unfavorable land tenure conditions for individual farmers. At present, individual farmers account for two-thirds of the livestock production in Mangistau, while they do not have much control of the pasture land.

The livestock production in Mangistau can be much increased by developing new production models based on individual farmers. This will involve the improvement in land tenure

arrangements between individual farmers and farm enterprises as well as improved water supply. Also, the present practice should be changed so that live animals will go through a fattening process before slaughtering. The carcass yield of off-take can be nearly doubled by intensive grain feeding prior to slaughtering. The efficiency with which feed resource is converted into meat is much higher, and the meat quality is much improved through finishing. As Kazakhstan is a major grain producer/exporter, feed is easily available from other regions for these new practices. Use of concentrate feed and improved pasture management, and provision of adequate veterinary services are other conditions for the new livestock models.

(3) Promotion of fishery, aquaculture and fish processing

Mangistau Oblast used to produce a large amount of fish, which was processed at a plant in Bautino. The fishery industry should be re-activated, following the Oblast policy. As it will be almost a complete re-start, all the related activities should be carefully planned and implemented as a cluster of development. The fishery cluster should consist of both the open sea fishery and aquaculture, and fish processing as well together with all the support facilities and services. The latter include development of fishery ports and fishing fleet, manufacturing of fishing gear and fishmeal, training, cold storage and links with other industries. It may be developed by the public-private partnership.

(4) Enhancement of land productivity

Enhancing land productivity would be essential to ensure the sustainable development of livestock activities throughout the Oblast. The land should be protected from wind erosion as well as over-grazing. For this purpose, vegetation cover should be increased and maintained by pasture management and tree planting. These measures should be undertaken by the Oblast initiative as they will not produce any immediate benefits. The private sector would join the efforts as land tenure arrangements are improved for individual farmers.

(5) Establishment of rural service centers

To support the production increase in the vast pasture land of Mangistau Oblast, service bases need to be established in selected locations having favorable conditions for related procurement and marketing. These locations should be determined based on the hierarchical structure of settlements proposed above.

3.2.5 Oil products transportation

(1) Oil production expansion and transport needs

Oil production in Mangistau would follow the national strategy that dictates some 60 million ton of oil products produced in the western Kazakhstan. Of this total, 38 million ton will be exported from the Caspian seaports in 2015, and 50 million ton in 2020. Infrastructure for oil products transportation needs to be strategically developed.

(2) Oil transport facilities development

The CPC pipeline as the main oil export line is planned to be reinforced by 2011. A new seabed pipeline to Baku is planned by BTC, but no decision has been made as to the starting point: Aktau or Kuryk. A pipeline leading to Iran through Turkmenistan is also planned, but may be difficult to realize in the near future. The pipeline from Uzen to Kuryk is included in the development of the Kuryk port complex. These pipelines and port facilities for oil export are summarized in Table 2, and the planned oil pipelines are illustrated in Figure 1.

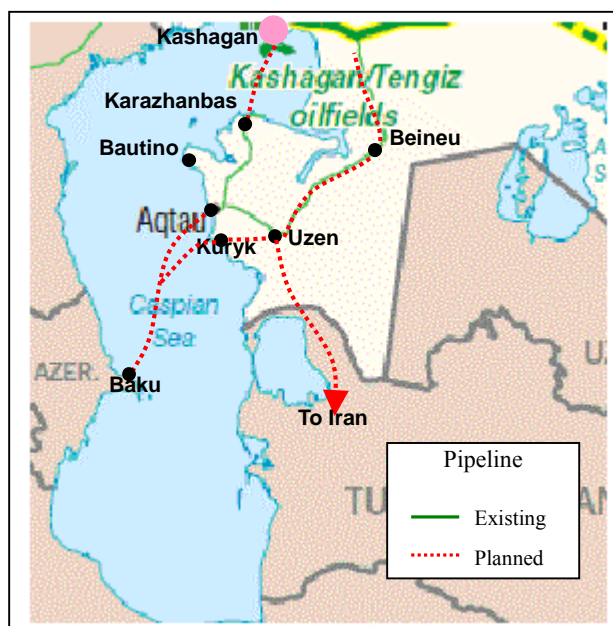


Figure 1 Existing and Planned Pipelines

Table 2 Oil transport Facilities to Foreign Countries

Facilities	Name of company	Route/Location	Capacity (10 ⁶ t/year)	
			Present	Future
Pipeline	CPC	Uzen-Atyrau-Samara	15	67
	CNP	Uzen-Kuryk	-	5
	BTC	Aktau (kuryk)-Baku-Supsa	-	20
	KTO	Karazhanbas-Kashagan	-	8
Port	Aktau	North of present Aktau Port	10	20
	Bautino	North of Aktau from 140km	-	5
	Kuryk	South of Aktau from 60km	-	10 – 20
	Sartas	North of Aktau from 170km	-	5
Oil products in west Kazakhstan			20	60
Transport via Caspian sea			10	38 (2015) 50 (2020)

Source: State-run Program of Development of the Kazakhstan Sector of the Caspian Sea Hearing from the Ministry of Transport

(3) Stage-wise development of oil export facilities

The oil export facilities listed above should be developed in stages (Figure 2). The expansion of the Aktau port is expected to be completed as scheduled to handle increasing amount of oil export. The new port in Kuryk should be developed promptly in parallel with the Aktau port expansion. Both the Aktau port for container and other general freight as well as oil products and the Kuryk port exclusively for oil cargoes should be part of the TRACECA corridor.

Private joint ventures are developing a ship maintenance factory near the original Bautino port, and the port expansion for oil shipping is also planned together with rail transport. The Bautino port will be the third port for oil export to complement the Aktau and the Kuryk ports. A consortium of private companies has prepared a plan to establish a new port in Sarytas near Bautino which was already accepted by the Government. The construction may start in 2008, but the port operation in full scale may be realized after the railway is constructed to transport oil products.



Figure 2 Strategy for Oil Development and Transport

3.2.6 Manufacturing industry

(1) Support for training programs of private firms

Large oil companies provide on-the-job training for the new recruits generated by local technical colleges. There is a government program to support training by private firms as well. These training programs should be expanded and streamlined to generate skilled labor required by respective firms. A special program needs to be developed for small and medium sized enterprises (SME's) to equip them with skills for producing parts and equipment required by large firms as part of a comprehensive support package described below.

(2) Development of a comprehensive support package for small enterprises

There exist opportunities for SME's in Mangistau to develop into parts and equipment manufacturers and service providers for the existing oil and gas industries. To encourage these enterprises to develop into local suppliers, size of contract packages and procurement rules may be modified for government procurement.

There is a plan to establish an industrial estate for SME's in the newly created *rayon* (administrative district) of Munailinsky. A business incubation center was established recently in Tupkaragan to provide office spaces and associated services for new enterprises. These existing and planned facilities alone, however, may not be effective in fostering SME's. A comprehensive support package should be introduced exclusively for SME's, including training, credit provision, products development, and business incubation, extending the efforts by the Government and the Oblast. Provision of serviced industrial plots, sometimes including buildings, is another way for the comprehensive support.

These measures would also help develop consumer goods industries that are at present confined to construction materials and such construction-related goods as doors and window frames, tiles, etc. An efficient SME program is likely to promote a host of other manufacturing industries in apparel, paper and plastic products, and metal products for local market.

(3) Provision of enabling environment for business

An enabling environment for business should provide first the private sector firms with conditions that are conducive for production and trade. These conditions include the availability of labor force, technical/scientific base, and shared platforms for all stakeholders, and the stability in business environment. They are sometimes called collectively the soft infrastructure. The second factor of the enabling environment is the availability of physical infrastructure. These two factors are generally sufficient for large businesses to establish and operate.

Related to the second factor, efficiency in public investments and management should be improved. This affects the production and trade through the quality of physical infrastructure, but equally important it affects the quality of living environment for inhabitants through social services such as health, education, culture and environmental protection. The latter are recognized increasingly important on the choice of business locations by private firms. Locations that do not provide attractive living conditions for the work force will find it very difficult to attract new investments and keep existing companies.

(4) Support for private firms to comply with environmental standards

Mangistau Oblast would introduce high environmental standards and enforce them strictly to overcome its unique environmental problems as suggested in the environment sector. To support private firms to comply strictly with such standards, a subsidy scheme may be introduced to facilitate the installation of abatement equipment. The establishment of an eco-industrial park with common treatment facilities may be another way to support the private firms' efforts for pollution abatement.

(5) Streamlining of testing and certification functions

Subcontracting and outsourcing by large firms to SME's are constrained also by quality requirements by the large firms. Another major constraint is lack of standardization. In enacting the national product and process standards, priority may be given to those products important for the oil and gas industries. Similarly, local firms need assistance in certification for product standards and quality. This would be consistent with the government policy on adopting international quality standards.

3.2.7 Logistics industry

(1) Establishment of clear policy and institutions for logistics industry

The logistics industry, unlike conventional industries, is a volatile industry, which does not necessarily have fixed addresses or physical facilities. It may be established if the cost competitiveness is superior but decline as the competitiveness is lost against alternative transport routes. The determination to establish such an industry is a necessary prerequisite that should be expressed by a clear policy. Such a policy should be embodied in institutional measures necessary for successful development of the logistics industry. Bilateral trade arrangements with neighboring countries are important part of the institutions as well as simplified customs procedures at the borders.

(2) Consistent provision of infrastructure

The logistics industry needs to be supported by the development of consistent transport and related infrastructure. The transport infrastructure will have to accommodate for multi-modal transportation with road, rail, sea and air transport. Kazakhstan has an advantage of having an operating railway system, although there exist network deficiencies. Mangistau Oblast has even better advantages with the only international seaport that can be used all the year round as well as road and rail networks and the international airport. Within the conceived transport infrastructure development at the national level, Mangistau should make deliberate efforts to upgrade the transport and related infrastructure to support the logistics industry.

(3) Development of indigenous industries

To ensure the robust development of the logistics industry, various indigenous industries should be

developed in the Oblast. They include resource processing industries to generate large quantities of domestic and export cargoes, import processing and export industries to directly contribute the logistics industry, and ICT and other industries to provide support services for the logistics industry. The latter may include local trading houses and forwarders, and financial institutions.

To encourage the development of these industries, special economic zones (SEZ's) may be established with logistics functions either exclusively or in combination with other industries. In addition to transshipment and warehousing, sorting, labeling, packaging/re-packaging and packaging materials manufacturing are among the functions to be included at the SEZ's. The establishment of border trade centers may also be pursued in cooperation with Uzbekistan and Turkmenistan.

3.2.8 Services

(1) Promotion of specialized services

At present, many large enterprises tend to internalize various services rather than outsourcing them to small local firms. This is not desirable from the regional development point of view. Certain specialized services should be promoted particularly in relation to the logistics industry. They include various business services, foreign trade, insurance and finance. These services will develop naturally in response to the demand as the economy grows, but small local firms may be encouraged to link up with new industries to develop these services, facilitated by the Oblast.

(2) Development of curricula for specialized services

Whether these specialized services develop within the existing large enterprises or by small local firms, manpower needs to be developed for them. Training curricula for these fields should be developed at the existing training and higher education institutes. These may be also the fields to be covered by the planned Caspian State University of Technology and Engineering.

(3) Service-oriented development of the Aktau city

These specialized services would be naturally located mainly in the Aktau city, which should pursue more service-oriented development. The city should also be equipped with some higher order service functions such as advanced education and research and specialized health care as already mentioned. The Aktau city should establish its fame as the center of excellence in these services to attract visitors from all over the Country and also from neighboring countries.

(4) Development of Zhanaozen as inland service center

Zhanaozen is located on the regional artery and constitutes a node of the logistic triangle defined above. The city should be strengthened as the inland service centers for logistics industry, agriculture, and tourism as well as the oil and gas industries. Marketing and distribution facilities should be preferentially located in and around the city. Some resource processing industries should develop further supported by service functions provided by the city.

(5) Development of high-grade services in the Aktau city

The Aktau city should provide higher order service functions for the entire Oblast. They include advanced education and research, specialized health care, international conference and tourism, and others. Subjects for the advanced education and research, and fields of the specialized health care are suggested in the respective sector. The Aktau city should establish its fame as the center of excellence in these specialized services to attract visitors from other regions and countries.

3.2.9 Environment

(1) Establishment of high environmental standards and strict enforcement

The air pollution by dust and emission from industries, including the flare gas emission, is a serious health hazard. Other than possible water pollution by off-shore oil exploration and production discussed below, the wastewater from oil production poses a broad environmental threat. The first step for the Oblast Akimat to administer the control of air and water pollution is to establish high emission and discharge standards of its own, recognizing the unique climatic and industrial conditions of the Oblast.

The enforcement of the standards involves first the monitoring as discussed below, and the provision of incentive measures for polluting enterprises to take abatement measures. The latter include subsidies for investment by enterprises in abatement equipment or reuse of the waste resources, or provision of an alternative site where control measures can be introduced more easily. The latter may take a form of an eco-industrial park where common treatment facilities are provided for wastewater and abatement facilities can be more easily installed for emission.

To alleviate the dust pollution, buffer zones may be established by tree planting around settlements, considering the dominant wind directions. This may be undertaken by the Oblast initiative, following the successful case of the Senek settlement. For excavation sites, responsible enterprises are required to take the necessary tree planting measures under the guidance of the Oblast.

(2) Protection of water quality of the Caspian Sea

Pollution of the Caspian Sea water would be critical for the Aktau city that depends entirely on the desalinization for its water supply. This is a matter of survival for the city residents, the city as a whole, and Mangistau Oblast as well. The strictest enforcement is necessary to prevent oil spills of any form from the offshore operations.

Equally important is to anticipate accidents and to prepare for them. That is, preventive measures to minimize the effects of oil spills should be built into the oil exploration and production operations. These measures are technologically well established and better measures will continue to be developed. A mechanism should be established to allow collective efforts by related enterprises in cooperation with the Oblast to minimize the risk of oil spills and adverse effects when the accidents occur in terms of information sharing, joint procurement and stock of parts and materials, and arrangements for insurance.

(3) Development of water supply capacity

Once the Koshkar-Ata tailing pit is reclaimed, the wastewater currently discharged from the Aktau city into the pit to cover the radioactive wastes can be used for other purposes. The wastewater can be easily used to water roadside trees. It may be transported to a depression that would work as an aeration lagoon for further treatment. The lagoon would facilitate the recharge of groundwater if its location is carefully selected, and the water can be taken from the lagoon for agricultural production by drip irrigation.

In rural areas of Mangistau Oblast, there are many wells that have been neglected after the collapse of the Soviet Union. Some of them can be restored immediately to support rural people and activities. The selection of wells to be restored would present opportunities to determine rural settlements to be strengthened for livestock and related activities. Those having more organized people should be selected to plan and implement the well restoration and livelihood development by participatory approach.

(4) Solid wastes management and recycling

The solid wastes management system in Mangistau is not well established. Landfill sites are not planned and managed properly. No regulations are enforced for transfer, storage and disposal of wastes by enterprises, and unauthorized waste dumping is commonly practiced. The solid waste management system should be re-structured from the beginning of waste generation and discharge. Waste separation at sources should be experimented first by a pilot project for households in selected districts in the Aktau and/or the Zhanaozen cities. This would be the first step to establish waste recycling and reuse industries by the private sector.

(5) Establishment of participatory monitoring and evaluation system

To enforce the environmental standards, monitoring and evaluation need to be undertaken. Also, to minimize adverse effects of discharges and emissions of hazardous materials, early detection is vitally important. Given the limited administrative capacity and resources on the public side, the monitoring should be undertaken with the wide participation of stakeholders. The participatory monitoring and evaluation represent also the method to raise the awareness of enterprises and people for environmental quality and value as increasingly recognized world wide.

To provide a momentum for the establishment of participatory monitoring and evaluation, environmental database development may be initiated by the Oblast. The database should cover land, sea and air, and be made open to the public as a matter of principle for sharing by all the stakeholders. It would provide a common base for discussion on critical environmental issues and their cooperative resolution. Such database may make a precedent of the comprehensive database for the Caspian Sea region for the cross-border management of its resources.

(6) Environmental education and awareness

Mangistau Oblast should overcome current difficulties in environmental management and become the center of advanced environmental management in the Caspian Sea region. Such a function should be supported by the residents. The environmental awareness of the people should be enhanced through their involvement in environmental monitoring, and other activities such as waste separation and recycling, tree planting and oil waste cleaning. Environmental education curricula should be expanded at existing general schools emphasizing field works and participation in social works. The planned Caspian State University for Technology and Engineering should have a strong program for environmental education and research.

4 Development Alternatives

4.1 Implications of the Regional Development Objectives

The regional development of Mangistau Oblast would have to reconcile two seemingly contradictory requirements. One is to convert the regional economic structure away from the oil and gas dominant one to a more diversified one so that a variety of lucrative employment opportunities would be generated for the expanding labor force in urban and rural areas as expressed by the economic objective of the Mangistau regional development. The attainment of this objective would contribute also to the reduction of disparities between urban and rural areas and between different segments of the society expressed by the social objective.

The other requirement is to utilize the oil and gas industries as the driving force of the regional growth for the foreseeable future. The oil and gas industries may contribute to the diversification of regional economy under the economic objective if they induce the development of related local industries and services. The latter will contribute to the attainment of the social objectives as well. Care needs to be taken, however, of possible side effects of these developments that may

undermine the attainment of the environmental objective.

The provision of comfortable and attractive living environment expressed in the environmental objective is considered increasingly important as the condition to determine business locations by private firms. Locations that do not provide attractive living environment for the work force will find it very difficult to attract new investments. The economic and the social objectives would also have implications to the improved living environment through generation of lucrative employment opportunities and reduction of disparities. The development of small and medium enterprises would help to attain these objectives as well as the provision of amenities and social infrastructure.

4.2 Development Prospects by Sector

(1) Agriculture

Agriculture in Mangistau is insignificant at present. Its contribution to the GRDP is almost negligible estimated to be only 0.37% in 2007. A question arises whether or not the sector deserves any effort for development at all. The answer is clearly “yes.” For social reasons, livestock activities are and will continue to be important for the Kazakh people who are originally nomads. Moreover, it has been found out that sheep and goat raising in Mangistau has some favorable characteristics. Improved management of pastureland and tree planting, particularly in the reserved land, would contribute to enhancing the land productivity in the long run not only for livestock but possibly also for crop cultivation.

For crop cultivation, greenhouse agriculture and drip irrigation should be promoted for three reasons. First, they are potentially the most water saving forms of crop production. Second, fresh vegetables, some fruits and tree saplings have immediate local markets. Third, they may induce some manufacturing of materials and equipment such as aluminum products, PVC pipes, rubber tubes, small water pumps and water meters.

(2) Mining

Mining in Mangistau is too dominant due to the strong oil and gas industries to cause a very biased economic structure. There is no doubt that mining will continue to be the driving force for the Mangistau regional development in the foreseeable future. A meaning question is how to utilize mining to develop other socio-economic activities. There are at least two directions to pursue.

One is to encourage local procurement of parts and equipment by oil and gas enterprises by introducing incentive measures. The other is to facilitate the increase in value added of the oil and gas industries by improving their efficiency. Increasing the local procurement may be a way to realize this, and thus these two methods may be complementary. Through improving the efficiency, income levels of workers engaging in the oil and gas enterprises can be increased without much increasing the production. The higher income, in turn, will increase the demand for consumer goods and services, thus contributing to the diversification of the regional economy.

(3) Manufacturing

Manufacturing in Mangistau at present is too small, but some diversification of sub-sector industries is observed in Aktau. Important questions are whether any sub-sectors can be identified that may attain significant growth in the medium term, and how can they start growing in the near future. The priority sub-sector industries have been identified by the location quotient analysis. They are: machinery and equipment, and engineering as the first priority; plastic products, and other non-metallic products as the second priority; and chemicals and leather products as the third priority.

These selected priority industries can be developed initially by import processing type manufacturing. This type of manufacturing processes import materials into final products for domestic markets. Most promising and readily available domestic markets are the oil and gas industries and the construction industry. This type of manufacturing includes import of synthetic resins to manufacture various household goods, manufacturing of building materials from wood chips and metals in combination with plastics, import of clinker for cement manufacturing, and fertilizer, agro-chemicals and medicament manufacturing from import goods as well as manufacturing of small equipment and tools based on import materials.

Another possible area for major manufacturing development is related to downstream industries of the oil and gas industries. While a major petrochemical complex is developing in Atyrau, opportunities in Mangistau may be related to natural gas chemistry, which has not much developed in Kazakhstan.

(4) Utilities

Utilities in Mangistau are well established. The heat-energy complex of MAEK-Kazatomprom in the Aktau city supplies 70% of fresh water used in Mangistau Oblast, including the supply of distilled and hot water to the surroundings, and also sea water to nearby rayons. It has the power generating capacity in excess of the total demand of the entire Oblast for the foreseeable future. Many facilities of MAEK including the desalinization plants, however, are over-aged and need rehabilitation. The efficiency of water and energy generation and use needs to be much improved. The planned introduction of a new gas turbine power generation plant may provide an opportunity to establish co-generation for the combined heat-power plant.

(5) Services

Services in Mangistau are least developed and least specialized. In particular, the Oblast is least specialized in the trade and the transport and communications, relying almost exclusively on the oil and gas industries. As these are demand responsive services, they are expected to develop as other economic activities develop. The roles of the public sector for these services are 1) to improve the transport and related infrastructure to facilitate their development, and 2) to ensure the sufficient man-power to be generated and available when necessary. Therefore, the efficient public investments into these infrastructure facilities need to be planned, and the training program should be supported in anticipation of expected changes in demand. The provision of specialized land area with proper infrastructure is a way to realize the efficient public investment for these services.

Another prospect identified through the analysis on potentials and constraints is for the Aktau city to become a center of excellence for some high-grade services. These services may include financial center, international trade, international conference and tourism, environmental and maritime research, and specialized health care. Some of these are demand responsive services, but the public sector may facilitate their development by generating human resources to support them. For other resource-based services, typically tourism, strategic approach would be effective for their development through deliberate efforts by the public-private partnership.

4.3 Development Alternatives

(1) Definition of alternatives

From the foregoing analysis, three main directions for the Mangistau regional development have emerged as follows:

- 1) Improvement of efficiency of the oil and gas industries that will induce the development of local enterprises supplying parts and equipment, and related services to them and increase the demand for consumer goods and services through enhancing income levels
- 2) Inducement of services at high level by efficient public investments into related infrastructure, and support in human resources development, both for demand responsive services, and also by strategic approach to tourism development
- 3) Development of agriculture, SME's and small services for social purposes, and also to induce related manufacturing and services

Corresponding to these directions, three development alternatives are defined as follows:

- Alternative 1: Oil and gas based development
- Alternative 2: High services based development
- Alternative 3: Equity-oriented development

These are conceptually distinct alternatives, but not mutually exclusive. As realistic alternatives, they share most common elements.

The difference between the three alternatives may reflect varying emphasis placed on the three regional development objectives. The first two alternatives emphasize the economic objective and represent different ways to attain the diversity of the regional economy. Alternative 3 emphasizes the social objective. Alternative 2 appears to contribute better to the attainment of the environmental objective than Alternative 1.

(2) Assessment of alternatives

Growth implications

Alternative 1 and Alternative 2 are both growth-oriented, while Alternative 3 is equity-oriented. To compare the possible growth performance of the first two alternatives, it is assumed that the GRDP growth at 10% per annum should be attained to the year 2015. The GRDP will grow to 1,418 billion tenge in 2015. If this should be attained by Alternative 1, the mining sector will have to at least maintain the present share. If this should be attained by Alternative 2, the services sector will have to increase its share at least to 50%, resulting in the mining share reduced to smaller than 45%. These possibilities are compared in Table 3.

Table 3 Comparison on Growth Performance under Alternative 1 and Alternative 2

Alt.	Sector	GRDP share (%)		Growth rate, 2007-15 (% p.a.)	Assessment
		2007	2015		
1	Mining	65	65	9.9	Very difficult to attain
	Services	31	≤30%	≤9.5	Rather modest
2	Mining	65	≤45%	≤5.0	More likely
	Services	31	50	16.7	Difficult but possible

As shown in Table 3, Alternative 1 requires the very high growth rate for mining, which is difficult to attain. The growth rate for services under Alternative 1 appears rather modest. Alternative 2 requires the very high growth rate for services. This level of growth, however, is possible to attain for services, especially when the size of this sector is very small at present. The growth of mining under Alternative 2 is more plausible and likely to be attained.

Alternative 3 is not growth-oriented, but expects growth rates for mining and services somewhere between the two extremes, respectively. It places more emphasis on agriculture, SME's and small

services. These sectors are expected to grow at high rates, but their effects on the overall growth will not be significant due to their very small shares in the GRDP.

Other implications

Other implications of the three alternatives are summarized in Table 4. The table has been prepared to highlight the differences between the alternatives. More important policy instruments are shown for each alternative. In reality, the three alternatives should have many common elements to be realistic.

Table 4 Comparison of Three Alternatives for Policy Instruments

Policy instruments	Alternative 1: Oil & gas based	Alternative 2: High service based	Alternative 3: Equity-oriented
Infrastructure	- Kuryk port complex - Bautino port - Economic infrastructure	Aktau port and airport for trade	Aktau airport for tourism
Land development	Industrial sites with complete infrastructure	Urban zoning in Aktau city/new city for trade, finance etc.	- Industrial site for SME's - Land productivity enhancement
Training	Training for ICT and high technology	- Training for ICT and office and hotel administration - Language training	- Support OJT by firms - Skill training - Technical extension for agriculture
Spatial development	Road and rail links to sea ports	Road links between Aktau city and secondary cities	- Establishment of rural service centers - Access roads to hinterland
Regulatory measures	- Industrial standards, testing and certification - Incentives to increase local value added contents	- Service quality control - Customs services	- Subsidies and other supports for business development - PPP for pilot projects

(3) Definition of the best alternative

Based on the assessment of the three alternatives, the most desirable yet realistic alternative is defined. The growth rates of such alternative should be 5.0-9.9% for mining, and 9.5-16.7% for services, annually on the average, respectively as examined above for Alternative 1 and Alternative 2. The growth of agriculture, SME's and small services under Alternative 3 will increase the overall growth marginally to attain the maximum growth, while better equity will also be ensured.

5 Development Frameworks and Scenario

5.1 Socio-economic Framework

(1) GRDP projection by sector

The GRDP in 2007 was estimated by sector/sub-sector based on the available data for 2006. Taking 2007 as the base year, the GRDP is projected to the year 2015 by sector. The projection corresponds to the development alternative defined in the previous sub-section. That is, the annual average growth should not much exceed 5.0% for mining, and should be lower than 16.7% for services. The maximum plausible growth rates are assumed for agriculture, related manufacturing and services.

Based on the GRDP projection by sector, the GRDP of Mangistau Oblast is projected to increase from 661.6 billion tenge in 2007 to 1,453.7 billion tenge in 2015, representing the annual average growth at 10.3% in real terms (Table 5). The GRDP structure in 2015 will be 0.37% agriculture, 52.8% industry and 46.9% services. The share of the mining sub-sector is calculated to be 47.3% in 2015.

Table 5 Projection of GRDP by Sector/Sub-sector, 2007-15

Sector/sub-sector	GRDP in 2007 (10 ⁹ tenge)	Growth rate for 2007-15 (% p.a.)	GRDP in 2015 (10 ⁹ tenge)	GRDP share in 2007 (%)
Agriculture	2.46	10.1	5.32	0.37
Crop cultivation	0.12	18.9	0.48	0.03
Livestock	2.24	9.1	4.48	0.31
Fishery & others	0.1	17.4	0.36	0.02
Industry	453.2	6.8	767.2	52.8
Mining	431.6	6.0	687.9	47.3
Manufacturing	8.7	25.0	51.9	3.6
Utilities	12.8	10.0	27.4	1.9
Services	205.8	16.1	681.2	46.9
Construction	44	10.0	94.3	6.5
Trade	16.1	25.0	96.0	6.6
Trans. & comm.	36.4	20.0	156.5	10.8
Other services	109.3	15.0	334.4	23.0
Total	661.6	10.3	1,453.7	100

Source: Projection by the JICA Study Team

(2) Population and per capita GRDP

The population of Mangistau Oblast increased from 314,000 in 1998 to 374,400 in 2005 at the annual average rate of 2.55%. The population growth had consistently accelerated from 2.82% in 2001, 3.14% in 2002, 3.31% in 2003 and 3.46% in 2004, to 3.48% in 2005, due to both the booming oil economy and the return of *oralman*. The growth is expected to be decelerating, and the Oblast estimates the 2007 population at 397,600, representing the annual average growth at 3.05% in 2005-07. For the long term planning purposes, the population is projected at 3.0% per annum in 2007-15. The population in 2015 is thus calculated to be 503,700. The per capita GRDP is projected to increase from 1,664,000tenge in 2007 to 2,886,000tenge in 2015, representing the annual average increase at 7.1%.

5.2 Spatial Development Framework

(1) Existing distribution of settlements

Existing distribution pattern of rural and urban settlements was first examined, mostly using the data in Village Monitoring 2006 issued by Mangistau Oblast. Based on the results of the examination, settlements were ranked by score as shown in Table 6, and then classified into five categories as shown in Table 7.

(2) Future hierarchical settlement system

Based the results on the classification of existing settlements, hierarchical distribution system of settlements was planned for target year of 2015. All the 57 settlements were classified into 5-tiers according to the functional hierarchy: regional center, upper regional sub-centers, secondary centers, rural service centers, and other settlements. Expected roles and functions of these hierarchical tiers are summarized in Table 8.

Table 6 Results of Settlement Analysis by Score

Settlement name	village/rural district name	Rayon name	Total score	Classification
Beineu	Beineu	Beineu	45	2
Shetpe	Shetpe	Mangistau	43	2
Kurik	Kurik	Karakiya	39	2
Mangistau	Mangistau	Aktau	38	2
Ushtagan	Aktobe	Mangistau	37	3
Senek	Senek	Karakiya	36	3
Borankul (st.Opornaya)	Borankul	Beineu	36	3
Kizan	Kizan	Mangistau	35	3
Singirlau	Singirlau	Beineu	34	3
Sarga	Sarga	Beineu	34	3
Umirzak	Umirzak	Aktau	34	3
Ondy	Ondy	Mangistau	33	3
Shair	Shair	Mangistau	33	3
Kulandy	Kulandy	Karakiya	32	4
Bostan	Bostan	Karakiya	32	4
Zhingildy	Zhingildy	Mangistau	32	4
Akzhigit	Akzhigit	Beineu	32	4
Akshimirau	Akshimirau	Mangistau	31	4
Zharmish	Zharmish	Mangistau	31	4
Tushikudik	Tushikudik	Mangistau	31	4
Saiotes	Saiotes	Mangistau	31	4
Kizilozen	Kizilozen	Tupkaragan	29	4
Kiziltobe	Kiziltobe	Aktau	29	4
Tolep	Kulandy	Karakiya	27	4
Akshukur	Akshukur	Tupkaragan	27	4
Shebir	Shebir	Mangistau	26	4
Tolep (crossing point 4-)	Tolep	Beineu	26	4
Tasmurin	Shair	Mangistau	25	5
Taushik	Taushik	Tupkaragan	25	5
Station 15	Zhingildy	Mangistau	24	5
Zharma	Aktobe	Mangistau	24	5
Baskuduk	Ondy	Mangistau	24	5
Turish	Turish	Beineu	24	5
Kzil-Asker	Sam	Beineu	24	5
Sayin	Akshukur	Tupkaragan	24	5
Bayandy	Bayandy	Aktau	24	5
Kizilsai	Kizilsai	Zhanauzen	24	5
Sazdy	Aktobe	Mangistau	23	5
Beki	Ondi	Mangistau	23	5
Korkol (Eset)	Eset	Beineu	22	5
Kizilsu	Bostan	Karakiya	21	5
Kiyakty	Tushikudik	Mangistau	21	5
Akkudik	Senek	Karakiya	21	5
Bostankum	Bostan	Karakiya	20	5
Nogaity	Nogaity	Beineu	20	5
Tushibek	Zhingildy	Mangistau	20	5
Daulet	Kiziltobe	Aktau	20	5
Birlik	Kiziltobe	Aktau	20	5
Tigen	Shair	Mangistau	19	5
Bozdak	Saiotes	Mangistau	18	5
Tazhen	Akzhigit	Beineu	16	5

Table 7 Criteria for Classification of Existing Settlements

Tier	No. of settlements	Description	Note
Rank A	(1)	Regional center	Aktau city
Rank B	(9)	Candidates for upper regional sub-centers	Score \geq 38 including Zhanaozen, Fort-Shevchenko & 3 urban-type settlements
Rank C	(9)	Candidates for secondary centers	Score 33-37
Rank D	(14)	Candidates for rural service centers	Score 26-32
Rank E	(24)	Candidates for ordinary settlements	Score \leq 25

Table 8 Functions of Settlements at Different Tiers

Tier	Name	Functions
I	Regional Center	<ul style="list-style-type: none"> • International and inter-regional gateway to the Oblast • Business center for international services • Trade center for regional and international commodities • Manufacturing center for export and other goods • Highest referral hospital for entire oblast area • Higher education with international recognition • Cultural center representing the Oblast
II	Upper regional sub-centers	<ul style="list-style-type: none"> • Tourism base with overnight stay capability • Government services for specialized purposes • Education for specialized fields • Sub-region level medical services
III	Secondary centers	<ul style="list-style-type: none"> • Rural production centers (livestock, fishery, and agro-industry) • Emergency medical care capability • Tourist service points
IV	Rural service centers	<ul style="list-style-type: none"> • Financial service for rural production • Basic social services
V	Other settlements	<ul style="list-style-type: none"> • General education • Communal medical care • Basic government services

Factors taken in to account for the planning include:

- Potential for economic development, such as distribution and logistics, manufacturing and processing industry, tourism, agriculture and livestock, fishery, and agro-processing,
- Future transport network,
- Location of the settlement in the spatial distribution balance in the region, and
- Availability of water for expansion of population size.

With these criteria, six settlements to be raised from their current tiers to the upper ones were identified as shown in Table 9. Figure 3 shows the planned hierarchical structure of settlements.

Table 9 Settlements with Higher Functional Expectations

Location	Settlement name	Present tier	Future tier	Note
Mangistau	Zhyngyldy	IV	III	Potential for agro-industry and livestock production
	Saiotes	IV	III	Strategic location for logistics industry
Karakya	Akkuduk	V	IV	New railway connection and strategic location for tourism support
	Kenderli	--	III	New development of beach resort complex with residential areas for workers
Tupkaragan	Kyzyluzen	IV	III	Potential for fishery
	Taushik	V	IV	Potential for agro-industry and livestock production
Beineu	Tazhen	IV	III	Strategic location for International Border Trade Center

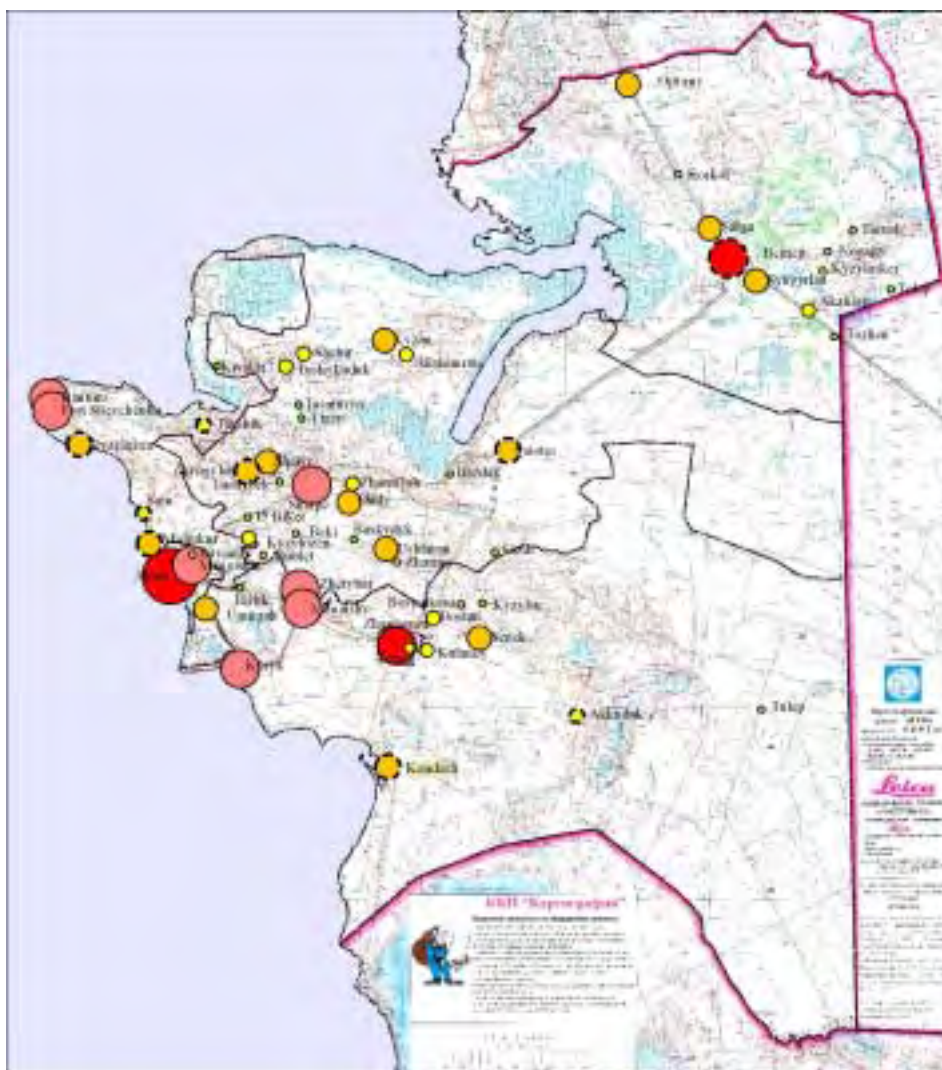


Figure 3 Future Hierarchical Structure of Settlements

(3) Transport network

Transport network in the region consists of land (roads and railways), sea, and sky. Connecting from the international and inter-regional transport nodes formed by airports and seaports, the railway network is formulated linking to other oblasts in the Country as well as to Uzbekistan and Turkmenistan. The road network will be planned in a hierarchical manner, with three categories seeking different roles respectively. These functions by the hierarchy of the road categories are summarized in Table 10. The future transport network of the Mangistau Oblast is depicted in Figure 4.

Table 10 Functions of Roads by Category

Category	Functions
Arterial road	<ul style="list-style-type: none"> • International/inter-regional links • Connection between international logistic facilities (Airport, seaports) • Connection between regional center and regional sub-centers
Secondary arterial road	<ul style="list-style-type: none"> • Intra-regional links • Connection between upper-regional sub-centers and secondary centers

Category	Functions
Tertiary arterial roads	<ul style="list-style-type: none"> • Access to major rural settlements • Connection between secondary centers and regional centers



Figure 4 Future Transport Network

5.3 Development Scenario for Mangistau Regional Development

5.3.1 Phase 1: 2008-11

During this phase, deliberate efforts will be initiated by the Oblast to diversify the Oblast economy away from the over-dominance by the oil and gas industries through promoting agriculture, manufacturing and services. To do this under the stable macro socio-economic conditions, high economic growth rates should be maintained. Therefore, the production of the oil and gas industries should at least maintain a modest growth throughout the phase, while the efforts continued to increase domestic value-added contents of oil and gas production.

The linkage industries as conceived are expected to develop steadily during this phase, taking initially the form of import processing. Such development would be encouraged by some facilitative measures by the Oblast. For instance, some incentive measures may be introduced to provide tax reduction proportional to domestic value added contents of this type manufacturing.

Existing resource processing type industries will continue to develop as the domestic demand increases along with the booming regional economy such as construction materials based on limestone and plastics, and some consumer goods industries.

In agriculture, some neglected groundwater wells would be restored to support the livestock development. Drip irrigation will expand to produce more vegetables, and experimental greenhouses would be established possibly by the partnership arrangement between the Oblast and the private sector. The formulation of strategy and measures for the fishery cluster development will be completed, and the implementation will start.

Some man-made attractions will be established in the Kendyrli tourism complex together with additional accommodations. The Karakolsky zoological reserve near the Aktau city may be taken as a test case for integrated management of protected area and tourism development. The strategy for integrated management of other protected areas may be drawn up in steps.

On-going road and railway projects will be completed to establish the basic structure of the regional artery network in Mangistau Oblast. The upgrading of the Aktau port and the Aktau international airport will proceed as planned, and a widely varied and increasing number of industries will establish in the Special Economic Zone as the confidence is built up among investors with improved infrastructure. The logistics center will establish in the SEZ area. The Kuryk port complex will start to be implemented.

5.3.2 Phase 2: 2012-15

The production of oil and gas within the Oblast may start to decline in the middle of this phase. To compensate for the declining value added in the oil and gas production, new downstream industries will start to develop to produce a widening range of products. The combined value added will increase at accelerated rates.

The linkage industries will accelerate their growth, and some of them will become export industries. The resource processing industries will continue to grow, and some of them also will start to export their products to neighboring regions and countries. Other industries may establish to supply materials and equipment for greenhouses and drip irrigation.

The expansion of oil and gas production during Phase 1 will enlarge the opportunity to establish the natural gas chemistry operation. To make it successful, specific production lines with methanol and their derivatives should be carefully studied in the light of marketing prospect, and the implementation planned in stages.

Both greenhouse agriculture and drip irrigation will further expand to meet the growing demand for fresh vegetables and fruits/berries, including supply to tourism industry. Livestock development will accelerate based on the improved land tenure and water use arrangements between peasant farmers and farm enterprises. The fishery cluster will become operational, including both open sea fishery and experimental aquaculture.

The Kendyrli tourism complex will further develop with additional facilities and accommodations. Tour itineraries linking inland tourism sites with the coastal area will be developed, and facilities in the inland tourism sites will start to be provided in steps. The city beautification of Aktau and Zhanaozen will be initiated mobilizing citizen's efforts.

The upgrading of the Aktau port and the Aktau international airport will be completed by the end of this phase. Some local products of the linkage industries and other new industries will start to be exported not only from the port but also from the airport. Basic infrastructure for the Kuryk port complex will be mostly completed. The railway link from the central part of Kazakhstan to Beineu will start to be constructed.

5.3.3 Phase 3: beyond 2016

The combined value added of the oil and gas industries and downstream industries will continue to increase as the latter diversify with a wide range of products. The share of the mining sector in the GRDP may decline to 50% more or less in the early part of this phase.

The linkage industries and other new industries will continue to develop despite the decreased oil and gas production, as their markets expand in the Oblast and neighboring regions and countries. As the railway link from the central part of Kazakhstan to Beineu is established in the early part of this phase, the market for some industries will further expand, and some of them may effectively substitute existing industries in other regions.

The natural gas chemistry will be fully operational to produce high value-added specialty products. Also, some downstream industries utilizing output from the petrochemical complex in Atyrau would be established. Together, Mangistau would become a production center for plastics and chemicals.

The logistics industry will develop most rapidly in this phase to become the lead industry in the Oblast, including increasing goods in containers to be transshipped. It is supported not only by the facilities in Aktau but also by the inland container depot, truck terminal and related facilities in Beineu. The Beineu city will become a major urban center in the inland area to provide social services, including some higher order functions, to its residents and vast rural hinterland.

The Aktau city will be established as the functional capital of the Pan-Caspian Region, equipped with higher order service functions to serve neighboring countries as well. These functions may include environmental and maritime education and research, and specialized health care such as radio-therapeutics. Mangistau Oblast will be characterized by the diversified economic structure with many export industries in addition to the oil and gas industries, high value industrial agriculture, international tourism featuring beach resorts, cultural heritage and experience/action oriented tourism, and international logistic services linking China in the east to Europe in the west. In addition, Mangistau Oblast in general and the Aktau city in particular will be known for cosmopolitan atmosphere with the population of mixed ethnicity, embracing many cultures and receptive for different faiths. The Oblast will attract a large number of international tourists from all over the world, including those for conference tourism.

6 Integrated Regional Development Master Plan for Mangistau Oblast

6.1 Structure of Mangistau Integrated Regional Development Plan

The integrated regional development plan of Mangistau Oblast is formulated under the development objectives and basic strategy established in Section 3. Specific projects and programs are formulated under the strategy by sector in line with the basic strategy. Implementation of the proposed projects and programs would collectively realize the levels of development specified by the socio-economic framework and the spatial structure dictated by the spatial framework, following the development scenario described in Section 5.

The proposed projects and programs are structured into four initiatives. The Regional Spatial Structure Strengthening Initiative consists of such infrastructure projects that will collectively enhance the competitiveness of various economic activities by reducing economic transaction costs. The emphasis is placed on establishing a multi-modal transport system comprising roads, railways and terminal facilities, and on strengthening urban functions and selected rural service centers in line with the basic strategy. This will particularly facilitate the development of logistics industry.

The Industrial Cluster Development Initiative consists of support programs for the five industrial

clusters in line with the basic strategy. The development of these clusters will generate more lucrative employment opportunities pursued by the first (economic) objective of the Mangistau regional development through the diversification of regional economy. It will also contribute to the second (social) objective to reduce disparities between urban and rural areas and between different segments of the society.

The Living Environment Improvement Initiative consists of projects and programs to generate additional livelihood opportunities, to improve the social services delivery, and to improve some physical infrastructure and environment. It responds directly to the third (environmental) objective of the Mangistau regional development, but will contribute to the second (social) objective as well.

The Mangistau Environmental Initiative addresses to the imminent and long-lasting environmental problems that the Oblast faces. It aims not simply to overcome these problems but through the process to establish Mangistau Oblast as the center of advanced environmental management in the Caspian sea region. This initiative would be supported by the industries and residents of enhanced awareness, and thus contribute to the social as well as economic and environmental objectives. The broad correspondence between the four initiatives and the three objectives of the Mangistau regional development is shown in Table 11.

Table 11 Broad Correspondence between Development Initiatives and Regional Development Objectives

Development Initiative	1.Economic objective: Generation of lucrative employment opportunities	2.Social objective: Reduction of disparities	3.Environmental objective: Improvement of living environment
Regional Spatial Structure Strengthening	√√	√	
Industrial Cluster Development	√√	√√	
Living Environment Improvement		√	√√
Mangistau environmental Initiative	√	√	√

Source: JICA Study Team

6.2 Regional Spatial Structure Strengthening Initiative

6.2.1 Artery roads improvement projects

(1) Development concepts

The development of artery road network for Mangistau should aim at the contribution to strengthening the international transport artery for Kazakhstan as a whole including the east-west and the north-south corridors, and the improvement of links between major settlements in the Oblast. It consists of the establishment of republican road network, improvement of intra-regional links, and improvement of local roads serving larger settlements as shown in Figure 5.

(2) Projects

Aktau-Beineu road upgrading

The Aktau-Shetpe section of 298km is subject to improvement by the project. This section corresponds to a part of the on-going Atyrau-Aktau road rehabilitation project of 900km supported by a loan from the European Bank for Reconstruction and Development (EBRD). This involves

300km section for pavement improvement, and 300km unpaved section undertaken by the Committee for Transport Infrastructure Department (CTID) of the Ministry of Transport and Communication (MTC). The total project cost is US\$243 million, of which US\$119 million is provided by the EBRD loan. The Aktau-Beineu road upgrading is estimated to cost US\$81 million.



Figure 5 Locations of Project Roads

Beineu-Opornoy road upgrading

This project will improve the link between Beineu and Opornoy on the border with Atyrau. It also constitutes part of the Atyrau-Aktau road rehabilitation project as well as the Beineu-Shetpe road improvement project. The project cost is estimated to be US\$64 million. It is administered by CTID, and the construction is undertaken by Turkish enterprises for completion in 2008.

Beineu-Uzbekistan border road improvement

The project will improve the existing road from Beineu to the border with Uzbekistan of 84km. This road section is considered of high priority in the western Kazakhstan according to the State Program of Road Sector Development approved in 2001. The project is administered by CTID. The project cost is estimated to be US\$25 million, of which US\$5.3 million is borne by the Government.

Zhanaozen-Turkmenistan border road improvement

The project will improve the republican road of 180km from Zhanaozen to the border with Turkmenistan. This road constitutes part of the north-south corridor connecting Aktau to Turkmenistan by Bekdash. It is specified as a high priority project in the western Kazakhstan in the 2001 State Program. The project is administered by CTID. The project cost is estimated to be US\$53 million, of which US\$13.3 million may be borne by the Government.

Zhanaozen-Sayutes road improvement

The project is to improve the existing local road of 95km from Zhanaozen to Sayutes. It involves the pavement and expansion works. The road is considered important for logistics and distribution functions for Mangistau, and thus the Oblast government is expected to take the initiative for the project implementation. The estimated traffic on the road is about 3,000pcu/day, and the road is classified as category III. The project cost is estimated to be US\$28 million.

Aktau-Shetpe road improvement

The project is to improve the existing local road of 40km from Akatu to Shetpe. At present, many traffic make detour to the republican road by Zetybai as the local road is of poor surface conditions. The initiative by the Oblast government is expected for its implementation. The estimated traffic volume is 3,900pcu/day, and the road is classified as category III. The project cost is estimated at US\$12 million.

Kuryk-Kenderli road rehabilitation

The project will develop the road from Kuryk to Kenderli along the coast of 95km as a local road. It constitutes part of the Aktau to Turkmenistan border road, which provides the alternative to the current route through Zhanaozen. The traffic demand is estimated to be about 500pcu/day in 2015, and the road classification is category III. The project cost is estimated at US\$22 million.

6.2.2 Railway network development projects

(1) Development concepts

Most larger settlements in Mangistau are located along the railway lines. The areas without rail services are the northern part of Tupkaragan including Fort Schevchenke, Bautino and Tauchik, the northern part of the Mangistau rayon and Kuryk. Of these areas, Kuryk will be served by the railway extension from the Yeralievo station under construction prior to the port development there. Moreover, in relation with the development of the Bautino port and the Sartas port, a railway from Aktau to Fort Schevchenko and Bautino is expected to start, and a railway from Shetpe to Bautino by Tauchik is also planned.

These new rail links may be justified as they are connected directly or indirectly to ports for oil shipment, where oil-related freight demand is expected to develop. The railway network development in Mangistau should take advantage of the development of oil-related freight in order to provide the comprehensive area coverage, eliminating the areas currently deprived of rail services (Figure 6). This will result also in the establishment of multi-modal transport system for Mangistau and Kazakhstan, which is an essential condition for the international logistics function.

(2) Projects

Beineu-Shalkar line

The project is to establish a new rail link to reduce the length of the present TRACECA route of the east-west corridor (Figure 7). The total length is 1,079km from Beineu to Zhenzkangen by

Shalkar, of which the length of about 120km passes through Mangistau. It is listed by KTZ as a high priority section. The Government announced the project outline in 2007, and a feasibility study has been carried out. It is reported that the travel time by railway from China to Europe will be reduced to 12 days after the completion of the project as compared to about 40 days by sea. The project cost is estimated to be US\$1.5 billion. KTZ is making arrangements for implementation by concession.

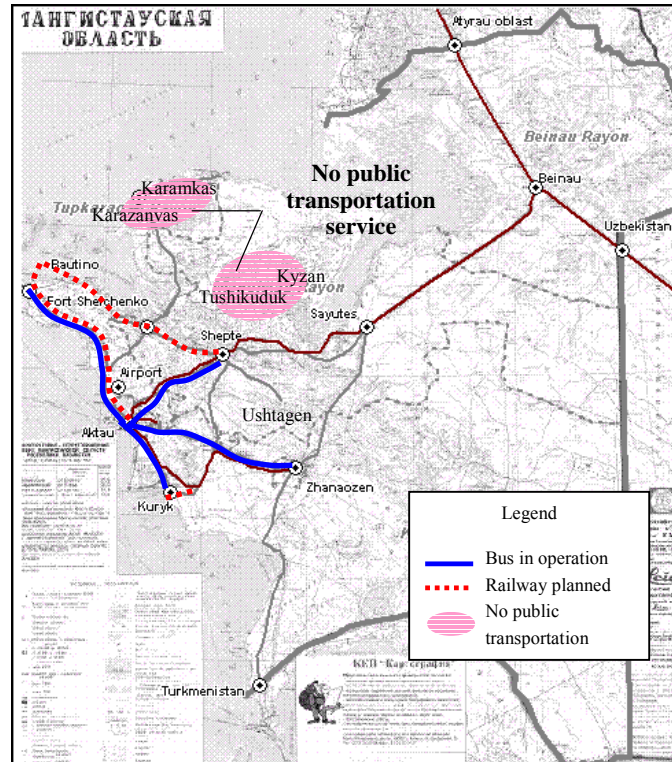


Figure 6 Missing Railway Links for Major Settlements



Source: Reassessment of the Regional Transport Sector Strategy, ADB

Figure 7 New Rail Link for TRACECA Corridor

Kazakhstan-Turkmenistan border new line

The project will establish the north-south rail corridor linking the Persian gulf to Russia and EU. Several alternatives were examined by the feasibility study, starting with the route from Yelarievo in Mangistau to Turkmenbashi in Turkmenistan. Finally selected is the route linking Uzen, Gyzylgaya, Bereket, Etrek and Gorgen for a total length of 697.5km, of which 140km is within the Kazakh territory (Figure 8). The freight demand is projected at 5 million ton per year initially to increase to 12 million ton in 2012. Passenger services are also conceived. The project cost is estimated to be US\$1.5 billion.



Figure 8 Location of Railway Projects

New rail link to Aktau port via SEZ

A new rail link to the Aktau port is planned as part of the planned extension of KTZ rail for nation-wide coverage in Kazakhstan in lieu to KTS, and a feasibility study has also been done as part of the port expansion. The rail link of KTZ will improve the situation of current monopolistic conveyance by KTS as well as to increase of freight capacity to the Aktau port, and improvement of service by reduction of transportation fee is also expected.

It is desirable to develop the new rail of KTZ linking to the Aktau port via the logistics center in the SEZ. The length of new rail connecting to the Aktau port is approximately 15km. This rail project is supposed to be developed by KTZ or KMG (KazMunaiGaz), but cost sharing is a matter

to be settled for the rail section passing through the SEZ. The total cost of project is estimated to be US\$9 million, of which US\$5 million is attributed to the railway of 15km length, and US\$4 million is for development in the SEZ.

Yeralievo station-Kuryk port new line

This is a new rail link of 14.4km connecting the Yeralievo station to the Kuryk port to be developed (Figure 8). The railway will serve the transport of oil, raw materials and products from/to factories in the Kuryk port complex to be established. The freight demand is estimated to be 5.5 million ton per year initially. The project cost is estimated to be US\$63 million, which is expected to be covered by the Karaikimunai oil enterprise.

Mangistau-Bautino new line

The Bautino port at present is used mainly as a base port for equipment transport by Agip KCO, which is exploring offshore oil fields. It is expected to be used to ship the oil from the Caspian Sea to the Aktau port at the time when commercial production starts around 2009. It may be used to ship oil to the Kuryk port as well. The Bautino port will also provide passenger and freight services to the Fort Schevchenko and Bautino area. The freight demand is estimated to be 7.5 million ton per year initially. The rail length is 135km, and the project cost is estimated at US\$189 million.

6.2.3 Ports and airports development

(1) Development concepts

As the oil production in the northern Caspian sea is expected to be increased significantly, port functions in the Mangistau Oblast need to be much strengthened not only for oil export and import and export of oil-related equipment, materials and products but also to support the development of linkage industries and the improvement of livelihood. Moreover, port functions of Mangistau are expected to support the logistic functions of Kazakhstan as a whole, which are essential in serving the transit demand of general freight including containerized cargoes that are expected to increase rapidly.

To accommodate the rapidly increasing passenger demand, the airport functions in Mangistau need to be upgraded as well. The increase in passenger demand would accelerate in the medium term as Mangistau develops its high potentials for tourism including conference tourism, adventure tourism and cultural tourism among others. Moreover, as the Mangistau economy develops, increasing high value products of new industries would start to export by air, and a variety of goods would be imported to cater for high-end demand of international tourists.

Existing port and airport facilities should be reinforced to meet the demand of oil and related industries and other services especially in Aktau and Fort Schevchenko/Bautino. New facilities should be developed to cater for emerging needs in Kuryk and Sarytash as currently planned. Additional port and airport facilities may be provided to meet specific requirements of local economies and livelihood such as airport facilities for tourism and fishery ports for individual fishermen.

(2) Projects

Aktau port expansion

The project will expand the capacity of existing port to handle freight twice as much as the present capacity. The oil shipment capacity will increase from 10 million ton to 20 million ton annually. The project cost is estimated to be US\$160 million, which will be supported by a loan from EBRD.

The project consists of provision of additional breakwater, dredging of sea-lanes, provision of stockyard for freight, and construction of berths comprising four oil berths, two container berths, two tanker berths and a berth for national border guard. Master planning and detailed design have been carried out for 18 months since June 2007, including the preparation of tender documents.

As part of the ongoing master planning, the previous master plan emphasizing oil berths in the port expansion should be carefully reviewed. The Aktau port should be specialized more in handling general freight including transit container cargoes after the Kuryk port is completed together with the BTC oil pipeline. A feasibility study should be carried out to convert the oil berths to general freight berths, including the establishment of rail connection to the present oil berths.

Aktau international airport upgrading

After more than 30 years since the construction, the passenger terminal and other facilities of the Aktau international airport have been over-aged. The existing facilities cannot handle properly even the existing passenger and service demand. For instance, the runway does not fit to the international standard for safety regulations. The project has two major components: runway extension and rehabilitation of passenger and freight terminals. For both of them, implementation by concession for 30 years has been adopted. The project cost is estimated to be US\$201 million, which will be funded by the airport's own fund, and the load from Kazkommertsbank. The Oblast has set aside US\$10 million in the regional budget for the new terminal. The project components are summarized in Table 12.

Table 12 Project Outline of Aktau International Airport

Project	Expected capacity	Investment cost (US\$10 ⁶)
Reconstruction of main runway	3,850×60m (to accommodate Boeing 747 class aircrafts)	160
Construction of new passenger terminal	350 passengers/hour capacity 200 passengers for international flight and 150 for domestic flight	41

Source: International Aktau airport, JSC

The construction work for the freight terminal started in February 2007 by concession. The passenger terminal construction is expected to follow for completion in 2008 and operation to start in 2009. The improvement of the runway is expected to start only after 2009 due to financial situation. Even after the expansion, the terminal capacity may be reached around 2020, if the present growth of passenger demand continues. It is recommended that a new expansion plan be prepared after the completion of the new runway.

Kuryk port development

The project is to establish a new port to export 60 million ton of oil from the northern Caspian sea. The development plan for the Kuryk port complex to be established in the Kuryk village has already approved. Taking advantage of the deep-water harbor of 8-10m depth, oil berths can be constructed for 15,000t class tankers. The port will be utilized also for the export of products from industries related to oil and gas production and transshipment of import products. The project cost is estimated to be US\$2,011 million for both industrial infrastructure and transport infrastructure. The new railway development from Yeralievto to Kuryk will be implemented in advance.

Bautino port expansion and Sarytash port development

Additional port facilities have been provided next to the original port of the Agip KCO company to handle materials for oil drilling in off-shore oil fields. A ship maintenance workshop, breakwater, berth and dredging are under construction. These construction works are being carried out by

joint ventures of Dubai companies and two Kazakhstan companies specialized in oil production and marine transport. The total project cost is estimated to be US\$80 million, which would be supported by a loan from EBRD. Other plans prepared by Kazakh oil companies for the Bautino port expansion exist, but details are not determined. The oil export is also expected from the Bautino port in the future, but the oil handling capacity is limited at about 5 million ton annually.

The Sarytash new port is planned by a consortium of more than 60 companies as the oil shipment base. The plan has been approved by the Government, and the construction is expected to start in 2008. The access road from Tauchik to the port has been developed earlier as a category IV road. The project including the transport infrastructure is estimated to cost US\$500 million, of which about US\$300 million are for the port itself. The railway development from Shetpe to Bautino, passing through near the Sarytash port is also planned in connection with the port development, but details are still to be worked out.

6.2.4 Aktau city development projects

(1) Development concepts

The development of the new Aktau city and the SEZ expansion will change the urban structure and traffic flow of the existing Aktau city. With the provision of large number of residential and commercial spaced in the new city, the property value may depreciate in the existing city, and old districts may face further deterioration. To revitalize the deteriorating districts of the Aktau city, urban renewal should be undertaken based on the assessment of living conditions.

(2) Projects

Assessment of needs for urban renewal

The needs for urban renewal should be assessed in the following steps:

- 1) Projection of housing demand and supply
- 2) Forecasting of property prices to be supplied by the new Aktau city
- 3) Identification of deteriorated blocks and buildings
- 4) Planning for urban renewal, relocation and project financing
- 5) Development by private investors/developers

Urban renewal for micro-districts nos. 1, 2, 3, 3a and 4b

The urban renewal should be undertaken for micro-districts nos. 1, 2, 3, 3a and 4b as the priority. This area adjoining the future industrial zone of the SEZ offers ideal housing location for factory workers and a public transport station to connect the industrial and the residential zones including the area of the new Aktau city. The following functions may be considered for the area:

- 1) Affordable housings for low to middle income people
- 2) Dormitory type rented apartments for students
- 3) Vocational schools
- 4) Bus stations and taxi pool spaces
- 5) Plaza and parks surrounded by cafes and restaurants
- 6) Amusement facilities and playgrounds
- 7) Modern supermarkets and shopping complex
- 8) Network of pedestrian walkways connecting bus stops and the core area

6.3 Industrial Cluster Development Initiative

6.3.1 Logistics cluster support program

(1) Special districts for preferential regulations and incentives

A special district system should be introduced for preferential regulations and incentives to encourage the location of facilities of the logistics industry in designated areas. These areas are the logistic triangle linking Aktau, Zhanaozen and Beineu, and other areas at the Bautino port, Kuryk port, Tazhen and Temir Baba (Figure 9).



Figure 9 Logistic Triangle

(2) Preferential regulations and incentives

Specific measures for preferential treatment consist of the following:

- 1) Simplified and fast-track customs procedure
- 2) Joint incentive package by the Oblast and the Central governments, consisting of the SEZ incentives and a subsidy to logistic services providers contributing employment generation
- 3) Collaboration with linkage industries by applying the same incentive package for manufacturers developing/expanding logistic facilities

(3) Infrastructure development

These regulations and incentives should be combined with infrastructure facilities essential for the logistics industry. They include the following:

- 1) Transport logistics center at the Aktau Port SEZ
- 2) Regional border trade centers near the Aktau Port SEZ offering rental sales offices for manufacturers, wholesalers, retailers, distributors etc., offices for trade information with ICT, exhibition facilities, and meeting and conference spaces
- 3) Regional truck terminals at the Znanaozen, Beineu and Shetpe railwat freight stations

6.3.2 Linkage industries cluster support program

(1) Promotion of Morport Aktau SEZ

The Department of Morport Aktau SEZ, established by the Presidential decree as the management entity, needs to be empowered to attract foreign direct investments in cooperation with KAZINVEST, the official agency of Kazakhstan for investment promotion. In developing effective marketing strategy, it is important to clarify the satisfaction of basic requirements by prospective investors and emphasize advantages for them.

The basic requirements include clear administrative procedure for registration and business operation at the SEZ, availability of human resources in sufficient quantity and quality, and incentive measures comparable to SEZs or similar facilities elsewhere. The third condition is considered largely satisfied by the Aktau SEZ, but the other conditions need to be improved. Given the limited human resources available locally and the lead time required for training qualified workers, the restriction on the employment of foreign workers dictated by the Law on Employment and Rules of Hiring Foreign Labor Force should be relaxed for the SEZ with a time limit. The foreign workers should be utilized for on-the-job training of Kazakh workers. At the same time to encourage the employment of Kazakh workers, subsidies should be introduced for training, employment of Kazakh workers and R&D program by companies located in the SEZ.

To improve the administrative efficiency of the SEZ, a one-stop consulting center may be established within the SEZ as a window of relevant ministries. It should be linked on-line with related Central Government agencies in Astana, and also foreign agencies. An automatic system should be introduced for on-line application and approval of investments with a standard format.

Possible advantages of the Aktau SEZ that may be established include the following: 1) preferential market access to the Caspian sea rim and other neighboring countries, 2) logistics center as the core function, and 3) abundant utilities at low costs.

(2) SME's upgrading system

The SME upgrading system is recommended based on the recognition that the innovation of the SME's in Mangistau cannot be expected on the individual enterprise bases due to their limited capacities with respect to credibility, financial security and technical capability. A breakthrough should be obtained by grouping of SME's.

The SME upgrading system would provide the following:

- 1) Facilitation of SME grouping
- 2) Accreditation of SME groups as legal entities
- 3) Provision of project finance and group finance for risk sharing between SME group and financier, and risk taking support by Atameken or Oblast Akimat
- 4) Consultancy and guidance as essential conditions for project financing

5) Technology transfer with SME group as a technology center

(3) Business incubation development

Business incubation comprises hardware such as office spaces and facilities for new business, and software in the form of an incubation manager. In Aktau, there exist many unused facilities that can be used for the former, and therefore the latter should be prioritized.

Business incubation consists of the following functions:

- 1) Management assistance: support for training, networking with external actors, marketing, accounting, legal aspects etc.
- 2) Financial assistance: support for financial analysis on new business, fund sourcing, proposal writing for funding, business planning, and joint venture making
- 3) Technical assistance: consultancy, group research promotion, cooperative arrangements with research institutes, support for access to research outcomes etc.
- 4) Infrastructure assistance: office spaces and equipment, common facilities, laboratory, library and other support facilities

For these different functions, division of works needs to be clarified between the private sector, academics and the government. The key issue in business startup, development and stable operation is financing, and the utilization of existing sources such as investment fund, national innovation fund and SME development fund or other schemes needs to be examined in detail.

The public initiative is indispensable for training incubation managers. Training programs should be developed by Aktau State University, training institutes and the Oblast Akimat, and a budget should be obtained. Regional cooperation should be called of business entities in Mangistau, researchers at the university and vocational training institutes, and potential investors. A technical evaluation committee should be formed to examine business seeds and ideas.

(4) Information and consulting services

An “enterprise development and support unit” may be established within the Private Business Industry Department of the Akimat as a one-stop consulting center especially for SME’s. The unit would provide information services covering incentive measures available, data on existing enterprises, marketing opportunities and prices, and services available at different sections of the Akimat. It should also provide consulting services related to business planning, accounting and financial management, procurement, marketing, and business partnership arrangement. The unit may be staffed by experienced private business.

The unit should become a center for close collaboration between enterprises, research institutes and the Oblast Akimat for Mangistau brand development. They would collaborate, for instance, for tourism campaign linked with international agents, inter-business exchange seminar, and business-academics coordination. The unit would be instrumental for networking SME Development Fund, Caspy, Oblast Chamber of Commerce and Industry, Atameken and other related organizations.

Business financing is another area where the Oblast Akimat can support SME’s possibly through the enterprise development and support unit. At present, the Akimat does not involve in the practice of financial schemes of the State Government, and most local enterprises do not even know the existence of the schemes. An indirect financing scheme should be considered, whereby the Akimat and KAZYNA can cooperate. Through the close collaboration with local enterprises for the information services, the Oblast Akimat would be in a good position to guarantee the credibility of some local enterprises with respect to management. Such finance-management linkages would lead to the establishment of regional champions for best business practices in

different fields.

6.3.3 Derivative industries support program

(1) Model methanol derivative industries

The gas chemistry operation in Mangistau should be established for methanol derivatives of high value-added. A case for Mangistau is worked out here for the production of methanol, formalin and MMA. The production, use of input, and investment cost are summarized in Table 13. The annual production consists of 415,000t methanol, 20,000t formalin, and 50,000t MMA. The production of polyacetal may also be included. The process to produce MMA from isobutylene through methacrolein is recommended rather than the aceto-cyan-hydrine (ACH) method to synthesize MMA from acetone and hydrocyanic acid.

For this model, the isobutylene raw material is purchased from the refinery or the naphtha cracker of petrochemical complex in Atyrau. Isobutylene is included in the extraction residue of butadiene and butane-1 of carbon-4 parts at the plant. For instance, contents of isobutylene are estimated 8% of feed oil on the refinery plant in general, varied in 3-10% depending on the feed oil quality. The Atyrau refinery with the planned capacity of 104 barrels/day has a potential content of 240,000t/year of isobutylene ingredients, calculated based on 60% of yearly operation of the facilities.

(2) Measures to promote the derivative industries cluster

The proposed derivative industries cluster consists of the main methanol based derivatives production, and other related downstream activities of the oil and gas industries. The latter include the gas use as thermal energy for greenhouse or industrial agriculture, plastic transformation and others. The environmental considerations should also be part of the cluster not only to minimize the pollution by littering of plastic products but also to recover utilize waster materials for production purposes.

Greenhouse or industrial agriculture

Greenhouse or industrial agriculture should be promoted to produce high value crops. Promising crops include fresh vegetables, berries, flowers and ornamental plants, and tree seedlings. Support measures are proposed in the rural livelihood development program under the Living Environment Improvement Initiative. Greenhouse agriculture may be experimented first by the Oblast initiative, including the local manufacturing of materials and equipment. A lesson may be learned from successful application in other countries such as Japan. A large-scale greenhouse in Japan costs typically 100-300 million tenge.

Plastic transforming plants

The establishment of plastic transforming plants should be encouraged to add depth to the petrochemical industries in Mangistau. They would produce mainly common commodities to substitute import products. Possible products include plastic emission products, packaging films manufacturing, PVC cast products such as window frames, and fishery and leisure boats manufacturing. These industries would naturally develop as the main activities of methane based derivative industries in Mangistau and the petrochemical complex in Atyrau develop.

Environmental measures

The development of the derivative industries cluster would contribute to establishing the green business in Mangistau. It would improve the diet of local people with the supply of fresh vegetables and berries, supply these and also flowers and ornamental plants to urban and tourism

markets, and produce seedlings for tree planting.

To minimize possible negative effects of the development of derivative industries, countermeasures should be formulated together with the planning for derivative industries. The cluster approach would be effective in utilizing wastes and byproducts to minimize the overall wastes. The plastic recycling business should be introduced with incentive measures, and environmental education should be strengthened to enhance the environmental awareness of people and enterprises.

6.3.4 Tourism cluster support program

(1) Program scope

The support program comprises the tourism destinations development for the Kenderli beach resort complex, natural parks, and Aktau tourist attractions; tourism infrastructure development consisting of the cruise pier construction, tourism transport development, and tourism service points development; and tourism industry and manpower development.

(2) Natural parks development

The development of four natural parks is proposed. The project encompasses the following activities:

- 1) Establishment of protected areas
- 2) Formulation of management plans for both protected areas network and respective protected areas
- 3) Infrastructure development for tourism (access roads, signposts, tourist information centers, etc.) based on the management plans
- 4) Carrying out of regular monitoring, database development, habitat evaluation for endangered species
- 5) Carrying out of tourism promotions such as tour route planning and advertising
- 6) Conducting of environmental education at protected areas
- 7) Water sport development at Karakul state zoological preserve
- 8) Introduction of organized tours and commercial activities

(3) Tour routes in Mangistau

The Zhanaozen-Kenderli circuit road will be established to serve tourism purposes. The road will pass Senek in the west of Zhanaozen, and connect to Kenderli by the Ustwr tourism area. The road length is about 350km, which is mostly unpaved. The road will have limited traffic mainly for weekend and holiday tourists, but two lanes should be provided in both directions to allow effective bus services and extension to the Turkmenistan border in the future. The Oblast government is expected to take the initiative in implementation and maintenance. The project cost is estimated to be US\$76 million. With the tourism infrastructure development, tour routes would be established in Mangistau as shown in Figure 10.

6.4 Living Environment Improvement Initiative

6.4.1 Rural livelihood development

(1) Project concept

New livelihood activities are promoted in selected rural settlements where water availability is better. In addition to technical extension, the improvement of transport services holds a key for

the success.



Figure 10 Planned Routes for Mangistau Tours

(2) Projects

Livestock support sub-program

The program first offers support for livestock farmers organizing for individual farms into village farms, and peasant farms into associations or private companies with shared capital, while retaining individual land ownership. Then, the Government support should be provided to organized farmers for the following services: 1) Facilitation of financing, 2) provision of market information, 3) guidance for sheep breed replacement, 4) skill training for value-added processing, and 5) guidance for improved feeding.

The following component projects are included:

- 1) Sheep breed improvement
- 2) Value-added processing support for milk and meat processing, village wool processing, and leather production
- 3) Local veterinary services development
- 4) Livestock research and extension center establishment
- 5) Forage reserve development
- 6) Establishment of rangeland management fund

Crop production promotion

Drip irrigation and greenhouse agriculture are promoted to diversify lucrative income opportunities for farmers. Manufacturing or procurement of materials and equipment should be supported. In addition to vegetables and fruits, ornamental plants and flowers, and tree saplings may also be produced.

Village poultry production

A grazing unit would be formed by organizing 10-15 households to undertake poultry in their backyard. A support package should be provided to the grazing units, including feed procurement, disease control and marketing.

Groundwater resources management

Groundwater wells abandoned after the collapse of the Soviet system should be selectively restored. The well restoration would be undertaken by farmers' organizations voluntarily formed for crop production or poultry as well as their management.

Village public transportation

Villagers would be supported for joint procurement of vehicle for public transportation. Pickup type buses may be introduced to combine small-scale freight services for household industries.

Fishery support sub-program

The priority for re-activation of fishery in Mangistau should be on the capture fishery by fishing fleet on the Caspian sea, which can be practiced once the basic infrastructure facilities are in place. Fish processing should follow. To expand the opportunity in the future fishery, aquaculture should be experimented to establish more promising fish species and cultivation methods.

The following projects and programs should be implemented:

- 1) Fishery infrastructure development by supporting private fishery ports development to be shared by individual fishermen
- 2) Ship building and fishing boat workshops
- 3) Small fishermen support program for:
 - Training on fishing methods, simple fish processing, fish marketing, fishery management etc.
 - Fishermen organizing for joint procurement of fishing gear, joint marketing and processing

In addition to the infrastructure development, the following institutional measures should be taken:

- 1) Strengthening of the Oblast Fishery Department
- 2) Establishment of credit scheme
- 3) Improvement of fishery resources management
- 4) Establishment of fishery experiment station

6.4.2 Social services improvement

- (1) Education

Expansion of education facilities

The number of pupils to attend general education schools will reach at least 90,500 by 2015, and at least some 5,000 seats will be additionally necessary even if the double sessions are fully adopted. Munaylinsky rayon should be given priority in expanding the general education facilities. There are about 6,000 pupils in five general schools in the rayon, and one of them is conducting triple session. Moreover, some 12,000 pupils in Munaylinsky go to schools in Aktau City.

Resolution of teachers' shortages

The shortages of teachers in rural areas would be resolved by introducing incentive measures.

They include a scholarship system for students in rural schools applicable to those who would serve rural schools after graduation as well as salary premium.

Improvement of pre-school education

Awareness raising among parents should be combined with free pre-school education at general schools to improve pre-school education.

(2) Vocational education

Curricula improvement responding to industrial needs

Curricula for vocational education should be improved in response to changing industrial needs. Three areas are particularly important. First, value-added production in traditional industries should be supported such as spinning and weaving, animal husbandry, food processing, and fishery and fish processing. Second, gender-sensitive vocational training should be provided such as business and personal services, foreign languages, interior design, and food quality control. Third, vocational education should gear to enhancing competitive edges in leading and core industries such as oil and gas downstream industries, corporate administration, and ICT.

Academic-industrial cooperation program

A system should be established to allow skilled workers and engineers of private enterprises to serve as lecturers for vocational education. Also, a local school board should be strengthened with teachers, government officials and private sector representatives to discuss on curricula.

(3) Health care

Rural medical care improvement

The project aims to reduce the infant and maternal mortality rates. It consists of the following components:

- 1) Cultivation of medical doctors and health personnel
- 2) Extension of health facilities
- 3) Adoption of modern examination equipment
- 4) Establishment of health care extension work system

Infectious diseases prevention

The project focuses on the expansion of hospitals and medical personnel for tuberculosis, and the establishment of mandatory health examination

Medical college strengthening

To increase the number of medical doctors, they should be trained in the Oblast. For the purpose, the present medical college may be converted to a medical university or a medical department established at the Aktau national university.

6.4.3 Urban and rural water supply expansion

(1) Urban water supply expansion

Aktau water supply expansion

The project will establish a new water treatment plant for Aktau with 40,000m³/day capacity by low temperature horizontal membranous evaporator system, and for Zhanaozen with 35,000m³/day

capacity by reverse osmosis membrane system.

Rural water supply expansion

The project will establish three water treatment plants in Beineu with the combined capacity of 240m³/day, two plants in Karakiya with 204m³/day, two plants in Mangistau with 72m³/day, and one plant in Tupkaragan with 1,124m³/day.

6.4.4 Wastewater treatment improvement

Wastewater treatment improvement

The project will establish a new wastewater treatment plant in Zhnaozen with 25,000m³/day capacity, Beineu with 15,000m³/day, and Aktau with 72,600m³/day. A biological filter system will be used for all of them. The treated sewage will be used for irrigation in Aktau and its surroundings.

6.5 Mangistau Environmental Initiative

(1) Issues for environmental management in Mangistau Oblast

The environmental management in Mangistau Oblast is a matter of survival demanding urgent attention and effective measures against both imminent and long-lasting problems. While the negative environmental heritage from the Soviet era such as the radioactive wastes in the Koshkar-Ata tailing pit and at former nuclear test sites, power plant and uranium processing plant has started to be managed, there remain inherent environmental problems due primarily to natural conditions of the Oblast aggravated by the economic development and the population growth.

The main issues related to the latter are as follows:

- 1) Protection of the water quality of the Caspian Sea to ensure safe and reliable water supply to coastal settlements
- 2) Provision of adequate water supply for inland settlements
- 3) Enhancement of land productivity of vast rural areas
- 4) Reduction of air pollution
- 5) Prevention of desertification
- 6) Proper management of solid wastes
- 7) Biodiversity conservation and protected area management
- 8) Environmental education and awareness

(2) Projects and programs

Caspian seawater monitoring center

The project aims to monitor water quality of the Caspian sea, to advocate the monitoring results in domestic and international measures, and to develop countermeasures to mitigate the contamination with international cooperation. It encompasses the following activities:

- 1) Monthly monitoring of seawater quality on the coasts, near oil fields and in the sea
- 2) Monitoring by satellite imageries
- 3) Investigation of the influence of water contamination on fish
- 4) Development of database of the Caspian seawater quality
- 5) Emergency operation for oil spills
- 6) Publication related to the Caspian seawater quality
- 7) Regulatory international conference on the Caspian seawater quality

8) Environmental education and development of participatory monitoring systems

Mangistau protected areas networking

The project will develop a protected areas network for efficient management of each area. It has the following components:

- 1) Formulation of management plans for protected areas network and each protected area
- 2) Infrastructure development for tourism (access roads, signposts, tourist information center, etc.) based on the management plans
- 3) Regular monitoring, database development, and habitat evaluation for endangered species
- 4) Tourism development of the protected areas (advertisement, planning with private sectors, etc.)
- 5) Environmental education at protected areas
- 6) Organized tours and introduction of commercial activities at the Western Karakao mountains, Beket Ata, etc.)

Desertification prevention

The project is to control the grazing on pastures near settlements. It is undertaken with the following components:

- 1) Development of grazing control measures with individual farms at rural settlements where sand movement is a serious problem
- 2) Village level nursery production
- 3) Tree planting for green buffer zones
- 4) Protection measures against grazing and other potential obstacles against planted trees

Oil wastes treatment

The project will encourage the clean-up of oil wastes accumulated in oil fields and their economic use. It would be implemented by private or state enterprises engaging in solid wastes management in cooperation with oil companies under the guidance of the Ministry of Environmental Protection and the Department of Natural Resources.

Environmental education and awareness program

The project will enhance the environmental awareness of people through the following activities:

- 1) Development of an environmental education/awareness program at the Oblast level
- 2) Environmental campaign at cities/settlements/educational organizations
- 3) Development of school curricula for school environmental education
- 4) Implementation of the curricula

Clean development mechanism application program

The program aims to contribute to the development and upgrading of industrial production processes, to increase the industrial value-added through carbon dioxide transactions, and to contribute to the establishment of Mangistau's fame as the leader in environmental management. The following activities would be undertaken:

- 1) Publicity for CDM activities to industries and citizens to raise their awareness
- 2) Guidance to enterprises for the formulation of CDM projects
- 3) Establishment of an institutional mechanism to promote, evaluate and select CDM projects for joint implementation by donor countries
- 4) Negotiation with supporting countries and partner enterprises for implementing arrangements for CDM projects
- 5) Implementation of selected CDM projects

Feasibility study on next generation energy-water complex

A comprehensive feasibility study should be carried out on the improvement of facilities and performance of MAEK. The study should cover not only the proposed nuclear power plant, but also the renovation of the gas-fired power plants possibly with co-generation option, and desalinization plants based on reverse osmosis or other technical options. Intake facilities for safe extraction of the Caspian seawater, even in the event of oil contamination, should be part of the scope of work for the feasibility study.

The feasibility study would be the first step to establish a next generation energy-water complex, which would reconcile the needs to increase stable water and power supply and to ensure the environmental safety at the highest level. The comprehensive feasibility study should be undertaken by the technical cooperation of an advanced country.

7 Institutional Measures for Mangistau Regional Development

7.1 Institutional Arrangements for Infrastructure Development and Maintenance

(1) Public-private partnership (PPP)

The successful development of the Mangistau regional development depends critically on the mobilization of the private sector resources for some public facilities and services. In particular, it is expected that some infrastructure projects will be implemented by PPP. In Kazakhstan, PPP has often been utilized from the very beginning of planning for such infrastructures as oil pipelines and ports, which are considered to be highly public in nature. To further promote the infrastructure development by PPP, guidelines may be prepared by the Central or oblast governments, encompassing incentives, risk sharing, various forms and techniques applicable to different cases, and information sharing.

Given the large territory to be covered by the transport infrastructure, a main direction for the PPP in Mangistau would be preventive maintenance of infrastructure under a long-term contract. This will allow private entities to take effective measures on their own to attain the specified performance levels as agreed by the long-term contracts. To expand this form of PPP, SME's should be supported to develop expertise for operation, maintenance and management of various public services.

Another possible direction for PPP is related to the introduction of a toll road system. It may be difficult, however, to apply the PPP for the construction. A realistic form may be to establish a road corporation by a joint venture between the oblast government or public investment company and the private firm, whereby the autonomous operation is effected with the toll revenue and the private capital. The PPP guidelines to be prepared should cover this case as well.

(2) Infrastructure maintenance

The maintenance of infrastructure, particularly important in Kazakhstan with a large territory and harsh climate to ensure its facilities once constructed, would continue to serve the need for a long time. As the stock of infrastructure related to the Mangistau regional development increases, the need for infrastructure maintenance will expand. It is an important consideration that the infrastructure development should be undertaken only to the extent that the resultant maintenance needs can be comfortably satisfied by available human and financial resources. Therefore, measures should start to be taken to expand the capacity for infrastructure maintenance.

The capacity development for infrastructure maintenance should be effected at the individual, organizational and institutional levels. For the capacity development at the organizational level,

an exclusive section should be established within the existing sections for various infrastructures such as roads, railway, ports and airports to take charge of maintenance of respective facilities. The capacity development for maintenance should be furthered at the institutional level by establishing an infrastructure maintenance system, which should be supported by manuals for periodic and routine maintenance, database for existing infrastructure, monitoring system, analysis on life cycle costs of infrastructure, economic evaluation of maintenance works and long-term maintenance planning.

7.2 Measures for Capacity Development

(1) Capacity development of Oblast Akimat

The capacity development of the Oblast Akimat should be promoted to contribute to the national policy of decentralization, and to realize more efficient and appropriate planning and development responding to local needs. In particular, the planning capacity of the Oblast officers should be enhanced in two broad areas: integrated planning and specific infrastructure planning. In the integrated planning area, three training subjects are proposed: project cycle management (PCM), integrated regional development master planning (IRDMP), and environmental management.

PCM is a tool for managing the whole cycle of a project starting from identification of stakeholders, clarification of problems and their interrelations, especially cause and effect relations, preparation of logical framework, monitoring methodology and evaluation techniques. PCM would enhance the capacity of individual officers and organization as a whole in addressing the most important issues effectively and efficiently through prioritization of problems, identification of most urgent actions and sharing of common understanding among officers toward project objective and scope and provision of a set of criteria that would ensure consistent monitoring and fair and objective evaluation.

Whereas PCM is a useful tool for problem-solving approach, the IRDMP approach is oriented more toward development of potentials endowed in a region. The present study is the very effort to prepare an integrated regional development master plan for Mangistau Oblast. A comprehensive approach of IRDMP encompassing all the sectors related with development in a region would create synergy effect of different sectors combined, thus resulting in more robust development than sector-focused approach. Officers and sections with different responsibilities would be able to share a common view toward the direction of development in the future and position activities of each officer and section in the overall context.

PCM and IRDMP are mutually complementary. In the stage after the present study is completed, the proposed programs and projects could be reviewed applying PCM method and promoted to implementation. The IRDMP will need to be constantly reviewed and whenever conditions change it should be modified. For these activities to take place, training of Akimat officers in these two subjects would be required.

The environmental monitoring should be undertaken with the wide participation of stakeholders under the management of the Oblast. The capacity to guide the procedures of participatory monitoring and evaluation needs to be enhanced at the Oblast, including environmental impact assessment.

In the infrastructure planning area, training subjects should cover: 1) urban planning, 2) land use planning, 3) transportation, 4) water resources and water supply, 5) wastewater treatment, 6) solid waste management, and 7) energy, power and telecommunications. While the sector planning may be outsourced, the capacity for management and integration of the entire sector-planning works needs to be strengthened in the Oblast. The outsourcing of planning works would help to involve experts and enterprises in the operation and management phase as well.

(2) Organizational and institutional capacity development

Enhancement of competitiveness of public services as employment opportunities

Brain drain is a crucial problem facing almost all the departments and management units of the Mangistau Oblast Akimat. The first step to alleviate the problem would be to enhance the competitiveness of the public services as job opportunities against the booming private sector. To secure staff of high quality is the first goal. Instead of single-aimed approach focusing on salary increase as pointed out by many directors, a comprehensive approach is recommended comprising wage system improvement coupled with other necessary measures. The following presents a basic idea.

- 1) The wage system reform should be planned and implemented in the context of national policy and in consideration of all relevant factors such as impact on macro-economy, fiscal viability, detailed analysis of the situation and priority area for reform. Previous and ongoing reform efforts at the central government level should carefully be monitored and positive outcomes integrated into the wage system reform in Mangistau Oblast.
- 2) The wage system reform should be undertaken based on a clear principle of “equity, accountability and transparency”, which is compatible with the Civil Service Law setting forth “equal pay for equal work” principle.
- 3) The wage system reform needs to be promoted in phases over a certain period of time and with priority placed on the sections for which delay in reform could create more serious problems. Environmental management could be the first priority, because it is only the public sector that can play a major role in properly managing environmental resources unlike economic development promotion whose engine is the private sector.
- 4) Measures to be coupled with wage increase include the following:
 - Adoption of a specific legal instrument on salaries that defines the basic principles for the salary system
 - A review of vacant posts and elimination of redundant posts
 - A review of the existing job classification system and modification where necessary,
 - Introduction of a mandatory performance appraisal system
 - Provision of training programs compatible with job classification and performance appraisal criteria

Division of responsibilities between central ministries and Oblast Akimat

One fundamental issue is division of responsibilities between central ministries and Mangistau Oblast Akimat. Some functions currently tasked to central ministries need to be transferred to Oblast Akimat. This of course should be associated with capacity development of Oblast Akimat staff. The transportation planning function is one of them. Considering the important role the transportation sector would play in developing Mangistau Oblast as a major hub of distribution and transportation network representing the western Kazakhstan, the planning function at regional level at least should be transferred to the Akimat office, while the responsibility for planning from a national point of view could remain with the central ministry. In case of environmental management, better communications and coordination activities between central ministries and the Oblast Akimat are required.

Specific institutional measures

There could be a number of specific practices creating problems at operational level such as the case of tendering system dependent on “low cost principle”. All kinds of shortfalls should be listed and improvement measures be adopted.

Promotion of human resource mobility between public and private sectors

One possibility for tackling the brain drain problem would be to enhance mobility of personnel from government offices to private organizations and vice versa. Currently there is no such a system as seconding a staff to a private company on the part of Mangistau Oblast Akimat. This kind of system, once introduced, would contribute to enhancing capacity of government officers, especially in acquiring practical skills based on experiences on field. Private organizations would benefit from this kind of system through dispatch of their staff to government organizations. Those staff dispatched will be able to grow familiar with laws, regulations and practices of the government, which will contribute to higher efficiency in the company's operation.

Need for public engagement

An area where more flexible management is required would be balance between leadership and public engagement. Economic development away from the energy-sector would motivate small and medium scale entrepreneurs for business development. Improvement of living conditions in rural areas and urban poverty areas would have to engage participation of direct beneficiaries. The participation of these stakeholders in the planning and implementation stages would lead to more successful achievement of the goals. Kind of leadership required in this context would be to open channels for dialogues with the private sector and civil society groups as partners in a true sense and promote collaborative efforts toward common goals with a facilitative role rather than commander role.

7.3 Measures to Improve Business and Investment Climate

There is a big room for Mangistau Oblast Akimat office to make further efforts in improving investment and business climate of Mangistau Oblast. It seems that there is a gap between the view of private companies and that of Oblast Akimat officers concerning the investment and business climate in the Oblast. The level of satisfaction of the companies seems to be lower than what the Akimat office assumes.

The following directions should be pursued.

- (1) High potentials of Mangistau Oblast as investment destination will be augmented by strengthening promotional programs aiming at wider and more thorough penetration of information into potential investors outside Mangistau Oblast.
- (2) The Mangistau's attractiveness as investment destination should be enhanced by streamlining various procedures related to licensing, export and import, registration, closing of business and others. The emphasis of the public sector's involvement, however, should be shifted away from these procedural matters but directed more toward environmental management. Training of Akimat officers in more advanced countries in these aspects would be effective in improving the investment climate of Mangistau. Candidate countries ranked higher than Kazakhstan by the World Bank survey include Singapore (ranked 1st), Thailand (15th) and Malaysia (24th).
- (3) There should be increased opportunities of dialogues between the Akimat and private organizations on a regular and frequent basis for promoting exchange of information.
- (4) Problems in accessing market, both domestic and foreign, and difficulty in procuring raw materials and spare parts could be overcome by tackling both physical and institutional factors such as improvement of communications infrastructure, streamlining of complicated and time consuming procedures and consistent and clear application of laws and regulations.

- (5) More supportive roles of the Akimat will be required in extending financial support schemes to private companies. Existing financial assistance schemes could be utilized more effectively once private companies are guided by the Akimat more elaborately in making applications and implementing their projects
- (6) The Akimat should strengthen its effort in eradicating corruptive practices.
- (7) The Caspian State University of Technology and Engineering is expected to contribute greatly to dissolving the gap between demand and supply of qualified personnel once it starts to send graduates to the society. Continuous efforts will be required to monitor the performance of the graduates, especially paying attention to matching of kind of specialties required by the private sector and the educational curricula.
- (8) The level and type of posts to be filled by the graduates from the University, however, will be limited to those of managers and experts. Specific measures need to be taken to enhance the vocational training function for general labors so that qualified workers with suitable skills are supplied to the labor market in a sufficient number both for energy-sector and non-energy sector companies. The following steps needs be followed in working out a plan for enhancing the vocational education programs:
 - Estimate of job opportunities to be created in the future
 - Clarification of kind of jobs to be created
 - Clarification of the capability of the existing vocational training organizations, both in quantity and quality
 - Comparison of demand and supply capacity both in quantity and quality
 - Identification of need for strengthening vocational education programs
 - Preparation of specific plans for strengthening vocational education programs
- (9) Improvement of basic and higher education that has been degrading since the independence is also an important issue from the perspective of investment and business climate.

8 Implementation Program

8.1 Stage-wise Development Plan

The Mangistau regional development strategy established by the Master Plan should be pursued, aiming at: (1) diversification of the economy, (2) broad-based enhancement of livelihood of residents, and (3) improved environmental management. To jump start the Mangistau regional development, the initial priority should be placed on the economic diversification drive, while measures for broad-based enhancement of livelihood are initiated, and imminent environmental problems alleviated.

To realize this, a stage-wise development plan is prepared for infrastructure and utilities projects proposed in the Master Plan as shown in Figure 11. As seen from the figure, all the core infrastructure projects in the Regional Spatial Structure Strengthening Initiative and most other projects to be implemented by either PPP or the private sector initiative are scheduled to complete by the end of Phase 2. Other infrastructure and utility projects will be implemented continually from Phase 1 or Phase 2 through Phase 3 (beyond 2016).

8.2 Indicative Investment Schedule

In line with the implementation schedule for infrastructure and utilities shown in Figure 11 and the phasing strategy presented in the previous section, an indicative investment schedule is prepared, including all the proposed projects and programs. The results are shown in Table 13.

Project	Year	Phase 1				Phase 2			Phase 3	
		8	9	10	11	12	13	14	15	16 -
I. Regional Spatial Structure Strengthening Initiative										
1.1 Aktau-Beineu road		■	■							
1.2 Beineu-Opoyney road		■								
1.3 Beineu-Uzbekistan border road			■	■						
1.4 Zhanaozen-Turkmenistan road				■	■	■				
1.5 Zhanaozen-Sayutes road						■	■			
1.6 Aktau-Shetpe road								■	■	
1.7 Kuryk-Kenderli road								■	■	
2.1 Beineu-Shalker rail					■	■	■	■		
2.2 Zhanaozen-Turkmenistan border rail				■	■	■				
2.3 Aktau port- SEZ rail (new)				■	■					
2.4 Yeralievo st.- Kuryk port (new)		■	■							
2.5 Mangistau-Bautino rail (new)			■	■	■					
3.1 Aktau port expansion			■	■	■	■	■			
3.2 Kuryk port development		■	■	■	■	■				
3.3 Bautino port expansion					■	■				
3.4 Sarytash port development		■	■	■						
3.5 Aktau international airport		■	■	■	■					
3.6 Kenderli airport development			■	■	■	■				
II. Industrial Cluster Development Initiative										
1.1 Transport logistic center development			■	■	■					
1.2 Regional border trade center				■	■					
1.3 Regional freight truck terminal					■	■				
4.1 Kenderli beach resort complex			■	■	■	■	■	■		
4.3 Zhanaozen-Kenderli circuit road								■	■	
III. Living Environment Improvement Initiative										
1.5 Local roads improvement				■	■	■	■	■	■	
3.1 Aktau water treatment plant		■	■							
3.2 Zhanaozen water treatment										
3.3 Rural water supply expansion										
4.1 Aktau wastewater treatment						■	■			
4.2 Zhanaozen wastewater treatment		■	■							
4.3 Beineu wastewater treatment				■						

Source: JICA Study Team

Figure 11 Implementation Schedule for Infrastructure and Utilities Projects

Table 13 Indicative Investment Schedule

(Unit: US\$10⁶)

Project title	Status	Implementing agencies	Investment cost			
			Phase 1	Phase 2	Phase 3	Total
I. Regional Spatial Structure Strengthening Initiative						
1. Artery roads improvement projects						
1.1 Aktau-Beineu road	On-going	CTID of MTC	81.0	0.0	0.0	81.0
1.2 Beineu-Opoyney road	On-going	CTID of MTC	64.0	0.0	0.0	64.0
1.3 Beineu-Uzbekistan border road	Planned	CTID of MTC	25.0	0.0	0.0	25.0
1.4 Zhanaozen-Turkmenistan border road	Planned	CTID of MTC	35.0	18.0	0.0	53.0
1.5 Zhanaozen-Sayutes road	Planned	Oblast	0.0	28.0	0.0	28.0
1.6 Aktau-Shetpe road	Planned	Oblast	0.0	12.0	0.0	12.0
1.7 Kuryk-Kenderli road	Planned	Oblast	0.0	22.0	0.0	22.0
		Sub-total	205.0	80.0	0.0	285.0
2. Railway network development projects						
2.1 Beineu-Shalker line	Planned	KTZ, Oblast	40.0	160.0	0.0	200.0
2.2 Zhanaozen-Turkmenistan border (new)	Planned	KTZ, Oblast	200.0	100.0	0.0	300.0
2.3 Aktau port-SEZ (new)	Planned	Private	9.0	0.0	0.0	9.0
2.4 Yeralievo station-Kuryk port (new)	Planned	Private	63.0	0.0	0.0	63.0
2.5 Mangistau-Bautino (new)	Planned	Private	189.0	0.0	0.0	189.0
		Sub-total	501.0	260.0	0.0	761.0
3. Ports and airports development						
3.1 Aktau port expansion	On-going	AISCP	115.0	115.0	0.0	230.0
3.2 Kuryk port development	Planned	Oblast (PPP)	716.3	358.2	0.0	1074.5
3.3 Bautino port expansion	Planned	Private	26.7	53.3	0.0	80.0
3.4 Sarytash port development	Planned	Private	300.0	0.0	0.0	300.0
3.5 Aktau international airport upgrading	On-going	Oblast (PPP)	201.0	0.0	0.0	201.0
3.6 Kenderli airport development	Planned	Oblast (PPP)	160.0	160.0	0.0	320.0
		Sub-total	1519.0	686.5	0.0	2205.5
4. Aktau city development project						0.0
		Total-I	2225.0	1026.5	0.0	3251.5
II. Industrial Cluster Development Initiative						
1. Logistics cluster support program						
1.1 Transport logistic center development	Planned	Morport Aktau SEZ	107.5	0.0	0.0	107.5
1.2 Regional border trade center	New	Oblast (PPP)	8.0	0.0	0.0	8.0
1.3 Regional freight truck terminals	New	KTZ, Oblast	18.8	18.8	0.0	37.6
		Sub-total	134.3	18.8	0.0	153.1
2. Linkage industries cluster support program						
2.1 Business incubation development program	New	Oblast, University	0.1	0.2	0.0	0.3
2.2 Enterprise development and support unit establishment	New	Oblast	1.3	1.3	0.0	2.6
		Sub-total	1.4	1.5	0.0	2.9
3. Derivative industries cluster support program	New	Sub-total	0.0	0.0	0.0	0.0
4. Tourism industries cluster support program						
4.1 Kenderli beach resort complex development	Planned	PPP	200.0	400.0	200.0	800.0
4.2 Aktau tourist attractions development	New	Private				0.0
4.3 Zhanaozen-Kenderli circuit road	Planned	Oblast	0.0	38.0	38.0	76.0
		Sub-total	200.0	438.0	238.0	876.0
		Total-II	335.7	458.3	238.0	1032.0
III. Living Environment Improvement Initiative						
1. Rural livelihood development program						
1.1 Livestock support sub-program	New	DOA, KazAgrofinance, Mang. Agroserv.	3.0	3.0	3.0	9.0
1.2 Crop production promotion	New	DOA, Private	6.0	0.0	0.0	6.0
1.3 Fishery support sub-program	New	Fishery section of Oblast Agric. Dept.	4.8	4.8	0.0	9.6
1.4 Groundwater management	Extension	DOCS, DOA, DNR&WM, Rayon Akimat	6.3	6.3	0.0	12.6
1.5 Local roads improvement	Extension	Oblast	0.0	109.0	100.0	209.0
		Sub-total	20.1	123.1	103.0	246.2
2. Social services improvement projects						
2.1 General education facilities expansion	Extension	DOE	60.3	30.2	30.2	120.7
2.2 Caspian State University of Technology & Engineering	On-going	MOE, Oblast	150.0	28.0	0.0	178.0
2.3 Medical doctors cultivation	Extension	DOH	0.8	2.0	1.6	4.4
2.4 Maternity hospitals strengthening	Extension	DOH	0.4	0.0	0.0	0.4
2.5 Tuberculosis hospitals strengthening	Extension	DOH	0.3	0.0	0.0	0.3
2.6 Counseling system support program	Extension	DOH	0.1	0.4	0.4	0.9
		Sub-total	211.9	60.6	32.2	304.7
3. Urban and rural water supply expansion projects						
3.1 Aktau water treatment plant	Planned	MAEK	22.4	0.0	0.0	22.4
3.2 Zhanaozen water treatment plant	Planned	Zhanaozen city	10.0	0.0	0.0	10.0
3.3 Rural water supply expansion	Extension	Rayons	6.4	0.0	0.0	6.4
		Sub-total	38.8	0.0	0.0	38.8
4. Wastewater treatment improvement projects						
4.1 Aktau wastewater treatment plant	Planned	TVS&V	0.0	8.3	0.0	8.3
4.2 Zhanaozen wastewater treatment plant	Planned	Ozeninvest	17.0	0.0	0.0	17.0
4.3 Beineu wastewater treatment plant	Planned	Beineu rayon	3.7	0.0	0.0	3.7
		Sub-total	20.7	8.3	0.0	29.0
		Total-III	291.5	192.0	135.2	618.7
IV. Mangistau Environmental Initiative						
1. Caspian seawater monitoring center	New	MOEP, MOE, oil companies	10.0	10.0	5.0	25.0
2. Koshkar Ata tailing pit reclamation	Planned	MOEP	12.5	12.5	0.0	25.0
3. Mangistau protected areas networking	New	FFHC, DNR&WM, SE, for eco-tourism dev't.	0.5	0.5	0.2	1.2
4. Desertification prevention	New	DNR&WM, SE for vegetation cover, MOA	1.2	0.0	0.0	1.2
5. Oil wastes treatment	New	MOEP, private/state enterprises	0.4	0.0	0.0	0.4
6. Environmental education & awareness program	New	MOE, MOEP, DNR&WM, schools	0.1	0.1	0.1	0.3
7. Clean development mechanism application program	New	MOEP, private/state enterprises	0.2	0.0	0.0	0.2
		Total-IV	24.9	23.1	5.3	53.3
		Grand Total	2877.1	1699.9	378.5	4955.5

Source: JICA Study Team

As seen in Table 13, the total investment cost for all the proposed projects and programs is US\$4,955.5 million during Phase 1 through Phase 3. The investment cost by phase is US\$2,877.1 million in Phase 1, US\$1,699.9 million in Phase 2, and US\$378.5 million in Phase 3. These costs are compared with the financial framework of public investment allocation to Mangistau worked out above.

Based on the macroeconomic data and public investment projections by the Oblast, the total public investment to Mangistau is projected to be US\$2,113 million in Phase 1 and US\$2,805 million in Phase 2 for the total of US\$4,918 million up to 2015. The estimated total investment cost till the end of Phase 2 or US\$4,577.0 million is within the projected financial framework, and only small portion of the proposed projects and programs would be crowded out to Phase 3 beyond 2016.

The investment requirements in Phase 1, however, exceed the projected public investment allocation considerably, while in Phase 2, the investment requirement is within the projected financial framework. These situations are precisely the reflection of the jump-start of the Mangistau regional development. To reconcile the investment requirement and the public investment allocation, either the contribution by enterprises should be increased or the Government supports for Oblast increased. The latter may be justified as the Mangistau regional development is expected to contribute indeed to the national socio-economic development.

A large portion of capital expenditure by the Oblast is presently directed to education, public health, housing and communal services rather than economic infrastructure. Therefore, if the projected public investment allocation is used for the projects and programs proposed in the Master Plan, a good portion of the regular capital expenditure will be crowded out. To avoid this to happen, the capital transfer between the Central and the Oblast governments may be reviewed.

Of the total investment cost, the private sector is expected to contribute US\$640.0 million during Phase 1 through Phase 2, and additional investments totaling US\$2,403.5 million are expected by PPP. If the latter are assumed to be supported 60% by the private sector, the total private sector contribution would become US\$2,081.1 million, corresponding to 42.9% of the total public investment. This ratio, however, is smaller than the ratio 51.2% of the private sector contribution to the public investment requirement projected by the Oblast Akimat for the period of 2006-10. Additional costs are expected to be borne by oil companies for some environmental projects, and state enterprise such as MAEK, TVS&V and Ozeninvest for utilities, and KTZ for railways.