

Selected Priority Project – 5

Balykchy Free Economic Zone

(1) Contents

Background of Project

Balykchy city, located edge of Issyk-Kul Lake, is the terminal of the west-bound railroad linked from Bishkek and the cross-point of trunk roads A-365 linking Issyk-Kul Zone with Bishkek, Nalyn and the Chinese border, and A-363 linking with Cholpon-Ata and the south shore of the lake. Considering the traffic demand between Bishkek to China (ex. Kashgar) has increased, the function of Balykchy has become important for traffic flow. In particular, the cargo traffic distribution function is important in Balykchy due to increased international and domestic contributions.

Functions to be Invited

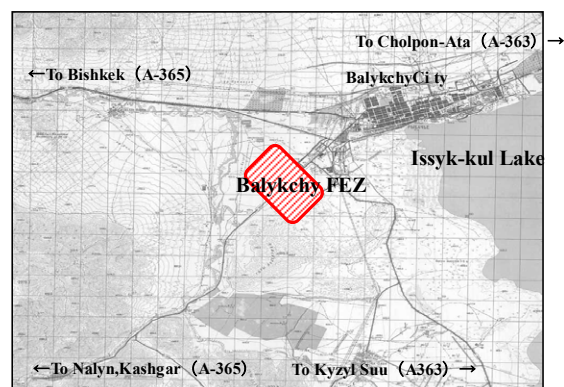
It is proposed that a distribution centre (including new wholesale marketing center, modern cargo terminals and storage facilities) be established, furnished with a trans-shipment facility between road and rail. In line with the growth of distribution industries, it is desirable to invite manufacturing industries in the FEZ. In connection with distribution industries, a packaging and bottling supply service centre will be established.

Selection of Site

To secure the trans-shipment function between road and rail and to cope with the future growth in traffic demand, the following elements were analyzed to select the site for the FEZ:

- i) Accessibility to the trunk roads (A-365, A-363)
- ii) Connection with the railway
- iii) Enough area for future expansion
- iv) Sufficient flat land to secure a large lot

The selected site is topographically flat land with an elevation of 1,620-1,630m above sea level. The area of the site is about 600ha. The site is located both sides of the A-365 trunk road.



Location of Balykchy FEZ

Zoning Plan

The cargo terminal/storage zone is planned on the northern edge of the site along the existing railway spur. The manufacturing industry zone will be developed around the cargo terminal/storage zone. To cope with the population increase in future, the residential zone is planned in the southeastern area, which can be separated from other industrial zones. It is desirable that the commercial/public buildings are arranged in the centre of the FEZ, and the green network (i.e. plantations/parks) will connect zones to make for a safe and comfortable pedestrian environment.

The land use plan of Balykchy FEZ is presented in Figures J.5.2 and J.5.3.

Development Area Plan of FEZ

Zone		Area (ha)		
		2010	2025	Total
Public Area	Road	6	0	47
	Cargo Terminal/Storage Zone	40	0	40
	Subtotal	46	0	87
Private Area	Cargo Terminal/Storage Zone	110	0	110
	Production Industry Zone	50	110	160
	Commercial/Public Buildings	5	0	5
	Residential Zone	0	60	60
	Green Plantations/Parks	30	50	80
	Roads	34	40	80
	Others	0	65	65
	Subtotal	229	325	560
Total		275	325	647

Source: JICA Study Team

Development Plan of Infrastructure

The electricity can be provided from the existing substation in Balykchy city. The existing groundwater resource will be converted to FEZ should the surface water resources be exploited for the Balykchy city water system. The waste water will be treated at the existing Balykchy sewerage treatment plant, although the latter needs renovation.

(2) Development Cost

The development cost of Balykchy FEZ is estimated at US\$35.8 million, as shown below. FDI is expected for the infrastructure development of Balykchy FEZ, however the cargo terminal and storage zone are assumed to be developed partially through a public initiative. The cost of the public initiative development is estimated at US\$2.8 million while the private development cost is estimated at US\$33million, as shown below. The detailed development cost is also estimated in following table.

Development Costs of Balykchy FEZ

	Amount (1,000US\$)		
	Phase 1	Phase 2	Total
Partial cargo terminal and storage zone (Public Development)	2,800	0	2,800
Mostly infrastructure (Private Development)	15,100	17,900	33,000
Total	17,900	17,900	35,800

Source: JICA Study Team

Detailed Development Cost of Balykchy FEZ

External Infrastructure (Public Development)

Items	Unit	Unit Cost (US\$)	Phase 1		Phase 2		Total	
			Quantity	Amount (1,000US\$)	Quantity	Amount (1,000US\$)	Quantity	Amount (1,000US\$)
1 Earth Works	m ³	3	138,000	414	0	0	138,000	414
2 Roads	m ²	20	60,000	1,200	0	0	60,000	1,200
3 Water Supply Facilities	m	100	3,900	390		0	3,900	390
4 Sewerage Facilities	m	50	3,400	170		0	3,400	170
5 Power Supply Facilities	m	30	4,800	144		0	4,800	144
6 Telecommunication Facilities	m	100	4,800	480		0	4,800	480
7 Green buffer/ Park	m ²	4		0		0	0	0
Total	-	-	-	2,798	-	0	-	2,798

Internal Infrastructure (Private Development)

Items	Unit	Unit Cost (US\$)	Phase 1		Phase 2		Total	
			Quantity	Amount (1,000US\$)	Quantity	Amount (1,000US\$)	Quantity	Amount (1,000US\$)
1 Earth Works	m ³	3	687,000	2,061	975,000	2,925	1,662,000	4,986
2 Roads	m ²	20	340,000	6,800	400,000	8,000	740,000	14,800
3 Water Supply Facilities	m	100	13,600	1,360	16,000	1,600	29,600	2,960
4 Sewerage Facilities	m	50	13,600	680	16,000	800	29,600	1,480
5 Power Supply Facilities	m	30	27,200	876	32,000	960	59,200	1,836
6 Telecommunication Facilities	m	100	27,200	2,920	32,000	3,200	59,200	6,120
7 Green buffer/ Park	m ²	4	90,000	360	110,000	440	200,000	800
Total	-	-	-	15,057	-	17,925	-	32,982

Net cost (\$/m2)

\$15.8

\$10.5

\$12.4

Total Development Cost

Items	Unit	Unit Cost (US\$)	Phase 1		Phase 2		Total	
			Quantity	Amount (1,000US\$)	Quantity	Amount (1,000US\$)	Quantity	Amount (1,000US\$)
1 Earth Works	m ³	3	825,000	2,475	975,000	2,925	1,800,000	5,400
2 Roads	m ²	20	400,000	8,000	400,000	8,000	800,000	16,000
3 Water Supply Facilities	m	100	17,500	1,750	16,000	1,600	33,500	3,350
4 Sewerage Facilities	m	50	17,000	850	16,000	800	33,000	1,650
5 Power Supply Facilities	m	30	32,000	1,020	32,000	960	64,000	1,980
6 Telecommunication Facilities	m	100	32,000	3,400	32,000	3,200	64,000	6,600
7 Green buffer/ Park	m ²	4	90,000	360	110,000	440	200,000	800
Total	-	-	-	17,855	-	17,925	-	35,780

Source: JICA Study Team

(3) Evaluation

To assess the investment viability, the financial internal rate of return for the infrastructure development business of Balykchy FEZ was derived.

Basis of FIRR Calculation.

Revenue

Assuming the unit lease rate of FEZ land, the annual revenue is estimated at US\$3.7 million and US\$8.9 million for phase 1 and phase 2, respectively, as shown below.

Assumption of Revenue of the Infrastructure Development Business of Balykchy FEZ

	Lease Area (ha)		Unit lease price (US\$/m ² /year)	Annual Revenue (US\$1,000)	
	Phase 1	Phase 2		Phase 1	Phase 2
Cargo Terminal/Storage Zone	110	110	1.5	1,650	1,650
Production Industry Zone	50	160	2.0	1,000	3,200
Commercial/Public Buildings	5	5	10.0	500	500
Residential Zone	0	60	5.0	0	3,000
Total				3,150	8,350

Source: JICA Study Team

Cost (Private initiative part only)

The assumed development cost of the infrastructure of FEZ is outlined below.

Phase 1	(US\$15.1 million)
Phase 2	(US\$17.9 million)
Total	(US\$33.0 million)

Periodic repair work cost is also assumed in addition to the development cost.

FIRR

The FIRR is estimated at 23%, which can be compared to the commercial bank financing rate of 25% in Kyrgyzstan. The results of sensitivity analysis are shown below.

FIRR of Private Initiative Development Project of Balykchy FEZ

Case	FIRR
Base case	23%
25% revenue decrease	16%
50% revenue increase	28%

(4) IEE

The results of the IEE are presented below. Overall, it was evaluated as having a “B” ranking, which requires the undertaking of an EIA prior to the implementation of the project.

IEE for Balykchy FEZ Project

Sector/Subjects		Program/Project	Schedule	
Transport		Balykchy FEZ	-2010	
Item		Evaluation	Remarks	
Social environment	1	Involuntary resettlement	N	
	2	Local economy (employment, livelihood, etc.)	+	
	3	Traffic and public facilities	N	
	4	Land use and utilization	+	
	5	Social infrastructure and services	N	
	6	Water usage	+	
	7	Poor, indigenous ethnic people	N	
	8	Water rights and rights of common people	N	Present water source of groundwater for the city will be transferred to FEZ.
	9	Split in communities	N	
	10	Equity of benefits and losses, and equity in the developing process	+	
	11	Gender	+	
	12	Children's right	N	
	13	Cultural heritage/property	N	
	14	Local conflict of interest	N	
	15	Public health conditions	N	
	16	Infectious diseases such as HIV/AIDS etc.	N	
Natural environment	17	Topography and geology	N	
	18	Biota and ecosystem	N	
	19	Soil erosion	N	
	20	Hydrological situation	N	
	21	Greenhouse gases	N	
	22	Meteorology	N	
	23	Landscape	+	
Pollution	24	Air pollution	N	
	25	Water pollution	N	Existing sewerage treatment plant adjacent to FEZ can receive and treat sewage from FEZ.
	26	Soil contamination	N	
	27	Ground subsidence	?	
	28	Waste	--	Waste generated from FEZ should be collected and disposed by LSG.
	29	Noise and vibration	--	Appropriate land use is necessary to prevent the noise/vibration problem.
30	Offensive odors	N		
Overall Evaluation		B		

Note: --: Negative impacts are expected
 +: Positive impacts are expected
 N: No significant impact is expected
 ?: Not clear and further study may be required

Overall evaluation:
 A: Likely to have significant adverse impact on the environment and society
 B: Have potential adverse impact on the environment and society less than project A
 C: Likely to have minimal or little adverse impact on the environment and society

■ Balykchy Free Economic Zone
【Phase1:2010】

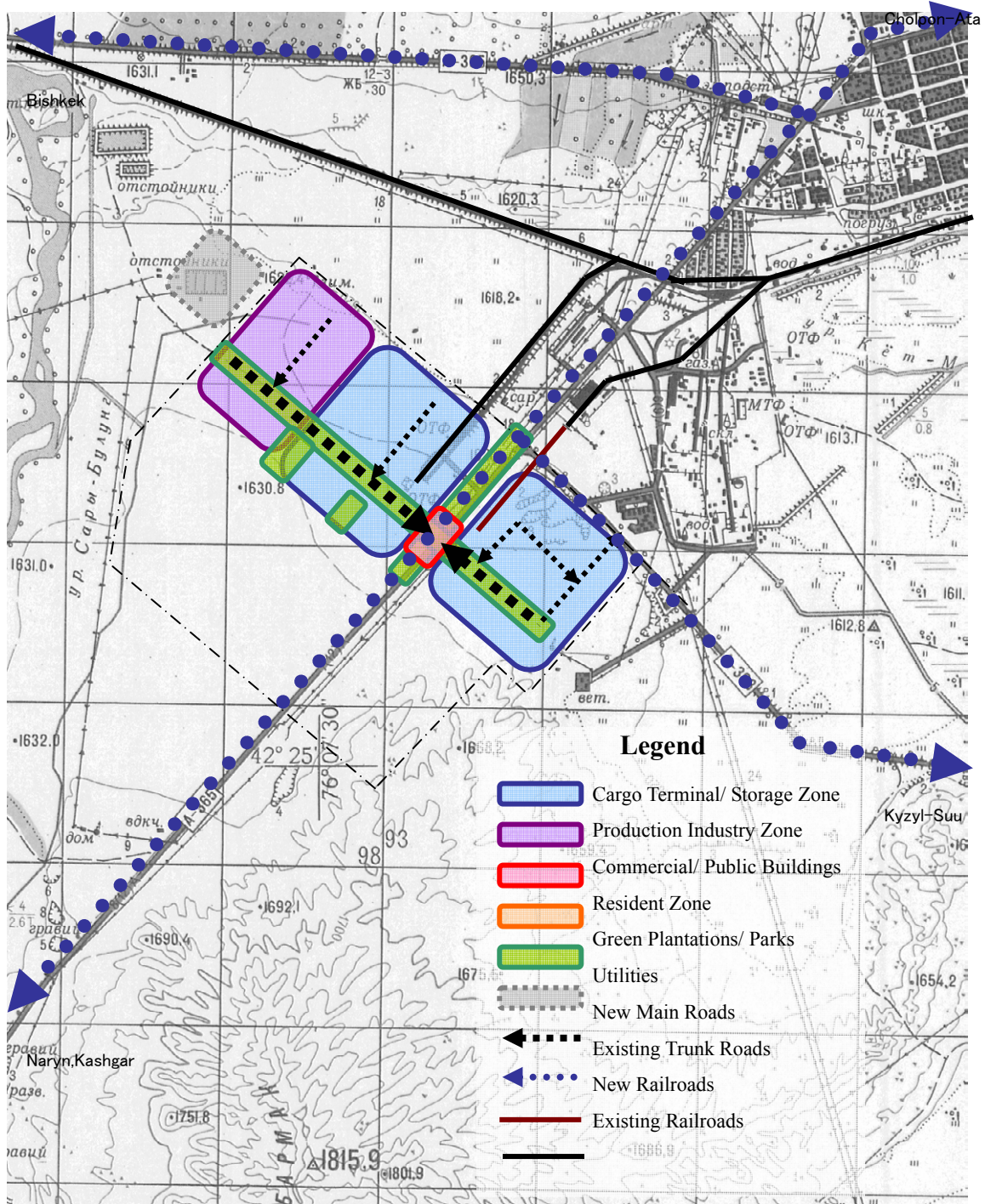


Figure Zoning Plan of Balykchy FEZ (Phase1:2010)

Cargo Terminal/ Storage Zone	Production Industry Zone	Commercial/ Public Buildings	Residential Zone	Green Plantations / Parks	Roads	Others	Total
150ha	50ha	5ha	0ha	30ha	40ha	0	275ha

■ Balykchy Free Economic Zone
【Phase2:2025】

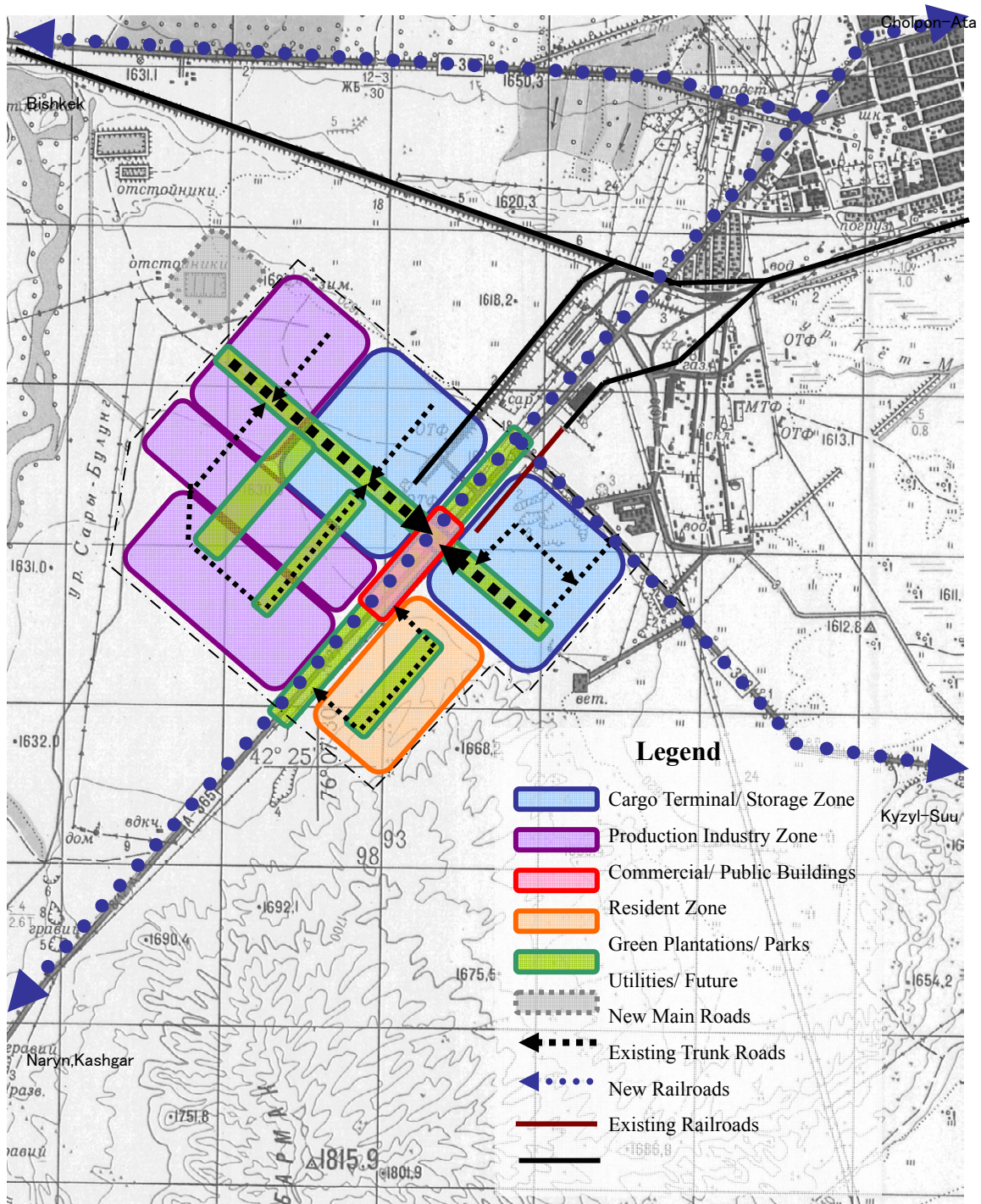


Figure Zoning Plan of Balykchy FEZ (Phase2:2025)

Cargo Terminal/ Storage Zone	Production Industry Zone	Commercial/ Public Buildings	Residential Zone	Green Plantations / Parks	Roads	Others	Total
150ha	160ha	5ha	60ha	80ha	80ha	65ha	600ha

Selected Priority Project – 6

Expansion of Issyk-Kul International Airport

(1) Project Profile

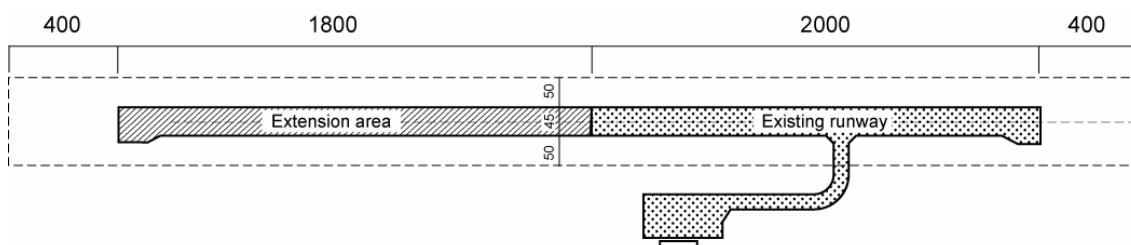
Issyk-Kul International Airport, formerly called Tamchi Airport, is located along the north shore of Issyk-Kul Lake, about 35 km to the west of Cholpon-Ata City and not far to the northeast of Tamchi Town. The airport has a runway of 2,000m length and therefore currently cannot accept direct flights from Moscow or other important cities to cater for the tourism market.

The JICA Study Team set targets for annual tourist arrivals to Issyk-Kul Zone of 1.1 million and 1.8 million by 2010 and 2025, respectively. In order to achieve these, it is necessary to consider an adequate modal balance because concentrations of a large number of cars in the region will cause congestion and other environmental problems. Therefore, accepting international flights to the airport is proposed. According to the Master Plan, tourist arrivals by air are estimated at 94,000 and 263,000 in 2010 and 2025, respectively, provided the airport can accept long-distance flights. In this case, expansion of the runway is necessary, and installation of air navigation equipment is required.

(2) Conceptual Design

This project consists of:

- Repair of the existing runway, taxiway and apron;
- Runway expansion (1800m);
- Passenger terminal;
- Installation of air navigation equipment;
- Installation of meteorological equipment;
- Procurement of special vehicles.



Conceptual Layout of Runway Expansion

(3) Project Cost

According to JSC Manas International Airport, the cost is estimated at US\$26.4 million. This comprises civil works for runway expansion (US\$8.2 million), construction of passenger terminal (US\$4 million), and installation of air navigation, communication and other equipment (US\$4.2 million).

(4) Economic Evaluation

The precondition of the economic evaluation is outlined below:

- 1) The necessary works will be completed in 2009 and operations will start from 2010.
- 2) Passenger arrivals between 2010 and 2025 are estimated to increase linearly.
- 3) A viable economic discount rate is 12% in Kyrgyzstan.
- 4) Residual value of the airport is assumed to be 10% of the capital cost.
- 5) Conversion from financial cost to economic cost is not considered.

Benefit

There is no impact on increases in foreign tourists because the number of foreign tourist arrivals (2010 – 1.1million, 2025 – 1.8 million) is fixed in the Master Plan. The expected economic benefit is summarized as follows:

Expected Benefit by Airport Development

Direct Benefit	Description
1) Expenditure by foreigners	- Loss of transport fee from foreign tourists between Bishkek and Issyk-Kul Oblast is a negative benefit. However, it can be assumed that foreign tourists will use the saved money during their stay in the Kyrgyz Republic, which cancels out the loss. - Reduction in travel time of foreign tourists increases other chances of tourism activity, which brings about increases in expenditure by foreign tourists.
2) Reduction in vehicle operation cost (VOC) by road	Reduction in the traffic volume between Bishkek and Issyk-Kul Oblast will save VOC.
3) Travel time saving for road users between Bishkek and Issyk-Kul Oblast	Reduction in the traffic volume between Bishkek and Issyk-Kul Oblast will increase travel speed, which will save travel time of road users. However, this benefit is very small compared to VOC saving.

Expenditure by foreigners

Travel time saving between Bishkek and Cholpon-Ata is about 7 hours (back and forth). This provides a whole day for tourists to undertake other activities. The average payment for tourism activities per day is assumed to be about US\$10.

Expenditure by foreigners in 2025: $US\$10 \times 263,000 = US\2.63 million

VOC Saving

Vehicle operating cost (VOC) between Bishkek and Cholpon-Ata (250km) is assumed to be US\$32.50, US\$35.00, and US\$80.00 for a passenger car, a minibus and a regular bus, respectively, as shown in the table below. The assumption in VOC per km is taken from a preliminary calculation using a HDM-4 model.

VOC Calculation

Vehicle Type	VOC	No. of Passengers	Cost per Person	Modal Share
Passenger car	US\$32.5 (\$0.13/km)	3.5	US\$9.29	50%
Minibus	US\$35.0 (\$0.14/km)	10	US\$3.5	25%
Bus	US\$80.0 (\$0.32/km)	40	US\$2.0	25%

Average VOC per passenger is calculated at US\$6.02/passenger (one-way).

VOC saving in 2025: $US\$6.02 \times 263,000 \times 2 = US\3.17 million

EIRR (Economic Internal Rate of Return)

The EIRR of the expansion project of Issyk-Kul International Airport is calculated at 9%. This is slightly lower than the marginal rate of 12%. If the project is postponed for implementation after 2010 (five years later for instance), the EIRR will approach the marginal rate due to passenger demand increases.

(8) Financial Evaluation

Cost

The capital investment cost is estimated at US\$22.2 million, with the Government bearing the cost of US\$4.2 million for the navigation system.

O&M costs are assumed to be US\$5 per WLU (work load unit).

Income

Landing and departure fee = US\$20 /ton

Long distance aircraft – 150 passengers, 90 tons

Short distance aircraft – 40 passengers, 24 tons

Airport charge = US\$11.50 per passenger (departure)

FIRR (Financial Internal Rate of Return)

FIRR of expansion project of Issyk-Kul International Airport is calculated at 14% on the basis of the cost/benefit balance during 2010 to 2025. In comparison with the EIRR, the FIRR is higher and more viable, however the domestic commercial bank rate of 24% cannot allow a freehand investment in the project. This means that FDI, who can participate in the favourable banking conditions in its country, should promote the project.

(9) Initial Environmental Examination (IEE)

The overall evaluation ranking is “B” due to the existence of cultural heritage/property around the airport and the noise impact on residents in the vicinity. An EIA is therefore necessary prior to implementation of the project.

IEE Result of Expansion Project of Issyk-Kul International Airport

Sector/Subjects		Program/Project	Schedule	
Transport		Runway expansion of Issyk-Kul International Airport	2010-	
Item		Evaluation	Remarks	
Social environment	1	Involuntary resettlement	N	
	2	Local economy (employment, livelihood, etc.)	+	The project will increase employment.
	3	Traffic and public facilities	+	The project will improve accessibility.
	4	Land use and utilization	N	
	5	Social infrastructure and services	N	
	6	Water usage	N	
	7	Poor, indigenous ethnic people	N	
	8	Water rights and rights of common people	N	
	9	Split in communities	N	
	10	Equity of benefits and losses, and equity in the developing process	N	
	11	Gender	N	
	12	Children’s right	N	
	13	Cultural heritage/property	--	Investigation is necessary for planning area.
	14	Local conflict of interest	?	There are some opinions about the project.
	15	Public health conditions	N	
	16	Infectious diseases such as HIV/AIDS etc.	N	
Natural environment	17	Topography and geology	N	
	18	Biota and ecosystem	?	Further investigation is necessary.
	19	Soil erosion	N	
	20	Hydrological situation	N	
	21	Greenhouse gases	N	
	22	Meteorology	N	
	23	Landscape	N	
Pollution	24	Air pollution	N	
	25	Water pollution	N	
	26	Soil contamination	N	
	27	Ground subsidence	N	
	28	Waste	N	
	29	Noise and vibration	--	Tamchy village is located near the airport.
	30	Offensive odors	N	
Overall Evaluation			B	

Note: --: Negative impacts are expected
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