

**Indonesia****“Balikpapan Airport Construction Project”****Project Summary**

	(1)	(2)
Borrower	Republic of Indonesia	
Executing Agency	Directorate General of Air Communications (DGAC)	
Exchange of Notes	June 1985	June 1991
Date of Loan Agreement	December 1985	September 1999
Date of Final Disbursement	December 1994	August 1998
Loan Amount	¥17,255 million	¥4,354 million
Loan Disbursed Amount	¥13,737 million	¥4,279 million
Procurement Conditions	Partial untied	General untied (Partial untied for consulting portion)
Loan Conditions		
Interest Rate	3.5%	2.6%
Repayment Period (year)	30 years	
Grace Period (year)	10 years	

## <Reference>

(1) Currency: Rupiah (Rp)

(2) Exchange Rate

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Exchange rate (annual average)														
Local currency/US\$	1,026	1,111	1,282	1,644	1,686	1,770	1,843	1,950	2,030	2,087	2,161	2,249	2,342	2,909
¥/US\$	237.5	238.4	168.5	144.7	128.2	138.0	144.8	134.7	126.6	111.2	102.2	94.1	108.8	121.0
Local currency/¥	4.32	4.66	7.61	11.36	13.15	12.83	12.73	14.48	16.03	18.77	21.1	23.9	21.5	24.0
Consumer index (1990=100)	67	70	74	81	88	93	100	109	118	129	140	153	166	177
% change from previous year	3.6	4.7	5.9	9.2	8.0	6.5	7.4	9.2	7.6	9.6	8.5	9.4	8.0	6.7

(Source) IFS

(3) Rate at the time of appraisal :

$$\$1 = \text{Rp}1,071 = \text{¥}248 \text{ (Phase I)} / \$1 = \text{Rp} 1,907 = \text{¥}130 \text{ (Phase II)}$$

(4) Fiscal Year: April ~ March

(5) Abbreviations

DGAC: Directorate General of Air Communication

PTAP (P.T.AngkasaPura): Airport company (for operation and maintenance of the airport)

( 6 ) Terminology

NDB (Non-Directional Beacon):

This equipment emits non-directional mid- to long-band radio waves to help aircraft locate the direction of the relevant facilities.

VOR (Very High Frequency Omni-Directional Range)

This equipment uses very high frequency waves to indicate to aircraft direction in relationship to the magnetic north. Thunderstorms have little impact on this method.

ILS (Instrument Landing System)

This equipment displays right/left slippage, approach angles and other information to direct aircraft when making their approach to the runway.

## 1. Project Summary

### 1.1 Project Location

It is located in coastal region in suburbs of Balikpapan City, East Kalimantan Province in the eastern section of Kalimantan Island.



## **1.2 Project Summary and ODA Loan Portion**

Balikpapan Airport is a leading Indonesian airport (one of 10 Level 1 airports that can also handle international flights) and serves the important role of a gateway to East Kalimantan Province. Phase I of this project was aimed at expanding facilities at the Balikpapan Airport in order to be able to handle A-300 aircraft (holding 280 passengers) and meet the projected demand for 1995 (2.1 million passengers per year). Phase II of this project focused on improving facilities could not be covered by the Phase I (fuel supply facilities, hangars, others) so that the airport could be operated in a more complete state.

The total project cost for the Phase I came to ¥31,028 million with the JBIC loan covering the entire foreign currency portion of ¥17,255 million. The JBIC loan also covered 85% of the ¥5,123 million needed for the Phase II construction project. This was broken down as the entire foreign currency portion of ¥1,754 million, and the local currency portion of ¥2,600 million.

## **1.3 Background (at the time of appraisal)**

### **(1) Airline Sector and Positioning of Balikpapan Airport**

Most of the airports in Indonesia were built during the period of colonization by Holland or during World War II, and consequently improving and expanding facilities has become a pressing issue for the country. In particular, the Indonesian government has been concentrating efforts on improving and expanding airports since the launch of its 4th 5-Year Plan (1984-1988).

Directorate General of Air Communications (DGAC) assigns a rank between 1 to 5 to airports based on the following standards: (1) number of flights and annual number of passengers, (2) role of the airport, (3) capacity of facilities, (4) safety equipment and others. The Balikpapan Airport was given the Level 1 ranking assigned to the nation's largest airports.

In 1998 Balikpapan Airport was ranked as Indonesia's No. 4 airport in terms of the number of passengers (776,000) and the No. 5 airport in terms of the amount of freight handled (8,388 tons), making this one of the nation's most important airports.

However, this airport was one of just three Level 1 airports with a runway length of less than 2,000m. The inability to handle landing and takeoffs by large aircraft due to the short runway had become a serious problem.

**Table 1 Overview of Level 1 Airports in Indonesia (as of 1988)**

Level 1 Airport	No. of Passengers (people)	Amount of Freight (tons)	No. of takeoffs and landing	Weight per Flights (tons/flight)	Runway Length (m)	Problems
Palembang	511,917	4,858	14,330	3.9	2,250	
Pontianak	382,259	3,263	14,925	2.8	1,850	Runway is short
Jakarta	7,533,257	113,971	89,372	9.7	3,600	
Surabaya	2,035,444	17,345	37,636	5.9	3,000	Terminal is old
Bandjarmasin	548,085	7,490	25,488	2.4	1,870	Runway is short
Medan	1,098,627	18,539	18,759	6.8	2,900	
Balikpapan	776,627	8,388	42,091	2.0	1,800	Terminal is old, Runway is short
Ujung Pandang	1,047,250	19,383	17,801	7.0	2,500	
Menado	202,254	2,740	7,450	3.1	2,500	
Bali	2,286,093	10,765	26,839	8.9	3,000	Terminal is old

(Note) Weight per flight is calculated by dividing the total of the weight of each passenger (set as 100kg) and the weight of freight by the number of flights.

(Source) JBIC materials

## (2) Overview of Balikpapan City and Balikpapan Airport

Balikpapan City, home of Balikpapan Airport, is located on the eastern side of Kalimantan Island, which belongs to East Kalimantan Province. East Kalimantan Province has an area of 202,000km<sup>2</sup>, roughly the same size as Japan's main island, Honshu, and is Indonesia's second largest province. Balikpapan is the largest city in the province, even larger than the provincial capital of Samarinda. This city was developed as an area for producing oil, natural gas and other underground resources, as well as lumber, cement and plywood. Balikpapan Airport is located in a coastal region 10km northeast of this city. The airport has served the important role of being a gateway to East Kalimantan Province since the start of operations in the 1960's. East Kalimantan Province has two other airports, but they are both small and thus Balikpapan Airport is the most important airport for the province (see Table 2).

**Table 2 Airports in the East Kalimantan Province**

	Runway (m)	Target Aircraft	Level	No. of Passengers (1983)	No. of Aircraft (1983)
Balikpapan	1800×30	F-28	Level 1	900,987	47,092
Tarakan	1400×30	DHC-6	Level 3	83,600	5,281
Samarinda	790×30	DHC-6	Level 3	20,096	5,940

Note: Level 1 = international airport, Level 2 = main regional airport, Level 3 = regional airport

## (3) Problems at the Time of the Appraisal, Necessity for this Project

As mentioned in (1), Balikpapan is one of the most important airports in Indonesia. However, with a runway only 1,800m long and asphalt only 51cm thick, the largest aircraft the airport could handle was F-28 that hold only 85 people. At the time CD-98's and A-300's, the two most commonly used aircraft in Indonesia, could not use this airport. Traffic at this airport had

become very congested, with some 42,091 flights in 1988, second only to Jakarta Airport, which had 89,372 flights. Most of the facilities were outdated and needed to be replaced (see Table 3).

**Table 3 Overview of Major Facilities before Balikpapan Airport Expansion**

Major Facilities	Facility Condition
Runway	Only 1,800m long and could not handle the aircraft most commonly used in Indonesia. Width only 30m and could not handle large aircraft. Asphalt thickness also insufficient for handling large aircraft.
Taxiway (guidance way)	Only an attached taxiway that was not parallel.
Apron	Too narrow and congested.
Passenger Terminal	Old wooden structure with poor lighting.
Freight Terminal	None
Radio Equipment	Outdated and needed to be replaced.
Aviation Lights	There were lights for indicating the approach angle and end of the runway, but they were outdated.
Weather Equipment	Only wind streamers.
Fire Equipment	New equipment capable of handling larger aircraft in the future.

(Source) JBIC materials

As mentioned above, Balikpapan Airport had several major problems such as 1) a runway that was too short to handle large aircraft resulting in congestion due to the an increase in the number of flights by smaller planes and 2) outdated facilities. Expanding the current airport or constructing a new airport to cope with these problems had become a pressing issue.

A study was made comparing the merits and demerits of expanding the current airport or constructing a new airport. Based on the following reasons, its was decided that the expansions would be made to the existing airport.

- (1) The land available for building a new airport was 10km further away from the city than the existing airport. Due to the urgent nature of this project, it was deemed that there would not be enough time to build the access roads and other necessary infrastructure for this new site.
- (2) Due to the urgency of this project, the Indonesian side had already started a part of the expansion project for the Balikpapan Airport using their own funds.

#### (4) Projected Demand for Balikpapan Airport

A forecast of demand was made in order to determine roughly how many passengers would be using Balikpapan Airport. This forecast was made by first projecting passenger demand for domestic flights for all of Indonesia, and then quoting that rate of growth for Balikpapan

Airport.<sup>1</sup> The Indonesian economy worsened soon after the loan agreement was concluded, and demand forecasts had to be revised. Still, this same method was used in making the new forecasts (see Table 4).

**Table 4 Demand Forecast**

Target / Year	Forecast at the Time of the Appraisal for Phase I (1985)		1988 Revision		Revision at the Time of the Appraisal for Phase II (1991)	
	1995	2005	1997	2007	1997	2007
No. of passengers (1,000 people)	2,100	4,000	1,560	2,680	889	1,106
Freight (1,000 tons)	21	38	20	40	14	23

(Source) JBIC materials and executing agency materials

#### 1.4 History

1979	November	Implementation of F/S on Balikpapan Airport Development Project (ADB assistance) “Studies for improvement of seven selected domestic airports” (executed by French consultant company)
1980	November	Implementation of D/D (ADB assistance)
1985	February	Request of Balikpapan Airport Development Project as FY 1985 IGGI loan to Japan by Indonesian government
	March	Visit to Indonesia by Japanese government mission
	April	Visit to Indonesia by JBIC Appraisal Mission
	December	Exchange of Notes between governments
	December	Loan Agreement signing, loan disbursed deadline on 27th December, 1990
1986	May	Loan Agreement issuing
1990	December	Extension of 4 years for L/A loan disbursement period
1991	March	Request of ODA loan as an additional project of the above-mentioned main Project by Indonesian government
	April	Visit to Indonesia for FY 1991 JGGI loan by Japanese government mission
	April	Visit to Indonesia by JBIC Appraisal Mission
	June	Exchange of Notes between governments
	August	Loan Agreement signing
1994	February	Completion of Phase I
1998	January	Completion of Phase II

<sup>1</sup> International transport was not taken into consideration, as Balikpapan is a domestic airport.

## 1.5 Comparison of Original Plan and Actual

### (1) Project Scope

#### (i) Phase I Summary

		Plan	Actual	Difference	
Construction works	Expansion of runway	From 1,800m × 30m to 2,500m × 45m	Same as left	None	
	Expansion of landing area	2,620m × 300m	<b>Cancelled</b>	-	
	Construction of taxiway	Parallel	1,800m × 30m	Same as left	None
		Access	1,060m × 23m	Same as left	None
			84.5m × 10m	Same as left	None
	Construction of apron	Passenger apron	7	8	+1
		General apron	8	12	+4
		Maintenance apron	2	3	+1
		Heliport	1	2	+1
	Construction of passenger terminal building	7,100 m <sup>2</sup>	8,786 m <sup>2</sup>	+1,686 m <sup>2</sup>	
	Construction of cargo terminal building	5,600 m <sup>2</sup>	4,697 m <sup>2</sup>	-903 m <sup>2</sup>	
	Construction of administration building	1,400 m <sup>2</sup>	1,982 m <sup>2</sup>	+582 m <sup>2</sup>	
	Construction of control tower	80 m <sup>2</sup>	191 m <sup>2</sup>	+111 m <sup>2</sup>	
Renovation of utility	Sewage treatment, power supply etc.	Same as left	None		
Others	Fire fighting station	740 m <sup>2</sup>	824 m <sup>2</sup>	+84 m <sup>2</sup>	
	Electricity substations	550 m <sup>2</sup>	923 m <sup>2</sup>	+373 m <sup>2</sup>	
	Parking lot	15,000 m <sup>2</sup>	19,335 m <sup>2</sup>	+4,335 m <sup>2</sup>	
Equipment installation	Renovation air traffic services system	ILS-CAT 1, VOR/DME, NBD etc.	Same as left	None	
	Construction of air lighting system	5 sets of CAT1 etc.	Same as left	None	
	Construction of meteorological system	1 set	Same as left	None	
Consulting service	Pro A	357 MM	325M/M	-32M/M	
	Pro B	89 MM	629M/M	+64M/M	
	Pro C	476 MM			

(Source) JBIC materials and executing agency materials

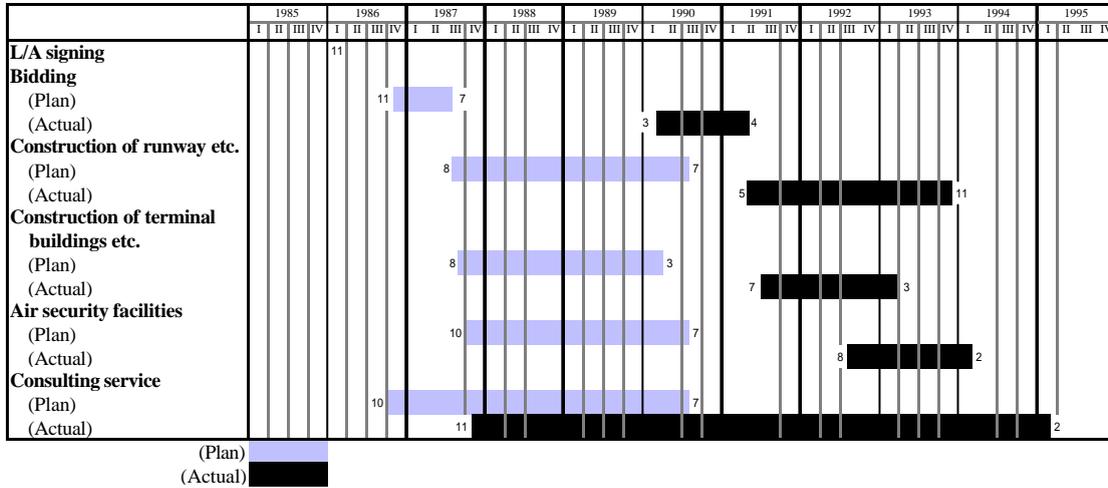
#### (ii) Phase II Summary

		Plan	Actual	Difference	
Construction works	Construction of fuel supply facilities	Receiving facility	3	Same as left	None
		Storage facility	3	Same as left	None
		Refueling facility	5	Same as left	None
		Sub system	2	Same as left	None
	Extension of aircraft hangar	Aircraft hangar	2	Same as left	None
		General aviation hangar	6	Same as left	None
		General aviation office	1	Same as left	None
	Other buildings	Administration building	1,026 m <sup>2</sup>	Same as left	None
		Security building	155 m <sup>2</sup>	Same as left	None
		Offshore rescue building	127 m <sup>2</sup>	Same as left	None
Airport staff housing		27 m <sup>2</sup>	<b>Cancelled</b>	-	
Expansion of landing area	2,620m × 300m	<b>Added</b>	-		
Consulting service	Pro A	43 M/M	95M/M	+52M/M	
	Pro B	98 M/M	154M/M	+56M/M	

(Source) JBIC materials and executing agency materials

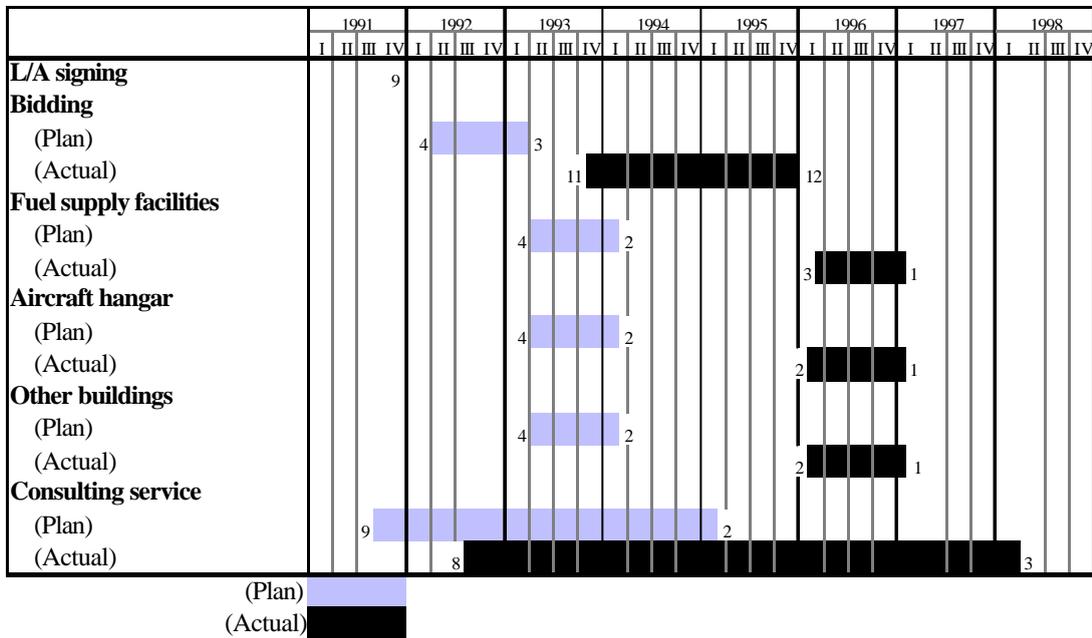
(2) Implementation Schedule

(i) Implementation Schedule of Phase I



(Source) JBIC materials and executing agency materials

(ii) Implementation Schedule of Phase II



(Source) JBIC materials and executing agency materials

(3) Project Cost

(i) Phase I

(Unit: ¥ million)

	Plan		Actual		Difference		
	Total project cost	JBIC loan amount	Total project cost	JBIC loan amount	Total project cost	JBIC loan amount	
Phase I	<b>Construction works</b>	22,530	12,289	20,900	10,986	1,630	1,303
	<b>Air security facilities</b>	2,406	2,233	2,223	1,804	183	291
	<b>Land acquisition cost</b>	1,106	-	337	-	769	-
	<b>Consulting service</b>	2,382	1,281	1,265	947	1,117	334
	<b>Contingency</b>	2,604	1,452	-	-	2,604	1,452
<b>Total</b>	<b>31,028</b>	<b>17,255</b>	<b>24,725</b>	<b>13,737</b>	<b>6,303</b>	<b>3,518</b>	

[Exchange Rate] Plan (at the time of appraisal): ¥1 = Rp.4.32

Actual (average at the time of disbursement): ¥1 = Rp.14.15

(Source) JBIC materials and executing agency materials

(ii) Phase II

(Unit: ¥ million)

	Plan		Actual		Difference		
	Total project cost	JBIC loan amount	Total project cost	JBIC loan amount	Total project cost	JBIC loan amount	
Phase II	<b>Construction works</b>	4,104	4,104	4,335	3,901	+231	203
	<b>Consulting service</b>	176	176	322	322	+146	+146
	<b>Contingency</b>	670	74	-	-	670	74
	<b>Airport staff housing</b>	173	-	-	-	173	-
	<b>Improvement of landing area</b>	-	-	131	56	+131	+56
<b>Total</b>	<b>5,123</b>	<b>4,354</b>	<b>4,788</b>	<b>4,279</b>	<b>335</b>	<b>75</b>	

[Exchange Rate] Plan (at the time of appraisal): ¥1 = Rp.14.67

Actual (at the time of disbursement): ¥1 = Rp.21.61

(Source) JBIC materials and executing agency materials

## 2. Analysis and Evaluation

### 2.1 Evaluation on Project Implementation

#### 2.1.1 Project Scope

This JBIC project was divided into two phases. Phase I covered the construction of main facilities, while Phase II covered the construction of additional facilities.

The project scope of Phase I was changed slightly and some aspects were removed (transferred to Phase II). The main changes were increasing the area of the passenger terminal, while decreasing the area of the freight terminal. Under the original plan, the per person area during peak times would be a narrow  $7.2\text{m}^2$  (the Japanese design at the time of the appraisal called for  $10\text{m}^2$ ). Therefore, this area was increased after conducting a D/D review. It was decided that the freight terminal would be reduced to the size needed at the present moment as the terminal building could be easily expanded later to meet a future increase in demand by simply increasing its span.

It was realized that the area of the passenger terminal was smaller than then at the time of the appraisal. There were no particular problems in expanding this area to the original forecast based on the D/D review. The reduction in the area of the freight terminal was also judged to be a prudent decision. Expansion of the landing area was originally planned to be included in Phase I, but was later transferred to Phase II due to delays with other construction projects.

Changes to Phase II of the project included the above-mentioned addition of the project for expanding the landing area, and the deletion of plans for building airport staff housing. There were no problems in expanding the landing area as expenses were covered by the budget from the Indonesian government and the JBIC loan. The airport staff housing had been scarcely related to the project from the beginning and it was not covered by the JBIC loan. Consequently, it was not admitted to be an urgent priority and was removed from the project scope.

Runway and Taxiway



Apron, Terminal and Parking Lot



Passenger Terminal (arriving terminal on the right, departing terminal on the left)



The project was implemented basically in accordance with plans with only slight modifications, transfers, and suitable deletions of individual construction projects.

The consultant service for Phase I reviewed and revised downward the demand forecasts made at the time of the appraisal. The scope of the project was also reviewed in accordance with this revision, but in the end no major changes were made to the project. This was because the purpose of the project was to expand and renew airport facilities, including the runway, to meet future passenger and freight demands at Balikpapan Airport. Furthermore, the project also aimed at solving the problems of air traffic congestion and decreased safety due to deteriorating equipment, so that it was decided that no major changes were needed to the scope of the project.

### **2.1.2 Implementation Schedule**

#### **(1) Phase I**

There were major delays with Phase I of the project. This was mainly due to the fact that the bidding procedure started some three and half years behind schedule. However, construction proceeded smoothly once started, and the actual time spent on construction was shorter than had been expected. The two main reasons for the large delays in bidding start are as explained below.

- (1) Due to a sudden deterioration in the Indonesian economy, the project scope had to be reviewed to take into consideration a downward revision in the forecasted demand. This review took place just before bidding was to start. As mentioned above, there were no major changes to the project scope, but time was needed to make the review and this delayed the bidding preparations.
- (2) More time was needed to acquire the local currency budget due to the sudden deterioration in the Indonesian economy.

The sudden worsening of the economic situation was an external factor that would have been very difficult to predict and resulted in unavoidable delays with the project. The fact that the actual implementation schedule itself was shortened is worthy of praise considering the circumstances.

## (2) Phase II

Phase II of the project also experienced large delays. Most of these delays involved the bidding process (delays in starting bidding and an extended bidding period). More than one year over the original plan was needed for the bidding period due to huge delays in evaluating bids and negotiating contracts. This evaluation has not been able to pinpoint specific reasons behind the large delays in evaluating bids and negotiating contracts, but it is believed that there is room for some improvement in this area.

### **2.1.3 Project Cost**

#### (1) Phase I

Total project costs for Phase I were originally estimated as ¥31,028 million, but actually came to only ¥24,725 million, which was under budget by ¥6,303 million or 20%. Reasons for why the expenses were under budget included the fact that there were no major changes to the project scope, competitive bidding, and a reduction in the contract amount as the yen was much stronger at the time of disbursement compared to at the initial planning stage.

#### (2) Phase II

Total project costs for Phase II came to ¥4,788 million, which was roughly in line with the originally planned ¥5,123 million.

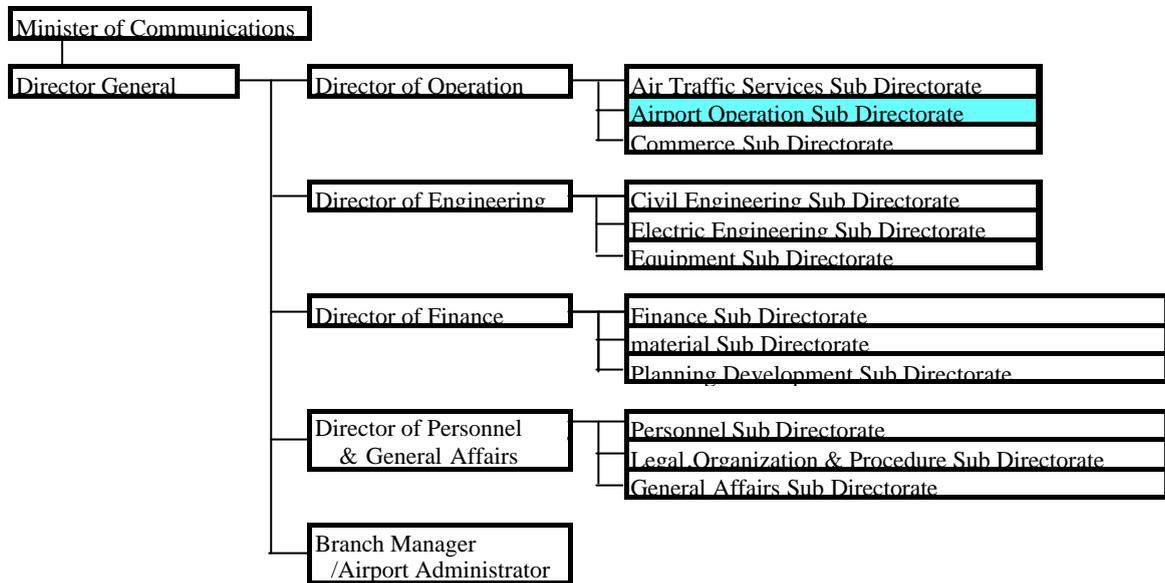
### **2.1.4 Implementation Scheme**

#### (1) Executing Agency

The executing agency for the project was Indonesia's Directorate General of Air Communication (hereinafter referred to as "DGAC", see Figure 1). DGAC is responsible for overall control of aeronautic administration, and the designing and building of the nation's airports. DGAC has some 4,000 employees with 1,200 stationed at the main headquarters and 2,800 assigned to the 103 airports under its direct control. Many of its employees are graduates from the Civil Aviation Academy and have gained valuable experience through support from many developed nations. Therefore, there were no particular problems with DGAC serving as the lead executing agency for this project.

During the implementation stage of the project, a project team was placed under DGAC's Airport Operation Sub Directorate (shaded section in Figure 1) to supervise the project along with the consultants and contractors. The First Airport Company (PTAP I), which will assume responsibility for operating and maintaining the facilities upon completion of the project, also assigned personnel to the financial, construction and airport operation posts within this team.

**Figure 1 Organization Chart of DGAC**



(Source) Executing agency materials

**(2) Consultant**

The Japanese and local consultant J/V for Phase I was hired through a short-list method. The same J/V was hired for Phase II by direct appointment. The direct appointment was adopted for the following reasons:

- (1) Results were satisfactory for the D/D revision of Phase I.
- (2) Familiarity with the conditions at the project site and accumulated working experience.
- (3) Very close relationship between Phase I and Phase II was needed and therefore desirable to use the same company.

The consultant’s TOR included (1) D/D revision, (2) bidding assistance (preparing bidding documents and contracts) (3) construction supervision work (on-site inspections, calculating balance), and (4) monitoring during maintenance period.

There were no reports of any particular problems with the performance of the consultants.

**(3) Contractor**

Based on competitive international bidding with P/Q, orders were placed with J/V of Japanese and local companies acting as contractors for both Phase I and Phase II (not the same J/V).

This was a difficult construction project due to the fragile construction foundation and the fact that the airport remained in use during the construction. Still, the performance of the contractors was reported to be very satisfactory for both Phase I and II.

## 2.2 Evaluation on Operations and Maintenance

### 2.2.1 Operational Scheme

DGAC directly operated and managed airports in Indonesia up until 1964. However, the Airport Public Corporation was established in 1962 to improve the efficiency of airport operations, and the operations of the more profitable airports were gradually transferred to this public corporation. In 1992 this corporation became a publicly listed company.

DGAC is currently responsible for supervising 146 of the nation's 533 airports. However, only 103 of these airports are directly operated by DGAC, and 21 of the largest airports are operated and managed by the First Airport Company (hereinafter referred to as "PTAPI") and the Second Airport Company (hereinafter referred to as "PTAPII"). PTAPI operates 12 airports in the eastern region of the country, while PTAPII operates nine airports in the western region (see Table 5).

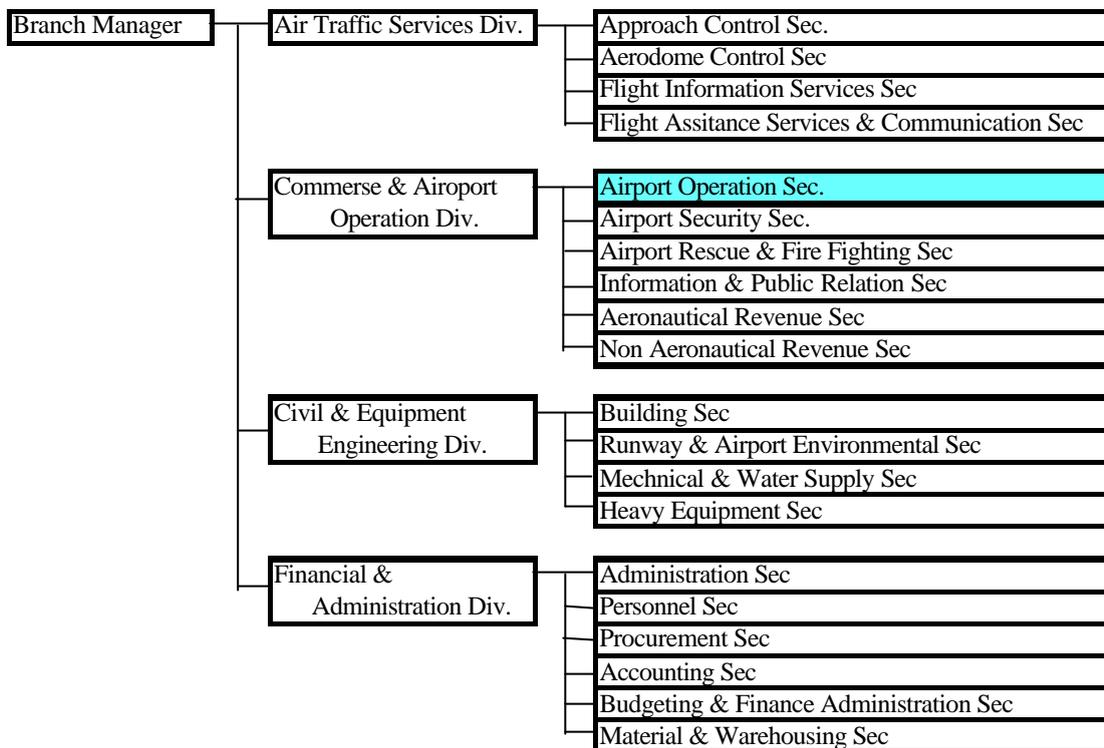
**Table 5 Maintenance System of the Airports**

Maintenance agency	No. of airports	Example
PTAPI	12	Bali, Balikpapan, Surabaya etc.
PTAPII	9	Jakarta etc.
DGAC	103	
Local government	22	

(Source) Executing agency materials

PTAPI is responsible for operating Balikpapan Airport, the target of this project. The Balikpapan Airport office of PTAPI's Airport Operation Section (shaded section in Figure 2) is directly responsible for operating the airport (see Figure 2). This office is responsible for maintenance of the runway, apron, taxiway, air security, safety facilities, and passenger and freight terminals. The fuel supply facilities are owned by the Indonesian Petroleum Public Corporation. The refining, transport and supply of this fuel, as well as the related maintenance, are all handled by this public corporation.

**Figure 2 Organization Chart of Airport Company**



(Source) Executing agency materials

### 2.2.2 Maintenance Scheme and Status

#### (1) Main Facilities

The surfaces of the runway, apron and taxiway are inspected and serviced on a regular basis. For example, cleaning is performed daily and once every year a chemical agent is used to remove rubber (scrapped off from the surface of the airplane tires during landing) that had become adhered to the runway. The passenger terminal is painted twice a year and the cargo terminal is painted once every two years.

There have been no problems in the maintenance of these main facilities as service and repairs have been carried out in accordance with the maintenance manual.

#### (2) Operation and Maintenance Costs

There have been no reports of problems in terms of operation and maintenance costs as a sufficient budget has been provided (see Table 6).

**Table 6 Operation and Maintenance Costs at Balikpapan Airport**

(Unit: Rp. million)

Fiscal Year	Operation Cost	Maintenance Cost
1990	476	676
1991	599	455
1992	604	358
1993	927	317
1994	1,829	1,125
1995	2,008	1,250
1996	2,301	1,336
1997	2,686	2,115
1998	2,945	2,640

(Source) Executing agency materials

### (3) Training and Education

Efforts have been made to provide training that supports smooth airport operations. The Education and Training Agency and the Research and Development Agency, both of which are outside of the Ministry of Transport, have been helping to train pilots, aeronautical engineers, air-traffic controllers and control technicians (electrical and communications technical officers).

### 2.2.3 Financial Situation

Earnings for PTAPI are as shown in Table 7. Two-thirds of these earnings are from aviation-related services (landing fees, navigation support fees, and airport user fees). The remaining one-third is obtained from tenant fees and other earnings. When PTAPI was a public corporation, 55% of all after-tax profits were collected by the government unconditionally, but such an obligation was eliminated when it became a publicly listed company. However, PTAPI then had to come up with its own budget for small-scale projects such as apron and building expansion.

**Table 7 PTAPI Profit and Loss Statement**

(Unit: one million Rp)

		1994	1995	1996	1997	1998
Income	Aviation-related	128,219	149,888	195,523	212,931	413,966
	Non-aviation	58,187	78,225	88,065	352,443	905,756
	Sub-total	186,406	228,113	283,588	565,374	1,319,722
Expenses	Personnel	31,251	41,837	46,162	59,004	73,958
	Operations	15,459	19,518	22,658	27,047	33,108
	Maintenance	12,798	14,816	16,174	27,541	25,405
	Depreciation Costs	38,819	48,389	55,042	63,489	64,637
	Others	20,594	28,718	54,322	62,319	328,984
	Sub-total	118,921	153,278	194,358	239,400	526,092

(Source) Executing agency materials

As shown in the above table, PTAPI's overall earnings are in the black, but it can not be said that all of the airports are posting a profit. In fact, the profitable main airports are compensating for the losses at the smaller unprofitable airports. Among the 11 airports under the jurisdiction of PTAPI only four (Bali, Medan, Surabaya, Ujung Pandang) are profitable and are compensating for the other seven unprofitable airports including Balikpapan Airport.

The profit and loss statement for just Balikpapan Airport is as shown in Table 8. Earnings at this airport increased almost three-fold over five years, but expenses also doubled, thus keeping operations in the red. Table 8 shows that depreciation costs rose sharply from 1994. This was because use of expanded and new airport facilities began during this year, and their amortization started as well.

Looking at the earnings forecasts for Balikpapan Airport, expenses are expected to continue at the current levels for the time being due to the continued amortization of the increased assets brought about by this project. Therefore the current financial state of the airport will likely remain unchanged unless there is a hike in airport fees or a large increase in the number of passengers using the airport.

**Table 8 Profit and Loss Statement of Balikpapan Airport**

(Unit: Rp. Million)

		1994	1995	1996	1997	1998
Income	Aviation-related	3,487	4,356	6,613	7,334	7,151
	Non-aviation	3,153	3,711	4,544	7,243	12,146
	Sub-total	6,640	8,067	11,157	14,577	19,297
Expenses	Personnel	2,513	3,418	3,574	4,653	5,779
	Operations	1,829	2,008	2,301	2,686	2,945
	Maintenance	1,125	1,250	1,336	2,115	2,640
	Depreciation Costs	13,808	19,696	19,967	21,487	20,489
	Others	1,277	1,569	6,857	4,517	5,836
	Sub-total	20,552	27,941	34,035	35,458	37,689
Profit		-13,912	-19,874	-22,878	-20,881	-18,392

(Source) Executing agency materials

**2.2.4 Impact on the Environment**

As this project involved the expansion of existing facilities, there were only very minor impacts on the environment (with the exception of noise pollution considerations). Several problems were solved through financial compensation or the construction of countermeasures. An outline of these measures is shown in Table 9. A further analysis of noise pollution problems is also provided below.

**Table 9 Environmental Problems and Countermeasures at Balikpapan Airport Development Project**

	Items to be Checked	Existence of Problems and Countermeasures
Pollution	Impact on aquatic life forms, the fishing industry and other water uses.	None
	Drainage, soil erosion and other items that could damage water quality.	None
	Noise	There are some local residents effected by the noise
Natural Environment	Influence on ecosystems	None
	Ocean and river shore erosion	An embankment was constructed
	Scenery	None
Social Environment	Historical and cultural assets	None
	Existing facilities	Was actually improved
	Relocation of residents	Handled by providing financial compensation to fishermen and roughly 1,000 households in the surrounding area
Others	Environmental impact during construction process	None
	Environmental monitoring	Monitoring during the construction phase showed that there were no environmental problems

Note: Items to be checked were based on the "JBIC Environmental Guidelines for ODA Loans".

## - Airplane Noise

Balikpapan Airport handles only 20 large airplane takeoffs and landings each day and the airport has provided many economic benefits. Therefore, the problem of noise has not become a serious issue. For the noisiest location, land was purchased and residents were relocated before starting the Phase II. However, there are still many residents in the area surrounding the airport, and there is the potential that noise may become a problem in the future. For this reason, hearings were conducted with local residents about noise pollution.

### (1) Technical High School

There is a high school located just beneath the runway approach. An interview was conducted with the principal and an English teacher of this school. They said that the surrounding area is quite noisy and this noise interferes with their ability to conduct classes. They would like to have the school moved, but funds are not available. They have also asked for soundproof school buildings, but again funds are not available. For the time being they are being asked to simply contend with the situation.

### (2) City Branch Office

This branch office is now located on a small hill a fair distance from the airport. The office used to be next to the airport, but was moved to avoid the noise.

### (3) Residents Near the Airport

There are many residents living right up against the fence of the airport. Interviews were conducted of three men and three women at the noisiest location among this residential area. They said that the area was quite noisy, but added that they have no intention of moving as the land prices are cheap (because of the noise) and the location is conveniently located near a national road. They also said that currently they have no intention of protesting against the noise as the airport has helped to improve their living standards.



Residents still living near the fence



Interview with local residents

Based on these interviews, it was concluded that the current noise level is within an acceptable range, except for the officials at the technical high school. However, considering that the noise is already at a level unacceptable by the technical high school, there is the possibility that

increased use of the Balikpapan Airport could raise the noise to a level that can not be accepted by the local residents as well.

This being the case, there is the possibility that noise prevention measures will be needed in the future for the area surrounding Balikpapan Airport. It is hoped that DGAC, the executing agency, and PTAPI, the operator of the airport, will conduct regular monitoring that includes measuring the noise level, and then based on these results, make the necessary checks to insure that there are no large noise-related impacts on the environment

## 2.3 Project Effects and Impact

### 2.3.1 Quantitative Effects

#### (1) Increased Passenger and Freight Volumes, Steady No. of Takeoffs and Landing

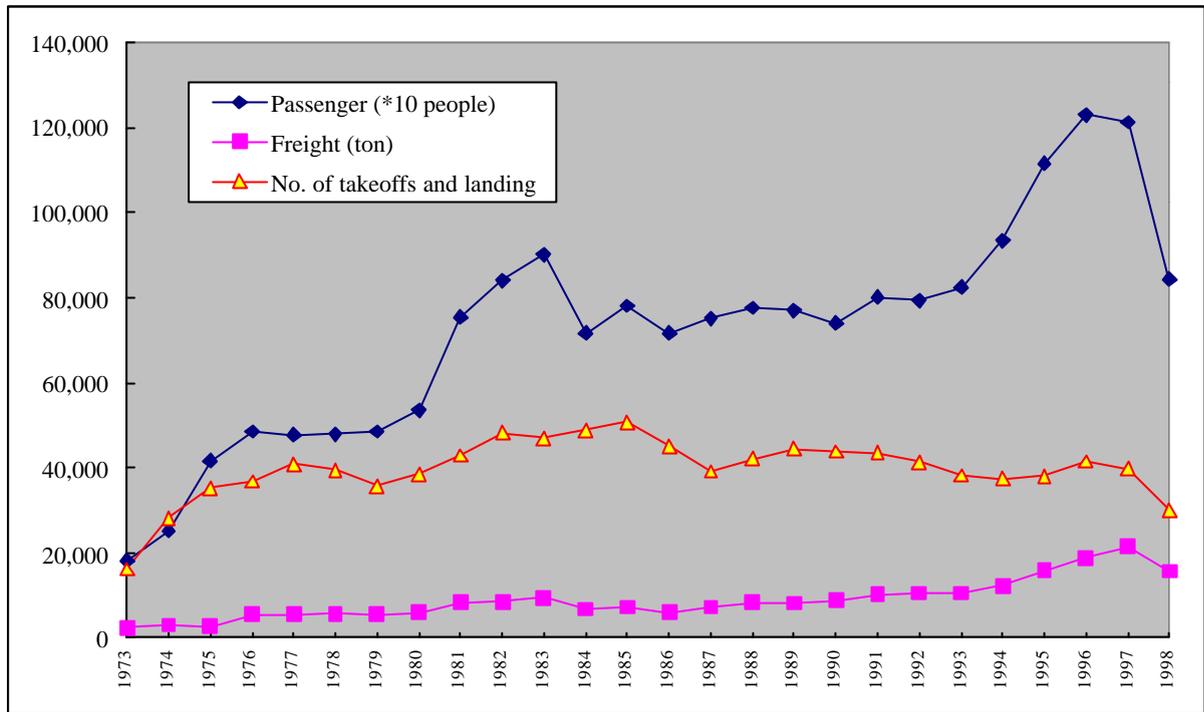
The shaded section of Table 10 shows the data for the number of passengers and other factors following completion of the Phase I. The number of passengers and the amount of freight increased sharply following completion of this project in 1994, while at the same time the number of takeoffs and landing remained roughly unchanged. This is a clear demonstration of how this project helped the airport to handle larger aircraft. The increase in the number of passengers and the amount of freight while keeping the number of takeoffs and landing roughly unchanged is seen as a direct result of this project (see Figure 3).

**Table 10 Passengers, Freight, and Takeoffs and Landing at Balikpapan Airport**

	Passengers (1,000 people)	Freight (tons)	No. of takeoffs and landing		Passengers (1,000 people)	Freight (tons)	No. of takeoffs and landing
1973	182	2,507	16,218	1986	717	6,032	45,061
1974	252	3,019	28,120	1987	751	7,279	39,183
1975	416	2,779	35,270	1988	776	8,388	42,091
1976	486	5,465	36,828	1989	770	8,193	44,508
1977	478	5,545	40,852	1990	741	8,771	43,934
1978	480	5,631	39,391	1991	802	10,256	43,513
1979	486	5,533	35,737	1992	793	10,534	41,304
1980	535	5,925	38,585	1993	825	10,588	38,203
1981	754	8,432	42,965	1994	934	12,337	37,481
1982	841	8,543	48,237	1995	1,116	15,913	38,117
1983	901	9,458	47,092	1996	1,230	18,779	41,507
1984	716	6,759	48,920	1997	1,212	21,556	39,807
1985	781	7,189	50,704	1998	843	15,747	30,072

(Source) Executing agency materials

**Figure 3 Changes of No. of Passengers and Other Factors at Balikpapan Airport**



(Source) Executing agency materials (prepared from Table 10)

## (2) Analysis of Economic Internal Rate of Return

EIRR was calculated after making a major downward<sup>2</sup> revision to the demand forecasts at the time of the Phase II project appraisal. This EIRR was calculated as 12.6% based on the following considerations:

### Benefits

- (1) Improved transport efficiency due to the use of larger aircraft
- (2) Reduced time due to the installation of aviation support facilities
- (3) Reduced time due to improved ground facilities
- (4) Reduced passenger time due to improved terminal building

### Expenses

- (1) Construction cost
- (2) Operation cost

Project life: 15 years (based on life for aviation support equipment with the shortest service life)

In this evaluation, the actual construction cost was applied and the other figures were re-calculated based on the number of passengers until 1998 and on the latest demand forecasts. As the result, EIRR came to 20.1%.

<sup>2</sup> Refer to Table 4.

EIRR increased because of (1) the overall decrease in the project cost and (2) the results and figures from the latest demand forecasts exceeded figures for the demand forecast at the time of the appraisal for the Phase II.

### **2.3.2 Qualitative Effects**

#### **(1) Improved Safety**

Safety at the airport was improved by installing safety equipment, widening the landing area, and extending the length of the parallel taxiway and runway.

#### **(2) Transfer of Technology**

DGAC technicians participated in the design and construction of this project. Through this experience these technicians were able to learn advanced technical skills. In particular, the Indonesian side said that this was their first experience in building a protective wall along the coastal section. They reported that this was a very valuable learning experience from a technical point of view.

#### **(3) Noise Reduction**

The number of passengers and the amount of freight have increased, but the number of takeoffs and landing has remained roughly unchanged as the expansion of the runway by this project has made it possible for A300's and other larger aircraft to use this airport. Furthermore, the larger A300 planes are actually quieter than the F28 planes that had been the predominant aircraft at this airport. In this manner, the project has made a specific contribution to easing noise levels for the areas surrounding the airport.

#### **(4) Employment Creation**

This project used Indonesian employees and materials. In particular, priority was given to using people and materials from the area surrounding the Balikpapan Airport, which helped to create many new jobs. At the busiest period this project was employing 1,300 people.