The Philippines

Nationwide Air Navigation Facilities Modernization Project – Phase III

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Field Survey: October 2006–April 2007

1. Project Profile and Japan's ODA Loan

Project area map

Tacloban Doppler VHF
Omni-directional Range and Distance
Measuring Equipment

1.1 Background

Until 1991, the traffic volume of the Philippines' aviation sector has remained stagnant due to political turmoil and economic recession. However, the volume of air traffic began increasing in 1992 as a result of population growth and economic development, as well as the introduction of larger aircraft, improved functions and the building of new airports. Under these circumstances, the government of the Philippines has been striving to promote the development of air navigation facilities based on a master plan on air navigation aid. Nevertheless, these facilities have not been developed sufficiently, and the country continues to be afflicted by a host of problems such as communication troubles between pilots and staff in control towers due to the poor quality of sound transmission especially in the southern part of the Philippines, difficulty of ascertaining the positions of aircraft at airports because of lack of navigation facilities, aging equipment, and lack of a system for supplying spare parts. In an island country like the Philippines, air transportation is an indispensable mean of transportation. Thus, it is extremely important that efforts are made to enhance the safety and efficiency of air transportation.

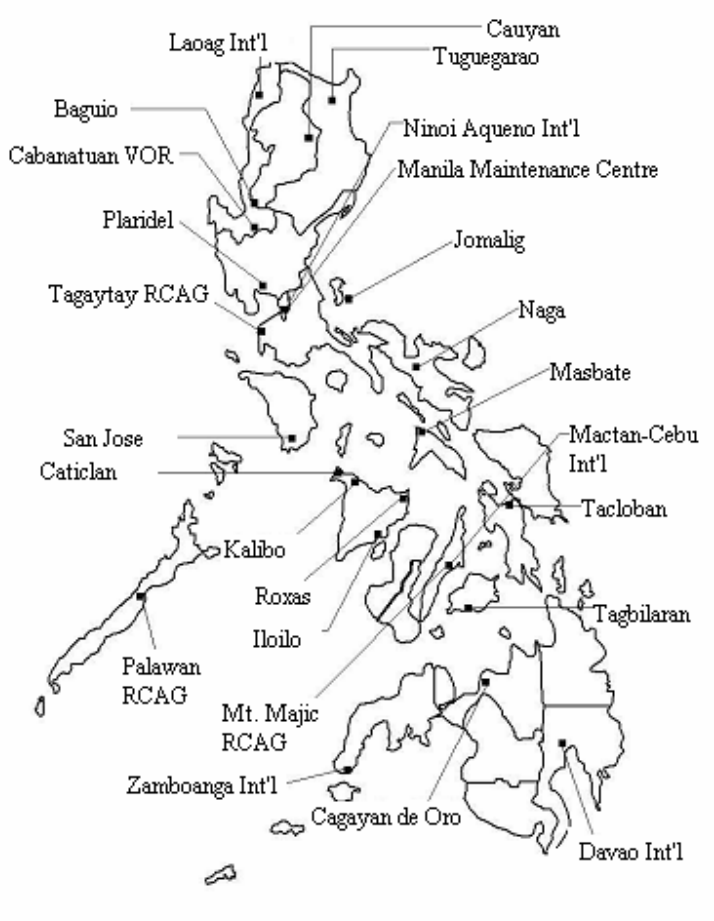
Under these circumstances, in 1978, JBIC implemented the Nationwide Air

Navigation Facilities Expansion Project – Phase I. As part of the Phase I project, JBIC implemented a long-term modernization program. In 1986, after reviewing its modernization program, JBIC implemented the Nationwide Air Navigation Facilities Modernization Project – Phase II. As part of the Phase II project, JBIC implemented the Financial Technical Management Study for 1990 to 2000. Based on the criteria established in the study, the project reviewed the implementation of development projects for air navigation facilities that were being carried out with assistance from other donor countries and prepared the demand forecast for the Civil Aviation Master Plan (CAMP). JBIC then prepared the implementation plan (I/P) for the Phase III project.

1.2 Objective

The project's objective was to enhance the safety of air traffic services by providing air navigation facilities, and thereby contribute to the traffic increase and the growth of the air industry in the Philippines.

Figure 1: Project Area Map



1.3 Borrower/Executing Agency

The Government of the Republic of the Philippines/Air Transportation Office (hereinafter referred to as "ATO")

1.4 Outline of Loan Agreement

Loan Amount / Loan Disbursed Amount	6,386 million yen / 6,230 million yen	
Exchange of Notes / Loan Agreement	July 1995 / August 1995	
Terms and Conditions -Interest Rate -Repayment Period (Grace Period) -Procurement	Main 2.7 % 30 years (10 years) General untied	Consultant 2.3% 30 years (10 years) General untied
Final Disbursement	June 2004	
Main Contractor (Above 1 billion yen per contract)	TOMEN Corporation (Japan).	
Consultant Services (Above 100 million yen per contract)	Japan Airport Consultants (Japan).	
Feasibility Study (F/S), etc.	N/A	

2. Evaluation Result (Rating: C)

2.1 Relevance (Rating: a)

2.1.1 Relevance at the time of appraisal

In 1992, under the support of the United Nations Development Program (UNDP), the Government of Philippines, specifically ATO, jointly formulated the Civil Engineer Master Plan (CAMP) with the International Civil Aeronautics Organization (ICAO).[1] Based on CAMP, the development of air navigation facilities, modernization of air navigation facilities and aerial communications facilities, and the improvement of disaster-prevention capacity were set as the goals of the Medium-Term Philippines Development Plan (1993–1998). Moreover, the Long-Range Modernization Plan (LRMP: for 1981–2000) was implemented in four phases, with priority given to the development of urgently needed air safety facilities. In phase 3, which includes this project, a plan was formulated for the development of facilities including air traffic control facilities, air safety communication facilities, and control communication facilities.

To meet the demands of the aviation sector, a mode of transportation indispensable to the island nation of the Philippines, this project was designed to enhance the safety and efficiency of air transport as well as the number of air passengers and volume of freight

[1] ICAO is an UN agency established in 1947.

transport. Given its contribution to the growth of Philippines' national economy in general and to its aviation industry in particular, the project was given high priority.

2.1.2 Relevance at the time of evaluation

At this point, in the field of transportation infrastructure, the goals, strategies and action plans of the Medium-Term Philippine Development Plan (2004–2010) are aimed at strengthening national unity, family bonds and tourism by allowing people to travel faster, cheaper and safer. In the development plan, top priority is given to the implementation of the most important infrastructure projects (airports, sightseeing spots, etc) in order to promote trade and investment. Moreover, CAMP II, which was adopted in 1997, updated specific items of navigation aid facilities and others which need be improved in the future. CAMP II also states facilities that are scheduled to be implemented or improved with OECF (now JBIC) funds. Thus, the importance of this project is recognized in the current medium-term development project and CAMP II.

The importance of this project was very high, as it involved the following components: (1) the immediate updating of facilities at Baguio Airport, which was damaged in an earthquake disaster; (2) the development of communication facilities that, due to a delay in the provision of air safety, have not kept up with the expanded demand for air transportation accompanying the advent of larger aircraft in recent years; and (3) the renovation of outdated equipment. In addition, the government of the Philippines is implementing the development of nationwide air navigation facilities following the international safety standards presented by ICAO. Thus, this project contributes to the enhancement of air transportation safety.

2.2 Efficiency (Rating: c)

2.2.1 Outputs

The outline and outputs of the project plan are shown in Table 1. Overall, this project involved undertaking the modernization of air navigation facilities targeting 29 airports and air stations.

The outputs were either as planned or nearly as planned, but there were some items in the project that were either partially altered or not implemented. The altered items are reviewed below. The location of the Remote Center Air Ground Communication (RCAG) in Palawan, one of the two air traffic control facilities installed under this project, was moved from Puerto Princesa to a better location in Quezon.

Table 1: Outline and Outputs of the Project

Item	Plan	Actual
1. En-Route Air Traffic Control Facilities	• Improvement of air traffic control facilities (expanding mainly VHF wave coverage on the west side and on the south side, improvement of Remote Center Air Ground Communication [RCAG]: 2 sites (Puerto Princesa and Davao)) • Improvement of terminal control facilities (8 airports such as Cagayan de Oro and Davao)	As planned Nearly as planned
2.Aerodrome/Approach Air Traffic Control Facilities	• Provision of Flight Service Station (FSS): 2 sites (Cauayan, Puerto Princesa)	Nearly as planned
3. Air Navigation Facilities	• Provision of an Automatic Telex Message Switching System for securing point-to-point aerial communication network between airports: 14 airports such as Davao, Manila and Mactan	Not implemented
4.Terrestrial Communication Facilities	• Renovation and installation of air navigation radio facilities for use on air routes and at airports (VOR/DME)	Nearly as planned
5.Satellite Based Communication Facilities	• Expansion of terrestrial based communication facilities (Davao Airport and between Tagaytay-Manila Center) • Improvement of satellite communication facilities (14 airports, Mt. Majic transmitting / receiving station, Manila AFC)	Nearly as planned Not implemented
6.Maintenance Center	• Provision of a maintenance center inside Manila Airport and placement of all spare parts for equipment for all airports to create a supply system. • Functions of the center: provision of spare parts / repair of equipment / measurement with testing equipment / monitoring of the operational condition of air safety facilities	As planned
Consulting services	International: 184 M/M Local: 182 M/M	As planned

Additionally, at first, renovation of the control communication facilities at Baguio Airport was planned, but after a survey, it was determined that damage to the building caused by an earthquake would be too devastating. Thus the plan was changed in favor of installing new RCAG facilities. There was a change in the project design that required construction of a different method of communication. Consequently, construction of point-to-point aerial communication facilities was not implemented. At Caticlan Airport, it was judged that with a VHF Omnidirectional Radio Range (VOR) facility, an approaching aircraft may have difficulty receiving radio signals from the airport. Thus, a Non-directional Radio Beacon (NDB) was installed instead. Moreover, since ATO self-financed and rehabilitated the existing VOR/DME (distant measuring equipment) facilities at Bacolod Airport, those activities were deleted from this project. In eight airports (see Table 1), the VOR/DME facilities were changed to Doppler VOR/DME (DVOR/DME), and the control tower Distance Measuring Equipment (DME) at Caticlan Airport in Zamboanga was moved to Masbate. What is more, the topographical condition of DME in Baguio Airport was judged to be so bad that approaching aircraft would not be able to properly receive radio waves from the airport. Thus, the DME was deleted from the project. The UHF link that was scheduled to be installed at Davao Airport was changed to a cable installation. Improvement of satellite communication facilities was deleted from the project, since ATO procured them to deal with the Y2K problem of the past.

Traffic control tower at Caticlan Airport

2.2.2 Project period

At the time of appraisal, the project period was set for 4 years and 1 month, from August 1995 to August 1999. Actual project period lasted 8 years and 11 months, from August 1995 to June 2004. Construction work was completed in March 2004. The period of implementation was delayed 4 years and 10 months from the original schedule. The breakdown of work delays is (a) 9 months prior to the consultant

ATIS at Cebu Airport

selection; (b) 5 months for the consultant selection; (c) 13 months for preparation of detailed designs and selection of contractors and (d) 24 months for the construction. The work delays were partly due to the length of time it took to settle disputes over site acquisitions at Baguio, Laoag, and Kalibo Airport. Settlement of these disputes took time because the landowners demanded an increase in the guarantee deposit. Land acquisition did not lead to relocation of inhabitants. The fact that the design had to be changed numerous times was another factor that caused approximately 7 month delays.

2.2.3 Project cost

At the time of appraisal, the total project cost was estimated at 7,124 million yen with 6,386 million yen to be funded by Japan's ODA loan. The actual total project cost was 7,622 million yen (6,203 million yen in Japan's ODA loans). The foreign portion (in terms of actual performance) of the total project cost was about 3% less than the planned amount. Expenditure for equipment purchase and civil works were nearly as planned. Consultant fees rose by 60% from the original estimation, but they were paid for by appropriating money from contingencies, so the foreign portion was nearly as planned. The local portion of the cost nearly doubled due to the inclusion of expenses for paying site compensation and local taxes.

2.3 Effectiveness (Rating: a)

2.3.1 Expansion of the coverage of air-ground radio communication

According to air traffic control personnel, the implementation of the project increased the coverage of air-ground radio communication by approximately 10–20% (about 81,000–162,000 nautical miles) in the Philippine Flight Information Region especially in the southern and western parts of the Philippines. In particular, the RCAG on Palawan Island is believed to have expanded its coverage in the South China Sea.

The adoption of state-of-the-art high-precision equipment made possible improvements in communication sensitivity and reductions in errors, as well as direct communication between airport control centers and pilots, thus creating a more conducive aviation environment to realizing good guidance control.

Figure 2: FIR Coverage

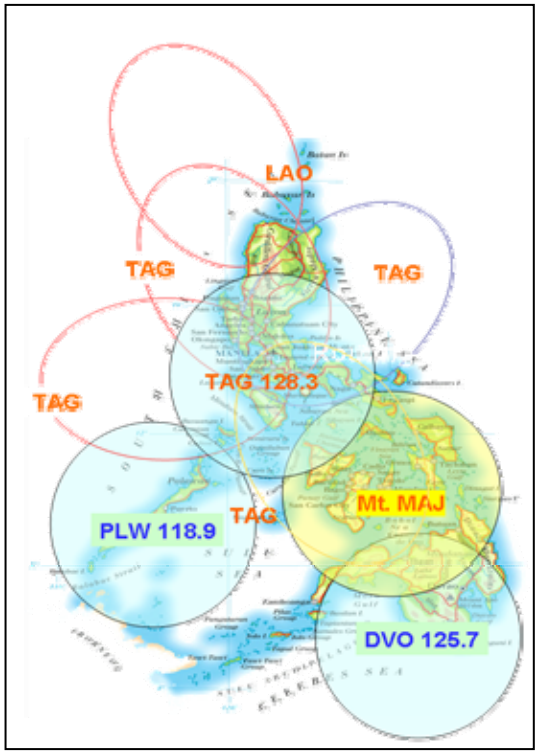
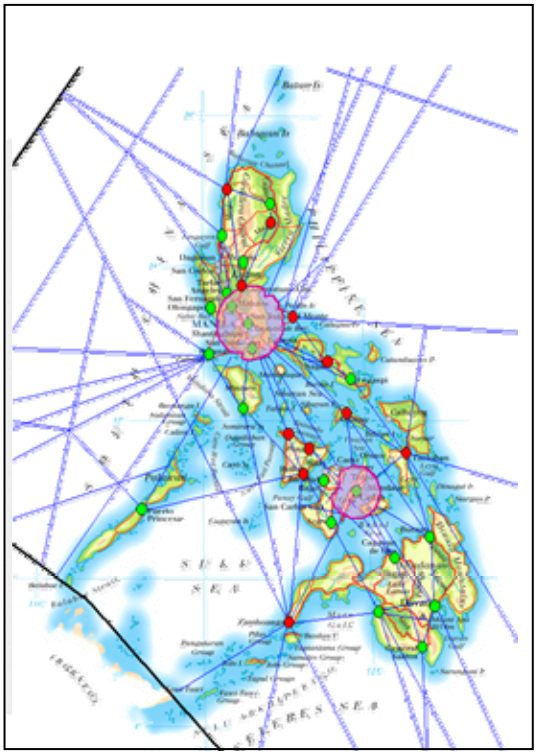


Figure 3: Airways in the Philippines



2.3.2 Increase in air transportation volume

High-precision equipment (e.g., replacement of VOR/DME with DVOR/DME) was adapted at 13 airports, which includes the installation of DVOR/DME at Iloilo and Tacloban airports. As a result, the opportunity for landing even in adverse weather conditions increased at Iloilo and Tacloban airports. These improvements increased the safety and efficiency of air transport, thereby contributing also to the increase in air traffic.

Tables 2, 3 and 4 below summarize the transaction volume of air cargo, the number of passengers, and the number of landings and takeoffs in each airport. It is difficult to confirm the relationship between the project and airport performance. However, at the time the project was completed (2004), compared with figures in 1995, traffic volume in both cargo and passengers tended to increase at every airport. At some airports, the number of landings and takeoffs, remained the same or decreased. This can be attributed to the impact of, among other things, the introduction of larger airplanes.

Hearing from pilots revealed that the adoption of such equipment results in the reduction of approximately 3–10 minutes of flight time, though this depends on the airport.

Table 2: Total Air Cargo by Airport

							(Unit: ton)
Domestic	**1995**	**1998**	**2000**	**2001**	**2002**	**2003**	**2004**
Mactan	37,168	29,166	34,271	32,985	29,521	33,565	37,986
Davao	23,151	26,977	41,505	46,420	41,323	40,037	43,772
Laoag	5.5	2.4	152	466	487	547	907
Zamboanga	4,022	3,883	6,239	5,872	6,210	7,592	7,561
Baguio	142	45	111	181	102	93	150
Cagayan de Oro	8,206	6,913	11,664	10,481	10,236	10,452	10,735
Iloilo	4,772	4,812	6,434	8,708	8,890	9,263	9,952
Roxas	3,910	2,106	3,837	3,637	2,997	1,563	3,436
San Jose	349	243	1,009	368	396	446	414
Tacloban	3,359	2,815	3,398	3,384	3,221	2,983	3,746
Cauayan	113	110	198	236	424	230	260
Kalibo	1,467	1,332	934	1,742	2,041	1,868	1,627
Masbate	389	174	203	288	280	178	172
Naga	531	1,288	1,068	359	109	103	72
Plaridel	0	125	4	2	24	47	6
Tagbilaran	268	163	390	501	1,770	2,125	2,367
Tuguegarao	131	918	227	273	282	147	169
Caticlan	446	522	691	1,184	1,408	2,418	3,259
Jomalig	1.9	3.6	0.6	N.A.	1.7	N.A.	0.3
Ninoy(NAIA)	79,743	85,975	120,398	120,839	121,862	119,521	124,428
Domestic TOTAL	**168,174**	**167,573**	**232,734**	**237,926**	**231,585**	**233,178**	**251,019**
International	**1995**	**1998**	**2000**	**2001**	**2002**	**2003**	**2004**
Ninoy(NAIA)	274,839	291,246	286,973	235,908	265,902	255,249	299,243
Mactan	15,192	14,803	22,326	19,713	19,115	19,428	19,678
International TOTAL	**290,031**	**306,049**	**309,299**	**255,621**	**285,017**	**274,677**	**318,921**

Table 3: Total Number of Air Passengers by Airport

							(Unit: thousand people)
Domestic	**1995**	**1998**	**2000**	**2001**	**2002**	**2003**	**2004**
Mactan	1,842	1,775	1,899	1,855	1,739	1,850	2,034
Davao	654	855	940	947	962	982	1,129
Laoag	76	48	27	42	36	33	46
Zamboanga	319	253	285	289	296	309	353
Baguio	37	16	7	12	14	14	19
Cagayan de Oro	350	836	473	458	469	472	545
Iloilo	466	616	380	699	677	681	740
Roxas	79	70	78	87	83	79	96
San Jose	35	30	36	42	45	41	41
Tacloban	266	318	309	299	304	304	347
Cauayan	14	19	8	9	19	10	11
Kalibo	207	218	177	238	254	230	266

Masbate	36	26	21	30	29	26	27
Naga	44	70	63	64	45	45	44
Plaridel	16	15	5	7	12	11	10
Tagbilaran	65	32	18	34	77	106	163
Tuguegarao	53	36	18	33	32	30	35
Caticlan	52	74	105	167	196	240	350
Jomalig	0.64	0.22	0.04	0.01	0.4	0.04	0.4
Ninoy (NAIA)	4,309	5,370	5,538	5,401	5,522	6,012	7,013
Domestic TOTAL	**8,921**	**10,677**	**10,387**	**10,713**	**10,811**	**11,475**	**13,269**
International	**1995**	**1998**	**2000**	**2001**	**2002**	**2003**	**2004**
Ninoy (NAIA)	6,560	6,814	7,130	7,144	7,466	7,126	8,416
Mactan	306	313	404	397	425	422	578
International TOTAL	**6,866**	**7,127**	**7,534**	**7,541**	**7,891**	**7,548**	**8,994**

Table 4: Total Number of Airplane Landings and Takeoffs by Airport

							(Unit: times)
Domestic	**1995**	**1998**	**2000**	**2001**	**2002**	**2003**	**2004**
Mactan	32,868	33,042	37,113	41,153	44,914	48,688	51,900
Davao	11,552	19,446	12,816	12,730	11,422	11,076	11,366
Laoag	3,924	1,762	274	2,454	2,384	3,378	2,444
Zamboanga	14,430	6,313	8,084	8,204	5,557	7,010	6,456
Baguio	2,516	868	622	904	1,948	2,116	1,826
Cagayan de Oro	5,626	3,822	7,996	7,308	6,364	5,998	6,834
Iloilo	14,486	6,615	25,672	13,940	20,244	19,464	19,524
Roxas	1,702	497	1,806	1,580	1,240	872	1,674
San Jose	972	1,000	1,596	2,108	1,592	1,540	1,640
Tacloban	3,094	4,315	7,850	7,328	7,472	6,428	7,306
Cauayan	4,698	2,091	3,194	3,408	6,558	0	2,444
Kalibo	3,350	3,351	2,264	5,628	5,358	3,142	6,580
Masbate	1,198	544	980	1,350	1,252	1,012	830
Naga	1,622	913	1,318	1,494	842	468	462
Plaridel	5,978	2,932	2,984	3,830	5,293	4,826	4,276
Tagbilaran	2,472	511	1,146	1,734	3,044	3,046	3,502
Tuguegarao	1,468	1,171	2,994	2,430	1,916	1,442	2,094
Caticlan	4,190	3,022	7,130	8,672	11,944	11,254	15,404
Jomalig	158	29	20	4	66	118	74
Ninoy	108,683	128,733	127,611	130,492	124,840	117,408	115,640
Domestic TOTAL	**224,987**	**220,977**	**253,470**	**256,751**	**264,250**	**249,286**	**262,276**
International	**1995**	**1998**	**2000**	**2001**	**2002**	**2003**	**2004**
Ninoy	37,311	41,138	49,260	42,099	44,112	42,300	42,385
Mactan	2,565	3,022	3,509	3,906	3,601	3,886	4,261
International TOTAL	**39,876**	**44,160**	**52,769**	**46,005**	**47,713**	**46,186**	**46,646**

2.3.3. Promotion of efficient and safe air navigation facilities

Manila Maintenance Center

Spare parts are stored and managed in Manila maintenance center. Maintenance centers not only supply spare parts but they also repair equipment, among other things. Establishing maintenance center has facilitated efficient equipment operation and maintenance. However, interviews conducted in field surveys indicate that some of the equipment procured under the project has already become outdated, thus making it difficult to procure spare parts.

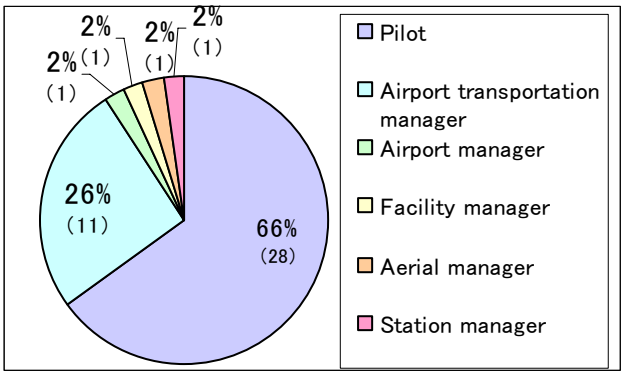
2.3.4 Internal rate of return

In a transportation sector, it is essential to ensure safety. This project also aims at improving the safety of all airways in the Philippines. However, it is difficult to calculate the additional benefit compared to the investment, economic and financial internal rate of return (IRR).

2.4 Impact

Beneficiaries of the project were asked what they thought were the impacts and effects of the project. The breakdown of the respondents and the results of the interview survey are presented below.

Figure 4: Profile of the Respondents



2.4.1 Improvement of safety and efficiency

All respondents to beneficiary surveys have acknowledged that air safety has been enhanced significantly since the completion of the project. It is also reported that adoption of navigational aids such as DVOR/DME enables them to take off and land by following

the instrument, thus reducing the number of flight cancellations due to bad weather. For airline companies, this means they are able to reduce the number of detour flights due to bad weather and thereby save on fuel. For passengers, this means they are able to reduce the frequency with which they have to change their itinerary because of delays in takeoffs and landings.

2.4.2 Impact on environment

Sixty-five percent (65%) of the respondents said that the project has not had any negative impact on the environment. Nineteen percent (19%) said that they "Can't say either way," and 12% said that "Yes, it may have." Some respondents spoke highly of the fact that increasing the efficiency of flight operations led to a reduction in fuel consumption, thus lowering the level of atmospheric contamination.

2.5 Sustainability (Rating: b)

2.5.1 Executing Agency (ATO)

2.5.1.1 Operation and maintenance system

ATO, under Department of Transportation and Communications (DOTC), is the executing agency of the project and is in charge of operation and maintenance after the completion of the project. Its main tasks are the overall guidance, supervision and development of airports as well as the efficient control of air traffic nationwide. ATO also conducts surveillance of the country's Flight Information Region (FIR) covering the country's airspace. It operates and manages airports in 85 locations scattered throughout the country with 3,900 staff dividing the country into nine regional centers. As shown Table 5, of the 3,900 personnel, 3,000 are full-time permanent employees, and 900 are non-permanent employees including sanitation workers and security guards. Of the 3,000 full-time workers, 1,100 are stationed in the headquarters adjacent to Manila Airport, and the remaining 1,900 are assigned to the nine regional centers.

The Airways System Maintenance Section of the Airways Navigation Service Department of ATO is responsible for providing operation and maintenance services. Of the 876 persons employed by the Airways System Maintenance Section, 323 are working in the ATO Headquarters and the remaining 553 are assigned to the various airports under the supervision of the nine regional centers. Experts assigned to the various airports conduct the daily monitoring, operation and maintenance of radars and other airport support equipment.

Table 5: Staff Number by ATO Affiliation

Affiliation (Office/Division)	Staff number
Office of Assistant Secretary	22
Civil Aviation Training Center	26
Aviation Medical Staff	23
Finance and Management Division	100
Administrative Division	149
Air Navigation Safety	103
Airways Navigation Service	876
Air Traffic Service	656
Airport	999
Total	2,954

(As of December 2004)

2.5.1.2 Technical capacity

Air traffic control personnel receive training for 1–2 months at the time they are hired. After they experience the actual operation of air traffic control, they have to pass a qualifying examination, after which they periodically undergo training. Technical staff who are responsible for the regular airport operation and maintenance also undergo training periodically.

2.5.1.3 Financial status

The annual budget of ATO (a budget appropriated by the government of the Philippines) and expenses are indicated in Table 6 and Table 7. According to Table 6, which shows the annual budget the government and DOTC allocated to ATO in 2003 and 2004, the budget in 2004 increased by 32% over the previous year's budget.

ATO receives commissions for aircraft induction and the like, and 90% of its income is earned by operating its communication facilities. Earnings from all of its operations and services, including those from communication facilities, go into the state treasury. The operating cost of ATO is appropriated from the state budget. As shown in Table 7, the budget allocated by the government accounted for less than 50% of the operating and service income of ATO. Usage fees for ATO's transmission facilities and the like are an important source of revenue in foreign currency. Hence it contributes significantly to public finance.

As shown in Table 8, operation and maintenance costs that were actually paid for increased by 54% in 2004 over that paid in the previous fiscal year; 296 million pesos in 2003 and 455 million pesos in 2004, respectively. From the perspective of sustainability,

the increase in expenditure for operation and maintenance is praiseworthy. However, according to ATO, this real cost covers only between 50–70% of the required operation and maintenance cost. Thus, it can hardly be said to be adequate.

It is not always clear how big the budget should be to keep traffic control facilities and communication facilities in a proper state of repair. A field survey conducted under this project indicates that there is not enough revenue to meet the demand for air navigation operations. This is evidenced by shortages of spare parts and delays in restoring dilapidated equipment. The survey also indicates that the way the government goes about drawing up and allocating the budget needs to be improved.

Technological developments in air traffic control communications facilities and the like are achieved at such a dazzling pace. Therefore, there are instances where, even when a budget is allocated, the new models cannot be purchased because they cost more than the available budget. Thus timely budget allocation is essential. ATO pointed out that the problems with the budget may be alleviated to a certain extent if some of the earnings from services rendered are placed under ATO supervision.

Furthermore, the government had considered raising the fee for using air navigation facilities, but opted not to do so.

Table 6: Annual Budget of ATO

(Unit: 1,000 pesos)

	2003	2004
Budget	1,176,531	1,549,391

Table 7: Ratio of Operating and Service Income of ATO

(Unit: 1,000 pesos)

Year	Operating and Service Income
2001	2,280,482
2002	2,237,369
2003	2,376,149
2004	2,742,611
2005	2,844,862

Table 8: Expenditure of ATO

(Unit: 1,000 pesos)

Item	2003	2004
Labor cost	796,891	781,675
Operation and maintenance cost	296,373	455,387
Others	163	5
Total	1,093,427	1,237,067

2.5.2 Operation and maintenance status

Navigational aids, radars, meteorological observation equipment, communication facilities, and so on are examined and administered according to the ICAO standards. The Airway System Maintenance Section conducts not only routine inspections and adjustments, but also repairs equipment. It periodically conducts inspections and confirms the operational status of the equipment and facilities and the inventory of spare parts, and the results are compiled in reports. However, given the difficulty of procuring the necessary spare parts noted earlier, there is some concern over the future status of operation and maintenance.

3. Feedback

3.1 Lessons Learned

After the detailed design was completed procurement and commencement of construction work were planned. However, progress was delayed from the preparatory stage of construction work, as well as during the construction itself. This fact resulted in a significant extension of the project period.

At the same time, technology is advancing at a remarkable pace in the field of the communication equipment and facilities provided in the project. Consequently, delays in construction lead to delays in the rollout of technology of the equipment and facilities provided in the project. Such delays have a direct impact on the effectiveness of the project. To minimize this problem, it is necessary to include an actual procurement plan in the detailed project design.

3.2 Recommendations

ATO has an administrative structure under which it sets up maintenance centers where spare parts are provided, but as things stand, spare parts are not being provided in a quick and smooth manner. To correct this situation, it is necessary to secure an appropriate budget that meets the needs at the site and enhance the provision of parts and the system under which equipment and facilities are repaired.

Comparison of Original and Actual Scope

Item	Plan	Actual
(1) Outputs (target: 29 airports and stations)		
1.En-Route Air Traffic Control Facilities	• Improvement of air traffic control facilities (expansion of VHF wave coverage on the west side and on the south side, improvement of Remote Center Air Ground Communication [RCAG] at 2 sites) • Improvement of terminal control facilities (8 airports)	As planned Nearly as planned
2.Aerodrome/Approach Air Traffic Control Facilities	• Provision of FSS facilities: Cauayan, Puerto Princesa	Nearly as planned
3.Air Navigation Facilities	• Provision of an Automatic Telex Message Switching System for securing point-to-point aerial communication network: 14 airports	Not implemented
4.Terrestrial Communication Facilities	• Renovation and installation of air navigation radio facilities for use on air routes and at airports (VOR/DME)	Nearly as planned
5.Satellite Based Communication Facilities	• Expansion of terrestrial based communication facilities (at Davao Airport, Tagaytay-Manila Center) • Improvement of satellite communication facilities (14 airports, Mt. Majic transmitting/ receiving station, Manila AFC)	Nearly as planned Not implemented
6.Maintenance Center	• Provision of a maintenance center inside Manila Airport, placement in the center of spare equipment parts of all airports, and provision of a supply system • Functions of the center: Provision of spare parts / repair of equipment / measurement with testing equipment / monitoring of the operational condition of air safety facilities	As planned
Consulting services	International: 184 M/M Local: 182M/M	As planned
(2) Project Period	August 1995–August 1999 (4 years, 1 month)	August 1995–June 2004 (8 years, 11 months) Completion of construction work: March 2004

(3) Project Cost (overall project cost) Foreign Currency Local currency Total ODA Loan Portion Exchange Rate	 6,386 million yen 738 million yen (179 million pesos) 7,124 million yen 6,386 million yen 1 peso＝4.13yen (January 1995)	 6,203 million yen 1,419 million yen (354 million pesos) 7,622 million yen 6,203 million yen 1peso＝4.01yen (Average weighted rate between 1995 and 2004)