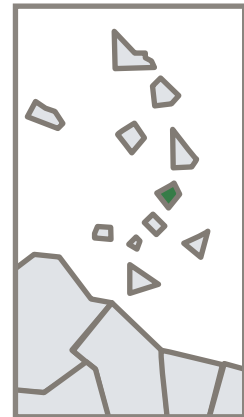


# REGIONAL EVALUATION MUNICIPAL SOLID WASTE MANAGEMENT SERVICES



COUNTRY ANALITICAL REPORT DOMINICA / EVALUATION 2002

MARCH 2004

## TABLE OF CONTENTS

1. Executive Summary	1
2. Introduction	3
3. Background	4
4. Functional Operational Structure	7
5. Delivery of Solid Waste Management Services	8
6. Strengths and Weaknesses of the System	10
7. Health, Environment and Social Development	11
8. Participatory Management	12
9. Future Perspectives	13
10. Bibliography	15
11. Acronyms	16
12. Working Team	17

## 1. EXECUTIVE SUMMARY

Dominica is an independent Commonwealth within the British Commonwealth. The country is a member of the OECS and is located in the central portion of the Caribbean between Guadeloupe and Martinique. Control of all affairs, both internal and external, is vested in the Central Government located in Roseau, the capital city. The solid waste management system is controlled by the Dominica Solid Waste Management Corporation, a semi autonomous body under the Central Government.

Dominica's population as of the 2001 census was 71,242. This places it in the low medium range for the PAHO survey.

The economy of Dominica is dependent on agricultural exports with bananas and coconuts being of primary importance. Efforts are currently being made to diversify these imports. The sharp decline in the banana market has resulted in severe economic problems at the national level that are reflected in the funding problems experienced by DSWMC.

The tourist industry is not of primary importance in the local economy. The equivalent population increase from all tourist sources is 2.17%, a relatively low figure. Cruise ship arrivals outnumber "stay over" arrivals by approximately 5:1. The tourist effect on solid waste generation rates is therefore low.

The per capita waste generation rate is 0.91 kg/person/day. This figure has been adjusted to account for the low collection coverage throughout the island. The adjusted figure is still in the lower range for the OECS countries. Possible reasons for this include the poor economic conditions that currently exist and the low number of long term tourists.

Poverty levels in Dominica are very high with 29% of the households considered to be below the poverty line. 38% of those households are considered to be in indigence. The GINI coefficient is 0.488, a high value indicating a maldistribution of wealth as well as the general poverty level.

Health care is good with an average life expectancy at birth of 74.1 years. There are five major hospitals and fifty local health clinics located throughout the island.

Illiteracy is moderately high at 6% of the population. This may be a side effect of the basically rural nature of the country and the poor economy.

Control of the solid waste management system is centralized under the Dominica Solid Waste Management Corporation. The Corporation, while a semi-autonomous body, retains close ties to the Environmental Health Department.

Solid waste disposal is currently in two landfills, one located close to Roseau and one located in the Portsmouth area. Neither is a secure landfill nor the Portsmouth site is little more than an open dump.

Both current landfills will be phased out and capped when the new secure Fond Colet landfill and the Portsmouth area transfer station are complete and operational.

The solid waste collection system is operated by DWSMC. Coverage is not complete, probably serving no better than 50% of the population. The coverage in the south east portion of the island is particularly poor. Industrial, Commercial and Institutional (ICI) wastes are privately collected, usually by the generators themselves.

The legislative framework in Dominica is excellent. It is not, however, backed up by either appropriate regulations or a strategic plan for waste management. The lack of regulations is considered serious by DSWMC. The strategic plan is under development.

The major strengths in the current Dominican solid waste management system include the dedication and commitment of the DWSMC staff and the growth of a viable collection and disposal system

The major weaknesses in the system include a severe lack of operational funding and the incomplete staffing of DWSMC. Given the poor condition of the national economy, there is little prospect of improvement in these areas in the near future.

There is a high level of public interest in composting of "green waste", possibly at a commercial level. In addition DWSMC is promoting the local composting of rural domestic waste as a means of reducing the amount of organic waste that reaches the landfill.

The severe lack of funding and the total lack of any source of income that is payable directly to DSWMC limits the ability of the Corporation to develop.

## 2. INTRODUCTION

The process of collecting and developing the data required for the production of Evaluation 2002 for Dominica was carried out by a PAHO representative in conjunction with the General Manager and the Public Relations Officer of the Dominica Solid Waste Management Corporation. Assistance was given by additional members of the Corporation and other Government departments.

Dominica is an independent Commonwealth within the British Commonwealth. The country consists solely of the island of Dominica, located about half way down the Caribbean chain which extends from Puerto Rico to Trinidad, midway between the French islands of Guadeloupe and Martinique.

Dominica is a full member of the Organization of Eastern Caribbean States (OECS). The Central Government is located in Roseau in the south central part of the island.

The overall management of solid waste is functionally controlled by the Dominica Solid Waste Management Corporation. Although theoretically a semi-autonomous entity within the local Government structure, the Corporation is actually closely allied to the Ministry of Health. This situation results from the recent transfer of senior personnel from the Environmental Health Unit to DWSMC.

The overall solid waste management picture in the OECS countries changed radically after the beginning of the WB/CDB initiatives. In Dominica, the changes included some improvement in the collection process particularly in the Roseau area. Other areas of the WB/CDB project objectives have, however, lagged badly primarily due to lack of both financial and human resources. This situation now shows some improvement with the addition of senior personnel in the person of a General Manager to the DWSMC administrative structure. Construction continues to lag with only one of the three transfer stations complete and the new (secure) Fond Colet landfill scheduled to begin construction at the end of March of this year.

The World Bank Implementation Completion Report (ICR) rates Dominica as satisfactory only in the area of ship-generated waste. All other areas are rated either as unsatisfactory or highly unsatisfactory. The report makes it clear that the ratings are not due to incompetence or lack of effort on the part of the personnel involved but rather from a lack of adequate funding and the associated lack of qualified personnel at the upper management levels of the Corporation. As noted, this situation now shows signs of improvement and there is an air of optimism within the Corporation as to the future prospects of DWSMC.

### 3. BACKGROUND

#### Physical Characteristics

Dominica is the largest of the windward islands with an area of 295 sq. mi. (754 sq. km.). The interior is mountainous and vulcanism is evident throughout the island with numerous hot springs and boiling lakes.

There is only 4% of the area which is considered as arable and only 16% of the land area is in permanent crops.

The climate is tropical with frequent rains. The virtually daily rainfall leads to a multiplicity of rivers and lakes that make the road system both difficult and indirect. Access to some areas of the island is very difficult and this has a severe effect on solid waste collection services. The southeast portion of the island has been particularly badly affected.

The island is well within the hurricane belt and has suffered badly in 1979 (David), 1989 (Hugo), 1995 (Marilyn) and 1999 (Lenny).

Despite the small amount of arable land and the small land area in permanent crops, the economy is still essentially based on agriculture with the main exports being bananas and coconuts.

Banana exports were heavily dependent on the preferential market offered by Great Britain. With Britain's entry into the European Union (EU), this preferential status disappeared with the result that Dominica's economy has suffered heavily. Efforts are now being made to diversify agricultural exports.

Recent austerity measures imposed under the IMF requirements have adversely affected the funding available for solid waste management operations. These measures, combined with the problems generated by 9/11 have been the cause of severe underfunding of the solid waste management effort. The actual amount transferred to DSWMC by the Central Government in 2002 amounted to only 0.41% of the total amount expended nationally by the Government.

The land based tourist industry is relatively small with visitors of all types representing only 2.17% equivalent population increase. Dominica's tourist attractions are largely in the natural beauty of the island and the form of eco-tourism promoted is highly sensitive to degradation both by overloading and by indiscriminate disposal of waste.

Beaches in Dominica are characterized by black volcanic sand in the southern portion of the island. More normal coral sand beaches are restricted to the northern portion of the island. These latter beaches are not readily accessible to tourists because of the road system and the overall size of the island.

#### Socio-Economic

The population of Dominica is estimated as 71,242 in 2001. There are two major cities, Roseau, the capitol, and Portsmouth located in the northwest of the island. The island fits into the low medium section of the survey populations. Despite the sparse nature of the population in most of the island, any division between rural and urban population is impractical.

The rate of population growth on Dominica from 1995 to 2001 is -0.34%. The birth and death rates are relatively normal at 16.78 and 6.99 per thousand respectively. The emigration rate is, however, extremely high at 16.11, virtually canceling out the birth rate. The high emigration rate is unquestionably the result of the extremely poor economic conditions that currently exist in Dominica. This has not always been the case, but the lack of export diversification and the dependence on Great Britain as a banana market has served to accentuate the problems with tourism that occurred after the events on September 11, 2002 in the United States.

## Health

Life expectancy is relatively high in Dominica. Male life expectancy at birth is 71.23 years with female life expectancy at birth equal to 77.15 years. The average for the population is 74.12 years.

There are five major hospitals and fifty local health clinics located on the island.

## Human Development Indicators

The average per capita Gross Domestic Product is the second lowest of the OECS countries at US\$3,700. Only St. Vincent is lower among the OECS countries.

Poverty levels by household total 29% with 38% of those households considered to be in indigence. Only St. Vincent has a higher percentage of households below the poverty line, but the larger household size in Dominica places a greater percentage of the population below the poverty line. The GINI coefficient is 0.488, ranking third highest among the OECS countries, and indicating a poor distribution of wealth in Dominica as well as reflecting the high poverty levels.

Illiteracy in the overall population is estimated at 6% with no differences between males and females. This level is relatively high, but may be an additional reflection of poor economic conditions. In addition, the difficulty in access to schools in the interior areas may be a factor. The basic language is Creole and this may also be an impediment to schooling in English.

## Evolution of the Solid Waste Management System

The WB/CDB initiatives should have produced positive changes in the solid waste management system in Dominica. In fact, the actual improvements have been limited. The World Bank ICR ratings of unsatisfactory and highly unsatisfactory in all areas other than ship-generated wastes reflect this performance. The situation is only now starting to improve as the management structure of DWSMC begins to improve.

Even in the area of ship generated waste there is a tendency not to accept waste from ships on the grounds that the solid waste disposal system is currently poorly equipped to handle it. This is, of course, contrary to the provisions of the MARPOL convention.

The Dominica Solid Waste Management Corporation (DSWMC) was established by Act of Parliament in 1996 and its responsibilities further defined in the Solid Waste Management Act of 2002. The intent of the legislation was to establish DSWMC as a semi-autonomous body within the Government framework. Lack of adequate funding and the resulting lack of personnel at the upper management level resulted in the Corporation remaining essentially an extension of the Ministry of Health. As noted, this situation is now changing with the transfer of senior personnel.

DWSMC's management structure continues to lack a permanent Operations Manager and also appears to demonstrate a significant lack of depth at the intermediate levels.

Virtually the only improvement in the solid waste management picture in Dominica noted in the World Bank ICR is in the collection system in and around Roseau. Collection on the remainder of the island remains incomplete and less than adequate. Collection in the southeastern portion of the island appears to be totally lacking. This has led to complaints from tourism operators and a wide section of the rest of the community. Attempts are currently being made to correct this situation, and coverage should improve drastically when the Portsmouth and Rosalie transfer stations are put into service.

Overall collection coverage appears to be in the 50% range. It must be assumed that waste that is not collected is disposed of by indiscriminant dumping in illegal dumpsites and along roadsides. These practices have negatively affected the tourist industry which is an important source of foreign income. The relatively high illiteracy rate probably impedes dissemination of the concept that inappropriate solid waste management practices may have a highly negative effect on tourism.

The developing eco-tourism industry is especially vulnerable to the damage caused by such practices as well as by careless use of sensitive natural sites by short term tourists.

The WB/CDB projects envisioned three transfer stations and a new secure landfill to be located at Fond Colet.

Of the transfer sites, one (at Marigot) is complete and operational. A second (in the Portsmouth area) has had to be relocated prior to completion due to public objection to the siting of the transfer station. A new site is currently being chosen. The location of the third transfer station, proposed for the Rosalie area in the southeast portion of the island, is still under consideration.

Construction of the Fond Colet landfill has been delayed by a land dispute involving the eviction of squatters. Originally, the World Bank ICR anticipated the start of construction at the end of the second quarter of 2003. The current estimate is the end of the first quarter of 2004.

Completion of the two remaining transfer stations and the new Fond Colet landfill is expected by the end of 2004. Given the normal pace of construction in the Caribbean generally, this completion date may be highly optimistic.

The completion of other landfills in the OECS countries has been delayed by the need to negotiate additional funding due to cost escalation, disputes over land ownership and a basic underestimation of construction costs. The situation in Dominica is worse than most since the work has been extremely slow to begin and the local economic picture remains marginal.

The fact that neither site for the remaining transfer stations has been chosen makes it unlikely that these stations will be operational by the end of 2004. Collection coverage will not improve significantly until all transfer stations are in operation.

### **Level of Investment**

The level of investment in solid waste management in Dominica has necessarily been limited to only that part of the WB/CDB projects that have been either started or completed. The original WB/CDB appraisal estimate showed a total project cost of US\$6.15 million with Dominica contributing US\$1.02 million in the form of land and excused duty and tax. Net funding required at the appraisal stage was US\$5.13 million.

To date, the Dominica contribution has been limited to commitment of the land for the Fond Colet landfill. Cost overruns have increased the project cost slightly so that the total financing required is now US\$5.19 million. All contingencies have been eliminated from this assessment of the cost structure.

Given the comments in the World Bank ICR on the status of the Fond Colet landfill and the fact that construction is only now starting, it is uncertain whether total project costs may still escalate beyond the US\$5.19 million level. The source of this funding will remain the EU and the CDB since the loan amounts have not been drawn upon.

One thing is certain; the total project cost is highly unlikely to be less than the US\$5.19 million figure given in the World Bank ICR.



## 4. FUNCTIONAL OPERATIONAL STRUCTURE

### **Institutional Structure**

The 1996 Act of Parliament and the 2002 Solid Waste Management Act were both intended to establish the Dominica Solid Waste Management Corporation as a semi-autonomous body responsible for all solid waste management systems in Dominica.

Prior to the end of 2003, underfunding and the resulting delay in the transfer of personnel from Public and Environmental Health had resulted in severe understaffing of DWSMC at the administrative level. The filling of the General Manager's position has alleviated the problem but the lack of a permanent Operations Manager continues. There appears to be a definite lack of depth in the organizational structure.

There is no obvious fallback position for Dominica in the absence of the Corporation.

### **Policies, Legal and Regulatory Framework**

The passage of the two Acts intended to establish DSWMC and define its responsibilities and structure has established the basic structure required for a viable solid waste management system.

There has been no significant progress in developing a regulatory framework to support the enabling legislation. If such a framework had been developed, it is highly questionable whether the DSWMC could have provided the enforcement personnel required.

The lack of funding and management staff has precluded the completion of a comprehensive national solid waste management plan to this point in time although one is currently being prepared.

### **Centralization of Service**

Solid waste management services are technically centralized under DWSMC, but the lack of funds and the understaffing appears to have led to some degree of fragmentation of responsibility particularly in the area of policy and regulatory development.

### **Street Sweeping**

Street sweeping is carried out by the Town Councils within urban limits. The Public Works Department controls drain cleaning and verge clearing in rural areas.

### **Planning**

Planning is the responsibility of DWSMC. Current planning is limited to the location or relocation of the two transfer sites and the construction of the Fond Colet landfill. As with other facets of the operation, understaffing is a problem.

## 5. DELIVERY OF SOLID WASTE MANAGEMENT SERVICES

### Quality and Coverage of Services

Collection services are of good frequency where they exist. Unfortunately they will not fully cover the island until the construction of the transfer stations is complete. At present frequency of collection (where it exists at all) varies from biweekly to three times per week for rural areas and daily for the Roseau area.

Disposal continues to be to controlled landfills (as opposed to secure landfills) and will remain so pending the completion of the new Fond Colet landfill site. The site closest to Roseau that is currently being used is over capacity and poorly managed. The Portsmouth site is apparently little better than an open dump.

The transfer station at Marigot acts as a bulking station only. This will also be true for the new transfer stations at Portsmouth and Rosalie.

### Cost Analysis

The unit cost for solid waste management is US\$50.78 per ton. This is well within the limits for landfill disposal but the unit cost does not include the cost of street sweeping or of drain cleaning and verge cutting and brush clearing.

There is no cost recovery system for domestic or industrial, commercial and institutional (ICI) wastes. There is a minimal cost recovery applied to cruise ship passengers but these funds are transferred to the Government Consolidated Fund. It is questionable how much of these funds actually reach DWSMC.

Municipal Development

Municipal development does not appear to be a major factor in solid waste management on Dominica.

### Administration

There have been significant improvements in the administrative structure of DWSMC but the underlying understaffing has not as yet been completely eliminated.

### Shared or Participatory Management

There is no shared or participatory management involved in the solid waste management system.

### Small Business Involvement

Collection of ICI wastes is by private companies. This appears to involve trucks owned and operated by the generators themselves and not specialized private collection companies. Small generators probably utilize the DWSMC collection system.

### Micro Enterprises

There are no micro enterprises involved in the solid waste management system.

### Sector Projects

The completion of the two remaining transfer stations and the Fond Colet landfill represent major sector projects in the solid waste management area.

## Funding

The cost recovery program for solid waste management in Dominica, as proposed, was based on revenue collected as part of an environmental levy supplemented by direct Government subventions. This might have been effective if the proceeds of the levy had been paid directly to DSWMC. This, unfortunately, was not the case with the proceeds being paid into the Government Consolidated Fund. Transfers from the Consolidated Fund to DSWMC have not been complete or have been much delayed. In fiscal 2002, DSWMC received only 66% of the proceeds of the environmental levy, and only 33% of budgeted Government subventions that form the only other source of available funding.

Assuming that the above figures are correct and further assuming that there were 250,000 cruise ship passengers and 50,000 airline passengers, the total funding that was actually provided by the Government for solid waste management amounted to approximately 0.41% of the total expended at the national level. This amount is too low to engender any confidence in the medium to long term viability of solid waste management in Dominica.

The problem of transfer of funding to the Solid Waste Management Entity (SWME) is common in all OECS countries. There is a common tendency for the Central Governments to apply an apparent priority system to disbursement of funds from the respective Consolidated Funds. Solid waste management often seems to be given a low priority under these circumstances.

DWSMC is considering preliminary steps towards the imposition of a universal fee for solid waste disposal. Their initial intent is to attempt to collect directly from each household, possibly on a monthly basis. It is, however, difficult to see how such a system could be enforced without a substantial political penalty. With an upcoming election in 2005, the prospects of successfully implementing such a cost recovery scheme seem remote. Few, if any, countries have had success with voluntary payment schemes, particularly if such schemes are seen to be less than equitable.

Given the continuing economic difficulties being experienced in Dominica, it is questionable whether the DWSMC financial situation will improve substantially in the near future. With continued inadequate funding, DWSMC's position is unlikely to show any marked improvement regardless of any improvements in staffing.

Overall, there is an urgent need for the development of a source of funding that is more independent of the Central Government. Possibilities which appear to have been effective in other OECS countries (such as Grenada, Nevis and St. Vincent) include direct levies against either the local electricity or water bills.

## 6. STRENGTHS AND WEAKNESSES OF THE SYSTEM

### Strengths

The main strengths of the system is the dedication and enthusiasm of the current DSWMC staff. In large measure this has led to the beginning of the development of both viable collection and disposal systems

### Weaknesses

The outstanding weakness of the system is a severe lack of operational funding which has led to staffing shortfalls. In addition, there are still gaps in the organizational structure at some senior levels.

### Limiting Factors

The continued absence of an effective cost recovery system which would reduce or eliminate dependence on Central Government Funding is the continuing limiting factor which restricts development of the system.

## 7. HEALTH, ENVIRONMENT, AND SOCIAL DEVELOPMENT

### Health and Environment

Dominica imports used tires for sale and reuse. Regardless of the basic consumer economics of this practice, it would appear that the end result is an increased number of tires to be disposed of. Currently tires are delivered to the site near Portsmouth and burned as means of disposal. The continuation of this practice at the new Fond Colet site may be problematic, and is only marginally acceptable at the current site.

If the burning process cannot be continued, there may be a problem of trapped water providing a breeding ground for mosquitoes.

At the moment there is no reported dengue on Dominica and there has been none during the last two years. It would appear that any steps that would possibly be ill advised.

Dominica's tourist industry is heavily environmentally dependent. The poor service levels in some parts of the island have already led to some evidence of damage to the environment and consequently to the industry itself. DWSMA expects that these conditions will change when the planned changes to the system are complete.

### Epidemiological Studies

No such studies have been carried out and none are planned that have a direct relation to solid waste disposal.

### Occupational Health

There are no occupational health problems that have a direct linkage to the solid waste management system.

### Economic Value

Dominica is particularly sensitive to economic damage in the tourist industry from improper solid waste disposal practices. The poor waste collection level inevitably leads to undesirable or illegal disposal practices as typified by illegal dump sites or indiscriminant dumping.

### Equity of Service

The delivery of collection service in Dominica is not equitably distributed. Some areas, particularly in the southeast, receive essentially no service. Admittedly, steps are being taken to correct this situation but, in the interim, the inequities continue to exist.

Disposal services are equitable but the continued use of the Portsmouth landfill site, which is little more than an open dump, tends to cause more damage in the north than does the current Stock farm site in the Roseau area.

The commissioning of the new Fond Colet landfill should correct these problems.

## 8. PARTICIPATORY MANAGEMENT

### Community Participation

Community participation is limited to relatively informal efforts on the part of local groups who carry out periodic programs such as beach cleaning.

### Non-government Organizations (NGO's)

Some NGO's and individuals are becoming interested in the composting of green wastes, possibly on a commercial basis. These projects are at a very early stage but show considerable promise for the future.

One such group is the Bellevue Chopin Organic Farmers Group. As the name would indicate, the group is heavily involved with organically grown crops, particularly bananas. Other crops of interest are passion fruit and vegetables.

### Hygiene and Occupational Safety Programs

There are currently no such programs in operation in Dominica.

### Scavenging of Waste

There are five to ten scavengers that routinely operate at the landfill sites. The main object seems to be glass for the purpose of recycling.

The scavengers are apparently evenly divided between men and women.

The scavenging is essentially informal but appears to have de facto Government approval.

## 9. FUTURE PROSPECTIVES

### Investment and Reorganization

Investment in the system must continue until the two transfer sites are both sited and completed and until the new Fond Colet landfill site is operational.

After that work is complete, the existing landfills must be capped off and decommissioned.

The organizational structure of DWSMC needs to be firmed up with the addition of a permanent Operations Manager. In addition, some extra depth at the administrative level would be desirable.

### Reform and Modernization

Consideration should be given to the establishment of a cost recovery system that would reduce the dependency on disbursements from the consolidated fund or direct Government subventions.

No modernization is required and none is under consideration.

### Alternative Management Systems

The private composting schemes are of considerable interest.

In addition the DWSMC promoted project for the local composting of organic domestic waste in the rural areas is of interest. This initiative is intended to sharply reduce the amount of organic waste reaching the landfill.

### Regulation

No regulations have been developed for the solid waste management system. While such regulations will eventually be required, the current lack of manpower at DWSMC would make enforcement of such regulations highly problematic.

A strategic waste management plan is under development.

### Financial Requirements

Considering that DWSMC received only 66% of their share of the environmental levy and 33% of direct Government contributions, financial requirements can scarcely be said to have been met. This gives added emphasis to the fact that alternative sources of operational funding which are less dependent on the Government are urgently required.

The completion of the outstanding transfer stations and the Fond Colet landfill will also require funding. The source of such funding will remain the EU and the CDB.

### Recycling

Dominica has a form of a deposit/return system on glass bottles. This system apparently operates at two levels; one with the local brewery/bottling company and one on bottles that are shipped off island for reuse. The combined systems appear to account for approximately 50% of the total glass in the initial waste stream and probably 80 - 90% of the bottles on which there is a significant deposit.

There is also a levy on all other bottles that enter the island. However, this levy of EC\$0.02 per bottle is apparently not considered by the public to be sufficient to warrant the expenditure of effort required to recover the glass.

The composting operations proposed by the NGO's and by DWSMC are of great interest. In particular, the NGO proposal would appear to have commercial potential.



## 10. BIBLIOGRAPHY

1. Environmental Statistics (2002)
2. Population and Housing (2001)
3. Solid Waste Characterization Study (2002)
4. Dominica Poverty Study (1999)
5. Composting Study (2003)
6. World Bank Implementation Completion Report (2003)
7. Personal Interviews - DSWMC (2004)
8. Personal Interviews - Department of Agriculture (2004)
9. Personal Interviews - Bureau of Statistics (2004)
10. World Factbook - Internet (2003)

## 11. ACRONYMS

<b>CDB</b>	Caribbean Development Bank
<b>DSWMC</b>	Dominica Solid Waste Management Corporation
<b>EC</b>	Eastern Caribbean (currency)
<b>EU</b>	European Union (currency)
<b>GINI</b>	Coefficient measuring the distribution of income
<b>ICR</b>	Implementation Completion Report
<b>IMF</b>	International Monetary Fund
<b>OECS</b>	Organization of Eastern Caribbean States
<b>PAHO</b>	Pan American Health Organization
<b>WME</b>	Solid Waste Management Entity
<b>US</b>	United States (currency)
<b>WB</b>	World Bank

## 12. WORKING TEAM

Boniface Xavier  
General Manager  
Dominica Solid Waste Management Corporation  
Roseau, Dominica

Marileen Hypolite  
Accountant/Deputy General Manager  
Dominica Solid Waste Management Corporation  
Roseau, Dominica

Jeno Jacob  
Public Relations Officer  
Dominica Solid Waste Management Corporation  
Roseau, Dominica

W.I. Walker  
Technical Consultant  
PAHO  
Tortola, BVI