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Secretariat of the Pacific Regional Environment Programme

PacWastePlus
PACIFIC WASTE MANAGEMENT

This initiative is supported by **PacWastePlus**-a 72 month project funded by the European Union (**EU**) and implemented by the Secretariat of the Pacific Regional Environment Programme (**SPREP**) **to sustainably and cost effectively improve regional management of waste and pollution.**

Fiji National Waste Audit Analysis Report

August 2023

This Waste data collation, analysis and reporting for the Fiji National Waste Audit Analysis Report was guided by the overarching Regional Waste Data Collection, Monitoring, and Reporting (DCMR) Framework for the Pacific Island Countries and Territories (PICT).

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Our vision: A resilient Pacific environment sustaining our livelihoods and natural heritage in harmony with our cultures.

PacWaste Plus Programme

The Pacific – European Union (EU) Waste Management Programme, PacWaste Plus, is a 72-month programme funded by the EU and implemented by the Secretariat of the Pacific Regional Environment Programme (SPREP) to improve regional management of waste and pollution sustainably and cost-effectively.

About PacWaste Plus

The impact of waste and pollution is taking its toll on the health of communities, degrading natural ecosystems, threatening food security, impeding resilience to climate change, and adversely impacting social and economic development of countries in the region.

The PacWaste Plus programme is generating improved economic, social, health, and environmental benefits by enhancing existing activities and building capacity and sustainability into waste management practices for all participating countries.

Countries participating in the PacWaste Plus programme are: *Cook Islands, Democratic Republic of Timor-Leste, Federated States of Micronesia, Fiji, Kiribati, Nauru, Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu*.

Key Objectives

Outcomes & Key Result Areas

The overall objective of PacWastePlus is "*to generate improved economic, social, health and environmental benefits arising from stronger regional economic integration and the sustainable management of natural resources and the environment*".

The specific objective is "*to ensure the safe and sustainable management of waste with due regard for the conservation of biodiversity, health and wellbeing of Pacific Island communities and climate change mitigation and adaptation requirements*".

Key Result Areas

- **Improved** data collection, information sharing, and education awareness
- **Policy & Regulation** - Policies and regulatory frameworks developed and implemented.
- **Best Practices** - Enhanced private sector engagement and infrastructure development implemented
- **Human Capacity** - Enhanced human capacity

Learn more about the PacWaste Plus programme by visiting

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PacWastePlus PACIFIC WASTE MANAGEMENT

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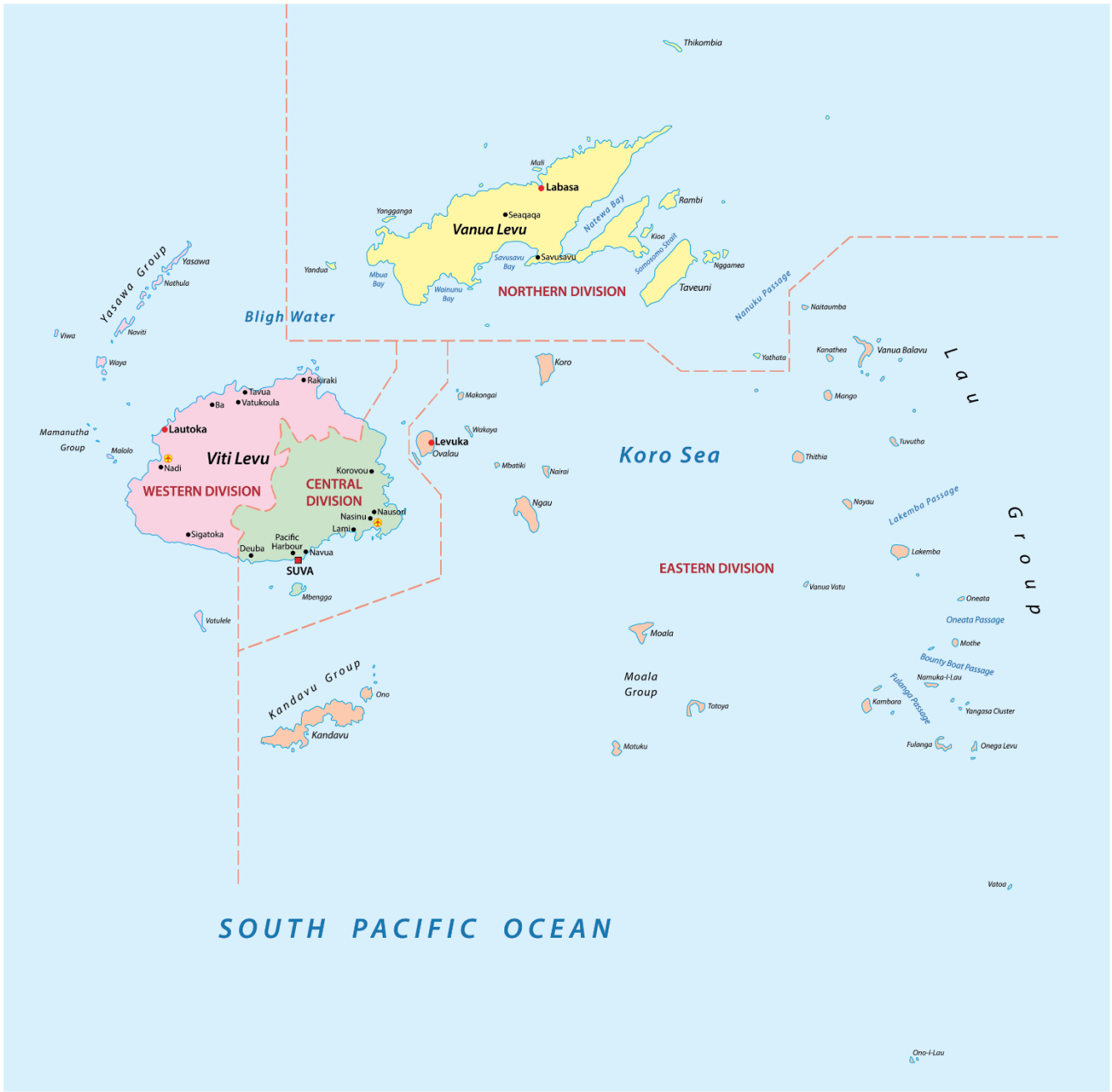
Map of Fiji



Source: https://www.worldatlas.com/maps/fiji

Glossary

Acronym	Definition
C&D	Construction and Demolition (Waste)
C&I	Commercial and Industrial (Waste)
DCMR	Data Strategy & Collection, Monitoring, and Reporting (Framework)
J-PRISM II	The Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries Phase II
KPI	Key Performance Indicator
MEA	Multilateral Environmental Agreement
MSW	Municipal Solid Waste (i.e., waste originating from the general public that is typically managed by local government entities, excludes commercial / business waste)
NGO	Non-Governmental Organisation
NIP	National Plan for Implementation
PET	Polyethylene terephthalate
PICT	Pacific Island Countries & Territories
PRIF	Pacific Regional Infrastructure Facility
SPREP	Secretariat of The Pacific Regional Environment Programme

Terminology	Definition
Capacity	The total maximum waste storage and processing that can take place at a facility (as capped by license conditions).
Capture rate	The proportion of total waste generated that is successfully captured and disposed or recovered in an environmentally responsible manner (e.g., by a formal collection service or self-hauled to a licensed facility)
Coverage	The proportion of total households that have access to a regular waste collection service.
Modern	A 'modern' facility employs 'sound waste management practices' (as defined by the UNEP) and results in minimal adverse impacts on the environment. A 'modern' facility must be licensed, staffed, and have access to equipment and machinery such as a bulldozer. A landfill or dumpsite must employ a leachate management system and a daily cover routine. A recovery facility should have fire prevention and control measures in place, and appropriate stormwater runoff controls. Facilities must not be exceeding their maximum storage capacity.
Per capita	Units measured on a per person basis (i.e., to allow for extrapolation over a national population).
Recovery	Any activity that diverts waste material from landfill, including processing of dry recyclables (such as paper, cardboard, metal and plastics such as PET and HDPE), organics recovery, and energy recovery.
Unregulated	Typically, unlicensed waste facilities which do not follow international frameworks, rules, and guidelines to protect the health of the environment and community.
Waste facility	'Waste facilities' involved in the handling, disposal, or recovery of waste streams above a minimum processing threshold determined on country basis (i.e., tonnes of waste received per year). Can include landfills or dumpsites (that primarily rely on burying waste in a controlled manner), recycling / recovery facilities for dry recyclables (and e-waste), organics recovery facilities, and waste-to-energy facilities. Incinerators are not included in this analysis.

Executive Summary

Waste data collation, analysis and reporting for the Fiji National Waste Audit Analysis Report was guided by the overarching Regional Waste Data Collection, Monitoring, and Reporting (DCMR) Framework for the Pacific Island Countries and Territories (PICT). The implementation of the DCMR Framework ensures that waste data is collected, analysed, and reported in a consistent and reliable way across the Pacific.

Due to the impacts of Cyclone Ana and COVID-19 restrictions, only Labasa, in Macuata Province of the Northern Division of Vanua Levu, were audited. The absence of waste audit data for Suva has meant that reporting to key performance indicators at a national level was not possible. Future waste audits will need to include Suva to better represent Fiji's waste management situation.

Table (a) Summary of Key Performance Indicators (KPIs) for Fiji

Core KPIs	Result	Supplementary KPIs	Result
1. Count / capacity of modern waste facilities	1 / Capacity unknown	1. Cost of disposal to landfill ($/tonne)	FJ $27.95 (US $12.59)
2. Count / capacity of unregulated waste facilities	2 / Capacity unknown	2. Weight of waste disposed (tpa)	154,000
3. National recovery rate (%)	No data	3. Weight of waste recovered (tpa)	No data
4. Per capita waste generation rate (kg/capita/year)	194	4. Volume and type of stockpiled hazardous waste (m^3)	See Section 3.2
5. Municipal Solid Waste (MSW) composition (%)	Figure (a)	5. Marine plastic pollution potential (tpa)	806
6. Household waste capture rate (%)	N/A	6. Awareness and support of waste management services (%)	No data
7. Household collection service coverage (%)	N/A	7. Proportion of strategic waste management initiatives implemented (%)	73.33%
8. Fulfillment of MEA reporting requirements (%)	20.00%	8. Commercial waste capture rate (%)	See Section 3.2
		9. Commercial collection service coverage (%)	See Section 3.2
		10. Total weight of disaster waste disposed (tpa)	No data

Note: 'No data' indicates that the audit did not capture the parameters / measurements necessary to calculate the KPI.

Legend		
Sufficient data	Limited data	No data

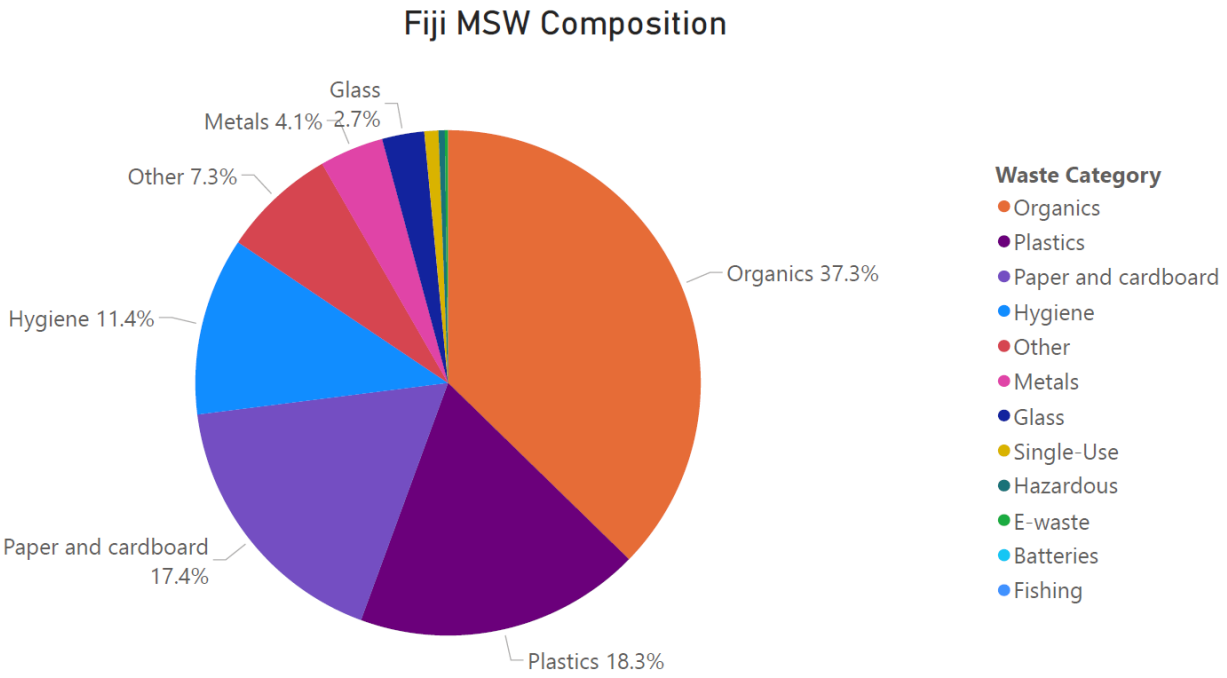


Figure (a) Fiji Municipal Solid Waste (MSW) Composition (% by weight)

Introduction

1.1 Background

Fiji is one of fifteen Pacific Island Nations which took part in the PacWaste Plus Programme implemented through SPREP and funded by the European Union Delegation of the Pacific. The PacWaste Plus Programme aims to improve waste management activities across the islands and strengthen the capacity of Governments, industries, and communities to manage wastes to protect human health and the environment.

Fiji has implemented several waste management practices aimed at reducing waste generation, increasing and promoting recycling, as well as minimising the environmental impact of the country's waste disposal to landfill. Local governments compost organic market waste, that would otherwise be destined for landfill, and use it on Council property with surplus compost sold to the public. Additionally, Fiji has a Home Composting Programme where households compost their own waste. Fiji is also seeking export opportunities for the disposal of some categories of hazardous waste, notably e-waste and used oil. Medical waste is often incinerated.

While these efforts have been successful in improving the waste situation across Fiji, the country still faces challenges to reducing its overall recovery of waste, with the audit report noting the high cost of transport of recyclable waste to domestic recyclers and a lack of programs in place to properly manage hazardous waste outside in some areas of the country.

1.2 Purpose and Aim

The purpose of this audit analysis and report is to establish a baseline position for Fiji waste data and waste management systems.

The aim of this report is to:

- Validate pre-existing national waste audit data; and
- Build national waste insights based on new key performance indicators (KPIs) to understand waste management trends.

The results of this report, and the other fourteen SPREP country audit analysis reports, will be collated together to inform a broader Pacific Regional Data and Audit Analysis Report.

1.3 Scope

The scope of this report is limited to the following waste data collected in Fiji:

- **Fiji waste audit report 2021:** The audit was undertaken between January and April in 2021 and provided an evaluation of household and business waste generated in Fiji. Audit data and information was obtained via interviews and waste collections from 104 households and 14 businesses in Labasa, followed by sorting and weighing. The audit report also provided an assessment of the state of Fiji's landfills, including landfill audits and stockpile assessments.
- The audit was undertaken soon after COVID-19 had been declared a global pandemic by the World Health Organisation. Due to restricted access and Cyclone Ana, audit activities were limited to Labasa.

This national report examines the MSW, commercial and industrial (C&I), disaster waste and landfill waste streams. Landfills may receive a broad array of waste types, including construction and demolition (C&D) waste, hazardous waste, and other types of waste in addition to MSW and C&I waste. As such, landfill waste is considered a separate waste stream.

The potential for marine plastic pollution is considered for macroscopic plastic waste (i.e., plastics that can be identified through compositional audits) originating from household sources. Accurate data on the amount and management of macroscopic plastic waste in the region is limited.

1.4 Country Overview

The Republic of Fiji is an island country in Melanesia, part of Oceania in the South Pacific Ocean (see map on **Page 4** of this report). It lies about 1,100 nautical miles (2,000 km) north-northeast of New Zealand. The Republic of Fiji (Fiji) comprises over 332 islands and more than 500 islets, amounting to a total land area of about 18,300 square kilometres.

The two main islands (Vanua Levu and Viti Levu) are home to around 87% of the population of 924,610 people (up from 884,887 people reported by the 2017 National Census). About three-quarters of Fijians live on Viti Levu's coastlines either in the capital city of Suva, or in smaller urban centres such as Nadi (where tourism is the major local industry), or in Lautoka where the sugar-cane industry is dominant. The interior of Viti Levu is sparsely inhabited because of its terrain. The languages spoken include iTaukei (Fijian), English and Hindi.

Fiji has developed significant environmental legislation, regulation and strategies for solid waste management, such as the *Environment Management Act 2005*, the *Environmental Management (Waste Disposal and Recycling) Regulations 2007* and the *Fiji National Solid Waste Management Strategy 2011–2014*.

The responsibility for managing solid waste is divided among various institutions in Fiji, which include:

National government:

- Ministry of Environment: Administers the Environment Management Act 2005. Responsible for protection of natural resources and for control and management of developments, waste management, and pollution control; for establishment of a national environment council; and for related matters.
- Ministry of Local Government: Responsible for administering the Local Government Act 1972 (Cap. 125), including monitoring compliance by councils and providing advice and support. More recently, the ministry has delivered capacity-building programs to help strengthen governance and leadership within councils. The ministry has wide authority over councils.
- Fiji Revenue and Customs Services: Responsible for imported items to Fiji under the Customs Act 1986.
- Local/municipal government: There are 13 Municipal Councils in Fiji, each responsible for overseeing the organisation and control of solid waste in their jurisdictions.

2 Methodology

Waste data collation, analysis and reporting was guided by the overarching Regional Waste Data Collection, Monitoring, and Reporting (DCMR) Framework for the Pacific Island Countries and Territories (PICT). The implementation of the DCMR Framework ensures that waste data is collected, analysed, and reported in a consistent and reliable way across the Pacific.

2.1 Data Sources

Data collated and examined in this audit analysis report was sourced from the data sources listed in Table 1.

Table 1 Data sources examined and available data

Data Source	Methods for data collation	Reported data
Fiji waste audit report 2021	• Household waste audits • Commercial waste audits • Landfill waste audits • Household and business interviews • Stockpile audits • Customs data	• Waste generation rates • Waste composition • Estimation of waste to landfill • Recovery potential • Stockpile sizes and types • Customs data
2017 Fiji National census	• National census	• Population data • Household data (size, number)

2.1.1 Fiji Waste Audit Report 2021

The audit was undertaken between January and April in 2021 and utilised the Waste Audit Methodology produced by Pacific Regional Infrastructure Facility (PRIF).

The audit was impacted by COVID-19 restriction and weather events such as Cyclone Ana. This meant that no auditing could be conducted in Suva. The cyclone prevented the audit team from completing the planned waste audit in Ba Town, resulting in data only being collected in Labasa. The Labasa audit was extended due to delays caused by the restrictions and weather events.

The audit consisted of household & commercial sort and weigh audits, household & commercial interviews, a landfill audit, and stockpile assessments. All auditing took place in Labasa, and Labasa's Namara landfill.

The report also included key data and information collected from during the draft Plastic Waste-Free Islands Project.

Table 2 Sample locations for audits

Sample Location	Population (2017)	Classification
Macuata (Labasa)	65,978	Province

2.2 Data Analysis

Each country's audit reports, audit data, and other relevant data sources were inspected for relevant information which was subsequently collated into country-specific databases. These databases were then used to calculate the DCMR Framework KPIs. KPI reporting followed the calculation methodologies as detailed in the DCMR Framework.

The main assumptions made during the analysis are discussed below.

Where it was necessary to modify calculation methodologies or assumptions (e.g., in cases of missing data or when certain parameters had to be calculated using assumptions derived from external data sources like census data), details of the changes are provided under their corresponding KPI in **Section 3.2.**

2.2.1 Main Assumptions

- Due to COVID-19 restrictions and Cyclone Ana, only Labasa was audited. It is difficult to extrapolate the results from the Labasa audit across the entirety of Fiji, particularly given the different characteristics of urban and rural areas throughout the country.
- The population estimates used to calculate performance indicators are based on national census data from 2017, which predates the audit (completed in 2021).
- All waste plastics which are not managed in an environmentally sound manner are assumed to have the potential risk of polluting oceans and estuarine waterways.
- Commercial waste service coverage reporting has relied primarily on survey information conducted during audits of commercial business waste.

2.3 Key Performance Indicators

The DCMR Framework introduces a series of KPIs (see **Table 3**). The KPIs were developed to guide data analysis to improve the efficiency of data collection activities by building on pre-existing data collection practices across the region.

Each of the KPIs were designed to be reported to using corresponding data collection methodologies.'

These comprise of:

- a waste facility register;
- household waste audits and community surveys;
- business waste audits and surveys;
- a policy survey; and,
- landfill and stockpile audits.

Table 3 Key Performance Indicators (KPIs) from the DCMR Framework

Core KPIs	Supplementary KPIs
1. Count / capacity of modern waste facilities	1. Cost of disposal to landfill
2. Count / capacity of unregulated waste facilities	2. Weight of waste disposed
3. National recovery rate	3. Weight of waste recovered
4. Per capita waste generation rate	4. Volume and type of stockpiled hazardous waste
5. Municipal Solid Waste (MSW) composition	5. Marine plastic pollution potential
6. Household waste capture rate	6. Awareness and support of waste management services
7. Household collection service coverage	7. Proportion of strategic waste management initiatives implemented
8. Fulfillment of Multilateral Environmental Agreement (MEA) reporting requirements	8. Commercial waste capture rate
	9. Commercial collection service coverage
	10. Total weight of disaster waste disposed

3 Audit Analysis Results

3.1 Summary of Data Availability

The waste audits provided varying levels of data and information for the purposes of calculating performance via the indicators introduced in the DCMR Framework. The extent to which there was adequate data and information to calculate the KPIs is represented below in **Table 4.**

Table 4 Summary of data availability for reporting against DCMR Framework KPIs

Core KPIs		Supplementary KPIs	
1. Count / capacity of modern waste facilities		1. Cost of disposal to landfill ($/tonne)	
2. Count / capacity of unregulated waste facilities		2. Weight of waste disposed (tpa)	
3. National recovery rate (%)		3. Weight of waste recovered (tpa)	
4. Per capita waste generation rate (kg/capita/year)		4. Volume and type of stockpiled hazardous waste (m^3)	
5. Municipal Solid Waste (MSW) composition (%)		5. Marine plastic pollution potential (tpa)	
6. Household waste capture rate (%)		6. Awareness and support of waste management services (%)	
7. Household collection service coverage (%)		7. Proportion of strategic waste management initiatives implemented (%)	
8. Fulfillment of MEA reporting requirements (%)		8. Commercial waste capture rate (%)	
		9. Commercial collection service coverage (%)	
Legend		10. Total weight of disaster waste disposed (tpa)	
Sufficient data	Limited data / No data		

Note: 'No data' indicates that the audit did not capture the parameters / measurements necessary to calculate the KPI.

In summary:

- There was adequate information to calculate policy-related KPIs (i.e. Core KPI 8 and Supplementary KPI 7).
- There was insufficient data from the audit to calculate Core KPIs 1 and 2 and Supplementary KPIs 1 and 2, as these relate to waste facility data.
  - COVID-19 restrictions and Cyclone Ana prevented the audit team from completing the 2021 audit as intended. Only Labasa and two landfill/dumpsites were audited in Fiji. Suva could not be included in the audit.
- There was insufficient data from the audit to calculate Core KPIs 4 to 7, alongside Supplementary KPIs 4, 5, 8, and 9, as these relate to stockpile assessments, or household and business audits and surveys.
- No data was available in the audit report to calculate Core KPI 3 and Supplementary KPIs 3, 6 and 10.

In the future, improved data capture and data quality will benefit performance assessment by reducing the extent to which assumptions and substitutions are necessary. In turn, the KPIs will reflect a more accurate depiction of the status of waste management in Fiji.

3.2 KPI Reporting Results

The following section presents the results of the collated and analysed waste audit data for each of the eight core and ten supplementary KPIs introduced in the DCMR Framework.

The results of the analysis will serve as a baseline position for Fiji to compare future data to, and to guide subsequent waste management or waste data-related activities.

Core KPI 1: Count / capacity of modern waste facilities

Result	**Count of modern waste facilities: 1** • The audit report provided information on Maururu Landfill (in Ba) and Namara Landfill (in Labasa Town). Both have access to equipment and staffing. • Maururu landfill implements a daily cover system, but no information was provided regarding leachate management on site. • Namara landfill does have leachate management systems in place, but no information was given with regards to the implementation of a cover system on site. – Due to these factors, the above facilities cannot be categorised as 'modern' waste facilities under the definitions set by the DCMR Framework. • Naboro landfill (Suva), which was not audited as part of the PRIF Fiji audit, would classify as a 'modern' facility. Nabora landfill services that whole Eastern and Central Division, uses daily covers and cells are capped once air space is fully exhausted. • It is understood that several other landfills and waste facilities exist in Fiji however these were not identified as part of the audit report. **Capacity of modern waste facilities (tonnes per annum): No data**
Assumptions	• None
Data gaps	• Fiji has several landfills and dumpsites. However, only Maururu landfill was audited. • No information on the total storage capacity of the sites and if they are exceeding storage capacity. • No information on leachate management at Maururu landfill. • No information on daily cover practices at Namara landfill.
Key considerations	• Naboro landfill (Suva), which was not audited as part of the PRIF Fiji audit, would classify as a 'modern' facility. • None of the audited landfills or dumpsites in Fiji classify as 'modern' facilities. • The potential lack of leachate management at both audited facilities means that both the environment and community may be at risk of hazards due to contamination and material flow. • No daily cover usage at the landfill sites means that these sites are very susceptible to be spread by weather events such as cyclones. • Further information is required to count the number of modern waste facilities in Suva and across Fiji. • It is recommended that maximum capacities for both facilities are investigated and reported on.

Core KPI 2: Count / capacity of unregulated waste facilities

Result	**Count of unregulated waste facilities: 2** • Neither of the audited facilities meet the requirements of a modern facility and as such are classified as unregulated. – Inadequate data on leachate management (Maururu) – Inadequate data on the use of daily cover (Namara) • Reporting to this KPI is incomplete due to lack of available data on number and location of landfills/dumpsites throughout Fiji. (It is understood that there could be 11 waste facilities in total in Fiji.) **Capacity of unregulated waste facilities (tonnes per annum): No data** • While no parameters were provided in the audit report to calculate the storage and processing capacities of Maururu and Namara landfills (tpa), it was noted that both landfills are significantly under-capacity. – Maururu landfill was upgraded in 2018 and gained an additional 20 to 30 years to its lifespan.
Assumptions	• It can be assumed that both facilities are not exceeding their maximum capacities, but a precise measurement or estimate was not able to be calculated.
Data gaps	• No estimates or parameters were used to calculate the maximum annual processing capacity the audited waste facilities. • Information on the number and location of landfills/dumpsites throughout Fiji was not provided by the audit.
Key considerations	• Reporting to this KPI is incomplete due to lack of available data on number and location of landfills/dumpsites throughout Fiji. This information is needed to complete the initial baseline assessment. • It is recommended that maximum capacities for both facilities are investigated and reported on. • The identified unregulated facilities present investment opportunities to upgrade existing sites to align with best practice.

Core KPI 3: National recovery rate

Results	**National recovery rate (%): Insufficient data** • The audit report identifies a total of 8 tonnes of waste being diverted from Namara landfill in 2020. There is insufficient data to extrapolate this result to the national level. • Waste pickers removed approximately: – 5.6 tonnes of Polyethylene terephthalate (PET) bottles; – 1 tonne of timber; – 0.7 tonnes of scrap metal; and, – 0.6 tonnes of aluminium cans. • In Labasa, a weekly garden organics collection service for household grass cuttings and flower trimmings is provided, and presumably used for composting. There were no estimates on the amount of waste this service diverts from landfill. • While there is no household recycling collection service for Ba Town, a recyclable drop-off point is available at the Ba Town Council office. – Office papers are collected once per month. – PET bottles are collected by the Health Department and used for repackaging. – No information on the quantity of recycling diverted from landfill was provided.
Assumptions	• None
Data gaps	• Lacking information on the total quantity of waste received by all recovery facilities (tpa) • No information on the total mass of material diverted from landfill (tpa). • No dedicated recovery facilities mentioned in audit reports.
Key considerations	• The limited scope of the audits means there is insufficient data to make an assessment on this performance indicator at the national level. • Further information on recovery facilities and the amount of waste they divert from landfill is necessary to produce a national recovery rate that can be used to assess Fiji's diversion of waste from landfill.

Core KPI 4: Per capita waste generation rate

Results	**Per capita waste generation rate (kg/capita/year): 194** – kg/capita/day: 0.531 – kg/household/day: 2.60
Assumptions	• Household waste audit data was converted from a per household basis to a per capita basis, then grouped and averaged based on geographic position (i.e., rural or urban), and extrapolated using census data of the national population. • Outcome is based on generation rates provided by the Labasa household audit. This means that Labasa's generation rate is being used to represent the whole of Fiji. • Population statistics used are from 2017 census results. • An average national household size of 4.9 persons per household was provided to the auditors by the Fiji Bureau of Statistics.
Data gaps	• Except for Labasa, no other information was recorded for any other location.
Key considerations	• Future per capita waste generation rates will provide insight into waste management trends and changes for Fiji.

Core KPI 5: Municipal Solid Waste (MSW) Composition

Results	Organic waste is the most prevalent waste type found in household waste compositions in Fiji. This is followed by glass waste and then organic waste. • Organics: 37.30% • Plastics: 18.30% • Paper and cardboard: 17.40%

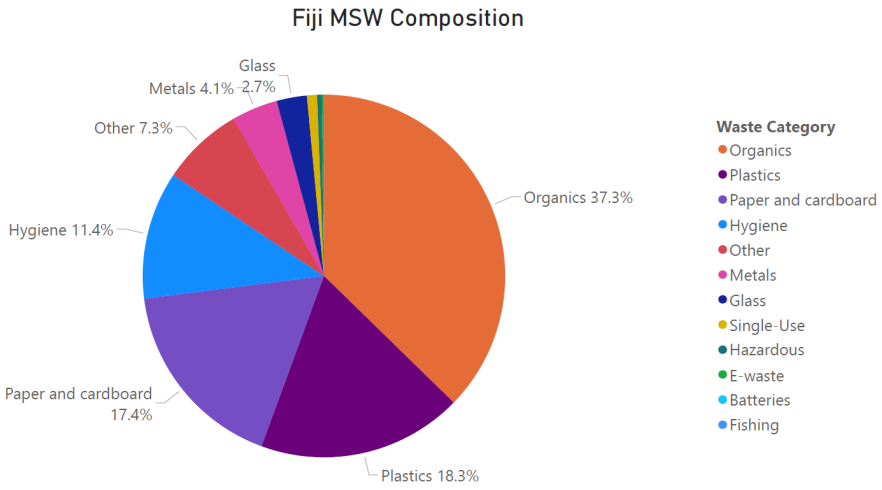


Figure 1 Fiji Municipal Solid Waste (MSW) Composition (% by weight)

Assumptions	• None
Data gaps	• Only households in Labasa were audited.
Key considerations	• Data for the rest of Fiji was not captured. The composition of waste in other areas may differ significantly across the country, and as such, the Labasa household composition results may not be representative of the rest of the country. • The prevalence of organics in the household waste stream is likely due to reliance on local subsistence agriculture, as rural communities often have fewer options for food and goods, which can result in a greater reliance on locally grown or produced items. • Organics recovery systems, such as a local or national composting service could help support local farmers and reduce the amount of organic waste destined for landfill. • It is recommended that compositional data is updated data on a regular basis. Impacts of the pandemic and climate change or weather events will have changed the proportions of waste types sourced from households. • Household waste compositions provide an insight into the types of waste contained inside the MSW stream. Knowledge of the waste types and proportion of these wastes present within the household waste stream allows for targeted decision making and prioritisation of problem waste types.

Core KPI 6: Household waste capture rate

Results	**Household waste capture rate (%): Insufficient data** • For audited Maururu and Namara locations only: – Total weight of household waste generated = 171,379 tpa – Total weight of household waste captured responsibly = 166,977 tpa
Assumptions	• None
Data gaps	• Audits were limited to Labasa only. As such there is insufficient data to accurately predict the household waste capture rate for Fiji at the national level.
Key considerations	• The two audited locations are not representative of Fiji and the outer island communities as a nation. – The result is impacted by a 100% service coverage in Labasa, where a small sample size of 25 households were interviewed. – Results from Ba found a 94% collection coverage. – With Ba and Labasa being used representatively for all urban and rural areas during KPI calculation, extrapolation to the national level portrayed that Fiji had near-perfect collection coverage, resulting in an inflated calculation result for the weight of managed waste. • It is recommended that future data collection collate data from more areas, making a point of collecting from multiple locations and representing both rural and urban areas. • This KPI is expected to change significantly in the future as relevant data is collected to calculate the household waste capture rate more accurately.

Core KPI 7: Household collection service coverage

Results	**Household collection service coverage (%): Insufficient data** • Collection service coverages were only reported for Labasa (in the Macuata Province) and Ba Town (in the Ba Province). No measurements were available for areas in the other provinces. • Collection service coverage surveys in Labasa returned a 100% coverage of 25 households' samples. • Collection service coverage of households in Ba (Urban) were reportedly: – 100% in Ba Town – 100% in Yalalevu – 100% in Vadradra – 75% in Vatulaulau. – An averaged 93.8% coverage.
Assumptions	• None
Data gaps	• Insufficient data to accurately predict the household collection service coverage for Fiji at the national level.
Key considerations	• This figure will become more accurate as additional data is collected using the DCMR Framework's suggested community survey. The survey data collection method will provide more representative results in the future.

Core KPI 8: Fulfillment of Multilateral Environmental Agreement (MEA) reporting requirements

Results	**Fulfillment of MEA reporting requirements (%): 20.00%** • Fiji is party to the Stockholm convention, of which it has ratified. It became a member party in 2001 and delivered the National Plan for Implementation (NIP) of the Stockholm Convention on Persistent Pollutants in Fiji in 2006. • The Stockholm convention has been through 5 reporting cycles and Fiji has been a member party throughout each of these reporting cycles.

Convention	Status	Reporting requirements	Reports delivered
Stockholm Convention	Ratified	5 reporting cycles (5)	1

Assumptions	• None
Data gaps	• Only MEA's with mandatory reporting requirements were included in the calculation of this KPI. • For MEAs such as the Waigani Convention and Rotterdam Convention, strict reporting requirements are not enforced and so are not included in the calculation.
Key considerations	• Fiji has delivered none of the national reports required from subsequent reporting cycles for the Stockholm convention since provision of the NIP in 2006. It is understood that at the time of reporting, the 2020 report was waiting on final endorsement before it is published. • Fiji is not party to the Minamata Convention or the Basel Convention. These waste-related MEA's have mandatory reporting requirements.

Supplementary KPI 1: Cost of disposal to landfill

Results	**Cost of disposal to landfill ($/tonne): FJ $27.95** • Based on available information from Namara landfill in Labasa. No other operational costs were identified within the audit report.
Assumptions	• The cost of operating the Namara landfill (Labasa) was reported to be FJ $196,078 in 2020. • Audit report stated that the estimated mass of material disposed at landfill per annum is 154,497 tonnes per annum.
Data gaps	• Operational costs were only reported for Namara landfill.
Key considerations	• Only data for Namara landfill in Labasa was provided in this audit report, and so is used to represent the case across the whole of Fiji. Due to the lack of data from other landfills, it is difficult to confidently suggest that the presented figure is an accurate representation of landfill costs in Fiji at the national level. • Operating costs for additional facilities need to be measured to provide a better representation of the cost of disposing waste to landfill in Fiji at the national level. • Completion of the waste facility register suggested by the DCMR Framework will result in sufficient data to accurately calculate this indicator and provide a benchmark for comparing disposal costs against previous periods, other countries, and the region.

Supplementary KPI 2: Total weight of waste disposed

Results	**Total weight of waste disposed (tonnes per annum): 154,00**
Assumptions	• The figure of 154,497 tpa presented in the 2021 report relies on: – Data collected for the Plastic Waste-Free Islands Project Fiji from the Vunato disposal site and Levuka were used to represent the whole of Viti Levu. – Data collected for the Waste Audit Report Fiji (Labasa) were used to represent the Namara Landfill and the whole of Vanua Levu. • Both reports provided composition data for household and commercial waste, which was used to estimate the total amount of waste sent to the landfill each year.
Data gaps	• Insufficient data to confidently predict the total weight of waste disposed in Fiji at the national level.
Key considerations	• The absence of waste and recycling data for Suva is a significant limitation to calculating the total weight of waste disposed of in Fiji, as Suva is the nation's largest and most urbanised population. • This measurement is expected to change considerably once data is collected from other areas in the future, with data collected from the waste facility register suggested in the DCMR Framework.

Supplementary KPI 3: Total weight of waste recovered

Results	**Total weight of waste recovered (tonnes per annum): No data**
Assumptions	• None
Data gaps	• No information presented for any waste recovered at any disposal site in Fiji in the examined audit reports.
Key considerations	• Calculation requires the completion of the waste facility register with the inclusion of data for any recovery facilities operating in Fiji. This will provide an indication of the effectiveness of a country's waste management systems, recovery systems & infrastructure, and a comparative data point for other countries and time periods.

Supplementary KPI 4: Volumes and types of stockpiled hazardous waste

Results	**Volumes and types of stockpiled hazardous wastes (m^3):** – Asbestos: No data – E-waste: No data – Healthcare and pharmaceutical waste: No data – Used oil: 2,868 – Used tyres: No data – Obsolete chemicals: No data
Assumptions	• None
Data gaps	• No stockpile volume measurements recorded in audit data for any categories besides used oil.
Key considerations	• Some used oil stockpiles have been reported on. The volume of other hazardous waste stockpiles in Fiji remains unknown. • Landfill audits, stockpile assessments and the completion of the waste facility register as proposed by the DCMR Framework will provide the necessary information to make calculate this indicator.

Supplementary KPI 5: Marine plastic pollution potential

Results	**Marine plastic pollution potential (tonnes per annum): 806**
Assumptions	• Assumes a national weight of mismanaged waste, based on household audit samples. – This calculation uses the total weight of waste generated, subtracted by the weight of waste captured by collection services. The difference is the estimate for mismanaged waste used in this calculation. – Mismanaged waste is defined as all waste which is not captured in collection services, and ends up buried / burned / littered etc. Uses proportion of plastics captured in MSW composition.
Data gaps	• Requires a more reliable metric for mismanaged waste. • Insufficient data to confidently predict Fiji's marine plastic pollution potential.
Key considerations	• Waste plastics made up a high proportion of the MSW in Fiji, at about 18% percent of the total waste generated. • Waste plastics which are not managed in an environmentally sound manner are assumed to pose a significant risk of polluting oceans and estuarine waterways.

Supplementary KPI 6: Awareness of waste management services

Results	**Awareness of waste services (%): No data**
Assumptions	• None
Data gaps	• Unable to calculate based on audit reports as this performance indicator requires completion of community survey, specifically gathering responses on: – Number of positive responses indicating awareness – Number of available services – Number of survey participants
Key considerations	• Completion of community survey in the future is required to report to this KPI. Monitoring the community's awareness provides an indication of the success of education initiatives and effective use of existing waste management services.

Supplementary KPI 7: Proportion of strategic waste management initiatives implemented

Results	**Proportion of waste management initiatives implemented (%): 73.33%** – Number of successfully implemented initiatives = 11 out of 15 – Number of pipeline initiatives = 4 • Implemented initiatives include: – Environment Management Act 2005 – Environment Management (Waste Disposal and Recycling) Regulations 2007 – Litter Management Act 2008 and Litter (Amendment) Act 2010 – Fiji National Solid Waste Management Strategy 2011-2014 • Pipeline initiatives include: – Single Use plastic ban – Increase of plastic ban levy – Fiji recycling hub – Implementation of the Waigani Convention
Assumptions	• None
Data gaps	• None
Key considerations	• The *National Solid Waste Strategy 2011-2014* offers an overview and perspective on waste management and highlights the lack of data on waste generation and management as a hindrance to understanding the overall waste situation in the country. • Fiji has several implemented and upcoming waste management initiatives which reflect the country's efforts towards proper waste management. However, at the time of the audit, no specific waste management legislation was in place, and waste management falls under general environmental and public health legislation.

Supplementary KPI 8: Commercial waste capture rate

Results	**Commercial waste capture rate (%): Insufficient data** • Measured as the fraction of the total waste captured through formal waste management services over the total waste generated by businesses. • Without estimates of commercial waste generation rates and the number of businesses, this indicator cannot be calculated.
Assumptions	• None
Data gaps	• No information as to the total amount of waste generated by businesses. • No estimate for the number of businesses in Fiji provided in the audit report. • No information as to the waste generation rates of businesses in the audit report.
Key considerations	• Accurate calculation relies on an estimate of total numbers of businesses in the country categorised by business type, and an estimate of the commercial waste generation rates for each business type. • Completion of business surveys suggested in the DCMR Framework will provide an indication of how many businesses are using collection services, and other forms of waste management, and to what extent these businesses access the service.

Supplementary KPI 9: Commercial collection service coverage

Results	**Commercial collection service coverage (%): Insufficient data** • Although high collection service coverages were determined for businesses in Labasa, the audit report did not present enough data representative of other areas of Fiji to reliably extrapolate service coverage to the national level.
Assumptions	• None
Data gaps	• Data collected during audit is not adequately representative of Fiji as a nation. • The audit report did not quantify access to alternative collection services used by businesses (e.g., waste disposal-points or self-haul), however the different disposal methods indicated by respondents was listed.
Key considerations	• Accurate calculation relies on understanding the total number of businesses participating nationally, and specific collection service coverages for businesses. • Completion of business surveys suggested in the DCMR Framework, would provide an indication of how regular, accessible, and affordable collection services are for businesses.

Supplementary KPI 10: Weight of disaster waste disposed

Results	**Weight of disaster waste disposed (tpa): No data** • Measured as a sum of the recorded weight of disaster waste disposed to landfill or received and stockpiled at waste facility following a disaster event. • No disaster waste data was recorded during the examined audits.
Assumptions	• Only captures disaster waste which ends up disposed of or stored at waste facilities, including landfills, disposal sites and recovery facilities. • Assumes that the waste facility register has been completed to capture disaster waste information separately of other waste loads received post-event (i.e., information on disaster waste categorised separately to other waste types/streams).
Data gaps	• The calculation of this performance indicator relies on estimations of the weight of disaster waste (tonnes) landfilled or received at a waste disposal facility following disaster events.
Key considerations	• Calculation of this performance indicator provides an estimate of the amount of disaster waste being effectively managed and the total amount of disaster waste generated in a year. • Calculating this KPI can be undertaken by regularly updating the waste facility register. Tracking the vehicle capacity and percentage fullness of the load of any 'disaster waste' carrying vehicles entering the facility will help reconcile waste amounts disposed if these wastes are not managed separately.

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