Fiji National Waste Audit Analysis Report

June 2025

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

www.pacwasteplus.org

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Map of Fiji

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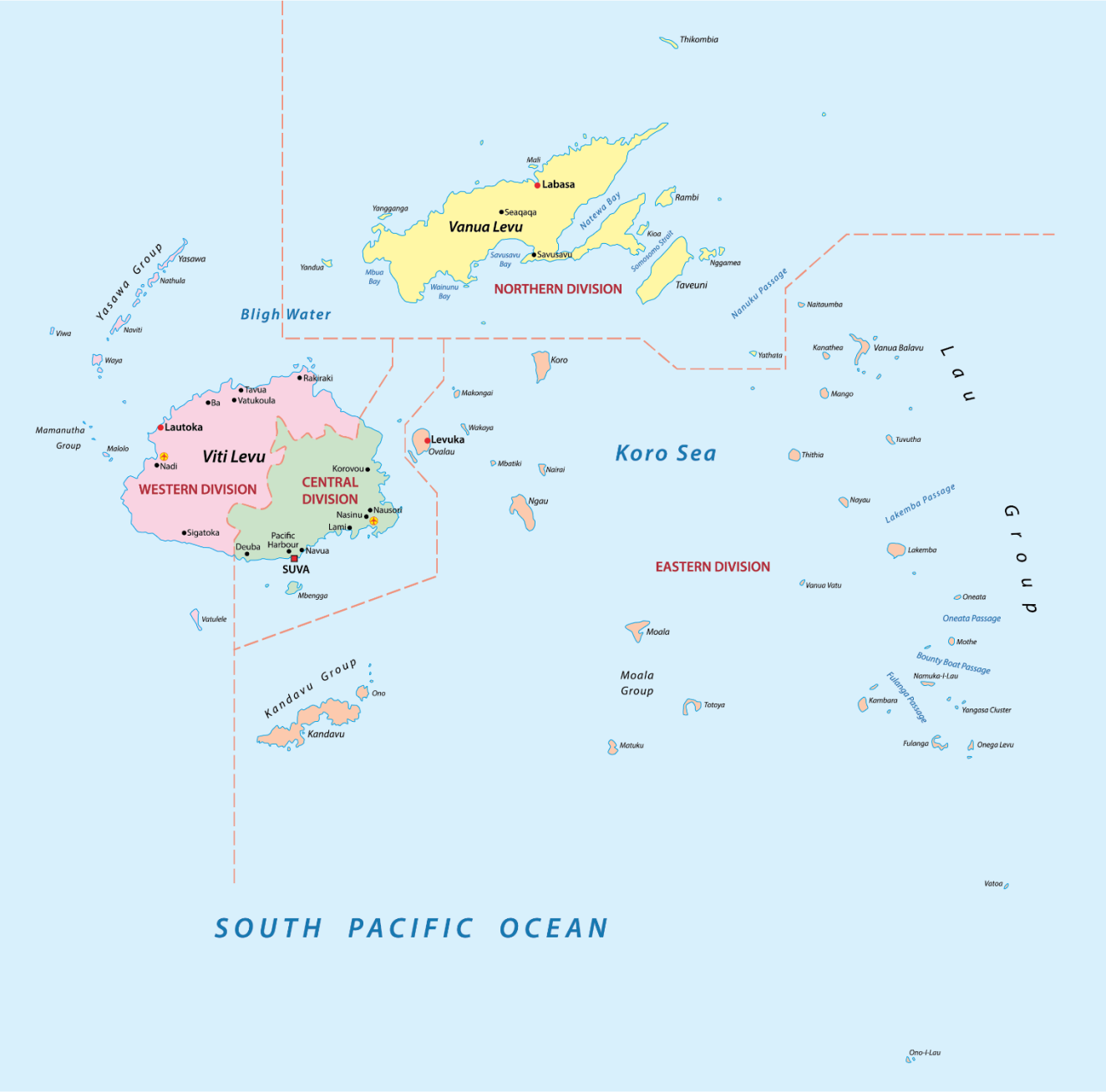
Glossary

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 / Naboro Landfill has a reported operational capacity of 96,993 in 2022	1. Cost of disposal to landfill ($/tonne)	(US $2.99)
2. Count / capacity of unregulated waste facilities	8 / Capacity unknown	2. Weight of waste disposed (tpa)	190,389
3. National recovery rate (%)	0.22	3. Weight of waste recovered (tpa)	61,039
4. Per capita waste generation rate (kg/capita/year)	51.14	4. Volume and type of stockpiled hazardous waste (m^3)	Used Oil – 2,686
5. Municipal Solid Waste (MSW) composition (%)	Figure (a)	5. Marine plastic pollution potential (tpa)	7,148.45
6. Household waste capture rate (%)	68%	6. Awareness and support of waste management services (%)	89%
7. Household collection service coverage (%)	54%	7. Proportion of strategic waste management initiatives implemented (%)	73%
8. Fulfillment of MEA reporting requirements (%)	20%	8. Commercial waste capture rate (%)	93%
		9. Commercial collection service coverage (%)	93%
		10. Total weight of disaster waste disposed (tpa)	42,000 Tonnes recorded from TC Winston

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

MSW Composition

- Single-Use (%), 12.64%
- Metals (%), 9.17%
- Fishing (%), 0.00%
- Other (%), 7.85%
- Hazardous (%), 0.09%
- Organics (%), 1.21%
- Paper and cardboard (%), 29.10%
- Hygiene (%), 19.02%
- Glass (%), 7.71%
- E-waste (%), 1.41%
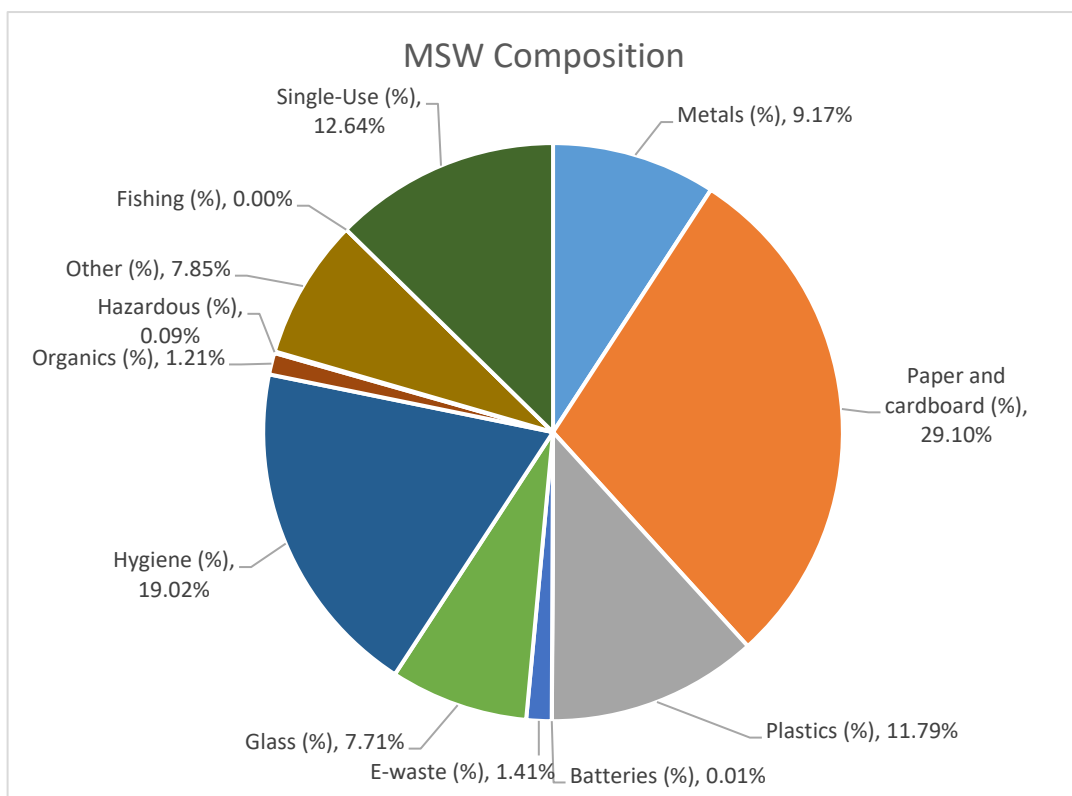- Batteries (%), 0.01%
- Plastics (%), 11.79%

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

Introduction

1.1 Background

Fiji is one of fifteen 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 waste and protect human health and the environment.

While Fiji has enacted laws such as the Environment Management Act 2005 and Litter Decree 1991, enforcement remains a major challenge due to limited manpower and resources. Illegal dumping and littering persist, with stricter penalties and better monitoring now being considered.

The government is taking proactive steps with households being encouraged to compost organic waste, with some councils achieving 100% composting of market waste. Community engagement efforts include public education campaigns, training of litter prevention officers, and the installation of CCTV in dumping hotspots. Fiji is also working to strengthen regulations, finalize landfill guidelines, and explore the establishment of a dedicated Waste Management Authority.

Fiji faces mounting challenges in waste management driven by rapid population growth, urbanization, and increased economic activity. Solid waste management is primarily handled by municipal councils, which oversee collection and disposal at sanitary landfills and dumpsites. However, these councils often lack sufficient resources and enforcement capacity, leading to gaps in service, especially in informal settlements and rural areas.

Key issues include rising waste volumes overwhelming existing landfills and dumpsites, limited recycling with most waste- including organics, plastics, and hazardous materials- ending up in landfills and legislative gaps and enforcement issues.

In summary, Fiji's waste management system is evolving, with ongoing reforms focused on improving regulation, infrastructure, and public participation. However, significant challenges remain in enforcement, resource allocation, and adapting to increasing waste volume.

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:

- Raw Data from the Waste Audit conducted through IUCN Plastic Waste-Free Islands Project
- 2023 Fiji Waste Audit Analysis Report
- 2025 additional Waste audit by PacWaste Plus
- Data provided by Department of Environment through the Statistical News release of Fiji's Experimental Account for Solid Waste 2023
- Data provided by DoE on the Solid Waste Supply and Use Account

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). 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 and Climate Change: Administers the Environment Management Act 2005, Environment Management (Waste Disposal and Recycling) Regulations 2007. 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 municipal 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 sets Analysed

Data Source	Year	Location/s	Sample Size/s	Method for Data Collection	Reported Data
Plastic Waste-Free Islands (PWFI) Project IUCN	2021	Levuka, Nausori, Lautoka, Suva	254	Household audit	Per capita generation, waste composition, total household waste generated
PWFI Project IUCN	2021	Levuka, Nausori, Lautoka, Suva	235	Household survey	Waste collection coverage, Awareness of waste services
PWFI Project IUCN	2021	Levuka, Lautoka, Suva	31	Commercial audit	Per employee waste generation
PWFI Project IUCN	2021	Levuka, Lautoka, Suva	42	Commercial survey	Waste collection coverage
Waste Facility Register Eunomia Research & Consulting	2025	Fiji	9	Facility registers	Number and capacity of facilities, waste disposed, waste recovered, cost of landfill operation, hazardous waste stockpiled, disaster waste
Solid Waste Supply and Use data DOE	2023	Fiji		Data from municipal councils	Supply of waste, Use of waste, quantity of waste collected and uncollected

2.2 Data Analysis

The datasets listed in the table above were analysed for relevant information to be collated into PICT specific databases. The extracted data was then used to calculate the 18 KPIs according to the calculation methodologies as detailed in the DCMR Framework. The main assumptions made and challenges met 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 the corresponding KPI in section 3.0 Analysis.

2.2.1   Main Assumptions

The main assumption is that the previously collected data is representative of the goals of the current project. Previous audit was conducted on a large and geographically dispersed sample of households and businesses, but the method of sampling was cross-sectional, i.e., multiple samples were collected at one point in time. Therefore, for these results to be representative, we need to make two key assumptions:

1.   Seasonal variation in waste generation and composition is non-existent or low

2.   Large time-frame variation (several years) in waste generation and composition is non-existent or low

While there are solid grounds for these assumptions, there are no empirical records to support them.

2.2.2   Specific assumptions for each KPI calculations are also discussed in Section 3.2 KPI Reporting Results. For calculation of national averages involving different geographical locations, weighting is done to ensure a more representative value at the national level. This applies to both household/commercial audits and community surveys.

2.3   Key Performance Indicators

The DCMR Framework introduces a series of KPIs (see **Table 2**). 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 are:

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

Table 2   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 (m³)	
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)	

Calculated in Previous Analysis Report	Calculated with additional 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** • Naboro landfill (Suva) is the only disposal facility which can be classified as a 'modern' facility. Naboro landfill services that whole Eastern and Central Division, uses daily covers and cells are capped once air space is fully exhausted. **Capacity of modern waste facilities (tonnes per annum): Operational capacity of 96,993 tpa**
Assumptions	• Naboro Landfill was originally engineered with a 50-year lifespan, based on a compaction density of ~900 kg/m³. However, the licensed capacity is not obtained.
Data gaps	• No information on the total storage capacity of the site and if it is already exceeding storage capacity.
Key considerations	• The Naboro Landfill while designed to last until 2050 is developed by stages. Proper monitoring is necessary to ensure each stage of development is planned prior to the cells exceeding capacity. • Since 2018, the recorded amount of waste disposed at Naboro Landfill ranged from 89,000 to 98,000 tpa

Core KPI 2: Count / capacity of unregulated waste facilities

Result	**Count of unregulated waste facilities: 8** • Neither of the other disposal facilities apart from Naboro Landfill meet the requirements of a modern facility and as such are classified as unregulated. **Capacity of unregulated waste facilities (tonnes per annum): No data** • No data was available to confirm condition of these facilities.
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	• Facility registers with inputs have not been returned due to limited time of data collection requested. • No estimates or parameters were used to calculate the maximum annual processing capacity the 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. It is understood that there could be 11 waste facilities in total in 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. Reducing the number of unregulated facilities will lead to better outcomes for the local environmental and community health.

Core KPI 3: National recovery rate

Results	**National recovery rate (%): 0.22** • The calculation is based on the actual data collected by DOE through the council operations. However, no details of which items and corresponding quantities are provided.
Assumptions	• It is assumed that the data provided by DOE covers all areas in Fiji. • A bigger percentage of waste (32%) diverted from the landfill with other treatment, i.e., incineration, is not considered in the calculation since it is uncertain whether the energy is recovered from these processes.
Data gaps	• Lacking information on the quantity of waste received by all recovery facilities (tpa) • No dedicated recovery facilities mentioned in audit reports.

Key considerations	• The recovery rate is very low at 0.22%. It only considers the quantity of waste which is recycled and not what is diverted from the landfill. A thorough investigation of materials recovered from the landfill is necessary.

	• The 2023 audit analysis also identified the following quantities which waste pickers remove approximately:
	    o 5.6 tonnes of Polyethylene terephthalate (PET) bottles;
	    o 1 tonne of timber;
	    o 0.7 tonnes of scrap metal; and,
	    o 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.
	• 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): 51.41**
	  — kg/capita/day: 0.141
	  — kg/household/day: 0.649

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 Levuka, Nausori, Lautoka and Suva household audit. This means that the 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 4.6 persons per household was used based on the census.
Data gaps	• None
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

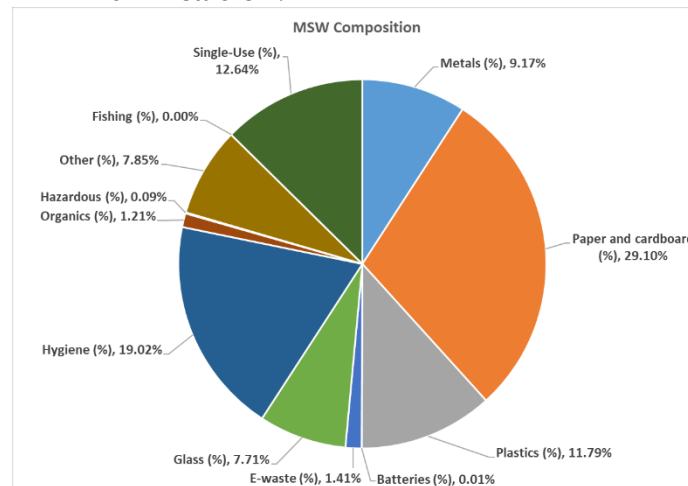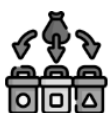|	

Results	Paper and cardboard is the most prevalent waste category for household waste in Fiji. This is followed by hygiene, single-use plastics, plastics, and metals, detailed below:
	     o Paper and cardboard: 29.1%
	     o Hygiene: 19.0%
	     o Single-use plastics: 12.6%
	     o Plastics: 11.8%
	     o Metals: 9.2%
	
	Figure 1 Fiji Municipal Solid Waste (MSW) Composition (% by weight)

Assumptions	Where provinces had no data available, an assumed 'rural average waste generation rate was used based on data from household audits performed in the other provinces.
Data gaps	• Data limited to the four areas covered in the audit.
Key considerations	• Data for the rest of a relatively bigger country such as Fiji was not captured. The composition of waste in other areas may differ significantly across the country, and as such, the household composition results may not be representative of the rest of the country. • The prevalence of paper and cardboard warrants the need for a recycling facility targeted on this category. A nappy composting trial may also be valuable to address the high proportion of this item in the waste stream. Single-use plastics is also common and initiatives to reduce its consumption should be promoted. • 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 (%): 68.16** • Total weight of household waste generated = 190,387 tpa • Total weight of household waste captured responsibly = 129,770 tpa
Assumptions	• The survey and audits did not capture each household's disposal method, although the weight of waste captured by management services was provided by DOE. The calculation was based on the actual data on how much waste was generated and collected. In this instance, this KPI was not based on the audit results extrapolated through census data. $$Household\ waste\ capture\ rate\ (\%) = \frac{weight\ of\ managed\ waste\ (tpa)}{total\ household\ waste\ generated\ (tpa)}$$ • Managed waste was regarded as waste actually collected with the assumption that all of these waste goes to the waste facilities. • Wastes from other industries are assumed to be municipal solid waste.
Data gaps	• Generated waste data did not separate household and other industries
Key considerations	• Despite a collection coverage of 100% based on the survey responses, the achieved capture rate is only two-thirds of the expected rate. The collection coverage can be validated from government records.

Core KPI 7: Household collection service coverage

Results	**Household collection service coverage (%): 54.07**
Assumptions	• Calculated using waste collection data provided by DOE and not household survey as suggested in the DCMR Framework. • Calculation was based on the quantity of waste collected by city/town Councils in 2023, i.e., 71,349 tonnes out of a total of 131,966 household waste which equates to 54.07% • Actual waste tonnage generated including industries amounted to 190, 389 but assuming there is 100% collection of the waste generated from industries of 58,423 tonnes, this is subtracted from the total waste generated and assumed that the remaining waste of 131,966 tonnes is from the households.
Data gaps	• There is no geographical collection coverage data readily available during the study although it was indicated that collection service is only limited to municipal boundaries. Most of the rural communities are not serviced.
Key considerations	• The collection coverage should be validated from government records to ascertain actual geographical coverage.

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.<table><tr><th>Convention</th><th>Status</th><th>Reporting requirements</th><th>Reports delivered</th></tr><tr><td>Stockholm Convention</td><td>Ratified</td><td>5 reporting cycles (5)</td><td>1</td></tr></table>
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 $2.99** • The calculation was based on data collected for Naboro Landfill and Sigatoka: • The cost of operating the Naboro Landfill is derived from data released through J-PRISM1 which is FJD 610,000 per annum. • This cost was divided by the estimated mass of material disposed of per annum in these two facilities, i.e., 96,000 tpa for Naboro1 and 7,654 tpa for Sigatoka (personal communication) for a total of 103,654 tpa
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	• No other operational costs were made available for the other waste facilities.
Key considerations	• 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.

- 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): 190,389** • The quantity was extracted from the Fiji Solid Waste Supply and Use account which is regularly updated.
Assumptions	• The data corresponds to the 2023 account.
Data gaps	• None
Key considerations	• This performance indicator provides an indication of the effectiveness of a country's waste management system in diverting waste from the environment via landfill. This result can be used to evaluate the need for additional investment into waste disposal infrastructure and identify opportunities for improved recycling. • This measurement may change once data is collected from other facilities in the future using 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): 61,039** • The data was extracted from the DOE account of Fiji's waste supply and use.
Assumptions	• The data combines the quantity of waste recycled and the quantity of waste subjected to other treatments. This KPI assumes diversion from the landfill.
Data gaps	• No details of items diverted from the landfill
Key considerations	• Calculation of this performance indicator 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 and 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 (m³):** – 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): 7,148.45**

Assumptions	• Weight of mismanaged waste is determined from the data provided by DOE.
	  o 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.
	  o Mismanaged waste is defined as all waste which is not captured in collection services, and ends up buried/burned/littered etc.
	• Uses a 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	• Considering the high proportion of mismanaged waste, there is also a high probability of plastic spillage in the environment. • 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 (%): 89.36**
Assumptions	• The survey question assessed the collection service as a whole, and was not directed to all possible waste services. Therefore, a value of 1 was assigned as number of available services in the formula to calculate awareness.
Data gaps	• No presentation of different waste services in the survey questionnaire
Key considerations	• Monitoring the community's awareness provides an indication of the success of education initiatives and the effective use of existing waste management services. • A significantly high percentage of the population is aware of the waste services provided.

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 (%): 92.86** • Theoretically, this is measured as the fraction of the total waste captured through formal waste management services over the total waste generated by businesses.
Assumptions	• The number of registered businesses was used to calculate a weighted average of daily generation per business from the audit, and assumed that each country has 250 work days a year.
Data gaps	• No estimate for the total amount of commercial waste successfully captured by management services identified. • No information on waste generation rates or the total amount of waste generated by businesses provided.
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 (%): 92.86**
Assumptions	• Assumes that the presented service coverage identified in the audit report is adequately representative of their corresponding locations.
Data gaps	• No information on the total number of businesses participating in collection services nationally.
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.

![Disaster icon] **Supplementary KPI 10: Weight of disaster waste disposed**

Results	**Weight of disaster waste disposed (tpa): 42,000 Tonnes** • Recorded from TC Winston
Assumptions	• Only captures disaster waste which ends up disposed of or stored at waste facilities, including landfills, disposal sites and recovery facilities.
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.

4   Conclusions

Following the additional data collection in Fiji, the following findings and recommendations are drawn:

1. There could be a big opportunity to promote the DCMR framework at the national level to enable the availability of more reliable regional data for strategic planning by SPREP through this project. However, this would entail more intensive training at the country level to ensure uptake of knowledge and sustained compliance to the framework. In addition, there should be a pilot year set-up for data collection before new annual KPI calculations are made.

2. The very limited coverage of the waste audit conducted in Fiji did not allow sufficient data to be collected. As such the results of the audit is very inconclusive. For a country as large as Fiji with the second largest population the region, a more extensive audit is needed to present a true picture of the waste situation in the country. In this study, the KPI calculation was confined to the raw data available in the IUCN PWFI project. The regularly updated data provided by the Department of Environment which contains quantity of waste generated, and supply and use of these wastes is very helpful to track actual managed waste and where these wastes are used, i.e., either landfilled, recycled or subjected to other treatment.

3. Most of the waste initiatives done within Fiji, which are usually at the council level, are not properly documented. These should be captured in the implementation of the DCMR Framework. A wider coverage of data collection and monitoring can inform national policies targeting prevalent waste categories to improve the overall management of waste in the country. Further support is needed for areas with limited data availability. There is a strong need to encourage continuous recording system to be in place for most of the facilities in the country.

4. The online recording system can potentially contribute to the collection and storage of data. This can facilitate easy access to the data and reduces risk of data loss.

5. The previous 2023 analysis presented KPI calculations based on limited data in Fiji. Some of these KPIs were recalculated based on raw data from the waste auditors who did the actual audit in more expansive coverage. There were also KPIs with no data reported in the previous report which are actually available from the raw data of the actual waste audit. The common methodology approach which was agreed prior to the recent audits should be strictly used to allow lateral comparison among the countries and enable more reliable regional data.

6. There is still a huge gap in the data received from countries owing to the limited recording system available to monitor waste material flow. If recording is done regularly and data stored properly and made available for any legitimate request from external customers, there may be lower probability of obtaining guess estimates of material flow. The confidence level of available data could be made higher.

References

Fiji Bureau of Statistics, 2018. **2017 Population and Housing Census**. Available at:
https://www.statsfiji.gov.fj/component/advlisting/?view=download&format=raw&fileId=2372

Pacific Region Infrastructure Facility (PRIF), 2021. **Waste Audit Report: Fiji**. Available at:
https://www.theprif.org/sites/default/files/documents/Waste%20Audit%20Fiji_web.pdf.