



Republic of Mauritius

NATIONAL AUDIT OFFICE

PERFORMANCE AUDIT REPORT

IMPLEMENTATION OF MEASURES FOR SUSTAINABLE SOLID WASTE MANAGEMENT

Ministry of Environment,
Solid Waste Management and
Climate Change
(Solid Waste Management Division)

SEPTEMBER 2023

NATIONAL AUDIT OFFICE

PERFORMANCE AUDIT REPORT

**IMPLEMENTATION OF MEASURES FOR
SUSTAINABLE SOLID WASTE MANAGEMENT**

**Ministry of Environment, Solid Waste Management and Climate
Change (Solid Waste Management Division)**

SEPTEMBER 2023

FOREWORD

Section 16 (1A) of the Finance and Audit Act makes provision for the Director of Audit to carry out performance audit and report on the extent to which a Ministry, Department or Division is applying its resources and carrying out its operations economically, efficiently and effectively.

I am pleased to submit to the Minister of Finance, Economic Planning and Development, and through him to the National Assembly, this Performance Audit Report entitled “Implementation of Measures for Sustainable Solid Waste Management”.

The sole landfill at Mare Chicose is nearing saturation and land scarcity restricts the possibility of developing new disposal infrastructures for solid wastes. To prevent a waste disposal crisis, initiatives have been taken to increase the disposal capacity of the landfill. Government, through the Solid Waste Management Division of the Ministry of Environment, Solid Waste Management and Climate Change has been facing challenges to ensure maximum waste diversion from the landfill.

The performance audit assessed whether the measures undertaken to sustainably manage solid waste were adequate for ensuring maximum waste diversion from the landfill. The Report contains audit findings, root causes, conclusion and recommendations for improvement. The Solid Waste Management Division was given the opportunity to comment on the contents of the report and where relevant, the responses have been included therein.

A follow-up audit will be carried out to evaluate the effectiveness and timeliness of actions taken in relation to the reported findings and recommendations.

I take this opportunity to thank the Permanent Secretary, the Director and staff of the Solid Waste Management Division for their cooperation and collaboration. I also thank Mr N. Ramead (Team Leader), Mrs Z. Bolah and Mrs S.B Bundhoo (Team Members), who were engaged in the conduct of this performance audit.



Dr. D. PALIGADU

Director of Audit
National Audit Office
PORT LOUIS

29 September 2023

CONTENTS

	Page
EXECUTIVE SUMMARY	1
CHAPTER ONE – INTRODUCTION	
1.1 Background	5
1.2 Audit Motivation	5
1.3 Audit Objective	5
1.4 Audit Questions	6
1.5 Audit Scope	6
1.6 Audit Approach and Methodology	6
1.7 Methods Used and Reasons for Gathering and Analysing Data	6
1.8 Assessment Criteria	7
1.9 Data Validation	7
1.10 Structure of the Report	7
CHAPTER TWO - DESCRIPTION OF THE AUDIT AREA	
2.1 Roles, Responsibilities and Functions of the Key Players	9
2.2 Laws and Regulations for Managing Solid Waste	10
2.3 Solid Waste Management Strategies and Plans	10

CHAPTER THREE – FINDINGS, ROOT CAUSES, CONCLUSION AND RECOMMENDATIONS

3.1	Shortcomings in the Solid Waste Management Planning	11
3.2	Gaps in the Existing Regulatory Framework	12
3.3	Weak Institutional Framework	16
3.4	Composting of Wastes	19
3.5	Ineffectiveness of Civic Amenity Centres	22
3.6	Ineffectiveness of Other Measures	25
3.7	Conclusion	27

APPENDICES

I	Interview with Key Personnel during the Audit	28
II	Solid Waste Management in Mauritius	29
III	Organisation Chart of the Solid Waste Management Division	30
IV	Main Functions of the Key Players in Managing Solid Waste	31
V	Status of the Measures of the Strategic Plan 2011-15	32

TABLE

1	Outcome of the Programmes related to Solid Waste Management	12
---	---	----

ABBREVIATIONS AND ACRONYMS

AGO	Attorney General's Office
BOT	Build Operate Transfer
CAC	Civic Amenity Centre
C&D	Construction and Demolition
CEB	Central Electricity Board
CTCN	The Climate Technology Centre and Network
EPA	Environment Protection Act
EPR	Extended Producer Responsibility
LAs	Local Authorities
LGA	Local Government Act
MoECC	Ministry of Environment, Solid Waste Management and Climate Change
MoLG	Ministry of Local Government and Disaster Risk Management
NECCF	National Environment and Climate Change Fund
PET	Polyethylene Terephthalate
RFP	Request for Proposal
SWM	Solid Waste Management
SWMD	Solid Waste Management Division

This page intentionally left blank

EXECUTIVE SUMMARY

Introduction

The Environment Statistics revealed that the total volume of solid waste landfilled at Mare Chicose increased from 388,000 tonnes in 2012 to 501,000 tonnes in 2021 that is, by 30 per cent and is expected to reach some 650,000 tonnes by 2030, that is an increase of another 30 per cent. Good practices recommend prevention as the best option for solid waste management and disposal as the least preferred choice.

The total expenditure on waste management from collection to disposal increased to Rs 1.8 billion in 2021 as compared to Rs 1.1 billion in 2012. In 2021, the average cost of managing solid waste was estimated at Rs 3,500 per tonne.

The Solid Waste Management Division (SWMD) of the Ministry of Environment, Solid Waste Management and Climate Change (MoECC) was under the aegis of the Ministry of Local Government and Outer Islands (MoLG) up to December 2014. The SWMD is responsible for the protection of the environment and public health through the proper management of solid and hazardous wastes.

Government has to achieve Target 12.5 of the United Nations Sustainable Development Goal 12 on “Responsible Consumption and Production”, which requires the country to substantially reduce waste generation through prevention, reduction, recycling and reuse. As such, good practices require an appropriate eco-system, including policies, strategies and actions, along with a robust legal and institutional framework for ensuring effective solid waste management and maximum waste diversion from the landfill.

The National Audit Office conducted this Performance Audit to assess whether the measures undertaken to sustainably manage solid waste were adequate for ensuring maximum waste diversion from the landfill. The audit covered the period 2018-19 to 2021-22 and where applicable, facts and figures for periods prior to 2018-19 and after 2021-22 were included in the report. The key findings, root causes, recommendations and the conclusion are presented hereunder.

Key Findings

1. Strategic Plans

The strategic plans for the periods 2005-10, 2011-15 and the new Solid Waste Management (SWM) Strategy and Action Plan 2021-25 contained various measures for diverting wastes from the landfill. However, the following lapses have been noted.

1.1 Unnecessary Delay Seeking Approval for Phases I and II.

- The Consultants submitted the report for Phase I of the new SWM Strategy and Action Plan 2021-25 in December 2017. The MoECC sought approval from Government in July 2020, that is, with a delay of 31 months.

- Due to the inordinate delay in securing approval for Phase I, the preparation of Phase II of the new Strategy and Action Plan 2021-25 started in November 2020 instead of August 2019. Meanwhile, a Technical Committee (TC) was set up in August 2019 to find alternative ways for disposing of waste. The TC submitted its report in January 2020. Government took note of the recommendations of the reports from the TC and that of Phase II in August 2021.

There was inadequate commitment from the Accounting Officers of the SWMD, the MoLG and the MoECC to seek timely approval from Government.

1.2 Implementation of Strategies not Successful

Most of the strategies of the strategic plans 2005-10, 2011-15 and the new SWM Strategy and Action Plan 2021-25 were not implemented. A few examples are provided hereunder.

- The construction of nine Civic Amenity Centres (CAC) during the period 2005-10 did not materialise. Only one Composting Plant was set up in 2011 instead of two. The Compost Plant ceased operation in 2017.
- With regard to Strategic Area two of the Strategic Plan 2011-15 on Resource Recovery, eight of the nine tasks proposed, that is 90 per cent, were not implemented.
- The construction of composting plants and sorting units has been proposed since 2021. In August 2023, the SWMD closed a Request for Proposal for the setting up of composting plants and sorting units on Public Private Partnership (PPP) basis.
- Instead of five, three CACs situated at La Chaumiere, La Laura and Poudre d'Or, each costing around Rs 3 million, were set up by the SWMD. In the absence of a Feasibility Study and effective Education and Awareness Campaigns, the performance of the CACs was below expectations.
- The distribution of 25,000 home composters by the Local Authorities (LAs) during the period 2012 to 2014 that was expected to divert some 10,000 tonnes of organic wastes from landfilling and bring a saving of around Rs 25 million in the collection and disposal costs, did not materialise.
- An amount of Rs 8.7 million was spent for the acquisition of 5,000 home composters in 2021-22 for diverting 2,738 tonnes of organic wastes from the landfill. As of August 2023, only 957 home composters were distributed.

There was inadequate planning for implementation of the projects and changes of Accounting Officers at the SWMD to drive the plans successfully further compounded the matter.

2. Undue Delay in Developing Waste Management Legislations

The UNEP Guidelines recommend that a comprehensive legal framework is fundamental for SWM. As of August 2023, a dedicated legal framework for the management of solid waste was not yet proclaimed and the relevant regulations were still not finalised.

- The proposal for a Waste Management Bill, as spelt out in the Strategic Plan 2005-10 was continuously rolled over.
- In 2021, the SWMD procured the services of a Consultancy team for the drafting of the Integrated (Solid and Hazardous) Waste Management Bill, renamed the Waste Management and Resource Recovery Bill, which was passed by the National Assembly in April 2023 and Gazetted. As of August 2023, it was not yet proclaimed.
- As of August 2023, the regulations for Construction and Demolition Wastes, Segregation of Waste at Source and Extended Producer Responsibility for PET Bottles and Containers were not yet finalised.

There was inadequate planning for the timely appointment of experts for developing dedicated solid waste management legislations and inordinate delay at the AGO for finalising the relevant regulations.

3. Weak Institutional Framework

Institutional arrangements for SWM cover organizational structures and the roles and responsibilities of all the stakeholders, including interagency coordination. The measures, as elaborated hereunder, undertaken by the LAs in view of diverting waste from the landfill were still in progress.

- As of August 2023, the acquisition of some 100,000 coloured bins, as proposed by the SWMD in September 2022, had not started.
- The implementation of a Compost Plant for market wastes at Henrietta, initiated in July 2020 was expected to be completed by June 2021. In December 2022, the project was put on hold until the implementation of new composting plants by the SWMD on a PPP basis.

There was absence of a strong institutional arrangement between the SWMD and the MoLG to oversee the implementation of the strategies.

Conclusion

As solid waste generation is projected to increase to some 650,000 tonnes by 2030, the current disposal practice through the landfill may not be sustainable. To move towards sustainable solid waste management, the SWMD, the MoLG and the MoECC have been proposing a strategic approach. However, most of the measures geared towards composting and recycling, have not been successfully implemented to ensure maximum waste diversion from the landfill.

The economic viability of reuse through composting and recycling efforts is constrained by the absence of a culture of waste segregation at source, appropriate sorting infrastructures and aggressive education and awareness campaigns. The existing legal framework and institutional arrangements are inadequate for sustaining waste reuse and recycling. The introduction of appropriate regulations to move towards a circular economy is taking unreasonable time.

Recommendations

- A policy decision must be taken by the Accounting Officers of the MoECC and the SWMD to ensure that Strategic Plans are approved by Government within a reasonable time.
- A Project Steering Committee at the MoECC must be set up to henceforth oversee and monitor the implementation of projects and ensure that appropriate remedial actions are taken wherever there are deviations from the plan.
- The SWMD may consider hiring the services of relevant experts to drive the implementation of projects for diverting wastes from the landfill.
- The Accounting Officer of the SWMD should ensure that the Waste Management and Resource Recovery Act is proclaimed promptly and that all the relevant regulations made thereunder are finalised.
- Appropriate infrastructure planning and coordination with the LAs must be strengthened by the MoECC and the SWMD. A Joint Monitoring Committee co-chaired by the MOECC and the MoLG must be set up to avoid waste of both financial and non-financial resources with regard to the implementation of projects that are undertaken jointly by the SWMD and the LAs.
- To ensure efficient and effective operation of the CACs, the Director of the SWMD should ensure that a feasibility study is carried out before embarking on forthcoming similar projects. The study should give prominence to accessibility, design, and the roles, responsibilities and obligations of the key players.
- The citizens must be sensitised on the existence of CACs, the benefits of the Compost Scheme at household level and on the conditions of the existing and forthcoming regulations. To ensure effective management of Construction & Demolition wastes, the waste generators need to be sensitised on the benefits of segregating waste at source.

CHAPTER ONE

INTRODUCTION

This Chapter provides a background of the subject matter examined, the motivating factors and the approach used in carrying out the audit.

1.1 Background

Solid waste refers to any type of garbage, trash, refuse or discarded material. Solid Waste Management (SWM) process consists of waste generation, collection and transportation, storage and disposal. Good practices recommend prevention as the preferred option for solid waste management and disposal as the least preferred choice.

The Solid Waste Management Division (SWMD) of the Ministry of Environment, Solid Waste Management and Climate Change (MoECC) is responsible for the protection of the environment and public health through the proper management of solid and hazardous waste.

1.2 Audit Motivation

The Environment Statistics revealed that the total volume of solid waste landfilled at Mare Chicose increased from 388,000 tonnes in 2012 to 501,000 tonnes in 2021 that is, by 30 per cent and is expected to reach some 650,000 tonnes by 2030, that is an increase of another 30 per cent.

In May 2020, the SWMD reported that the sole landfill was nearing saturation and land scarcity restricted the possibility of developing new disposal infrastructures. To prevent a waste disposal crisis, initiatives have been taken to increase the disposal capacity of the landfill.

The total expenditure on waste management from collection to disposal increased to Rs 1.8 billion in 2021 as compared to Rs 1.1 billion in 2012. In 2021, the average cost of managing waste was estimated at Rs 3,500 per tonne.

Government has to achieve Target 12.5 of the United Nations Sustainable Development Goal 12 on “Responsible Consumption and Production”, which requires the country to substantially reduce waste generation through prevention, reduction, recycling and reuse. Good practices require an appropriate eco-system, including policies, strategies and actions, along with a robust legal and institutional framework for ensuring effective solid waste management and maximum waste diversion from the landfill.

It is against this background that the National Audit Office carried out this audit.

1.3 Audit Objective

The audit assessed whether the measures undertaken to sustainably manage solid waste were adequate for ensuring maximum waste diversion from the landfill.

1.4 Audit Questions

The following audit questions were formulated and the answers supported the conclusion against the audit objective.

- Did the Ministry have policies, implementable strategies and action plans to ensure effective management of solid waste and maximum waste diversion from the landfill?
- Were the Legal Framework and the Institutional Arrangements adequate to ensure effective management of solid wastes and maximum waste diversion from the landfill?

1.5 Audit Scope

The key aspects of planning for the implementation of measures to ensure effective management of solid waste in Mauritius were examined.

The institutional arrangements between the SWMD and the MoLG for ensuring the timely implementation of measures, along with the adequacy of the existing laws, regulations, policies and procedures for ensuring effective SWM were examined.

The activities relating to the collection and conveyance of household waste to Waste Management Facilities by Local Authorities (LAs), the operation and maintenance thereof as well as the management of hazardous waste were not examined.

The impact of fiscal incentives provided by the Ministry of Finance, Economic Planning and Development through different budgets to the local recyclers were also not examined.

The audit covered the period 2018-19 to 2021-22 and where applicable, facts and figures for periods prior to 2018-19 and after 2021-22 were included in the report.

1.6 Audit Approach and Methodology

The audit was conducted in accordance with the International Standards of Supreme Audit Institutions¹. Different methodologies were used to understand the audit area, along with obtaining sufficient, relevant and reliable audit evidence to support the conclusions and recommendations.

1.7 Methods Used and Reasons for Gathering and Analysing Data

The quantitative and qualitative data were gathered from the files and documents available at the MoLG and the SWMD, wherein information on policies, processes, systems, procedures and practices were obtained. The details of the strategic areas as elaborated in the strategic plans as well as relevant provisions from the existing laws and regulations were consulted.

¹ The International Organisation of Supreme Audit Institutions is the professional body of Supreme Audit Institutions in countries that belong to the United Nations or affiliated to its specialised agencies. The National Audit Office is the Supreme Audit institution for Mauritius and a member of the professional body.

Interviews with key personnel, as listed in **Appendix I** at operational, middle and senior management levels were conducted to confirm information from the files and documents, and to obtain additional explanations wherever applicable. The data were compiled and analysed to provide sufficient evidence to support the audit findings and conclusion in view of formulating appropriate recommendations.

1.8 Assessment Criteria

Assessment Criteria are standards that have been used as a basis for evaluating the evidence collected, developing audit findings and reaching conclusion on the audit objective. Audit findings are developed by comparing the factual situation (the conditions) with the assessment criteria.

The assessment criteria used in the report were extracted from the Local Government Act and the Environment Protection Act and relevant regulations made thereunder as well as the strategic plans and publications from international organisations.

1.9 Data Validation

The SWMD was provided with the criteria, findings, root causes, recommendations and conclusion to confirm their relevance, accuracy and suitability. The responses from the SWMD on the contents of the report were included therein.

1.10 Structure of the Report

The remaining part of the Report covers the following:

- Chapter Two describes the roles, responsibilities and functions of the key players, the regulatory framework and other relevant aspects of solid waste management.
- Chapter Three presents the audit findings, root causes and recommendations followed by the conclusion on whether the measures undertaken to sustainably manage solid waste were adequate for ensuring maximum waste diversion from the landfill.

This page intentionally left blank

CHAPTER TWO

DESCRIPTION OF THE AUDIT AREA

This Chapter describes the roles, responsibilities and functions of the key players, the regulatory framework and other relevant aspects of solid waste management.

2.1 Roles, Responsibilities and Functions of Key Players

In January 2015, the Solid Waste Management Division (SWMD) of the then Ministry of Local Government and Outer Islands, was transferred to the then Ministry of Environment and Sustainable Development.

Hence, the management of solid waste as illustrated in **Appendix II** was assigned to both the Ministry of Environment, Solid Waste Management and Climate Change (MoECC) and the Ministry of Local Government and Disaster Risk Management (MoLG), the parent ministries of SWMD and Local Authorities (LAs) respectively.

2.1.1 Ministry of Environment, Solid Waste Management and Climate Change

The vision of the MoECC is to achieve a cleaner, greener and safer Mauritius in a sustainable manner through the protection and management of the environmental assets, mainstreaming sustainable development principles in different sectors of the economy and managing solid and hazardous wastes.

Its mission in relation to solid and hazardous wastes management is to devise an appropriate legal and policy framework to minimise negative impact on human health and the environment.

- *Solid Waste Management Division*

The mission of the SWMD is to ensure an efficient and sustainable management of solid and hazardous waste along with protecting public health and the environment. In 2021-22, the SWMD was manned by a blend of technical and administrative cadre with the support of the general services cadre, human resource, finance and procurement cadre. The composition of the technical and administrative cadre unit is illustrated in **Appendix III**.

2.1.2 Ministry of Local Government and Disaster Risk Management

The MoLG is responsible for the formulation of appropriate policies and strategies and the establishment of a necessary legal framework to ensure that entities under its purview operate smoothly to contribute effectively towards achieving national objectives. As part of its key functions, the MoLG ensures that the LAs comply with the provisions of the Local Government Act (LGA) for their service delivery and for performing their statutory duties efficiently. The main functions of the key players in managing solid waste are illustrated in **Appendix IV**.

2.2 Laws and Regulations for Managing Solid Waste

The regulatory framework for Solid Waste Management comprises the Environment Protection Act (EPA) and the LGA and relevant regulations made thereunder, and the Waste Management and Resource Recovery Act 2023 (WMRRA).

2.2.1 The Waste Management and Resource Recovery Act

The Waste Management and Resource Recovery Act was passed by the National Assembly in April 2023. The Act provides for the regulatory framework to ensure the environmentally safe and sound management of solid and hazardous wastes and a sustainable waste management system through the adoption of a circular economy approach focusing on waste reduction, reuse, material recovery and recycling and to provide for matters related thereto.

2.3 Solid Waste Management Strategies and Plans

The Strategic Plans covering the periods 2005-10 and 2011-15 were prepared in-house by the SWMD. In 2017, the SWMD spearheaded a Consultancy Study for a new SWM Strategy and Action Plan with the financial assistance of the Agence Française de Développement.

▪ *Main Recommendations – Solid Waste Management Strategy 2005-10 and 2011-15*

The main recommendations of the strategic plan 2005-10 were focused on minimisation of waste production and maximisation of value derived from environmental waste treatment and disposal. Other measures were related to the construction and upgrading of transfer stations and the setting up and operation of compost plants.

The SWM Strategy 2011-15 was developed to render the waste management sector as efficient as possible. Government's aim for future initiatives in relation to the total volume of waste was to increase recycling and at the same time reduce the volume of landfilled waste.

▪ *Strategy and Action Plan for Solid Waste Management and Resource Recovery System*

The new Strategy and Action Plan (2021-25) aims at maximising resource recovery and recycling in the short to medium term, while also tapping the energy recovery potential in the long term. The Consultancy Study comprised two phases. Phase I consisted, amongst others, of the preparation of the Strategy and Action Plan, including a baseline review. As for Phase II, the Consultants submitted a feasibility report of the selected options and prepared the Terms of Reference for the bidders.

▪ *Setting up of Inter-Ministerial Committee*

In August 2019, Government set up an Inter-Ministerial Committee to look into the urgent need of finding alternative ways for disposing of wastes. The Inter-Ministerial Committee set up a Technical Committee (TC) to review the existing policy, planning and institutional framework regarding SWM as well as the financing of waste management costs, assess the status of resource recovery and recycling and propose policies and strategies for enhancement. As per its terms of reference, the TC submitted a report to the SWMD in January 2020.

CHAPTER THREE

FINDINGS, ROOT CAUSES, RECOMMENDATIONS AND CONCLUSION

The Chapter presents the audit findings, root causes and recommendations followed by the conclusion on whether the measures undertaken to sustainably manage solid waste were adequate for ensuring maximum waste diversion from the landfill.

3.1 Shortcomings in Solid Waste Management Planning

The strategic plans for the periods 2005-10, 2011-15 and the new Solid Waste Management Strategy and Action Plan 2021-25 contained various measures for diverting wastes from the landfill. However, the following lapses were noted.

3.1.1 Strategic Plans not Approved

Criteria: According to good practices, Ministries and Departments engaging in strategic planning should formally ensure that their strategic plans are approved by Government for guiding policy and budget decisions².

Condition: The Strategic plans for 2005-10 and 2011-15 were not sent for approval by the SWMD or by the MoLG, responsible for managing waste during that period.

3.1.2 Unnecessary Delay in seeking Approval from Government for Phase I and II

Condition: The Consultants submitted the report for Phase I of the new SWM Strategy and Action Plan 2021-25 in December 2017. The MoECC sought approval from Government in July 2020, that is, with a delay of 31 months.

Due to the inordinate delay in securing approval for Phase I, the preparation of Phase II of the new Strategy and Action Plan 2021-25 started in November 2020 instead of August 2019. Meanwhile, a Technical Committee (TC) was set up in August 2019 to find alternative ways for disposing of waste. The TC submitted its report in January 2020. Government took note of the recommendations contained in the reports from the TC and Phase II in August 2021.

Consequences: Several Programmes of the Strategic Plan 2005-2010 related to effective solid waste management, as illustrated in **Table 1** were not implemented. The details were extracted from the Performance Audit Report entitled “Efficiency and Effectiveness of Managing and Operating Solid Waste Transfer Stations” issued in 2011 by the National Audit Office.

² Government Finance Officers Association (GFOA). The GFOA founded in 1906, represents the public finance officials throughout the United States and Canada, www.gfoa.org.

Table 1: Outcome of the Programmes related to Solid Waste Management

Programmes	Tasks	Outcome
Programme 2	<ul style="list-style-type: none"> • Construction of two new Transfer Stations • Segregation of Waste at Source by two Municipal Councils 	Not Implemented
Programme 5	<ul style="list-style-type: none"> • Construction of Nine Civic Amenity Centres 	Not Implemented
Programme 6	<ul style="list-style-type: none"> • Construction of Two Composting Plants 	One Compost Plant constructed at La Chaumiere. The company ceased operation in 2017.

Source: NAO Performance Audit Report 2011

With regards to the strategic plan 2011-15, various tasks that were developed in view of enhancing the recycling of solid waste were not implemented within the specified period. Under the Strategic Area ‘Resource Recovery’, eight tasks out of nine proposed were not implemented. Further details are provided in **Appendix V**.

Root Cause: There was inadequate commitment from the SWMD, the MoLG and the MoECC to seek timely approval from Government.

Recommendations

- A policy decision must be taken for the Ministry to ensure that Strategic Plans are approved by Government within a reasonable time.
- The SWMD should ensure that the waste management system becomes a top priority. A Project Monitoring Committee at the MoECC must be set up that will henceforth, oversee and monitor the implementation of the projects and ensure that appropriate remedial actions are taken wherever there are deviations from the plan.
- The SWMD may consider hiring the services of experts to drive the implementation of projects for diverting wastes from the landfill.

3.2 Gaps in the Existing Regulatory Framework

Criteria: According to UNEP Guidelines, a comprehensive legal and regulatory framework is fundamental to creating appropriate conditions for effective waste management. A dedicated legislation that deals with SWM holistically is mandatory.

Condition: The current Environment Protection Act (EPA) and the Local Government Act (LGA) and the regulations made thereunder were not comprehensive as they contained several loopholes and inconsistencies.

Consequences: The inconsistencies in the Acts and regulations did not allow the SWMD to ensure effective solid waste management holistically. A few examples are described below.

- Local Authorities (LAs) were responsible for waste collection whilst the operation and management of transfer stations and the landfill rest with the SWMD. However, Section 59 of the LGA which required the Permanent Secretary of the Ministry responsible for the subject of local government to formulate policies and strategies for waste minimisation and recovery and for the operation and management of disposal sites and Waste Management Facility was not amended.
- Section 60 of the LGA stipulated that any vehicle used for the conveyance of waste shall be licensed by the Ministry responsible for the subject of local government. However, this conflicted with Section 4 (2) of the Local Government (Dumping and Waste Carriers) Regulations in which it was stated that any person who intends to obtain a waste carrier licence has to make an application to the Minister to whom the responsibility for the subject of SWM is assigned.
- Bulky waste has neither been legally defined nor was there an indication as to whether it included only waste made of mixed materials such as furniture, mattresses, fixtures and fittings, e-waste and Construction and Demolition (C&D) waste or waste made up of one material such as wood, metal and glass or both.
- The Fourth Schedule of the EPA stipulated that “the enforcing agencies in relation to solid and hazardous wastes, shall be the Permanent Secretary to the Ministry responsible for the subject of local government.” However, pursuant to Section 2 of the Local Government (Dumping and Waste Carriers) Regulations 2021, an authorised officer responsible for enforcing the provisions of the Regulations included an enforcement officer of the Ministry responsible for the subject of SWM or any other officer of the Ministry designated by the Minister to whom the responsibility for the subject of SWM is assigned.
- Waste has not been defined in the EPA. Further, as per the LGA, waste includes any solid matter, other than hazardous waste while according to the Environment Protection (Industrial Waste Audit) Regulations, waste includes amongst others, any matter, whether solid, liquid, gaseous or radioactive, which is discharged, emitted or deposited in the environment.

Root Cause: There was not enough commitment from the Accounting Officer of SWMD for amending the regulations relevant for solid waste management following the transfer of the Division from the MoLG to the MoECC in January 2015.

3.2.1 Unnecessary Delay in Developing Solid Waste Management Legislations

Condition: The proposal to prepare a Waste Management Bill was spelt out in the Strategic Plan 2005-10 but was continuously rolled over. In 2021, the SWMD procured the services of a Consultancy team for the drafting of an Integrated (Solid and Hazardous) Waste Management

Bill, renamed the Waste Management and Resource Recovery Bill which was passed by the National Assembly in April 2023. As of August 2023, it was not yet proclaimed.

Consequence: In the absence of an integrated legislative framework, the EPA and the LGA and the regulations made thereunder contain various inconsistencies and outdated provisions remaining in force. The delay in the proclamation of the Act has deterred the SWMD from ensuring effective SWM.

Root Cause: There was inadequate planning for the timely appointment of experts for developing dedicated solid waste legislations. Inordinate delay at the AGO for finalising the relevant regulations.

Recommendation

The Accounting Officer of the SWMD should ensure that the Waste Management and Resource Recovery Act is proclaimed promptly.

Ministry's Response

The fragmented provisions existing under the EPA and LGA have been reinforced and integrated into the new Act. Other Regulations under the new Act need to be developed and the existing regulations under LGA and EPA need to be repealed.

3.2.2 Unnecessary Delays in Developing Other Regulations

Criteria: The development of some regulations pertaining to the C&D wastes, segregation of waste at source, Extended Producer Responsibility (EPR) and scrapyards facilities are essential for the implementation of projects focusing on resource recovery and recycling.

Condition: These regulations were either under preparation or in the process of finalisation at the level of the Attorney General Office (AGO). Moreover, the development of a dedicated regulation for bulky wastes was not considered by the SWMD.

- *No Regulations for Construction and Demolition Wastes*

Condition: The SWMD decided to set up a proper regulatory framework for C&D waste. The regulations would make the necessary provisions to provide for an effective and efficient C&D waste management system, prioritising resource recovery and recycling which are important for moving towards a circular economy. In March 2022, the SWMD initiated preliminary discussions with the UNDP for funding the consultancy services for the drafting of the regulations. Since August 2022, the ToR for the consultancy services have been submitted to the UNDP. As of August 2023, the regulations for C&D Wastes were not yet drafted.

Recommendation

In view of the potential increase of C&D waste and to ensure effective management thereof, the Accounting Officer should expedite matters for the drafting of the Regulations.

- *Regulations for the Segregation of Waste at Source not yet proclaimed*

Condition: With the setting up of composting plants and sorting units, a proper and effective waste segregation process was vital to ensure a high-quality feedstock to the facilities. In January 2023, the draft regulations were sent to the AGO for vetting. In the meantime, unsorted wastes were still directed to the landfill.

Recommendation

The Ministry should liaise with the AGO so that the regulations are finalised promptly and actions must be taken to sensitise the citizens to promote segregation of waste at source.

- *Regulations for Extended Producer Responsibility not yet proclaimed*

Condition: The SWMD reported that about 130 million Polyethylene Terephthalate (PET) bottles were injected into the local market and the rate of collection was about 40 per cent despite several financial incentives schemes for recycling were offered by Government. On the other hand, about 50 to 60 million aluminium beverage cans were placed in the local market. But their collection /recycling rate was higher due to their increased economic value.

The SWMD in collaboration with the Department of Environment drafted the EPR Regulations for the management of post-consumer beverage containers (including PET bottles) in the year 2021. It is expected that with the introduction of the EPR regulations on post-consumer beverage containers which include mainly PET and high-density polyethylene plastic bottles, the collection rate would increase. As of April 2023, the SWMD informed that the regulations have been sent to the AGO for vetting.

Recommendation

The promulgation of the regulations for the management of post-consumer beverage containers (including PET bottles) can be used as a deterrent to further increase the collection rate. To note that countries such as Germany and Estonia have been successful in diverting plastics products from the landfill with the regulations and incentives put in place.

Ministry's Response

Regulations for post-consumer beverage containers have been re-drafted in light of the new WMRA and submitted to the State Law Office for vetting.

NAO's Comment

The draft regulations were sent to AGO in July 2022.

- *No Regulations for the Setting up of a Scrapyard Facility*

Condition: The SWMD reported that there was no official disposal site or management system for scrap vehicles. In that context, the Ministry commissioned a feasibility study for the setting up and operation of a recycling facility for the de-pollution, dismantling and recycling of End-Of-Life Vehicles. The feasibility report was submitted in April 2022. As of February 2023, the

preparation of a regulation by the SWMD for the issue of licences for the setting up and operation of scrapyards with specific conditions was still ongoing.

Recommendation

The setting up and operation of an End-of-Life Vehicles recycling facility for de-pollution, dismantling and recycling would provide a sustainable solution for the effective management of scrapped vehicles. Hence, the SWMD in collaboration with the Ministry of Land Transport and Light Rail should work together to convert the project proposal into reality. An effective consultation and coordination among the stakeholders is warranted.

Ministry's Response

The Regulations need to be made concurrently with the regulations on End-of-Life Vehicle being made by the Ministry of Land Transport and Light Rail.

▪ ***No Regulatory Guidance on the Management of Bulky Waste***

Condition: There were no regulations or comprehensive guidelines for the management of bulky wastes which defined, amongst others, the roles and responsibilities of waste generators, recyclers, enforcement agencies, the frequency and type of bulky waste campaigns to be undertaken, as well as the storage, the conveyance and disposal thereof.

Consequence: In the absence of regulations or comprehensive guidelines on bulky wastes management, unsegregated bulky wastes including e-wastes were disposed of during the bulky waste collection campaigns. Effective solid waste management was not ensured as almost all of the wastes generated were disposed of at the landfill.

Root Cause: The Technical Officers at the SWMD did not have the appropriate expertise for the timely development of relevant regulations.

Recommendation

The SWMD in consultation with LAs should develop comprehensive guidelines/regulations to improve the management of bulky waste, defining the roles, responsibilities and obligations of each stakeholder.

3.3 Weak Institutional Framework

Criteria: Institutional arrangements for SWM cover organizational structures and the roles and responsibilities of all the stakeholders, including interagency coordination, procedures and methods, amongst others. In the strategic plan 2011-15, it was stated that the SWMD would require proper harmonization and coordination with LAs for the implementation of SWM projects to guarantee adequate performance at all stages of their execution.

Condition: Several measures of the strategic plans, such as composting of organic wastes as well as the purchase of household coloured bins were undertaken by LAs. However, in the absence of a strong institutional arrangement between the SWMD and the MoLG, the measures

undertaken by LAs in view of diverting waste from the landfill were not executed with proper planning.

Consequence: The consequences have been explained in the respective paragraphs hereunder.

Recommendation

Appropriate infrastructure planning and coordination with the LAs must be strengthened by the SWMD. A Joint Monitoring Committee co-chaired by the MOECC and the MoLG must be set up to avoid waste of both financial and non-financial resources with regards to implementation of projects that are undertaken jointly by the SWMD and the LAs.

Ministry's Response

Section 9 of the Waste Management and Resource Recovery Act provides for the setting up of a National Waste Management Coordination Committee which shall be responsible for bringing the shift to circularity. Further, Section 12 of the Act provides for the setting up of a Technical Advisory Committee.

NAO's Comment

None of these committees were set up as of August 2023.

3.3.1 Poor Management of Bulky Waste

In 2019, the Centralised Cleaning Coordination (3C) Committee was set up to coordinate all cleaning activities and embellishment programmes. The bulky waste collection was organised by the 3C Committee in collaboration with the SWMD, the MoLG and LAs.

The 3C Committee was administratively set up under the aegis of the MoLG. Unlike the Environment Coordination Committee, whose Terms of Reference were defined under Section 14 of the EPA, the mandate of the 3C Committee were not defined under any legal framework. Moreover, the 3C Committee did not consider the organisation of the thematic collection of bulky wastes during the campaigns. Hence, in February, March and August 2021, unsorted bulky waste was disposed of at the CACs.

In June 2022, the National Environment Cleaning Authority (NECA) replaced the 3C Committee to bring a One-Stop-Shop approach for cleaning and embellishment of the country, thus, improving coordination results and accountability. The Authority, under the aegis of the Prime Minister's Office, will spearhead the national cleaning agenda.

Recommendation

The SWMD in collaboration with the NECA and LAs should ensure that thematic collections of bulky waste are conducted to optimise the utilisation of CACs to enhance recycling.

3.3.2 Purchase of Household Coloured Bins still pending

According to the Consultants of the new SWM Strategy and Action Plan, an advanced resource recovery would be obtained by introducing a systematic segregation and material recovery of household wastes. The development of two Pilot Projects in the North and West³ of the country would act as a catalyst to the new solid waste management system. In that respect, the acquisition and distribution of some 100,000 coloured bins were considered.

In September 2022, the SWMD proposed that each LA procures the required coloured bins for distribution to the households in the pilot regions as they had the required experience and logistics.

As of August 2023, none of the LAs had initiated procurement procedures for the coloured bins.

Recommendation

There should be adequate coordination among all stakeholders involved in the acquisition and distribution of bins.

3.3.3 Placement of Eco Bins by the SWMD not Successful

According to the SWMD, some 2,000 tonnes of PET bottles were collected for recycling annually, resulting in a collection efficiency rate of some 45 per cent. The remaining were mixed with normal wastes and ended up in the landfill. In the financial year 2020-21, the SWMD proposed to install eco-bins to increase the capture rate to 80 per cent.

However, according to the SWMD, as the EPR Regulations for PET bottles were under preparation, the project for the purchase and installation of 400 eco-bins was kept in abeyance in June 2021. As of August 2023, no further development was noted.

3.3.4 Purchase of Eco-Bags not Materialised

The SWMD also proposed to provide 8,000 collection bags to 1,000 households for the annual collection of some 300,000 PET bottles in four pilot regions of the country. The total estimated cost for the project amounted to some Rs 875,000.

The MoECC launched a request for sealed quotations for the purchase of the 8,000 eco-bags in October 2020. In January 2021, the Bid Evaluation Committee recommended a fresh bidding exercise due to major deviations in the cost estimates. As of August 2023, no further developments were noted.

Recommendation

The purchase and distribution of eco-bins and eco-bags can be reconsidered as a short-term measure for the diversion of PET bottles from the landfill.

³ North Region included the district of Port-Louis, Pamplemousses, Riviere du Rempart, Moka and Flacq) and West Region includes the district of Black River, Savanne, Plaine-Wilhems and Grand Port).

3.3.5 Composting of Market Waste by Local Authorities Ineffective

Markets and fairs managed by LAs generated about 8,750 tonnes of vegetable wastes annually, which ended up at the landfill. In 2018 and 2019, the Municipal Council of Vacoas-Phoenix proposed to set up a Compost Plant at Henrietta at an estimated cost of Rs 8.5 million. The Council intended to collect around 625 tonnes of market wastes annually for composting. However, there was no further development on the implementation of the project.

The composting of market wastes was taken up again in the budget 2020-21. The SWMD had no objection to the MoLG proceeding with the setting up of four composting plants. The Technical Committee set up by MoLG in July 2020, comprising representatives of the SWMD, among others, recommended, that the project for composting of market wastes be undertaken on a pilot basis at Henrietta.

An amount of Rs 5 million was earmarked under the National Environment and Climate Change Fund (NECCF) for its implementation. The project was expected to be completed by June 2021 and bids were to be launched by December 2020. However, the estimated cost increased from Rs 5 million to Rs 16.3 million due to an escalation in the prices of construction materials and freight, amongst others. The cost was reviewed in August 2022, leading to a further increase to Rs 23 million. In December 2022, the compost project was kept in abeyance until the award of a contract for new compost plants by the SWMD on a PPP basis.

3.3.6 Statistics on the Volume of Waste Generated

As per the strategic plan 2011-15, most of the LAs did not have a functional record-keeping method to assess the ward-wise and street-wise volumes of waste handled so as to improve the quality of planning. As of April 2023, it was noted that statistics on waste generated at household, commercial and industrial levels were not kept for effective SWM planning. The SWMD informed that information relating to the annual cost of waste collection for the period 2012 to 2022 including the total cost of management and operation of the transfer stations and landfill was not available.

In April 2023, the SWMD informed that under Section 17 of the Waste Management and Resource Recovery Act, LAs have to submit in writing and at such intervals, information on the type and quantity of waste expected to be generated in their respective administrative area.

Root Cause: The SWMD did not initiate any action to request statistics from MoLG on the volumes of waste generated ward-wise and street-wise as per the strategic plan 2011-15.

Recommendation

Pending the proclamation of the Waste Management and Resource Recovery Act, administrative arrangements can be made with LAs for compiling statistics on waste generation.

3.4 Composting of Wastes

Criteria: The objectives of the composting scheme at the household level were to adopt responsible attitudes towards waste generation and disposal. The construction of compost plants at the national level was to divert waste from the landfill.

Condition: There were shortcomings with regards to the home composting schemes and the setting up of the compost plants, as detailed in the respective paragraphs.

Consequence: The primary objective of diverting waste from the landfill was not met.

Root Causes: The home composting scheme was not effectively marketed among the householders. As regards composting at the national level, the company set up in 2011 discontinued its operation in 2017.

3.4.1 Lapses in the Composting Scheme at Household Level

Criteria: The distribution of 25,000 home composters by the LAs during the period 2012 to 2014 that was expected to divert 10,000 tonnes of wastes from landfilling and to bring a saving of Rs 25 million in the collection and disposal costs did not materialise.

Condition: The Scheme was further pursued in the financial years 2019-20 and 2020-21 and was driven by the MoECC. Some 9,800 household compost bins were distributed⁴. However, no assessment of the effectiveness of this initiative was carried out thereafter by the MoECC.

In January 2015 in view of enhancing the outcome of the scheme the responsibility for implementing same was transferred to the SWMD. An amount of Rs 8.7 million was spent for the acquisition of 5,000 bins under the NECCF in 2021-22 with the objective to divert 2,738 tonnes of wastes. However, as of August 2023, the home composters were not yet distributed.

Ministry's Response

As at August 2023, 957 of the 5,000 bins were distributed. The SWMD stated that they do not have the required logistics and resources for the transportation and distribution of bins.

NAO's Comment

Some 80 percent of the bins have not been distributed.

3.4.2 Ineffectiveness of the Compost Plant at La Chaumiere

Criteria: In the strategic plan 2005-10, it was estimated that with the construction of two compost plants, the SWMD would save on transportation and other costs.

Condition: The construction of one of the composting plants was completed in May 2011 at La Chaumière and the contract of operation was awarded to a private company whereby it was agreed that a minimum of unsorted 300 tonnes of waste would be supplied daily.

During the period from May 2011 to May 2013, the company managed to produce 14,000 tonnes of compost for local consumption. The company ceased operation in May 2017 and has been under receivership since January 2018. Following the cessation of business, some 25,000 tonnes of unsorted waste were stacked at the transfer station. Since then, no new company has been set up to operate the composting plant. As of April 2023, these were not carted away.

⁴ NAO Annual Audit Report

▪ ***Carting Away of Stacked Wastes at La Chaumiere still Pending***

Condition: Following the fire outbreak in April 2017, some 5,000 tonnes of unburnt waste and about 20,000 tonnes of burnt waste were stacked thereto. Despite the Enforcement Notices issued in May 2017 and January 2021 by the Department of Environment requesting the company to cart away the wastes, no actions were undertaken.

In November 2022, tenders for the carting away of the wastes for an estimated amount of Rs 10 million were launched. As of January 2023, the contract had not been awarded.

Consequence: As the number of months the wastes had been stacked at La Chaumiere, the risk of leachate emission was real. No tests were carried out to assess the potential damage caused to the environment and the underground water.

Recommendation

The SWMD should finalise the tender procedures to cart away the accumulated stacked wastes at the La Chaumiere Compost Plant in order to avoid the risk of fire and to minimise the risk of potential environmental damage. The setting up of a Special Purpose Vehicle to take over the assets and liabilities of the company in receivership can be reconsidered. The entity can also benefit from the tipping fee of Rs 300 per tonne of waste recycled.

3.4.3 Implementation of the Material Recovery Facility Delayed

Criteria: From a financial perspective, the setting up of composting plants and sorting units (Material Recovery Facility) on a pilot basis required significant initial capital investments and implied several risks.

Condition: Pursuant to Section 5(b) of the Act, a Transaction Advisor was recruited by the Build-Operate-Transfer (BOT) Projects Unit to carry out a supplementary feasibility study to determine the appropriateness of implementing the projects on a PPP basis and to prepare the Request for Proposal (RFP) documents.

It was expected that the contract for the provision of Transaction Advisory Services Consultancy would be awarded by November 2021. However, the contract started in February 2022 for some Rs 6.5 million following a tender exercise by the BOT Projects Unit.

The construction of the composting plants and sorting units were proposed in 2021 to ascertain that the country is not fully dependent on landfilling while also ensuring that the target 12.5 of Sustainable Development Goal 12 is achieved. The SWMD has recently closed a Request for Proposal for the setting up of the composting plants and sorting units on a PPP basis.

Ministry's Response

The RFP documents for the Integrated Waste Processing Facility (IWPF) were launched in November 2022 and as of August 2023, the bids were being evaluated. It is important to highlight that a landfill is crucial, irrespective of any waste management strategies adopted.

In light of the saturation of the landfill, a new procurement exercise is currently being carried out.

3.5 Ineffectiveness of the Civic Amenity Centres

Criteria: The setting up of a network of CACs at the five transfer stations was announced in the Budget Speech 2020-21. In the financial years 2020-21 to 2022-23, an aggregated sum of Rs 19 million was provided under the NECCF for that purpose.

Condition: As of April 2023, instead of five, three CACs situated at La Chaumiere, La Laura and Poudre d'Or each costing around Rs 3 million, were set up by the SWMD. The first CAC became operational in November 2020, while the other two facilities started operations in October 2021 and July 2022 respectively. Several lapses, as elaborated in the respective paragraphs, were noted in the setting up and operation of the CACs.

3.5.1 Absence of a Feasibility Study for the Setting Up of Civic Amenity Centres

Criteria: According to good practices, a feasibility study is an assessment of the practicality of a proposed project and this is done by analysing technical, economic, legal, financial, operational and time feasibility factors. Market research studies are one of the most important sections of the feasibility study as it examines the marketability of the product or services.

Condition: The SWMD did not carry out a feasibility study before the setting up of CACs.

Consequence: In the absence thereof, the SWMD faced several challenges in ensuring the optimum use of the CACs to divert waste from the landfill.

Root Cause: This situation arose due to inappropriate planning. The amendment to the Local Government (Dumping and Waste Carriers) Regulations 2021 did not give the expected results.

Recommendation

To ensure efficient and effective operation of the CACs, the SWMD should carry out a feasibility study before embarking on forthcoming similar projects. The study should give prominence on accessibility, design, and the roles, responsibilities and obligations of the key players.

3.5.2 Limited Sensitisation and Awareness Campaigns

Criteria: The effective use of the CACs relied heavily on properly sensitised and knowledgeable citizens.

Condition: The education and awareness-raising actions undertaken by LAs were focused on the organization of bulky wastes collection campaigns. The distribution of flyers occasionally by the SWMD was inadequate to produce significant changes in the behaviour of the society.

Consequence: The volume of wastes disposed at the CACs by the householders compared to the collections emanating from bulky waste collections was on the low side.

Root Cause: The education and sensitisation campaigns were not properly planned.

Recommendations

- The waste collection and storage system at the CACs must be further improved by raising education and awareness of the different stakeholders. The citizens and the waste generators should continuously be sensitised on the existence of three CACs, the forthcoming CACs, and the acceptable recyclables at the CACs.
- The SWMD should collaborate with the Ministry of Information Technology, Communication and Innovation and other stakeholders for the development of similar mobile applications that may contain information on the location, the working hours and a list of acceptable wastes, amongst others.

3.5.3 *Ineffective Space Management at the Civic Amenity Centre at La Chaumiere*

Condition: Since December 2021, used tyres have been kept in the yard of the transfer station for more than one and a half years. The space allocated for C&D wastes was full for almost seven months in 2022, while the space allocated for wood wastes was full for five months in the same year.

According to the site visit reports of the Technical Enforcement Unit of the SWMD for 2021, 2022 and 2023, there were recurring space problems at the CAC with regard to the storage of used tyres and C&D wastes. In November 2022, the Technical Enforcement Unit confirmed that there was no space at the CAC as well as in the yard of the transfer stations.

Recommendation

The SWMD should ascertain that the bays for the storage of recyclables at the CAC are not overloaded and inform recyclers of the availability of adequate recyclables whenever necessary.

- ***Delay in the Carting Away of Recyclables***

Condition: An analysis of site visit reports for 2021 revealed that some 216,000 kg of used tyres were being carted away with a delay of eight months. Similarly, some 715,000 kg of C&D wastes remained at the CAC for more than eight months. The wastes were removed by an unregistered recycler from August 2021 to October 2021 despite the decision was not in compliance with the Local Government (Registration of Recycler and Exporter) Regulations 2013.

Moreover, the site visit report of 14 June 2021 revealed that the recycler for wood wastes was not complying with the provisions of the Memorandum of Understanding despite being contacted on several occasions by SWMD.

Consequence: The delay in carting away the recyclables led to an accumulation of wastes at a certain point in time. In addition to the risk of accelerated deterioration of the wastes, the space capacity was also affected.

Recommendation

The Ministry should consider entering into a contract with the recyclers so that recyclables are carted away according to the conditions stipulated in the agreement.

3.5.4 Ineffective Use of the Civic Amenity Centres at La Laura and Poudre d'Or

Condition: The CACs at La Laura and Poudre d'Or started operations in October 2021 and July 2022 respectively. From the date the CAC at La Laura became operational up to December 2022, some 77 tonnes of wastes were received, of which some 15 tonnes were carted away.

The site visit reports for the year 2022 revealed that the C&D wastes and the metal wastes compartments were utilised at some 5 and 20 per cent respectively while the waste oil compartment remained unutilised at the CAC located at La Laura. On the other hand, used tyres were kept in the open space in the absence of a dedicated compartment. The reports also indicated that plastics as well as some domestic wastes, collected between the end of March 2022 and May 2022 were kept in the carton and paper wastes compartments while the collections for the period September 2022 to mid-November 2022 were not properly segregated.

Furthermore, the recyclers were not collecting the recyclables on a regular basis despite reminders were being sent to them in July, September and October 2022 respectively. Since May 2022, some 12 tonnes of wood wastes were stacked up at the CAC. However, as at December 2022, only two tonnes were transferred by the selected recycler. Likewise, as from July 2022, recyclers were being requested to collect accumulated metal wastes of about 1.6 tonnes and 8.2 tonnes of PET bottles at the CAC. However, as of August 2023, the recyclables were still stacked at the CAC. As per the Local Government (Dumping and Waste Carriers) Regulations 2021, PET bottles are prohibited at the CAC.

With regards to the CAC at Poudre d'Or, some 38 out of the 112 tonnes of wastes received had been carted away as of December 2022. According to the site visit reports for the period September to December 2022, wastes deposited at CAC were mixed with domestic wastes. The Contractor responsible for the operation and maintenance of the Transfer Station was required to cart away the mixed domestic wastes to the landfill.

Recommendations

- In light of the shortcomings and observations made by the Technical Enforcement Unit on the performance of the contractors, the management and operation of the CACs should be reviewed and readapted to the exigencies of the waste recycling sector. The possibility of inviting Expression of Interest from potential promoters should be envisaged.

It is to be noted that in UK, all LAs have set statutory performance standards for the recycling and composting of household waste. The Lancashire County Council has made several alterations to the layout and facilities. The site attendants have been encouraging customers to segregate waste more efficiently, and a recycling-related bonus scheme has been introduced for that purpose.

- Schedule I Part III of the Local Government (Dumping and Waste Carriers) Regulations 2021 should be amended to include PET bottles and any other recyclables, which the SWMD considers could be temporarily stored at the CACs.

Ministry's Response

Since the operation of the three CACs, over 1,200 tonnes of wastes have been received while nearly 600 tonnes have been collected by recyclers. The construction of three additional CACs is planned at Bois Marchand, La Brasserie and Rose Belle. Land still needs to be identified and acquired.

NAO's Comment

The total tonnes of waste received at the three CACs and collected by the recyclers are considered low.

3.6 Ineffectiveness of Other Measures

3.6.1 Management of Used Tyres

According to the SWMD, around 4,500 tonnes of used tyres are generated annually, with an average of 600 tonnes disposed of at the landfill. The remaining tyres are either stored in garages, retreated or illegally dumped on barelands.

Criteria: Since August 2020, Government intended to set up a recycling unit for used tyres. The obligation of the SWMD will be to supply a guaranteed 3,000 tonnes of used tyres over a period of 10 years. The MoECC proposed to use the Build-Own-Operate route for the project due to lesser financial implications. The BOT Projects Unit registered the project on 9 March 2017 and a feasibility study was submitted on 27 March 2017. The feasibility study was re-actualised in July 2020. A financial incentive of Rs 2,000 would be provided for each tonne of used tyres recycled locally or exported to a potential developer.

Condition: In a meeting of the negotiation panel held in December 2021, the views of the BOT Projects Unit were sought with regard to some outstanding elements for executing the project. The Departmental Bid Committee met in January 2023 to take cognisance of the minutes of proceedings of the negotiation committee and noted that the preferred bidder failed to meet the conditions stipulated in the letter issued by the SWMD dated 2 September 2022 and reiterated in another letter dated 28 December 2022. As of August 2023, no further developments were noted.

Consequence: Used tyres were still stored at the landfill.

Root Cause: The SWMD did not put enough sustained effort to ensure the project was implemented in a timely manner.

Recommendation

The opportunity to divert some 3,000 tonnes of used tyres annually from the landfill which depends on the final negotiations with the preferred bidder will have to be resolved by the SWMD.

Ministry's Response

Negotiation with the preferred bidder is ongoing. In the meantime, some companies have been set up and are collecting and exporting used tyres.

3.6.2 Information, Education and Communication

Criteria: As the successful operation of composting plants and sorting units relied heavily on a proper and effective waste segregation process, the SWMD intended to carry out sensitisation and awareness campaigns for that purpose.

Condition: However, as the implementation date of the Material Recovery Facility was revised to mid-2025, the appointment of the consultancy firm was postponed.

Consequence: As the implementation of the projects was delayed so were the sensitisation and awareness campaigns. In the meantime, wastes continued to be disposed of at the landfill.

Root Cause: The SWMD did not put enough sustained effort to ensure that the project was implemented in a timely manner.

Recommendation

The SWMD and the MoECC should expedite the final decision on the project implementation.

Ministry's Response

Procurement of Receptacles – The bins will be provided some eight months prior to the start of operation of the IWPF.

Education and Sensitisation Campaign – To ensure effective waste segregation at source, sensitisation and awareness-raising will be developed and implemented some eight months prior to the operation of the IWPF.

3.6.3 Anaerobic Digestion of Organic Wastes

Criteria: Over the last 10 years, an average of 500,000 tonnes of wastes have been landfilled annually, out of which more than 50 per cent are organic wastes, while over 87 per cent of the total primary energy requirements of the island are met through fossil fuels. In view of alleviating the issues, anaerobic digestion comes as a potential solution for the production of primary energy.

Condition: The Department of Environment approached the Climate Technology Centre and Network (CTCN)⁵ for providing technical assistance for this project. Due to a lack of in-house expertise, the CTCN procured the Consultancy Services of the Council of Scientific and Industrial Research and the University of Mauritius for the commissioning of a feasibility study on anaerobic digestion. The technical assistance provided by the CTCN has enabled it to make

⁵ The CTCN provides at the request of developing countries, technology solutions, capacity building and advice on policy, legal and regulatory frameworks tailored to the needs of individual countries.

a step forward in having a more sustainable waste management system while also potentially increasing the share of renewable energy in the energy mix for the country.

The results of the feasibility study will be used as inputs to a Transaction Advisory Consultancy Services contract procured by the SWMD for the preparation of a detailed Public-Private Partnership proposal and the RFP documents to invite potential project promoters for the setting up and operation of a biogas plant. The project will assist in the mitigation of greenhouse gases through the production of renewable energy.

On 26 October 2022, SWMD sought confirmation from the Central Electricity Board (CEB) as to whether the entity would be agreeable to drive the anaerobic digestion project from the procurement stage to the implementation phase. However, it was brought to the attention of CEB that the RFP documents on process engineering will be drafted by the SWMD and that a Waste Supply Agreement will have to be signed with the bidder while a Power Purchase Agreement will have to be signed between the bidder and the CEB. As of January 2023, the proposal from SWMD was still under discussion at the level of the CEB.

Consequence: Waste continued to be landfilled instead of being converted into energy.

Root Cause: The SWMD did not put enough effort to implement the project in a timely manner.

Recommendation

The Ministry and other stakeholders, responsible for the setting up of a biogas plant for anaerobic digestion should ensure timely realisation of the project.

Ministry's Response

The way forward is to move towards the implementation of the project on a PPP basis and the CEB has agreed to spearhead the procurement exercise of the project.

3.7 Conclusion

Good practices require an appropriate eco-system, including policies, strategies and actions, along with a robust legal and institutional framework to ensure effective solid waste management and maximum waste diversion from the landfill. This Performance Audit assessed whether the measures undertaken to sustainably manage solid waste were adequate for ensuring maximum waste diversion from the landfill. The audit conclusion is as follows.

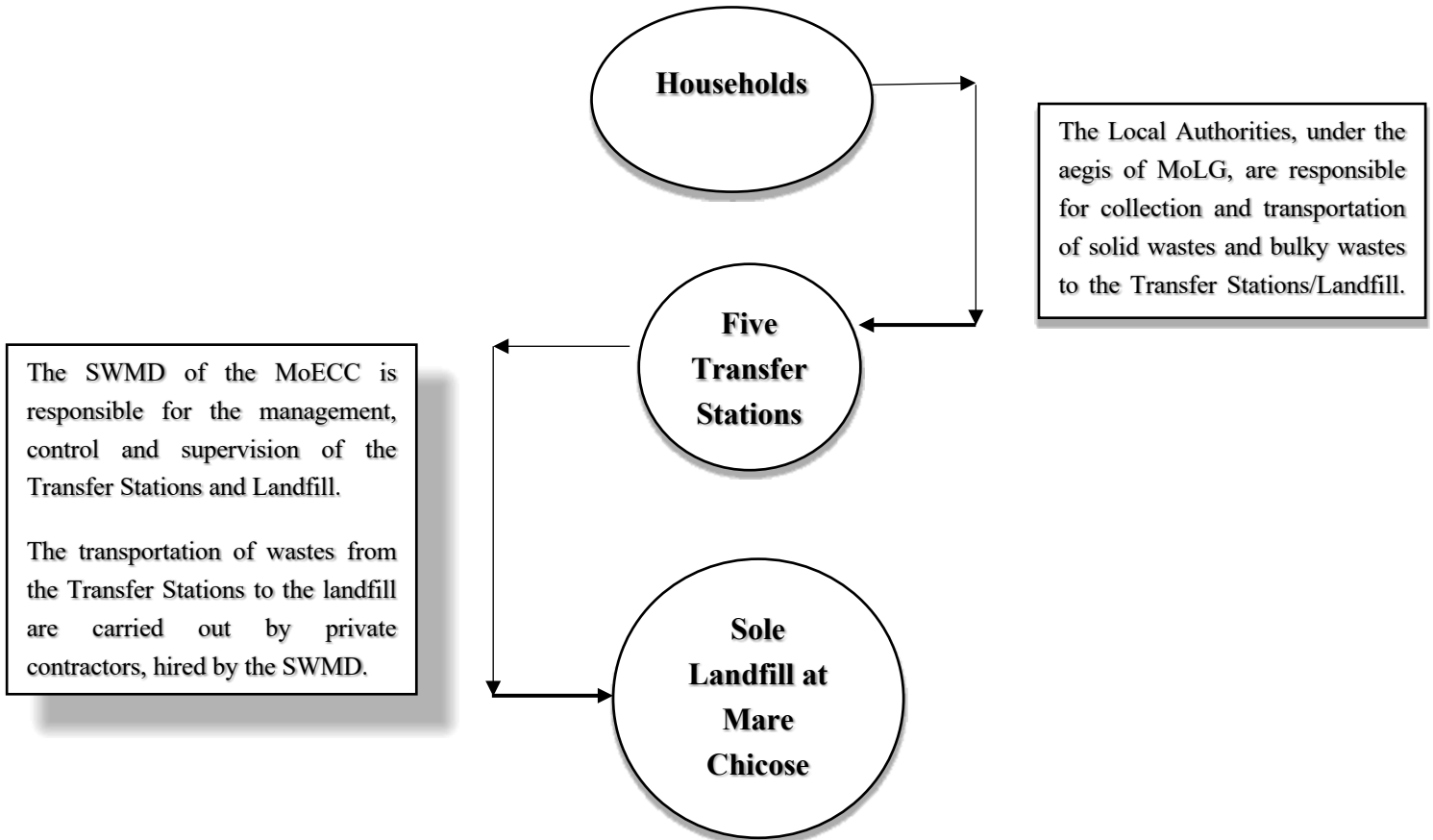
As solid waste generation is projected to increase to some 650,000 tonnes by 2030, the current disposal practice through the landfill is not sustainable. To move towards sustainable solid waste management, the SWMD, MoLG and the MoECC have been proposing a strategic approach. However, most of the measures geared towards composting and recycling, have not been successfully implemented to ensure maximum waste diversion from the landfill.

The economic viability of reuse through composting and recycling efforts is constrained by the absence of a culture of waste segregation at source, appropriate sorting infrastructures and aggressive education and awareness campaigns. The existing legal framework and institutional arrangements are inadequate for sustaining waste reuse and recycling. The introduction of appropriate regulations to move towards a circular economy is taking a very long time.

Interview with Key Personnel during the Audit

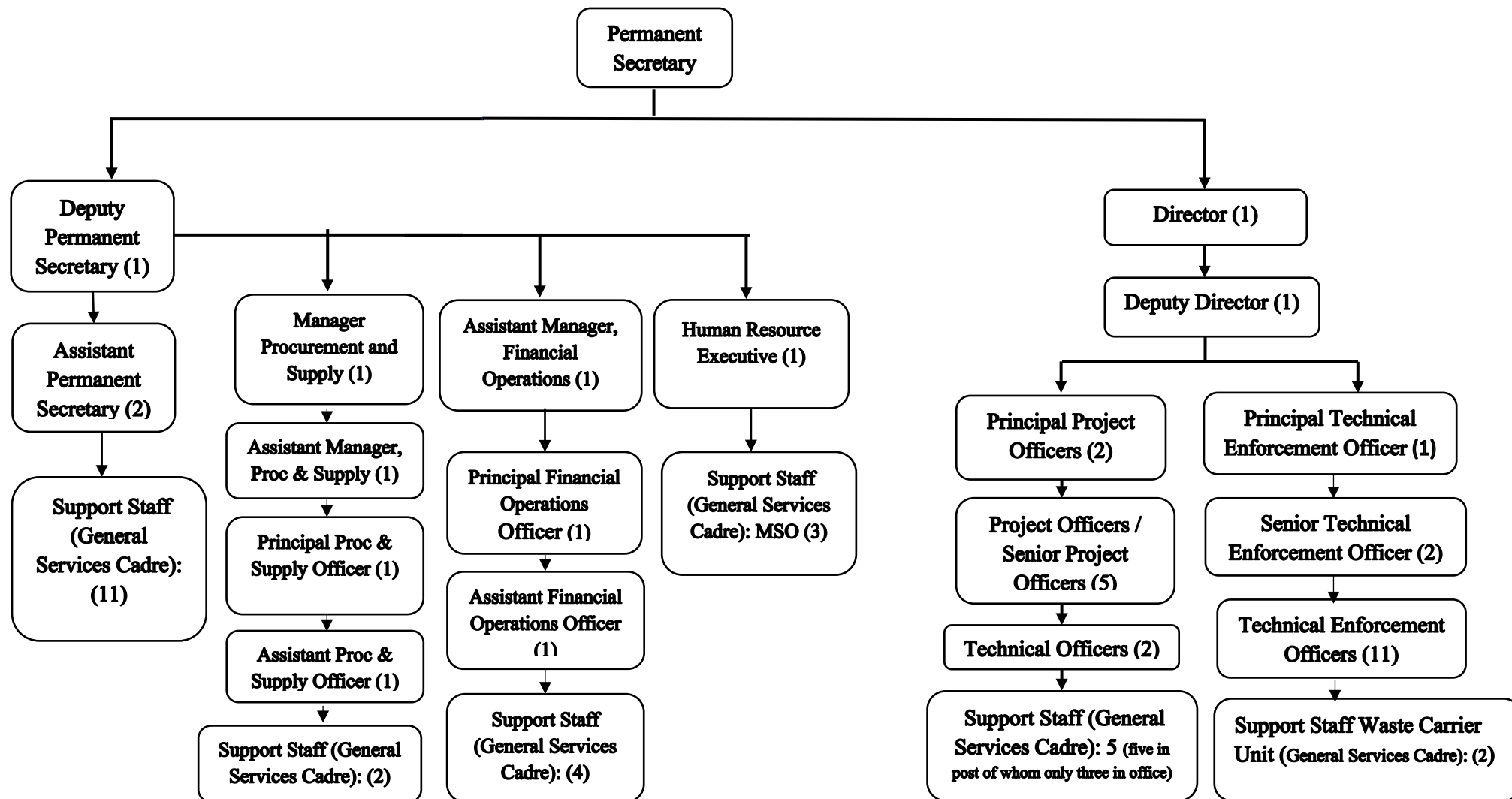
Ministry of Environment, Solid Waste Management and Climate Change (Solid Waste Management Division)	Permanent Secretary
	Deputy Permanent Secretary
	Assistant Permanent Secretary
	Director
	Deputy Director
	Principal Project Officer
	Project Officer
Principal Technical Enforcement Officer	
Ministry of Local Government and Disaster Risk Management	Deputy Permanent Secretary
	Assistant Permanent Secretary

Solid Waste Management in Mauritius



Note 1: Waste collected at the southern part of the island are transferred to the Mare Chicose Landfill directly.

Organisational Chart of Solid Waste Management Division



Implementation of Measures for Sustainable Solid Waste Management

Main Functions of the Key Players in Managing Solid Waste

Key Players	Key Functions
Ministry of Environment, Solid Waste Management and Climate Change	Devise policies, strategies and action plans for a sound environment management
	Attend to complaints made by the public regarding environmental pollution
	Upgrade and embellish infrastructure and enhance the environment
Solid Waste Management Division	Devise policies, strategies and develop programmes for the environmentally sound management of different waste streams, including hazardous wastes
	Control and supervise waste management facilities (transfer stations, Civic Amenity Centres, interim hazardous waste storage facility and sanitary landfill) in Mauritius
	Promote Circular Economy through Prevention, Re-use, Recycling and Resource Recovery
	Enforce legislations related to solid and hazardous waste management
	Register Scavenging Contractors, Recyclers and Exporters of wastes
Ministry of Local Government and Disaster Risk Management	Ensure that Local Authorities comply with the provisions of the Local Government Act
	Ensure that Local Authorities are performing their statutory duties efficiently
	Define policies to assist Local Authorities to better perform their duties
	Make regulations with a view to providing the appropriate legal framework for the Local Authorities to comply with the Local Government Act for their service delivery

Status of Measures of the Strategic Plan 2011-15

Strategic Areas	Specific Objectives	Estimated Costs Rs Million	Tasks	Implemented (I) / Not Implemented (N/I)
Resource Recovery	<p>1. Move from a waste management system to a resource efficient system</p> <p>2. Reduction of disposal costs by treating waste as a resource</p> <p>3. To put in place economic and legal incentives mechanisms that support recycling activities and decrease disposal i.e. incentives to minimise waste and disincentives to generate waste</p>	190	Segregation schemes at LA levels.	N/I
			Recycling of Supermarket wastes with a focus on cardboard and plastics wrap through Voluntary Initiatives.	N/I
			Drafting of an MoU and stakeholder consultation with businesses and recycling companies.	N/I
			Tender for the redesigning of transfer stations into Material Recovery Facilities and transfer of non-recyclables to la Chaumiere, La Brasserie and La Laura.	N/I
			Launching of Request for Proposal for the construction of two composting plants at Forbach and La Martiniere.	N/I
			Composting by LAs	N/I
			Distribution of home composters by LAs	N/I
			Introduction of a waste disposal fee at transfer station and landfill for Industrial and commercial operators.	N/I
			Ban on disposal of waste that can be valorised	N/I
Registration of Recyclers	I			
Provision of adequate disposal for the short to medium term and selection of appropriate treatment technologies for the long term	<p>1. To provide for adequate disposal capacity for the next five years</p> <p>2. Development of long-term treatment/disposal system</p>	476	Development of additional cells for waste disposal for the next five years.	I
			Feasibility study to analyse the various alternative technologies to cater for the long-term	I
Broader Community Involvement	Promote better use of resources and avoid waste		Liaise with the then Ministry of Business, Enterprise, Cooperatives and Consumer Protection so as to develop a sensitization programme to encourage consumers to purchasing longer lasting products and those made from recycled materials with a view to	I

<p>Secure the commitment of LAs and other partners</p> <p>Provide adequate support and facilitation to the LAs to use the various means of communication to sensitise and create awareness of the public.</p> <p>Collaborate with educational institutions</p> <p>Development of research projects in the field of solid waste management</p> <p>Reward efforts for waste reduction and minimisation</p> <p>Organise regular workshops and seminars with stakeholders</p> <p>Dissemination of information on waste statistics</p>	18.7	conserve scarce and non-renewable materials.	
		Liaise with the then Ministry of Finance and Economic Development and the Private Sector so as to explore new ways of purchasing which are more resource efficient.	Implemented with delay by the MoECC
		Initiate action to avoid and reduce waste at Government level and also use their purchasing power to increase markets for recycled materials.	Implemented on small scale
		Set up a Special Committee under the current Solid Waste Coordination Committee to brainstorm on the issue of SWM, learn from the experiences of others and come up with a model Annual Action Plan for implementation by LAs.	N/I
		Arrange for central publication of pamphlets on proper waste handling and disposal for distribution to households.	N/I
		Liaise with MCA and/or MBC with a view to including SWM in specific programmes on civic awareness.	Implemented with Delay
		Provide resource persons to deliver talks in village halls/councils to inhabitants about good SWM practices, backyard composting, etc.	Implemented with Delay
		Approach and discuss with the then Ministry of Education and Scientific Research for inclusion of the topic of SWM in primary and secondary school curricula.	N/I
		Approach the University of Mauritius and the University of Technology to mount special courses in Sanitary Science and SWM for central and local government staff and other interested students.	N/I
		Approach the Mauritius Research Council for funding a research project on a Waste characterisation study to determine waste composition and percentage of recyclables.	N/I
		Reward LAs having implemented innovative policies and practices in SWM.	N/I
		Encourage LAs to organise competitions amongst schools, clubs, other organisations for "Tidy your Area"	N/I
		Organise workshops on a regular basis for the benefit of stakeholders in the field of SWM.	N/I
Compilation of Waste Statistics	N/I		

National Audit Office

Air Mauritius Centre, John Kennedy Street, Port Louis, Mauritius
Tel: (230) 212 2096 Fax: (230) 211 0880 Web: <http://nao.govmu.org>