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	Interest Rate: 2.7% Repayment Period: 30years (Grace Period: 10years) Conditions for Procurement: General Untied ---------- Consulting Services: Interest Rate: 2.3% Repayment Period: 30years (Grace Period: 10years) Conditions for Procurement: General Untitled
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 ton[1] 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 permorming 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 2,832m^3.

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

	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）

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 airliners 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 Banka 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.□%	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 passengers[3] 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 cooped 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.

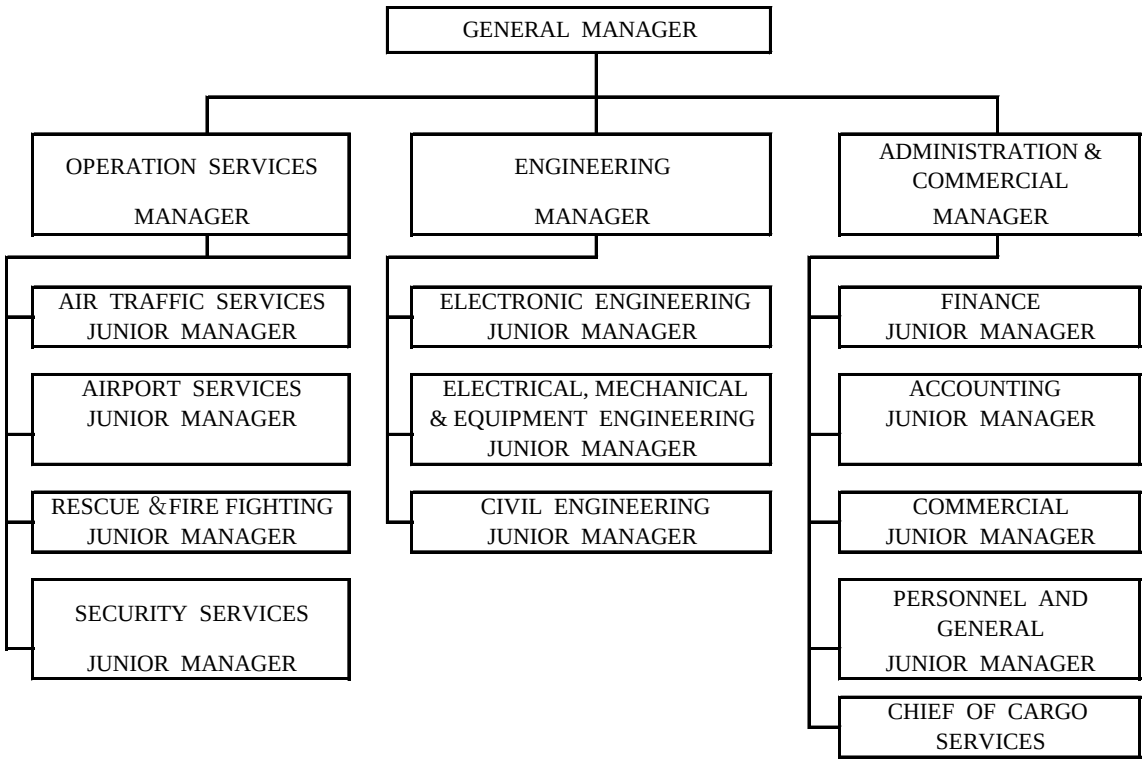

Figure 6 Organization of Palembang Airport

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	Runway	
	Improvement:2,200m x 45m	No change
	Extension:300m x 45m	No change Repair of runway and taxiway was added. Sliding slope remedial works were added.
	Taxiway:597m	No change
	Apron:387.5m x 273.5m	410m x 1333.5m
	Roads	
	Apron connection:6,580 m^2 asphalt	8,200 m^2 concrete
	Access road:2.0km	2.2km
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	Stormwater drainage system	No change
	Car parking:439 cars	433 cars
	Security fence:12,880m	2,660m
	Terminal building	
	Passenger:13,964 m^2, 2-storey RC structure	23,300 m^2, 3-storey RC + SRC + Steel structure
	Cargo:2,310 m^2, 1-storey steel structure	3,403 m^2, 2-storey steel + RC structure
	Control tower and administrative building:2,231 m^2, 33.1m high	2,420 m^2, 29.8m high
	Hangar:2,132 m^2, 1-storey steel	Cancelled
	Maintenance and admin. building:1,886 m^2, 1 storey steel	1,987 m^2, 1-storey RC+steel
	Fire station:608 m^2, 1 storey RC	920 m^2, 2-storey RC
	Power station:1,526 m^2	1,863 m^2
	Others（Drivers waiting shed, pray room）	Others (Drivers waiting shed, pray room, security building, water supply station, shed for NAV/COM, etc.)
	Radio navigation aids (ILS CAT I, NDB, Locator)	(ILS CAT I)
	Aeronautical telecommunication systems (VHF A/G TX/RX, ATIS, ATS/DS, ADS consoles, APP consoles, AMSC/AFTN, recorder)	Added:HF TX/RX
	Airfield lighting systems and Meteorological observation systems	No change
		No change
	Power supply system	No change
	Water supply system（Deep well, water reservoir x 2 (320cu.m)）	Existing pond, reservoir (1,080cu.m）
	Sewage system (oxidation pond with imhoff tank）	Closed-type
	Telecommunication system (Microwave link 100 lines）	Optical fiber 200lines
	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)	(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 Amount paid in Local currency Total Japanese ODA loan portion Exchange rate	 7,311 million yen 8,470 million yen (162,882 million Rupiah) 15,781 million yen 8,826 million yen Rp 1.00=¥0.052 (June, 1996)	 8,091.6 million yen foreign 8,332.1 million yen 1,702.1 million yen (138,543.4 million Rupiah) 9,793.8 million yen 8,085.6 million yen Rp 1.00=¥0.0123 (Average between January, 2000 and December, 2006)