

8 ENVIRONMENTAL ASSESSMENT AND MANAGEMENT

Environmental Capacity and Pollutant Loads

For the integrated regional development plan of the Issyk-Kul zone, the strategic environmental assessment (SEA) has been applied to evaluate overall pollutant loads to be caused by changes in land use and development projects envisaged under the moderate growth scenario.

As discussed previously, the most sensitive is the pollution of water quality in the Issyk-Kul Lake. Under the moderate growth scenario, the lake water quality will be degraded to some extent as predicted in the table below. The extent of pollutant loads in terms of BOD, total nitrogen (NH₄-N, NO₂-N and NO₃-N) and total phosphorus (PO₄-P) appears to be permissible in the light of international standards for lake water quality.

Table S.10 Predicted Water Quality under Moderate Growth Scenario
(mg/l)

	Current (2002)	Moderate Growth Scenario		Permissible Level
		2010	2025	
BOD	0.61	0.66	0.75	1
T-N	0.15	0.16	0.18	0.2
T-P	0.0011	0.0012	0.0014	0.005

Source: JICA Study Team

Quality of river water flowing into the Issyk-Kul Lake should also be assessed and monitored. The available data, though limited as they are, indicate that river water flowing through agricultural lands has been degraded to some extent.

Table S.11 Water Qualities of Major River Inflows into Lake Issyk-Kul (Average of 1988–1992)
(mg/l)

River Name	Tyup	Djyr -Galan	Karakol	Djeti Oguz	Tamga	Ton	Akk-Sai	Cholpon -Ata	Chon AK Suu
BOD ₅	1.70	1.99	1.90	1.60	2.10	1.10	0.56	0.79	0.83
T-N	1.17	1.14	1.02	1.10	0.91	1.22	0.91	0.91	0.81
T-P	0.016	0.017	0.013	0.011	0.016	0.014	0.013	0.011	0.009

Source: JICA Study Team

Emission of air pollutants from stationary sources will not be a serious concern as far as the industrial proposals are controlled individually. Automobile emissions will increase in line with the increased traffic volume. Total volume of automobile emissions as estimated below, implies that the atmospheric pollutants will not be serious under the moderate growth scenario.

Table S.12 Estimated Volume of Automobile Emissions (Moderate Growth Scenario)
(ton/year)

	2004					2010					2025				
	CO	HC	NO _x	CO ₂	SPM	CO	HC	NO _x	CO ₂	SPM	CO	HC	NO _x	CO ₂	SPM
Boom Valley	52	12	35	7,582	5	77	16	49	11,161	6	159	34	104	23,298	14
Balykey - Cholpon-Ata	112	24	74	16,451	10	167	34	105	24,547	14	339	70	216	49,561	28
Cholpon-Ata - Karakol	73	20	61	11,334	8	107	28	85	16,403	12	249	65	200	38,256	28
Ring Road South	50	14	41	7,745	6	99	24	73	14,910	10	198	44	138	19,304	20
Tup-Kegen	-	-	-	-	-	2.4	0	1	338.57	0	0	0	0	45.44	0.0
TOTAL	287	70	211	43,112	28	454	102	313	67,360	42	945	214	657	130,464	90

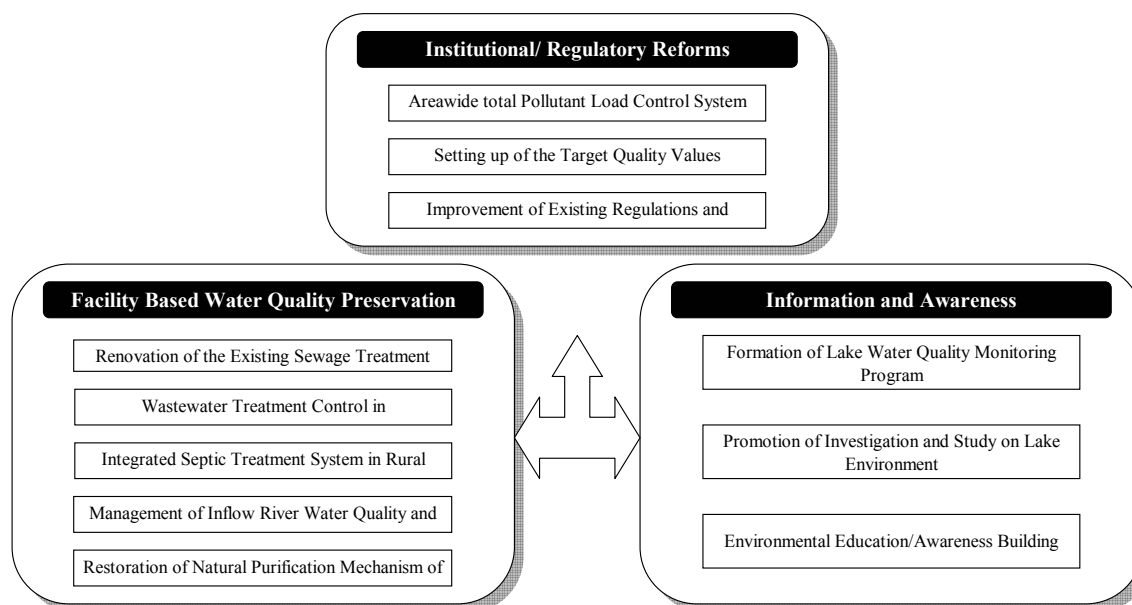
Source: JICA Study Team

Environmental Management

The legal foundation for environmental management is provided in the Law on Environmental Protection (1999), and details of management procedures are defined in the Law on Ecological Expertise (1999). The environmental impact assessment (EIA) is adopted for the works of project initiators, while the rest of the management process is entrusted to ecological expertise regulated by the Instruction on State Ecological Expertise and the EIA Instruction, as well as the Law on Ecological Expertise. In order to streamline the procedures for EIA, it is proposed that the Law on Ecological Expertise, Instruction on State Ecological Expertise and EIA Instruction would be merged and a simplified process applied. The Law on Ecological Expertise should also be amended with regard to the roles of local administrations and local councils to reflect the new roles of LSGs and local administration bodies.

The Issyk-Kul Fund for Environmental Protection has been maintained with fees collected at the eco-post, fine and nature use fees (approximately 4 million soms). Management of this Fund should be rectified so that the Fund could be used for priority programs of environmental protection in Issyk-Kul. Accountability of the Fund management should also be improved.

For management of water quality in the Issyk-Kul Lake, various programs are proposed for implementation. These programs are summarized and illustrated in the following figure.



Source: JICA Study Team

Figure S.16 Scope of Environmental Management Plan

9 SOCIAL AND COMMUNITY DEVELOPMENT

Major Focuses

As pointed out in Section 3, education and public health services have been degraded and burdens on individuals have been increasing. Under the poverty reduction policy, the Kyrgyz government and donor agencies have been providing various supports to improve social services, particularly in the rural area. Through discussions with stakeholders, it has been agreed that the integrated regional development plan should focus on the following issues:

- (1) The social capital should be strengthened through reactivating village communities;
- (2) Income generation activities should be promoted in a more active manner;
- (3) Seasonal unemployment should be improved during the off-tourism season;
- (4) Communities should learn how to market their products to tourism facilities;
- (5) Communities should have proper funding for maintenance of village infrastructure;
- (6) Self-help efforts should be made in improving the social environment in communities;
- (7) The youth should be particularly nourished; and
- (8) Vocational training should be improved for active participation in tourism

Pilot Project for Community Empowerment

To learn how to reactivate community-based development under the tourism-led regional development, two villages (Ornok village and Oruktu-Hutor village) have been selected for the pilot project. Starting with the renovation of their community centers, community-based organizations (CBOs) have been formed with the support of NGOs and community development plans (CDPs) have been formulated. Training for villagers has been carried out in such fields as accounting, services for tourists, youth leadership, and so on. Yulta shops have been opened and village products (e.g., handicrafts, jam, herbs) were sold to tourists and visitors. The profit of Yulta shops in August-October 2004 amounted to around 8,000 soms at each village.



Photo S.3 Workshop for Community-based Planning



Photo S.4 Yulta Shop for Marketing Village Products

Communities have come to recognize that collective efforts and collaboration are indispensable and they voluntarily initiated learning the English language to be able to attend foreign customers at Yulta shop. They have also contracted with tourism agents for marketing. Community-based development is found to be effective for promotion of linkages with tourism and other industries.

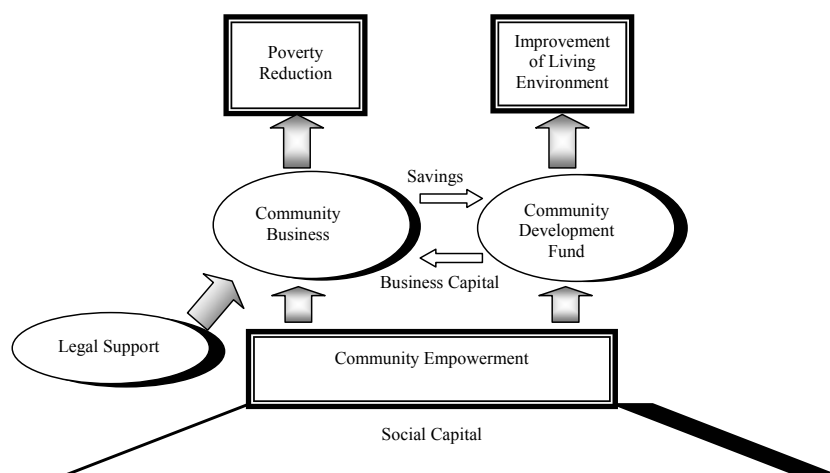
Community Development Programs

Based on the lessons learned from the pilot CDPs, several programs for social and community development are proposed. They include:

- (1) Community empowerment programs combined with village nursery programs;
- (2) Development of marketing systems for community products;
- (3) Creation of a Community Fund at the village/community level;
- (4) Networking of communities in promoting social and community development; and
- (5) Deregulation and public support in CDPs.

Community empowerment is to be promoted by a learning-by-doing process facilitated by NGOs. Competition among CDPs may be taken into account to stimulate villagers and communities in active involvement in CDPs and to make the utmost use of available resources.

Development of marketing systems should also be guided by NGOs or appropriate experts. The Yulta shop is considered to be an example of “Michi-no-Eki”, or road station, but its location should be evaluated well. Packaging, labeling and other marketing practices should be collectively programmed. Creation of a Community Fund should be further examined for better operation in practice.



Source: JICA Study Team

Figure S.17 Concept of Community Empowerment Programs

Creation of an Issyk-Kul Foundation by donations from FDIs in tourism and other industries should also be further studied.

Communities, even if they are empowered, would turn out to be less sustainable unless they are networked and self-supporting. A plan to set up a Civil Society Support Center among NGOs is encouraging. Such an effort is desirably oriented towards training of community leaders and their ownership is encouraged. They would be networked through the Internet. Since self-help efforts at the community level are hindered by various legislative procedures at the LSG and Oblast levels, deregulation should be implemented so that communities’ development can be implemented through villagers’ initiatives.

10 AGRICULTURAL DEVELOPMENT

Major Focuses on Agricultural Development

Agriculture in the Issyk-Kul zone contributed 57% of GRP (without Kumtor) and 55% of employment in 2002; hence it is the most significant sector for the people and Oblast. For agricultural development, major focuses are placed on the following:

- (1) Farm land will not be expanded but productivity should be improved;
- (2) Crops should be diversified to attain higher value added;
- (3) Farmers' organization should be reinforced; and
- (4) Marketing systems should be improved.

Pilot Project for Village Nursery

To experiment the crop diversification and formation of farmers' organization, as well as to set up a marketing system for diversified crops, a pilot project for village nursery has operated for six months. The programs involved are: (i) establishment of center nursery at Dendro Park, (ii) sub-center nurseries at Balan-Sogottu village and Kyzyl-Suu village, (iii) cultivation and marketing of herbs at Maman village, (iv) reforestation around the Lake, (v) organization of farmers into collaborative works, (vi) promotion of linkage with academic circles, and (vii) evaluation of applicability to the integrated regional development plan. A total of 8,500 apple, pear, wild apricot and poplar trees have been planted, and three species of herb (Calendula, Chamomile and Valerian) have been cultivated, harvested and marketed.



Photo S.5 Apple Seedlings in Nursery



Photo S.6 Wild Apricot Seedlings in Nursery



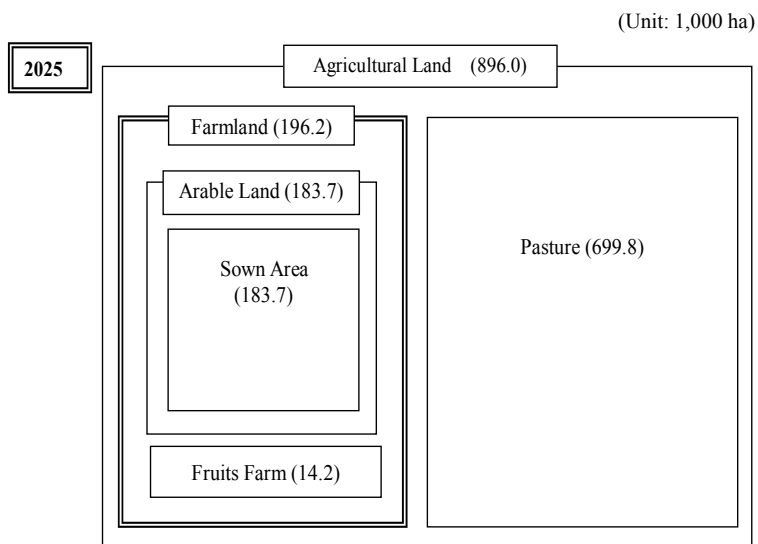
Photo S.7 Rosehip Processing at College of Pharmacy

Training of farmers has been executed for fruit and herb cultivation, as well as for packaging, labeling and marketing of cultivated and collected herb products. The University of Karakol (College of Pharmacy) has joined herb processing and a linkage between the academic circle and farmers' association has been newly established. The pilot project has turned out to be successful.

Agricultural Development Program

Within the agricultural land available in Issyk-Kul (about 900,000 ha), pasture lands are planned to remain as they are and sown and fruit farm areas are proposed to expand as shown below.

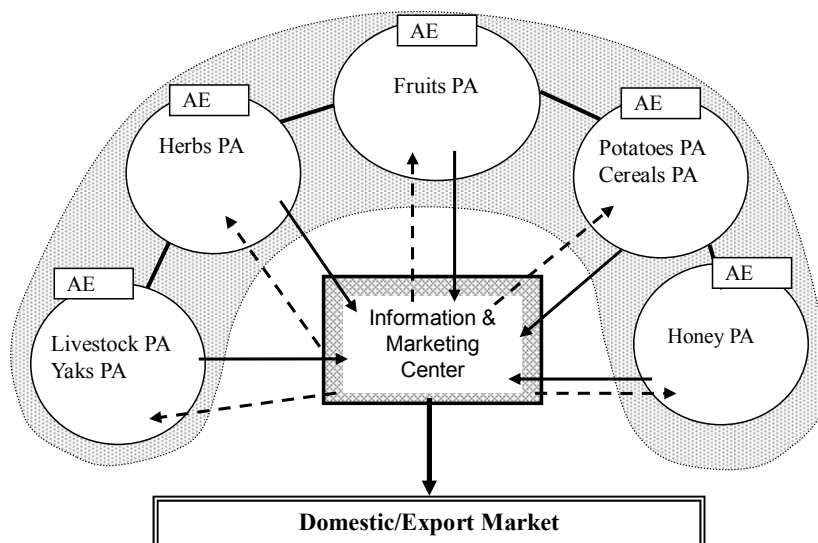
Cultivation of fruit, herbs and other high value added crops have been introduced in Issyk-Kul for the tourism-led local markets, domestic markets and for export. Gross output from agriculture and livestock would reach 9.4 billion soms in 2010 and 16.0 billion soms in 2025. Particular attention should be paid to the formation of farmers' associations. After the collapse of Kolkhoz-type farming, farmers have been engaged in agriculture rather independently without forming associations. Irrigation facilities have been operated without water user organizations and a number of facilities have been left unworkable. Farmers are about to learn that individual operation and marketing is weak under market-oriented agriculture, and they should be further motivated to form associations among themselves.



Source: JICA Study Team

Figure S.18 Agricultural Land in 2025

In view of the fact that farmers themselves have less power in processing and marketing, it is planned that they will be guided to organize a Producers' Association (PA) and that the processing and marketing will be conducted by establishing Agricultural Enterprises (AE). At the initial stage, farmers' share of AE would be limited but it could be gradually increased by their incomes.



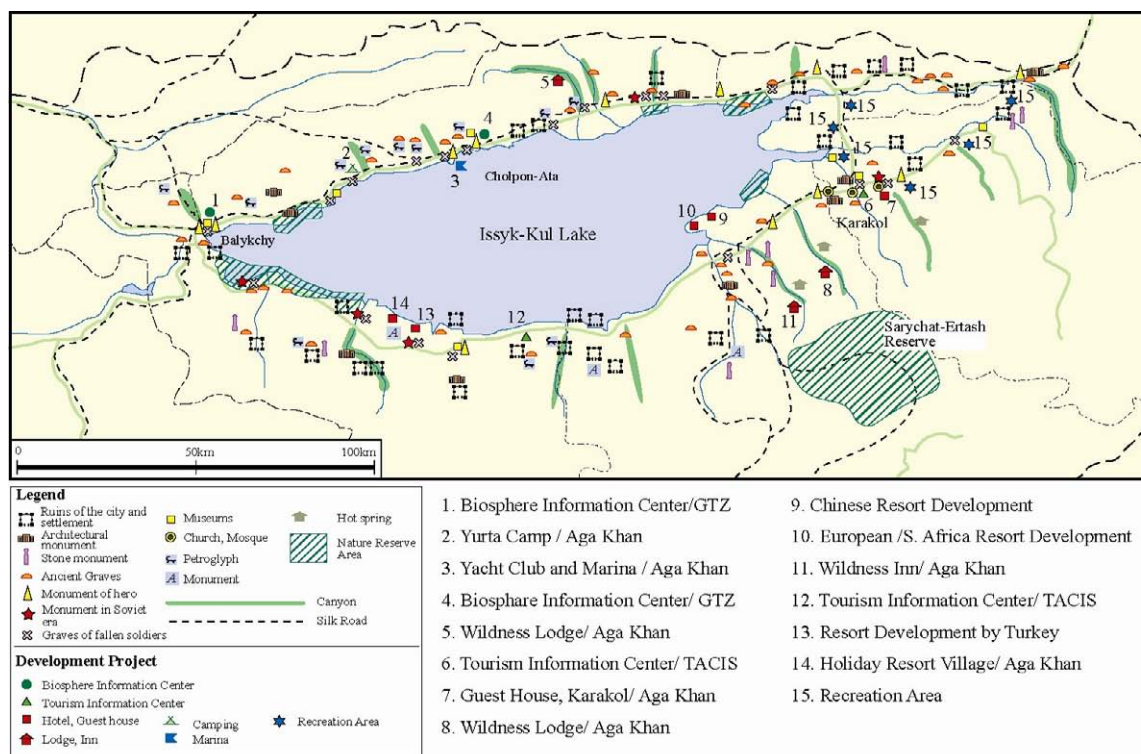
Source: JICA Study Team

Figure S.19 Producers' Association and Agricultural Enterprise

11 TOURISM DEVELOPMENT

Major Focuses on Tourism Development

Several tourism development projects have been proposed in the Issyk-Kul zone, as illustrated on the following map.



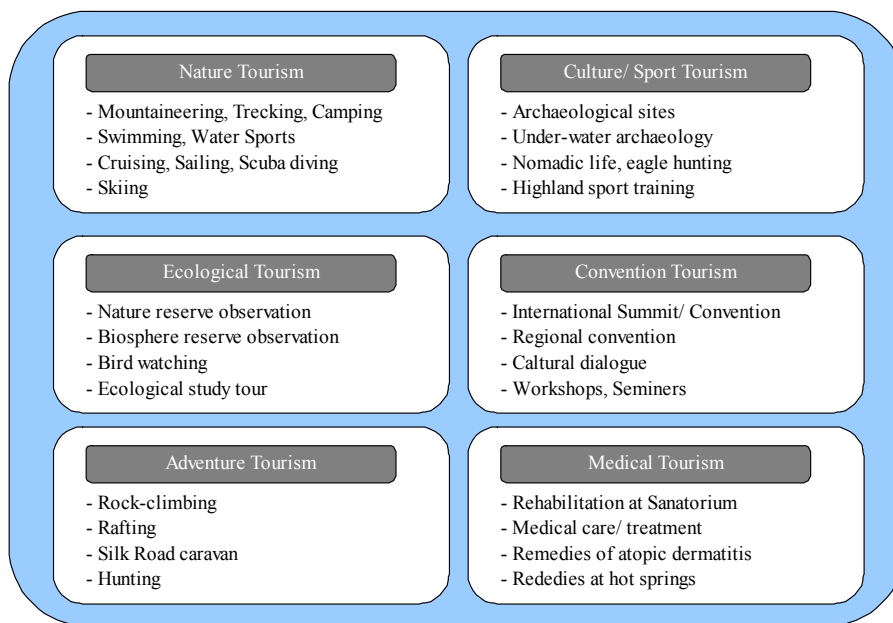
Source: JICA Study Team

Figure S.20 Reported Tourism Development Projects

The strength of Issyk-Kul tourism is: (i) untouched unique natural settings, (ii) historical reputation as a resort area, (iii) clean weather with 300 sunshine days, (iv) serviceable basic infrastructure, (v) availability of tourism spots in neighboring countries for diversified tour products. On the other hand, Issyk-Kul tourism has weaknesses associated with: (i) less diversified tourism products, (ii) individually developed resorts and lack of collective efforts, (iii) lack of service mind, (iv) decreased competitiveness, (v) limited transport services, and (vi) accessibility for long haul tourists. The strengths should be further enhanced and weaknesses should be improved under the proposed plan.

Tourism Products

Tourism products to be promoted in the Issyk-Kul zone are summarized in the following figure.



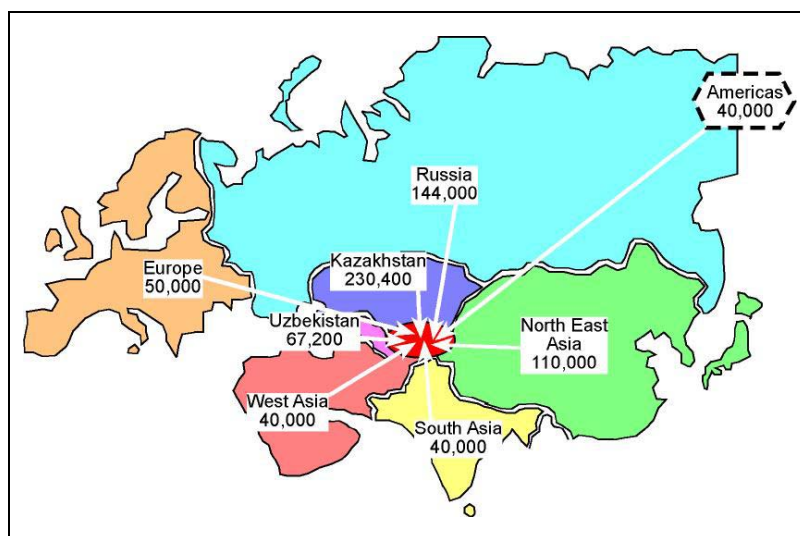
Source: JICA Study Team

Figure S.21 Tourism Products in Issyk-Kul

Tourist Demand and Promotion

The demand for tourists to Issyk-Kul has been projected in setting the development framework as discussed in Section 4. Under the moderate growth scenario, it is estimated that the tourist arrivals will reach 1.1 million in 2010 (0.8 million foreign tourists) and 1.8 million in 2025 (1.2 million foreign tourists). Particular efforts should be made in marketing and promotion towards international tourists, especially non-CIS tourists from Europe, USA, West Asia, South Asia and Southeast Asia. Joint tourism promotion in Central Asia, as discussed at the Workshop held in the course of this Study, is also recommended.

For tourism promotion, further efforts are required to propagate through travel agencies and the Internet in major markets as predicted above, opening a centralized electronic reservation system, and improving the airline services to the Kyrgyz Republic. Since tourism products in Issyk-Kul are not yet widely known and many potential tourists are interested both in the unique natural landscape and the historical heritage of the Great Silk Road, it is desirable that the tourist attractions in Central Asia are jointly promoted and offer a variety of tours.



Source: JICA Study Team

Figure S.22 Forecast of Tourist Arrivals

In this context, a workshop was held in Issyk-Kul by the representatives from the public and private sectors of five Central Asian countries and the JICA Study Team. The participants have come to adopt the “Issyk-Kul Initiative” for joint tourism promotion in Central Asia, as summarized in the following.

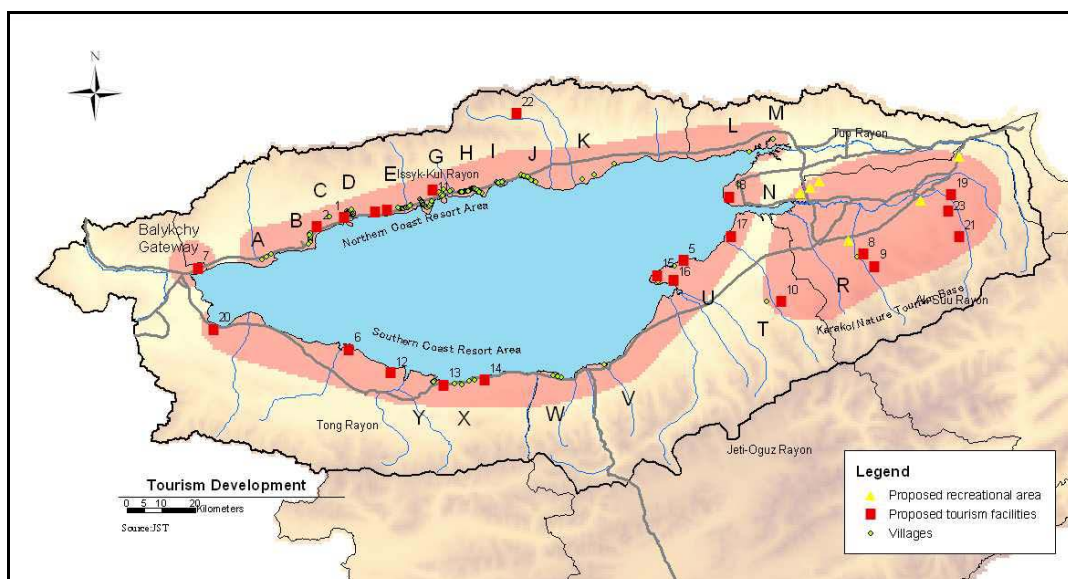


Photo S.8 Central Asia Tourism Workshop

**ISSYK-KUL INITIATIVE FOR
CENTRAL ASIA REGIONAL COOPERATION IN TOURISM PROMOTION**

1. A regional tourism association (e.g., Central Asia Tourism Association) will be organized.
2. A “Silk Road Tourist Visa” valid for Central Asia would be better introduced.
3. With more deregulation, the private sector will take more initiative in tourism business.
4. Statistical data and records are unified and a network of information exchange is promoted.
5. Regional tourism products will be jointly developed, including the Silk Road tours.
6. Joint marketing and promotion will be held periodically.
7. Physical infrastructure, including surface and air transport, will be jointly improved.
8. Human resources in tourism will be developed through joint training and capacity building.
9. Investments in tourism will be promoted at the regional level.
10. Local industries will be promoted in line with tourism promotion.

To accommodate the increased number of foreign and domestic tourists, tourism facilities should be distributed in an orderly manner in line with the proposed land use plan. It is estimated that the additional land requirements for tourism development will reach around 2,000 ha in 2003-2010 and 1,800 ha in 2011-2025. The spatial distribution of tourism facilities is proposed as illustrated below.



Source: JICA Study Team

Figure S.23 Tourism Facility Distribution Plan

Measures to be Taken

In addition to marketing and promotion of tourism, some measures have to be taken to attain the goals set for tourism development under the integrated development plan of the Issyk-Kul zone.

(1) Increased Tourism Consumption

As noted in Section [6], efforts must be made to ensure the visiting tourists consume more in the Issyk-Kul zone. For instance, more local products (e.g., fruit, vegetables, herbs, honey, meat, milk, yogurt) should be served to visitors, who would then enjoy healthy products of the region. Construction of tourism facilities should make utmost use of local materials, and transportation services should be offered by local enterprises. Even for ecological tourists who usually consume less, natural herb products and other eco-friendly products would be attractive. It should be emphasized that the GVA in the tourism sector is attained through increased tourism consumption and increased numbers of tourists.

(2) Linkage with Agriculture and Other Industries

Increased consumption in the tourism sector can be promoted through its linkages with agriculture and other industries in the Issyk-Kul zone. Farmers will be encouraged if their products are used for tourists and they will be proud of their fresh and healthy organic products. Small and medium enterprises will also be encouraged if their products are locally marketed. Linkage with construction industry and transportation services should also be promoted to form a cluster.

(3) Linkage with Local Communities

A closed-type tourism facility is undesirable from the viewpoint of tourism consumption and integrated regional development. Communities, if directly contacted by tourists, will be encouraged, as experienced in the pilot Yulta shop. Likewise, tourists will enjoy heartfelt hospitality of local communities when they mix with local people. A harmonized region of Issyk-Kul is formed in this way.

(4) Human Resource Development

Personnel related to tourism in Issyk-Kul should be better trained to provide improved services to tourists, through academic education, vocational training, internship and other measures. Unless this service mindset is disseminated, the competitiveness of Issyk-Kul tourism would be degraded in the international market.

(5) Privatization of State Facilities

There still remain a number of hotels and facilities owned by the public sector (e.g., political parties, labor unions, universities). As a minimum, management of these facilities should be contracted out to the private sector. Unless human resources remain undeveloped, tourism consumption remains stagnant, and a vicious spiral would start, resulting in a loss of competitiveness of Issyk-Kul tourism.

(6) Institutional Reforms

Both private and public sectors in tourism should be better institutionalized. For instance, an association of tourism suppliers will be formed to upgrade professional reliability. Responsibility for tourism development in the public sector would be better assigned to an organization with a single mandate.

12 **INDUSTRIAL AND TRADE DEVELOPMENT**

Limited Contribution to Regional Economy

The most notable industrial complex in the Issyk-Kul zone is a gold mine operated by Kumtor Gold Company in the southern part of the Issyk-Kul Oblast. This is a joint venture of Cameco (Canada) and the Kyrgyz Republic. The gold is totally exported. This gold mine contributes nearly 90% of GRP in the oblast. The industrial GRP (520 million soms without Kumtor in 2002) contributes not more than 8% of total GRP in Issyk-Kul. About 70% of industrial GRP derives from manufacturing industries, employing about 4,400 workers, and 30% from the construction industries, employing about 1,500 workers.

There are around 400 small and medium enterprises (SMEs) in Issyk-Kul. Only 63 enterprises are registered as manufacturing industries, of which 20 are currently idle. Major industrial products are electric stoves/heaters, footwear, beverages (vodka and liquor), coal and lignite, and agro-processing industries (e.g., butter, cheeses, sausages, flour, and fruit processing). Factories are mostly operated at low capacity. For instance, a fruit and vegetable canning factory is operating at around 20% of its capacity. Such a situation is attributable to a lack of marketing capability, obsolete equipment and shortage of funds for renovation, lack of division of labor and industrial management, shortage of skilled workers and lack of industrial linkages.

Direction of the Issyk-Kul Industry

Restructuring of the Issyk-Kul industry will be founded on the following strategies:

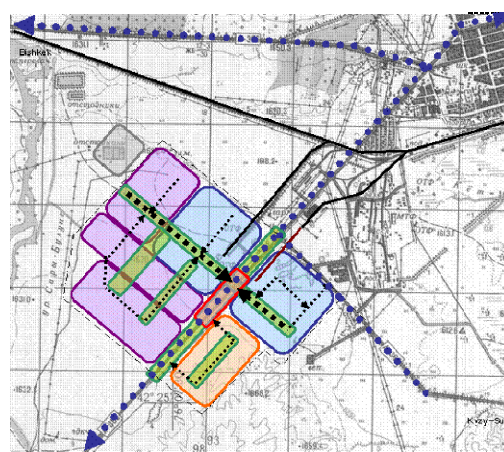
- (1) The mass-production type industry will not be viable, and the Issyk-Kul industry should be oriented towards production of niche products for niche markets;
- (2) Locally available resources and some advantages in industrial location should be utilized to the utmost extent;
- (3) Linkages of the manufacturing and construction industries with the tourism industry should be strategically promoted;
- (4) Packaging and other logistic service industries should also be promoted with the division of labour and simplification of procedures for exports;
- (5) Healthy and environment-friendly industries should be promoted;
- (6) Products of high value and low weight should be developed for export; and
- (7) Foreign direct investments (FDIs) should be promoted.

Promising Industries in Issyk-Kul

Locally available resources in Issyk-Kul will include agricultural and livestock products, herbs and other biological products, gypsum and other mineral products. In the longer term, the environment of the Issyk-Kul zone offers advantages for locating knowledge-based industries. Several industrial sub-sectors have been found to be promising in Issyk-Kul. They will include:

Agro-based processing industries	Processed fruit (e.g., juice, jam), if characterized by chemical-free and healthy products, will find markets for increased numbers of tourists and for export.	New types of liquor based on cider, honey and other local products might also be developed. Production of ethanol from potatoes and other starches is worthy of further study to save imported gasoline and reduce emission of pollutants.
Pharmaceutical and biological industries	By utilizing herbs and other biological products in Issyk-Kul, the pharmaceutical industry can be developed as a competitive industry. Pharmaceutical and biological industries will be linked with promotion of medical tourism in Issyk-Kul.	Extraction of essential oil for perfumes and other uses will also be promising. A by-product of bee culture, propolis, will also offer an opportunity for the pharmaceutical industry.
Sanitary wares and other gypsum-based industries	Such a construction industry will be linked with the tourism industry. It will also promote gradual improvement in household sewerage facilities and improve environmental protection in the Issyk-Kul zone.	<i>Gypsum</i> of good quality is available to the south of the Issyk-Kul Lake. It may be used for production of sanitary wares or toiletry ceramics, as well as for drainage pipes for domestic consumption. If some gold produced at Kumtor is retained in the local market, the cottage-based <i>goldsmith industry</i> could be developed for production of souvenirs for tourists.
Logistical service industries	Packaging, labeling, storing and other logistics industries will be developed in line with the agro-processing and pharmaceutical industries. These logistic service industries should be developed to support manufacturing industries in Issyk-Kul.	They would preferably be located in the free economic zones (FEZs).
IT-software industries	In the longer term, the industry related to ICT (information communication technology) will be promising in Issyk-Kul where IT software engineers will enjoy the natural environment.	

Potential industries to be located in Balykchy
<ul style="list-style-type: none"> - Logistics service industry e.g. packaging (bottling, packing etc), labeling, printing - Truck terminal, storage and distribution industry - Pharmaceutical industry - Herb and essential oil distilling industry - Biotechnological industry



Source: JICA Study Team

Figure S.24 Potential Industry and Layout of Balykchy FEZ

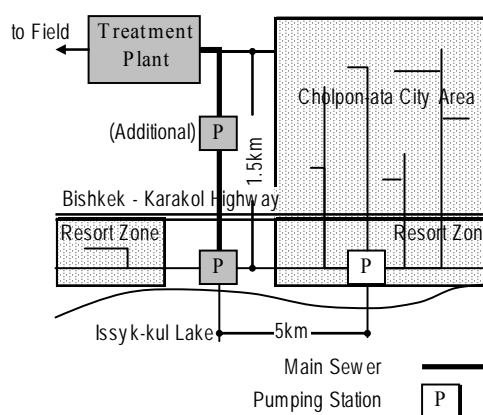
For industrial development in Issyk-Kul, linkages with the academic circles are to be promoted. The universities, while promoting acquisition of practical knowledge and entrepreneurship, will be open to access for consultation by private enterprises and communities in the region.

13 INFRASTRUCTURE DEVELOPMENT

Water Supply and Sewerage

Seven urban centers in Issyk-Kul have treated water supply systems while rural water supply depends mostly on shallow wells. Water tariffs vary from 1.0-2.3 soms/m³ for residential use to 9.0-20.6 soms/m³ for commercial use in Cholpon-Ata, and 1.07 soms/m³ for residential use to 10.4 soms/m³ for commercial use in Karakol. Water consumption for residential use is about 65 liters/day and will increase up to around 120 liters/day towards 2025. The existing water supply capacity in Karakol and Balykchy will satisfy the requirements in 2010 but in Cholpon-Ata the capacity will have to be expanded.

Centralized wastewater treatment systems are operated in only three major cities (i.e., Karakol, Balykchy and Cholpon-Ata), and they are not well maintained. The most serious is the sewage treatment plant in Cholpon-Ata, which has deteriorated, particularly the pumps, and is a high pollution risk to the lake water. It should be rehabilitated urgently. Septic treatment in rural areas should also be improved.



Source: Institute of Construction under SCAC

Figure S.25 Diagram of Cholpon-Ata Sewerage System

High costs of water supply and sewage treatments are attributable to the elevated power tariff applied to the old design of treatment facilities. Voda Canals, responsible for water supply and sewage treatment, have difficulties in their operations, particularly in sewage treatment. Increased costs and tariffs have reduced the number of connections and invited a vicious cycle in operations. Management of the water supply and sewage treatment should be improved, by ensuring better services and reducing operational costs. A combined tariff system for water supply and sewerage should be better applied in Issyk-Kul.

Solid Waste Management

A public company, Tazalyk, is in charge of collection and treatment of solid waste and sludge from septic tanks. It has insufficient numbers of trucks and collecting boxes. Collected waste is disposed of at dumping sites that are inadequately maintained. Industrial and hazardous wastes are dumped at the same dumping sites as household waste.

Future demand for solid waste disposal is estimated to increase to around 20,300 tons in Cholpon-Ata, 45,600 tons in Balykchy and 68,400 tons in Karakol in 2025. To cope with these increased volumes, particularly due to the increased numbers of tourists and industries, it is planned that large establishments like hotels and industrial estates should install proper facilities. Efforts should also be made to minimize the generation of solid waste by means of public campaigns and improved factory management.

Power Supply and Heating Systems

Electric power is used as a source for domestic and industrial energy, as well as for heating. It is integrated into the national power grid through 220 kV and 110 kV transmission lines. Power consumption is around 930 GWh for nearly 200,000 customers in Issyk-Kul. Sold energy is about 47% of generated energy, and transmission losses and unpaid bills are substantial. More than 100 heating systems are in operation, and the largest centralized system is a coal-fired 60 MW steam plant in Karakol. Poor maintenance and decreased numbers of customers for centralized heating have resulted in increased electric power consumption.

Demand for electric power varies from 50 MW in summer and 240 MW in winter at the Balykchy substation. The peak power demand is estimated to increase up to around 370 MW in 2010 and 420 MW in 2025. To cope with the increased power demand, development efforts should first be directed towards improvement of financial positions of Vostokelectro, which is in charge of power supply in Issyk-Kul, to reduce distribution losses and increase the tariff collection systems. Particular attention should be paid to rehabilitation of the power distribution network (substation facilities and 35 kV distribution lines) and improvement of regional heating systems. Accelerated development of renewable energy sources (e.g., solar, wind and bio-gas) should also be considered. In the longer term, development of fuel cells will be envisaged to protect the environment in Issyk-Kul.

Table S.13 Estimated Peak Power Demand

(Unit: MW)

	2003	2010	2025
Karakol	38.2	59.9	71.9
Balykchy	23.6	36.7	47.9
Cholpon-Ata	5.0	8.0	17.6
Others	173.2	264.4	282.8
Total	240.0	369.1	420.2

Source: JICA Study Team

Telecommunications System

Kyrgyz Telecom, a privatized joint stock company, is in charge of telecommunication services for fixed telephone, telegraph, radio and TV broadcasting. Mobile phones and the Internet are served by subsidiaries of Kyrgyz Telecom, i.e., Kotel and Bitel. The service level is 17.8 connections per 100 persons in urban areas and 5.4 in rural areas. Cholpon-Ata, as a tourism center, has 39 connections per 100 persons. Currently, a trunk line for telecommunications runs from Bishkek to Karakol via Cholpon-Ata and Kadji-sai through a microwave digital circuit. For mobile phone services, seven transceiver stations have been installed, while the Internet service is available through telephone dial-up. Kyrgyz Telecom has a plan to install a fiber optic cable (622 Mbps) along the Bishkek – Kemin - Cholpon-Ata - Karakol route with digital switching stations.

Demand for telecommunications in Issyk-Kul is predicted to increase up to around 140,000 fixed lines in 2010 (32 lines per 100 persons) and 210,000 lines in 2025 (40 lines per 100). In the light of expected increases in tourism and industrial development in Issyk-Kul, it is planned that the trunk line capacity between Bishkek and Cholpon-Ata will be enhanced, and a trunk line of SONETT/SDH cable will be installed around the Issyk-Kul Lake (600 km in length). Digital telephone exchange facilities in three major urban centers will also be upgraded. The proposed improvement will be implemented by private initiative or by Kyrgyz Telecom. If an IT park is planned to be located in the FEZ, the improvement should be promoted well in advance of such a project.

Human resource development in ICT should be promoted in line with the telecommunication improvements, as well as industrial development. Particular attention should be paid to improve education and training at universities in Issyk-Kul. In this context, expansion of the optic fiber cable network should be implemented as early as possible.

Transportation Systems

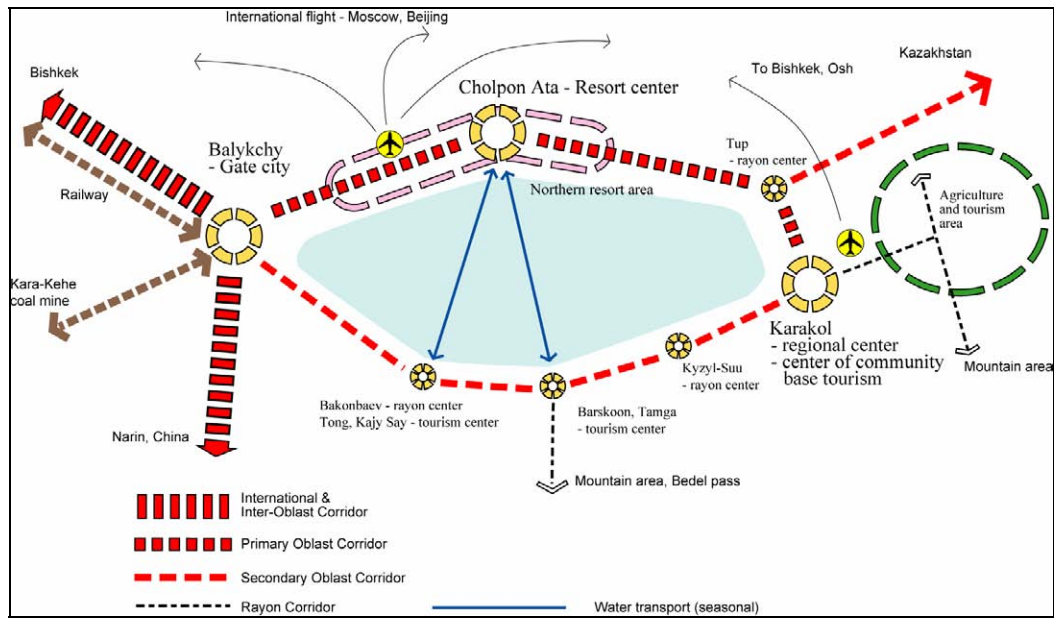
The total length of motor roads in Issyk-Kul is 3,022 km. Traffic volume is still relatively small, with average annual daily traffic (AADT) of 500-900 along the northern ring road and 400 along the southern ring road. Boom Valley has AADT of about 2,800 PCU.

AADT along Boom Valley will increase up to around 4,500 PCU in 2010 and 9,700 PCU in 2025, in the case that no alternative transport development plans are implemented. Although the hourly traffic volume in peak months along Boom Valley and Cholpon-Ata city will slightly exceed the road capacity by 2025, there will be no acute need to upgrade the existing road. In the event that the Issyk-Kul international airport at Tamchy is expanded, Tup-Kegen road is rehabilitated as a diversion route to Almaty, and Bishkek-Balykchy railway is rehabilitated to compete with motor roads, the AADT along Boom Valley would be reduced to 4,300 PCU (7,100 in peak months) in 2010 and 9,300 PCU (13,200 in peak months) in 2025. Automobile emissions under the increased traffic volume will not cause damage to the ecological system in Issyk-Kul.

Rail transport between Bishkek and Balykchy is available by diesel traction trains on a single track with a 1,520 mm broad gauge. While coal and sand are major components of freight, a passenger train of four cars operates daily in the summer season. It takes 4 hours and 40 minutes and serves about 2,000 passengers.

Air transport is available at the Issyk-Kul international airport located at Tamchy. It has a runway 2000 m in length and 45 m in width with a small terminal building. It is maintained by the Manas International Airport in Bishkek. The airspace has some limitations in horizontal surface due to the mountain ranges extending to the north. For expansion of the runway, attention should be paid to the archaeological ruins nearby. Although a technical study on this airport expansion has been conducted, the EIA has not yet been executed.

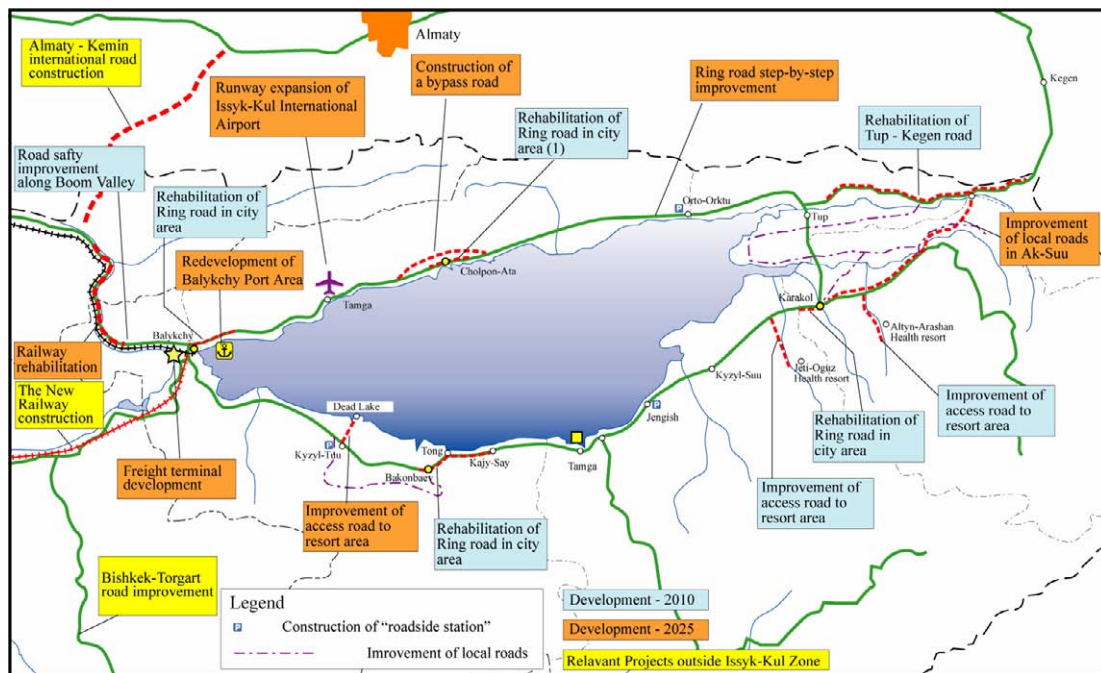
Water transport is served for freight at Balykchy port, Karakol port and Kyrmenti wharf by a stock company called Issyk-Kul Liner. Although it played a significant role in freight transport in the past, demand has dropped rapidly in recent years. No passenger liner operates on the Lake.



Source: JICA Study Team

Figure S.26 Transport Network Concept in Issyk-Kul Zone

A transport network concept in Issyk-Kul is proposed as illustrated above. The road network will mainly consist of the Bishkek-Balykchy-Torugart international motorway, Issyk-Kul ring road, Tup-Kegen international motorway and local/rural roads connecting local communities and tourism attractions. Bishkek-Balykchy railway will be improved in the longer term for tourists in the summer season. Issyk-Kul international airport, in the medium and long terms, will directly accept international flights from CIS and non-CIS countries. Water transport will deal with passenger transport as a tourism attraction. Based on such concepts, several projects are proposed for implementation in the Issyk-Kul zone towards 2010 and 2025 as shown on the following map.



Source: JICA Study Team

Figure S.27 Transport Project Locations in Issyk-Kul

14 INVESTMENT AND FINANCE

Public Investment

Under the Comprehensive Development Framework (CDF) towards 2010 and the National Poverty Reduction Strategy (NPRS) in 2003-05, the medium term budget framework for gross investments has been defined. The public investment is to be gradually decreased from 5.3% of GDP in 2003 to 3.2% in 2007. The external funding for public investment is to be limited to around 3% of GDP. Such a macroeconomic framework is a limitation, particularly for improvement of public services and infrastructure.

Table S.14 Gross Investments under NPRS

	2003 Actual	2004 Expected	2005-2007 Forecasted		
			2005	2006	2007
Gross Investments	18.0	18.1	19.8	20.3	20.6
Public	5.3	3.9	3.5	3.1	3.2
PIP (external funding)	4.4	3.5	3.2	2.9	2.8
Private	12.7	14.2	16.3	17.2	17.4
Consolidated state budget deficit	5.0	4.4	4.0	3.2	2.9

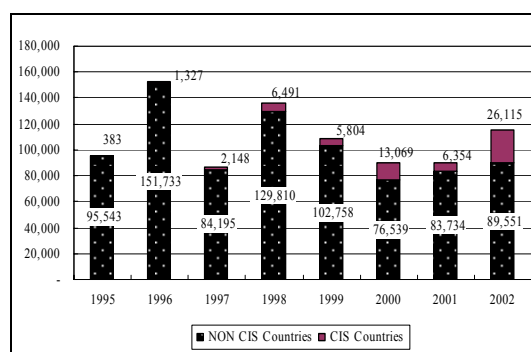
Source: JICA Study Team

Given a low savings rate resulting from high unemployment, low purchasing power and a limited capacity of domestic financial institutions, domestic investment remains stagnant. The government spending cannot increase without a higher tax collection. Consequently, an increase in foreign direct investments (FDIs) is essential for development of the Issyk-Kul zone.

FDI Inflows

Total FDI in the Republic during 1995-2002 amounted to about US\$880 million, or approximately US\$100 million annually. FDI in the industrial sector accounts for nearly 60%. Of these industrial investments, the Kumtor gold mine represents about 60%.

Total FDI inflow into the Issyk-Kul Oblast was US\$67 million (4.1% of total FDIs) in 1999 and US\$77 million (7%) in 2002.



Source: MEDIT

Figure S.28 FDI in the Kyrgyz Republic

Of the total FDIs in Issyk-Kul in 2003 (US\$29 million), nearly 92% was for Kumtor gold mine-related investments. Investments in other businesses are relatively small, despite the investment opportunities in tourism and other industries in the region. The Law on Foreign Investment (1998) ensures equal treatment between domestic and foreign investors. Foreign investors, however, have experienced some legal and regulatory difficulties in registration, permits and licenses, state inspections and tax systems. Measures are being taken for rationalization of the tax system, establishment and operation of the Investment Round Table and Investment Promotion Center. For promotion of FDIs in Issyk-Kul, the Oblast Administration created a Center of Tourism, Investment and External Relations (Decree of the

Governor in April 2003). In August 2004, a new “Law on Sustainable Development of Ecological and Economic System Issyk-Kul” was adopted by the Parliament, but requirements contradictory to the existing laws and regulations are defined and should be rationalized. For promotion of FDIs in Issyk-Kul, some measures are to be taken to: (i) rationalize the structure on FDI data and promotion, (ii) streamline regulatory mechanisms, (iii) introduce proper guidelines for FEZs, and (iv) define the roles of the central and oblast governments.

Financial System

The financial system can be best described as an emerging bank-centered system. Since the laws related to the National Bank and commercial banks were promulgated in 1992, the financial system has been slowly but steadily developing. However, the financial system only partially fulfils its functions and top priority is to augment the efficiency of financial intermediation.

The current banking system indicates narrow options for both lenders and borrowers, high cost of intermediation, and high interest rates. The banking system is composed of: (i) commercial banks and branches of foreign banks, (ii) state-owned banks, and (iii) non-bank finance institutions and credit cooperatives. On the funding side, the level of total deposits is about 10% of GDP. On the lending side, the total loan portfolio is 3.0 billion soms or 3.6% of GDP, while the total assets reached 11.3 billion soms or 13.5% of GDP. The lending rates are high (around 18-20% for US\$ loans and 24-28% for domestic currency loans).

Micro and SME Financing

At present four types of micro and/or SME financing are identified: i.e., (i) by Kyrgyz Agricultural Finance Corporation (KAFC), (ii) through Savings and Credits Unions (SCUs), (iii) by microfinance organizations (MFOs) and (iv) by commercial banks supported by the EBRD-IFC. The total loan outstanding amounts to around 330 million soms. KAFC has an office in each rayon.

Table S.15 Micro and SME Financing in Issyk-Kul

(mil. soms)		
Institution	Total Loans	No. of Institution
KAFC	218,192	1 branch in Karakol 1 office in each rayon
SCUs	55,101	47
MOFs	49,376	15
Commercial Banks	4,422	2 branches in Karakol
Total	327,091	

Source: JICA Study Team

MFOs are supervised under the Law on Microfinance Organizations (2002). In Issyk-Kul, 15 MFOs (out of 72 in the whole country) are in operation. These MFOs charge annualized interest rates ranging from 28% to 54% with loan terms from 3 to 24 months depending on the loan size and usage.

Although various donors are extending technical and financial assistance, further support to micro and SME financing is required in Issyk-Kul and support is to be directed more to the productive sector for income generation and incubation of small enterprises. Strengthening of the commercial banking sector and institutional strengthening of the SCU system should also be promoted to support, in particular, agro-processing and cottage industries.

15 INSTITUTIONAL ARRANGEMENT

Decentralization Pilot in Issyk-Kul Oblast

Under the Presidential Decree in February 2004, a pilot project is underway in the Issyk-Kul Oblast to explore the decentralization of functions from the central government to the oblast and from oblast to the rayons and local self-governments (LSGs). Major decisions and actions taken under this pilot scheme include transfer of the authorities of: (i) state registration of legal entities including foreign investments, (ii) management of funds for environmental protection, (iii) control over allocating land parcels, and (iv) reduce the number of state bodies and personnel.

Under the decentralization pilot, the implementation of the projects/programs proposed for integrated development of the Issyk-Kul zone should envisage more initiatives of the Issyk-Kul Oblast administration. The central government and agencies concerned, however, should be involved as the Oblast administration is yet unequipped with adequate human resources.

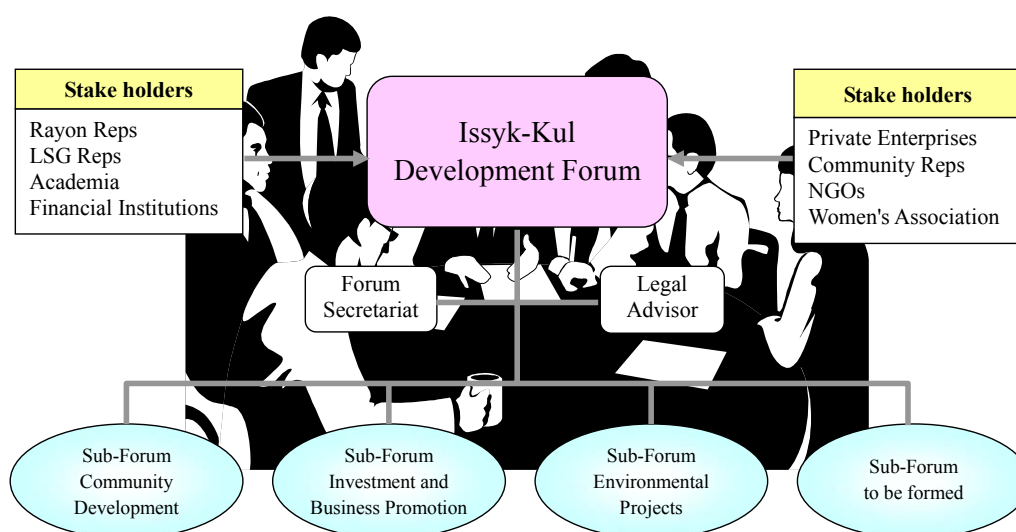
Strengthening of Local Self-Governance

The national strategy for development of LSGs has been defined under the laws on “Local Self-Government and Local State Administration” (January 2002), “Communal Property Ownership” (March 2002), and “Economic and Financial Bases of LSG” (September 2003). The areas of LSG responsibilities include: (i) development of the life support system and provision of social/cultural and health care services, (ii) development of local community territories, (iii) rational land use by local communities, (iv) improvement of housing and utilities, communal transport and roads, (v) development of pre-schools, secondary schools and vocational education, and (vi) development of historical and cultural traditions of local communities.

Despite the increasing power and responsibility shifted to LSGs and the important roles that CBOs are to assume in social and economic development, the communities in Issyk-Kul are not yet well organized at the village level, and the community empowerment programs should be promoted to enhance local governance in the region.

Issyk-Kul Development Forum

Building on the momentum of decentralization and the participatory approach applied for development of the Issyk-Kul zone, it has been agreed by the Oblast and the Steering Committee that the “Issyk-Kul Development Forum” (the Forum) will be set up by stakeholders in Issyk-Kul. The Forum will not be an implementing agency or a political decision-making body, but it will be a body or platform of stakeholders for consultation and coordination of key development directions of the oblast, including those recommended in the Integrated Development Plan of the Issyk-Kul zone. Although details of the Forum are to be defined, the Forum will be organized in the following manner.



Source: JICA Study Team

Figure S.29 Proposed Structure of Issyk-Kul Development Forum

The Forum will be composed of around 20 members selected from the Oblast Kenesh, Rayon state administration, association of Aiyl Okmotus, community leaders, business associations, farmers' associations, financial institutions and NGOs. Strategic focuses of the Forum are:

- (1) Promotion of information sharing, knowledge management, partnership and linkages among different actors and organizations in Issyk-Kul;
- (2) Ensuring a healthy balance between profit opportunities, job creation, environment sustainability and social integrity in developing tourism and other industries in Issyk-Kul;
- (3) Fostering linkages between tourism and other industries and local communities;
- (4) Ensuring appropriate roles of the public and private entities for promotion of foreign and local investments and business operations;
- (5) Coordination in realization of the policies and actions proposed for the Integrated Development Plan of Issyk-Kul; and
- (6) Partnership with similar Forums and regional development efforts in other countries for mutual learning and cooperation.

The main activities of the Forum are:

- (1) Support to strengthen local governance and community development including advice on measures to ensure balanced development of communities;
- (2) Review of procedures that are working as obstacles for attracting investments and business development and advice on solving problems;
- (3) Review of the progress of the land use and environmental management plans;
- (4) Review of the roles of public and private sectors in realization of investment ideas and plans;
- (5) Monitoring and evaluation of programs and projects for realization of the Integrated Development Plan of the Issyk-Kul zone; and
- (6) Providing a platform of information sharing and coordination between donors and donor support projects in Issyk-Kul.

The Forum may set up Sub-Forums and/or task forces for specific issues to be addressed.

16 PRIORITY PROJECTS FOR IMMEDIATE IMPLEMENTATION

Identified Projects/Programs

Through this Study, a total of 78 projects and programs related to public investments and public support have been formulated for integrated development of the Issyk-Kul zone towards 2025. Total costs required for their implementation will amount to around US\$380 million, with US\$330 million earmarked for infrastructure development, US\$30 million for industrial development, and US\$20 million for social and community development. These projects/programs will support the formation of a regional cluster to attain the principal objective of creating a “Healthy and Harmonized Region of Issyk-Kul” in the short, medium and long terms.

Priority Projects/Programs

Programming for implementation of all identified projects/programs is not viable due mainly to financial constraints. Priority projects, therefore, have been selected for immediate implementation, irrespective of whether they are to be completed or at least initiated in the short term. They have been selected on the basis of urgency and readiness for implementation, impacts on the social environment and poverty reduction, sustainability, efficiency and relevancy. The selection has been made in consultation with stakeholders at the Workshops. Ultimately, 49 projects and programs have been selected as priority projects/programs. The number of selected projects/programs and their estimated cost by sector are summarized below.

Table S.16 Proposed Projects/Programs

	No. of Identified Projects	No. of Priority Projects	Estimated Cost of Priority Projects (mil US\$)			
			2005	-2010	-2025	Total
Institutional Management Plan	1	1	0	0	0	0
Environmental Management Plan	9	9	0.50	0	0	0.50
Land Use Plan			0	0	0	0
Social and Community Development Plan	7	5	1.50	3.50	0	5.00
Investment Promotion and Financial Sector	5	3	0	0.20	0	0.20
Agricultural Development Plan	7	4	3.79	0	0	3.97
Tourism Development Plan	15	9	1.51	2.87	0	4.38
Industrial Development Plan	7	5	0	4.80	0	4.80
Infrastructure Development Plan	27	13	12.63	39.76	30.20	82.59
TOTAL	78	49	19.93	51.13	30.20	101.44
Av. annual expenditure			19.93	10.23	2.01	3.90

Source: JICA Study Team

Outline of the selected priority projects/programs is listed in the Annexed Table.

The estimated costs of priority projects will amount to approximately US\$101 million. About US\$20 million are earmarked by 2005, of which \$10 million are allocated for urgent rehabilitation of the sewerage treatment plant in Cholpon Ata. The medium-term projects (2006-10) will cost about US\$51 million or an averaged annual disbursement of US\$10.2 million. This annual investment is equivalent to about 13-15% of PIP that would be limited to 3% of GDP under the CDF and NPRS.

The estimated budget for the priority projects/programs will be allocated to the responsible executing agencies for implementation. Allocation will be made in the following manner.

Table S.17 Priority Projects by Responsible Organization

Main Responsible Organization	Estimated cost (US\$ million)			
	2005	-2010	-2025	Total
Issyk-Kul Oblast Administration	5.32	4.56		9.88
SCAC+(Voda Canal)	11.00	2.00		13.00
State Commission of Tourism	0.50	1.80		2.30
Min. of Environment	0.50			0.50
Min. of Education		0.50		0.50
Min. of Transport	1.60	12.00	8.00	21.60
SSGC	0.01			0.01
Academia	1.00	1.00		2.00
Vostokelectryo		10.00		10.00
Kyrgyz Telecom	0.00	8.70		8.70
Financing Organization		0.20		0.20
Private		10.37	22.20	32.57
Total	19.93	51.13	30.20	101.26

Source: JICA Study Team

Studies on Selected Priority Projects

A pre-feasibility level study has been conducted for several selected priority projects, including the initial environmental examination (IEE) required for SEA. These projects are listed below, and details are presented in the Main Report.

- (1) Community empowerment program based on community development plans;
- (2) Agricultural development program, focusing on crop diversification and capacity building;
- (3) Rehabilitation of the Cholpon Ata sewerage treatment plant;
- (4) Rehabilitation of the power distribution network;
- (5) Balykchy free economic zone; and
- (6) Expansion of Issyk-Kul international airport at Tamchy.

17 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The following conclusions are derived from the study on integrated development of the Issyk-Kul zone.

- (1) In the event that the proposed projects are implemented as programmed, the targets of the integrated development plan set out in Section 5 will be attained and the balanced regional development will be realized. **Challenges** are required in all sectors through the combined efforts of the public, private and academic sectors, as well as collaborative efforts of the people and communities in the region.
- (2) Although tourism will be a driving force, agricultural development combined with community empowerment should be accelerated. Farmers and communities should be properly organized to collaborate and challenge for their common targets.
- (3) Tourism in Issyk-Kul has high potential and tourist arrivals will quadruple by 2010. The negative impacts should be mitigated and the pollutants should be kept within a permissible range through land use and environmental management.
- (4) Tourism should not be developed independently, but should be promoted in combination with community empowerment and strengthening linkages with other industries. It should be recalled that the economic and social impacts of tourism are expected not only by the increased number of tourists but also by the increased tourism consumption in the region.
- (5) Industries in Issyk-Kul should better be oriented to produce niche projects for niche markets, making utmost use of local resources. For instance, herb cultivation and processing appears to be promising and it would contribute to enhancing the image of a “healthy region” of Issyk-Kul.
- (6) Infrastructure in Issyk-Kul still requires substantial improvement. Urgent rehabilitation, like the sewerage treatment plant in Cholpon Ata, should be implemented without delay. Improvement of infrastructure should be adequately programmed in accordance with the financial viability and well-balanced budgetary allocation.
- (7) The environment in Issyk-Kul will be sustainable against the total pollutants to be generated by the proposed projects if they are properly managed and monitored. Special attention should be paid to land use management and control of water quality in the Issyk-Kul Lake.
- (8) Livelihoods of the people in rural areas will be substantially improved through community empowerment and agricultural development programs. The people in the region will find themselves happy to live in Issyk-Kul. The proposed development plan will greatly contribute to poverty reduction in the Issyk-Kul zone.
- (9) All stakeholders in Issyk-Kul should challenge individually and collectively to attain common targets. The participatory approach should be applied to enhance a regional power.
- (10) Conclusively, the objective to create a “**Healthy and Harmonized Region of Issyk-Kul**” is attainable through implementation of the projects/programs proposed in this Study.



















Recommendations

Based on the results of studies and their conclusions, the JICA Study Team recommends the following.

- (1) Collective efforts by the public sector, private sector and academia are required for implementation of the proposed projects/programs. In this context, it is recommended that “Public-Private-Academic Partnership” be strengthened for the integrated development plan of Issyk-Kul.
- (2) Under the financial constraints, it is recommended that the financial support of international donors be sought for implementation of the selected priority projects. The Local budget should also be earmarked particularly for social and community development.
- (3) Enhancement of local governance appears to be of utmost importance, and it is recommended that community-based development and community empowerment be promoted in an accelerated manner.
- (4) Better compilation and open access to statistics are indispensable, and it is recommended that the statistics survey system be improved and the statistics and basic data be open to the public.
- (5) The participatory approach is found to be effective through this Study, and it is recommended that this approach be applied for the implementation of the proposed projects/programs.
- (6) Promotion of regional cooperation in Central Asia and Eurasia is indispensable. The Issyk-Kul zone offers an excellent location for conventions. It is recommended that further promotion be made to invite conventions to promote amicable, convivial and healthy international relations in Central Asia and the world at large.
- (7) The proposed development plan will serve as a master plan for integrated regional development of Issyk-Kul, as well as a guideline for similar development in other regions of the Republic. It is recommended that the proposed plan be recognized as a guiding document for long term integrated development of Issyk-Kul.
- (8) The plan formulated in this Study should be monitored in the course of its implementation. It is recommended that this plan be reviewed and updated sometime before 2010 in combination with the evaluation of the CDF.

***ANNEXED
TABLE***

Outline of Priority Projects/Programs

Projects/Programs	Outline	Implementing Schedule		
		2005	2010	2025
A. State Governance and Institutions				
1) Support to the Issyk-Kul Development Forum	Organize the regional forum as the implementing body of Issyk-Kul regional development with the participation of public and private donors and NGOs.			
B. Environmental Management				
1) Formulation and implementation of environmental management plan for sustainable conservation of ecosystem of Lake Issyk-Kul	The environmental management plan is to be formulated based on establishment of the "Law on Clean Lake Issyk-Kul".			
2) Reinforcement of laws and institutional systems on the environment of Lake Issyk-Kul	Strict application of effluent quality standard to sanatoriums, hotels, factories, etc. located in Issyk-Kul Lake watershed.			
3) Environment education/awareness building (water quality monitoring by secondary school students)	In order to provide environmental education to the residents, on-site water quality checking by local people using simplified methods is meaningful.			
4) Establishment of data management system for sustainability of water environment using GIS	Development of GIS data of lake water information such as water quality, water levels, etc. (improvement of monitoring system is inclusive).			
5) Restoration of water purification function in lake transition zone	Restoration of wet lane and meadows in the coastal area of Issyk-Kul Lake, which is sensitive to water quality contamination due to closed water body			
6) Project for the management of water level change	Detailed study on countermeasures to change in water level of Issyk-Kul Lake. The enhancement of meteorological observatory network should be inclusive.			
C. Land Use				
1) Introduction of incentive measures in land use management	The incentive measure for land use control should be introduced through the taxation system on farmland and lease pricing on pasture land.			
2) Restructuring of spatial planning system	A quick method of planning should be pursued by reducing the number and depth of pre-planning surveys to fit the current private land ownership system.			
3) Streamlining of permission procedure	A quick and effective permission procedure should be established by expanding the authority and enhancing the capacity of Oblast level administration.			
D. Social and Community Development				
1) Strengthening of vocational training	Capacity empowerment for vocational education is urgently needed. Empowerment in tourism faculties of existing universities and establishment of specialized vocational training schools.			
4) Establishment of network for community empowerment	Network setup concerning community empowerment/development by donors and NGOs to avoid duplication and cooperation.			
5) Development and marketing of community products/goods (Michi no Eki	Income generation for community by the specialized local products and sale to tourists at the Michi no Eki			

Projects/Programs	Outline	Implementing Schedule		
		2005	2010	2025
6) Community development fund	Development fund for community business, repair of common facility by the joint contribution with community member, Aiyl Okmuto, donors, etc.			
7) Deregulation concerning CBO business/community development	Simplification of building permission, restaurant business permission for the easy startup of non-profitable business by CBO			
E. Investment Promotion and Financial Sector				
2) Strengthening commercial banking sector	Commercial bank should be strengthened to promote finance for micro and small enterprises. Risk management, internal control and audit, loan appraisal, trade finance, etc. are necessary.			
4) Consolidation of regional institutions for FDI promotion	Capacity building is necessary for institutions responsible for FDI promotion.			
5) Regulatory reforms for private investment and business promotion in Issyk-Kul	A mechanism to receive complaints and concrete cases concerning business barriers related to public interference from private enterprises will be established at the proposed Issyk-kul Development Forum.			
F. Agriculture				
1) Strengthening of the Farmers Association Program	Present farmers' association should be converted to the entrepreneur association for farmers to yield profits for the community and members through agricultural business.			
3) Village reforestation program	Regional and village reforestation should be promoted through village nursery projects.			
4) Fruit and herb development program (incl. tourism farm)	Cultivation of fruits and herbs should be nourished in Issyk-Kul Zone to encourage processing industry, tourism-related sales, etc.			
5) Beekeeping and natural medicines development program	Promotion of the production of honey and natural medicines made from the sub-products of beekeeping or herbs.			
G. Tourism				
3) Production of tourist maps by GIS map	To produce trekking maps, etc. in the eastern mountainous area of Issyk-Kul using 1:100,000 digital maps, which have been produced by the JICA Study Team.			
4) Improvement of the tourist statistics technology	Preparation of WTO standard tourism statistics through joint work of 5 Central Asian countries			
5) Tourism human resource development package	Capacity building of tourism human resources is urgent. Enhancement of tourism faculty of universities and OJT (on-the-job training) is necessary.			
6) Cooperation of regional tourism promotion in Central Asia	Joint activity for tourism promotion by 5 Central Asian countries.			
7) Promotion of ecological tourism in biosphere territory	Eco-tourism in Issyk-Kul biosphere territory will be promoted. Ecological centre in Cholpon Ata will be fully utilized for purpose.			
8) Historical and archaeological museum	Development of archaeological and historical museum for exhibition of the silk road in Issyk-Kul zone.			
12) Improvement of reservation system using IT system	Digitalization of hotel/sanatorium reservations by IT technology. Technical assistance for consensus-making among tourism agencies and accommodation			
13) Supporting measures for development of FEZ and development promotion area	Support for the tourism resort development in Tamchy FEZ, the external infrastructure development, agreement of tourism free zone concept			

Projects/Programs	Outline	Implementing Schedule		
		2005	2010	2025
14) Invitation of sports training camp (expansion of tourism season)	Intensive promotion of off-peak tourism such as sports training camp			
15) Invitation of convention tourism to Issyk-Kul Zone	Intensive promotion of international conference on basis of accumulated international sanatorium/hotel			
H. Industrial Development				
1) Promotion of juice, jam, cider, honey liquor, medical materials, vegetable processing	Technical assistance, nourishment of processing, manufacturer of fruit, beekeeping, herb production, vegetables, etc.			
3) Networking of manufacturers	Information exchange, linkage between industries and/or enterprises should be established. Network for machinery and materials procurement and product sales will be developed in the distribution centre, for instance.			
4) Establishment of package material bank	Small lot trade of package materials is necessary for micro and small enterprises and community business. Balykchy is suitable to develop trading centre.			
5) Cargo terminal/trading centre in Balykchy	Cargo distribution centre is conceivable at Balykchy, the transportation node connecting Naryn/Kashgar to Bishkek. Advantageous tax incentives for established enterprises should be discussed.			
6) IT park in Tamchy FEZ	Air-based industry such as IT software industry, high value added manufacturer are conceivable adjacent to Tamchy Airport. Airport IT park, for instance, will be the infrastructure to invite those industries.			
I. Infrastructure				
1) Surface water resource development for water supply system	In line with the development of surface water resources for the water supply in Issyk-Kul zone, a purification facility should be installed. Technical and financial assistance are necessary.			
2) Rehabilitation of Cholpon-Ata sewage treatment plant	Outdated sewage treatment plant in Cholpon-Ata is so dangerous as to give adverse impact on Issyk-Kul Lake water. Total improvement of facilities of the plant and empowerment of management/operation corporation, Voda Canal, are necessary.			
3) Renovation of Voda Canal management				
4) Clean campaign of garbage in tourism spot	Clean campaign for rubbish treatment is recommended to keep the reputation of beautiful Issyk-Kul by cleaning up scattered rubbish.			
5) Rehabilitation of power distribution network (Vostokelectryo empowerment)	Even in the urban area of Issyk-Kul zone, frequent black outs are seen to be due to the aged distribution network. Modernization of the distribution network as well as empowerment and sound management of Vostokelectryo are necessary.			
6) Improvement of capacity of trunk line (to Bishkek and the circuit of lakeshore)	By high speed telecommunication OFC between Bishkek and Cholpon-Ata, digitization of tourism industry and introduction of IT industry will be accelerated. Installation of OFC in Karakol and the southern coastal area will be required to enhance the infrastructure foundation to attract industry.			

Projects/Programs	Outline	Implementing Schedule		
		2005	2010	2025
7) Digitization of telephone switchboards, increasing the telephone capacity	Digitization of telephone exchanges in Karakol, Balykchy, Cholpon-Ata will be necessary for the upgrade of telecommunication capacity.		▣	
8)-1 Improvement plan of ring road	Introduction of database system and inspection system of roads.		▣	
8)-2 Improvement of ring road in city area	Pavement improvement of road section in city areas.		▣	
8)-3 Emergency maintenance of ring road	Regular emergency maintenance work should be carried out in city roads in Issyk-Kul zone.			
8)-4 Reconstruction of bridges on ring road	There are some bridges to be repaired in the near future.		▣	
9) Development of a freight terminal in Balykchy (FEZ)	Development of cargo distribution centre is recommended in Balykchy, the transportation node on the route of Bishkek to Naryn, as explained in I 5.		▣	
10) Expansion of Issyk-Kul international Airport (Tamchy)	Improvement of Tamchy Airport will contribute to new tourism demand from remote areas.		▣	