

**Ex-Post Evaluation Report of Japanese ODA
Loan Projects 2009
(Indonesia III, Philippines I,
Sri Lanka II, Kazakhstan I)**

February 2011

JAPAN INTERNATIONAL COOPERATION AGENCY

Gyros Corporation
R-Quest Corporation

EVD
JR
10 - 28

List of Errata

Page	Item	To be corrected	Corrected description
II-3	2.3 Constraint during the Evaluation Study	DOTC-ATO became a <u>public</u> corporation	DOTC-ATO became a <u>government</u> corporation
II-4	3.1.2 Relevance with the Development Needs of the Philippines	<u>The Phase II construction work at the Tacloban airport was cancelled and only equipment procurement for urgent improvement was implemented</u> due to budget shortage of the government of the Philippines, despite the need to improve airport facilities and equipment to meet increasing traffic demand and to improve safety.	<u>Equipment procurement for immediate improvement was implemented as planned.</u> However, major part of the phase II construction work at the Tacloban Airport was <u>cancelled excepting the resurfacing (5 cm overlay) of the runway</u> due to budget shortage of the government of the Philippines, despite the need to improve airport facilities and equipment to meet increasing traffic demand and to improve safety.
II-6	3.2.1 Project Outputs	(1) Construction of New Bacolod Airport Civil works (plan) : Apron (passenger: <u>33,657</u> m ²) Air Navigation System(plan): <u>Radar</u> navigation facility (2) <u>Construction of New Bacolod Airport</u> its own budget in <u>2009</u>	Civil works (plan) : Apron (passenger: <u>26,937</u> m ²) Air Navigation System(plan): <u>Radio</u> navigation facility (2) <u>Redevelopment of Tacloban Airport</u> its own budget in <u>2007</u>
II-7	3.2.1.1 Construction of Bacolod Airport	1) Civil Works <u>Sewage drain construction was added to the project based on the design re-calculation as the original design calculation on ground and drainage was found out to be mistaken.</u> 2) Building <u>The floor material of the passenger terminal building was changed from lumber to stone</u> 3) Air Navigation Facility/System Airlines <u>insisted.</u>	<u>The drainage outfall outside of airport boundary was added to the project to address the private landowners concern on the effect of the water that will come out from the airport.</u> <u>The floor finish material of the pre-departure area of the passenger terminal building was changed from laminated wood plunk to granite tiles</u> Airlines <u>suggested.</u>
II-9	3.2.1.3 Urgent Improvement	<u>Urgent</u> improvement	<u>Immediate</u> improvement
II-15	3.4.2.1 Impacts on the Natural Environment	At the time of appraisal, the implementing agency was in the process to obtain an environmental compliance certificate (ECC) of <u>the Ministry of Environment and Resources</u>	At the time of appraisal, the implementing agency was in the process to obtain an environmental compliance certificate (ECC) of <u>Department of Environment and Natural Resources (DENR)</u>
II-15	3.4.2.2 Land Acquisition and Resettlement	As for Tacloban, there was no negative impact to natural environment either as it was <u>equipment procurement project.</u>	As for Tacloban, there was no negative impact to natural environment either as it was <u>equipment procurement and runway resurface project inside the airport.</u>
II-15	3.5 Sustainability	An Air Transportation Office (ATO), which is a <u>subordinate</u> organization under DOTC,	And Air Transportation Office (ATO), which is a <u>sectoral</u> agency under DOTC,
II-16	3.5.2 Technical Aspects of Operation and Maintenance	Aerodrome Development and Management Service (ADMS) of CAPP head office <u>adjusts</u> requests from all the airports	Aerodrome Development and Management Service (ADMS) of CAPP head office <u>evaluates</u> requests from all the airports
II-18	3.5.4.1 Current Status of Operation and Maintenance of Tacloban Airport	It was confirmed at the evaluation that maintenance of the elevator and escalator installed by the project and the X-ray equipment procured under the <u>urgent</u> improvement scheme is consigned to another company while maintenance of general facilities is done by airport employees by themselves. Two of 4 X-ray equipments supplied by <u>urgent</u> improvement scheme were broken, which was causing trouble in passenger boarding.	It was confirmed at the evaluation that maintenance of the elevator and escalator installed by the project and the X-ray equipment procured under the <u>immediate</u> improvement scheme is consigned to another company while maintenance of general facilities is done by airport employees by themselves. Two of 4 X-ray equipments supplied by <u>immediate</u> improvement scheme were broken, which was causing trouble in passenger boarding.
II-19	3.5.4.2 Current Status of Operation and Maintenance of Tacloban Airport	It was confirmed at the evaluation survey that equipment procured by the <u>urgent</u> improvement scheme was maintained well in general, except for fire trucks and runway <u>clear</u> , which were broken	It was confirmed at the evaluation survey that equipment procured by the <u>immediate</u> improvement scheme was maintained well in general, except for fire trucks and runway <u>sweeper</u> , which were broken
II-20	4.3 Lessons Learned	(2) Intrusion by <u>Trespasser</u>	(2) Intrusion by <u>Outsiders</u>
II-21	Comparison of the Original and Actual Scope of the Project	Civil works (original) : Apron (passenger: <u>33,657</u> m ²)	Civil works (original) : Apron (passenger: <u>26,937</u> m ²)

Preface

Ex-post evaluation of ODA projects has been in place since 1975 and since then the coverage of evaluation has expanded. Japan's ODA charter revised in 2003 shows Japan's commitment to ODA evaluation, clearly stating under the section "Enhancement of Evaluation" that in order to measure, analyze and objectively evaluate the outcome of ODA, external evaluations conducted by experts shall be enhanced.

This volume shows the results of the ex-post evaluation of Japanese ODA loan projects that were mainly completed in fiscal year 2008. The ex-post evaluation was entrusted to external evaluators to ensure objective analysis of the projects' effects and to draw lessons and recommendations to be utilized in similar projects.

The lessons and recommendations drawn from these evaluations will be shared with JICA's stakeholders in order to improve the quality of ODA projects.

Lastly, deep appreciation is given to those who have cooperated and supported the creation of this volume of evaluations.

February 2011

Atsuo KURODA

Vice President

Japan International Cooperation Agency (JICA)

Disclaimer

This volume of evaluations shows the result of objective ex-post evaluations made by external evaluators. The views and recommendations herein do not necessarily reflect the official views and opinions of JICA.

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I. The Republic of Indonesia
“ Palembang Airport Development Project (1) ”

The Republic of Indonesia

Ex-Post Evaluation of Japanese ODA Loan Project
“Palembang Airport Development Project (1)”

Takao YAMAGUCHI, Gyros Corporation

1. Project Description



Project Location Map



Control Tower and Administration Building Built by the Project

1.1 Background

Palembang Airport is located in the suburb of Palembang City in Sumatra. The airport had only one runway which was too short for large-sized aircrafts to land on and depart from. The passenger terminal building also required improvement as it was too old and small to cope with increasing passenger movement. Under these circumstances, in order to satisfy increasing traffic movement and to secure operational air traffic safety, the government of Indonesia requested the Japanese government to implement reconstruction of Palembang Airport project with Japanese soft loan.

1.2 Project Outline

The project objective is to satisfy the increasing air traffic movement and operational safety requirements at Palembang Airport by improving and extending the runway, constructing new passenger and cargo terminal buildings, and installing air safety system, thereby effectively contributing to local economic development.

Approved Amount/ Disbursed Amount	8,826 million yen / 8,085 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	January 1998 / January 1998
Terms and Conditions	<p>Interest Rate: 2.7% Repayment Period: 30years (Grace Period: 10years) Conditions for Procurement: General Untied</p> <p>-----</p> <p>Consulting Services: Interest Rate: 2.3% Repayment Period: 30years (Grace Period: 10years) Conditions for Procurement: General Untitled</p>
Borrower / Executing Agency(ies)	Government of the Republic of Indonesia / Directorate General of Air Communications, Ministry of Communications
Final Disbursement Date	August 2007
Main Contractor (Over 1 billion yen)	PT. Brantas Abipraya (Indonesia) / Hazama Corporation (Japan) (JV)
Main Consultant (Over 100 million yen)	PT. Dacrea Avia (Indonesia) / Pacific Consultants International (Japan) (JV)
Feasibility Studies, etc.	Master Plan (M/P) on Regional Airport Facilities Development Planning Survey, JICA, 1991 Implementation Plan (I/P), DGAC, 1996
Related Projects (if any)	n.a.

2 . Outline of the Evaluation Study

2.1 External Evaluator

Takao YAMAGUCHI, Gyros Corporation

2.2 Duration of Evaluation Study

Duration of the Study: March 2010 – December 2010

Duration of the Field Study: June 12, 2010 – June 20, 2010; September 27, 2010 – September 30, 2010

2.3 Constraints during the Evaluation Study

The evaluation was made based on limited number of people interviewed and available data.

3 . Results of the Evaluation (Overall Rating: B)

3.1 Relevance (Rating: a)

3.1.1 Relevance with the Development Plan of Indonesia

At the Time of Project Appraisal:

In 1997, the government of Indonesia had second 25-year long term development plan (PJP II) and the sixth 5-year development plan (REPELITA), which prioritized the transportation sector. The sixth REPELITA (1994-1998) aimed to expand air transportation capacity (domestic passengers to 12 million, international passengers 9.6 million, domestic cargo 179,000 capacity ton¹ and international cargo 9,600 capacity ton) by 1998 end. And the Palembang Airport was considered to one of 14 principal airports and one of 7 priority airports to be developed in the sixth REPELITA.

At the Time of Project ex-post Evaluation:

The government of Indonesia announced the long-term development plan (RPJP) in 2005, based on which the medium-term development plan (RPJM) for 2004-2009 was drawn up. The RPJM envisaged that the air transportation infrastructure should be developed in order to meet the minimum service standards, improve regional connection and minimize bottlenecks and improve technical skills of engineers. Moreover, the Ministry of Transportation announced in the 11th regulation of 2010 (KM11) that Palembang Airport should play a role of regional international airport, regional international haji airport (a key airport for the muslims performing pilgrimage to Mecca) and regional international cargo airport.

3.1.2 Relevance with the Development Needs of Indonesia

At the time of Project Appraisal:

Palembang Airport is located in Palembang city, which is the state city with the population of 1.28 million in South Sumatra. The economy of the region was buoyant and air traffic demand was increasing on back of this economic development. Sumatra island and Jawa island, where Jakarta is located, were not connected by road and the ferry transportation took a long time. This is another reason why air traffic demand was quite strong in the region. The airport terminal, however, was small and superannuated and was not in the condition to accommodate additional flights. The runway did not comply with ICAO standards and was in need of serious repairing in order to insure safety.

At the time of Project ex-post Evaluation:

The air transportation demand between Palembang and Jakarta remained brisk and the Palembang Airport continued to play the important role as the gateway airport. The airport had 17 scheduled domestic flights by small jets every day and 6 scheduled international flights to and from Singapore. Palembang Airport was designated as a haji airport in 2006 and its role as the gate airport had become more important. There were 44 haji flights with 14,701 passengers in 2009.

3.1.3 Relevance with Japan's ODA Policy

¹ 1 capacity ton is approximately 2,832m³.

Japan's ODA policy for Indonesia insisted on five key sectors in 1997, including nation-wide balanced development both social and regional and improvement in transportation sector as an industrial key infrastructure.

This project has been highly relevant with Indonesia's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Efficiency (Rating: b)

3.2.1 Project Outputs

The project output is summarized in the below table.

	Plan	Actual
Civil Works	<p>Runway Improvement:2,200m x 45m Extension:300m x 45m</p> <p>Taxiway:597m Apron:387.5m x 273.5m</p> <p>Roads Apron connection:6,580 m² asphalt Access road:2.0 km Airport perimeter road:8 km Stormwater drainage system Car parking:439 cars Security fence:12,880 m</p>	<p>No change No change Repair of runway and taxiway was added. Sliding slope remedial works were added. No change 410m x 1333.5m</p> <p>8,200m² concrete 2.2 km 5,890 m No change 433 cars 2,660m</p>
Architectural Works	<p>Terminal building Passenger:13,964 m², 2-storey RC structure Cargo:2,310 m², 1-storey steel structure</p> <p>Control tower and administrative building:2,231 m², 33.1m high Hangar:2,132 m², 1-storey steel Maintenance and admin. building:1,886 m², 1 storey steel Fire station:608 m², 1 storey RC Power station:1,526 m² Others (Drivers waiting shed, pray room)</p>	<p>23,300 m², 3-storey RC+SRC+Steel structure 3,403 m², 2-storey steel + RC structure</p> <p>2,420 m², 29.8m high Cancelled 1,987 m², 1-storey RC+steel</p> <p>920 m², 2-storey RC 1,863m²Others (Drivers waiting shed, pray room, security building, water supply station, shed for NAV/COM, etc.)</p>
Air Safety System	<p>Radio navigation aids (ILS CAT I, NDB, Locator) Aeronautical telecommunication systems (VHF A/G TX/RX, ATIS, ATS/DS, ADS consoles, APP consoles, AMSC/AFTN, recorder) Airfield lighting systems and Meteorological observation systems</p>	<p>(ILS CAT I) Added:HF TX/RX No change</p>
Supporting Facilities	<p>Power supply system Water supply system (Deep well, water</p>	<p>No change Existing pond, reservoir (1,080cu.m)</p>

reservoir x 2 (320cu.m) Sewage system (oxidation pond with imhoff tank) Telecommunication system (Microwave link 100 lines) Rescue and fire fighting service (RIV x 1, major vehicle x 2, commander car x 1, ambulance x 1) Fuel system (fuel tank x 4, 580 kl)	Closed-type Optical fiber 200lines Rescue and fire fighting service (RIV x 0, major vehicle x 3, commander car x 1, ambulance x 1) Fuel system (fuel tank x 4, 720 kl)
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Figure 1 The Passenger Terminal Building and Aerobridge Built by the Project



Figure 2 Inside the Passenger Terminal Building

Main reasons for the above changes in the output are explained below.

(1) Civil and Architectural Works

Unexpectedly high demand growth observed between the plan and implementation stages made it inevitable for some modifications to be made in civil and architectural works.

Sliding slope remedial works were added at the construction stage in order to cope with high level of underground water and flimsy ground, which were unpredicted at the design stage. Moreover, A part of the security fence was built by AP-II while a hangar was constructed by a private company, both of which accordingly were cancelled from the scope of works.

(2) Air Safety System

The air safety system was cancelled from the scope of works as conventional land-based NDB and locator were both being replaced by the satellite-based system in the international market at that time and there was a high possibility that these might not be used in the near future.

(3) Supporting Facilities

The water supply system was changed as a deep well was not available and the sewage system was also changed for environmental reasons at the time of detailed design. Telephone materials were changed as TELECOM, the delivery company, switched to optical fiber line in place of microwave.

Rescue and fire fighting services were also changed as ICAO standards were changed.

It could be said that these changes in outputs were adequate as facilities were in operation with no problem since the project completion meeting with higher-than-expected traffic demand.

3.2.2 Project Inputs

3.2.2.1 Project Period (Sub-rating: b)

The project period was longer than planned. The actual project period was longer than planned by 36.2% though it is not possible to make a simple comparison as the project scope had been changed. The project period was 94 months from December 1998 to September 2006 (up to completion of the end of the defect warranty period) in comparison to the original plan of 69 months from January 1998 to September 2003 (up to the end of the defect warranty period).

The following are the main reasons for major delays experienced in consultant contract (8 months of delay), pre-qualification approval (10 months) and bidding (6 months)

(1) Procurement of the Consultant:

AP-II requested for a non-bid contract to be made with the local consultant already participating in another development project at the airport in order to shorten the procurement period. However, the estimate costs presented by this consultant were so low that AP-II had to have the consultant explain the methodology in detail. AP-II also took time to discuss whether a consultant should be selected by non-bid or bid contract.

(2) Pre-Qualification (PQ) Approval:

It had become necessary to follow the instruction from the Ministry of Transportation to explore the possibility of an alternative survey and review the contract package and project costs as the Government of Indonesia had the intention to reduce the Japanese soft loan.

(3) Bidding:

It took time to re-analyze the financial status of the lowest-priced bidder as its financial status had deteriorated.

3.2.2.2 Project Cost (Sub-rating: a)

The project cost was lower than planned. The actual project cost was lower than the plan (62.1% of the plan) although it is not possible to make a simple comparison as the project scope had been changed. Actual project cost was 9,793.8 million yen (foreign 8,091.6 million yen, domestic 138,543.4 million Rupiah, yen soft loan of 8,085.6 million yen) in comparison to the original project cost of 15,781 million yen (foreign 7,311 million yen, domestic 162,882 million Rupiah, yen soft loan of 8,826 million yen).

Foreign project cost increased by 10.7% as civil and utility cost (power, water and sewage systems) increased due to changes in volume and specifications. Domestic project cost, despite high price escalation, decreased by 22.4% in Rupiah and by 83% in Japanese yen due to sharp depreciation of Rupiah during the period.²

Although the project cost was lower than planned, the project period was longer than planned, therefore efficiency of the project is fair.

3.3 Effectiveness (Rating: a)

3.3.1 Quantitative Effects

3.3.1.1 Results from Operation and Effect Indicators

Annual passengers were originally expected to reach 1 million in 2008, which was soon revised down (1 million by 2013) due to 1998 economic crisis. It turned out, however, that actual demand surpassed even the original estimate as shown in the table below.

Table 1 Air Traffic Movement at Palembang Airport (Forecast and Actual)

		Forecast*		Actual **			
		1995	2008	2006	2007	2008	2009
Passengers (Thousand)	International	4	25	42	104	94	94
	Domestic	590	1,014	1,408	1,556	1,619	1,810
Cargo (Capacity ton)	International	48	396	65	87	134	285
	Domestic	4,570	9,831	12,453	15,694	8,739	9,396
Aircraft Movement	International	N.A	N.A	532	970	938	1,088
	Domestic	N.A	N.A	14,957	16,205	15,804	15,330
Maximum Size of Aircraft		B737	A310	B737	B767	B737	B737

* Completion goal: September 2003

**Actual completion: September 2005

Source: AP-II

As shown in Table 1, actual number of international passengers was 94,000, or 3.8 times that of the original plan of 25,000 for the year 2008. Domestic demand (1,619 thousand) was 1.5 times of the original target (1,014 thousand). The main reason behind surprisingly strong demand was unexpected implementation of deregulation in the air transportation industry and accordingly increased flights of low-cost carriers (LLC). LLC operated 11 flights out of 18 flights per day between Palembang and Jakarta as of June 2010.

² Rupiah weakened against Japanese yen by more than four times between L/A and the design stages. The engineer's estimate (EE) applied just after the design was 1¥=Rp.80.00.



Figure 3 Cargo Terminal Building Built by the Project

Actual domestic cargo was brisk at some 12,000 capacity ton in 2006 and 15,000 capacity ton in 2007, although it came down to 8,739 capacity ton in 2008, or 93% of the target of 9,831 capacity ton for the year. Meanwhile, international cargo was merely 134 capacity, or approximately a third of the original target in 2008.

The original plan was to accommodate 250-300 seated medium-sized jet flights (wide-body aircraft with two aisles) through runway extension by 2008. This goal was achieved one year earlier when a B767 arrived at the airport in 2007. However, the maximum size of the aircraft at Palembang Airport was the small-sized jet of B737 in the period of 2008-2010, the same as was in 2004. It was because airlines adopted the strategy to fly small jets more frequently instead of medium-sized jets as it renders higher occupancy rate and fuel efficiency.

3.3.1.2 Results of Calculations of Internal Rates of Return (IRR)

The project's FIRR (Financial Internal Rate of Return) and EIRR (Economic Internal Rate of Return) are summarized below. It would not be adequate to make a simple comparison as the assumptions used for the original and present internal rates are different. The original assumptions were not made available to the evaluator. The present FIRR of 6.4% is higher than a prevailing market interest rate of 2.7% in Indonesia while EIRR of 47.9% surpasses 15.0%, the economic discount rate usually applied by the World Bank and Asian Development Bank for infrastructure projects in developing countries.

Assumptions used for re-calculating IRR at the evaluation time:

Project period of 35 years (Construction period of 2000 – 2005), 2010 as the base year

Table 2 IRR Comparison

	Plan	Evaluation
FIRR	8.1%	6.4%
Financial costs	Investment costs, operation and maintenance costs	Incremental project costs (new and re-investment), Incremental operation and maintenance costs (before depreciation and after bad debt disposal)
Financial revenues	Increase in airport use income, increase in airport tax income	Incremental airport income (aeronautical and non-aeronautical revenue)
EIRR	16.4%	47.9%
Economic costs	n.a.	Incremental project costs (new and re-investment), Incremental operation and maintenance costs (before depreciation and after bad debt disposal)
Economic benefits	n.a.	Reduced travelling time effect of Indonesian passengers switching from existing transportation method (bus and ferry) to airplanes, consumer surplus of new Indonesian travellers

3.3.3.2 Qualitative Effects

The project appraisal expected safety improvement in air transportation through improvement and extension of the runway.

It was observed at the ex-post evaluation that the runway slope was compliant with the ICAO standards, which had reduced burden on the pilots at landing and hence contributed to safety improvement. Extension of the runway also contributed to safety improvement by providing sufficient length for safe landing and departing aircrafts. Furthermore, replacement of the air navigation system improved communication accuracy between the control tower and airplanes and hence improved safety. The extension of the apron have provided international standard level of safety distance between parked airplanes and between a parked airplane and taxing airplane, which reduced the number of minor collision of airplanes at the apron.

This project has somewhat achieved its objectives, therefore its effectiveness is fair.

3.4 Impact

3.4.1 Intended Impacts

Table 3 summarizes historical trend of GRDP of South Sumatra and GDP of Indonesia in 2005-2009. The real average growth rate was 2.9% for GRDP and 3.2% for GDP in 2005-2008.

Table 3 Trend of GRPD and GDP (Billion rupiahs)

	South Sumatra	Indonesia		GRDP/ GDP
	GRDP	GDP	CPI	
2005	81,532	2,774,281	4.3%	2.9%
2006	95,929	3,339,217	14.1%	2.9%
2007	109,896	3,949,421	11.5%	2.8%
2008	133,359	4,954,029	18.1%	2.7%
2009 Forecast	-	5,417,983	4.8%	-
Nominal average growth (2005 - 2008)	17.0%	18.2%	14.5%	-
Real average growth (2005-2008)	2.9%	3.2%	-	-

Units of GRDP and GDP is 10 billion Rupiah

Source: ADB, BPS, CIA

(1) Increased Spending by New Travellers

Travel expense spent by new travellers for a round air trip between Palembang and Jakarta and incremental travel expense spent by converted Indonesian passengers³ equal to 239.7 billion rupiahs, or equivalent to 0.2% of GRDP on average per annum in 2006-2008 (95,589 billion rupiahs).

(2) Reduced Travelling Time for Converted Indonesia Travellers

Reduced travelling time for passengers switching from ferries/buses to airplanes for a round trip between Palembang and Jakarta are calculated to be 28 hours, which is equivalent to 4 day of GDP per capita (170,000 rupiahs)⁴ if monetarized based on 2009 GDP estimate.

Total amount of reduced travelling time effect of these passengers is equivalent to 0.6% of GRDP per year in 2006-2008.

It should be noted, however, that above impact has been realized not only by this project but also by investment by all participants including other airports and airlines both in and out of the country, air port access transportation as well as deregulation in air transportation.

It could be said from the above that the project has contributed to efficiency and revitalization of Palembang and the country by reducing travelling time of passengers. The project has also contributed indirectly to GRDP and GDP by increasing travellers' spending.

3.4.2 Other Impacts

3.4.2.1 Impacts on the Natural Environment

³ The analysis assumes 340,000 rupiahs for a round trip cost between Palembang and Jakarta using ferries and buses and 1 million rupiahs using the airplanes.

⁴ Source: CIA World Fact Book, Forecast in 2009 is 4,000 US dollar (Equivalent to 40 million Rupiah (2010)

Directorate General of Air Communications prepared the EIA, the Planned Area Control and the Environmental Control Plan for the airport's original master plan (2,200m length of runway), which were approved in June 1998, five months later than the loan agreement signing date of this project. These analyses concluded that this project would not cause negative impact on the surrounding environment.

The environment monitoring was added to the consulting services during the construction period and it was implemented between September 2004 and September 2006, which also concluded that the project did not affect the surrounding environment adversely.

Nevertheless, the following three types of negative impacts were identified during the construction period. The implementing agency cooperated with these issues accordingly.

- (1) Heavy smoke emission from the asphalt mixing plant installed in the construction site caused protest from nearby inhabitants at the initial stage of pavement works. The implementing agency installed a smoke reduction device in order to solve this problem.
- (2) Flood occurred a few times outside the construction site during the construction stage and some fish swam away from the fish-bleeding pond. It was attributed partly to the inadequate temporary drainage system and partly to the reduced capacity of existing river downstream due to sedimentation. The contractor compensated for the fish disappeared from the fish-bleeding pond. Meanwhile, widening works of the river concerned was carried out by nearby inhabitants in coordination with the project schedule to secure capacity of discharge from the airport and to avoid future flood.
- (3) Minor protests were made by nearby inhabitants against the dust at temporary access road to the construction site and the contamination of their wells which was caused by construction workers waste water. Compensation was given by the contractor to those affected. Regular watering to the temporary access road was conducted and filtering devices were installed at the contaminated wells.

It was also found at the evaluation time that the pond near the drainage of the fueling facility area was contaminated. It is likely that the surface drain, not the drain water from the fueling system area, flowed into the pond. The surface drain includes some oil even after the purification as the purifying system is quite simple. The implementing agency confirmed that PT. Pertamina had a plan to add one more water treatment tank. PT. Pertamina is a national petroleum company and is responsible for maintenance of the fueling facility at Palembang Airport.



Figure 4 Fuelling System Built by the Project.



Figure 5 Maintenance and Control Building Built by the Project

3.4.2.2 Land Acquisition and Resettlement

At the appraisal time, the implementing agency had already been discussing the resettlement compensation for residents with the Air Force, then the owner of the land. Also, residents in the neighbourhood had built an incinerator made of bricks near the area destined for the runway for which the compensation money had already been paid.

Approximately 60 households (150 people) resided in the land to be acquired for the project. DGAC was negotiating with these people based on the regulation No.55 of 1993 President Decree over compensation of the land (42.6ha). Compensation payment for the houses/land (about 3.3 billion Rp.) was completed in 1997.

Before the commencement of the Project, land acquisition and compensation payment had been completed by AP-II. At the initial stage of construction works, however, the contractor was disturbed by some farmers who were not satisfied with crop compensation amount and continued to cultivate crops within the airport boundary. The issue was settled by AP-II by additional payment of compensation.

It could be concluded from above that the project had brought some positive impact and limited adverse impact.

3.5 Sustainability (Rating: b)

3.5.1 Structural Aspects of Operation and Maintenance

PT. Angkasa Pura II was responsible for maintenance of major facilities of Palembang Airport both at the time of appraisal and evaluation. There were 246 employees at the evaluation time, of which 203 were involved in operation and maintenance of the airport. AP-II operates 12 airports in the western part of Indonesia and owns experienced engineers specialized in airport operation. Therefore, there seemed no serious problem in its structural aspect of operation and maintenance. Nonetheless, AP-II employees at the airport claimed shortage of engineers at the interview, which could be improved in the future.

The fueling system built by the project had been transferred to PT. Pertamina (Persero) after the project completion and this national petroleum company has been in charge of operation and maintenance of the system since. PT. Pertamina also operates similar facilities at many other airports in the country and has no problem as the system operator.

The following is the organization chart of Palembang Airport. The Operation Department and Engineering Department are responsible for operation and maintenance of the airport.

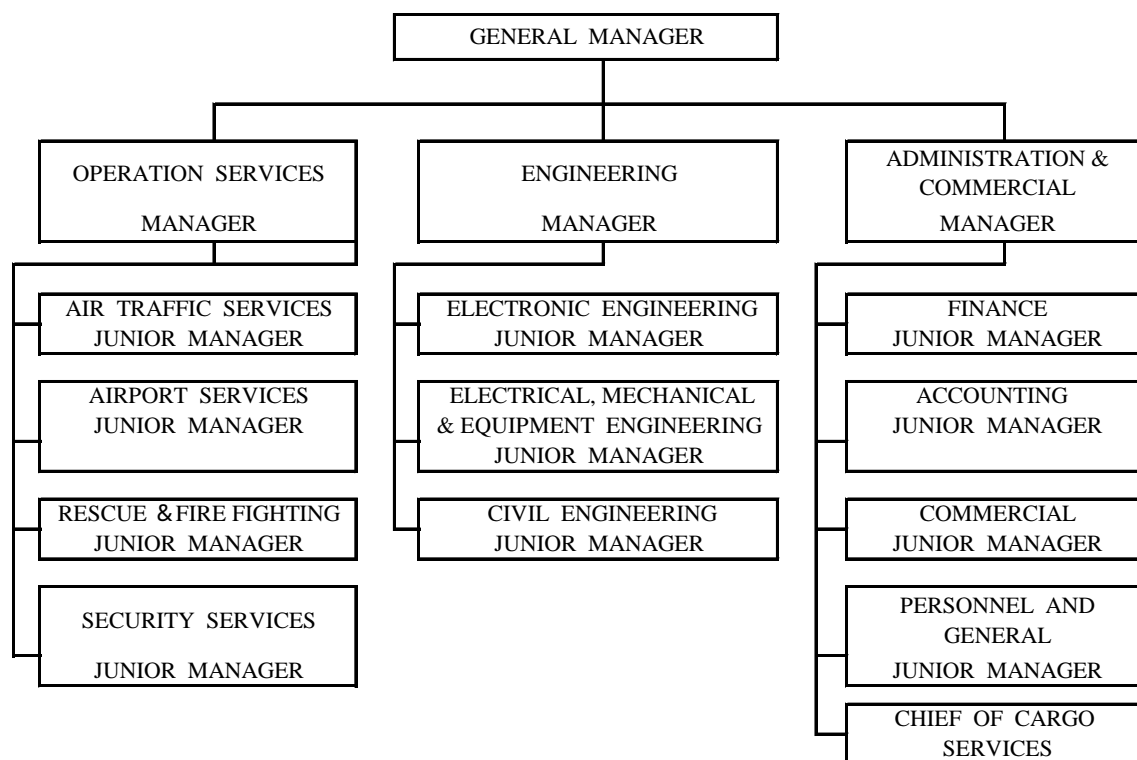


Figure 6 Organization of Palembang Airport

3.5.2 Technical Aspects of Operation and Maintenance

The implementing agency provides to its employees training and seminars on basic airport facilities (grass cutting, cleaning of drainage, repairing of pavement and signs and equipment inspection). The engineering department of the headquarter's, sometimes together with private specialists, provide O&M training of more specialized equipment including air navigation system and radio equipment.

The site survey found rain leaks from the roofs of some buildings. The water-proof coating on the roofs, which in general require regular repairing, had not been repaired not even once since the buildings were constructed by the project. It is possible that the engineers capable of maintaining the buildings are in short and there seems to be a need to compile a manual on O&M of the buildings.

There was no problem in O&M of basic airport facilities, air navigation facilities or radio equipment as grass cutting, cleaning of drainage, repairing of pavement and signs and equipment inspection are

implemented regularly.

3.5.3 Financial Aspects of Operation and Maintenance

Table 4 summarizes operation and maintenance costs of Palembang Airport in 2007-2009.

Table 4 O&M Costs of Palembang Airport (Rp. million)

	2006	2007	2008	2009
Personnel	18,588	19,312	21,688	23,657
Operation	8,798	9,319	10,715	7,638
Maintenance	4,624	5,013	4,064	6,837
General	4,133	1,570	1,911	5,664
Depreciation	48,408	49,222	50,876	53,793
Total	84,552	84,436	89,254	97,589
O&M Costs to Initial Investment Costs (%)	-	0.7%	0.5%	0.6%

The ratio of O&M costs to initial investment costs is O&M costs is 0.5% to 0.77% in 2007-2009, lower than the adequate level of 1.5% - 2.0%⁵. AP-II also considers that the O&M budget is not sufficient.

3.5.4 Current Status of Operation and Maintenance

Table 5 summarizes current status of O&M of Palembang Airport.

Table 5 Current Status of O&M

	Frequency	Implementer
Grass cutting	Everyday	AP-II or outsourcing, depending on locations
Runway cleaning	Everyday	AP-II
Pavement repairing	As necessary	AP-II or outsourcing, depending on volume
Sign repainting	As necessary	AP-II or outsourcing, depending on volume
Drainage cleaning	As necessary	Outsourcing
Building cleaning	Everyday	Outsourcing
Building repairing	As necessary	AP-II or outsourcing, depending on volume
Equipment adjustment	Twice a year	AP-II
Equipment repairing	As necessary	AP-II
Communication equipment adjustment	Twice a year	Government (DGCA)
Communication equipment repairing	As necessary	AP-II
Light adjustment	Twice a year	Government (DGCA)
Light repairing	As necessary	AP-II
Adjustment of meteorological equipment	Twice a year	Government (Ministry of Meteorology)
Repairing of meteorological equipment	As necessary	Government (Ministry of Meteorology) or AP-II

⁵ The ratio of 1.5% to 2.0% is generally used in feasibility study of airport investment projects. It should be noted that maintenance costs in Table 4 include not only the maintenance costs for project facilities but also for non-project facilities. It is not possible, therefore, to make a simple comparison.

Fundamental airport facilities were maintained well though the building roofs started to deteriorate in some parts. The parking lot and the drainage near the terminal building were not cleaned well and would require some repairing. It is presumed that AP-II does not have sufficient number of engineers to maintain these facilities.

Some problems have been observed in terms of technical aspects of operation and maintenance, therefore sustainability of the project is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The number of passengers at the Palembang Airport was higher than the original estimate, 2.8 times for domestic and 50% for international routes per annum in 2005-2009 after the project implementation. The project has enabled the large-sized jets to land on and depart from the extended runway. It could be said therefore that the project's effect had been fairly high. Moreover, the project has contributed to efficiency and revitalization of South Sumatra by reducing travelling time and increasing travel expenses of passengers.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendation

4.2.1 Recommendation to the Executing Agency

The building roofs are not maintained well and many buildings have the problem of rain leaks. The parking lot surface has started to deteriorate. In order to maintain the project impact, it should be required to repair building roofs, clean the parking lot and drainage near the terminal building as well as to provide training to the engineers. It would be also necessary to increase the number of engineers in order to fully carry out the maintenance and operation of the airport.

4.2.2 Recommendation to JICA

None.

4.3 Lessons Learned

1) The roofs of the buildings constructed by the project are flat, which is not very typical shape for roofs in the region. The implementing agency lacks skills and experience required for maintaining this type of flat roofs and therefore the roofs suffer from rain leaks. In constructing a structure not so typical in a project region, it should be important to study its appropriateness from the point of operation and maintenance after the implementation.

2) The completion of this project was delayed by approximately 2 years. It was mainly because the

implementing agency took time in discussing whether the consultant should be selected by non-bid or bid contract. It should be important for implementing agencies to discuss in detail and reach on selection method of consultants in advance of consultation with JICA.

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1.Project Outputs	<p>Runway Improvement:2,200m x 45m Extension:300m x 45m</p> <p>Taxiway:597m Apron:387.5m x 273.5m</p> <p>Roads Apron connection:6,580 m² asphalt Access road:2.0km Airport perimeter road:8km Stormwater drainage system Car parking:439 cars Security fence:12,880m</p> <p>Terminal building Passenger:13,964 m², 2-storey RC structure Cargo:2,310 m², 1-storey steel structure</p> <p>Control tower and administrative building:2,231 m², 33.1m high Hangar:2,132 m², 1-storey steel Maintenance and admin. building:1,886 m², 1 storey steel Fire station:608 m², 1 storey RC Power station:1,526 m² Others (Drivers waiting shed, pray room)</p> <p>Radio navigation aids (ILS CAT I, NDB, Locator) Aeronautical telecommunication systems (VHF A/G TX/RX, ATIS, ATS/DS, ADS consoles, APP consoles, AMSC/AFTN, recorder) Airfield lighting systems and Meteorological observation systems</p> <p>Power supply system Water supply system (Deep well, water reservoir x 2 (320cu.m)) Sewage system (oxidation pond with imhoff tank) Telecommunication system (Microwave link 100 lines) Rescue and fire fighting service</p>	<p>No change No change Repair of runway and taxiway was added. Sliding slope remedial works were added. No change 410m x 1333.5m</p> <p>8,200 m² concrete 2.2km 5,890m No change 433 cars 2,660m</p> <p>23,300 m², 3-storey RC + SRC + Steel structure 3,403 m², 2-storey steel + RC structure</p> <p>2,420 m², 29.8m high Cancelled 1,987 m², 1-storey RC+steel</p> <p>920 m², 2-storey RC 1,863 m² Others (Drivers waiting shed, pray room, security building, water supply station, shed for NAV/COM, etc.)</p> <p>(ILS CAT I) Added:HF TX/RX</p> <p>No change No change No change Existing pond, reservoir (1,080cu.m) Closed-type Optical fiber 200lines</p>

	(RIV x 1, major vehicle x 2, commander car x 1, ambulance x 1) Fuel system (fuel tank x 4, 580 kl)	(RIV x 0, major vehicle x 3, commander car x 1, ambulance x 1) (fuel tank x 4, 720 kl)
2. Project Period	December 1998 - September 2006 (94 months)	January 1998 - September 2003 (69 months)
3. Project Cost		
Amount paid in Foreign currency	7,311 million yen	8,091.6 million yen foreign 8,332.1 million yen
Amount paid in Local currency	8,470 million yen (162,882 million Rupiah)	1,702.1 million yen (138,543.4 million Rupiah)
Total Japanese ODA loan portion	15,781 million yen 8,826 million yen	9,793.8 million yen 8,085.6 million yen
Exchange rate	Rp 1.00=¥0.052 (June, 1996)	Rp 1.00=¥0.0123 (Average between January, 2000 and December, 2006)

II. The Republic of the Philippines

“ The Philippines: Selected Airports (Trunkline)
Development Project (I) & (II) ”

1. Project Description



Project Location Map



Passenger Terminal Built by the Project
(New Bacolod Airport)

1.1 Background

The air transportation grew rapidly in the Philippines during the decade between the end of 1980’s and early 1990’s (passengers 40.5% and cargos 89.8%). Development of air transportation (both passengers and cargos) was considered as one of the key factors to achieve economic growth and it was expected to play an important role for the country consisting of more than 7,000 islands. The country had 90 airports managed by the government (7 international airports, 12 trunkline airports serving the transportation between large cities, 37 regional airports between large cities and medium-sized cities and 34 branch line airports between medium-sized cities and small cities.) The Government of the Philippines had so far made large investment mainly for international airports such as Manila, Cebu and Davao. The government had an intention to develop 13 regional airports (one airport at each of 13 regions in the nation) to satisfy ICAO (International Civil Aviation Organization) standards and advices. At the time of appraisal, there was no development plan for Bacolod airport (the 6th largest in the country in terms of number of domestic passengers) or Tacloban airport (8th) and improvement of these existing airports had become an urgent issue.

1.2 Project Outline

The project objective is to satisfy increasing air traffic demand and operational safety requirements at Bacolod airport by constructing a new airport and providing urgent repairing to the existing airport, and at Tacloban airport by expanding the airport, thereby effectively contributing to economic

development¹ in respective regions.

Approved Amount/ Disbursed Amount	(I) 5,728 million yen, (II) 11,743 million yen / (I) 2,335 million yen, (II) 6,437 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	(I) Sep. 1998, (II) March 2001/ (I) Sep. 1998, (II) May 2001
Terms and Conditions	(I) Interest Rate: 2.2% Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General Untied ----- Consulting Services: Interest Rate: 0.75% Repayment Period: 40 years (Grace Period: 10years) Conditions for Procurement: General Untied (II) Interest Rate: 2.2% Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General Untied ----- Consulting Services: Interest Rate: 0.75% Repayment Period: 40 years (Grace Period: 10years) Conditions for Procurement: Bilateral Untied
Borrower / Executing Agency(ies)	Government of the Republic of the Philippines / DOTC(Department of Transportation and Communications) ² (The operating agency is CAAP (Civil Aviation Authority of the Philippines) at the evaluation time.
Final Disbursement Date	(I) May 2006, (II) September 2008
Main Contractor (Over 1 billion yen)	Takenaka Corporation (Japan) / ITOCHU Corporation (Japan) (JV)
Main Consultant (Over 100 million yen)	Pacific Consultants International (Japan)
Feasibility Studies, etc.	“Feasibility study on Iloilo and Tacloban Airport Development” , JICA, January 1997; “Feasibility Study on Bacolod Airport Development”, JICA, March 1997
Related Projects (if any)	“Master Plan on Development of Bacolod, Iloilo, Tacloban and Legazpi Airports”, JICA, May 1996; Detailed Design of New Bacolod Airport, JICA, March 2000; JICA Specialist assigned at Air Traffic Control at DOTC

¹ The project objective is changed to “contribution to economic development” here in order to clarify the impact.

² DOTC-ATO (Air Transportation Office, Department of Transportation and Communication) had been in charge of operation and maintenance of the project till March 2008, when it became an independent public corporation called CAAP (Civil Aviation Authority of the Philippines).

2 . Outline of the Evaluation Study

2.1 External Evaluator

Rie KAWAHARA, R-Quest Corporation

2.2 Duration of Evaluation Study

Duration of the Study: March, 2010 – December 2010

Duration of the Field Study: June 8, 2010 – June 19, 2010; September 22, 2010 – September 30, 2010

2.3 Constraints during the Evaluation Study

DOTC-ATO (Air Transportation Office, Department of Transportation and Communication) became a public corporation called CAAP (Civil Aviation Authority of the Philippines) in March 2008. CAPP was still in the process of restructuring the organization at the time of evaluation. Therefore the evaluator was unable to obtain sufficient information, especially financial data of ATO and was not able to make a sufficient evaluation of financial sustainability.

3 . Results of the Evaluation (Overall Rating: B)

3.1 Relevance (Rating: a)

3.1.1 Relevance with the Development Plan of Philippines

At the Time of Project Appraisal:

The government of the Philippines targeted at economic growth by modernizing transportation infrastructure and facilities and promoting exports by air in the Medium-Term Philippine Development Plan (1993-1998). Development of airport network and facilities was an important issue for the country.

At the Time of Project ex-post Evaluation:

The government of the Philippines had the Medium-Term Public Investment Programme (2004-2010), in which both Bacolod and Tacloban airports in the central region were selected as priority airports for development in order to make efficient transportation between islands. Also, JICA' s Master Plan on Nation-wide Airport Development (March 2006) targeted for 2025 had three objectives including improvement of safety and security of air transportation services, improvement of efficiency in airport services and realization of sustainability of airport operation.

3.1.2 Relevance with the Development Needs of the Philippines

At the time of Project Appraisal:

Air transportation's share to total domestic transportation increased sharply between 1986 and 1995 in the Philippines and air transportation development was considered as one of the factors for economic development. It was expected that air transportation, both passengers and cargos, would play an important role as economy and income increase in this country consisting of over 7,000 islands.

Under these circumstances, development of Bacolod airport, 6th airport in terms of number of domestic passengers (320,000) in 1994, located in Negros Island, and Tacloban airport, the 8th with 240,000 domestic passengers, located in Leyte Island, became an important issue to be solved. While the demand increases, facilities and equipment of both airports were very old. As there was an urgent need to improve the situation from the point of air transportation management, a JICA Master Plan study was carried out to improve 4 trunkline airports including Bacolod and Tacloban in May 1996. Based on the Master Plan, the Government of the Philippines and JICA respectively implemented a feasibility study of development of Tacloban airport and Bacolod airport in 1997.

The study recommended that a new airport should be constructed in Bacolodo. There was a serious problem for safety at the existing Bacolod airport as the surrounding area became urbanized with building nearly as high as the height limit for approaching airplanes. The truckline road just behind the airport terminal was also a concern for the safety. On the other hand, the study concluded that the terminal area should be moved to the adjoining land for Tacloban airport.

This project planned to construct about 60% of the new Bacolod airport in Phase I and the remaining in Phase II. It also planned to carry out a detailed design in Phase I and make construction in Phase II for Tacloban airport.

At the time of Project ex-post Evaluation:

Air transportation in the country increased more than the original estimate on back of price competition amongst airline companies and its importance has increased further. Air traffic increased sharply at the new Bacolod airport. There were three flights per day between Manila and Bacolod and 5 flights between Cebu and Bacolodo at the old Bacolod airport before 2006. But respective number of flights increased to 5 and 7 flights at maximum in 2010 at the new airport. Total traffic was 9,556 flights and 1.1 million passengers in 2009.³

The Phase II construction work at the Tacloban airport was cancelled and only equipment procurement for urgent improvement was implemented due to budget shortage of the government of the Philippines, despite the need to improve airport facilities and equipment to meet increasing traffic demand and to improve safety. In 2009, the government of the Philippines, based on the revision of the detailed design, implemented runway re-pavement and civil engineering work for the new terminal

³ It is not possible to make the comparison as traffic data of old Bacolod airport data for 2000-2006 was not made available to the evaluator. However, 1995 actual data is 37,200 passengers and 2,444 flights in 1995 according to the 1995 Master Plan report. It could therefore be said that that passengers and flights increased by nearly three times and four times respectively over 14 years.

building to be constructed in the future. Traffic demand was strong with 7,752 flights and 89200 passengers at Tacloban airport in 2009. Equipment procured for urgent improvement scheme such as X-ray inspection contributed to improvement of safety and reduction of time⁴.

This project prioritized construction of the new Bacolod airport to improvement of Tacloban airport, which could be considered as reasonable decision as traffic demand at the new Bacolod airport increased rapidly.

As for cargo transportation, demand has been weaker than the original estimate of 1990's at both airports due to Asian economic crisis and lengthened world-wide economic downturn. Nevertheless, recent cargo volume shows a sign of improvement in Asian region.

3.1.3 Relevance with Japan's ODA Policy

At the time of project appraisal in 1998, Japan's ODA policy toward the Philippines listed sustainable economic growth as one of the development issues for the country. It also listed "reinforcing economic structure for sustainable economic growth and overcoming constraints for economic growth" as one of the development aide policies for each important sector and issue and pointed out importance of the traffic infrastructure development for the country consisting of many islands.

This project has been highly relevant with the Philippines' development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Efficiency (Rating: b)

3.2.1 Project Outputs

The project output is summarized in the below table.

4 Actual traffic data was 258,000 passengers and 3,094 flights in 1995 at Tacloban airport according to 1995 Master Plan report. The growth was almost 3.5 times for passengers and 2.5 times for flights over 14 years' period.

	Plan	Actual
(1) Construction of New Bacolod Airport		
Civil Works	Runway (2,000 m x 45 m, 7.5 m shoulder) Taxiway (678 m x 23, 10.5 m shoulder) Apron (passenger : 33,657 m ² , general 6,720 m ²) Road (3,350 m), Parking lot (320 cars, 15,428 m ²) Airport peripheral fence (12,880 m)	No change No change No change No change 17,880m
Architectural Works	Terminal buildings Passengers:6,180m ² Cargo: 1,660 m ² Control tower/administration building:1,000 m ² Others (fire truck car park, fire fighting equipment, power supply building, communication facility building, security staff building)	Basically no change No change No change No change
Air Navigation System	Radar navigation facility, air traffic control communication facility/equipment, airfield lighting facility/equipment, meteorological facility	No change, apart for addition of taxiway markers to the original equipment list.
Supporting Facilities	Power supply system: Water supply facility Sewage facility Fuel supply facility	An urgent power voltage stabilizer and an uninterruptible power supply were added. Water filtering facility was added. A drain construction was added. Cancelled
(2) Construction of New Bacolod Airport		
Civil Works	Runway (2,140 m) Taxiway improvement Apron improvement Other facilities (courtyard road and parking lot)	All cancelled
Architectural Works	Construction of terminal building Construction of cargo terminal Construction of control tower	All cancelled
Air Navigation System	Improvement of air traffic security facility and equipment (radio, radar and airfield lighting)	All cancelled
(3) Urgent Improvement		
Old Bacolod Airport	X-ray equipment (4 units) Vehicles (1 grass mowing tractor, 1 dump truck, 1 runway cleaner and 3 fire trucks)	No change
Tacloban Airport	Re-pavement of the runway Construction of peripheral fence X-ray equipment (4 units) Vehicles (1 grass moving tractor, 1 dump truck and 1 runway cleaner and 3 fire-fighting cars)	No change Cancelled Changed to 2 units No change



Figure 1 Control Tower Built by the Project (New Bacolod Airport)



Figure 2 Passenger terminal and Check-in Counter (New Bacolod Airport)

Some changes in output were caused by unexpected external factors, which should be taken into account in evaluating the project. For instance, airport security became severer to satisfy international standard and advices in the Philippines due to the simultaneous multiple terrorist acts in the US in 2001. This, in turn, caused the change in the project's original output design. Improvement of Tacloban airport was suspended due to budget constraint policy of the Philippines implemented in and after 2003. The government made a priority list of implementing projects and the Tacloban airport project was low on the list. Nonetheless, as discussed above, the government did carry out preparing work for improvement of Tacloban airport on its own budget in 2009, which shows that the planning itself was reasonable.

The following changes were made in civil and construction works and equipment procurement from the planning stage to implementing stage.

3.2.1.1 Construction of Bacolod Airport

(1) Civil Works

Sewage drain construction was added to the project based on the design re-calculation as the original design calculation on ground and drainage was found out to be mistaken. The peripheral fence was redesigned and made longer in order to increase airport security, following 2001 terrorist acts in the US. Due to these changes, the security facility of the airport could satisfy the international standards recommended by ICAO.

(2) Buildings

The floor material of the passenger terminal building was changed from lumber to stone, which resulted in saving of maintenance costs.

(3) Air Navigation Facility/System

Airlines insisted, during the project implementation period, the need for installing markers at the

access area from the runway to the taxiway in order to secure safety for taxing aircrafts. The taxiway markers were therefore added to the project.

(4) Power and Fuel Facilities

The original plan was that Central Negros Electric Cooperative (CENECO), a private local electricity supply company, would construct a substation during the project's construction period to supply power for the project. However, it was not constructed and the project added SLF series transient voltage surge suppression and an uninterrupted power supply (UPS). There was no formal contract signed between the implementing agency and this company regarding the substation construction.

At the time of evaluation in September 2010, CENECO was constructing the substation as originally planned. It should contribute to stabilization of power voltage for the airport when it starts operation.

The fuel supply facility was cancelled. It was considered as a standard facility required for airport construction according to the 1996 Master Plan and Feasibility Study. Refueling was also considered necessary for the airplanes in operation at Bacolod airport at that time. Airplanes, however, became more fuel efficient since then and refuelling the aircrafts was no longer required. Cancellation of the fuel supply facility resulted in reduction of project costs by 9.28 million yen.

3.2.1.2 Improvement of Tacloban Airport

Cancellation of Tacloban airport improvement project was made as it became difficult for the Philippines government to provide its part of fund due to constraint budget policy of 2003-2004. The implementing agency had to revise the priority of projects both undergoing and planned. And construction of the new Bacolod airport and Iloilo airport⁵, another yen-loan project, were given higher priority to Tacloban airport improvement, based on negotiation between the government of the Philippines and Japan. Tacloban airport project was formally cancelled in September 2008 by the government of Philippines.

The direct reason for cancellation of the project was financial reasons on the part of the government of the Philippines. But, there was also an indirect reason, which was slow redevelopment of the new community for the residents to be transferred. The government of the Philippines planned for transfer of neighboring residents living near the airport to other area and redevelopment of the new community⁶ and the Tacloban City was to provide land for this. However, it did not proceed as planned⁷ and the Tacloban project itself was suspended since 2004.

The need for improvement of airport facility and equipment was strong at Tacloban airport in order to

⁵ "New Iloilo Airport Development Project" (E/N and L/A in August 2000)

⁶ National Housing Authority (NHA)

⁷ It was confirmed from the interview at evaluation survey that the Tacloban City Council opposed to community redevelopment and thus Tacloban airport improvement was suspended. The project was cancelled later on and accordingly as community redevelopment was not implemented.

secure safety and convenience to meet increasing air traffic. The project (mainly Phase 4) was cancelled. However, the government of the Philippines did re-pavement work of the runway and partial civil engineering work as the base for the new terminal building to be made in the future in 2009.

3.2.1.3 Urgent Improvement

(1) Old Bacolod Airport

The old airport was closed as the new airport started operation. The equipment procured under urgent improvement project was all transferred to the new Bacolod airport. There was no change in procuring materials.

(2) Tacloban Airport

The peripheral fence was cancelled and the number of X-ray inspection equipment decreased from 4 units to 2 units. These X-ray inspection equipment and other materials were found to be operational at the time of evaluation.

3.2.2 Project Inputs

3.2.2.1 Project Period (Sub-rating: b)

The project period was longer than planned. It was longer than the plan by 39%. There were, however, unexpected external factors to prolong the project period.

The project period was 107 months from September 1998 (LA signing) to July 2007 (completion of construction of new Bacolod airport) in comparison to the original plan of 77 months from September 1998 (sign of LA) to January 2005 (up to completion of construction of Tacloban airport) The actual project period was 30-month longer than the plan.

The main reason for the delay was caused by delay in construction and material procurement of the new Tacloban airport due to the following reasons. There were unexpected external factors such as 2001 multiple terrorist attacks in the US, which made change the specifications of the project in order to reinforce the airport security and meet the international standards.

The period of consulting services was extended following changes in design and tender documents and it required long time to reply to the questions made by applying companies.

It required longer time than planned to go over legal procedures to change land ownership as some of the land was owned by people residing abroad.

The construction site was attacked and some construction equipment was damaged in October 2008, which forced temporal suspension of the construction.

There was need to change the design of peripheral fence and drainage to reinforce airport security recommended by ICAO after the simultaneous multiple terrorist attacks in the US.

3.2.2.2 Project Cost (Sub-rating: a)

The project cost was lower than planned.

The original project cost was 12,184 million yen in Phase I (1998) and 15,260 million yen (2001), totaling to 27,444 million yen. The total project, however, was revised to 23,294 million yen at the beginning time of Phase II (2001) following revision of project cost of Phase I (1998). As explained above, data for civil engineering works for Phase I was revised, fuel supply facility was cancelled and there was delay in tender procedure (2001). Accordingly the project process was delayed and some works were transferred from Phase I to Phase II.

Therefore, the present evaluation reasonably assumes revised total project cost (23,294 million yen) as the original plan. The actual project cost was 13,758 million yen, or a mere 59% of the original cost. It was mainly due to reduction in project output following as cancellation of improvement of Tacloban airport and cancellation of construction of fuel supply system for New Bacolod airport. For reference, evaluation of project costs excluding these cancellations is made below. In this case, actual project costs (13,758 million yen) were almost 100% of the original estimate of 13,538 million yen. There were other changes than above two major changes to the project such as cancellation and thus this calculation should be treated only as reference.

+ The original project cost (23,294 million yen)
Combined estimated construction costs of fuel supply system for New Bacolod airport and estimated project costs and part of consulting services⁸ of Tacloban airport (9,756 million yen)
= 13,538 million yen (The original project cost excluding above two major works)

Although the project cost was lower than planned, the project period was longer than planned, therefore efficiency of the project is fair.

3.3 Effectiveness (Rating: a)

3.3.1 Quantitative Effects

3.3.1.1 Results from Operation and Effect Indicators

Table 1 and 2 show comparison of original plan and actual number of traffic at Bacolod airport. The original estimate is based on the demand forecast of JICA Master Plan Study of 1996.

⁸ A part of consulting services spent in prior to the formal cancellation of Tacloban airport improvement project is excluded from the planned project costs.

Table 1 Air Traffic of Bacolod Airport – Forecast and Actual (Thousand)

	Estimate*			Actual**	
	1995	2005	2009	2008	2009
Domestic Passengers (Thousand)	372	1,003	1,175	841	1,099
Cargo (Thousand)	7,581	15,600	15,872	8,269	11,674
Annual number of flights	2,444	7,060	7,792	7,879	9,556
Peak-time flights per day	280	630	830	N.A.	N.A.
Peak-time flights per hour	2	3.9	4.5	N.A.-	N.A.

* Completion goal: June 2004

**Actual completion: July 2007, operational in January 2008

Source: CAAP

Note: The estimate for 2009 is calculated by the evaluator based on M/P forecast for 2005-2015 made in 2006.

Actual domestic passengers of 1,099 thousand in 2009 were almost in line with the original estimate of 1,175 thousand. Actual annual flights were 9,556, or higher than the estimate of 7,792 in the same year. Increase in passengers was principally brought by price competition amongst airline companies. Increase in number of flights was brought by the policy of airlines to fly small jets more frequently. The project

As for cargo, actual volume of 11,674 ton was lower than the plan of 15,872 in 2009. The implementing agency considers that the original estimate was too optimistic and the demand became sluggish affected by Asian Economic Crisis. It was also mentioned that inland sea transportation was further developed and price competitiveness of sea transportation still remained especially for agricultural products such as sugar canes, which are the main product in West Bisaya Region. Nonetheless, all in all, it could be said that the implementation of Bacolod airport project enabled to satisfy increasing traffic and to provide required services.

As for Tacloban airport, actual passengers and flights were higher than planned in 2009 as price competitiveness increased. The project contributed to improvement of safety and convenience at the airport.

Table 2 Air Traffic of Tacloban Airport – Forecast and Actual (Thousand)

		1995	2005	2008	2009
Domestic Passengers (Thousand)	Plan	258	655	740	768
	Actual	N.A	329	626	892
Cargo (Thousand)	Plan	2,881	5,600	6,320	6,560
	Actual	N.A	3,507	4,546	5,019
Annual number of flights	Plan	3,094	5,010	5,525	5,698
	Actual	N.A	4,440	N.A	7,752
Peak-time flights per day	Plan	280	480	516	528
	Actual	N.A	N.A	N.A	N.A
Peak-time flights per hour	Plan	2.0	3.2	4.4	4.5
	Actual	N.A	N.A	N.A	N.A

* Completion goal: January 2005

Source: CAAP (2010), JICA M/P on 4 Trunkline Airports (1996)

Note: Improvement project of the Tacloban airport was cancelled and only equipment procurement was implemented under the scheme of urgent improvement. The estimate for 2009 is calculated by the evaluator based on M/P forecast for 2005-2015 made in 2006.

3.3.1.2 Results of Calculations of Internal Rates of Return (IRR)

Table 3 summarizes financial internal rate of return (FIRR) and Economic internal rate of return (EIRR) of the New Bacolod airport project. The methodology for IRR calculation at the time of appraisal was not available.

FIRR was 6.2% at the appraisal time and was 2.7% at evaluation time. Although the simple comparison would not be adequate, the reason for lower IRR should be increased project costs including land acquisition cost and construction of detour and increased operation and maintenance costs.

EIRR was reasonable at 16.7% at the evaluation time due to travel time reduction, tourism income and cargo income.

Assumptions for IRR calculation at evaluation time:

Project period 25 years, base year 2008, depreciation period 30 years and 10% annual increase in revenues

Table 3 IRRs at New Bacolod Airport

	At Appraisal Time	At Evaluation Time
FIRR	6.2%	2.7%
Financial Costs	Project costs and incremental operation and maintenance costs	Construction, equipment, materials, O&M costs, indirect costs such as personnel costs, utility costs
Financial Revenues	Incremental revenue	Aeronautical revenues and fixed assets
EIRR	N.A.	16.9%
Economic Costs	N.A.	Construction, equipment, materials, O&M costs, indirect costs such as personnel costs, utility costs
Economic Benefits	N.A.	Reduced travel time for passengers switching from ship and land transportation to air transportation, tourism income, cargo revenue

3.3.1.3 Qualitative Effects

The project appraisal expected improvement of safety and convenience in air transportation as qualitative effect of the project.

It was confirmed from the interview with the air traffic controllers at the New Bacolod airport that safety in air transportation was improved by installing new aeronautical navigational system, increasing parking space for 5 aircrafts at the apron (previously space for only 3 aircrafts) and having no obstacle such as high buildings for approaching airplanes. As for convenience, it was also confirmed from the interviews with 3 out of 4 airline companies in operation that time required for work and passenger movement was reduced thanks to new facilities, especially aerobridges and procured materials. For instance, it took on average 30~40 minutes for passengers to get off and board an airplane before but it only takes 25~ 30 minutes now, contributing to efficiency of the travel. It could also be said that airport security has improved at Tacloban airport owing to installation of new equipment such as X-ray equipment procured under urgent improvement scheme.

This project has largely achieved its objectives, therefore its effectiveness is high.

3.4 Impact

3.4.1 Intended Impacts

3.4.1.1 Impact to Project Region and Beneficiaries

It was expected at the time of appraisal that the project would contribute to economic development of respective regions. Table 4 summarized trend of GRDP in West Bisaya region, where the New Bacolod airport is located, and GDP of the Philippines . Average annual growth rate of GRDP was 5.7% and that of GDP was 4.4% in 2005-2008.

Table 4 Trend of GRDP and GDP

	West Bisaya Region		Philippines		GRDP/ GDP
	GRDP (million pesos)	Growth rate (%)	GDP (million pesos)	Growth rate (%)	
2005	87,553	-	2,774,281	-	7.2%
2006	91,858	4.9	3,339,217	5.4	7.2%
2007	98,963	7.7	3,949,421	7.2	7.2%
2008	103,145	4.3	4,954,029	3.7	7.3%
2009	109,252	5.9	5,417,983	1.1	7.6%
Average annual growth rate (2005 - 2008)	5.7%		4.4%		

Source : National Statistical Coordination Board

Note : The new Bacolod airport was completed in July 2007 and started operational in January 2008.

(1) Reduced Travelling Time for Converted Travellers

The number of passengers was 264,498 at the new Bacolod airport in 2009, which was 25% higher than in 2008. Reduced travel time for passengers switching from a bus and ferry to an airplane would be 129 million pesos in terms of money, which is equivalent to 0.1% of GRDP.

(2) Other Economic Benefits

The project also contributes to the local economy through increased tourism and cargo revenues.

The number of tourists visiting West Bisaya region increased from 25,453 in 2008 to 32,533 in 2009. Cargo volume at new Bacolod airport increased by 42% from 8,245 ton in 2008 to 11,688 ton in 2009. Increased tourism and cargo revenues would respectively be 32 million pesos and 20 million pesos, which total to 50% of GRDP of West Bisaya region in 2009.

It could be concluded from above that the project has contributed to economic development of West Bisaya region.

3.4.1.2 Contribution to Economic and Social Development in the Region

It was confirmed at the evaluation time that there were over 600 people working at the new Bacolod airport (airlines and tenants) and adjacent facilities (related organizations) in total. The number would be even greater if indirect growth in employment and salary such as those of taxi drivers are included. It could be said that the project has contributed to employment growth and economic growth.

There was review of land use in Silay city where the new Bacolod airport is located following the construction of the new airport, which contributed to promotion of commercial and industrial activities near the airport and increased land value. For instance, the agricultural land cultivating sugar canes were converted into commercial or industrial site and the land price increased by more than 10 times. There are two new hostels near the airport and there is a plan for a large super market to be built in Silay city in the near future.

Tacloban airport should also have some impact, albeit limited, to regional economy as the number of passengers is increasing.

3.4.2 Other Impacts

3.4.2.1 Impacts on the Natural Environment

At the time of appraisal, the implementing agency was in the process to obtain an environmental compliance certificate (ECC) of the Ministry of Environment and Resources of the Philippines, whose approval was given for new Bacolod airport in May 1999 and Tacloban airport in October 2000. The surrounding area of the project site for new Bacold airport was sugar cane field with no residents and there was no negative problem to natural and social environment such as noises. As for Tacloban, there was no negative impact to natural environment either as it was equipment procurement project.

3.4.2.2 Land Acquisition and Resettlement

It was considered at the time of appraisal that it would require resettlement of 35 families (legal residents) for new Bacolod airport and 70 families (legal and illegal residents) for Tacloban airport. It was planned to provide adequate compensation based on the market value to legal residents. The local government was also planning to provide resettlement land for illegal residents near the original land.

At the time of evaluation, it was confirmed that 187 hectare land was acquired for the project site in July 2007. The implementing agency made compensation to the land owners and the land ownership was completed smoothly. Also it was confirmed from the interviews with the implementing agency, Silay city and neighborhood community that the project site, which is in the suburb 5 km away from the city center, was sugar cane field. Tenant farmers were compensated by the land owners in form of money or alternative land. Some illegal residents living in the community had already moved to other places and there were no residents within the project site. Therefore, there was no resettlement or related trouble concerning acquisition of land for the project.

There was no resettlement or land acquisition for Tacloban airport as only equipment was provided to be used at the airport.

Based on above discussion, it could be said that the project had made some positive impact such as contribution to regional economic development with no negative impact.

3.5 Sustainability (Rating: b)

3.5.1 Structural Aspects of Operation and Maintenance

The implementing agency of this project was Department of Transportation and Communications (DOTC), which formulates air transportation policies, implements development projects for airports and air transportation facilities, plans public airport facilities and services and supervises private airline companies in the Philippines. And Air Transportation Office (ATO), which is a subordinate

organization under DOTC, was to be responsible for operation and maintenance of the airport. ATO had been in charge of operation and maintenance of all government controlled airports except for financially independent airports such as Manila and Cebu international airports. It therefore is considered that there is no special problem regarding operation and maintenance of the project.

ATO became a financially independent organization named Civil Aviation Authority of the Philippines (CAPP) in March 2008. CAPP operates 80 regional airports excluding 5 financially independent international airports such as Manila and Cebu international airports, formulates operation regulations regarding air transportation, inspects aircrafts and operates Civil Aviation College. Former ATO employees were transferred to CAAP. It seems necessary to reinforce the structural aspect of operation and maintenance as there is concern such as delay in responding to urgent breakdowns.

Both airports seem to have sufficient number of employees. 207 CAPP employees and 76 airport security employees are stationed at new Bacolod airport. 93 CAAP employees are stationed at Tacloban airport.

However, there seemed to be problems in communication and administrative work between the CAPP head office and these two airports. It was commented that long time was required to process administrative work in case of urgent repairs at CAPP head office, Bacolod and Tacloban airports. It also seemed that Tacloban would need an employee to operate the runway cleaner, which was acquired by the project.

From this, it could be concluded that there are slight problems in structural aspect of operation and maintenance of airport facilities.

3.5.2 Technical Aspects of Operation and Maintenance

Aerodrome Development and Management Service (ADMS) of CAPP head office adjusts requests from all the airports in the country and distributes required equipment, materials and capital to all the airports in the country, while responsibility of operation and maintenance of airports is in hand of the facility managers of each airport.

New Bacolod airport has, as operation and maintenance staff, 10 staff at electronic machinery division and 39 staff at building and ground operation division. Tacloban has 35 staff in charge of operation and maintenance of facilities and machinery. Both airports have sufficient number of staff for operation and maintenance. CAPP employees, however, learn operation and maintenance skills basically on the job training basis and there seems room for expanding existing training courses in the future

CAPP was planning to make a manual for medium and large-sized regional airports first and then another manual for small regional airports. However, the plan is being delayed.

It is expected that the manual should be made as soon as possible and the capital for repair would be distributed smoothly from CAPP to new Bacolod airport and Tacloban airport.

3.5.3 Financial Aspects of Operation and Maintenance

CAAP became financially independent organization in March 2008, as explained above.

**Table 5 Revenue and Expense of CAAP
(Million pesos)**

	2008	2009
Revenues	2,613	3,705
Main expenses		
Personnel costs	702	1,265
Operation and maintenance costs (including training)	619 (37% of revenues)	1,154 (31% of revenues)
Others	0.05	3

Source : CAAP (September 2010)

Note : Financial data of previous ATO was not made available to the evaluator.

Revenues increased from 2008 to 2009 as shown in Table 5. It is not possible to compare the financial status of the organization between appraisal time and evaluation time as financial data of previous ATO was not made available to the evaluator. However, both airports managed to increase revenues after projects were completed. Operation and maintenance costs of airport facilities and equipment are also on the rise.

CAPP adjusts annual budget of regional airports through the process of budget request and hearings and redistributes annual budget to each airport. That is to say, airports such as new Bacolod airport transfer the income to CAAP head office and do not hold the income to itself. These airports need to follow procedures to use the money for other purposes other than predetermined budget categories (for instance in case of emergent trouble of facilities and machinery). But the communication between CAAP head office and regional airports is not always smooth and this process tends to take long time. It may be partly because CAAP, being a new organization, is still in the process of building its structure.

There was a plan to entrust operation of new Bacolod and Tacloban airports to a private company at the time of appraisal, which had not yet been realized at the evaluation time.

3.5.3.1 Financial Status of New Bacolod Airport

Table 6 summarizes income and O&M costs of new Bacolod airport. Airport revenues have increased by 4.5 times from 20.6 million pesos in 2008 to 112.8 million pesos in 2009. It was mainly because the tariff was raised as its facilities met the international standards while traffic demand increased as air ticket prices lowered due to price completion among airliners. Annual O&M costs of new Bacolod,

equivalent to almost half of annual budget, are sufficient for usual O&M of the airport.

**Table 6 Annual Revenues and O&M Costs of New Bacolod Airport
(Million pesos)**

	2008	2009
Annual budget	22.1	43.9
Airport revenue	20.6	112.8
O&M costs of facilities and machinery	N.A	22.2 (51% of annual budget)

Source: New Bacolod Airport and CAAP (July 2010)

Note: Airport revenues include aeronautical and non-aeronautical revenues and other income.

3.5.3.2 Financial Status of Tacloban Airport

There has been no big change in facilities/equipment of Tacloban airport as it was not repaired by the project. Airport revenue increased from 2008 to 2009 on back of increased passengers, as shown in Table 7.

It was confirmed at the evaluation that electronic controlling unit of one out of two fire trucks was broken. There is no budget for repairing this precision unit and has not been fixed yet.

**Table 7 Annual Revenues and O&M Costs of New Bacolod Airport
(Million pesos)**

	2008	2009
Annual budget	75.3	46.0
Airport revenue	29.9	46.0
O&M costs of facilities and machinery	18.3 (24% of annual budget)	21.6 (47% of annual budget)

Source: Tacloban Airport and CAAP (July 2010)

Note: Airport revenues include aeronautical and non-aeronautical revenues and other income.

3.5.4 Current Status of Operation and Maintenance

3.5.4 .1 Current Status of Operation and Maintenance of New Bacolod Airport

It was confirmed at the evaluation that maintenance of the elevator and escalator installed by the project and the X-ray equipment procured under the urgent improvement scheme is consigned to another company while maintenance of general facilities is done by airport employees by themselves. There is no problem in maintenance and conditions of facilities and equipment seem to be good in general, except for X-ray equipment. Two of 4 X-ray equipments supplied by urgent improvement scheme were broken, which was causing trouble in passenger boarding.

The rooftop of the terminal building was originally designed in such a way that people could come up there to see the airport. However, the roof top had been closed in order to reinforce security following

2001 multiple terrorist acts in US. There is no plan to use the roof top for other purposes.

Power voltage at the airport is unstable due to power supply shortage and unstable power voltage problems prevailing in West Bisaya and the central air-condition control equipment got broken and inoperable. CAPP has secured the budget to investigate the reasons for breakdown of the central air-condition control equipment. CENECO, a private power supply company, is in the process of constructing a substation for the airport area, which is expected to solve unstable power voltage problem at the airport soon.

3.5.4 .2 Current Status of Operation and Maintenance of Tacloban Airport

It was confirmed at the evaluation survey that equipment procured by the urgent improvement scheme was maintained well in general, except for fire trucks and runway clear, which were broken. One of two fire trucks was inoperable as the electronic control was broken. The other fire truck had a problem with the engine and is also inoperable. The runway cleaner had never been used as there is no staff with adequate operation skill. The runway cleaner is also broken.

Some problems have been observed in terms of structural aspect and current status of operation and maintenance, therefore sustainability of the project is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The number of passengers and flights has increased more than the original plan at New Bacolod airport on back of brisk domestic demand in the Philippines in general. The project could satisfactorily provide sufficient infrastructure to meet this increasing traffic demand. Especially construction of new Bacolod airport could contribute to improvement in air transportation safety and airport services as well as revitalization of regional economy.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendation to the Executing Agency

(1) Personnel to Control Procured Equipment at Tacloban Airport

The runway cleaner provided by the urgent improvement scheme to Tacloban airport has not been used. The reason may be that there is no personnel assigned to the task and it is not clear how to operate it. Therefore, the executing agency should assign a technician to carry out this task regularly.

(2) A Manual to Operate and Maintain Airport Facilities and Equipment

It seems at evaluation survey time that the command line and communication between CAAP and

regional airports was not functioning sufficiently.

CAPP has been planning to make a manual for regional airports for some time but the manuals have not been made yet. It may be one of the reasons for not so efficient operation and maintenance of the airport. It is expected therefore that responsibilities be made clearer and the manual should be made as soon as possible.

(3) Organization of CAPP

It would be important for CAAP to reinforce its operational structure in order to carry out airport operation and maintenance of the airport facilities and equipment better.

4.2.2 Recommendation to JICA

None.

4.3 Lessons Learned

(1) Construction of Power Supply Facility

It was originally planned that CENECO, a private local power supply company, would build a substation for new Bacolod airport, which though was not built during the project construction period. Therefore, the airport has the problem of power voltage instability. It was confirmed at the evaluation survey in September 2010 that CENECO is building the substation near the airport, which should solve the problem of power voltage instability in the near future.

The issue of power supply, including contracts with power suppliers, should be well planned at the project planning stage for similar projects in the future, as it is vital for operation of facilities and equipment.

(2) Intrusion by Trespasser

Construction of new Bacolod airport was temporarily suspended as there was an explosion near the power generating facility caused by an anti-government group. Adequate measures should be taken for similar projects in the future in order to prevent trespassers to enter the construction site.

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs		
(1) Construction of New Bacolod Airport		
Civil Works	Runway (2,000m x 45m, 7.5m shoulder) Taxiway (678m x 23, 10.5 m shoulder) Apron (passenger : 33,657 m ² , general 6,720 m ²) Road (3,350m), Parking lot(320 cars, 15,428 m ²) Airport peripheral fence (12,880m)	No change No change No change No change 17,880m
Architectural Works	Terminal buildings Passengers:6,180 m ² Cargo: 1,660 m ² Control tower/administration building:1,000 m ² Others (fire truck car park, firefighting equipment, power supply building, communication facility building, security staff building)	Basically no change No change No change
Air Navigation System	Radar navigation facility, air traffic control communication facility/equipment, airfield lighting facility/equipment, meteorological facility	No change, apart for addition of taxiway markers to the original equipment list.
Supporting Facilities	Power supply system: Water supply facility Sewage facility Fuel supply facility	An urgent power voltage stabilizer and an uninterruptible power supply were added. Water filtering facility was added. A drain construction was added. Cancelled
(2) Construction of New Bacolod Airport		
Civil Works	Runway (2,140m) Taxiway improvement Apron improvement Other facilities (courtyard road and parking lot)	All cancelled
Architectural Works	Construction of terminal building Construction of cargo terminal Construction of control tower	All cancelled
Air Navigation System	Improvement of air traffic security facility and equipment(radio, radar and airfield lighting)	All cancelled
(3) Urgent Improvement		
Old Bacolod Airport	X-ray equipment (4 units) Vehicles (1 grass mowing tractor, 1 dump truck, 1 runway cleaner and 3 fire trucks)	No change
Tacloban Airport	Re-pavement of the runway Construction of peripheral fence X-ray equipment (4 units) Vehicles (1 grass moving tractor, 1 dump truck and 1 runway cleaner and 3 fire-fighting cars)	No change Cancelled Changed to 2 units No change
2. Project Period		

	September 1999 – January 2005 (77 months)	September 1998 - July 2007 (107 months)
3.Project Cost (Sum of Phase I and Phase II)		
Amount paid in Foreign currency	12,942 million yen	5,978 million yen
Amount paid in Local currency	10,352 million yen (3,696 million pesos)	7,788 million yen (3,417 million pesos)
Total	23,294 million yen	13,758 million yen
Japanese ODA loan portion	17,471 million yen	8,769 million yen
Exchange rate	Phase I : PHP 1 = ¥3.5 (March 1998) PhaseII : PHP 1 = ¥2.8 (January 2000)	PHP 1 = ¥2.28 (Average of 2001 to 2008)

III. The Democratic Socialist Republic of
Sri Lanka
“ Bandaranaike International Airport
Development Project ”

1. Project Description



Project Location Map



New Passenger Terminal Pier No.1 Built by the Project

1.1 Background

Bandaranaike international airport, opened in 1959 at 32 km towards the north from Colombo city and also known as Colombo international airport, is the only international airport in Sri Lanka and functions as the gateway for the country. Traffic demand has been increasing at the airport.

Many of the facilities at the airport were supplied by Japan, UK, France, Netherland and Sri Lanka between 1984 and 1988 based on the master plan compiled by the Netherland in 1981. These facilities have become very old as no major repairing work has been done since then. The taxiway and apron, in especial, were seriously deteriorate needing for urgent repair. There was also problem of safety and convenience. The airport was not equipped with a boarding bridge and passengers had to take a bus to get on board and ground staff had to walk on the apron. It also took long time to handle boarding procedures and luggage at peak hours. And it became urgent to improve safety and convenience for passengers by reducing time for boarding and alleviate the rush. It was also urgent to expand the existing cargo terminal and build a new one as the capacity could not meet increasing demand.

1.2 Project Outline

The project objective is to satisfy increasing air cargo demand and improve convenience and safety for users at Colombo international airport by repairing old facilities, modernizing air traffic control facilities and building a cargo terminal building, thereby effectively contributing to economic

development of the region.¹

Approved Amount/ Disbursed Amount	12,384 million yen / 12,055 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	July, 1999/ August, 1999
Terms and Conditions	<p>Interest Rate: 1.8% Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General Untied</p> <p>-----</p> <p>Consulting Services: Interest Rate: 0.75% Repayment Period: 40 years (Grace Period: 10years) Conditions for Procurement: Bi-lateral Untied</p>
Borrower / Executing Agency(ies)	Government of the Republic of Sri Lanka / Airport and Aviation Services Sri Lanka Ltd. (AASL)
Final Disbursement Date	December 2006
Main Contractor (Over 1 billion yen)	Taisei Corporation (Japan) /Mitsubishi Corporation (Japan) (JV) / Selex Sistemi Integrati S.P.A (Italy)
Main Consultant (Over 100 million yen)	Japan Airport Consultants (Japan) / Nippon Koei (Japan)(JV)
Feasibility Studies, etc.	<p>-M/P, NACO (Holland), January 1981 -F/S, JICA (consigned to Japan Airport Consultants), August 1997 -SAPROF, JBIC (consigned to Pacific Consultants International), November 1998</p>
Related Projects (if any)	<p>- JICA, Technical Cooperation, “The Detailed Design Study on Bandaranaike International Airport Development Project in Sri Lanka”, November 2000 - JBIC, yen loan SL-P6,” Bandaranaike International Airport Development Project”, L/A in 1983 (L/A amount 10,200 million yen), completed in 1988</p>

2 . Outline of the Evaluation Study

2.1 External Evaluator

¹ The project's objective was changed to “contribution to economic development“ in order to make the project outcome and impact clearer.

Rie KAWAHARA, R-Quest Corporation

2.2 Duration of Evaluation Study

Duration of the Study: March, 2010 – December 2010

Duration of the Field Study: June 19, 2010 – June 27, 2010; September 15, 2010 – September 21, 2010

2.3 Constraints during the Evaluation Study

This project is partial repair of the existing airport. The implanting agency continued to improve Bandaranaike international airport, including improvement of the engineering work done by this project, on its own even after the yen loan was completed.

In addition, some project outputs were changed. Thus, the implementing agency did not clearly understand the local portion of this project. Moreover, the Project Completion Report was not compiled because of difference in opinions between the implanting agency and the contractor, which made it difficult to understand the project. This evaluation is made mainly on information and data collected from the implementing agency in Colombo in June and September 2010.

3 . Results of the Evaluation (Overall Rating: A)

3.1 Relevance (Rating: a)

3.1.1 Relevance with the Development Plan of Sri Lanka

At the Time of Project Appraisal (1999):

The government of Sri Lanka announced the six-year development plan (1999 – 2004) in 1999, in which it placed importance to “accelerated economic development” and “regional hub development of international cargo infrastructure facilities” and “investment for private sector priority and economic infrastructures” were two of priority policies. The six-year development plan also specified importance of improvement and modernization of existing infrastructure facilities and expansion and facility improvement of Bandaranaike international airport was considered as important policy.

At the Time of Project ex-post Evaluation (2010):

“Mahinda Chinthana Vision for the Future” announced by the President in 2009 insisted that it was important to increase competitiveness in South Asia in handling air passengers and cargos by developing air transportation sector.

3.1.2 Relevance with the Development Needs of Sri Lanka

Many of the facilities at Bandaranaike international airport were supplied by Japan, UK, France, Netherland and Sri Lanka between 1984 and 1988 based on the master plan compiled by the

Netherland in 1981. Major improvement work has not been made since then and the runway and passenger terminal had become old and obsolete. Traffic demand was weak at Colombo airport as the country was not considered as safe due to ethnic conflict since 1980's. The airport was not equipped with a boarding bridge and it therefore was not safe or convenient for airport staff and passengers. Also, there was an urgent need to increase the cargo terminal to cope with increasing demand.

Bandaranaike international airport is the only international airport in Sri Lanka and is an important international gate-way and base for economic growth for this island country. The traffic demand is at the airport is increasing even more following the end of the civil war in May 2009.

3.1.3 Relevance with Japan's ODA Policy

Japan's ODA policy toward Sri Lanka in 1999 placed importance to the sector of "development and improvement of economic infrastructure" and sub-sectors of "development of transportation infrastructure" and "improvement of social infrastructure".

This project has been highly relevant with Sri Lanka's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Efficiency (Rating: b)

3.2.1 Project Outputs

The project output is summarized in the below table.

	Plan	Actual
Civil Works	Taxiway extension (2km to the south) Apron Repair (14,000 m ²) Extension (50,000 m ²)	1,860 m ² x 45 m ² to the south 8,900 m ² including reinforcement of 1,000m ² 59,150 m ² Addition: - Extension of Apron C to the south (45,000m ² for space for 4 airplanes) - Installation of Visual Docking Guidance System (VDGS)
Architectural Works	Passenger pier construction (19,200 m ²) Passenger terminal repair (3,000 m ²) Construction of cargo terminal (15,500m ²)	18,000 m ² No change 13,000 m ² Addition: - Access road - A storage - Security checking point at the new cargo terminal
Air Navigation	Renovation and installation of radar control system	No change No change

System	Renovation of air traffic control facility Installation of meteorological observation system Installation of HF air communication system	No change No change Addition: - High-level electronic guidance system
Supporting Facilities	Power supply facility Purifying and water distribution system Sewage disposal facility Incinerator Telephone facility	Cancelled No change No change Change in design Cancelled
Consulting Services	51 months 8 to 12 months (bidding assistance) 24 months (construction management) 12 months (defect liability period)	66 months 21 months 46 months 12 months Addition: - A feasibility study on airport expansion project (Phase II, stage 2) was implemented.



Figure 1 Moving Walk at Entrance of New Passenger (Pier 1) Built by the Project



Figure 2 New Cargo Terminal Built by Project

Main reasons for the above changes in the outputs are explained below.

There was difference in opinions between the executing agency and the contractor regarding a part of the collapse found on the taxiway surface during the defect liability period. Thus, a defect liability certificate was not published at time of the evaluation survey. It was found, however, that the contractor will remedy the problem in the near future, based on the interview with both parties.

The taxiway area needing repair was revised to be reduced based on JICA's detailed design. It was the main reason for change in volume in civil works.

The air conditioning system at the concourse of the existing passenger terminal has a problem with the control software. The executing agency has not published a defect liability certificate. The interview

with both parties revealed at the evaluation that they were in the process to solve the problem.

A part of the HF communication system is damaged due to thunder light. The executing agency was planning to replace the damaged equipment by its own budget.

Central Environmental Authority of Sri Lanka (CEA) changed some environmental standards in 2001 after completion of the detailed design. Thus there was a need to change design of the incinerator to comply with the new standards.² The design was changed in April to December 2006 based on discussion between the executing agency and the contractor in 2003-2006 to satisfy the new standards in the area of waste disposal method and equipment operation. The environmental protection license issued by CEA was already received in September 2009. The facility complying with the new standards had been found installed and in operation at the time of evaluation survey.

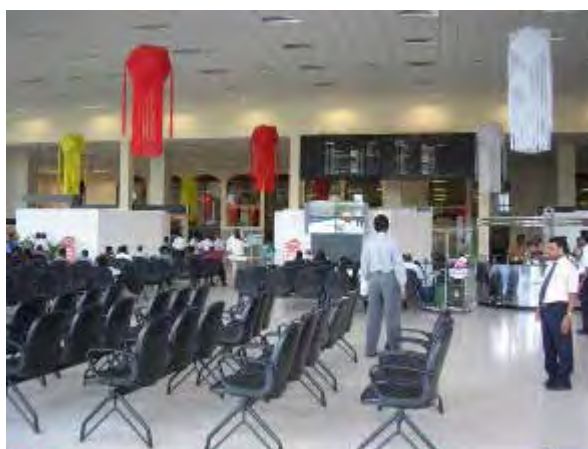


Figure 3 Arrival Hall Improved by the Project

3.2.2 Project Inputs

3.2.2.1 Project Period (Sub-rating: b)

The project period was longer than planned.

The project period was 89 months from August 1999 (L/A signing) to February 2007 (up to completion of the construction work and equipment procurement), 37% longer than the original plan of 65 months from August 1999 (L/A signing) to December 2004 (up to completion of the construction work and equipment procurement).

Main reasons for longer project period was delay in procedures and approval following dividing the work into small-scaled bids and contracts, delay in negotiation among relevant organizations, delay in construction and addition of some works. Construction of the cargo terminal was suspended for 3.5 months as it was used as the storage for emergency materials when there occurred the Indian Ocean

² Standards for incinerators include aspects such as noise, solid waste proposal method, usage of bottom ash, skills and training of personnel, disposal volume of polyethylene products, combustion efficiency, burning temperature, fuel (diesel), colour of smoke, height of chimney and cleaning.

Tsunami in December 2004. It is considered as an unexpected external factor out of control of the executing agency.

3.2.2.2 Project Cost (Sub-rating: a)

The project cost was lower than planned.

Actual project cost was 12,064 million yen (foreign 8,710 million yen and domestic Rp 3,355 million, of which yen soft loan 12,055 million yen, 12% lower than the original project cost of 14,569 million yen (foreign 10,589 million yen and domestic Rp 2,152 million, of which yen soft loan 12,384 million).

The project cost was reduced as even local construction companies participated in the bidding³ thanks to division of the work into small scaled bids and contracts. Quality of the output, however, was not low despite lower project costs as the executing agency had sufficient control capabilities. Total project cost was 10,804 lower than the plan even if there were additional work such as apron expansion and installation of visual docking guidance system (VDGS). Another reason is considered to be weaker local currency than the plan.

Although the project cost was lower than planned, the project period was longer than planned, therefore efficiency of the project is fair.

3.3 Effectiveness (Rating: a)

3.3.1 Quantitative Effects

3.3.1.1 Results from Operation and Effect Indicators

There were no indicators set up at the time of appraisal. Table 1 summarizes traffic movement based on JBIC SAPROF study in 1998 and JICA detailed design in 2000.

³ For instance, many Sri Lankan companies participated in biddings of cargo terminal construction and apron expansion work and had won the contracts against foreign companies and JV of foreign and local companies.

Table 1 Actual and Forecast Traffic Movement at Bandaranaike International Airport

		1997	2003	2007	2008	2009
Passengers (thousand)	Plan	2,319	3,663	4,861	5,161	5,416
	Actual	N.A	N.A.	4,899	4,642	4,242
Cargo (tons)	Plan	97,436	190,500	294,420	320,400	346,380
	Actual	N.A	N.A.	163,570	151,954	138,684
Flight movements	Plan	22,568	32,400	38,400	39,900	41,400
	Actual	N.A	N.A.	42,878	41,734	37,651
Peak-time passengers per day	Plan	7,259	11,630	14,980	16,380	17,220
	Actual	N.A	N.A.	N.A.	1,370	1,481
Peak-time cargo per day (ton)	Plan	301	620	964	1,050	1,155
	Actual	N.A.	N.A.	N.A.	515	567
Peak-time Flight movements per day	Plan	51	78	79	100	110
	Actual	N.A	N.A.	N.A.	123	122
Parking airplanes per day	Plan	11	16.6	20	20.5	21.6
	Actual	N.A	N.A.	N.A.	62	62

Source: SAPROF (1998), Detailed design study (2000) and AASL (July 2010)

* 2007 and 2009 figures are calculated by the evaluator based on average growth rate of 2008-2013 figures of SAPROF and DD.

**Repair Completion goal: December 2003

*** Actual completion: July 2007

Actual passengers and cargos were both lower than the plan in 2007 and 2008 as a result of aggravated civil war and world-wide economic recession. As both of these reasons were unexpected external factors and were uncontrollable by the executing agency, it would not be adequate to judge the project efficiency only based on these operation and effect indicators.

Aircraft movements and parking airplanes are increasing faster than the plan after 2008. Annual number of passengers decreased in 2009 than in 2008 but monthly figures started to recover following termination of the civil war in May 2009.

The project expected cargo demand to expand as there was prevailing estimate that air cargo in the whole Asia would expand in 1990's. However, actual growth of cargos was not as strong hit by the Asian economic crisis of 1997, the world-wide economic recession later and aggravated civil war⁴ after 2006.

Nonetheless, it could be considered that the project could provide airport infrastructure and services required to meet increasing traffic demand following the recent peace accord and stabilization of the internal affairs.

3.3.1.2 Results of Calculations of Internal Rates of Return (IRR)

Table 2 compares FIRR and EIRR of the project both at the time of appraisal and evaluation. It is not possible to make a simple comparison as calculation methodology at the appraisal time is not available and preconditions are different. The project period is assumed to be 25 years for the analysis at

⁴ The civil war between the government and anti-government force was going on for 26 years. It aggravated following annulation of the accord in 2006. The peace accord was finally concluded in May 2009.

evaluation time.

FIRR was 2.25% at appraisal but was slightly better at 2.72% at evaluation, the reason for which may be better than expected airport revenues. EIRR was sufficient at 21.3% at evaluation albeit slightly smaller than 23.5% of the appraisal and 21.3% at evaluation.

Table 2 IRRs of Bandaranaike International Airport Project

	At Appraisal	At Evaluation Time
FIRR	2.25%	2.72%
Financial Costs	Project Costs, O&M costs, administration costs	Construction costs, facility costs, equipment costs, O&M costs, indirect costs including personnel costs, utility costs
Financial Revenues	Landing and parking charges, air security facility charges, aerobridge charges, airport entrance fees, duty-free shop tenant fees, fuel charges	Various types of airport revenues
EIRR	23.5%	21.3%
Economic Costs	Project costs excluding taxes and inflation	Construction costs, facility costs, equipment costs, O&M costs, indirect costs including personnel costs, utility costs
Economic Benefits	All the above financial revenues, indirect benefits through expansion of air transportation industry and tourism industry	Travel time saving for passengers switching from ship/land to air, tourism income, cargo income

3.3.1.3 Qualitative Effects

The project appraisal expected improvement in facility users' convenience and improvement in air transportation as qualitative effects of the project.

Airliners operating at Bandaranaike international airport insisted at the interview that convenience had increased after the project. Time required for immigration process was reduced owing to construction of the new pier, repair of the terminal and installation of the terminal. Also the concourse repair made it possible for even airport visitors to enter the airport building. Moreover, convenience and safety for passengers, especially for the aged, the handicapped and small children, improved thanks to the boarding bridge as they do not need to walk or take a bus to get on board any more. The space between airplanes has been widened as the apron space was expanded. There is now less risk of airplanes having minor collisions. Airlines also commented that turnover of the airplanes increased due to shortened time required for boarding and parking and that convenience, safety and efficiency have improved in areas such as cargo handling. It is further expected that low cost carriers already operational at Bandaranaike international airport would increase flights in the future.

The executing agency records daily service operation and sets the annual service target based on the

records. Table 3 summarized such data for the year 2008. The agency achieved 95% of the target in handling boarding passengers and 97% both in handling arriving passengers and luggage pick-up. The agency also met the self-established targets in prevention of the problems in the Colombo airport air space and prevention of delay in departing and arriving airplanes. It is therefore could be said that standards of the service and convenience is maintained high at Bandaranaike international airport.⁵

Table 3 Achievement Ratio of Service Targets of AASL(2008 Actual)

Items	Targets	Achievement Ratio in 2008
Handing boarding passengers	Complete safety inspection, check-in and passport control in 40 minutes	95%
Handing arriving passengers	Complete immigration, customs and luggage pick-up within 40 minutes	97%
Luggage pick-ups	Complete luggage pick-ups in 30 minutes	97%
Prevention of problems inside the Colombo airport air space	Contain the number of accidents to less than 40 out of 100,000 flights	100%
Prevention and management of delay in departing and arriving airplanes due to the crowd	Maintain the ratio less than 6% of the total flights	100%

Source: Annual Report, AASL, 2008

This project has largely achieved its objectives, therefore its effectiveness is high.

3.4 Impact

3.4.1 Intended Impacts

3.4.1.1 Impact to Project Region and Beneficiaries

The appraisal expected that the project would contribute to development of the regional economy.

Table 4 summarizes GRDP of Greater Colombo Region, where Colombo airport is located and GDP of Sri Lanka. Both GRDP and GDP grew steadily from 2005 to 2009. The annual average growth of GDP was 6.4% during this period.

⁵ AASL announces key performance indicators to measure convenience and effect of the airport operation based on the annual plans in the annual reports.

Table 4 GRDP and GDP Trend

	Colombo Metropolitan Area	Sri Lanka		GRDP/ GDP
	GRDP (Billion rupees)	GDP (Billion rupees)	Growth rate (%)	
2005	1,065	2,453	5.4	43%
2006	1,472	2,939	6.2	50%
2007	1,664	3,579	7.7	46%
2008	2,002	4,411	6.8	45%
2009	-	4,825	6.0	-
Average growth rate (2005 - 2009)	-		6.4%	-

Source: Sri Lanka economic Update, World Bank

(1) Reduced Travelling Time for Travellers

Total number of passengers was 4.8 million at Bandaranaike international airport in 2007. Passengers decreased in 2008-2009 as the civil war aggravated. But the passengers could enjoy reduced travelling time, which is calculated as 1 billion rupees, or equivalent to 0.05% of GRDP of 2008. This benefit should grow further as the number of passengers is expected to increase after 2010.

(2) Other Economic Benefits

Bandaranaike international airport was the only international airport both at appraisal and evaluation time. International passengers increased following development and repair of the airport by the project. The number of passengers decreased from 2007 to the beginning of 2009 due to aggravation of the civil war but is expected to grow by 10% per annum from 2010 onwards. Other economic benefits, based on this estimate, are calculated to be 1.6 billion rupees in 2010 and 4.5 billion rupees in 2015.

From above, it could be said that the project has contributed to activation of the Greater Colombo Region.

3.4.1.2 Contribution to Regional Economic and Social Development

The interview with the executing agency confirmed that the number of people working at the passenger and cargo terminals has increased. The number of people working for the duty-free tenant shops has also increased as the shops increased following repair of the existing passengers. Thus, the project could contribute to the job market both directly and indirectly.

Bandaranaike international airport was the main gate for international activities such as tourism both at appraisal and evaluation. The number of tourists visiting Sri Lanka was down in 2007 and 2008, which coincides with the project construction period. It was also the period when the civil war became more serious. However, it is recovering steadily after the peace accord of May 2009. As Table 5 shows, the number of tourists for the first 9 months in 2010 was up by 28% year on year, or almost equivalent to the figure for 12 months of 2009. There came 433,000 foreign tourists in the first 6

months of 2010, up by 150% of the same period of 2009. ⁶

Table 5 Trend of Foreign Tourists Visiting Sri Lanka

	Foreign tourists (thousand)	Year on year growth rate
2007	494	-11.7 %
2008	438	-11.2 %
2009	448	2.1 %
2010 (up to September)	433	28 % (Year on year comparison)

Source: Sri Lanka Tourism Development Authority,
Key Statistic Indicators Sri Lanka Tourism 2009 and 2010

From above, it could be said that the project contributed to promotion of employment and tourism.

3.4.2 Other Impacts

3.4.2.1 Impacts on the Natural Environment

It was considered that the project would have little impact on the natural environment as it is improvement of airport facilities at the existing airport. There was no request to implement EIA for the same reason.

There was no big impact to the environment confirmed at the evaluation. There was however a clam from residents living nearby the sewage disposal facility regarding sewage water smell during the construction period. The executing agency installed a chimney to the facility for ventilation, which is considered to be an adequate measure.

Burden to the natural environment was largely reduced by installing incinerator and sewage facilities. This incinerator reduces the waste volume and produces reusable bottom ash. It is therefore more efficient and less burdensome to the natural environment than the old incinerator. For instance, daily disposal capability of the new incinerator is 1,000 tons in comparison to 6,000 tons of the old one.

The implementing agency received an EPL (environmental protection license) from CEA for the incinerator in September 2009 and sewage disposal in July 2006.

It could be considered that there was no particular negative impact of the project to the natural environment.

⁶ According to the quarterly report of UN-WTO published in April 2010, annual growth of foreign tourists was highest in Sri Lanka with 150%.



Figure 4 Incinerator Repaired by Project

3.4.2.2 Land Acquisition and Resettlement

This project did not entail land acquisition as it was improvement of facilities and equipment of the existing airport. Therefore, there was no resettlement required due to the project.

3.4.2.3 Others

AASL was able to acquire ISO9001/2008 in August 2010 as the airport's service improved and control system of the services was established following the project. Conditions for ISO9001/2008 are to satisfy customer needs and several standards and regulations as well as to provide the quality control system to satisfy customers. It could be said that the airport's social recognition and general evaluation has been improved by the project and efforts on the part of AASL.

From above, it is considered that the project had positive impacts such as contribution to regional economy development and social aspects including tourism promotion while it had little negative impacts.

3.5 Sustainability (Rating: a)

3.5.1 Structural Aspects of Operation and Maintenance

AASL is a public corporation owned 100% by the government of Sri Lanka and is under the supervision of Civil Aviation Authority of Sri Lanka both at appraisal and evaluation time.

AASL's responsibilities are specified in the air transportation regulations of Sri Lanka, as to implement operation and maintenance of the facilities, provide passenger services and conduct airport terminal tasks, air traffic control and airport security and fire-fighting activities at Bandaranaike international airport. It is the only international airport operated by AASL both at appraisal and evaluation time.

Figure 5 depicts the organizational structure of AASL, which is basically composed of three main

groups; administration, operation Bandaranaike international airport and implementation of new projects and repair, which are further divided into 8 sub-groups. The following 8 sections are in charge of technical aspects of the airport.

- Operation: Safety management, firefighting and air traffic control
- Maintenance: Airport control (maintenance and control of the all facilities and equipment), electric and machinery engineering (maintenance and control of electric and machinery equipment at the airport), electronic and airport security (security facilities and monitoring), civil engineering (maintenance and control of civil engineering facilities), IT section (maintenance of electronic control equipment)

Responsibilities of each division and the order line of AASL are clearly defined.

The number of employees was 2,300 at the appraisal as of January 1999 and increased to 3,208 at evaluation as of June 2010, of which 2,849 are stationed at Bandaranaike international airport office. The personnel increased during the past decade following expansion of the airport facilities and equipment by this project. It could be said that the project contributed to employment promotion in this aspect. Some of these newly employed are expected to work at the new international airport being built in Hambantota in the south region at present.⁷

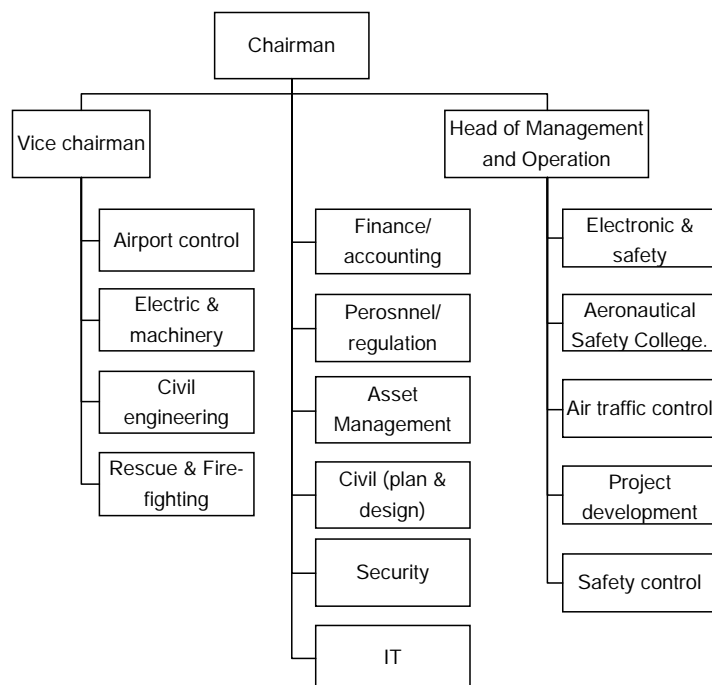


Figure 5 Organization Chart of AASL (as of September 2010)

⁷ The South international airport (provisional name), scheduled to constructed in 2012, is to accommodate air cargos and charter flights for foreign tourists.

New employment of AASL is decided based on the annual corporate plan and is implemented through approval and decision of the board. Annual reports of AASL list organizational structure and operation records.

AASL has established the organizational structure as a public corporation responsible for airport operation and maintenance and its management structure seems to be solid and sound. It could be said that there is no particular problem in structural aspects of operation and maintenance operation at Bandaranaike international airport.

3.5.2 Technical Aspects of Operation and Maintenance

The appraisal considered that AASL held sufficient skills in operation and maintenance of communication equipment for air traffic control as it owned the Aeronautical Safety College. The appraisal considered that AASL was capable of operation and maintenance of facilities and equipment provided by the project also because the skills of employees seemed sufficiently high.

There was 143 technical staff at AASL at the time of evaluation, all of which hold at least diploma or a bachelor's degree. AASL also provides training at the Aeronautical Safety College and dispatches staff to other training institutes both in and out of the country. 1,224 staff received training in the country while 85 was sent abroad for training in 2009.

Each of eight sections explained above is responsible for operation and management of facilities and equipment. Each section has complied manuals and regulations specifying how to regularly maintain facilities and equipment and checking points, in addition to manuals provided by equipment manufactures.

In summary, AASL holds enough staff with sufficient knowledge and skills. There employees are regularly provided with training in and out of the country. The executing agency is capable of handling the maintenance and breakdowns of the facilities and equipment at the airport.

3.5.3 Financial Aspects of Operation and Maintenance

AASL is a public corporation 100% owned by the government of Sri Lanka, under the supervision of Civil Aviation Authority of Sri Lanka. AASL receives a part of funds necessary for new construction and repair of facilities from the government budget. But other than that, it is financially independent.

The appraisal reports no particular financial problems with AASL. 47% of the airport income was sent to the government of Sri Lanka, while 40% was spent for operation at AASL and 13% kept as retained earnings for future investment. Apart of this airport income, AASL expected to receive tenant charges and sales right from shops at the airport as well as sales income from its own shops.

Table 6 summarizes AASL revenues in 2005 to 2010. Aeronautical revenues are composed of by landing charges, parking charges, overflight charges and airport facility charges while non-aeronautical revenues are tenant income, car parking fees, advertisement income, interest income

and lounge charges. Revenues have grown steadily in the period despite decline in air traffic volume. It shows AASL's efforts in financial management.

Table 6 Revenue Breakdown of AASL (Rp. million)

	2005		2006		2007		2008		2009	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Aeronautical revenues	1,047	38	2,990	58	3,153	50	3,176	45	3,151	45
Non-aeronautical revenues	1,710	62	2,133	42	3,162	50	3,818	55	3,814	55
Total	2,757	100	5,123	100	6,315	100	6,994	100	6,965	100

Source: AASL (2010)

Each division of AASL makes the budget request, which is adjusted and approved by the board of AASL both at appraisal and evaluation time. AASL confirmed that there is no shortage in O&M budget. Each division is allowed to make request for urgent budget such as in the case of breakdowns of machinery and equipment to monthly AASL board meeting, which then is generally distributed from AASL's non-operating budget.

As table 7 summarizes, O&M expenses account for the majority of airport revenues. It was 5,225 million rupees, or 79% of annual airport revenues in 2009. Approximately 30% of airport facility usage income is distributed to Sri Lanka Tourism Bureau to be spent for tourism promotion activities. Similarly, about 2.5% is distributed to Civil Aviation Authority of Sri Lanka to be spent for activities related to regulation and approvals in the area of air transportation and services. Civil Aviation Authority of Sri Lanka is also supervised by Ministry of Ports & Aviation Sri Lanka.

Table 7 O&M Expenses of AASL (Rp. million)

	Year	Revenues	O&M Costs	
			Amount	Proportion to revenues
Before completion	2005	2,757	2,088	76%
	2006	5,123	-	-
After completion	2007	6,315	3,846	61%
	2008	6,994	5,252	75%
	2009	6,965	5,525	79%

Source: AASL (2010)

From above, it could be said that there is no particular problem as to O&M budget of AASL.

3.5.4 Current Status of Operation and Maintenance

Facilities constructed and equipment procured by the project was generally in good condition and was operational in full at evaluation time.

There was, however, difference in opinions between AASL and the contractor as to status of a part of the taxiway and control system of the air-conditioning facility built by the project. AASL insists on defects by construction and had not yet issued the defect liability certificate for some facilities and equipment at the evaluation time. The constructor insisted that these malfunctions were triggered by operation and not be liability defect in construction or instalment. At the evaluation time, both parties

were having meetings to solve this problem as soon as possible. It was already agreed upon that the constructor would repair the taxiway pavement while the executing agency would replace the communication equipment. It is expected that AASL will solve these problems as soon as possible in order to avoid further problems in operation and maintenance of the said facilities and equipment.

No major problems have been observed in the operation and maintenance system, therefore sustainability of the project is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

Both passenger and air cargos at Bandaranaike international airport, the only international airport in Sri Lanka, are increasing on the back of recent brisk air transportation demand in Sri Lanka in general. And the project was able to provide sufficient airport facilities to cope with this demand hike at the airport. It was confirmed that the project had contributed to substantial improvement in operational safety and convenience in air transportation and airport service as well as to activation of the economic development of the region.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendation to the Executing Agency

AASL has not issued defect liability certificates for some facilities and equipment provided by the project though they have already been delivered to AASL and have been operated and maintained by AASL. It is recommended that the executing agency solve this problem as soon as possible so that it could better conduct operation and maintenance of the facilities and equipment and thereby manage airport operation more sufficiently.

4.2.2 Recommendation to JICA

None.

4.3 Lessons Learned

Actual project costs were lower than the budget. It was partly due to weakening rupee but the main reason would be adopting small-scaled bids and contracts, which made it possible not only multinational corporations but also local companies could participate in the biddings. It introduced competition principle to the biddings, contributing to containment of the project costs. Meanwhile, quality of outputs was maintained high enough despite the low costs due to sufficient supervising skills on the part of the executing agency.

However, making small amounts of many contracts did make the administrative procedure for bidding and approval complicated and long and delayed the construction period.

The following is the lessons learned from this experience.

(1) Containing the contract amounts by supervising skills of construction

It is possible to contain the project costs by breaking the work into small sizes and maintain the output quality at the same time under good supervision of an executing agency. It however requires high supervising skills on the part of the executing agency as well as sufficient preparation period.

(2) Delay caused by making many contracts with small amount

Making many bids and contracts of small amount would make administrative procedures complicated. Therefore, it would be required to improve the structural aspect such as increasing staff of the executing agency and consultants.

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs		
Civil Works	Taxiway extension (2km to the south) Apron Repair (14,000 m ²) Extension (50,000 m ²)	1,860 m ² x 45 m ² to the south 8,900 m ² including reinforcement of 1,000m ² 59,150 m ² Addition: - Extension of Apron C to the south (45,000m ² for space for 4 airplanes) - Installation of Visual Docking Guidance System (VDGS)
Architectural Works	Passenger pier construction (19,200 m ²) Passenger terminal repair (3,000 m ²) Construction of cargo terminal (15,500m ²)	18,000 m ² No change 13,000 m ² Addition: - Access road - A storage - Security checking point at the new cargo terminal
Air Navigation System	Renovation and installation of radar control system Renovation of air traffic control facility Installation of meteorological observation system Installation of HF air communication system	No change No change No change No change Addition: - High-level electronic guidance system
Supporting Facilities	Power supply facility Purifying and water distribution system Sewage disposal facility Incinerator Telephone facility	Cancelled No change No change Change in design Cancelled
Consulting Services	51 months	66 months
2. Project Period		
	August 1999 – December 2004 (65 months)	August 1999 - February 2007 (89 months)
3. Project Cost		
Amount paid in Foreign currency	10,589 million yen	8,710 million yen
Amount paid in Local currency	1,794.5 million yen (970 million rupees)	3,345 million yen (2,998 million rupees)
Total	14,569 million yen	12,064 million yen
Japanese ODA loan portion	12,384 million yen	12,055 million yen
Exchange rate	Rp 1 = ¥1.85 (January 1999)	Rp1=¥0.8962 (Average of 2001 to 2007)

IV. The Republic of Kazakhstan
“ Astana International Airport
Reconstruction Project ”

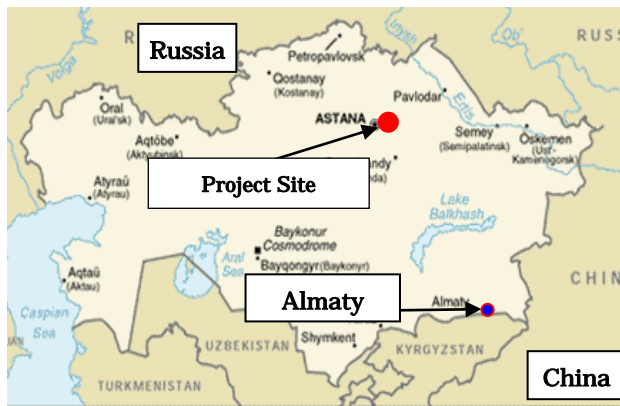
The Republic of Kazakhstan

Ex-Post Evaluation of Japanese ODA Loan Project

“Astana International Airport Reconstruction Project”

YAMAGUCHI Takao, Gyros Corporation

1. Project Description



Project Location Map



Passenger Terminal Building Built by the Project

1.1 Background

The capital city of the Republic of Kazakhstan was relocated from Almaty to Astana in 1997. The International Astana Airport then, however, was superannuated with only one short runway. The airport was not able to accommodate large aircrafts, meet increasing traffic demand or satisfy the safety standards of ICAO (International Civil Aviation Organization). Under these circumstances, reconstruction of International Astana Airport became the top development priority for the Republic of Kazakhstan and the Kazakhstan government requested the Japanese government for Japanese soft loan to implement reconstruction project of International Astana Airport.

1.2 Project Outline

The project objective is to satisfy increasing air traffic demand and operational safety requirements at International Astana Airport by improving runways, terminal building, navigation systems, and other facilities, thereby effectively activating air transportation and contributing to economic development in the republic of Kazakhstan.

Approved Amount/ Disbursed Amount	22,222 million yen / 21,720 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	June, 1998 / December, 1998
Terms and Conditions	<p>Interest Rate: 2.2% Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General Untied</p> <p>-----</p> <p>Consulting Services: Interest Rate: 0.75% Repayment Period: 40 years (Grace Period: 10years) Conditions for Procurement: General Untied</p>
Borrower / Executing Agency(ies)	Government of the Republic of Kazakhstan / International Astana Airport ¹
Final Disbursement Date	June 2007
Main Contractor (Over 1 billion yen)	Alarko (Turkey) / Laing Limited (UK) / Marubeni (Japan) / Siemens Aktiengesellschaft (Germany) (JV)
Main Consultant (Over 100 million yen)	CH22M Hill International, Ltd. (UK) / Kisho Kurokawa Architect & Associates (Japan) / Pacific Consultants International (Japan)(JV) ²
Feasibility Studies, etc.	Feasibility study, the Government of Kazakhstan (Consigned to CH2Mhill (U.S.)), October 1997
Related Projects (if any)	Master Plan, JICA, "Air Transportation Development Study", March 1997

2 . Outline of the Evaluation Study

2.1 External Evaluator

YAMAGUCHI Takao, President, Gyros Corporation

2.2 Duration of Evaluation Study

Duration of the Study: March, 2010 – December 2010

Duration of the Field Study: June 21, 2010 – June 30, 2010; October 18, 2010 – October 21, 2010

2.3 Constraints during the Evaluation Study

The evaluator was unable to obtain sufficient project information from IAA and thus was not able to evaluate organization of IAA or financial aspect including IRR. It was partly because almost all IAA employees who were familiar with the project left the organization when IAA was restructured.

¹ International Airport Astana (IAA) was established under the Ministry of Communication as the State Enterprise Company, SEC by Government Decree No.60 in 1998. IAA become Closed Stock Company, CSC on 27th September 2002, and become Joint Stock Company, JSC in May 2005. The share of IAA is 100 % owned by Astana City.

² At the beginning, the joint venture was consisted of 3 companies, CH2M-KKAA-PCI, however, CH2M was dropped out after the completion of the design stage.

Furthermore, IAA was cautious about disclosing information as it was involved in the course case with a contractor of the project regarding payment and defects of the project construction, which also made it difficult for the consultant to obtain accurate information on the project.

3 . Results of the Evaluation (Overall Rating: A)

3.1 Relevance (Rating: a)

3.1.1 Relevance with the Development Plan of Kazakhstan

At the Time of Project Appraisal:

The Kazakhstan government announced the “Public Investment Program (1996-1998)” in November 1996, in which it placed the transportation as the most important sector for national development. Investment for the transportation sector accounted for the highest share of 36% then. The transportation infrastructure sector was also considered as a high priority sector even among seven priority sectors specified in the “National Development Plan towards 2030” announced in October 1997. Moreover, restructuring of the Astana International Airport was given the highest priority in the National Development Plan.

At the Time of Project ex-post Evaluation:

The Government of Kazakhstan set the goal to double GDP by 2010 and increase by 2.5 times by 2015 in the “Strategy to be One of the Top 50 Most Advanced Countries in the World” announced by the President in 2002. The transportation infrastructure sector was one of the seven priority sectors specified in the action programs to realize this strategy.

Above-mentioned “National Development Plan up to 2030” also remained in effect at the time of ex-post evaluation.

Furthermore, the transportation infrastructure development program specified by the Ministry of Transportation in 2006 places importance to conformity of the air transportation infrastructure to international standards and it was expected that the Astana International Airport play an important role both as an international gateway and national hub airport.

3.1.2 Relevance with the Development Needs of Kazakhstan

At the time of Project Appraisal:

It was urgently required then to improve economic and social infrastructure, which had had become a bottleneck for Kazakhstan with both population and economic bases scattered over the vast landlocked country. The transportation sector development, amongst all kinds of infrastructure development, was given a high priority.

The capital of Kazakhstan was transferred from Almaty to Astana in December 1997. However, facilities of the Astana Airport were very old and did not seem capable to accommodate rapidly increasing air transportation demand that was expected to come in the near future.

At the time of Project ex-post Evaluation:

The population of Astana city has more than doubled from 300,000 in 1998 to 700,000 in 2009 as city development has progressed and functions of the capital have been transferred. Astana, however, is approximately 960km away from Almaty, the old capital since the establishment of the country and the demand for air transportation between Astana and Almaty has remained high.

It could be said therefore that this project has been highly relevant to the country’s development needs.

3.1.3 Relevance with Japan’s ODA Policy

At the time of project appraisal in 1998, Central Asia and Caucasian countries including Kazakhstan were in the middle of the economic chaos following destruction of the Soviet Union and were continuing efforts to introduce democracy and the market economy. Japan’s ODA policy toward these countries including Kazakhstan was to help them restructure aged economic infrastructure. (“1998 Annual Report on Japan’s ODA Activities” (ODA White Paper))

This project has been highly relevant with the country’s development plan, development needs, as well as Japan’s ODA policy, therefore its relevance is high.

3.2 Efficiency (Rating: b)

3.2.1 Project Outputs

The project output is summarized in the below table.

	Plan	Actual
Civil Works	Runway Renovation(1,000m x 45m, 7.5m shoulder) Extension(1,000m x 45m, 7.5 m shoulder) Taxiway:64,400m Apron(Passengers• Cargos):48,000 m ²	Cancelled Cancelled No change 128,100 m ²
Architectural Works	Terminal buildings Passengers:20,800m ² -storey high Cargos: 2,400 m ² 1-storey high Administration: 1,900 m ² 1-storey high Control tower:1-storey high Maintenance building:3,400 m ² 1-storey high	24,950 m ² 6-storey high 2,200 m ² 2-storey high Storage shed: 3,370 m ² 3,350 m ² 2-storey high No change 6,110 m ² 2-storey high
Air Navigation System	Radar Navigation Control (1 unit), transfer of radio antenna location (1 unit), airfield lighting systems (1 unit)	All cancelled

Supporting Facilities	Power supply system:1,000KVA 2 units	1,200KVA 2 units
	Solid waste disposal (1 units) Fuel supply pipeline • water supply facilities Fuel hydrant:4 units Pipeline:2,000m Fuel tank:3 units Aerobridge:4 units	Transformer:809 m ² Cancelled 8 units No change 3 units (3,000KL fuel tank) 6 units



Figure 1 Power Supply Facility Built by the Project



Figure 2 Control Tower Built by the Project

Main reasons for the above changes in the output are explained below.

(1) Civil Works

The runway renovation and extension work was cancelled from the project as the Government of Kazakhstan decided to implement it urgently by its own budget. The project planned to connect the existing apron with the new apron at the appraisal as the existing apron looked solid enough. However, the existing apron deteriorated faster than expected and was no longer capable of accommodating large aircrafts. Therefore, the area size of the apron was expanded after the appraisal.

(2) Architectural Works

At the appraisal time, a simple shaped one-storey high building with flat roof structure was planned to be built. During the design stage, however, the Government of Kazakhstan requested for an arched shape building with cupola structure. Also, based on the traffic movement analysis, the numbers of departure gates (and consequently boarding bridges), immigration counters and check-in counters were increased.

The floor space of the ACC/ATC (air traffic control) administrative building was increased by 80% as Astana Airport became the main airport to control air traffic in the country following the new policy of air traffic control of the government.

Moreover, the control tower was cancelled from the scope of works as another national company called *Kazaeronavigatsia (Казэронавигация)* was to be in charge of operation of air traffic control

for the whole country. The Government of Kazakhstan established a separate budget for *Kazaeronavigatsia* to build the control tower.

As volume of necessary ground service equipment increased, operation and maintenance equipment and the floor space increased by 80% from the original plan.

(3) Air Navigation System

It was cancelled out from the scope of works as *Kazaeronavigatsia* was to be in charge of operation of air traffic control for the whole country. The Government of Kazakhstan established a separate budget for *Kazaeronavigatsia* to purchase air navigational equipment.

(4) Supporting Facilities

The power supply capacity was increased from the original plan as the existing airport facilities to be covered and consequently the power demand increased.

The solid waste facility was excluded from the scope of works as the existing facility was to be reused. The number of fuel hydrant increased to cope with increase in existing airport facilities to be covered and to enable stable air fuel operation. The underground refuel hydrant pits were also added to fuel hydrant system for stable air fuel operation.

The specification and number of boarding bridges were changed based on the traffic movement analysis during the design stage. The specification of the boarding bridges was also changed

It was noted during the evaluation survey that the facilities were designed in such a way not to remove trees from the original places. Facilities are in excellent harmony with the surrounding environment with some buildings painted in green.

(5) Consulting Services

The period for supervision services was mainly prolonged due to extension of the contract period for construction.

It could be said that these changes in outputs were adequate as the Government of Kazakhstan implemented their part of the outputs as planned and there seems to have been no major problem in airport operation after the project implementation.

3.2.2 Project Inputs

3.2.2.1 Project Period (Sub-rating: b)

The project period was longer than planned.

The project period was 79 months from June 1999 to December 2005 (up to completion of the trial operation) in comparison to the original plan of 57 months from December 1998 to August 2003 (up

to completion of the trial operation). The actual project period was 136% of the original estimate although it is not possible to make a simple comparison as the project scope had been changed.

It could be said that the original project period was rather unrealistically short considering that it requires many kinds of government approval on design and materials in the country. The following are the main reasons for most significant delays.

(1) Contract with the consultants (approximately 6 months of delay):

Due to delay in final approval by the Government of Kazakhstan

(2) Design (approximately 6 months of delay):

The study for use of the runway lighting system for CATT III was implemented.

(3) Bidding (approximately 3 months of delay):

It required time to examine the changes in scope of works.

It took 3 months for the Government of Kazakhstan to approve the bidding evaluation report.

(4) Construction (approximately 5.5 months of delay):

The construction period had to go through three winters instead of originally estimated two as the construction launch was delayed.

3.2.2.2 Project Cost (Sub-rating: a)

The project cost was lower than planned.

The actual project cost was lower than the plan (86.2% of the plan) although it is not possible to make a simple comparison as the project scope was changed. Actual project cost was 22,122 million yen (foreign 22,122 million yen, domestic nil, yen soft loan of 22,122 million yen) in comparison to the original project cost of 25,677 million yen (foreign 22,122 million yen, domestic 3,555 million yen, yen soft loan of 22,122 million yen).

The original domestic project cost was to be used for civil work for runways and aprons but the work was cancelled out from the scope of works, hence no actual domestic project cost. Changes in scope of works including floor space and construction area pushed up construction costs. Consulting services increased as the project period was prolonged.

Meanwhile, cancellation of runway and air navigation system pushed down the actual project cost.

Although the project cost was lower than planned, the project period was longer than planned, therefore efficiency of the project is fair.

3.3 Effectiveness (Rating: a)

3.3.1 Quantitative Effects

3.3.1.1 Results from Operation and Effect Indicators

There were no indicators set up either at the appraisal or ex-post evaluation time. The following discussion is based on the air traffic, which is generally used as operation and effect indicators for airport infrastructure projects.

Actual number of passengers, the most important indicator for the airport, was 85.4% of the original plan for the year 2009. Nonetheless, average annual growth rate was stable at 12.5% for the domestic line, 25.4% for the international line and 16.4% for total during 2005-2009 period.

(1) Passengers

Actual number of domestic passengers (867 thousand) was 95.3% of the original plan (910 thousand), while that of actual international passengers (447 thousand) was 74.2% of the estimate (602 thousand) for the year 2009, as shown in Table 1. Total number of passengers (1,314 thousand) was 85.4% of the original plan (1,512 thousand) in the same year. Although the actual traffic did not meet the target, its growth rate was stable at 12.5% for the domestic line, 25.4% for the international line and 16.4% for total during 2005-2009 period.

Table 1 Passenger Movement – Forecast and Actual(Thousand)

	Estimate**			Actual***				
	2005	2009*	2010	2006	2007	2008	2009	Average growth
Domestic	675	910	980	609	849	933	867	12.5%
International	225	602	770	225	322	383	447	25.7%
Total	900	1,512	1,750	834	1,171	1,316	1,314	16.4%

* 2009 figures are made based on calculated average growth rate of 2005-2010.

** Completion goal: December 2002

***Actual completion: June 2005

(2) Cargos

There was no breakdown between domestic and international data for cargos at the time of appraisal. As summarized in Table 2, actual total cargo was 500 capacity ton³ in 2009, 2.1 times of the estimate (204.4 capacity ton). The growth was buoyant at 32.6% for the domestic, 14.5% for the international in 2005-2009.

Table2 Cargo – Forecast and Actual (Capacity Ton)

	Estimate**			Actual***				
	2005	2009	2010	2006	2007	2008	2009	Average growth
Domestic	N.A	N.A	N.A	150	320	350	350	32.6%
International	N.A	N.A	N.A	100	150	160	150	14.5%
Total	155.9	204.4	255.5	250	470	510	500	26.0%

³ 1 capacity ton is approximately 2,832m³.

(3) Aircraft Movement

There was no forecast of aircraft movement at the time of appraisal. Actual aircraft movement was 8,313 for the domestic and 3,752 for international in 2009 as shown in Table 3. The growth was 28.9% for the domestic and 23.7% for international between 2005 and 2009.

Table 3 Actual Aircraft Movement

	2005*	2006	2007	2008	2009	Average growth
Domestic	3,014	6,343	7,841	9,566	8,313	28.9%
International	1,601	3,151	4,889	4,709	3,752	23.7%
Total	4,615	9,494	12,730	14,275	12,065	27.2%

3.3.1.2 Results of Calculations of Internal Rates of Return (IRR)

Financial internal rate of return (FIRR) of the project at the appraisal time was calculated at 3.0% based on the cash flow of revenues (airport revenues) and costs (construction costs and operation and maintenance costs). Economic internal rate of return (EIRR) of the project was 10.4% with economic benefits (airport revenues and reduced travel time) and economic costs (construction costs and operation and maintenance costs) at the appraisal time.

Due to the fact that data needed for quantitative analysis was not available, analysis for the internal rate of return was not possible.

3.3.2 Qualitative Effects

The project appraisal expected safety improvement in air transportation as qualitative effect of the project.

It was observed at the ex-post evaluation that the Astana Airport complied by international standards on safety distance space for aircraft movement at taxiways and aprons. The Ministry of Transportation and Communications also confirmed safety improvement at the airport based on the fact that there had been no critical aircraft accidents after the project was implemented. It is considered that the project had contributed to air transportation safety at the airport by having it comply with international standards and securing sufficient safety distance space for airplanes.

This project has somewhat achieved its objectives, therefore its effectiveness is fair.

3.4 Impact

3.4.1 Impact to Project Region

Table 4 summarizes historical trend of GRDP of Astana City and GDP of Kazakhstan in 2005-2008. Average growth rate was 12.5% for GRDP and 14.2% for GDP during the period.

Table 4 Trend of GRPD and GDP (Billion tenge)

	Astana City GRDP	Kazakhstan GDP	GRDP/GDP
2005	644	7,591	8.5%
2006	957	10,214	9.4%
2007	1,134	12,850	8.8%
2008	1,292	15,937	8.1%
2009	1302	-	-
Real average growth* (2005 - 2008)	12.5%	14.20%	-

* Real growth is net of consumer price index (average of 12.1% in the period).

Source: Statistical Bureau of Kazakhstan, ADB, CIA

The beneficiaries of the present project are (1) conversion passengers switched from conventional transportation modes (automobiles and trains) to airplanes and (2) new travellers using the Astana Airport.

(1) Reduced Travelling Time for Converted Travellers Kazakhstan Travellers⁴

Reduced travelling time and reduced travelling costs for passengers switching from automobiles to airplanes for a round trip between Astana and Almaty are calculated to be 18 hours and 6,205 tenge, which is equivalent to 15,300 tenge, or 2.6 day of GDP per capita if monetarized based on 2009 GDP estimate.

Total amount of reduced travelling time effect of these passengers was equivalent to 1.6% of GRDP per year in 2006-2008.

(2) Increased Spending by New Travellers

Total travel expenses spent by new travellers for a round trip between Astana and Almaty using the Astana airport is equivalent to 1.6% of GRDP on average per annum in 2006-2008.

It should be noted that above impact has been realized not only by this project but also by investment by all participants including other airports and airlines both in and out of the country, air port access transportation as well as deregulation in air transportation.

It could be said from the above that the project has contributed to efficiency and revitalization of

4 Transportation between Astana city and Almaty city is used as a typical case for the analysis here as aircraft movement between Astana Airport and Almaty Airport accounts for the largest 38% of the total at Astana Airport. Reduced travelling time and reduced travelling costs for conversion passengers switching from automobiles to airplanes are calculated to be 18 hours and 6,205 tenge. (Travelling costs of automobile include gasoline costs but exclude depreciation costs of automobiles and road wear costs.)

Astana City and the country by reducing travelling time of passengers. The project has also contributed indirectly to GRDP and GDP by increasing spending of new travellers.

3.4.2 Other Positive and Negative Impacts

3.4.2.1 Impacts on the Natural Environment

The appraisal report mentioned that there was a possibility that the project would cause noise problem in the future. It is reported that the Government of Kazakhstan did carry out EIA on its own and the project received the approval of the Ministry of Environment, Biology and Resources in September 1997.

3.4.2.2 Land Acquisition and Resettlement

The new terminal construction site had some scattered slots of land owned by *kolkhoz*, ex-Soviet style of collective farming system. But these slots of land were not cultivated with no residents. Thus the land purchase was completed without delay in August 1997. There were no people that had to be transferred to other area because of the project.

3.4.2.3 Noise

It was foreseen at the appraisal that the project might cause noise problem and that it become necessary to implement appropriate land use and regulation in accordance with the noise. However, there had occurred no aircraft noise problem as the surrounding area was agricultural and devastated land with no habitants.

3.5 Sustainability (Rating: a)

3.5.1 Structural Aspects of Operation and Maintenance

3.5.1.1 Airport Facilities

IAA is in charge of operation and maintenance of the airport facilities. There was not sufficient information provided on structure of operation and maintenance of IAA as it was involved in court case with the contractor. Those in charge of operation and maintenance at IAA confirmed at the interview that there existed no serious problem. Those in charge of finance, marketing and technical divisions also commented there was no problem in airport operation or structural aspect. From this, it could be concluded that there are no critical problems in structural aspect of operation and maintenance of airport facilities.

IAA was under supervision of the Ministry of Transportation and Communications at the appraisal time but became under the Astana City⁵ after the project implementation. Nevertheless, the Ministry

⁵ Policy to transfer state own enterprises to local authorities, all the share of IAA was transferred to the Astana City.

of Transportation and Communications remains responsible for supervision of operation and maintenance of fundamental facilities (runways, taxiways and aprons), operational structure, license issuing for airlines and pilots and airport inspection.

3.5.1.2 Control Tower

Kazaeronavigatsia is responsible for O&M of the control tower building. No information was provided from *Kazaeronavigatsia* regarding O&M structure of the control tower. There was no problem found in the tower building at the site observation.

3.5.2 Technical Aspects of Operation and Maintenance

IAA was established in June 1998, just before the project implementation and did not have enough engineers. IAA was planning to employ 54 engineers experienced in airport, machinery, electricity and construction fields from the Ministry of Transportation and Communications and national companies, of which 10 technicians were to be allocated to the Airport Construction Division. It was also planning to employ consultants with state-of-the-art skills in construction and O&M of airports.

Whether the above plan was realized or not was not made available at the ex-post evaluation as IAA was involved in court case with the project contractor. Information on present number of engineers or skill training programs were not disclosed either. Based on the interview on technical questions with IAA staff, however, it was judged that IAA had sufficient technical skills and capacity required for operation and maintenance. The site survey also found airport pavement and signs well maintained and almost all machinery and equipment being operational without a problem. From these facts, it could be said that IAA does not have a serious problem in technical aspect of O&M.

3.5.3 Financial Aspects of Operation and Maintenance

The finance department of IAA claims no budget shortage in O&M. It is not possible, however, to verify it as financial data on operation and maintenance was not made available to the evaluator.

3.5.4 Current Status of Operation and Maintenance

Civil and architectural facilities and equipment provided by this project were in good condition, except for the buildings which were involved in court case the contractor. The outer walls and pavement surrounding those buildings had not been maintained and wall painting had come off in some parts.

No major problems have been observed in the operation and maintenance system, therefore sustainability of the project is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The number of passengers at the Astana Airport increased by 12.5% for domestic and 25.7% for international lines per annum in 2005-2009 after the project implementation. The project has contributed to efficiency and revitalization of Astana City and Kazakhstan by reducing travelling time of passengers. The project has also contributed indirectly to economy of the city and the country through creation of new travellers.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendation to the Executing Agency

The buildings under the lawsuit with the contractor are not maintained well with outer walls coming off in some parts needing repair. It is probable that the rain leaks would cause a problem for airport operation if these walls are not taken care of. It is recommended therefore that these walls be repaired immediately.

4.2.1 Recommendation to JICA

None.

4.3 Lessons Learned

- 1) All the project buildings are designed in such a uniform manner that the Japanese-loan financed buildings are easily recognized by everyone who see them. It has a good advertising effect and it should be applied to future yen loan projects.
- 2) The buildings and facilities were designed in such a way to keep existing trees at original places. The facility at the parking space was painted green and is in excellent harmony with the surrounding environment. It is environmentally friendly to design and construct buildings in harmony with the environment and should be applied to other future airport projects.
- 3) The project period was prolonged by 16 months in comparison to the plan as it took long time to get approval from the Government of Kazakhstan. It is therefore advised to plan for realistic project periods for future projects in the country well in consultation with the Kazakhstan Government at the time of appraisal.

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs		
Civil Works	Runway Renovation(1,000m x 45m, 7.5m shoulder) Extension(1,000m x 45m, 7.5 m shoulder)	Cancelled Cancelled
Architectural Works	Taxiway:64,400m Apron(Passengers• Cargos):48,000 m ² Terminal buildings Passengers:20,800 m ² 2-storey high Cargos: 2,400 m ² 1-storey high Administration: 1,900 m ² 1-storey high Control tower:1-storey high Maintenance building:3,400 m ² 1-storey high	No change 128,100 m ² 24,950 m ² 6-storey high 2,200 m ² 2-storey high Storage shed:3,370 m ² 3,350 m ² 2-storey high No change 6,110 m ² 2-storey high
Air Navigation System	Radar Navigation Control (1 unit), transfer of radio antenna location (1 unit), airfield lighting systems (1 unit)	All cancelled
Supporting Facilities	Power supply system:1,000KVA 2 units Solid waste disposal (1 units) Fuel supply pipeline • water supply facilities Fuel hydrant:4 units Pipeline:2,000m Fuel tank:3 units Aerobridge:4 units	1,200KVA 2 units Transformer:809 m ² Cancelled 8 units No change 3 units (3,000KL fuel tank) 6 units
2. Project Period	January 1999 - August 2003 (56 months)	June 1999 - December 2005 (79 months)
3. Project Cost		
Amount paid in Foreign currency	22,122 million yen	22,122 million yen
Amount paid in Local currency	3,555 million yen (2,127 million tenge)	0 yen (0 tenge)
Total	25,677 million yen	22,122 million yen
Japanese ODA loan portion	22,122 million yen	22,122 million yen
Exchange rate	1 tenge = 1.6712 (December 1997)	