

## **PROFILE II**

### **BELIZE**

**JUNE 17, 2002**

**Project name:** Solid Waste Management Project

**Project number:** BL-0021

**Project team:** Camilo Garzón (RE2/EN2), Project Team Leader; Corinne Cathala (RE2/EN2); Ana María Linares (RE2/EN2); Harold Arzu (COF/CBL); Diego Buchara (LEG); and Eliana Smith (RE2/EN2)

**Profile I date:** January 22, 2002

**Borrower:** Government of Belize

**Executing agency:** Solid Waste Management Authority (SWMA)

**Financing plan:**

IDB (OC):	US\$6,600,000
Local:	<u>US\$ 800,000</u>
Total:	US\$7,400,000

**Tentative dates:**

Analysis Mission	September 2002
Loan Committee	October 2002
Board of Directors	November 2002

**Poverty Targeted Investment:** No

## **I. BACKGROUND**

### **A. General**

- 1.1 Belize, a country with a total area of 22,960 square kilometers, including 689 sq. km. of offshore islands, has a population of approximately 260,000 people, growing at an estimated average annual rate of 2.7%. The largest population and commercial centers are Belize City, the Belmopan-San Ignacio corridor in the west of the country, the Orange Walk Town-Corozal area in the north, and the coastal town of Dangriga south of Belize City. Tourism has become a major economic activity, placing rigorous demands on basic public services and environmental protection. The development of ecotourism is an important goal of economic development policy. Approximately 36% of the Belize territory has some form of protected status.

### **B. Institutional and legal framework**

- 1.2 Improved solid waste management is seen in Belize as a critical component of sustainable economic development and the protection of public health. Accordingly, a body of legislation that bears on solid waste management has been developed in recent years. This legislation includes:

- a. The Solid Waste Management Authority Act (1991), which established the Solid Waste Management Authority (SWMA) with broad powers to provide collection and disposal services directly or by engaging private contractors.
  - b. The Environmental Protection Act (1992), which among other objectives, defined the powers, duties and functions of the Department of the Environment (DOE), including the prevention and control of pollution by coordinating all activities related to the discharge of wastes into the environment. The DOE is part of the Ministry of Natural Resources, Environment and Industries (MNREI).
  - c. Local Government (District Board) Act, which established the towns' authority to raise financing for waste management.
  - d. An amendment to the Environmental Tax Act (2001), by which a 1% tax on imports was imposed to support implementation of the Solid Waste Management Plan, assist collection and disposal operations, strengthen the institutional capacity of the DOE, and preserve and enhance the environment.
  - e. Other Acts such as the Public Health Act, the Refuse Removal By-Laws, the Belize Port Authority Act, the Merchant Shipping Act and the Wrecks and Salvage Act, which have some relevance to specific situations.
- 1.3 Responsibility for both waste collection and disposal has resided with the local governments. SWMA has not yet been made operational although a Chairman has been appointed. With the recent approval of the Environmental Tax Act, the completion of the national Solid Waste Management Plan (see Section E), and the project hereby proposed, this situation is expected to change. A more proactive role will be played by the Central Government, through SWMA, in solid waste disposal activities. These actions will be initiated in the more densely populated areas of the country and in those environmentally more sensitive. Household waste collection, however, will remain as a purview of local governments.
- 1.4 The creation of an effective waste management system will require the development of specific standards and rules, and a set of economic/financial incentives to foster reduced waste generation, recycling and proper treatment and disposal. The Solid Waste Management Plan, briefly described in Section E, recommends a series of improvements and clarifications to the existing legislation that will help to enhance the existing body of legislation. The legal framework and the Plan's recommendations will be reviewed by the project team during project appraisal to determine their adequacy and to establish priorities for intervention.
- C. Waste disposal practices**
- 1.5 Detailed waste quantity and composition studies have not been undertaken in Belize but the estimated daily municipal waste generation rate is 0.93 kg/capita, which means that the urban areas yearly generate a total of almost 45,000 tons of waste. This estimation assumes that approximately 48% of the total population lives in urban centers (see table

1.1)<sup>1</sup> and receives regular collection service. In Belize City and San Ignacio, the household collection of these wastes has been contracted to the private sector. This modality is increasingly being adopted by other urban centers around the country and is reasonably effective. However, contractual arrangements could be better defined and strengthened. An exception to this trend is Belmopan, where waste management services are provided by the Town Board.

<b>Table 1.1</b>	
<b>URBAN POPULATION</b>	
<b>City / Town</b>	<b>Year 2000</b>
1. Belize City	51,000
2. Orange Walk	14,000
3. San Ignacio/Santa Elena	13,800
4. Dangriga	9,200
5. Belmopan	8,500
6. Corozal	8,200
7. Benque	5,300
8. San Pedro	4,700
9. Punta Gorda	4,500
<b>Urban (total)</b>	119,200
<b>Country (total)</b>	249,800

- 1.6 The waste collected in all cities and towns around the country is currently discharged in open dumps. These facilities lack technical and environmental controls and operate without adequate equipment or sufficient cover material. The largest disposal site, located at the edge of Belize City, handles more than 60 tons/day, which are discharged in an unsuitable mangrove area. This site presents a high water table and lacks the minimum requirements to turn into a properly run facility. On the offshore islands, the inadequacy of the waste disposal practices is especially worrisome due to the environmental vulnerability of the islands, their proximity to coral reefs and their importance to the ecotourism market. Fires are common at most sites and leachate escapes to the immediate surroundings, which in many cases are watercourses or the sea. Human scavenging is common at all sites and experience with formal recycling methods, waste reduction, and composting is very limited.

#### **D. Financial situation**

- 1.7 The main funding sources for solid waste management consist of municipal revenues, mainly in the form of property taxes, supplemented by Central Government subsidies. With the exception of Placencia, Ladyville, Belmopan and San Pedro, where households pay for waste collection (monthly rates ranging from US\$3 to US\$6), all other towns and Belize City provide residential waste collection services free of charge. Property taxes are the principal source of municipal revenues, the collection of which is considered very poor. Large commercial establishments are typically charged a separate amount by private collectors for the provision of waste removal services. It is generally agreed that the municipal funds being allocated to these operations are insufficient to provide an environmentally sound waste disposal service.
- 1.8 The amounts spent on solid waste management varies among towns. For example, Belize City and San Ignacio annually spend 45% and 40% of their respective budgets on solid waste activities, while San Pedro only spends 10%. This is partly due to fact that San Pedro, being a tourist community, has proportionally higher municipal revenues. The majority of the funds spent by local governments are for waste collection, leaving proportionately smaller amounts for disposal operations. Property tax collection efficiency also varies among towns. For instance, the collection rate in Belize City was

<sup>1</sup> Based on preliminary results from the 2000 Census.

estimated at 65% for the fiscal year 2000/2001, while San Ignacio's collection rate was only 27% over the same period. Some town boards are in the process of privatizing tax collection. In spite of the shortcomings mentioned, payments to contractors for solid waste collection services have generally been honored.

- 1.9 Municipal revenues are supplemented by Central Government subsidies from general revenues. Allocation of these subsidies is based on town size and expected municipal revenues. For the majority of the towns, subsidies represent between 30% and 40% of their revenues, with the exception of Belize City and San Pedro, where government contributions represent only 15% and 4% of their respective revenues.
- 1.10 As mentioned before, a 1% tax levied on imports intended for domestic consumption, was recently approved. Basic foodstuffs, medicines and Government imports are exempted. The environmental levy is collected at the port of entry by the Customs Department and the proceeds are administered under the Central Government general budget. The environmental tax raised approximately US\$2.1 million between April 2001 and March 2002, its first year of existence. The Government of Belize estimates revenues of the order of US\$2.3 million for the fiscal 2002-2003 year. During the analysis period, the project team will assess the sufficiency of the proceeds from the environmental tax to ensure that they are adequate to cover the costs of providing the proposed services and to consider other alternatives to generate revenues, such as the application of tipping fees.

## **E. Solid Waste Management Plan**

- 1.11 The Government of Belize, recognizing the importance of developing a national strategy to address the municipal solid waste problem, sought the assistance of the IDB to prepare a Solid Waste Management Plan. To attain this objective, a technical cooperation was approved in December 1996. Work on the development of the plan began in 1998 with the participation of an international consulting company. An important feature in the plan was the identification of a regional disposal site at a central location, which would receive waste from the major cities and towns. An in-depth environmental impact assessment (EIA) of the proposed waste disposal system was also prepared. These studies were conducted at a feasibility level and were concluded in October 2001.
- 1.12 The plan analyzed various disposal alternatives, from improving individual landfills in each locality to the construction of a single national sanitary landfill. Through a comparative evaluation, *Scenario VIII* was selected as the most cost-effective option. Its main components are: (i) a regional sanitary landfill at a location near mile 22 on the Western Highway, with a 25-year capacity; (ii) modified landfills at existing sites in Orange Walk and Corozal; (iii) new modified landfills in Placencia, Dangriga and Punta Gorda; (iv) two transfer stations along the Western corridor, at the existing landfill sites of Belize City and at the Western Landfill between San Ignacio and Benque Viejo; (v) closure of the landfills on Caye Caulker and San Pedro; (vi) development of transfer systems to bring wastes from these Cayes to the mile-22 site; and (vii) development of a collection system to provide service to small villages and rural residents along the three main highways corridors.

- 1.13 A review of the existing financial situation was also undertaken. Having identified a general shortage of funding for solid waste management in the country as a whole, different cost recovery mechanisms were evaluated. The development of a reliable long-term funding source, that minimized the fiscal burden on the Government, was considered a primary objective. An environmental levy, set between 0.60% and 1% of the value on all retained imports, was proposed in April 2000 to cover operating and maintenance costs and to service debt for initial capital investments. This environmental levy, approved in 2001, is seen as an interim step, which should ultimately lead to a user-pay system.
- 1.14 As part of this financial analysis, a review of the private sector role was conducted to determine potential financing sources and possible arrangements for constructing and operating the proposed disposal system. As a result, the plan recommended the involvement of the private sector in managing, constructing, and operating the major facilities. The Government would finance initial construction (site development) and retain ownership of the facilities.
- 1.15 Based on the plan's recommendations, a first phase of the strategy was determined, which concentrates the initial efforts on the more populated central area of the country, along the Western Highway, and on the offshore islands. Among the works identified with highest priority are a central sanitary landfill at mile 22 and transfer stations in Belize City, Ambergris Caye (San Pedro), and Caye Caulker. These works will be accompanied by an institutional strengthening component to consolidate the SWMA and public awareness activities to assure community participation and support.

#### **F. Experience of the Bank**

- 1.16 In December 1996, the Bank approved a US\$676,720 technical cooperation to prepare a national Solid Waste Management Plan (ATN/JF-5430-BL). The studies were initiated in 1998 and concluded in October 2001. Although a formal completion evaluation of this TC has not been conducted, it is evident that a comprehensive management plan was developed, even though not all the objectives initially established by the TC were achieved. During its execution it became necessary to reformulate the use of funds in order to conduct an in-depth environmental impact evaluations of two alternative disposal sites. Preliminary designs also had to be prepared for the two sites to obtain reliable comparative economic data. For these reasons, final engineering designs were not completed as had been originally envisaged.
- 1.17 The Bank has had increasing experience in solid waste management in comparable situations in other Caribbean countries, where tourism is a key economic sector requiring improved services. Loans for solid waste management projects were approved in Barbados (US\$13 million, 1998), Bahamas (US\$23,5 million, 1999) and Jamaica (US\$11,5 million, 1999). Although these projects are currently under execution, the lessons learned will be incorporated into the design of this operation where possible. In the case of Barbados, for example, the absence of a unified contract with a private company, to carry out both landfill construction and landfill operation, has caused considerable delays in project implementation.

## **G. IDB strategy and rationale for involvement**

- 1.18 The Bank's strategy in Belize is to assist the country in: (i) creating an enabling environment for private sector development; (ii) promoting agriculture and agribusiness through export diversification; (iii) stimulating tourism and environmental protection; (iv) promoting sustainable development at the regional level; and (v) enhancing Government's ability to provide quality social services. The proposed operation is consistent with this strategy in that it contributes to institutional development in a basic public service and promotes private sector involvement in its management.
- 1.19 The project recognizes the need to gradually develop institutional and financial capacity in the sector to assure long-term sustainability in service provision. Through this operation, the national solid waste management strategy will concentrate initially on improving waste disposal operations in the larger urban centers and in the more populated offshore islands. The needs of smaller urban centers, villages and rural communities will be addressed in the future, as SWMA acquires greater capacity to expand its assistance to other regions of the country. Less pressing waste management issues, such as industrial/agricultural waste, hazardous materials, and ship refuse will also be incrementally pursued by SWMA, in coordination with corresponding local governments and/or other national institutions. As an integral part of the project hereby proposed, a specialized private company will be selected, through an open and competitive process, to operate and maintain the central sanitary landfill and its associated transfer stations. SWMA's role will be to supervise this operation, which will be initially financed from the proceeds of the Environmental Tax approved in 2001. House-to-house refuse collection will remain a local government responsibility. A user-pay system, which could include tariffs and tipping fees, will be introduced incrementally to guarantee social acceptability, avoid illegal dumping, increase accountability in service provision, and enhance long-term sustainability.

## **II. PROJECT OBJECTIVES AND DESCRIPTION**

### **A. Objective**

- 2.1 The project objective is to support the Government of Belize in its efforts to reduce environmental pollution and enhance the image of Belize in the ecotourism market through better management of its municipal solid wastes. The project will address the solid waste management needs of the whole country, but the initial investments will be directed to achieving a safe and efficient solid waste disposal system in the western corridor, where 70% of the urban population is located.

### **B. Components**

- 2.2 In agreement with the recommendations of the Solid Waste Management Plan, the project will include the following components: (i) Institutional strengthening of SWMA; (ii) Community participation and education programs to promote public support and

waste minimization practices; and (iii) Construction of a central sanitary facility to serve Belize City, San Pedro, and Caulker Caye, including deactivation of existing disposal sites and construction of transfer stations to facilitate and diminish waste hauling costs. These three components are interdependent and complementary to each other, and thus constitute the minimum set of activities required to successfully meet the stated objective.

**1. Institutional strengthening (US\$0.2 million).**

- 2.3 Activation and strengthening of the Solid Waste Management Authority (SWMA), which will be responsible for contracting a private operator to run the major facilities, in addition to conducting other management and supervision functions around the country. This activity comprises: (i) definition of organizational aspects and regulatory functions, (ii) development of specific standards and rules, and (iii) staff training in technical aspects, accounting, financing and contract administration.

**2. Community participation (US\$0.2 million)**

- 2.4 Educational and public awareness activities to assure community support and expand waste reduction and recycling programs. These programs will seek to: (i) lessen the quantity and cost of handling and disposing wastes, (ii) improve the management of special wastes, including hazardous materials, and (iii) diminish littering and illegal dumping.

**3. Waste transport and final disposal facilities.**

- 2.5 To successfully initiate implementation of the solid waste management plan, the following facilities are considered critical and will be part of this operation:

**a) Central sanitary landfill (US\$3.5 million)**

- 2.6 A central sanitary landfill will be developed along the Western Highway, at approximately mile 22, on a 130-hectare parcel of land, selected by way of a thorough technical and environmental evaluation. This facility will replace the existing disposal site at mile 3, serving the Belize City and Ladyville areas. The proposed site will require the construction of a 3.8 km access road and has sufficient capacity to operate for at least 25 years. Its development includes site preparation, construction of administration buildings, weigh scales installation, landfill gas collection, a leachate treatment system, and groundwater monitoring.

**b) Transfer stations (US\$0.95 million)**

- 2.7 Due to the increase in distance to the new site, a transfer station will be required in Belize City to minimize waste hauling costs. This station will be located at the current disposal site (mile 3), which will be transformed from its present condition into a properly run transfer facility. This implies that the existing waste collection operations will not be affected by the greater distance.

- 2.8 Wastes generated in San Pedro (Ambergris Caye) and Caye Caulker will be barged and hauled to the mainland for final disposal at the central landfill. Thus, two additional but smaller transfer stations will also be required in these two islands to collect wastes and facilitate their transportation to the Belize City transfer station.

**c) Closure of existing disposal sites (US\$0.3 million)**

- 2.9 The disposal sites being used in San Pedro and Caye Caulker will be properly deactivated and reclaimed. Closure will entail an evaluation of leachate and gas production, the spreading of suitable cover material, revegetation, and environmental monitoring for surface and groundwater pollution. In addition, alternative solutions to the human scavenging problem will be considered. Post-closure activities will include the control of illegal dumping and community awareness activities.

**4. Complementary activities**

- 2.10 A parallel technical cooperation (TC-02-05-008), financed under the MIF Line of Activity for Concessions, is also being proposed to support SWMA and local governments in contract development and other associated activities. These include: (i) involving a private contractor in developing, building and operating the Belize City transfer station and the central sanitary landfill, (ii) improving and/or consolidating current contractual arrangements for private refuse collection services at the local level, and (iii) developing incentives, licensing arrangements, penalties, and other enforceable mechanisms to promote efficient collection services and to reduce illegal dumping .
- 2.11 To the extent possible, other low-cost solutions in other regions of the country will be included, depending on estimated costs and availability of funds. In particular, a transfer station would be required in order to economically transport waste from the Benque Viejo / San Ignacio area to the new central landfill. Smaller, low-cost landfills are also required in other communities around the country.

**C. Execution**

- 2.12 It is proposed that the SWMA be activated and strengthened to coordinate and supervise all activities related to project execution. Provisions will be made to assure that qualified local staff is hired for this task. The project team will evaluate the need for support from experienced consultants during project execution. As the project develops, further strengthening of the SWMA will allow greater involvement of this institution in other activities related to assistance to local governments, promotion of good management practices around the country, community involvement, expanded recycling programs, etc. Thus, this execution arrangement is expected to assure continuity in all SWMA tasks once the project is completed.
- 2.13 It is proposed that a private solid waste management company be retained, under a dual construction-operation contract, to develop the selected site into a sanitary landfill and to operate the facility for a period of eight years using its own equipment. The operator would also be in charge of constructing and maintaining the access road to the landfill, running the Belize City transfer station and transporting the waste from the transfer



station to the landfill. All these activities are closely related and can be optimally performed by a single solid waste management company. The Government will finance initial construction of the facilities, retain ownership, and supervise compliance with contractual obligations. During project preparation the project team will carefully review the arrangement proposed to assure complete agreement with all elements of the Bank's Public Utilities Policy.

### **III. ENVIRONMENTAL AND SOCIAL IMPACTS AND PROPOSED ACTION**

- 3.1 As described in this document, the project seeks to correct undesirable environmental conditions that have resulted from poor municipal solid waste management practices, especially in relation to final waste disposal. Thus the environmental effects of the project will be overwhelmingly positive. The achievement of this goal, however, will depend on the long-term sustainability of the system proposed, including proper supervision and financing. Public participation and support will also be a determining factor in assuring success.
- 3.2 Potentially negative environmental impacts could occur from improper operation of the proposed central sanitary landfill and to a lesser extent, of the transfer stations and transport systems. No involuntary physical displacement of people by the project is expected, but a limited waste scavenging problem exists at some disposal sites, needing consideration. Negative environmental impacts will be mitigated with proper monitoring by the country's environmental authority, appropriate contract supervision by SWMA and local governments, and adequate enforcement of existing regulations. The environmental mitigation plan for the major facilities will include various elements such as: buffer zones, traffic safety patterns, surface water drainage, ground water protection, landfill gas and odor control, etc. The project team will ensure that these measures are adequately addressed during project preparation and that actions are included in the project to guarantee their timely implementation. Environmental indicators and monitoring procedures will also be reviewed and discussed during project preparation to assure efficiency and permanency in these critical tasks.
- 3.3 Since private sector participation is being proposed to manage waste disposal operations, the project team will carefully evaluate all preexisting environmental liabilities and those that may arise during the operational phase. This is particularly important in the case of the Belize City transfer station, which will be constructed within the boundaries of the existing disposal site. Environmental risks will be evaluated during project preparation and a clear assignment of responsibilities will be proposed. Mitigating measures to reduce these risks will be introduced into tender documents, construction specifications and operating regulations.
- 3.4 Social and environmental acceptability of solid waste disposal sites and transfer stations is commonly a difficult and controversial issue in surrounding communities. In this case, a protracted discussion with respect to landfill location alternatives has already taken place and should facilitate this process. During project preparation, the team, in

conjunction with Government authorities, will review this issue, the EIA already conducted for the mile-22 site and its associated access road and transfer stations, and will decide if additional studies and/or consultations with potentially affected parties are required to properly assess the project's social and environmental impacts. As mentioned before, the DOE is the agency with primary responsibility for enforcing environmental legislation and, consequently, for oversight of the impacts of solid waste management operations. As such, the DOE is currently conducting public consultations on the EIA that was prepared for the project by international consultants, before submitting it to the National Environmental Appraisal Committee (NEAC) for final approval.

#### **IV. ISSUES AND RISKS**

- 4.1 The weakness of the existing solid waste collection and disposal services, especially with respect to the absence of self-sustaining user fees, represents a risk for the success of this project. The environmental levy recently approved would seem to mitigate this risk, but part of the funds collected through the application of this tax should be clearly earmarked for this purpose. All financial issues related to project feasibility will be carefully evaluated during project preparation, including the timely availability of counterpart resources and the possibility of using environmental tax proceeds for this purpose.
- 4.2 The interest of private sector companies in managing and operating the new landfill and transfer stations is somewhat uncertain due to the small size of the operation and to the lack of local experience with the methods proposed. The development of good contractual instruments, a clear set of regulatory standards, and a stable financial arrangement will greatly contribute to diminishing this risk.
- 4.3 The SWMA, in spite of having been legally created in 1991, has not yet been activated. Since this institution will have direct responsibility for the implementation and smooth operation of the National Solid Waste Management Plan, its proper structuring and subsequent strengthening becomes a crucial issue to guarantee waste management sustainability. The formation of a qualified professional group, with financial and engineering management expertise, to initiate SWMA activities and to lead and coordinate all tasks related to project preparation has been recommended by the project team. This coordinating group and its supporting staff should be appointed before project appraisal. A budget proposal for activating the Authority was recently submitted by DOE to the Cabinet. Three technical staff and two supporting staff would be initially hired under this proposal.
- 4.4 Up to the present time, the town boards have been responsible for both solid waste collection and disposal. The use of a central disposal site, as proposed, implies a new central government role that must be properly coordinated with local governments. To guarantee successful operation of this interdependent system, adequate consultation and proper participation will become critical factors in the inter-relationship between these two levels of government.
- 4.5 The proposed location of the new central landfill, at mile 22 on the Western Highway, implies high transportation costs which could constitute a disincentive to its continued

use. The public awareness and educational activities proposed will assist in understanding and support of this necessary expenditure.

- 4.6 It will also be necessary for the GOB to acquire the parcel of land proposed for the central landfill, which it is currently owned by private individuals. Since this transaction constitutes a critical step for overall project feasibility, the team, in conjunction with the Government, will review Belizean legislation related to compulsory land acquisition and will determine the most appropriate moment, during the project preparation period, when negotiations with property owners should be conducted and completed.

## **V. PREPARATION STEPS**

- 5.1 The national Solid Waste Management Plan, developed between 1998 and 2001, included preliminary designs for most of the physical facilities proposed under this project. In addition, the plan analyzed the country's legal framework, institutional matters, options for financing, and conducted an environmental impact assessment (EIA) of the proposed central waste disposal system. The DOE is currently conducting public consultations of this assessment before submitting the EIA document to the NEAC for final approval.
- 5.2 Specialized engineering consultants will be hired with IDB financing, using C & D funds and EN2 resources, to prepare final designs and detailed cost estimates for the major works proposed, namely the Belize City transfer station, the central sanitary landfill and its access road. These studies will be carried out during a period of three to four months, in parallel with project analysis. Final engineering designs and detailed environmental measures for the remaining smaller facilities will be developed as part of the project itself.