

## **IV MANAGEMENT AND OPERATION IN THE SHORT TERM STAGE**

### **4.1 Expected Roles of APN in the Short Term Stage**

1. Two issues related to port management and operation in the long term plan are introduced in the Interim Report: a) definition of APN's roles and reconsideration of its organization, b) efficient management system for the control of the ports in Panama. What follows is a concrete plan on management and operation that APN should tackle in the short term stage.

#### **4.1.1 Radical Reform of APN Organization**

2. Following Manzanillo International Terminal and CoCo Solo Norte by Evergreen, privatized port operation by HIT is actually going to start. In this situation, what APN has to urgently launch is organizational reform including a drastic reduction in the number of employees. Although it is needless to say that Administration Office of both Balboa and Cristbal should be rationalized, even workers of APN Central Office should be reduced. This is because APN operates only Vacamonte Port and other minor ports. On the other hands, reduction of personnel should be done carefully so as not to lose valuable human resources.

3. APN should take this opportunity of HIT's terminal operation to trim its organization which has not always been efficient and rational. Concrete points at issue of organization, proper number of employee and reform plan of organization are given in detail at 4.2 "Reform of organization".

#### **4.1.2 Establishment of Efficient Port Management System in Collaboration with Private Sectors**

4. APN should supervise terminal operations by private sectors in order for them to work in harmonization with APN's policy on port management and operation, and to safeguard the national interests of the Republic of Panama.

5. In the short period until HIT starts its full scale operation at the ports of both Balboa and Cristbal, APN should define its management policy that is well coordinated with the terminal company. Then, APN should establish a monitoring system for port activities of private operators that checks, for example, environmental condition and cargo movement. Efficient and dependable way of collecting charges from concessionaires should be established when on-line system is introduced.

6. In particular, APN should monitor HIT's operation to see if it is actually being conducted based on the concession contract from February 1<sup>st</sup>, 1997. Main Items of the agreement between APN and HIT on the concession contract are as follows.

- a) The State grants an option, on the same terms and conditions of the contract, to the Company for the development, management and operation at Diablo and Telfers Island. The Company must implement the option during the first fifteen years of the contract.
- b) The State shall consult the Company before granting any concessions over Diablo and Telfers Island and shall obtain its approval.
- c) The company shall have the exclusive right to develop, build, operate and manage the ports during the term of the contract and its extension. The State shall not grant the right to operate cargo handling businesses in Rodman facilities to any other parties without giving a right of first refusal to the Company during the first three years.
- d) The Company agrees to pay the State through APN, 22.2 million balboas paid in equal monthly installments and ten percent of the gross receipts from all income sources derived from the activities of the Company, in monthly payments.
- e) The State shall receive a fully paid and issued participation of ten percent (10%) of the stock of the Company.
- f) The Company agrees to invest fifty million balboas in the ports during the first five years.
- g) The State is bound to terminate the labor relation kept with all APN employees of the both ports and Central Office. The Company will not have any obligation to enter relations with present unions at the ports.
- h) The contract shall have a duration of twenty five years from its effective day. It could be automatically extended for an another 25 years on the same condition.
- i) The State grants the Company the right to operate the installations and

facilities of the ports and to operate services under the concession contract with other companies such as towage, work boats, ship repair and pilotage service.

j) The tariffs of services shall be established on a nondiscriminatory commercial basis by the Company.

k) The Company is obliged to request and obtain the necessary permission from the State in relation to the construction of civil works in the ports and pay required fee.

l) The State shall have the obligation to supply maritime services, traffic control, quarantine, customs, immigration and other public services. The Company pays the salary for the necessary personnel, but they are regarded as public employees.

m) The State shall not grant any new concessions to others without prior approval by the Company.

n) The State shall vacate the areas, facilities and installations presently occupied by PCC and the US Government and turn those over to the Company prior to the end of the Treaty.

o) The Company shall guarantee the Company's customer choice of the pilotage service after the termination of the Treaty.

p) The Company agrees to ensure proper protection of the environment for the Company's activities in the ports.

q) All civil installations shall become the property of the State on the expiration of the term.

#### **4.1.3 Enhancement of Strategic Marketing**

7. In order to compete with neighboring ports of Central and South American countries, it is necessary to analyze the present situation of Balboa port, to forecast the future demand of the port, and then to feed such information back to marketing activities and port development as mentioned in the report on the long term plan.

8. More detailed statistical system is necessary to fully analyze the present situation of Balboa port. In other words, the statistical system should be organized by origin/destination and commodity of cargo as well as type of cargo. The system may require a computer network on a real-time base to ensure that updated information is always available.

9. To forecast the future demand of Balboa port, understanding domestic and foreign economies and worldwide maritime transportation surrounding Panama is necessary especially in forecast of container transshipment as mentioned in the demand forecast of the long term plan. Therefore, APN should keep updated information on the world economy and maritime transportation. To update such worldwide information, it is recommended that APN dispatch missions to large cities and advanced ports in corresponding areas. Such areas may include East Asia, Europe, and the Mid East as well as the American Continent.

10. To feed the demand forecast back to marketing activities, APN should make a concrete marketing policy of Balboa port. The marketing policy may include the following four items; a) hub port for container transshipment in Pacific Latin America, b) ship services of repair and bunkering, c) cruise center, and d) distribution center of domestic cargo in Panama.

11. The first two items of a) and b) have been executed successfully because item a) will be privatized by HIT very soon and item b) is already privatized. The third item of cruise center is already included in the long term plan of the report. In order to execute the last item, distribution center of Panama, large industrial zone around the port and sufficient access roads between the port and its hinterland including Panama city should be constructed.

12. For port promotion, preparation of pamphlets, seminars, promotion missions, and information center are necessary. These promotional activities should be focused not only on port facilities including ship services but also on advantages of tariff and savings in transportation time. The information center should be established to provide customers of shipping companies, shipping agents, and shippers with easy access to port information.

#### 4.2 Reform of Organization

13. Considering APN's policy on the management and operation in the short term stage mentioned in 4.1, APN should urgently tackle reform of its organization to enable it to carry out its expected role. As mentioned in the

Interim Report, "strategic", "flexible and systematic" and "collaborative" organization are the ideal features that APN should aim for.

14. As HIT will start port operation of Balboa and Cristbal, one of the most important point on the management is to reduce the number of employee rationally and to realize "small authority". On the other hand, this "small authority" has to truly work to realize planned development and to supervise activities of private operators.

#### 4.2.1 Simplification of APN Organization

15. The organization of APN has several units with specialized purposes such as Labor Relations, Legal Consultants, Auditing, Computer, and Public Relations, etc. which are organized to directly provide the General Director and General Sub-Directors with supporting services. However, some of them do not seem to be necessary, especially as the organization is due for radical reform.

16. For example, "Canal Area Office", as a liaison with the Panama Canal Committee, is not always necessary if each department on executive level could contact directly with PCC.

17. "Labor Relations", a liaison with unions on the matter of labor issues, could be transferred to "Administration and Finance Department"(newly established) at the Executive level, because both syndicates Balboa and Cristbal would be released after HIT starts the operation.

18. "Legal Advisor" with three advisors could also transfer its function to "Administrative and Finance Dept." or "Planning & Development Dept. at executive level. The same also holds true for "Supervising Level"

19. In conclusion, it is recommended that APN organization should be simplified by abolishing those special units: only the Executive Committee, Director General, General Sub-Vice Director and Executive level are necessary to deal with practical business tasks.

#### 4.2.2 Integration of the Executive Level

20. Under the present circumstances that privatized port operation is going to start, some departments and sections at the Executive level should be integrated for the sake of organizational efficiency. Administrative Office and Finance

Office should be combined into one such as "Administrative and Finance Dept." "Administration Service" that unifies other departments, "Personnel", "Training", "Budget" and "Accounting" etc., belong to this department.

21. "Planning Office" and "Engineer Office" should be combined into one department as "Planning and Development". This consists of several sections with the following functions.

- a) to plan port development and control land area
- b) to supervise and monitor port activities of private operators. This functions as a liaison with concessionaires and other public sectors.
- c) to be in charge of port development including privatization plan of Vacamonte and other minor ports
- e) to construct port facilities and perform maintenance

Special attention should be paid to the organization of this department because it is responsible for drafting and carrying out the future development policy.

22. Third, "Port Management Department", newly established department by combination of Engineering Office and Port Service Office, should be in charge of management and operation of port facilities, control of vessel movement to and from the port, control of water area, security service and environmental affairs including pollution. In addition, it is recommended that the Port Captain Offices (see below), Vacamonte Port Office and other minor ports be under jurisdiction of this department.

23. Lastly, with regards to the above mentioned in 4.1.3, department specialized in marketing is needed to carry out strategic promotion of all the ports in Panama including MIT, CoCo Solo Norte and HIT's terminal. This department of "Trade and Marketing " should have at least three sections as follows.

- a) "Research and Statistics section" that analyze maritime trends of the world and cargo movement and feed it back to promotion section.
- b) "Promotion section" that promotes Panamanian ports to shippers and shipping lines in and out of Panama with data provided by "Research and Statistic section".
- c) "Public Relations section" functions as a liaison with all port related business circles and provides information.

#### 4.2.3 Other Organization

24. Basically, HIT's terminal operation will mean that APN will have nothing to do with the operation of Balboa and Cristbal port. Then, present Administration Office of both ports should be simplified, for example, by converting it to a "Port Captain Office".

25. "Balboa Port Captain Office" would have approximately 10 to 15 staff members. On the other hand, another Port Captain Office on the Atlantic side should supervise and monitor port activities not only of Cristbal Port but of the other two ports in the same area, MIT and CoCo Solo Norte. The "Atlantic Port Captain Office" would have a staff of 15 to 20 personnel.

26. Since operation of the Panama railroad connecting Panama and Colon, currently suspended, will be resumed by an American railroad company. APN needs an administration office on both sides. This function could be set up within the Port Captain Office.

27. Based on the aforementioned idea, organization structure (draft) is shown on the attached.

#### 4.2.4 Establishment of Computer Network System

28. APN Central Office, Port Captain Office and private terminal operators should be connected by computer network system before HIT and Evergreen start terminal operation.

29. At this stage, it is not easy to pick up (out put) the latest strategic data for marketing immediately whenever it is needed, because APN Central Office is not connected on-line with each Port Administration Office. In order to accurately collect port charges and concession fees, establishment of LAN should be launched as soon as possible.

30. It is needless to say that these data should be provided to "Trade & Marketing Dept." in charge of research and promotion as well as to "Administrative & Finance" which is responsible for accounting, but this network system should be set up for all sections which need information. In order to promote (prepare) establishment of this system, a preparatory office could be set

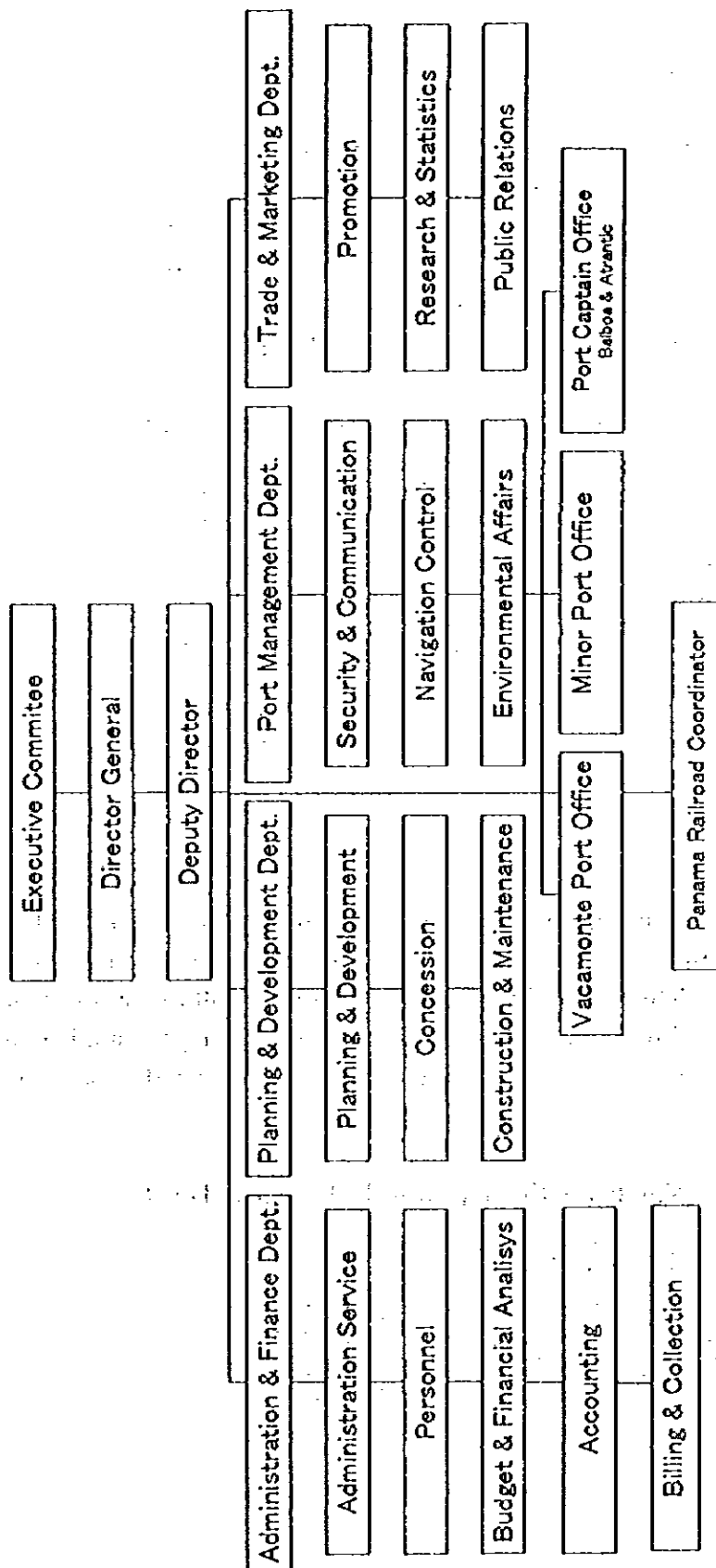


Figure 4-2-1 Organizational Structure of APN (Draft)



up in the "Administration & Finance Department." for the time being.

#### 4.2.5 Number of Employees

31. Considering the container cargo volume that all ports in Panama will handle in the year of 2005, staff of APN Central Office should be reduced approximately 200 to 250 employees. As aforementioned, proper number of staff at each Port Captain Office is estimated to be 15 to 20. Following table shows number of employees of APN in the short term stage.

\*The staff of the Central Office(250) includes both Port Captain offices.

Table 4-2-1 Number of APN Employees in the Short-term Stage

	at the end of '96	in short term
APN Central Office	566	250
Balboa Port	545	*15
Cristbal Port	879	*20
Vacamonte Port	186	100
Minor Ports Office	149	80
Panama Railroad	0	15
Total	2325	445

32. Security function will continue to be performed by APN, however number of "Security and Communication department" should be reduced to less than half of the present number. This is because privatized operation will realize efficient cargo handling, thereby improving safety in the port area. Proper number of employees of each department at the Executive level is given on the following table.

Table 4-2-2 Number of Employees at the Executive Level

Administration & Finance Dept.	50-60
Planning & Development Dept.	50-60
Port Management Dept.	100-120
Trade & Marketing Dept.	25-35

### **4.3 Financial Condition of Concessionaires**

#### **4.3.1 Purpose of Financial Analysis for Concessionaires**

33. In the last year, the contract of the concession for the operation and development of ports at Balboa and Diablo(hereinafter referred to as "the concession") between Republic of Panama and PPC will result in a bigger profit for the Panamanian government than through the present port operations at Balboa Port. The purpose of the financial analysis for the concessionaires(for Balboa/Diablo and Farfan) is to confirm the financial feasibility of concessionaires which are private companies.

#### **4.3.2 Financial Analysis of Concessionaire in Short-term Development Plan**

34. In this financial analysis, the income and expenditure at Balboa and Diablo areas for the port activity and development are calculated by the estimated cargo volume and packing style, number of calling ships and number and scale of necessary berths. Then, the financial statements(balance sheet, statement of profit and loss and cash flow) of the concessionaire are made. The finances of the concessionaire are evaluated by the condition of return, discharging of debts and operation which are calculated from the financial statements(the balance sheet, statement of profit and loss and cash flow). The income of the concessionaire is assumed to be generated only from port operation including the concession fee by the contracts between PPC and concessionaires which were moved from APN's territory to PPC's territory.

35. The major preconditions of the project are ①to secure the traffic road between the terminal in the port and the warehouse of consignees/shippers, ②to maintain a high level of port services. In this analysis, it is assumed that these preconditions, especially securing the traffic road, are realized by the beginning of terminal operation.

#### **(1) Prerequisites of Calculation for the Financial Statements**

36. Items of prerequisites of calculation for the financial statements are as follows:

##### **1) Items of Prerequisites for Loans:**

Interest rate of long-term loans : 6 - 8 percent per annum

Grace period of long-term loans : 3 years  
 Loan period of long-term loans : 20 years(including a grace period)  
 Range covered by long-term loans : 100 percent of construction costs and  
 part of the compensation for discharge  
 and transfer of APN's workers.  
 Interest rate of short-term loans : 10 percent per annum  
 Revenues of concessionaire: Cargo handling charges, anchorage fee(all  
 tariffs are the present levels) and concession  
 fee.

## 2) Items of Prerequisites for Costs:

Construction cost for Balboa and Diablo areas  
 Maintenance and repair costs  
 Administration cost  
 Depreciation cost  
 Re-investment cost  
 Fixed Concession Fee  
 Variable Concession Fee:

### A) Maintenance and Repair Expenses

37. The maintenance and repair expenses of "the concession" are calculated for the structures, equipment and dredged facilities (basins and channels) separately.

38. The annual expenses are one percent of the construction cost for the structure (the quays, yards and roads, etc.) and three percent of the purchase price for the equipment(machinery and instruments). As to the basins and channels, the expense is calculated based on the past dredging record of APN.

### B) Personnel and Administration Expenses

39. The annual personnel expense per person is calculated based on the past record of personnel expenses of APN at Balboa Port. The number of employees of the concessionaire is assumed to be 102 persons in the urgent plan stage, 242 persons in the Short-term Development Plan stage and 412 persons( 242 persons at Balboa/Diablo area and 170 persons at Farfan area) in the Master Plan stage.

40. The annual administration expense is calculated as 11.44% based on the

past personnel expense record(from 1990 to 1995) of APN at Balboa Port.

#### C) Depreciation Expenses

41. Depreciation expenses are calculated using the straight line method for facilities and equipment constructed by HIT. Residual values after all depreciation are not counted in this study in accordance with the depreciation system of APN.

#### D) Concession Fee

42. Concession fee of "the concession" is composed of the fixed concession fee and variable concession fee.

43. The fixed concession fee is US\$16,650,000 per annum which is calculated by multiplying the total fixed concession fee in the contract of "the concession" (US\$22,200,000) and the ratio of Balboa/Diablo area. The ratio of Balboa/Diablo area is 75% which is estimated by assumed ratio of the total container cargo handling volume at the Pacific side ports in Panama to total container cargo handling volume at all Panamanian ports.

44. The variable concession fee in a year is 10% of the total operation revenue which is composed of the cargo handling charges, anchorage fees for calling ships and revenue from other concessionaires.

#### (2) Results of the evaluation

45. According to the profit and loss statements, the condition of the cumulated surplus of the concessionaire for works of the Short-term Development Plan is changed from minus to plus one year (High Case) and seventeen years (Low Case) after this concession comes into effect.

46. Debt Service Coverage Ratio shows whether the operating income can cover the repayment of principal and interest on long term loans. It exceeds 1.75(World Bank standard) fourteen years (High Case and Low Case) after the concession comes into effect for the concessionaire of "the concession".

47. Operating Ratio shows the operational efficiency of the organization as an enterprise. It keeps below 70 percent nine years (High Case) and thirteen years (Low Case) after the concession comes into effect for the concessionaire of "the

concession".

48. Working Ratio shows the efficiency of the routine operations of the project. It keeps below 60 percent (World Bank standard) eight years (High Case) and eleven years (Low Case) after the concession comes into effect for the project of "the concession".

49. The financial condition of the concessionaire in this project will be sound under the current contract of the concession between Panamanian Government and the concessionaire (PPC) from the above result. However, the major preconditions of the project (Securing the access road and maintaining the high level port services) must be realized before the analysis can be conducted.

#### 4.3.3 Financial Analysis of Concessionaire in Master Plan

50. Financial analysis of the concessionaire in the Master Plan at Farfan area will be conducted.

51. The contents of the concession contract are expected to be almost the same as those of the concession at Balboa/Diablo areas (Concession period: 50 years. Contracted facilities should be transferred to APN in the year after construction is completed.).

52. The financial condition of the concessionaire at Farfan area in the Master Plan is evaluated using the operating ratio and the working ratio which are calculated from the Statement of Profit and Loss for the concessionaire.

##### (1) Prerequisites of calculation for the Profits and Loss Statement

53. The condition of long-term loans and short-term loans, the items of costs of concessionaire at Farfan area for the Master Plan project are almost same as for the project of Short-term development Plan.

54. The differences are the items of revenues and kind of berths for the concessionaire.

Revenues of the concessionaire: Cargo handling charges and Anchorage fee  
(All tariffs are the present levels)

Berth type: Container berth

## **(2) Results**

55. According to the profit and loss statements, the condition of the cumulated surplus of the concessionaire for works of the Master Plan at Farfan area is changed from minus to plus twenty years (High Case) and twenty-four years (Low Case) after this concession comes into effect.

56. The operating ratio keeps below 70 percent fifteen years (High Case) and twenty years (Low Case) after the concession comes into effect.

57. The working ratio keeps below 50 percent fourteen years (High Case) and nineteen years (Low Case) after the concession comes into effect.

58. The financial condition of the concessionaire will be satisfactory assuming the contract is similar to that of the Balboa/Diablo concession. However the major preconditions (Securing the access road and keeping the high level port services) must be realized before the analysis can be conducted.







Table 4-3-1 (1) The Financial Statements of Concession (High Case)

PROFIT AND LOSS STATEMENT (Unit: '000 US\$)																	
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Operating Revenues	23,076,222	27,597,032	32,107,751	36,612,825	41,116,814	45,620,176	50,123,719	54,624,800	59,062,097	63,510,499	71,956,034	78,401,139	83,551,212	89,770,957	93,239,770	96,712,034	98,135,208
Operating Cost	23,272,016	23,578,157	24,029,229	29,225,736	36,418,615	38,693,991	41,561,155	43,528,267	45,029,112	43,874,952	41,959,505	46,613,016	44,675,023	49,477,937	48,137,879	44,644,105	43,816,423
Personnel, Administration	2,594,566	1,976,597	1,976,597	1,976,597	3,759,391	3,759,391	4,658,519	4,659,519	4,659,519	4,659,519	4,659,519	4,659,519	4,659,519	4,659,519	4,659,519	4,659,519	4,659,519
Maintenance & repair	1,719,565	1,719,565	1,719,565	2,235,565	4,796,828	4,796,828	5,508,828	7,025,828	7,560,718	5,762,778	6,232,778	5,762,778	7,279,729	7,560,718	5,762,778	6,232,778	5,762,778
Concession Fee	18,957,622	19,409,703	19,860,775	20,311,293	20,761,651	21,212,017	21,662,373	22,112,450	22,556,210	23,201,050	23,816,693	24,490,114	25,005,421	25,527,055	25,979,977	26,221,203	26,463,521
Depreciation costs	0	472,299	472,299	3,702,299	7,100,745	7,100,745	9,700,355	9,700,355	10,221,575	10,221,575	10,221,575	11,700,575	11,700,575	11,700,575	11,700,575	11,700,575	11,700,575
Net Operating Income	-195,854	4,018,875	8,078,523	7,387,089	4,693,170	8,751,194	8,562,575	11,096,533	14,032,985	19,635,548	26,966,529	31,758,124	31,876,189	39,292,955	45,166,891	46,867,929	49,518,285
Non-operating Revenues	0	2,454,095	4,976,672	11,316,257	20,365,350	26,792,787	31,395,110	37,719,660	42,464,397	45,914,205	50,236,873	55,594,235	60,444,424	67,878,931	75,315,419	85,499,893	96,414,768
Interest on deposits	0	2,454,095	4,976,672	11,316,257	20,365,350	26,792,787	31,395,110	37,719,660	42,464,397	45,914,205	50,236,873	55,594,235	60,444,424	67,878,931	75,315,419	85,499,893	96,414,768
Non-operating Expenses	0	1,690,783	3,051,929	7,314,306	12,431,613	15,220,637	18,166,330	17,765,271	17,707,156	18,632,422	15,533,311	14,364,516	13,195,690	12,026,864	10,858,038	9,689,213	8,520,337
Interest on long-term loans	0	1,690,783	3,051,929	7,314,306	12,431,613	15,220,637	18,166,330	17,765,271	17,707,156	18,632,422	15,533,311	14,364,516	13,195,690	12,026,864	10,858,038	9,689,213	8,520,337
Interest on short-term loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Income	-195,854	4,782,185	10,003,266	11,359,041	12,634,907	20,323,345	24,791,355	31,050,927	33,791,227	50,917,330	61,670,061	72,937,813	82,124,923	95,145,022	109,624,301	122,678,609	137,413,167
Retained Earnings	0	4,782,185	14,785,451	26,144,455	38,779,492	59,102,716	83,894,102	114,915,079	153,736,256	204,653,576	266,323,647	339,311,490	421,436,419	518,581,435	626,205,735	745,884,345	886,297,512

CASH FLOW STATEMENT (Unit: '000US\$)																	
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cash Beginning	24,510,950	49,766,723	113,162,574	203,683,499	267,927,873	313,951,101	372,196,597	424,643,971	459,142,050	502,368,731	555,912,319	604,414,245	678,789,314	753,154,492	854,993,928	964,147,693	1,093,760,995
Cash Inflow (excluding G. Funds)	26,430,146	33,774,269	82,995,491	106,018,916	83,227,264	100,402,226	59,556,540	18,217,553	66,719,958	77,721,328	87,424,977	99,052,934	107,021,169	118,872,161	132,182,914	144,068,397	157,634,129
Net operating income	-195,854	4,018,875	8,078,523	7,387,089	4,693,170	8,751,194	8,562,575	11,096,533	14,032,985	19,635,548	26,966,529	31,758,124	31,876,189	39,292,955	45,166,891	46,867,929	49,518,285
Depreciation costs	0	472,299	472,299	3,702,299	7,100,745	7,100,745	9,700,355	9,700,355	10,221,575	10,221,575	10,221,575	11,700,575	11,700,575	11,700,575	11,700,575	11,700,575	11,700,575
Long-term loans	26,626,000	26,829,000	69,468,000	83,643,300	51,060,000	57,757,500	6,898,500	19,761,000	0	0	0	0	0	0	0	0	0
Interest on deposits	0	2,454,095	4,976,672	11,316,257	20,365,350	26,792,787	31,395,110	37,719,660	42,464,397	45,914,205	50,236,873	55,594,235	60,444,424	67,878,931	75,315,419	85,499,893	96,414,768
Cash Outflow (excluding G. Funds)	1,859,196	8,518,497	19,599,643	15,528,020	18,982,890	24,318,939	26,311,014	30,830,179	32,221,879	34,514,615	33,851,359	50,551,039	32,676,139	44,507,291	30,333,469	31,918,612	28,000,816
Investment	1,859,196	5,304,000	14,994,000	6,690,000	4,071,693	5,100,000	0	0	0	0	0	16,705,093	0	13,000,000	0	5,750,000	0
Repayment for long-term loans	0	1,553,714	1,553,714	1,553,714	2,450,185	4,058,369	8,144,714	13,664,905	14,514,724	17,512,224	15,318,018	19,480,429	19,480,429	19,480,429	19,480,429	19,480,429	19,480,429
Interest on long-term loans	0	1,690,783	3,051,929	7,314,306	12,431,613	15,220,637	18,166,330	17,765,271	17,707,156	18,632,422	15,533,311	14,364,516	13,195,690	12,026,864	10,858,038	9,689,213	8,520,337
Interest on short-term loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash Inflow - Cash Outflow	24,510,950	25,225,712	63,335,851	90,520,926	64,244,374	76,023,228	33,245,495	47,417,374	31,493,078	43,226,692	53,573,615	48,501,836	76,315,069	74,365,165	101,844,415	109,119,755	129,633,312
Cash Ending	24,510,950	49,766,723	113,162,574	203,683,499	267,927,873	313,951,101	372,196,597	424,643,971	459,142,050	502,368,731	555,912,319	604,414,245	678,789,314	753,154,492	854,993,928	964,147,693	1,093,760,995
Cash excess	24,510,950	49,766,723	113,162,574	203,683,499	267,927,873	313,951,101	372,196,597	424,643,971	459,142,050	502,368,731	555,912,319	604,414,245	678,789,314	753,154,492	854,993,928	964,147,693	1,093,760,995
Cash shortage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BALANCE SHEET (Unit: '000US\$)																	
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
(Assets)																	
Current Assets	24,510,950	49,766,723	113,162,574	203,683,499	267,927,873	313,951,101	372,196,597	424,643,971	459,142,050	502,368,731	555,912,319	604,414,245	678,789,314	753,154,492	854,993,928	964,147,693	1,093,760,995
Cash & Deposit	24,510,950	49,766,723	113,162,574	203,683,499	267,927,873	313,951,101	372,196,597	424,643,971	459,142,050	502,368,731	555,912,319	604,414,245	678,789,314	753,154,492	854,993,928	964,147,693	1,093,760,995
Fixed Assets	1,859,196	8,518,497	21,242,593	24,170,299	21,140,647	19,139,902	9,439,547	-260,808	-10,452,393	-20,703,958	-30,925,533	-25,920,015	-37,620,590	-36,321,165	-48,021,710	-53,972,316	-65,672,890
Depreciable Fixed Assets	1,859,196	7,193,196	22,187,196	28,817,196	32,638,289	37,938,289	37,938,289	37,968,289	37,958,289	37,958,289	37,958,289	54,694,392	54,694,392	67,694,392	67,694,392	73,444,392	73,444,392
Accumulated depreciation	0	472,299	944,598	4,645,897	11,747,642	18,818,357	28,549,742	33,219,697	49,470,672	59,692,147	64,913,822	80,614,397	92,314,972	104,015,517	115,716,122	127,416,697	139,117,272
Net fixed assets	1,859,196	6,720,897	21,242,593	24,170,299	21,140,647	19,139,902	9,439,547	-260,808	-10,452,393	-20,703,958	-30,925,533	-25,920,015	-37,620,590	-36,321,165	-48,021,710	-53,972,316	-65,672,890
Total Assets	26,430,146	56,487,620	134,405,167	227,853,798	289,068,520	333,091,003	381,636,144	424,383,163	448,689,657	481,664,773	525,016,816	578,524,230	641,169,724	716,839,317	803,977,183	910,175,365	1,028,108,105
(Liabilities and capital)							</										





Table 4-3-1 (2) The Financial Statements of Concession (High Case)

PROFIT AND LOSS STATEMENT (UNIT: '000 US\$)															
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Operating Revenues	100,554,600	103,048,406	105,464,650	107,952,016	110,347,784	112,784,167	115,244,703	117,748,039	120,139,106	122,676,819	125,431,403	128,671,755	132,932,836	138,091,897	142,259,497
Operating Cost	50,315,362	52,354,742	50,828,357	51,547,408	51,316,680	53,077,319	52,057,372	52,056,709	52,765,872	52,549,593	54,348,043	51,640,077	49,656,739	50,571,645	48,498,656
Personnel, Administration	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549
Maintenance & repair	7,279,778	7,560,778	5,762,778	6,232,778	5,762,778	7,279,778	6,043,778	5,762,778	6,232,778	5,762,778	7,279,778	6,043,778	5,762,778	6,232,778	5,762,778
Concession Fee	26,705,460	26,954,841	27,195,465	27,445,265	27,634,778	27,928,417	28,174,470	28,424,807	28,668,971	28,917,651	29,193,141	29,817,176	30,043,284	30,458,190	30,819,850
Depreciation costs	11,700,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	11,289,575	9,191,129	9,191,129	7,166,519
Net Operating Income	50,179,233	50,663,664	54,636,293	56,404,608	59,031,104	59,706,848	63,187,331	65,691,364	67,373,234	70,127,230	71,143,365	78,031,678	84,276,096	87,520,252	93,759,802
Non-operating Revenues	109,378,100	123,850,692	139,690,159	157,991,327	177,076,360	199,876,453	225,283,866	252,763,006	284,632,907	319,703,181	359,830,975	404,130,125	453,475,263	506,876,512	567,179,301
Interest on Deposit	109,378,100	123,850,692	139,690,159	157,991,327	177,076,360	199,876,453	225,283,866	252,763,006	284,632,907	319,703,181	359,830,975	404,130,125	453,475,263	506,876,512	567,179,301
Non-operating Expenses	7,351,561	6,182,735	5,013,910	3,845,034	2,731,846	1,713,299	939,934	4,955,706	461,779	163,837	0	0	0	0	0
Interest on long-term loans	7,351,561	6,182,735	5,013,910	3,845,034	2,731,846	1,713,299	939,934	4,955,706	461,779	163,837	0	0	0	0	0
Interest on short-term loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Income	152,205,777	168,301,620	189,312,533	210,551,182	233,375,618	257,870,032	287,501,263	313,458,664	351,544,961	389,666,573	430,974,340	497,161,803	537,721,359	594,336,763	660,979,103
Retained Earnings	1,038,503,289	1,206,804,909	1,396,112,442	1,606,665,624	1,849,044,242	2,097,914,272	2,355,416,537	2,639,968,201	3,050,449,163	3,440,115,735	3,871,030,072	4,353,254,818	4,890,973,233	5,485,810,001	6,146,289,104

CASH FLOW STATEMENT (Unit: '000 US\$)															
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Cash Beginning	1,093,780,395	1,238,206,918	1,396,901,590	1,579,913,269	1,770,763,597	1,998,764,831	2,252,838,656	2,522,630,064	2,846,329,058	3,197,031,806	3,598,309,748	4,041,301,251	4,534,752,629	5,068,265,117	5,671,793,009
Cash Inflow (excluding G. Funds)	171,252,913	187,663,931	207,506,018	227,575,811	249,287,039	272,762,906	301,620,772	331,633,945	365,166,316	403,009,955	444,153,915	493,451,378	546,912,459	603,527,892	668,145,622
Net operating income	50,179,233	50,663,664	54,636,293	56,404,608	59,031,104	59,706,848	63,187,331	65,691,364	67,373,234	70,127,230	71,143,365	78,031,678	84,276,096	87,520,252	93,759,802
Depreciation costs	11,700,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	11,289,575	9,191,129	9,191,129	7,166,519
Long-term loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest on deposits	109,378,100	123,850,692	139,690,159	157,991,327	177,076,360	199,876,453	225,283,866	252,763,006	284,632,907	319,703,181	359,830,975	404,130,125	453,475,263	506,876,512	567,179,301
Cash Outflow (excluding G. Funds)	26,831,930	28,959,259	24,494,339	36,725,513	21,265,805	18,659,082	26,829,363	12,931,941	14,453,578	1,732,043	1,162,412	0	13,400,000	0	0
Investment	0	3,306,093	0	13,400,000	0	0	13,000,000	0	9,058,093	0	0	0	13,400,000	0	0
Repayment for long-term loans	19,450,429	19,450,429	19,450,429	19,450,429	18,553,959	16,975,782	12,659,479	2,969,235	4,965,706	1,568,205	1,162,412	0	0	0	0
Interest on long-term loans	7,351,561	6,182,735	5,013,910	3,845,034	2,731,846	1,713,299	939,934	4,965,706	461,779	163,837	0	0	0	0	0
Interest on short-term loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash Inflow - Cash Outflow	144,421,983	158,898,673	183,011,679	190,850,328	228,007,792	254,073,825	274,791,409	318,699,004	350,702,787	401,277,922	432,991,503	493,451,378	533,512,459	603,527,892	668,145,622
Cash Ending	1,238,206,918	1,396,901,590	1,579,913,269	1,770,763,597	1,998,764,831	2,252,838,656	2,522,630,064	2,846,329,058	3,197,031,806	3,598,309,748	4,041,301,251	4,534,752,629	5,068,265,117	5,671,793,009	6,339,938,631
Cash excess	1,238,206,918	1,396,901,590	1,579,913,269	1,770,763,597	1,998,764,831	2,252,838,656	2,522,630,064	2,846,329,058	3,197,031,806	3,598,309,748	4,041,301,251	4,534,752,629	5,068,265,117	5,671,793,009	6,339,938,631
Cash shortage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BALANCE SHEET (Unit: '000 US\$)															
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
(Assets)															
Current Assets	1,238,206,918	1,396,901,590	1,579,913,269	1,770,763,597	1,998,764,831	2,252,838,656	2,522,630,064	2,846,329,058	3,197,031,806	3,598,309,748	4,041,301,251	4,534,752,629	5,068,265,117	5,671,793,009	6,339,938,631
Cash & Deposit	1,238,206,918	1,396,901,590	1,579,913,269	1,770,763,597	1,998,764,831	2,252,838,656	2,522,630,064	2,846,329,058	3,197,031,806	3,598,309,748	4,041,301,251	4,534,752,629	5,068,265,117	5,671,793,009	6,339,938,631
Fixed Assets	-77,313,455	-87,246,947	-100,426,522	-100,206,097	-113,365,672	-126,565,247	-126,744,822	-139,924,397	-141,047,879	-157,227,454	-170,407,029	-181,698,601	-177,497,733	-186,678,662	-193,845,381
Depreciable Fixed Assets	71,444,382	76,750,475	76,750,475	90,150,475	90,150,475	90,150,475	103,150,475	103,150,475	112,206,568	112,206,568	112,206,568	125,606,568	125,606,568	125,606,568	125,606,568
Accumulated Depreciation	150,817,847	163,997,422	177,178,997	190,356,572	203,536,147	216,715,722	229,895,297	243,074,872	256,254,447	269,434,022	282,613,597	295,793,172	308,972,747	322,152,322	335,331,897
Net fixed assets	-77,313,465	-87,246,947	-100,426,522	-100,206,097	-113,365,672	-126,565,247	-126,744,822	-139,924,397	-141,047,879	-157,227,454	-170,407,029	-181,698,601	-177,497,733	-186,678,662	-193,845,381
Total Assets	1,160,893,463	1,309,654,643	1,479,486,747	1,670,557,500	1,885,399,159	2,126,273,409	2,400,885,242	2,706,404,661	3,055,983,927	3,441,082,294	3,870,894,222	4,353,054,026	4,890,777,384	5,485,114,147	6,146,093,250
(Liabilities and capital)															
Liabilities	122,576,018	103,045,558	83,565,159	64,084,729	45,530,771	28,554,933	15,665,559	7,696,324	2,730,618	1,162,412	-0	-0	-0	-0	-0
Current Liabilities (cross subsidy)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fixed Liabilities (long-term loan)	122,576,018	103,045,558	83,565,159	64,084,729	45,530,771	28,554,933	15,665,559	7,696,324	2,730,618	1,162,412	-0	-0	-0	-0	-0
Capital	1,038,307,435	1,206,609,055	1,395,921,588	1,606,472,771	1,839,844,388	2,097,718,470	2,385,219,683	2,638,708,343	3,020,253,309	3,438,919,882	3,870,894,222	4,353,056,026	4,890,777,384	5,485,114,147	6,146,093,250
Investment in Kind By Gov. Funds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Income	152,205,777	168,301,620	189,312,533	210,551,182	233,375,618	257,870,032	287,501,263	313,458,664	351,544,961	389,666,573	430,974,340	497,161,803	537,721,359	594,336,763	660,979,103
Retained Earnings	1,038,307,435	1,206,609,055	1,395,921,588	1,606,472,771	1,839,844,388	2,097,718,470	2,385,219,683	2,638,708,343	3,020,253,309	3,438,919,882	3,870,894,222	4,353,056,026	4,890,777,384	5,485,114,147	6,146,093,250
Total Liabilities and capital	1,160,893,463	1,309,654,643	1,479,486,747	1,670,557,500	1,885,399,159	2,126,273,409	2,400,885,242	2,706,404,661	3,055,983,927	3,441,082,294	3,870,894,222	4,353,056,026	4,890,777,384	5,485,114,147	6,146,093,250





Table 4-3-1 (3) The Financial Statements of Concession (High Case)

PROFIT AND LOSS STATEMENT (Unit: '000 US\$)						
	2029	2030	2031	2032	2033	2034
Operating Revenues	146,339,199	150,536,317	154,843,357	158,795,954	162,793,503	166,929,171
Operating Cost	50,474,766	49,087,253	49,212,462	50,097,221	50,826,976	51,957,543
Personnel, Administration	4,659,549	4,689,549	4,699,549	4,689,549	4,699,549	4,699,549
Maintenance & repair	7,219,778	6,043,778	5,762,778	6,232,778	5,762,778	7,219,778
Concession Fee	31,268,920	31,708,632	32,414,836	32,529,595	32,929,350	33,242,917
Depreciation costs	7,166,519	6,645,299	6,645,299	6,645,299	6,645,299	6,645,299
Net Operating Income	95,954,433	101,499,059	105,435,895	108,698,733	112,766,527	114,971,628
Non operating Revenues	633,993,863	707,375,735	787,627,745	877,593,639	976,317,906	1,055,890,879
Interest on deposit	633,993,863	707,375,735	787,627,745	877,593,639	976,317,906	1,055,890,879
Non-operating Expenses	0	0	0	0	0	0
Interest on long-term loans	0	0	0	0	0	0
Interest on short-term loans	0	0	0	0	0	0
Net Income	729,958,296	808,874,795	893,063,641	986,292,372	1,089,084,433	1,200,862,507
Retained Earnings	6,876,247,400	7,684,926,341	8,577,939,931	9,564,287,353	10,653,371,786	11,854,234,293

CASH FLOW STATEMENT (Unit: '000 US\$)						
	2029	2030	2031	2032	2033	2034
Cash Beginning	6,339,938,831	7,073,757,353	7,876,277,447	8,775,956,356	9,763,179,057	10,859,908,789
Cash Inflow (excluding G. Funds)	737,124,815	816,520,094	899,709,910	992,942,671	1,095,729,732	1,207,507,806
Net operating income	95,954,433	101,499,059	105,435,895	108,698,733	112,766,527	114,971,628
Depreciation costs	7,166,519	6,645,299	6,645,299	6,645,299	6,645,299	6,645,299
Long-term loans	0	0	0	0	0	0
Interest on deposits	633,993,863	707,375,735	787,627,745	877,593,639	976,317,906	1,055,890,879
Cash Outflow (excluding G. Funds)	3,306,093	13,000,000	0	5,750,000	0	0
Investment	3,306,093	13,000,000	0	5,750,000	0	0
Repayment for long-term loans	0	0	0	0	0	0
Interest on long-term loans	0	0	0	0	0	0
Interest on short-term loans	0	0	0	0	0	0
Cash Inflow - Cash Outflow	733,818,722	803,520,094	899,709,910	987,192,671	1,089,729,732	1,207,507,806
Cash Ending	7,073,757,353	7,876,277,447	8,775,956,356	9,763,179,057	10,859,908,789	12,066,416,595
Cash excess	7,073,757,353	7,876,277,447	8,775,956,356	9,763,179,057	10,859,908,789	12,066,416,595
Cash shortage	0	0	0	0	0	0

BALANCE SHEET (Unit: '000 US\$)						
	2029	2030	2031	2032	2033	2034
(Assets)						
Current Assets	7,073,757,353	7,876,277,447	8,775,956,356	9,763,179,057	10,859,908,789	12,066,416,595
Cash & Deposit	7,073,757,353	7,876,277,447	8,775,956,356	9,763,179,057	10,859,908,789	12,066,416,595
Fixed Assets	-197,705,807	-191,351,106	-197,995,405	-198,891,704	-205,537,003	-212,182,302
Depreciable Fixed Assets	128,912,661	141,912,661	141,912,661	147,662,661	147,662,661	147,662,661
Accumulated depreciation	326,618,468	333,263,767	339,909,066	346,554,365	353,199,661	359,844,963
Net fixed assets	-197,705,807	-191,351,106	-197,995,405	-198,891,704	-205,537,003	-212,182,302
Total Assets	6,876,051,546	7,684,926,341	8,577,939,931	9,564,287,353	10,653,371,786	11,854,234,293
(Liabilities and capital)						
Liabilities	0	0	0	0	0	0
Current Liabilities (cross subsidy)	0	0	0	0	0	0
Fixed Liabilities (long-term loan)	0	0	0	0	0	0
Capital	6,876,051,546	7,684,926,341	8,577,939,931	9,564,287,353	10,653,371,786	11,854,234,293
Investment in Kind By Gov. Funds	0	0	0	0	0	0
Net Income	729,958,296	808,874,795	893,063,641	986,292,372	1,089,084,433	1,200,862,507
Retained Earnings	6,876,051,546	7,684,926,341	8,577,939,931	9,564,287,353	10,653,371,786	11,854,234,293
Total Liabilities and capital	6,876,051,546	7,684,926,341	8,577,939,931	9,564,287,353	10,653,371,786	11,854,234,293







Table 4-3-2 (1) The Financial Statements of Concession (Low Case)

PROFIT AND LOSS STATEMENT (Unit: '000 US\$)																
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Operating Revenues	19,534,252	22,594,393	25,653,078	28,711,251	31,769,811	34,828,125	37,883,019	40,941,170	43,996,750	47,056,295	50,116,200	53,175,495	56,234,720	59,294,095	62,353,430	65,412,855
Operating Cost	22,917,879	23,077,893	23,353,761	28,435,579	35,453,844	35,789,576	37,025,424	38,848,133	42,048,050	42,218,031	42,669,022	43,119,951	45,087,874	44,302,811	44,472,635	44,923,587
Personnel, Administration	2,594,856	1,976,587	1,976,587	1,976,587	3,759,391	3,759,391	4,689,549	4,689,549	4,689,549	4,689,549	4,689,549	4,689,549	4,689,549	4,689,549	4,689,549	4,689,549
Maintenance & repair	1,719,568	1,719,568	1,719,568	3,235,568	4,796,828	4,796,828	4,796,828	6,313,828	6,087,278	5,806,278	5,806,278	5,806,278	7,323,278	6,087,278	5,806,278	5,806,278
Concession Fee	18,603,425	18,909,440	19,215,305	19,511,125	19,826,881	20,132,612	20,438,302	20,744,017	21,049,678	21,500,630	21,951,620	22,402,550	22,853,472	23,304,410	23,755,283	24,206,156
Depreciation costs	0	472,299	472,299	3,702,299	7,100,745	7,100,745	7,100,745	7,100,745	10,221,575	10,221,575	10,221,575	10,221,575	10,221,575	10,221,575	10,221,575	10,221,575
Net Operating Income	-3,383,627	-483,496	2,299,316	275,673	-3,715,033	-963,451	857,595	2,092,031	1,948,700	6,288,261	10,317,178	14,405,544	16,916,845	22,241,781	26,550,145	30,639,268
Non-operating Revenues	0	418,254	223,659	106,290	0	0	0	0	0	0	0	0	0	0	0	0
Interest on deposit	0	418,254	223,659	106,290	0	0	0	0	0	0	0	0	0	0	0	0
Non-operating Expenses	0	1,690,783	2,878,679	5,933,506	8,922,848	9,592,685	9,905,320	12,042,767	14,732,107	15,306,761	15,337,212	15,137,370	14,672,171	13,906,323	12,534,417	10,591,496
Interest on long-term loans	0	1,690,783	2,878,679	5,933,506	8,922,848	9,592,685	9,905,320	12,042,767	14,732,107	15,306,761	15,337,212	15,137,370	14,672,171	13,906,323	12,534,417	10,591,496
Interest on short-term loans	0	0	0	0	212,434	1,019,166	1,753,556	2,629,314	3,860,882	4,915,860	5,596,107	6,061,930	6,322,397	6,282,214	5,636,003	4,418,717
Net Income	-3,383,627	-1,276,024	-385,703	-5,601,514	-12,637,861	-10,556,136	-9,047,725	-9,950,735	-12,783,406	-9,018,488	-5,050,033	-731,826	2,274,675	8,334,960	14,045,699	20,046,772
Retained Earnings	0	-1,276,024	-2,111,728	-7,713,271	-20,401,152	-30,957,288	-40,005,013	-49,955,749	-62,739,155	-71,757,613	-76,837,676	-77,539,502	-75,264,827	-66,979,867	-52,834,169	-32,837,397

CASH FLOW STATEMENT (Unit: '000 US\$)																
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cash Beginning	5,603,177	2,795,738	1,328,619	-2,124,340	-10,191,661	-17,535,560	-26,293,137	-38,608,821	-49,158,602	-55,961,068	-60,619,300	-63,223,971	-62,822,142	-56,360,028	-44,187,175	-26,013,249
Cash Inflow (excluding G. Funds)	23,242,373	24,378,558	52,640,774	43,220,911	4,677,212	6,436,544	38,970,090	47,691,276	12,170,275	16,509,839	20,568,753	24,627,119	27,168,421	32,462,859	36,801,720	40,859,843
Net operating income	-3,383,627	-483,496	2,299,316	275,673	-3,715,033	-963,451	857,595	2,092,031	1,948,700	6,288,261	10,317,178	14,405,544	16,916,845	22,241,781	26,550,145	30,639,268
Depreciation costs	0	472,299	472,299	3,702,299	7,100,745	7,100,745	7,100,745	7,100,745	10,221,575	10,221,575	10,221,575	10,221,575	10,221,575	10,221,575	10,221,575	10,221,575
Long-term loans	26,626,000	23,941,500	49,675,500	45,136,650	1,291,500	299,250	31,011,750	38,499,000	0	0	0	0	0	0	0	0
Interest on deposits	0	418,254	223,659	106,290	0	0	0	0	0	0	0	0	0	0	0	0
Cash Outflow (excluding G. Funds)	17,639,196	27,185,997	51,107,893	52,673,870	12,744,533	13,780,413	47,727,656	60,007,460	22,720,057	23,312,304	25,226,955	27,231,790	26,766,592	26,000,744	24,628,867	22,695,917
Investment	17,639,196	23,941,500	49,675,500	45,136,650	1,291,500	299,250	31,011,750	38,499,000	0	0	0	0	0	0	0	0
Repayment for long-term loans	0	1,553,714	1,553,714	1,553,714	2,450,185	3,888,505	6,810,597	9,465,694	7,587,550	8,003,553	9,829,724	12,094,421	12,094,421	12,094,421	12,094,421	12,094,421
Interest on long-term loans	0	1,690,783	2,878,679	5,933,506	8,922,848	9,592,685	9,905,320	12,042,767	14,732,107	15,306,761	15,337,212	15,137,370	14,672,171	13,906,323	12,534,417	10,591,496
Interest on short-term loans	0	0	0	0	212,434	1,019,166	1,753,556	2,629,314	3,860,882	4,915,860	5,596,107	6,061,930	6,322,397	6,282,214	5,636,003	4,418,717
Cash Inflow - Cash Outflow	5,603,177	2,795,738	1,328,619	-2,124,340	-10,191,661	-17,535,560	-26,293,137	-38,608,821	-49,158,602	-55,961,068	-60,619,300	-63,223,971	-62,822,142	-56,360,028	-44,187,175	-26,013,249
Cash Ending	5,603,177	2,795,738	1,328,619	-2,124,340	-10,191,661	-17,535,560	-26,293,137	-38,608,821	-49,158,602	-55,961,068	-60,619,300	-63,223,971	-62,822,142	-56,360,028	-44,187,175	-26,013,249
Cash excess	5,603,177	2,795,738	1,328,619	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash shortage	0	0	0	-2,124,340	-10,191,661	-17,535,560	-26,293,137	-38,608,821	-49,158,602	-55,961,068	-60,619,300	-63,223,971	-62,822,142	-56,360,028	-44,187,175	-26,013,249

BALANCE SHEET (Unit: '000 US\$)																
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
(Assets)																
Current Assets	5,603,177	2,795,738	1,328,619	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash & Deposit	5,603,177	2,795,738	1,328,619	0	0	0	0	0	0	0	0	0	0	0	0	0
Fixed Assets	17,639,196	41,108,397	90,311,598	131,745,949	125,936,704	119,135,209	143,046,214	174,444,469	164,222,891	154,001,319	143,779,744	133,558,169	123,336,591	113,115,019	102,893,414	92,671,869
Depreciable Fixed Assets	17,639,196	41,580,696	91,256,196	136,392,846	137,654,346	137,933,595	169,995,316	207,491,346	207,491,346	207,491,346	207,491,346	207,491,346	207,491,346	207,491,346	207,491,346	207,491,346
Accumulated depreciation	0	472,299	944,598	4,646,897	11,747,642	18,818,387	25,949,132	33,049,877	43,271,452	53,493,027	63,714,602	73,936,177	84,157,752	94,379,327	104,600,902	114,822,477
Net fixed assets	17,639,196	41,108,397	90,311,598	131,745,949	125,936,704	119,135,209	143,046,214	174,444,469	164,222,891	154,001,319	143,779,744	133,558,169	123,336,591	113,115,019	102,893,414	92,671,869
Total Assets	23,242,373	43,904,135	91,640,217	131,745,949	125,936,704	119,135,209	143,046,214	174,444,469	164,222,891	154,001,319	143,779,744	133,558,169	123,336,591	113,115,019	102,893,414	92,671,869
(Liabilities and capital)																
Liabilities	26,626,000	49,013,786	97,135,571	142,842,847	149,721,493	159,476,124	186,434,854	227,783,811	230,345,676	229,142,589	223,971,047	214,431,293	201,935,048	183,428,513	159,161,239	128,892,893
Current Liabilities (cross subsidy)	0	0	0	2,124,340	10,191,661	17,535,560	26,293,137	38,608,821	49,158,602	55,961,068	60,619,300	63,223,971	62,822,142	56,360,028	44,187,175	26,013,249
Fixed Liabilities (long-term loan)	26,626,000	49,013,786	97,135,571	140,718,507	139,529,832	138,940,564	160,141,717	189,175,024	181,187,074	173,181,521	163,351,747	151,207,326	139,112,906	127,068,485	114,974,065	102,879,644
Capital	-3,383,627	-5,109,651	-5,495,355	-11,096,898	-23,784,779	-34,340,915	-43,388,640	-53,339,375	-65,122,782	-75,141,270	-80,191,303	-80,923,129	-78,643,451	-70,313,494	-58,267,795	-36,221,024
Investment in kind by Gov. Funds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Income	-3,383,627	-1,276,024	-385,703	-5,601,514	-12,637,861	-10,556,136	-9,047,725	-9,950,735	-12,783,406	-9,018,488	-5,050,033	-731,826	2,274,675	8,334,960	14,045,699	20,046,772
Retained Earnings	-3,383,627	-5,109,651	-5,495,355	-11,096,898	-23,784,779	-34,340,915	-43,388,640	-53,339,375	-65,122,782	-75,141,270	-80,191,303	-80,923,129	-78,643,451	-70,313,494	-58,267,795	-36,221,024
Total Liabilities and capital	23,242,373	43,904,135	91,640,217	131,745,949	125,936,704	119,135,209	143,046,214	174,444,469	164,222,891	154,001,319	143,779,744	133,558,169	123,336,591	113,115,019	102,893,414	92,671,869





Table 4-3-2 (2) The Financial Statements of Concession (Low Case)

PROFIT AND LOSS STATEMENT (Unit: '000 US\$)																
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
Operating Revenues	80,070,990	84,579,475	87,718,320	91,197,750	94,550,470	97,341,795	100,597,270	103,428,945	104,754,060	106,935,775	109,611,140	111,533,820	113,993,280	116,366,910	118,639,830	
Operating Cost	45,374,501	47,342,349	49,378,234	49,445,177	49,783,449	50,059,591	51,893,129	50,849,296	50,800,893	51,018,919	51,287,116	52,995,794	50,116,230	47,973,647	45,200,939	
Personnel, Administration	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	4,639,549	
Maintenance & repair	5,806,278	7,323,278	6,097,218	5,806,278	5,806,278	5,806,278	7,323,278	6,097,278	5,806,278	5,806,278	5,806,278	7,323,278	6,097,278	5,806,278	5,806,278	
Concession Fee	24,657,099	25,107,945	25,421,832	25,769,775	26,108,047	26,384,160	26,700,727	26,897,895	27,125,406	27,343,578	27,611,714	27,803,332	28,049,828	28,286,691	28,513,993	
Depreciation costs	10,221,575	10,221,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	11,289,575	9,191,129	9,191,129	
Net Operating Income	34,696,489	37,237,126	38,340,086	41,752,573	44,767,021	47,282,214	48,614,141	51,579,649	53,953,252	55,916,796	58,324,024	58,894,036	63,882,050	68,393,263	70,438,891	
Non-operating Revenues	0	0	2,342,479	5,364,234	8,958,781	13,142,501	17,997,459	23,456,079	29,928,416	37,030,203	45,141,603	54,116,093	64,001,617	75,135,477	87,353,066	
Interest on deposits	0	0	2,342,479	5,364,234	8,958,781	13,142,501	17,997,459	23,456,079	29,928,416	37,030,203	45,141,603	54,116,093	64,001,617	75,135,477	87,353,066	
Non-operating Expenses	8,043,438	4,845,253	3,995,783	3,270,118	2,544,452	1,874,375	1,288,798	878,516	4,106,471	627,599	351,211	0	0	0	0	
Interest on long-term loans	5,447,113	4,721,413	3,995,783	3,270,118	2,544,452	1,874,375	1,288,798	878,516	4,106,471	627,599	351,211	0	0	0	0	
Interest on short-term loans	2,601,325	123,804	0	0	0	0	0	0	0	0	0	0	0	0	0	
Net Income	26,643,051	32,391,873	34,344,303	43,846,689	51,212,350	58,550,340	65,312,802	74,187,182	79,775,198	92,319,399	103,050,416	112,654,129	127,883,668	143,528,740	157,791,938	
Retained Earnings	-6,169,346	26,202,527	62,859,309	106,735,998	157,947,348	216,497,668	281,810,499	355,937,671	435,772,859	528,082,268	631,182,655	743,836,814	871,720,431	1,015,248,221	1,173,091,179	

CASH FLOW STATEMENT (Unit: '000US\$)																
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
Cash Beginning	-26,013,249	-1,233,043	29,280,934	67,052,921	111,954,764	164,281,268	224,843,233	293,575,984	374,105,202	462,877,534	564,270,037	676,451,161	800,020,218	939,193,460	1,091,913,329	
Cash Inflow (excluding G. Funds)	41,918,064	47,458,701	53,862,140	60,239,382	66,935,377	73,694,290	79,781,175	83,245,302	97,061,243	106,126,573	116,651,202	125,933,704	139,173,243	152,719,869	166,983,097	
Net operating Income	34,696,489	37,237,126	38,340,086	41,752,573	44,767,021	47,282,214	48,614,141	51,579,649	53,953,252	55,916,796	58,324,024	58,894,036	63,882,050	68,393,263	70,438,891	
Depreciation costs	10,221,575	10,221,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	13,179,575	11,289,575	9,191,129	9,191,129	
Long-term loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Interest on deposits	0	0	2,342,479	5,364,234	8,958,781	13,142,501	17,997,459	23,456,079	29,928,416	37,030,203	45,141,603	54,116,093	64,001,617	75,135,477	87,353,066	
Cash Outflow (excluding G. Funds)	20,142,659	16,939,673	16,090,201	15,364,538	14,638,873	13,042,325	11,043,424	7,716,054	8,283,912	4,734,070	4,470,079	2,264,647	0	0	0	
Investment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Repayment for long-term loans	12,094,421	12,094,421	12,094,421	12,094,421	12,094,421	11,167,950	9,759,626	6,837,533	4,182,441	4,106,471	4,085,863	2,264,647	0	0	0	
Interest on long-term loans	5,447,113	4,721,413	3,995,783	3,270,118	2,544,452	1,874,375	1,288,798	878,516	4,106,471	627,599	351,211	0	0	0	0	
Interest on short-term loans	2,601,325	123,804	0	0	0	0	0	0	0	0	0	0	0	0	0	
Cash Inflow - Cash Outflow	21,775,205	30,519,028	37,771,935	44,931,844	52,296,504	60,561,965	68,732,750	80,529,219	88,777,332	101,392,504	112,181,124	123,569,057	139,173,243	152,719,869	166,983,097	
Cash Ending	-1,233,043	29,280,934	67,052,921	111,954,764	164,281,268	224,843,233	293,575,984	374,105,202	462,877,534	564,270,037	676,451,161	800,020,218	939,193,460	1,091,913,329	1,258,896,416	
Cash excess	0	29,280,934	67,052,921	111,954,764	164,281,268	224,843,233	293,575,984	374,105,202	462,877,534	564,270,037	676,451,161	800,020,218	939,193,460	1,091,913,329	1,258,896,416	
Cash shortage	-1,233,043	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

BALANCE SHEET (Unit: '000US\$)																
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
(Assets)																
Current Assets	0	29,280,934	67,052,921	111,954,764	164,281,268	224,843,233	293,575,984	374,105,202	462,877,534	564,270,037	676,451,161	800,020,218	939,193,460	1,091,913,329	1,258,896,416	
Cash & Deposit	0	29,280,934	67,052,921	111,954,764	164,281,268	224,843,233	293,575,984	374,105,202	462,877,534	564,270,037	676,451,161	800,020,218	939,193,460	1,091,913,329	1,258,896,416	
Fixed Assets	82,450,294	72,228,719	59,049,144	45,869,569	32,689,994	19,510,419	6,330,844	-6,848,731	-20,028,306	-33,207,831	-46,337,436	-59,567,031	-70,856,606	-80,047,735	-89,238,864	
Depreciable Fixed Assets	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	207,494,346	
Accumulated depreciation	125,044,052	135,265,627	148,445,202	161,624,777	174,804,352	187,983,927	201,163,502	214,343,077	227,522,652	240,702,227	253,881,802	267,061,377	278,350,952	287,542,031	295,733,210	
Net fixed assets	82,450,294	72,228,719	59,049,144	45,869,569	32,689,994	19,510,419	6,330,844	-6,848,731	-20,028,306	-33,207,831	-46,337,436	-59,567,031	-70,856,606	-80,047,735	-89,238,864	
Total Assets	82,450,294	101,509,703	126,102,065	157,854,333	196,971,262	244,353,652	299,906,828	367,256,471	442,849,228	531,062,156	630,063,705	740,453,187	868,336,854	1,011,865,591	1,169,657,552	
(Liabilities and capital)																
Liabilities	92,023,267	78,690,803	66,596,392	54,501,962	42,407,541	31,239,591	21,479,565	14,642,426	10,459,985	6,353,515	2,264,647	0	0	0	0	
Current Liabilities (cross subsidy)	1,238,043	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fixed Liabilities (Long-term loan)	90,785,224	78,690,803	66,596,392	54,501,962	42,407,541	31,239,591	21,479,565	14,642,426	10,459,985	6,353,515	2,264,647	0	0	0	0	
Capital	-9,572,973	22,818,900	59,505,682	103,352,371	154,563,721	213,114,061	278,426,863	352,614,045	432,389,242	524,708,642	627,799,058	740,453,187	868,336,854	1,011,865,591	1,169,657,552	
Investment in Kind By Gov. Funds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Net Income	26,643,051	32,391,873	34,344,303	43,846,689	51,212,350	58,550,340	65,312,802	74,187,182	79,775,198	92,319,399	103,050,416	112,654,129	127,883,668	143,528,740	157,791,938	
Retained Earnings	-9,572,973	22,818,900	59,505,682	103,352,371	154,563,721	213,114,061	278,426,863	352,614,045	432,389,242	524,708,642	627,799,058	740,453,187	868,336,854	1,011,865,591	1,169,657,552	
Total Liabilities and capital	82,450,294	101,509,703	126,102,065	157,854,333	196,971,262	244,353,652	299,906,828	367,256,471	442,849,228	531,062,156	630,063,705	740,453,187	868,336,854	1,011,865,591	1,169,657,552	





Table 4-3-2 (3) The Financial Statements of Concession (Low Case)

PROFIT AND LOSS STATEMENT (UNIT: '000 US\$)							
	2028	2029	2030	2031	2032	2033	2034
Operating Revenues	120,815,610	122,855,820	125,692,875	127,604,250	130,280,860	132,023,550	134,590,235
Operating Cost	48,418,523	50,143,533	46,641,413	46,551,551	46,819,212	46,993,451	43,765,155
Personnel, Administration	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549	4,659,549
Maintenance & repair	5,806,278	7,323,278	6,087,278	5,806,278	5,806,278	5,806,278	7,323,278
Concession Fee	28,731,567	28,939,552	29,219,283	29,410,425	29,678,056	29,852,355	30,108,030
Depreciation costs	9,191,129	9,191,129	6,645,299	6,645,299	6,645,299	6,645,299	6,645,299
Net Operating Income	72,397,187	72,752,282	79,051,462	81,052,699	83,461,648	85,030,099	85,814,140
Non-operating Revenues	100,711,713	115,295,712	131,074,842	148,416,571	167,305,735	187,898,751	210,264,650
Interest on deposit	100,711,713	115,295,712	131,074,842	148,416,571	167,305,735	187,898,751	210,264,650
Non-operating Expenses	0	0	0	0	0	0	0
Interest on long-term loans	0	0	0	0	0	0	0
Interest on short-term loans	0	0	0	0	0	0	0
Net Income	173,108,860	188,047,995	210,126,304	229,469,270	250,767,384	272,928,820	296,078,820
Retained Earnings	1,345,150,039	1,534,198,034	1,744,324,338	1,973,293,608	2,224,560,992	2,497,433,812	2,790,565,632

CASH FLOW STATEMENT (Unit: '000US\$)							
	2028	2029	2030	2031	2032	2033	2034
Cash Beginning	1,258,856,416	1,411,196,405	1,638,435,529	1,855,207,132	2,091,321,701	2,348,734,384	2,628,308,503
Cash Inflow (excluding G. Funds)	182,293,959	197,239,124	216,721,603	236,114,569	257,412,683	279,574,119	302,724,119
Net operating income	72,397,187	72,752,282	79,051,462	81,052,699	83,461,648	85,030,099	85,814,140
Depreciation costs	9,191,129	9,191,129	6,645,299	6,645,299	6,645,299	6,645,299	6,645,299
Long-term loans	0	0	0	0	0	0	0
Interest on deposits	100,711,713	115,295,712	131,074,842	148,416,571	167,305,735	187,898,751	210,264,650
Cash Outflow (excluding G. Funds)	0	0	0	0	0	0	0
Investment	0	0	0	0	0	0	0
Repayment for long-term loans	0	0	0	0	0	0	0
Interest on long-term loans	0	0	0	0	0	0	0
Interest on short-term loans	0	0	0	0	0	0	0
Cash Inflow - Cash Outflow	182,293,959	197,239,124	216,721,603	236,114,569	257,412,683	279,574,119	302,724,119
Cash Ending	1,441,196,405	1,638,435,529	1,855,207,132	2,091,321,701	2,348,734,384	2,628,308,503	2,931,032,622
Cash excess	1,441,196,405	1,638,435,529	1,855,207,132	2,091,321,701	2,348,734,384	2,628,308,503	2,931,032,622
Cash shortage	0	0	0	0	0	0	0

BALANCE SHEET (UNIT: '000US\$)							
	2028	2029	2030	2031	2032	2033	2034
(Assets)							
Current Assets	1,441,196,405	1,638,435,529	1,855,207,132	2,091,321,701	2,348,734,384	2,628,308,503	2,931,032,622
Cash & Deposits	1,441,196,405	1,638,435,529	1,855,207,132	2,091,321,701	2,348,734,384	2,628,308,503	2,931,032,622
Fixed Assets	-98,429,993	-107,621,122	-114,266,421	-120,911,720	-127,557,019	-134,202,318	-140,847,617
Depreciable Fixed Assets	207,494,316	207,494,316	207,494,316	207,494,316	207,494,316	207,494,316	207,494,316
Accumulated depreciation	305,924,339	315,115,463	321,760,767	328,406,066	335,051,365	341,695,661	348,341,963
Net fixed assets	-98,429,993	-107,621,122	-114,266,421	-120,911,720	-127,557,019	-134,202,318	-140,847,617
Total Assets	1,342,766,412	1,530,814,407	1,740,940,711	1,970,409,981	2,221,177,365	2,494,106,185	2,790,185,005
(Liabilities and capital)							
Liabilities	0	0	0	0	0	0	0
Current Liabilities (cross subsidy)	0	0	0	0	0	0	0
Fixed Liabilities (Long-term loan)	0	0	0	0	0	0	0
Capital	1,342,766,412	1,530,814,407	1,740,940,711	1,970,409,981	2,221,177,365	2,494,106,185	2,790,185,005
Investment in Kind By Gov. Funds	0	0	0	0	0	0	0
Net Income	173,108,860	188,047,995	210,126,304	229,469,270	250,767,384	272,928,820	296,078,820
Retained Earnings	1,342,766,412	1,530,814,407	1,740,940,711	1,970,409,981	2,221,177,365	2,494,106,185	2,790,185,005
Total Liabilities and capital	1,342,766,412	1,530,814,407	1,740,940,711	1,970,409,981	2,221,177,365	2,494,106,185	2,790,185,005









## **V FINANCIAL ANALYSIS**

### **5.1 Purpose and Methodology**

1. The purpose of the financial analysis is to examine the financial condition of Balboa Port Office of APN (excluding Panama Railroad) and the National Government during the project life in relation to Balboa Port project.

2. To execute the projects proposed in the Short-term Plan, the National Government will have to make more profits than before, and Balboa Port Office will have to increase productivity and its generated income within the limits of running the business of the concessionaire. The financial condition of the concessionaire has been analyzed in Chapter IV of Part III. In this chapter, the financial condition of Balboa Port Office and the National Government is solely analyzed, and the condition of the concessionaire is given.

3. The financial analysis of Balboa Port Office is examined based on its projected financial statements ( Profit and Loss Statement, Cash Flow Statement and Balance Sheet ) during the project life. The financial analysis of the National Government is examined based on its projected Profit and Loss Statement expressed by the changing profits and losses from the projects.

### **5.2 Presuppositions of Financial Analysis**

#### **5.2.1 Scope of Financial Analysis**

##### **(1) Projects**

4. The object of this study is the Short-term Plan including not only the construction plan but the operation and management plan. However, the project executed by ARI located in Amador and Rodman is not included in the scope of this study.

##### **(2) Base Year**

5. The "Base Year" in the cost estimation of construction or other costs and revenues is set as 1996 for this study. Neither price inflation nor increases in nominal wage are considered during the project life.

### **(3) Project Life**

6. Taking into consideration the depreciation period of the main facilities of 30 years or more, the period of calculation (project life) in the financial analysis is assumed to be 30 years from the time construction is completed.

### **(4) Cargo Handling Volume**

7. In this study, the high growth case and the low growth case is examined. (See Chapter II of Part II)

## **5.2.2 Revenues**

8. During the project life, Balboa Port Office and the National Government earn revenues from PPC as well as present concessions and lease fees.

### **(1) Revenues from PPC**

9. Revenues from PPC consist of the fixed annuity, the variable annuity and equipment sales. Their revenues have been decided by the contract between the National Government and PPC on December, 1996. The fixed annuity and selling charge for equipment come under the jurisdiction of the National Government directly.

#### **1) Fixed Annuity**

10. The National Government will receive 22.2 million Balboas (or US\$) per year as the concession fee for Balboa Port and Cristobal Port. Seventy-five percent of this annuity is assumed to be derived from the Balboa Port concession. (See Chapter IV of Part III)

#### **2) Variable Annuity**

11. APN will receive ten percent of an amount of PPC's proceeds. The amount of this annuity is given from another study related to the financial condition of the concessionaire. (See Chapter IV of Part III)

#### **3) Sale of Equipment**

12. The National Government will receive 10 million Balboas (or US\$) for

selling existing equipment of Balboa Port and Cristobal Port now owned by APN to PPC. About 2.5 million Balboas (or US\$) is assumed to be the revenue of Balboa Port Office based on the ratio of the book value between Balboa and Cristobal.

**(2) Revenues from Present Concessions and Lease Fees**

13. According to the concession contract between APN and PPC, the terms of the contract for present concessions and lease are changed. Revenues from present concessions and lease fees received by Balboa Port Office are assumed to be as follows;

- a) 80 % of the concession fee from Braswel Ship Yard
- b) 60 % of the concession fee from Atlantic Pacific S.A.
- c) 65 % of the concession fee from other port service company
- d) Concession fee from Port Engineering Consultants Company; 10% of the revenues from the "Lighthouse and Buoy" tariff.
- e) Lease fees from the tenant located outside of PPC concession area

Other present concessions and lease fees will be received by PPC.

**5.2.3 Expenses (excluding depreciation)**

**(1) Operating Expenses**

**1) Personnel Expenses**

14. The number of personnel is given in Chapter IV of Part III

15. Unit personnel cost including salary tax is assumed to be about 9.3 thousand Balboas (or US\$) per skilled worker and 6.6 thousand Balboas (or US\$) per unskilled worker based on the actual unit cost of APN (excluding Balboa Port and Cristobal Port where the wage level is inordinately high) in a recent year.

**2) Repair and Maintenance**

16. Repair and Maintenance in Balboa Port will be performed by PPC or another concessionaire.

**3) Other Operating Expenses**

17. Administration cost and other operating cost is assumed to be about 25 % of total personnel expenses. This ratio is based on the actual one of the Central

Office of APN in recent years.

**(2) Dismissal Allowances**

18. The National Government must pay 48 million Balboas (or US\$) for dismissing workers at Balboa Port, Cristobal Port and Central Office of APN. Of this amount, it is assumed that about 17 million Balboas (or US\$) will be paid for the Balboa Port workers based on the ratio of number of workers between Balboa and Cristobal.

**5.2.4 Investment, Fixed Assets and Depreciation**

**1) Investment**

19. New construction and dredging in Balboa Port are carried out by PPC, and new investment expenses and new fixed assets constructed by APN or the National Government do not arise. The facilities and buildings constructed by PPC in Balboa Port will be transferred to APN after expiry of the contract between the National Government and PPC.

**2) Present Fixed Assets and Depreciation**

20. The equipment of the present fixed assets are sold to PPC. Other fixed assets depreciate during the project life. The annual depreciation costs are calculated by the straight line method, based on their service lives. Residual values after all depreciation are estimated as zero.

**3) Fixed Assets returned by PCC and Depreciation**

21. The facilities and buildings owned by PCC in Balboa Port will be returned to Balboa Port Office till the return of the Panama Canal on December 31, 1999. Their facilities and buildings will be included in the fixed assets of Balboa Port Office at that time, and they will depreciate during the project life in the same manner as above "2)".

**4) Other**

22. According to the contract between the National Government and PPC dated December, 1996, APN must bear the expenses to remove the buildings returned from PCC due to the construction of the new port facilities operated by

PPC. But these costs are assumed to be paid by the National Government for convenience of the analysis.

### 5.2.5 Fund Raising

#### (1) Long-term Loan

23. In this project, the expenses which require procurement of long-term loans are only the expenses of the dismissal allowances. The National Government raised these funds from PPC and Panama National Bank (BNP).

##### 1) Loan from PPC

24. The loan condition from PPC is as follows;

- a) Total amount : 30 million Balboas (or US\$)  
It is assumed that about 10 million Balboas (or US\$) will be used for Balboa Port Office based on the ratio of number of workers of Balboa and Cristobal
- b) Loan period : 7 years
- c) Interest rate : 0 %
- d) Repayment : fixed amount repayment of principal

##### 2) Loan from BNP

25. The loan condition from BNP is as follows;

- a) Loan period : 5 years
- b) Interest rate : 8.25 %
- c) Repayment : fixed amount repayment of principal

#### (2) Domestic Short - term Loan and Deposit

26. Any cash shortage should be covered by short-term loans with an annual interest rate of 9.7 %. Cash excess will be deposited to a current account at a bank.

### 5.2.6 Distribution

#### (1) Distribution to Central Office of APN

27. An amount from the net income of Balboa Port Office will be distributed to the Central Office of APN by Balboa Port Office. The amount represents a



proportional distribution of profits at each port based on past records of a recent year.

**(2) Contribution to the National Government**

28. In this study, net income of Balboa Port Office's contribution to the National Government after distribution to Central Office is assumed to be the same as before; and Balboa Port Office does not have any internal reserves. Before the concession, it was permitted to use internal reserves only for the purpose of dredging. In future a concessionaire will dredge in Balboa Port.

29. The projected financial statements of Balboa Port Office and the National Government according to the above condition are presented in the following Tables ( from Table 5-2-1 to Table 5-2-7).

Table 5-2-1 Balance Sheet of Balboa Port Office

(1,000 B/.)

Year	Assets	Current Assets	Fixed Assets	Investments	Liabilities & Patrimony	Liabilities	Patrimony	Government Funds	Accrued Results
1997	461,345	12,940	451,401	4	461,345	0	461,345	450,984	13,361
1998	461,345	14,070	450,271	4	461,345	0	461,345	450,984	13,361
1999	467,030	14,823	452,203	4	467,030	0	467,030	453,669	13,361
2000	467,030	15,737	451,289	4	467,030	0	467,030	453,669	13,361
2001	467,030	16,648	450,378	4	467,030	0	467,030	453,669	13,361
2002	467,030	17,555	449,471	4	467,030	0	467,030	453,669	13,361
2003	467,030	18,457	448,569	4	467,030	0	467,030	453,669	13,361
2004	467,030	19,297	447,729	4	467,030	0	467,030	453,669	13,361
2005	467,030	20,111	446,915	4	467,030	0	467,030	453,669	13,361
2006	467,030	20,644	446,382	4	467,030	0	467,030	453,669	13,361
2007	467,030	21,139	445,887	4	467,030	0	467,030	453,669	13,361
2008	467,030	21,634	445,392	4	467,030	0	467,030	453,669	13,361
2009	467,030	22,129	444,897	4	467,030	0	467,030	453,669	13,361
2010	467,030	22,622	444,401	4	467,030	0	467,030	453,669	13,361
2011	467,030	23,113	443,913	4	467,030	0	467,030	453,669	13,361
2012	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2013	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2014	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2015	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2016	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2017	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2018	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2019	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2020	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2021	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2022	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2023	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2024	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2025	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2026	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2027	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2028	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2029	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2030	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2031	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2032	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2033	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361
2034	467,030	23,236	443,790	4	467,030	0	467,030	453,669	13,361

Table 5-2-2 Profit and Loss Statement of Balboa Port Office (High-growth Case)

(1,000 B/.)

Year	Operating Revenue	Operating Expenses	Operating Income	Non-Operating Income	Distribution	Surplus
1997	3,922	1,505	2,417	0	2,417	0
1998	4,403	1,304	3,099	0	3,099	0
1999	4,883	927	3,956	0	3,956	0
2000	5,363	1,088	4,275	0	4,275	0
2001	5,843	1,085	4,758	0	4,758	0
2002	6,323	1,081	5,242	0	5,242	0
2003	6,803	1,076	5,727	0	5,727	0
2004	7,283	1,014	6,269	0	6,269	0
2005	7,757	988	6,769	0	6,769	0
2006	8,431	707	7,724	0	7,724	0
2007	9,105	669	8,437	0	8,437	0
2008	9,775	668	9,106	0	9,106	0
2009	10,315	668	9,646	0	9,646	0
2010	10,862	668	10,194	0	10,194	0
2011	11,339	665	10,675	0	10,675	0
2012	11,606	297	11,309	0	11,309	0
2013	11,873	174	11,699	0	11,699	0
2014	12,140	174	11,966	0	11,966	0
2015	12,414	174	12,240	0	12,240	0
2016	12,681	174	12,507	0	12,507	0
2017	12,954	174	12,780	0	12,780	0
2018	13,219	174	13,045	0	13,045	0
2019	13,487	174	13,313	0	13,313	0
2020	13,758	174	13,584	0	13,584	0
2021	14,033	174	13,859	0	13,859	0
2022	14,297	174	14,123	0	14,123	0
2023	14,576	174	14,402	0	14,402	0
2024	14,882	174	14,708	0	14,708	0
2025	15,325	174	15,151	0	15,151	0
2026	15,776	174	15,602	0	15,602	0
2027	16,216	174	16,042	0	16,042	0
2028	16,662	174	16,488	0	16,488	0
2029	17,096	174	16,922	0	16,922	0
2030	17,541	174	17,367	0	17,367	0
2031	17,972	174	17,798	0	17,798	0
2032	18,412	174	18,238	0	18,238	0
2033	18,836	174	18,662	0	18,662	0
2034	19,275	174	19,101	0	19,101	0
Total	457,436	18,236	439,201	0	439,201	0

Table 5-2-3 Cash Flow Statement of Balboa Port Office (High-growth Case)

(1,000 B/)

Year	Cash Beginning	Cash Inflow (1)	Cash Outflow (2)	(1)-(2)	Cash Ending
1997	11,609	3,748	7,861	-4,113	7,496
1998	7,496	4,229	3,267	962	8,458
1999	8,458	4,709	3,749	960	9,418
2000	9,418	5,189	4,229	960	10,378
2001	10,378	5,669	4,709	960	11,338
2002	11,338	6,149	5,189	960	12,298
2003	12,298	6,629	5,669	960	13,258
2004	13,258	7,109	6,149	960	14,218
2005	14,218	7,583	6,635	948	15,166
2006	15,166	8,257	6,909	1,348	16,515
2007	16,515	8,932	7,583	1,348	17,863
2008	17,863	9,601	8,262	1,339	19,202
2009	19,202	10,141	9,061	1,080	20,282
2010	20,282	10,688	9,594	1,094	21,376
2011	21,376	11,166	10,210	956	22,331
2012	22,331	11,432	10,899	532	22,863
2013	22,863	11,699	11,164	534	23,398
2014	23,398	11,966	11,432	534	23,932
2015	23,932	12,240	11,692	549	24,480
2016	24,480	12,507	11,974	533	25,013
2017	25,013	12,780	12,233	547	25,560
2018	25,560	13,045	12,516	529	26,089
2019	26,089	13,313	12,776	537	26,626
2020	26,626	13,584	13,042	542	27,168
2021	27,168	13,859	13,309	550	27,719
2022	27,719	14,123	13,595	528	28,247
2023	28,247	14,402	13,845	557	28,804
2024	28,804	14,708	14,096	613	29,416
2025	29,416	15,151	14,265	886	30,302
2026	30,302	15,602	14,700	902	31,204
2027	31,204	16,042	15,162	880	32,084
2028	32,084	16,488	15,595	893	32,977
2029	32,977	16,922	16,054	868	33,845
2030	33,845	17,367	16,478	889	34,734
2031	34,734	17,798	16,936	862	35,596
2032	35,596	18,238	17,358	879	36,475
2033	36,475	18,662	17,813	849	37,324
2034	37,324	19,101	18,224	877	38,201

Table 5-2-4 Profit and Loss Statement of Balboa Port Office (Low-growth Case)

(1,000 B/.)

Year			Operating Income	Non- Operating Income	Distributi on	Surplus
	Operating Revenue	Operating Expenses				
1997	3,550	1,505	2,045	0	2,045	0
1998	3,876	1,304	2,572	0	2,572	0
1999	4,202	927	3,275	0	3,275	0
2000	4,528	1,088	3,440	0	3,440	0
2001	4,854	1,085	3,769	0	3,769	0
2002	5,180	1,081	4,099	0	4,099	0
2003	5,507	1,076	4,431	0	4,431	0
2004	5,834	1,014	4,820	0	4,820	0
2005	6,161	988	5,173	0	5,173	0
2006	6,632	707	5,925	0	5,925	0
2007	7,103	669	6,435	0	6,435	0
2008	7,570	668	6,902	0	6,902	0
2009	8,037	668	7,369	0	7,369	0
2010	8,504	668	7,836	0	7,836	0
2011	8,971	665	8,306	0	8,306	0
2012	9,438	297	9,140	0	9,140	0
2013	9,904	174	9,731	0	9,731	0
2014	10,371	174	10,197	0	10,197	0
2015	10,701	174	10,527	0	10,527	0
2016	11,065	174	10,891	0	10,891	0
2017	11,419	174	11,245	0	11,245	0
2018	11,711	174	11,537	0	11,537	0
2019	12,043	174	11,869	0	11,869	0
2020	12,251	174	12,077	0	12,077	0
2021	12,500	174	12,326	0	12,326	0
2022	12,734	174	12,560	0	12,560	0
2023	13,018	174	12,844	0	12,844	0
2024	13,225	174	13,051	0	13,051	0
2025	13,488	174	13,314	0	13,314	0
2026	13,740	174	13,566	0	13,566	0
2027	13,984	174	13,810	0	13,810	0
2028	14,217	174	14,043	0	14,043	0
2029	14,441	174	14,267	0	14,267	0
2030	14,736	174	14,563	0	14,563	0
2031	14,943	174	14,770	0	14,770	0
2032	15,227	174	15,053	0	15,053	0
2033	15,417	174	15,243	0	15,243	0
2034	15,689	174	15,515	0	15,515	0
Total	386,771	18,236	368,535	0	368,535	0

Table 5-2-5 Cash Flow Statement of Balboa Port Office (Low-growth Case)

(1,000 B/.)

Year	Cash Beginning	Cash Inflow (1)	Cash Outflow (2)	(1)-(2)	Cash Ending
1997	11,609	3,376	8,233	-4,857	6,752
1998	6,752	3,702	3,050	652	7,404
1999	7,404	4,028	3,376	652	8,055
2000	8,055	4,354	3,701	652	8,708
2001	8,708	4,680	4,028	652	9,360
2002	9,360	5,006	4,354	653	10,013
2003	10,013	5,333	4,680	653	10,666
2004	10,666	5,660	5,006	654	11,320
2005	11,320	5,987	5,333	654	11,973
2006	11,973	6,458	5,515	943	12,916
2007	12,916	6,930	5,986	943	13,859
2008	13,859	7,396	6,463	934	14,793
2009	14,793	7,863	6,930	934	15,726
2010	15,726	8,330	7,396	934	16,660
2011	16,660	8,797	7,863	934	17,594
2012	17,594	9,264	8,330	934	18,527
2013	18,527	9,731	8,797	934	19,461
2014	19,461	10,197	9,264	934	20,395
2015	20,395	10,527	9,868	660	21,054
2016	21,054	10,891	10,163	728	21,782
2017	21,782	11,245	10,537	708	22,490
2018	22,490	11,537	10,953	584	23,074
2019	23,074	11,869	11,205	665	23,739
2020	23,739	12,077	11,661	416	24,155
2021	24,155	12,326	11,829	497	24,652
2022	24,652	12,560	12,092	468	25,120
2023	25,120	12,844	12,276	568	25,688
2024	25,688	13,051	12,636	415	26,103
2025	26,103	13,314	12,789	525	26,628
2026	26,628	13,566	13,061	505	27,133
2027	27,133	13,810	13,323	486	27,619
2028	27,619	14,043	13,576	467	28,086
2029	28,086	14,267	13,819	448	28,534
2030	28,534	14,563	13,971	591	29,125
2031	29,125	14,770	14,356	414	29,539
2032	29,539	15,053	14,486	567	30,106
2033	30,106	15,243	14,863	380	30,486
2034	30,486	15,515	14,972	543	31,030

**Table 5-2-6 Profit and Loss Statement of the National Government**  
(High-growth Case)

(1,000 B/)

Year	Operating Revenue	Operating Expenses	Operating Income	Non-operating Revenue	Non-operating Expenses	Non-Operating Income	Net Income
1997	20,878	17,401	3,477	0	166	-166	3,311
1998	18,942	0	18,942	0	290	-290	18,652
1999	19,684	3,200	16,484	0	208	-208	16,276
2000	19,966	0	19,966	0	125	-125	19,841
2001	20,398	0	20,398	0	43	-43	20,355
2002	20,836	0	20,836	0	0	0	20,836
2003	21,287	0	21,287	0	0	0	21,287
2004	21,805	0	21,805	0	0	0	21,805
2005	22,280	0	22,280	0	0	0	22,280
2006	23,172	0	23,172	0	0	0	23,172
2007	23,844	0	23,844	0	0	0	23,844
2008	24,479	0	24,479	0	0	0	24,479
2009	24,994	0	24,994	0	0	0	24,994
2010	25,517	0	25,517	0	0	0	25,517
2011	25,978	0	25,978	0	0	0	25,978
2012	26,588	0	26,588	0	0	0	26,588
2013	26,964	0	26,964	0	0	0	26,964
2014	27,222	0	27,222	0	0	0	27,222
2015	27,487	0	27,487	0	0	0	27,487
2016	27,745	0	27,745	0	0	0	27,745
2017	28,010	0	28,010	0	0	0	28,010
2018	28,266	0	28,266	0	0	0	28,266
2019	28,527	0	28,527	0	0	0	28,527
2020	28,790	0	28,790	0	0	0	28,790
2021	29,057	0	29,057	0	0	0	29,057
2022	29,314	0	29,314	0	0	0	29,314
2023	29,586	0	29,586	0	0	0	29,586
2024	29,884	0	29,884	0	0	0	29,884
2025	30,316	0	30,316	0	0	0	30,316
2026	30,757	0	30,757	0	0	0	30,757
2027	31,186	0	31,186	0	0	0	31,186
2028	31,623	0	31,623	0	0	0	31,623
2029	32,048	0	32,048	0	0	0	32,048
2030	32,484	0	32,484	0	0	0	32,484
2031	32,907	0	32,907	0	0	0	32,907
2032	33,338	0	33,338	0	0	0	33,338
2033	33,755	0	33,755	0	0	0	33,755
2034	34,186	0	34,186	0	0	0	34,186
Total	1,024,102	20,601	1,003,501	0	832	-832	1,002,669

**Table 5-2-7 Profit and Loss Statement of the National Government**  
(Low-growth Case)

(1,000 B/)

Year	Operating Revenue	Operating Expenses	Operating Income	Non-operating Revenue	Non-operating Expenses	Non-Operating Income	Net Income
1997	20,576	17,401	3,175	0	166	-166	3,009
1998	18,499	0	18,499	0	290	-290	18,209
1999	19,093	3,200	15,893	0	208	-208	15,685
2000	19,236	0	19,236	0	125	-125	19,111
2001	19,523	0	19,523	0	43	-43	19,480
2002	19,814	0	19,814	0	0	0	19,814
2003	20,117	0	20,117	0	0	0	20,117
2004	20,484	0	20,484	0	0	0	20,484
2005	20,814	0	20,814	0	0	0	20,814
2006	21,500	0	21,500	0	0	0	21,500
2007	21,970	0	21,970	0	0	0	21,970
2008	22,403	0	22,403	0	0	0	22,403
2009	22,839	0	22,839	0	0	0	22,839
2010	23,278	0	23,278	0	0	0	23,278
2011	23,721	0	23,721	0	0	0	23,721
2012	24,512	0	24,512	0	0	0	24,512
2013	25,074	0	25,074	0	0	0	25,074
2014	25,520	0	25,520	0	0	0	25,520
2015	25,836	0	25,836	0	0	0	25,836
2016	26,186	0	26,186	0	0	0	26,186
2017	26,527	0	26,527	0	0	0	26,527
2018	26,808	0	26,808	0	0	0	26,808
2019	27,129	0	27,129	0	0	0	27,129
2020	27,330	0	27,330	0	0	0	27,330
2021	27,570	0	27,570	0	0	0	27,570
2022	27,796	0	27,796	0	0	0	27,796
2023	28,072	0	28,072	0	0	0	28,072
2024	28,273	0	28,273	0	0	0	28,273
2025	28,527	0	28,527	0	0	0	28,527
2026	28,773	0	28,773	0	0	0	28,773
2027	29,009	0	29,009	0	0	0	29,009
2028	29,236	0	29,236	0	0	0	29,236
2029	29,454	0	29,454	0	0	0	29,454
2030	29,742	0	29,742	0	0	0	29,742
2031	29,944	0	29,944	0	0	0	29,944
2032	30,220	0	30,220	0	0	0	30,220
2033	30,406	0	30,406	0	0	0	30,406
2034	30,671	0	30,671	0	0	0	30,671
Total	956,484	20,601	935,883	0	832	-832	935,051



### 5.3 Examination of the Financial Condition of Balboa Port Office

#### (1) Payability (Break-even Analysis)

##### 1) Methodology

30. The expenses structure and break-even point are analyzed by break-even analysis. Through the calibration of the break-even point, the payability of Balboa Port Office is examined. The break-even point and break-even ratio can be calculated by the following formula.

$$\begin{aligned}\text{Break-even Point} &= \text{Fixed Costs} / (1 - \text{Variable Costs} / \text{Total Revenue}) \\ \text{Break-even Ratio} &= \text{Break-even Point} / \text{Total Revenue} \times 100\end{aligned}$$

31. Variable costs are assumed to be about 25 % of repair and maintenance expenses and half of other operating expenses based on the actual expenses structure of Balboa Port in a recent year. Other expenses are assumed to be fixed amounts, for example personnel expenses, the greater part of repair maintenance expenses, about half of other operating expenses and depreciation expenses.

##### 2) Results of the Calculation and Examination

32. Figure 5-3-1 shows the break-even ratio from 1990 to 2005 in the high-growth case. The results of the high-growth case and low case are almost the same. (Note: results in 1996 are excluded due to lack of data.)

33. Revenues and expenses structure from 1990 to 1995, before the concession with PPC, is different from the structure after the concession. There are fewer revenues after the concession though there are also fewer expenses.

34. However, the revenues after the concession increase. In comparison with the revenues, the expenses are stable and few. Therefore, the surplus of the APN Balboa Office increases every year. In 2005, the surplus will be more than the surplus in 1995, and the surplus in 2019 will be twice that of 1995.

35. The break-even point before the concession was considerably higher than after the concession due to the large revenues and the large fixed expenses in Balboa Port Office. The break-even ratio was 80.5 % on average from 1990 to 1995. Immediately after the concession, the break-even ratio will be 38 % in 1997. From then on, the payability will improve still more as the revenue increases. A major

reason for this improvement is the change in the expenses structure in Balboa Port Office after the concession, namely, the realization of low fixed expenses, for example, personnel expenses.

36. As there are no depreciation expenses from the new facilities and buildings invested in by Balboa Port Office after the concession, the fixed expenses decrease. Moreover, the revenues after the concession increase due to the activation of Balboa Port. As a result, the break-even ratio goes down every year, increasing the payability of Balboa Port Office.

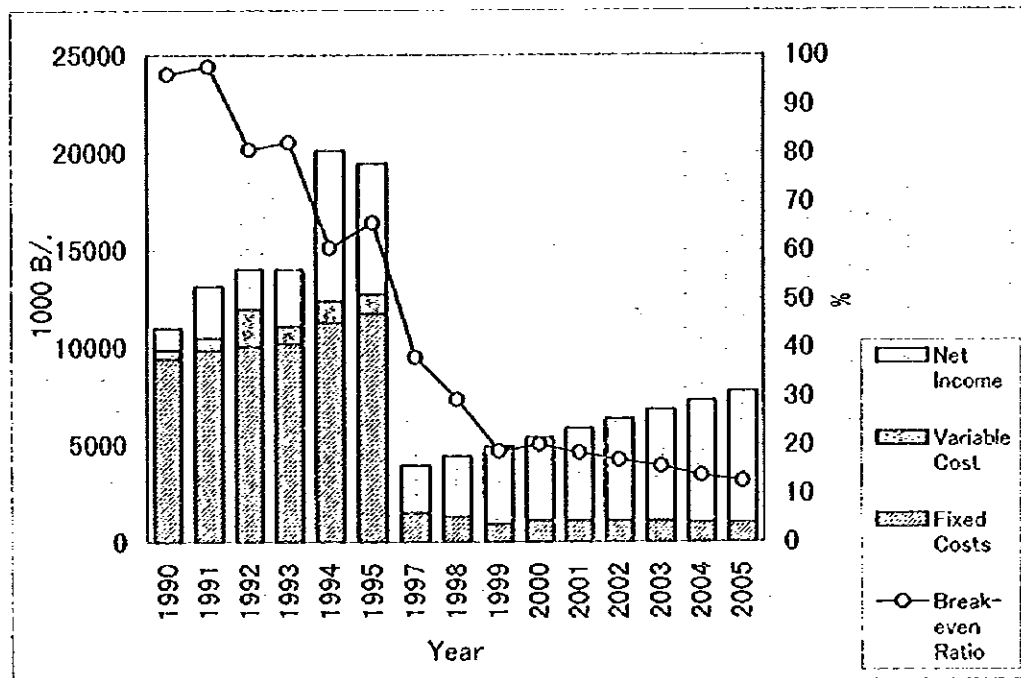


Figure 5-3-1 Break-even Point of Balboa Port Office (High-growth Case)

## (2) Productivity (Net income per Head)

### 1) Methodology :

37. Net income per head shows the productivity of man power. This indicator can be calculated by the following formula.

$$\text{Net Income per Head} = \text{Current Profit} / \text{Number of Labor}$$

## 2) Results of the Calculation and Examination

38. Figure 5-3-2 and 5-2-3 show the net income per head from 1990 to 2005. (Note: results in 1996 are excluded due to lack of data.) The net income per head after the concession is generally greater than before. The reason for this is a drastic retrenchment in the number of personnel and maintenance of the net income.

39. The revenues after the concession will decrease momentarily in comparison with before. However as the expenses after the concession decrease also due to the a reduction in personnel expenses, the net income is maintained.

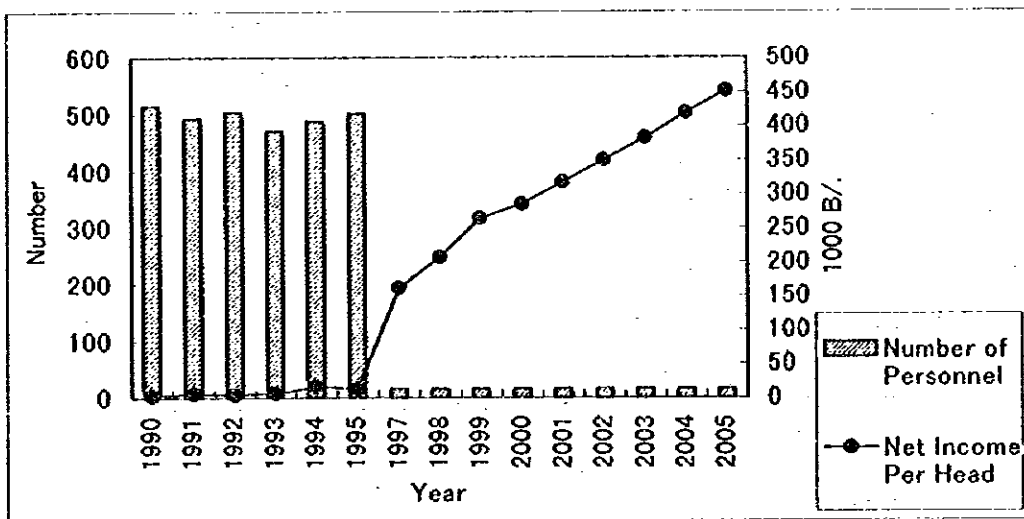


Figure 5-3-2 Net Income per Head at Balboa Port Office (High-growth Case)

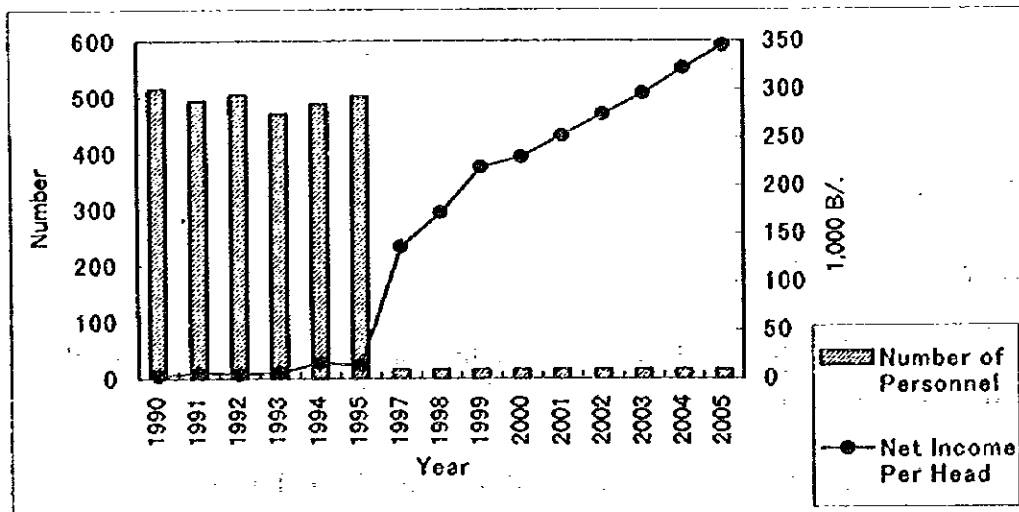


Figure 5-3-3 Net Income per Head at Balboa Port Office (Low-growth Case)

### (3) Operational Efficiency (Working Ratio)

#### 1) Methodology

40. See Chapter XI, 11.3.5, Part I

#### 2) Results of the Calculation and Examination

41. Figure 5-3-4 shows the working ratio from 1990 to 2005. (Note: results in 1996 are excluded due to lack of data.) The working ratio after the concession greatly improves, breaking 50 % every year.

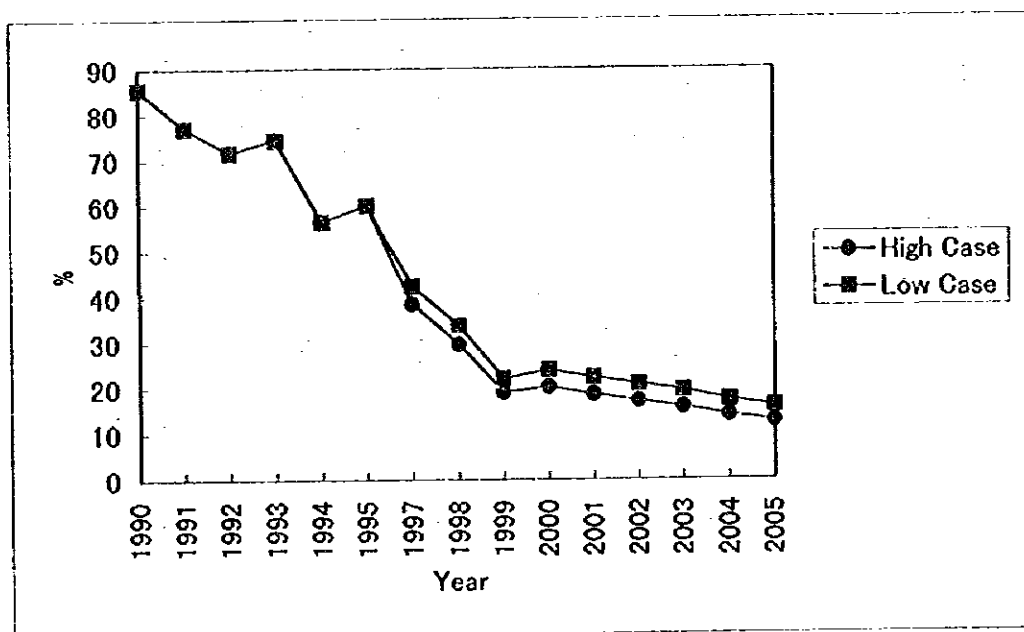


Figure 5-3-4 Working Ratio at Balboa Port Office

## 5.4 Examination of the Financial Condition of the National Government

### 5.4.1 The National Treasury Receipts from Balboa Port Office

42. Figure 5-4-1 shows the National Treasury receipts from Balboa Port including the revenues from PPC from 1990 to 2034. (Note: Results from 1990 to 1995 are estimated by the proportional distribution between the net income of Balboa and that of the total port except Balboa. Results in 1996 are excluded due to lack of data.) Net income shows great profits every year.

43. After the concession, the National Treasury receipts from Balboa Port increase greatly. Balboa Port contributed 11 million Balboas (or US\$) to the National Treasury during the six year period from 1990 to 1995. It can contribute about nine times that amount, 95 million Balboas (or US\$), in only a six year period from 1997 to 2002, in the low-growth case. The contribution accumulated from 1997 to 2005 is 156 million Balboas (or US\$) in the low-growth case or 164 million Balboas (or US\$) in the high-growth case.

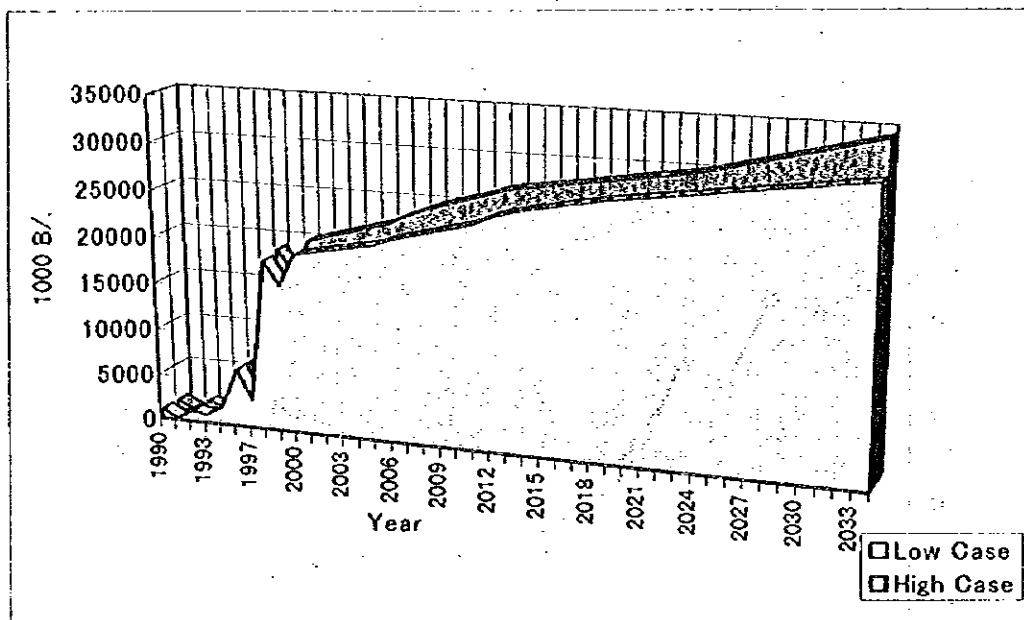


Figure 5-4-1 The National Treasury Receipts from Balboa Port

#### 5.4.2 Solvency (Debt Repayment Coverage Ratio)

##### 1) Methodology

44. Debt repayment coverage ratio shows whether the operating income can cover the repayment and the interest on long-term loans. The ratio must be higher than 1.0. This indicator can be calculated by the following formula.

$$\text{Debt Repayment Coverage Ratio} = \frac{\text{Net Operating Income Before Depreciation}}{\text{Repayment and Interest on Long-term Loans}}$$

## 2) Results of the Calculation and Examination

45. Table 5-4-1 show the results of calculation of the debt repayment coverage ratio from 1997 to 2003. The National Government takes loans only to pay the dismissal allowances during this period.

46. The operating income can cover the repayment and the interest on long-term loans because this ratio is higher than 1.75 (World Bank Standard) every year except 1997. Furthermore, this ratio is close to 1.75 even in 1997.

Table 5-4-1 Debt Repayment Coverage Ratio

Year	1997	1998	1999	2000	2001	2002	2003
Debt Repayment Coverage Ratio (High Case)	1.181	6.789	7.269	7.606	9.899	13.891	11.348
Debt Repayment Coverage Ratio (Low Case)	1.162	6.630	7.051	7.828	9.474	13.210	10.724

## 5.5 Conclusion

47. Judging from the above analysis, improvement of payability, productivity and the operational efficiency at Balboa Port can be expected through the project. Moreover, the National Treasury receipts from Balboa Port Office will increase in particular. Accordingly, the financial condition of Balboa Port Office and the National Government after the concession with PPC will be satisfactory.

48. However, this good situation is dependent on the following given conditions.

- a) Expenses including the personnel expenses are sharply reduced.
- b) Brisk port activity will generate steady revenues.
- c) Terms of the contract with PPC, in which the National Government and APN receive high fixed and variable annuities and is not required to make any investment, are complied with.

Inclusive of the above, attention should be paid to the following issues.

**1) To keep the condition of the contract with PPC**

**49. As the National Government will collect the concession fee, the National Government should have the right of access to the information related to activities and revenues of PPC.**

**2) To maintain cargo volume growth and brisk port activity**

**50. Not only PPC but APN will make efforts for the promotion of the port. Details are given in Chapter IV of Part III.**

**3) Accounting System**

**51. The execution of the budget must be coordinated with each budget item. The code of the budget is different from the code of the financial statement. And their code of account is so complicated that it is difficult for the accounting staff to understand. APN should remake the code of account to connect the budget with the financial statement and to make it easily understood by all accounting staff.**

## **VI ECONOMIC ANALYSIS**

### **6.1 Methodology**

1. An economic analysis is conducted to appraise the economic feasibility of the short-term plan for the new port facilities and the new port operation and management of Balboa Port.
2. The economic evaluation of a project should show whether the project is justifiable from the viewpoint of the national economy by assessing its contribution to the national economy.
3. An economic analysis will be carried out according to the following method. Short-term plan will be defined and it will be compared to the "Without" case. Benefits and costs of both cases will be calculated and evaluated.
4. The economic internal rate of return ( EIRR ) based on a cost-benefit analysis is used to appraise the feasibility of the project. The EIRR is a discount rate which makes the costs and the benefits of the project during the project life equal.

### **6.2 Prerequisites of Analysis**

#### **(1) Base Year**

5. The "Base Year" in the cost estimation of construction, 1996, is set as the "Base Year" for this study.

#### **(2) Project Life**

6. Taking into consideration the depreciation period of the main facilities of 30 years or more, the period of calculation (project life) in the economic analysis is assumed to be 30 years from the time construction is completed.

#### **(3) Foreign Exchange Rate**

7. The exchange rate adopted for this analysis is US\$ 1.00 = B/.1.00, the same rate as used in the cost estimation.



#### **(4) Projects for the Economic Analysis**

8. The object of this study is the Short-term Plan including not only the construction plan but the operation and management plan. However, the project executed by ARI located in Amador and Rodman is not included in this analysis.

#### **(5) "With" case**

9. In an economic analysis, benefits are mainly brought about by improvements and expansions in handling capacity. Therefore, the "With" case scenario includes all improvements in productivity, all expansions of port facilities and improvement of the port operation and management through the concession with PPC for the short-term plan.

#### **(6) "Without" case**

10. A cost-benefit analysis is conducted on the difference between the "With" and "Without" investment cases. In this study, the following conditions are adopted as the "Without" case.

- a) No investment is made for the port
- b) Container handling capacity of the existing terminal is estimated to be about 60,000 TEUs. The overflowed import-export container cargo is assumed to be handled at the Caribbean ports in Panama and carried by truck between Balboa and those ports. The overflowed transshipment container cargo is accounted as lost opportunity.
- c) As for the container terminal project, the size of vessels and the working efficiency of cargo handling are not the same as "With" case.
- d) Substantial reduction in the existing number of workers and other means to rationalize management are not put into force.

### **6.3 Economic Pricing**

#### **6.3.1 Methodology**

11. In estimating the costs and benefits of the projects, "economic price" is applied. Economic price means the international price or border price.

12. In general, the values of goods and services quoted at market price of the

national economy do not always represent the true value of those goods and services. The market price of the national economy often includes customs duties and influence of the national economic system, for example a minimum wage system. Therefore, "economic price" should be conducted for the economic analysis in order to exclude these influences.

13. In this study, all costs and benefits are assumed to be divided into the following items. The market price of each item except the transfer items is changed to each economic price by each conversion factor corresponding with each item.

- a) Values of traded goods and services
- b) Values of non-traded goods and services
- c) Values of labor:  
The values of labor are further divided into values of skilled labor and values of unskilled labor.
- d) Transfer items.

#### 6.3.2 Transfer Items

14. Import / export duties, other taxes and subsidies are merely transfer items which do not actually reflect any consumption of national resources. Therefore, these transfer items should be excluded in the calculation of the costs and benefits of the project for the economic analysis.

#### 6.3.3 Conversion Factors

##### (1) Traded Goods and Services

15. Traded goods are expressed at the price of cost, insurance and freight (CIF) for imports and at the price of free on board (FOB) for exports, which are border prices or economic prices themselves. The price of traded services is decided by the international market mechanism functioning properly, which is also expressed in border prices or economic prices.

##### (2) Non-traded Goods and Services

16. The economic price of the non-traded goods and services are calculated by multiplying the Standard Conversion Factor (SCF). By using the SCF, a difference between the domestic market price and international market price caused by

customs duties and/or import/export subsidies can be voided.

17. The SCF is expressed by the following formula:

$$SCF = (I + E)/(I + DI - Is) + (E - De + Se)$$

where, I: Total amount of imports in CIF

E: Total amount of exports in FOB

DI: Total amount of import duties

De: Total amount of export duties

Is: Total amount of import subsidies

Se: Total amount of export subsidies

18. In this study, the SCF of 0.938 is adopted according to the past records of trade and customs.

(3) Labor

1) Skilled Labor

19. As the market mechanism of skilled labor is assumed to function properly, the economic price of skilled labor is obtained by multiplying its domestic market price by the Conversion Factor for Consumption (CFC). The CFC is used for converting the price of consumer goods from domestic market price to border price or economic price.

20. The conversion factor for skilled or unskilled labor is expressed by the following formula:

Conversion Factor of Labor

$$= \text{Opportunity Cost} / \text{Market Cost} \times \text{CFC} \quad \text{--- (Formula 6-3-1)}$$

where, in the case of skilled labor

$$\text{Opportunity Cost} / \text{Market Cost} = 1$$

The CFC is expressed by the following formula:

$$CFC = (Ic + Ec)/(Ic + Dci - Sci) + (Ec - Dce + See)$$

where,  $I_c$ : Total amount of consumer goods import in CIF  
 $E_c$ : Total amount of consumer goods export in FOB  
 $D_{ci}$ : Total amount of consumer goods import duties  
 $D_{ce}$ : Total amount of consumer goods export duties  
 $S_{ci}$ : Total amount of consumer goods import subsidies  
 $S_{ce}$ : Total amount of consumer goods export subsidies

21. In this study, the CFC or the conversion factor for skilled labor of 0.906 is adopted according to the past records of trade and customs.

## 2) Unskilled Labor

22. The market mechanism of unskilled labor does not function properly. Then, the opportunity costs and the market costs of unskilled labor must be estimated.

23. In this study, the market costs or wages of unskilled labor is assumed to be the value added per capita of the construction sector, and it is often assumed in a simplified manner that the opportunity cost of unskilled labor is equal to the value added per capita of the agricultural sector which is generally relatively elastic in its use of labor and where wages are normally lowest.

24. According to the Formula 6-3-1, the conversion factor for unskilled labor of 0.486 is adopted according to the past records of population and GDP of each sector in this study.

## 6.4 Costs and Benefits of the Project

### 6.4.1 Costs of the Project

25. The items that should be considered as costs of the projects are construction costs, replacement investment costs, and operational costs. "Residual Value" is also considered as a negative cost in the final year of the project.

26. The details of the costs of the project are the same as those of the preliminary economic analysis in section 9.3 of Chapter IX, Part II.

27. Table 6-4-1 and Table 6-4-2 show total costs of the short-term plan in 1997-2034. Table 6-4-3 shows the summary of total costs.

**Table 6-4-3 Costs of the Short-term Plan (1997-2034)**  
(thousand B/.)

Item/Case	Low Growth Case	High Growth Case
Construction	181,744	181,744
Replacement Investment	46,929	46,929
Operation	194,126	195,631
Residual Value	-21,704	-21,103
Total	401,095	404,201

#### 6.4.2 Benefits of the Project

28. The monetary benefits calculated in this study are as follows.

- a) Generation of foreign currency earnings from handling of transshipment container cargo
- b) Savings in the transport cost for import and export container cargo
- c) Savings in water transportation cost by enlargement of ship size
- d) Savings in mooring costs of ships by improved efficiency of container cargo handling
- e) Savings in existing operational costs

29. The details of the benefits of the project are the same as those of the preliminary economic analysis in section 9.4 of Chapter IX, Part II.

30. Table 6-4-4 and Table 6-4-5 show total costs of the short-term plan in 1997-2034. Table 6-4-6 shows the summary of the benefits.

**Table 6-4-6 Benefits of the Short-term Plan (1997-2034)**  
(thousand B/.)

Item/Case	Low Growth Case	High Growth Case
Transshipment	771,404	739,131
Transport	364,782	550,268
Ship Size & Handling Efficiency	351,926	540,444
Operation	290,333	290,333
Total	1,778,444	2,120,177

31. In both cases, "Transshipment" represents the largest benefit item. But "Transshipment" of the low growth case is greater than in the high case. In the high-growth case, not only the transshipment container cargo but the import-export container cargo increase greatly. Therefore, the import-export cargo

squeezes the transshipment cargo out of the capacity of the container terminals planned in the short-term. As a result, the opportunity to handle the transshipment cargo which is highly profitable is lost. This is why the master plan calls for the construction of new container terminals.

32. Another mean to maintain the container cargo operation is through the extension of the Diablo container yards which have much space. The capacity of these yards will be increased from 0.3 million TEUs to 0.4 million TEUs per yard after 2005.

## **6.5 Evaluation of the Project**

### **6.5.1 Calculation of the EIRR**

33. The economic internal rate of return (EIRR) based on a cost-benefit analysis is used to appraise the economic feasibility of the project.

34. Results of the EIRR calculation of the short-term plan are shown in Table 6-5-1 and Table 6-5-2. Table 6-5-3 shows the summary of the results of the EIRR.

### **6.5.2 Sensitivity Analysis**

35. In order to determine whether the project is feasible when certain conditions change, a sensitivity analysis is made for three alternatives.

Case A : The costs increase by 10%

Case B : The benefits decrease by 10%

Case C : The costs increase by 10% and the benefits decrease by 10%

36. The sensitivity analysis for three alternatives is calculated as the base case and the results are shown in Table 6-5-3.

### **6.5.3 Evaluation**

37. As for this project, even though the economic calculation only takes into account the items which are easily quantified, the EIRR exceeds 10%. Therefore, this short-term plan development project is feasible from the viewpoint of the national economy.

Table 6-5-3 EIRR of the Short-term Plan (1997 - 2034)

(%)

Case	Low Growth Case	High Growth Case
Base Case	19. 17	21. 33
Alternative A	17. 21	19. 23
Alternative B	17. 02	19. 02
Alternative C	15. 26	17. 15

## 6.6 Other Economic Effects

38. In this section, economic benefits which are not included in the calculation of EIRR are explained.

### (1) Benefits Related to Non-the Container Ships

39. Though the benefits related to the container cargo are included in the calculation of EIRR, there are also benefits related to other cargo ships, for example break bulk cargo ships and bulk cargo ships. Savings in waiting costs of ships by relieving port traffic congestion in the port is one of these benefits.

### (2) Benefits from the Improvement of Port Operation and Management

40. The benefits from the improvement of port operation and management include savings in interest or time costs of cargo costs and reduction of cargo damage and accidents at the port.

### (3) Indirect Benefits from Stability and Low Prices of the Cargo Supply

41. A stable cargo supply results in stable and low prices which will have a positive effect on the people's living standard and will also increase consumer demand. Moreover, investors will have more confidence when they consider business opportunities, which means that regional development (see Chapter V of Part II) as well as port related businesses will be promoted.

### (4) Increase in Employment Opportunities

42. The number of workers at Balboa Port decreased for a time because of the reduction in the existing labor force. However, the number of port operational employees after construction of the four new container terminals located Diablo

and Farfan will increase to some degree.

43. Furthermore, the employment opportunities increase because of the construction of Balboa Port and promotion of the port related businesses and regional development in Panama.

(5) Effects on the Panama Canal Transits

44. It goes without saying that Balboa Port is strategically located in the world maritime transport system close to the Panama Canal: most vessels calling at the port transit the Canal. With the construction of new container terminals and the improvement of the facilities and services for the ship repair, bunkering, supply services and other cargo handling, the additional vessel transits will be generated.



Table 6-4-1 Costs of the Short-term Plan (Low-growth Case)

(1,000 B/.)

Year	Const- ruction	Replacement Investment	Operation	Residual Value	Total
1997	13,702	0	14,171	0	27,873
1998	23,022	0	926	0	23,948
1999	44,438	0	1,955	0	46,393
2000	39,239	0	3,959	0	43,199
2001	1,310	0	3,643	0	4,953
2002	757	0	3,656	0	4,413
2003	25,849	0	3,664	0	29,512
2004	33,428	0	5,310	0	38,738
2005	0	0	5,140	0	5,140
2006	0	0	4,950	0	4,950
2007	0	0	4,914	0	4,914
2008	0	2,203	4,874	0	7,077
2009	0	3,704	6,262	0	9,966
2010	0	1,502	5,140	0	6,642
2011	0	0	4,950	0	4,950
2012	0	0	4,914	0	4,914
2013	0	0	4,874	0	4,874
2014	0	0	6,262	0	6,262
2015	0	0	5,140	0	5,140
2016	0	0	4,950	0	4,950
2017	0	0	4,914	0	4,914
2018	0	5,206	4,874	0	10,080
2019	0	14,718	6,262	0	20,980
2020	0	6,508	5,140	0	11,648
2021	0	0	4,950	0	4,950
2022	0	0	4,914	0	4,914
2023	0	0	4,874	0	4,874
2024	0	5,680	6,262	0	11,942
2025	0	0	5,140	0	5,140
2026	0	0	4,950	0	4,950
2027	0	0	4,914	0	4,914
2028	0	2,203	4,874	0	7,077
2029	0	3,704	6,262	0	9,966
2030	0	1,502	5,140	0	6,642
2031	0	0	4,950	0	4,950
2032	0	0	4,914	0	4,914
2033	0	0	4,874	0	4,874
2034	0	0	6,262	-21,704	-15,442
Total	181,744	46,929	194,126	-21,704	401,095

Table 6-4-2 Costs of the Short-term Plan (High-growth Case)

(1,000 B/.)

Year	Const- ruction	Replacement Investment	Operation	Residual Value	Total
1997	13,702	0	14,171	0	27,873
1998	23,022	0	926	0	23,948
1999	44,827	0	1,955	0	46,783
2000	39,239	0	3,963	0	43,203
2001	21,904	0	3,647	0	25,552
2002	27,163	0	4,194	0	31,357
2003	3,535	0	4,755	0	8,291
2004	8,351	0	6,179	0	14,529
2005	0	0	5,140	0	5,140
2006	0	0	4,874	0	4,874
2007	0	0	4,874	0	4,874
2008	0	2,203	4,914	0	7,117
2009	0	3,701	6,338	0	10,042
2010	0	1,502	5,140	0	6,642
2011	0	0	4,874	0	4,874
2012	0	0	4,874	0	4,874
2013	0	0	4,914	0	4,914
2014	0	0	6,338	0	6,338
2015	0	0	5,140	0	5,140
2016	0	0	4,874	0	4,874
2017	0	0	4,874	0	4,874
2018	0	5,206	4,914	0	10,120
2019	0	14,718	6,338	0	21,056
2020	0	6,508	5,140	0	11,648
2021	0	674	4,874	0	5,548
2022	0	5,006	4,874	0	9,880
2023	0	0	4,914	0	4,914
2024	0	0	6,338	0	6,338
2025	0	0	5,140	0	5,140
2026	0	0	4,874	0	4,874
2027	0	0	4,874	0	4,874
2028	0	2,203	4,914	0	7,117
2029	0	3,701	6,338	0	10,042
2030	0	1,502	5,140	0	6,642
2031	0	0	4,874	0	4,874
2032	0	0	4,874	0	4,874
2033	0	0	4,914	0	4,914
2034	0	0	6,338	-21,103	-14,765
Total	181,744	46,929	196,631	-21,103	404,201

Table 6-4-4 Benefits of the Short-term Plan (Low-growth Case)

(1,000 B/.)

Year	Transshipment	Transport	Ship Size & Handling Efficiency	Operation	Total
1997	0	0	0	7,640	7,640
1998	0	0	0	7,640	7,640
1999	1,000	0	1,111	7,640	9,751
2000	7,918	166	1,865	7,640	17,590
2001	13,245	520	2,719	7,640	24,124
2002	13,071	875	2,979	7,640	24,566
2003	12,897	1,231	3,250	7,640	25,019
2004	12,724	1,588	3,533	7,640	25,485
2005	29,050	1,912	3,933	7,640	42,535
2006	28,680	2,636	4,640	7,640	43,595
2007	28,310	3,352	5,404	7,640	44,706
2008	27,940	4,063	6,226	7,640	45,869
2009	27,570	4,770	7,036	7,640	47,016
2010	27,200	5,472	7,447	7,640	47,760
2011	26,830	6,172	7,858	7,640	48,501
2012	26,460	6,869	8,270	7,640	49,239
2013	26,090	7,564	8,333	7,640	49,628
2014	25,720	8,258	9,092	7,640	50,710
2015	25,350	8,949	9,504	7,640	51,443
2016	24,980	9,640	9,915	7,640	52,175
2017	24,610	10,329	10,326	7,640	52,906
2018	24,240	11,017	10,738	7,640	53,636
2019	23,870	11,705	11,149	7,640	54,364
2020	23,500	12,392	11,560	7,640	55,092
2021	23,130	13,078	11,972	7,640	55,820
2022	22,760	13,763	12,383	7,640	56,546
2023	22,390	14,448	12,794	7,640	57,273
2024	22,020	15,132	13,206	7,640	57,998
2025	21,650	15,816	13,617	7,640	58,723
2026	21,280	16,500	14,029	7,640	59,448
2027	20,910	17,183	14,440	7,640	60,173
2028	20,540	17,865	14,851	7,640	60,897
2029	20,170	18,548	15,263	7,640	61,621
2030	19,800	19,230	15,674	7,640	62,344
2031	19,430	19,912	16,085	7,640	63,068
2032	19,060	20,594	16,497	7,640	63,791
2033	18,690	21,275	16,908	7,640	64,514
2034	18,320	21,957	17,319	7,640	65,236
Total	771,404	364,782	351,926	290,333	1,778,444

Table 6-4-5 Benefits of the Short-term Plan (High-growth Case)

(1,000 B/.)

Year	Transshipment	Transport	Ship Size & Handling Efficiency	Operation	Total
1997	0	0	0	7,640	7,640
1998	0	0	0	7,640	7,640
1999	852	311	1,304	7,640	10,107
2000	7,618	808	2,247	7,640	18,314
2001	12,885	1,311	3,349	7,640	25,185
2002	17,651	1,819	2,856	7,640	29,966
2003	28,917	2,330	4,154	7,640	43,042
2004	28,684	2,845	4,586	7,640	43,754
2005	28,450	3,300	5,175	7,640	44,565
2006	27,965	4,324	6,250	7,640	46,179
2007	27,480	5,345	7,427	7,640	47,892
2008	26,995	6,365	8,705	7,640	49,705
2009	26,510	7,383	9,986	7,640	51,519
2010	26,025	8,400	10,709	7,640	52,775
2011	25,540	9,417	11,433	7,640	54,030
2012	25,055	10,433	12,156	7,640	55,284
2013	24,570	11,448	12,880	7,640	56,538
2014	24,085	12,462	13,250	7,640	57,438
2015	23,600	13,477	14,326	7,640	59,043
2016	23,115	14,491	15,050	7,640	60,296
2017	22,630	15,504	15,773	7,640	61,548
2018	22,145	16,518	16,497	7,640	62,800
2019	21,660	17,531	17,220	7,640	64,051
2020	21,175	18,544	17,943	7,640	65,303
2021	20,690	19,557	18,667	7,640	66,554
2022	20,205	20,569	19,390	7,640	67,805
2023	19,720	21,582	20,114	7,640	69,056
2024	19,235	22,594	20,837	7,640	70,307
2025	18,750	23,606	21,561	7,640	71,557
2026	18,265	24,619	22,284	7,640	72,808
2027	17,780	25,631	23,007	7,640	74,058
2028	17,295	26,643	23,731	7,640	75,309
2029	16,810	27,655	24,454	7,640	76,559
2030	16,325	28,666	25,178	7,640	77,809
2031	15,840	29,678	25,901	7,640	79,060
2032	15,355	30,690	26,624	7,640	80,310
2033	14,870	31,702	27,348	7,640	81,560
2034	14,385	32,713	28,071	7,640	82,810
Total	739,131	550,268	540,444	290,333	2,120,177

Table 6-5-1 EIRR of the Short-term Plan (Low-growth Case)

(1,000 B/)

Year	Cost Total	Benefit Total	Benefit - Cost	Net Present Value (NPV)		
				Benefit	Cost	Benefit - Cost
1997	27,873	7,640	-20,232	7,640	27,873	-20,232
1998	23,948	7,640	-16,308	6,411	20,095	-13,684
1999	46,393	9,751	-36,642	6,866	32,665	-25,800
2000	43,199	17,590	-25,609	10,392	25,523	-15,130
2001	4,953	24,124	19,171	11,960	2,456	9,504
2002	4,413	24,566	20,153	10,219	1,836	8,383
2003	29,512	25,019	-4,493	8,733	10,302	-1,568
2004	38,738	25,485	-13,253	7,465	11,347	-3,882
2005	5,140	42,535	37,395	10,454	1,263	9,191
2006	4,950	43,595	38,645	8,991	1,021	7,970
2007	4,914	44,706	39,792	7,737	850	6,886
2008	7,077	45,869	38,792	6,661	1,028	5,633
2009	9,966	47,016	37,049	5,729	1,214	4,514
2010	6,642	47,760	41,118	4,883	679	4,204
2011	4,950	48,501	43,551	4,161	425	3,736
2012	4,914	49,239	44,325	3,545	354	3,191
2013	4,874	49,628	44,754	2,998	294	2,703
2014	6,262	50,710	44,448	2,570	317	2,253
2015	5,140	51,443	46,303	2,188	219	1,969
2016	4,950	52,175	47,225	1,862	177	1,685
2017	4,914	52,906	47,992	1,584	147	1,437
2018	10,080	53,636	43,555	1,348	253	1,095
2019	20,980	54,364	33,385	1,146	442	704
2020	11,648	55,092	43,445	975	206	769
2021	4,950	55,820	50,870	829	73	755
2022	4,914	56,546	51,632	704	61	643
2023	4,874	57,273	52,399	599	51	548
2024	11,942	57,998	46,056	509	105	404
2025	5,140	58,723	53,583	432	38	394
2026	4,950	59,448	54,498	367	31	337
2027	4,914	60,173	55,259	312	25	286
2028	7,077	60,897	53,820	265	31	234
2029	9,966	61,621	51,654	225	36	188
2030	6,642	62,344	55,703	191	20	171
2031	4,950	63,068	58,118	162	13	149
2032	4,914	63,791	58,877	138	11	127
2033	4,874	64,514	59,640	117	9	108
2,034	-15,442	65,236	80,678	99	-23	122
Total	401,095	1,778,444	1,377,349	141,466	141,466	0

EIRR=19.17 %

Table 6-5-2 EIRR of the Short-term Plan (High-growth Case)

(1,000 B/)

Year	Cost Total	Benefit Total	Benefit - Cost	Net Present Value (NPV)		
				Benefit	Cost	Benefit - Cost
1997	27,873	7,640	-20,232	7,640	27,873	-20,232
1998	23,948	7,640	-16,308	6,297	19,737	-13,440
1999	46,783	10,107	-36,675	6,866	31,778	-24,912
2000	43,203	18,314	-24,889	10,252	24,186	-13,934
2001	25,552	25,185	-366	11,620	11,789	-169
2002	31,357	29,966	-1,391	11,395	11,924	-529
2003	8,291	43,042	34,751	13,489	2,598	10,891
2004	14,529	43,754	29,225	11,302	3,753	7,549
2005	5,140	44,565	39,425	9,487	1,094	8,393
2006	4,874	46,179	41,305	8,102	855	7,247
2007	4,874	47,892	43,018	6,925	705	6,221
2008	7,117	49,705	42,588	5,924	848	5,076
2009	10,042	51,519	41,477	5,060	986	4,074
2010	6,642	52,775	46,133	4,272	538	3,735
2011	4,874	54,030	49,156	3,605	325	3,280
2012	4,874	55,284	50,410	3,040	268	2,772
2013	4,914	56,538	51,624	2,562	223	2,340
2014	6,338	57,438	51,100	2,145	237	1,909
2015	5,140	59,043	53,903	1,818	158	1,659
2016	4,874	60,296	55,422	1,530	124	1,406
2017	4,874	61,548	56,674	1,287	102	1,185
2018	10,120	62,800	52,679	1,082	174	908
2019	21,056	64,051	42,996	910	299	611
2020	11,648	65,303	53,655	764	136	628
2021	5,548	66,554	61,006	642	54	589
2022	9,880	67,805	57,925	539	79	461
2023	4,914	69,056	64,142	453	32	420
2024	6,338	70,307	63,969	380	31	345
2025	5,140	71,557	66,417	319	23	296
2026	4,874	72,808	67,934	267	18	249
2027	4,874	74,058	69,184	224	15	209
2028	7,117	75,309	68,192	188	18	170
2029	10,042	76,559	66,517	157	21	137
2030	6,642	77,809	71,167	132	11	120
2031	4,874	79,060	74,186	110	7	103
2032	4,874	80,310	75,436	92	6	87
2033	4,914	81,560	76,646	77	5	73
2034	-14,765	82,810	97,575	65	-12	76
Total	404,201	2,120,177	1,715,975	141,020	141,020	0

EIRR=21.55 %