

Philippines

Subic Bay Freeport Environment Management Project

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Field Survey: September 2004

1. Project Profile and Japan's ODA Loan



Subic Bay Freeport



One of the garbage trucks procured

1.1 Background

The former US military base at Subic Bay, which reverted to the Philippines from the US in 1992, was designated together with adjacent municipalities as the Subic Bay Freeport Zone (SBFZ) by the Bases Conversion and Development Act of 1992 (Republic Act No. 7227). Under this law, the Subic Bay Metropolitan Authority (SBMA) worked in collaboration with adjacent municipalities to promote the development of the SBFZ as an international center for industry, commerce, finance and tourism through utilizing the facilities such as airports and seaports taken over from the US military. The former US military base¹ under the direct control of the SBMA was granted various privileges, including tax and duty free exemptions, and by May 1996 some two hundred businesses ranging from manufacturers, forwarding agencies, duty free shops, hotels and public utilities, or approximately US\$1.4 billion worth of investment had been approved, leading to the expectation that the SBFZ would become a center of economic development in the Philippines².

However, it was anticipated that further influx of investment and population growth would cause a rapid increase in solid waste produced by the former US military base and its neighbor, Olongapo City. In view of the developments of infrastructure for investment and the living environment of local residents, the early establishment of

¹ Excluding an area of primeval forest from the total of approximately 15,000 hectares of the base, an area measuring approximately 6,700 hectares, roughly the area contained within the Yamanote Line that encircles central Tokyo, are available to use.

² In 1993, the World Bank devised a master plan for the development of the entire US military base: the Strategy for Conversion of the Subic Bay Naval Base into a Special Economic Zone and Freeport.

appropriate waste disposal facilities was designated a priority undertaking. In addition, the SBFZ encompasses abundant marine and forest resources, thus the development of a land use and environmental management plan to balance development with environmental protection was also identified as an urgent task.

This project was co-financed by the World Bank, with that organization funding (1) the development of roads and bridges, (2) power grid infrastructure, and (3) strengthening the administrative and financial capacity of SBMA³.

1.2 Objectives

The project's objective was to rehabilitate existing landfills and to procure waste treatment equipment at the SBFZ, located at a former US military base, and the adjacent city of Olongapo, in order to handle increasing volumes of garbage as well as to improve the collection and disposal system, and thereby promoting investment in the SBFZ and contributing to improvements in the living and sanitary conditions of local residents.

1.3 Borrower/Executing Agency

Subic Bay Metropolitan Authority (SBMA)

1.4 Outline of Loan Agreement

Loan Amount/Disbursed Amount	1,034 million yen/798 million yen
Exchange of Notes/Loan Agreement	March 1997/March 1997
Terms and Conditions	
Interest Rate	2.5%
Repayment Date (Grace Period)	30 years (10 years)
Procurement	General untied (Consultant component: partially untied)
Final Disbursement Date	July 2002
Contractors	Local and Japanese companies
Consultants	Woodward-Clyde International (U.S.A.)
Feasibility Study (F/S)	World Bank (1995)

2. Results and Evaluation

2.1 Relevance

2.1.1 Relevance of project plans at appraisal

At the time of appraisal, the Bases Conversion and Development Act called for the development and implementation of environmental protection policies, including

³ "Subic Bay Freeport Project" (approved by the Board in 1994; total cost: US\$52 million)

strategies for waste disposal. At that time, as already stated above, rapid increases in the number and amount of investment were forecasted and, thus, there was a need to cope with the increased volumes of waste⁴. Further, the National Integrated Protected Areas System act (NIPAS, 1992) stipulated that land use plans be drawn up and environment management plans developed and implemented for environmental conservation areas. This project was assigned high priority because it involved the rehabilitation of existing landfills and the procurement of equipment in the SBFZ and Olongapo City, and technical assistance in the designation of environmental conservation areas and the development of land use and environment management plans.

2.1.2 Relevance of project plans at evaluation

At the time of evaluation, environmental protection measures for the SBFZ have been provided in the strategic plan (2001-2005) developed by SMBA, the project's executing agency. The waste issue, along with increases in the number and amount of investment, remains important⁵. Moreover, the development of land use plans and the development and implementation of environment management plans for environment conservation areas continues to be consistent with NIPAS. As this demonstrates, this project intends to address the issues being faced by SBMA and has therefore maintained its priority status.

2.2 Efficiency

2.2.1 Outputs

A comparison of the appraisal plan and actual outputs (i.e. rehabilitation of existing landfills, equipment procurement and consulting services) is shown in Table 1.

Table 1: Comparison of Planned and Actual Outputs

Planned	Actual
1. Rehabilitation of existing landfills (1 each in Subic Bay Freeport Zone and Olongapo City)	1.1 The outputs for the Subic Bay Freeport Zone component were expanded (construction of leachate treatment facilities, etc.) and the landfill was converted into a controlled disposal site. 1.2 The Olongapo City component was cancelled.
2. Equipment procurement (garbage trucks, etc.)	2. Partial changes were made to the equipment procurement component (garbage packer trucks were introduced instead of containers).

⁴ It was predicted that a population and waste generation would increase to approximately 250,000 and around 200 tons/day, respectively, by 2000 and 450,000 and 370 tons/day, respectively, by 2010.

⁵ Phase 2 which is focusing on the development of a new sanitary landfill (L/A March 2002; total cost: 1,291 million yen), is currently in progress. Further, a SAPROF (Special Assistance for Project Formulation) was undertaken for the formation of this project.

<p>3. Consulting services</p> <ul style="list-style-type: none"> • Review of candidate site selection for the new sanitary landfill (Phase 2 project) and detailed design (D/D) • Study on efficient joint garbage collection and disposal system for SBMA and Olongapo City • Technical assistance for designation of environmental protection zones and the development of land use/environmental management plans 	<p>3. Consulting services</p> <ul style="list-style-type: none"> • As planned • Cancelled • As planned
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The rehabilitation of two existing landfills, one in the SBFZ and one in Olongapo City was included in the original scope; however, the inauguration of the Estrada administration in 1998 resulted in the replacement of the SBMA Chairman, which led to political wrangling between SBMA and Olongapo City and the cancellation of the Olongapo City component⁶. Conducted while this project was in progress, a survey revealed a necessity to deal with leachate. The construction of a leachate treatment facility was added to the project scope and the landfill converted into a controlled dump⁷. The rehabilitated landfill was designed in accordance with sanitary landfill⁸ specifications.

For the equipment component, garbage packer trucks (see photo at top) were introduced instead of containers. With the exclusion of the study into a joint garbage collection and disposal system for SBMA and Olongapo City, consulting services were implemented according to the original plans.

2.2.2 Project Period

The appraisal documents stated that the project was to be implemented in a 32-month period from March 1997 to October 1999 (i.e. from L/A signing through the completion of construction work); however, excluding the procurement of equipment, there were major delays in the implementation of all components, and the project thus took 63 months to complete (March 1997 – May 2002). The delays are primarily attributed to the replacement of the SBMA Chairman mentioned earlier, which resulted in the replacement of many officials and managers, and internal disruption at SBMA, including the political wrangling with Olongapo City.

⁶ SMBA continued a dialogue with the Olongapo City after the replacement of the SMBA Chairman

⁷ A landfill at which soil cover and adjacent drainage ditches are managed on a periodic basis.

⁸ A landfill that conforms to the specifications established for controlled disposal sites, and employs measures to control seepage of pollutants into groundwater, flammable gases and so forth.

2.2.3 Project Cost

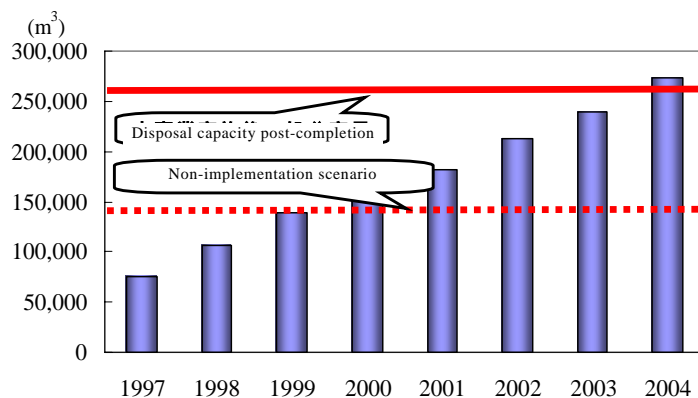
Total project costs was estimated at 1,200 million yen with 86.2%, or 1,034 million yen, to be funded by Japan’s ODA loan. The total cost of the project was actually 887.9 million yen (74.0% of the projected amount), with Japan’s ODA loan portion amounting to 797.1 million (77.1% of the pledged amount); thus both figures were within the original budget. The lower project cost was consequent upon two factors: (1) depreciation of the local currency in excess of inflation; and (2) the aforementioned alterations in project outputs.

2.3 Effectiveness

2.3.1 Increased garbage handling capabilities

In rehabilitating the existing landfill at the SBFZ, this project increased its garbage handling capacity to approximately 260,000m³.

Figure 1: Aggregate garbage handling volumes



Source: SBMA

As Figure 1 shows, had this project not been implemented and thus the rehabilitation work not done, the existing landfill would have reached its capacity in 2000; However, the project effectively extended its capacity through 2004⁹.

There are plans to raise the banks of the existing landfill as an interim measure until September 2006, when the new sanitary landfill being constructed under Phase 2 is scheduled to be partially completed. This suggests that the work to rehabilitate the existing landfill is thus serving as a “stopgap” until the new landfill can

Figure 2: Landfill at Subic Bay Freeport



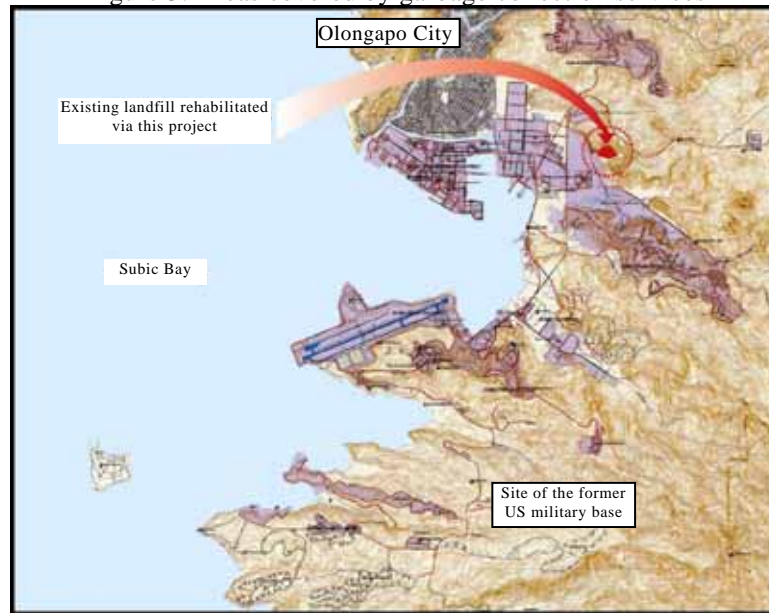
⁹ Wasted disposal volumes for the SBFZ landfill were 25,815 tons (cubic volume: 30,024m³) in 2002 and 23,828 tons (28,033m³) in 2003.

be completed¹⁰.

2.3.2 Improved garbage collection and disposal system

The implementation of this project resulted in substantial improvements in the SBFZ's garbage collection and disposal system, increasing both the collection capacity and frequency of garbage.

Figure 3: Areas covered by garbage collection services



Note: Areas shaded purple are covered by garbage collection services; the red lines indicate the route of the garbage trucks.

Source: SBMA

Firstly, garbage collection capacity was increased from around 24 tons/day before the project implementation to approximately 120 tons/day post-completion. In 1996, prior to the implementation of this project, waste generation had reached approximately 41 tons/day, exceeding the current system's collection capacity; however, the system is now more than capable of handling 65 tons/day of garbage generation today¹¹.

Secondly, as Table 2 shows, the frequency of garbage collections has also increased: e.g. household waste collections have increased from once to twice weekly. However, the results of the beneficiary survey¹² in this evaluation show that just 10.3% of household

¹⁰ The initial plans call for the banks to be raised by approximately 3m, meaning that the landfill is capable of handling some 160,000m³ of garbage through the end of 2006. However, since excessively high banks pose a risk for accidents, due care is necessary.

¹¹ The garbage collection rate (the volume of garbage disposed of in the landfill/the volume of garbage generated) was 78.1% (2002). The internal disposal rate, including source recycling, etc., has reached 99.9%.

¹² As part of the field survey, a beneficiary survey was conducted with a view to determining whether the project had resulted in any improvement in garbage collection and disposal services, whether this was serving to promote investment in the SBF Zone and whether it had contributed to improvements in sanitary conditions for local residents. With the cooperation of SBMA personnel, 110 residents and 110 companies within the SBFZ were interviewed using a questionnaire.

respondents and 13.9% of corporate respondents evaluate the project as having “substantially increased” or “increased” the frequency of garbage collections. As to the punctuality of collection services, again, only 35.8% of residents and 10.4% of companies stated that there had been either a “substantial improvement” or “an improvement”.

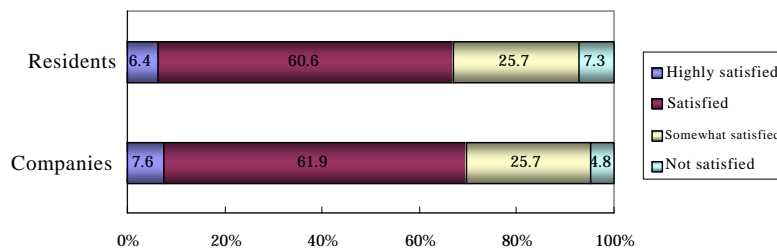
Table 2: Frequency of collections

Household waste	Twice weekly (once or twice a week pre-project implementation)
Commercial waste	Daily
Industrial waste	On an individual plan/individual request basis
Shipping waste	On an individual request basis
Road waste	Daily
Construction waste	On an individual request basis

Source: SBMA

Nevertheless, when asked about their satisfaction with garbage collection services as a whole and with this project, as Figure 4 shows, 67.0% of residents and 69.5% of companies provided favorable responses, stating that they were either “extremely satisfied” or “satisfied”.

Figure 4: Satisfaction with garbage collection/this project



Further, in connection with related information, education and communication (IEC) activities, 89.1% of residents and 89.1% of companies stated that they were familiar with garbage collection rules and regulations having obtained information on garbage collection via notices from SBMA or seminars given by SBMA. This evidences that the IEC activities undertaken by the executing agency are functioning effectively, and that the activities have a favorable impact on upcoming garbage separation and recycling activities.

2.3.3 Recalculation of the Financial Internal Rate of Return (FIRR) (garbage disposal component)

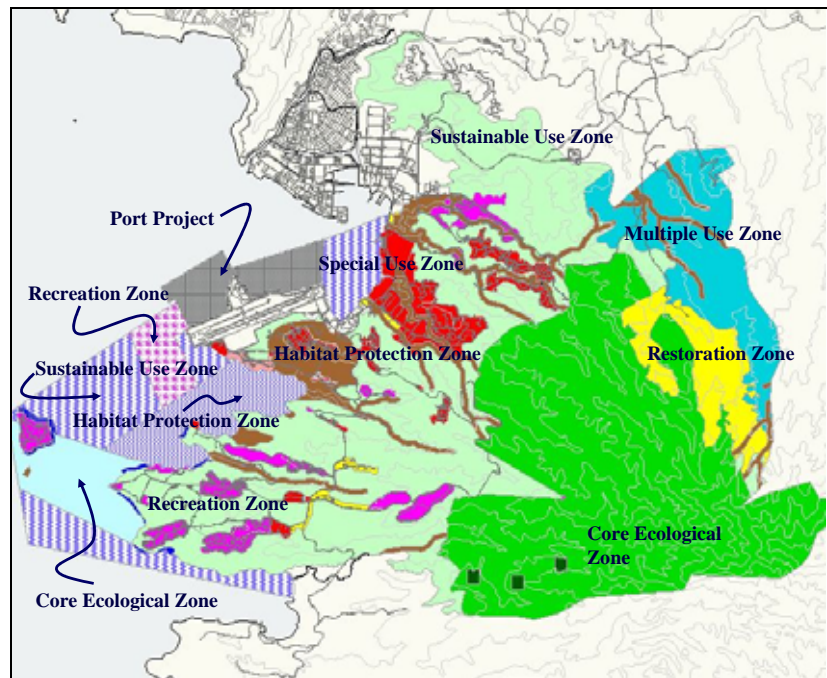
At the time of appraisal, the project’s Financial Internal Rate of Return (FIRR) was estimated at 6.0% for the Phase 1 and Phase 2 projects taking the fees from garbage collection and disposal as the benefits, and investment and maintenance costs as the costs. The FIRR was recalculated by using the same parameters at evaluation, but the resultant

figure was negative.

2.3.4 Conservation of Marine and Forest Environment

As part of the project's consulting services, technical assistance was provided in the designation of environment conservation areas within the SBFZ and for the creation of a land use and environmental management plan. As Figure 5 shows, this plan serves as guidelines in environmental protection, designating of the sites for new business entities and setting specific requirements on the environmental measures to be executed by investors.

Figure 5: Land Use and Environmental Management Plan for Subic Bay Freepport



Source: SBMA

2.4 Impact

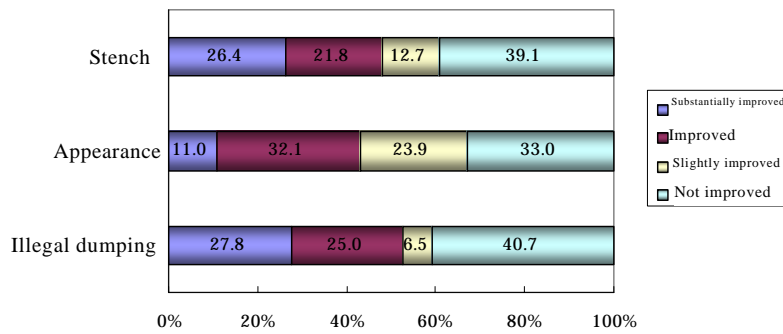
2.4.1 Improved Living and Sanitary Conditions for Local Residents

According to appraisal documents, by preventing pollution in the SBFZ, Olongapo City and their environs, this project would generate a positive impact on sanitary conditions for local residents; it was predicted that these effects would predominantly be felt in Olongapo City.

As already stated, the Olongapo City component was cancelled. According to the results of the beneficiary survey, however, the project is also having a positive impact on the SBFZ. The impact of the project was highly valued by those residents who responded

to interviews, with 48.2% stating that there had been either “a substantial decrease” or “a decrease” in street stench; 42.7% that the appearance of the area had either “substantially improved” or “improved”; and 51.8% that illegal dumping in rivers, etc. had either “substantially improved” or “improved” (see Fig. 6).

Figure 6: Improvements in Living & Sanitary Conditions for Locals

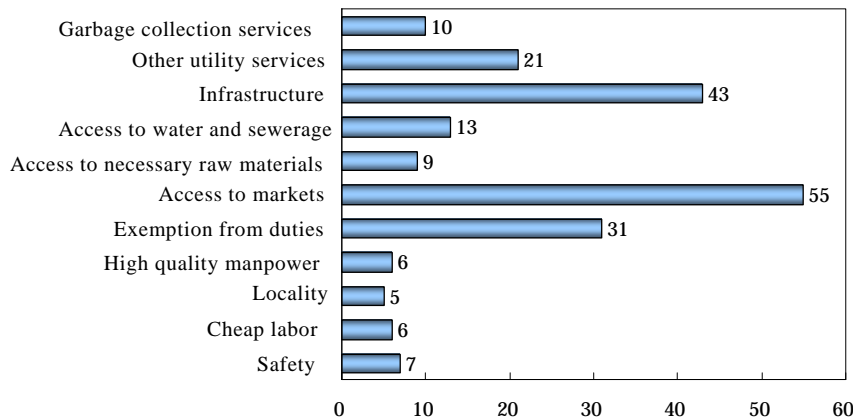


Moreover, 17.3% and 39.1%, respectively, stated that the project had contributed to improvements in the quality of marine and fresh water within the SBFZ and to reductions in flies, mosquitoes and other sanitary pests.

2.4.2 Promoting Investment in the Subic Bay Freeport Zone

This project, together with the paralleled project funded by the World Bank, is expected to contribute to investment promotion in the SBFZ. Asked to cite reasons for locate to the SBF Zone, although just 9.1% of companies pointed to “waste collection services” per se, 39.1% of the companies polled gave “infrastructure” (including garbage collection facilities), and more than half of the respondents pointed to “market accessibility” (see Fig. 7).

Figure 7: Reasons for investing in SBFZ



Asked about their satisfaction with current garbage collection services in terms of their impact on business activities, 73.6% of companies stated that they were either “highly satisfied” or “satisfied”. In specific terms, respondents pointed to “a reduced burden on employees thanks to efficient garbage collection” and “the cleaner environment making a favorable impression on visiting customers”.

Figure 8: Subic Bay Industrial Park



In fact, the value of investments and the number of investors have both grown steadily, with investments in the SBFZ increasing from US\$2.59 million in 1998 to US\$4.16 million in 2003, and the number of companies investing in the SBF rising from 304 to 640 during the same period, which suggests that this project is helping to increase SBFZ’s attractiveness to investors.

2.4.3 Others

At the same time of this evaluation survey, the Nomura Research Institute (NRI) conducted an “Expert Impact Assessment on Project Ex-Post Evaluation (Subic Bay Freeport Environment Management Project)”. This study investigated the environmental impact of leachate seeping out of the landfill and changes in the lifestyles/living standards of socially vulnerable residents (scavengers¹³) in the SBFZ. The survey found that leachate from the landfill is being properly treated and that efforts are being made to mitigate any negative effects on the environment, and reported that the earnings of scavengers have improved and/or stabilized since the completion of the project. For more details, please refer to the aforementioned document.

2.5 Sustainability

2.5.1 Executing Agency

2.5.1.1 Technical Capacity

SBMA, the project’s executing agency, has the technical capacity necessary to operate and maintain project-related facilities and there is no specific problem in this area. SBMA provides training on landfill and garbage truck management, which is designed to improve the technical skills of its operation and maintenance staff.

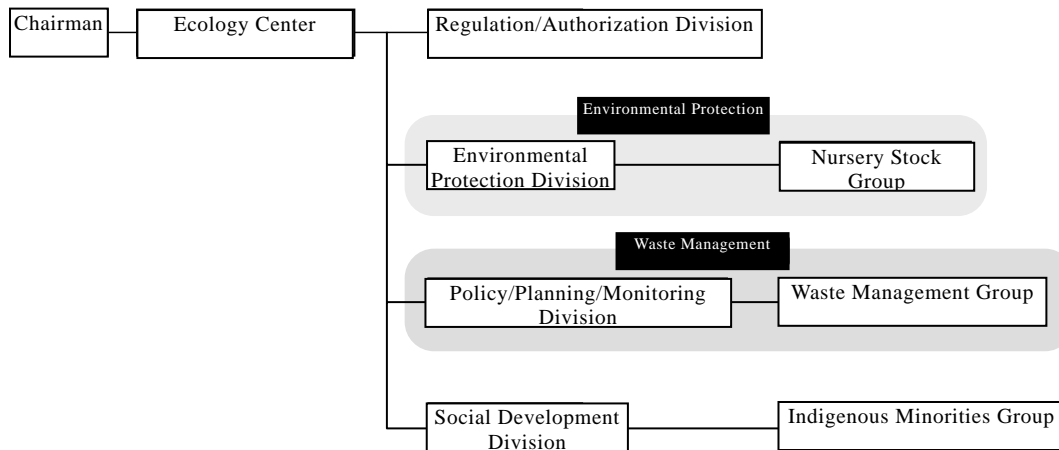
2.5.1.2 Operation and Maintenance System

The operation and maintenance of facilities and equipment funded by this project is the

¹³ People who earn their living collecting and selling garbage.

responsibility of the Ecology Center, which has been established within SBMA. As Figure 9 shows, the Ecology Center’s policy, planning and monitoring division is responsible for waste management, while the environmental protection division takes care of matters relating to the protection of the environment. There is no problem with structure or staffing of either of these divisions.

Figure 9: Operation and Maintenance Organizational Chart



However, from an institutional perspective, the Ecology Center has yet to establish a system for monitoring the quality of well and river water in the surrounding areas on a regular basis¹⁴.

2.5.1.3 Financial Status

As Table 3 shows, SBMA’s finance are in good shape. Revenues from fee-based collections of waste consistently exceed operation and maintenance costs and contribute to the healthier financial standing of the executing agency¹⁵.

Table 3: Financial Indicators (Unit: million pesos)

	Sales	Net profit*	Capital adequacy ratio
2001	2,391.8	32.7	79.8%
2002	2,671.6	135.0	74.7%
2003	2,851.2	169.9	75.7%

Source: SBMA

2.5.2 Operation and Maintenance Status

During this evaluation, it was confirmed that the facilities and equipment funded by this project are being properly maintained and that they pose no hindrance to the generation of project effects.

¹⁴ For details on this point, see the “Expert Impact Assessment of Project Ex-Post Evaluation (Subic Bay Freeport Environment Management Project)” (2004).

¹⁵ Revenue from fee-based waste collection/waste collection costs = 139% (2003)

3. Feedback

3.1 Lessons Learned

None.

3.2 Recommendations

[To the Executing Agency]

The existing landfill rehabilitated by this project is on the verge of reaching capacity. Aside from ensuring that the Phase 2 project is executed without delay and that sufficient waste disposal capacity is secured at the earliest time, there is also a need to shutdown the existing landfill safely so as to prevent accidents due to extending banks excessively.

Comparison of Original and Actual Scope

Item	Planned	Actual
(1) Outputs	<p>1. Rehabilitation of existing landfills (1 each in Subic Bay Freeport Zone and Olongapo City)</p> <p>2. Equipment procurement (garbage trucks, etc.)</p> <p>3. Consulting services</p> <ul style="list-style-type: none"> • Review of candidate sites for new sanitary landfill (Phase 2) and detailed design (D/D) • Study on efficient garbage collection/disposal system for SBMA/Olongapo City • Technical assistance for environmental protection zone designation and development of land use/environmental management plans 	<p>1.1 Outputs for Subic Bay Freeport Zone expanded (construction of leachate treatment facilities, etc.) and landfill converted into a controlled disposal site</p> <p>1.2 Olongapo City component canceled</p> <p>2. Partial change to equipment procurement content (garbage packer trucks introduced instead of containers)</p> <p>3. Consulting services</p> <ul style="list-style-type: none"> • As planned • Canceled • As planned
(2) Project period	Mar. 1997 – Oct. 1999 (32 months)	Mar. 1997 – May 2002 (63 months)
(3) Project cost		
Foreign currency	1,034 million yen	823.5 million yen
Local currency	166 million yen (41 million pesos)	64.4 million yen (26.8 million pesos)
Total	1,200 million yen	887.9 million yen
ODA loan portion	1,034 million yen	798 million yen
Exchange rate	1 peso = 4 yen (March 1997)	1 peso = 2.4 yen (Mar. 1997-May 2002 average)