

Trade in environmental services amongst SADC member states

SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC)

Short-term Assignment Report

Cooperation for the Enhancement of SADC Regional Economic Integration (CESARE) Programme

1 July 2023 – 30 November 2023



Implemented by:

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Imprint

As a federal enterprise, GIZ supports the German Government in achieving its objective in the field of international cooperation for sustainable development.

Published by:

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices

Bonn and Eschborn, Germany

Friedrich-Ebert-Allee 40
53113 Bonn, Germany
Phone: +49 228 44 60-0
Fax: +49 228 44 60-17 66

Dag-Hammarskjöld-Weg 1-5
65760 Eschborn
Phone: +49 61 96 79-0
Fax: +49 61 96 79-11 15

Email info@giz.de
Internet www.giz.de

Responsible

Jens Koeniger

Author

Asmita Parshotam and Christopher Wood

GFA Consulting Group GmbH



Place and date of publication

Hamburg, *Select date*

TABLE OF CONTENTS

1	Consultant’s Understanding of the Assignment	4
2	Defining environmental trade in services.....	4
3	Overview of the Assignment.....	7
3.1	Methodology	7
3.2	Risks, challenges and assumptions accompanying this study	7
4	Literature review: contextualising trade in environmental services	9
4.1	Trade in environmental services at a multilateral level – current developments and trends.....	9
4.2	The SADC market for trade in services.....	12
5	SADC Environmental Services market	16
5.1	Approach.....	16
5.2	SADC Market Overview.....	17
5.3	Market profiles	22
5.3.1	Angola.....	22
5.3.2	Botswana	24
5.3.3	Comoros	27
5.3.4	Democratic Republic of the Congo (DRC)	29
5.3.5	Eswatini.....	30
5.3.6	Lesotho	34
5.3.7	Madagascar	36
5.3.8	Malawi.....	38
5.3.9	Mauritius	42
5.3.10	Mozambique	46
5.3.11	Namibia.....	51
5.3.12	Seychelles.....	53
5.3.13	South Africa	56
5.3.14	Tanzania	65
5.3.15	Zambia	67
5.3.16	Zimbabwe	69
6	Barriers to regional trade	73
6.1	Scoping of opportunities	73
6.2	Barriers in opportunity sectors.....	74
6.2.1	Industrial wastewater	74
6.2.2	Recycling	75
6.2.3	Consulting & certification	78
6.2.4	Treatment plants.....	80
6.2.5	Air & noise pollution abatement.....	82
6.2.6	Waste collection.....	83
6.2.7	Septic tanks	84
6.2.8	Waste sorting.....	85
6.3	Implications of SADC trade in environmental services negotiations for Southern	

	Africa under the AfCFTA	85
6.4	Summary priorities	86

LIST OF TABLES

Table 1: Overview of the W/120 list of environmental services	4
Table 2: (non-exhaustive list) Type of restrictions affecting services trade (mode 3 and 4) 11	
Table 3: Existing SADC Protocols, policies and action plans that support trade in environmental services	13
Table 4: Primary service-delivery provider, utility-scale Environmental Services	18
Table 5: Waste collection and disposal by service providers	41
Table 6: Overview of SWM activities amongst South Africa’s largest municipalities	60
Table 7: Summary of general waste generation and management in South Africa, 2017 ...	61
Table 8: Overview of South Africa’s participation in intra-regional waste trade	63
Table 9: SADC member state exports and imports from other SADC markets, 2021	77
Table 10: Requirements for consultants undertaking EIAs	79
Table 11: Assets and revenue of the largest national SADC wastewater utilities	80
Table 12: Initial recommendations to promote SADC trade in environmental services	87

LIST OF FIGURES

Figure 1: Process flow for the identification of opportunities and export barriers.....	16
Figure 2: Share of population with access to sanitation, by level of service, 2022 (or most recent available).....	17
Figure 3: Municipal solid waste production in SADC member states, most recent year available	18
Figure 4: Maximum potential coverage per municipality / city council.....	40
Figure 5: Rate of urban and rural sanitation across Mozambique.....	46
Figure 6: An overview of the water and sanitation industry value chain.....	57
Figure 7: An overview of waste generation in South Africa, 2018.....	58
Figure 8: General provisions of NEMA that apply to an application for environmental authorisation	64
Figure 9: SADC trade in waste with SADC, 2021	77
Figure 10: Overview of wastewater treatment technologies	81
Figure 11: Share of population covered by waste collection services, in SADC states for which data is available.....	83

ABBREVIATIONS

AfCFTA	African Continental Free Trade Agreement
AfDB	African Development Bank
CPC	United Nations Provisional Central Production Classification
DBSA	Development Bank of Southern Africa
DRC	Democratic Republic of the Congo
EAC	East African Community
ECOWAS	Economic Community of West African States
EGS	Environmental goods and services
EIAs	Environmental impact assessments
EU	European Union
FDI	Foreign direct investment
GATS	General Agreement on Trade in Services
GDP	Gross domestic product
MRF	Materials recovery facility
OECD	Organisation for Economic Cooperation and Development
PPPs	Public-private partnerships
REC	Regional economic community
SADC	Southern African Development Community
SWM	Solid waste management
TESSD	Trade and Environmental Sustainability Structured Discussions
WTO	World Trade Organisation
WWTW	Wastewater treatment works

1 Consultant’s Understanding of the Assignment

The Southern African Development Community (SADC) Secretariat, through the project Cooperation for the Enhancement of SADC Regional Economic Integration (GIZ CESARE), has commissioned a study on Trade in Environmental Services in SADC. The study aims to assist all member states in preparations for forthcoming negotiations on specific commitments under the SADC Protocol on Trade in Services and the African Continental Free Trade Agreement (AfCFTA).

The objective of this study is to establish the state of trade liberalisation in environmental services and identify any market access and national treatment limitations in the existing regulatory regimes across the SADC member states. The study will also identify any regulatory principles that may be necessary in promoting trade in environmental services at the SADC and AfCFTA levels. The purpose of this study, therefore, is two-fold:

- (i) Provide an overview of the readiness, interest and appetite of SADC member states to liberalise trade in environmental services within the SADC region.
- (ii) Assess how existing challenges and barriers to trade can be addressed and removed as part of facilitating regulatory cooperation across the SADC countries.

Findings from this study will be especially useful in informing how trade in services can be developed further to support economic growth in the region, especially in light of its important contribution – up to 60% of GDP and more than 30% of employment across many SADC member states – to the regional economy. The findings from this study will also be used to enhance SADC member states’ readiness to participate in the AfCFTA negotiations focused on liberalising trade in services, in terms of which negotiations for environmental services are anticipated to take place in 2024.

2 Defining environmental trade in services

At the outset it is important to understand what is and is not environmental services, for which definitions differ across the world. Over the years, several classifications and lists of environmental goods and services (EGS) have been developed for different purposes, including statistical analysis and trade negotiations.

Environmental services are a notably broad and complex category of services, with a highly contested definition. Previous attempts to analyse environmental services at a regional level have often faced complexities in differing or incomplete definitions of the sector, with the Organisation for Economic Cooperation and Development (OECD) noting that “(a) core challenge in (their) analysis relates to the definition of environmental services”.¹

Trade in environmental services, as defined and developed by the World Trade Organisation (WTO) at the 1991 Uruguay Round refers to the “W/120 list” and is based on the United Nations Provisional Central Production Classification (CPC). Table 1 below provides an overview of the list of environmental services contained in the W/120 list.

Table 1: Overview of the W/120 list of environmental services

ENVIRONMENTAL SERVICES	CPC Provisional	Including the following (referred to in CPC 2.1):
-------------------------------	------------------------	--

¹ Christophe Bellmann and Alena Bulatnikova, “Incorporating Environmental Provisions in Regional Trade Agreements in Chapters and Articles Dealing with Trade in Services,” OECD Trade and Environment Working Papers (Paris, France: OECD, 2022).

A. Sewage services	9401	Sewerage, sewage treatment and septic tank emptying and cleaning services
B. Refuse disposal services	9402	Waste collection services, including collection services of hazardous and non-hazardous waste, recyclable materials, residential and industrial waste
C. Sanitation and similar services	9403	Other sanitation services including outdoor sweeping Site remediation and clean-up services
D. Other	9404	Cleaning services of exhaust gases
	9405	Noise abatement services
	9406	Nature and landscape protection services

At a multilateral level, the WTO's W120 list remains the reference point for environmental services specifically. Unfortunately, this is not without challenges and restrictions. The CPC / W120 list covers a wide array of waste types and specific service offerings, while also having notable exclusions, such as recycling (classified under manufacturing services), environmental consulting (classified under professional services), and a range of next-generation environmental services related to the climate change transition or newer topics like industrial symbiosis. Other reasons accounting for the restrictive and relative dated nature of the W120 list includes:

1. Many environmental services (such as refuse collection and solid waste management, as well as sanitation) were considered public goods to be delivered by government and private companies, as singular entities, simply did not have the economic incentive to provide such services.²
2. The high levels of investment required to provide such services (such as sanitation and sewerage) created significant barriers to entry, resulting in government (or state-owned entities) having a natural monopoly over such service delivery.³
3. There has, historically, been a reluctance amongst governments to allow foreign service providers or foreign ownership over essential services for fear of exploitation of consumers.⁴ As a consequence, private sector was often deterred, or not allowed, to provide such services.

As a result, the CPC/W120 list no longer accounts for the operational realities of trade in EGS in the 21st century and the vast availability of different types of EGS found globally. It is limited because it is primarily concerned with pollution control and waste management and does not reflect the wide plethora of services across a variety of sectors that may benefit the environment. It is focused on traditional 'end of pipe' approaches, with little consideration of pollution prevention and sustainable resource management services.⁵

New business models have emerged spanning new types of services that may not feature in the W/120 or CPC classification. Today, non-infrastructure environmental services such as air pollution management, environmental consulting and engineering services are also considered to be part of the broader family of environmental services.⁶ Finally, the heterogeneous nature of entities involved in environmental services industries cuts across the "vertical" sector line of the

² WTO Council for Services, Environmental Services: Background note by the Secretariat, 6 July 1998, S/C/W46

³ Ibid.

⁴ Ibid.

⁵ UNCTAD Energy and Environmental Services: Negotiating Objectives and Development Priorities, 2003.

⁶ C Bellman and A Bulatnikova, op. cit.

WTO classification, in terms of which public and private sector actors can be either “vertical” functional specialists or “horizontal” service providers.⁷

Despite being outdated, the W120 list is yet to be formally replaced with a revised, more accurate reflection of trade in environmental services that suits the current and complex global industry for environmental services. Moreover, despite having the flexibility to adapt domestic classification systems for environmental services, WTO members have largely confined themselves to the W/120 list,⁸ inadvertently reinforcing the negative scope and categorisation of trade in environmental services.

Ultimately, the project in question and its environmental purpose largely depends on the service’s end-use, which dictates whether the services are deemed environmental in nature or not. This complicates the classification of environmental services as services classifications need to establish mutual exclusivity and cannot fall into the scope of other sectors even if it can be applied to the environmental industry, raising questions around the W/120 and CPC list to be considered as ‘core environmental services’ versus broader (related) environmental services.⁹

These are challenges to be resolved within the multilateral space, and which lie outside the scope of this paper. To narrow the definition to a manageable scope and account for the aforementioned gaps this paper clusters environmental services into five categories, as defined below. For ease of grouping, ‘Refuse disposal’ and ‘Sanitation and remediation’ are sometimes collectively grouped as ‘Refuse disposal & Sanitation’; while ‘Environmental consulting’ and ‘Specialist services’ are sometimes collectively grouped as ‘Environmental consulting & Specialist services.’

- **Wastewater management:** Services related to the collection, handling, storing, and processing of sewage and wastewater. This may or may not be linked to services providing and distributing fresh water.
- **Solid waste management (SWM):** Services related to the collection, handling, storing, and recycling of waste products.
- **Sanitation and remediation:** Services related to cleaning outdoor spaces, and/or rehabilitating land from exposure to environmental hazards.
- **Environmental consulting:** Services related to assessing environmental impact, designing interventions to improve environmental conditions, and/or any other activity offering expert guidance on issues connected to the services listed above.
- **Specialist services:** Other services not listed above, which have as their objective the preservation of environmental standards. Examples include protection services for natural reserves, and services to address non-traditional pollution (such as noise or light).

⁷ UNCTAD, op. cit.

⁸ C Zhuawu and K Powell (2022) Reigniting Old Flames: The Liberalisation of Trade in Environmental Goods and Services. Commonwealth Secretariat, International Trade Working Paper 2022/02.

⁹ C Bellman and A Bulatnikova, op. cit.

3 Overview of the Assignment

3.1 Methodology

The study makes use of both qualitative and quantitative methods of research. For the former, qualitative research is undertaken in a two-step approach: conducting desktop research and designing a survey questionnaire / instrument shared with all SADC members.

Desktop research forms the basis of informing the questionnaire as well as providing an extensive literature overview on trade in environmental services issues at the multilateral level (WTO agreements and negotiations), at the AfCFTA level, as well as trade in services within the SADC region. In addition, desktop research has also been extensively utilised by the research team to ascertain the scope and availability of environmental services in each SADC country and the participation of the private sector in each country's domestic environmental services' industry(ies).

A structured questionnaire has been shared with all SADC member states in electronic format for the purposes of engaging them to better understand the range of environmental services offered in their countries; the rate of private sector service delivery in their country, and the extent to which their businesses are engaged in regional trade in environmental services delivery. This information, together with the desktop review, is used to identify the opportunities and challenges that exist for private sector participation in regional trade in environmental services. However, it should be noted that the **response rate on the questionnaire has been very low, and the use of other evidence (i.e. desktop research) played a large role than originally envisioned.**

From a qualitative / data perspective, the study utilises existing datasets and existing research to provide an overview, where necessary, on relevant data related to trade in environmental services at a regional and national level. To this end, therefore, the study does not seek to generate new user data or provide in-depth statistics to SADC member states as may be relevant to trade in environmental services.

Utilising a mixed methodology affords the research team the best opportunity to generate country-specific findings, identify useful data (from existing data sources) to inform the overarching research findings and also to provide overall recommendations and findings regarding the state of trade liberalisation in environmental services within the SADC region.

3.2 Risks, challenges and assumptions accompanying this study

Desktop research has been critical in preparation of the country case studies, although existing resources are imperfect for the purposes of this study. This is owing to several key reasons:

1. There is a limited pool of pre-existing information on regional environmental services markets. To our knowledge, this is the first such paper on trade in environmental services in the SADC region.
2. While there is a notable body of pre-existing research on issues like wastewater and SWM, these rarely consider regional trade dynamics, and often have a technical focus that may not answer core trade related questions. Many of these research papers touch on private sector participation in an ancillary manner only, again focusing primarily on technical issues.
3. Where statistics are available, they are highly aggregated and environmental services are most often not reported as a separate sector. The report endeavours to utilise as much available data as possible to support informed decision making during the SADC negotiations. Nevertheless, the scarcity of available data makes it difficult to understand, statistically, the effect of liberalisation on trade in environmental services. Overall, data

limitations are similarly serious, with bilateral services trade data not available for environmental services, and with limited data on domestic environmental services sectors or the role of private providers in core environmental utilities.

4. Availability of information differs significantly across the SADC member states. In general, trade in environmental services is not a well-explored topic in existing research and is not a priority sector for many SADC countries, with limited examples of private sector participation and/or regional trade in environmental services. As a consequence, country case studies selected for a 'deeper dive' focus were chosen on the basis of their higher levels of private sector participation, the presence of their private sector in select regional services activities and their perceived 'readiness' for a more liberal trade in environmental services regime. In doing so, the authors of this study hope to distil a broader 'lessons learning' approach in terms of identifying arrangements within SADC, specific to SADC's contextual realities, that might better suit trade liberalisation in environmental services to the benefit of all of its members.
5. To address these gaps, this paper makes use of surveys of member states and desktop research on non-trade related issues of relevance to the sector. In addition, the paper relies on a selection of specific case studies, which serve as more concentrated avenues for the collection of details on export barriers and regional trade opportunities.

The findings in this study should be read against the backdrop of these challenges and assumptions.

4 Literature review: contextualising trade in environmental services

This section discusses two key areas of trade in environmental services: developments at a multilateral level (specifically within the context of the WTO) and a big-picture overview of trade in services within the SADC region, the SADC Protocol on Trade in Services, as well as a discussion on existing environmental commitments amongst SADC member states. In doing so, this section provides an overview of existing challenges and opportunities for trade in environmental services and contextualises some of the overarching considerations that may inform efforts to promote regional trade in environmental services.

4.1 Trade in environmental services at a multilateral level – current developments and trends

This section provides an outline of how the four modes of supply are relevant in the environmental

What does GATS allow WTO members to do?

1. Market access commitments (i.e. limit number, volume, value of services export, number of persons employed, type of legal entity through which services are delivered and foreign capital limits)
2. National treatment (minimum level of non-discrimination for foreign entities) + transparency.
 - a. Market access + national treatment are not general obligations – i.e. only granted in sectors that have national schedule of specific commitments + to the extent expressed in the schedule
3. Significant flexibility because countries can design different disciplines applying to different sectors (i.e. individualized commitments reflecting national priorities)

Source: OECD

services sector, a brief overview of the historical context behind discussions at the WTO as well the implications (opportunities and challenges) for SADC member states in liberalising trade in environmental services within the regional economic community (REC) itself and within the context of the ongoing AfCFTA negotiations.

Trade in environmental services is governed by the General Agreement on Trade in Services (GATS), which entered into force in 1995. The GATS identifies four different modes of supplying services. The importance of the four modes of supply varies depending on the environmental service concerned:¹⁰

1. Cross border supply of environmental services was commercially insignificant at the time the GATS entered into force, scheduling as “unbound” (i.e. for lack of technical feasibility). Now, with the advent of technology it is possible that, in some instances, cross-border provision of designs, testing, analysis and operations of equipment can be undertaken remotely.

2. Consumption abroad mode of supply is mostly relevant to the movement of goods belonging to a service consumer.
3. Establishing a commercial presence – mode 3 – is the predominant mode of supply within environmental services because many sectors are infrastructure dependent and require long-term and consistent presence. Therefore, it is common for environmental services practitioners and companies to have subsidiaries and satellite offices in the countries within which they render these services
4. The last mode – presence of a natural person – is also very important for trade in environmental services especially relating to the delivery of specialised environmental services, such as environmental impact assessments (EIAs), and other related niche services.

¹⁰ WTO Background Note on Environmental Services: Note by the Secretariat, S/C/W/320, 20 August 2010.

Unfortunately, trade in environmental services is one of the least-committed sectors under the GATS and only modest levels of binding commitments that have been made to date: only 59 members (with the EU counted as a single member) having undertaken specific commitments in at least one of the seven provisional CPC sub-sectors, while other members have limited commitments to consulting and advisory services only.¹¹ African countries' participation in WTO discussions on this topic is particularly limited, and only 11 African WTO members¹² have made commitments in at least one environmental services sub-sector.¹³ Amongst SADC member states, the majority have undertaken services liberalisation commitments under the GATS except for Seychelles (who only joined the WTO in 2014) and the Union of Comoros, which is currently negotiating accession.¹⁴

Commitments made at the WTO include

52 members have undertaken commitments for sewage services

50 members for refuse disposal services

51 members have commitments governing sanitation and similar services

51 members for 'other environmental services'

Source: tralac

Discussions at a multilateral level on EGS have also not been successful thus far. Although discussions for liberalising EGS (specifically, "the reduction, or as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services")¹⁵ were launched as part of the Doha Development Agenda in 2001, a lack of progress ultimately led to 46 countries launching the Environmental Goods Agreement plurilateral negotiations (to the exclusion of environmental services) in 2014. Unfortunately, in 2017 these discussions also fell apart. Trade in environmental services negotiations were launched under the plurilateral Trade in Services Agreement in 2013 but have also subsequently stalled, in part, as a result of concerns raised by member states regarding sensitivities around services liberalisation, impacts on domestic regulatory policy space and pricing and affordability of private sector service providers.¹⁶

Since then, the Trade and Environmental Sustainability Structured Discussions (TESSD) has been created to explore opportunities and possible approaches for promoting and facilitating trade in EGS.¹⁷ Here too, African participation is limited with only four African countries joining the TESSD talks (and none from Southern Africa): Cabo Verde, Chad, the Gambia and Senegal.¹⁸

Despite lacklustre movement within international global forums, trade in environmental services has continued to grow. The range and market value of environmental services have grown over the years, representing more than 65% of the market value of the environmental industry.¹⁹ Most trade in environmental services now occurs through mode 3, followed by mode 4 (temporary movement of service providers), while the advent of technology has also helped to increase the range of environmental services being supplied remotely via mode 1 (cross-border supply).²⁰ World trade in environmental services has grown by an average of 4% since 2005 and commercial presence is the most important mode of supply for environmental services because of the

¹¹ WTO World Trade Report 2022: Climate change and international trade.

¹² Cabo Verde, Central African Republic, the Gambia, Guinea, Lesotho, Liberia, Morocco, Rwanda, Seychelles, Sierra Leone and South Africa

¹³ Tralac, Trade in environmental services (note from annual conference 2023).

¹⁴ V Sawere (2022) The SADC Protocol on Trade in Services enters into force – what is in it for services trade and for services suppliers? Tralac Trade Report No. S22TR03/2022.

¹⁵ Paragraph 31(III) of the Doha Ministerial Declaration.

¹⁶ J Monkelbaan, M Sugathan, A Naranjo (2021) Environmental Goods and Services: Questions and Possible Ways Forward in the TESSD.

¹⁷ WTO World Trade Report 2022: Climate change and international trade.

¹⁸ Tralac, op.cit.

¹⁹ WTO World Trade Report 2022: Climate change and international trade.

²⁰ WTO and World Bank Trade in Services for Development, 2023.

continuous nature of the service delivery and dependence on related infrastructure.²¹ Despite this growth, measuring trade in environmental services – and related barriers – remains challenging, in part due to insufficient data and the restrictions on the sector. For example, the WTO estimates that the costs associated with trade in services is twice as high compared to trade in goods, and regulation-related factors account for more than 40% of these costs.²²

Trade in environmental services remains less liberalised than other sectors and, because of the interconnectivity of the sector, restrictions on the provision of environmental services can affect related services such as environmental goods.²³ Existing restrictions affecting environmental trade in services largely affect modes 3 and 4 and, as discussed in section 5 below, many of these restrictions can be found amongst SADC states.

Table 2: (non-exhaustive list) Type of restrictions affecting services trade (mode 3 and 4)²⁴

Local content requirements
Restrictions on legal form of companies, foreign equity limits, and investment screening procedures
Economic-needs test for the establishment of a commercial presence
Limited eligibility for subsidies, including tax benefits, and restrictions on acquiring real estate
Limited recognition of third-country diplomas required to practice regulated professional services, professional exams and labour market tests
Public monopolies restricting entry of private services providers and government procurement favouring local suppliers
Costly and time-consuming visa applications, and limitations on duration of stay for foreign service providers

While larger (and often international) firms may dominate infrastructure environmental services, there are increasing opportunities for smaller entities to participate in the delivery of specialised environmental services. Various forms of public-private partnerships (PPPs) have become popular and emerged as alternatives to outright privatisation – providing specialised and specific opportunities for private sector participation – while the state takes on a more regulatory role in the process.²⁵

In part, this is the result of continued growth and expansion of green technologies that will require a range of complementary services including consulting, engineering, construction, maintenance etc, and for which it will be easier to source such expertise domestically or within the region.²⁶ Carefully managed market opening has an important role to play in sustainable economic development in the region²⁷ as well as promoting competition, which can lead to lower costs and improved service delivery. As such, facilitating trade in environmental services could therefore stimulate innovation and knowledge diffusion throughout the region, as well as more skilled workers and higher wages – all benefits that can contribute towards mitigating the widespread unemployment and stagnated growth currently characteristic of many SADC countries.²⁸

²¹ WTO World Trade Report 2022: Climate change and international trade.

²² WTO (2019) World Trade Report 2019: The Future of Services Trade.

²³ WTO and World Bank Trade in Services for Development, 2023.

²⁴ OECD, Joint Working Party on Trade and Environment 2017 COM/TAD/ENV/JWPTE(2015)61/FINAL

²⁵ M Grosso (2007) Regulatory Principles for Environment Services and the General Agreement on Trade in Services. ICTSD Issue Paper No.6

²⁶ Tralac, op.cit.

²⁷ M Grosso, op. cit.

²⁸ WTO World Trade Report 2022: Climate change and international trade.

Therefore, the limitations and requirements around modes of supply can hinder growing private sector presence for trade in environmental services, which includes those for local companies in the region, ultimately to the detriment of regional trade and development. Some of these challenges already exist in the Southern African region, as discussed in the next section.

4.2 The SADC market for trade in services

Following the first round of negotiations in 2019, the SADC Protocol on Trade in Services entered into force in 2022, with the initial round of negotiations focused on communication, finance, tourism, transport, construction and energy-related services, in alignment with the negotiations on the AfCFTA Protocol on Trade in Services. The Protocol on Trade in Services is aligned with the GATS approach to negotiations and obligations. It promotes competitiveness and preserves the right of member states to regulate their services sectors.

In addition, the SADC Protocol on Trade in Services is also aligned with the AfCFTA Protocol on Trade in Services in that:²⁹

- Excludes air traffic rights and associated services.
- Maintains the right to regulate.
- Contains similar exceptions for the limitation of liberalization.
- Follows the approach of successive rounds of liberalization.

A second round of negotiations was approved in 2021, covering the remaining sectors, i.e. business services, distribution services, education, health, environmental services and recreational, cultural and sports.³⁰

In general, the services sector (and trade in services) is important for the continent as a whole and especially for the Southern African region in terms of contribution to gross domestic product (GDP) and employment. Services trade in the region is primarily driven by the tourism sector and business services.³¹ South Africa accounts for 67% of all trade in services in the region; Mauritius, Mozambique and Zambia are relatively liberalised markets, while Zimbabwe, Botswana and Namibia remain less liberalised.³² In terms of employment, services is a relatively low contributor to countries such as Malawi (17%), Mozambique (20%) and the Democratic Republic of Congo (DRC) (24%) and, unsurprisingly, very large contributors of employment in countries such as South Africa (71%), Seychelles (79.7%) and Mauritius (67%).³³ Compared to other RECs, employment in services is the largest in SADC at 49% compared to East Africa at 37.5% and 43% across West Africa.³⁴ To this end, therefore, it is in SADC member states' interests to consider how to further grow the services industries for overall regional development as well as job creation across member states.

Existing data provides strong correlation between growth in value-added services and economic growth, especially when in relation to the servicification of the manufacturing sector.³⁵ Facilitating trade in environmental services through improved competition and foreign direct investment (FDI) could potentially be one way to encourage transformation, job-creating growth (much-needed for the region) and value addition especially as growth in value-added trade in services can support economic growth in the region. Greater levels of trade in services can be beneficial for land-locked

²⁹ UNECA (2023) The African Continental Free Trade Area (AfCFTA) and Trade in Services: Opportunities and Strategies for Southern Africa.

³⁰ "SADC Protocol on Trade in Services Enters into Force" <https://www.sadc.int/latest-news/sadc-protocol-trade-services-enters-force>

³¹ UNECA (2023), op. cit.

³² UNECA (2023) op. cit.

³³ V Sawere, op. cit.

³⁴ V Sawere, op. cit.

³⁵ Servicification of the manufacturing sector refers to embedding of services across different stages of global value chains, either as direct input into the production stage or as services embodied in the product they used to manufacture. UNECA (2023) op. cit.

(Botswana, Eswatini and Lesotho) and smaller countries (Mauritius) where value-added trade in services accounts for between 51% and 67% of GDP.³⁶ In addition, growth in environmental services can also support greater uptake of clean and green technologies, allowing for further regional trade in ‘core’ and ‘ancillary’ environmental services.

However, in the current context, certain market entry regulations applied by SADC member states (licensing, exclusive rights granted to locals, and quantitative restrictions) are more trade-restrictive (and, by implication, less supportive of liberalising trade in services) than those applied by other developing economies.³⁷ Implicit in trade in services – especially modes 3 and 4 – is the ability of service providers and persons to move freely across borders. Unfortunately, the SADC region is also more restricted in terms of movement of people compared to other RECs (such as ECOWAS and the EAC), which have achieved deeper levels of free movement of persons.³⁸ Furthermore, Article 22 of the SADC Protocol on Trade in Services stipulates that only business enterprises owned and controlled by persons of State Parties, who have substantial business operations (i.e. an entity incorporated and licenced by a state party) in the economy of a signatory state is eligible to the benefits of the Protocol.

These restrictions have important implications for the growth and liberalisation of trade in environmental services across the region especially as trade in environmental services is heavily dependent on technical knowledge, expertise and the delivery of services from service providers with commercial presence and/or technical experts being able to travel freely without facing restrictions to movement. It is important to recognise that trade in environmental services – compared to negotiations around the first five priority sectors – are unlikely to receive the same level of attention / interest. This has, in part, been confirmed in select stakeholder interviews, which indicated that trade in environmental services (for a variety of reasons) is not a huge priority sector / earmarked as part of national economic development strategies, and therefore likely to have less political interest across the SADC region. As confirmed by stakeholder interviews, this is the result (in part) owing to a lack of information as to the contribution that trade in environmental services makes to economies, and insufficient information regarding foreign and domestic investment in these industries.

Lastly, it is also worth recognising that EGS is often a holistic package – while policymakers and governments may treat trade in environmental goods and trade in environmental services as separate sectors for the purposes of policy development and trade negotiations, in practice environmental goods trade is often accompanied by environmental services provisions (especially where the environmental good in question is infrastructure that requires operational maintenance, servicing, etc). To that end, therefore, discussions on liberalisation of trade in environmental services should be seen as a way towards promoting greater uptake and trade in environmental goods as well, as a vehicle for promoting greener trade practices in the SADC region as well as implementing a ‘just transition’ that supports climate change mitigation measures, for economic growth in the future.

While negotiations on environmental services may be a first for the region, the importance of the green economy, sustainable development and their links to climate change is not new to the policy and negotiating space within SADC. In fact, existing protocols, policies and action plans already reference the importance of EGS and control over waste and water management as part of shared ambitions and priorities for the region, providing an established recognition of the importance of trade in environmental services and its significance for both regional trade and regional sustainable development (Table 3).

Table 3: Existing SADC Protocols, policies and action plans that support trade in environmental services

Protocol on Environmental Management for Sustainable Development, 2017	Article 4 provides:
---	---------------------

³⁶ UNECA (2023) op. cit.

³⁷ Ibid.

³⁸ Ibid.

<ul style="list-style-type: none"> • Provides for state parties to take relevant domestic measures to promote reduced air pollution, and use of cleaner and low carbon technologies. • Provides for state parties to take domestic measures to implement integrated waste management systems and control transboundary movement of hazardous waste. • The Protocol also calls on SADC member states to manage and control transboundary effects of all forms of pollution – which could be interpreted to support regional efforts in managing such measures, thereby opening up an avenue for trade in environmental services. 	<ul style="list-style-type: none"> • “Promoting trade in environmental goods and services for the development of the economies of the State Parties” • “Facilitating harmonisation of environmental policies, legislation, law enforcement and natural resources governance” • “Facilitating the development, implementation and coordination of environmental assessment procedures, environmental management instruments and standards”
<p>Revised Protocol on Shared Watercourses, 2000</p>	<p>Provides for the prevention, reduction and control of pollution (jointly) of a shared watercourse</p>
<p>SADC Green Economy Strategy and Action Plan, 2015</p> <p>While covering a wide array of green economy areas of interest to SADC economies, of specific relevance to environmental services are the activities identified for waste management and water management:</p>	<p>The Action Plan provides for the following activities:</p> <ul style="list-style-type: none"> • Support the improvement and regional harmonisation of municipal solid waste management schemes • Strengthen control on hazardous and e-waste disposal and promote waste recycling. • Support the improvement and regional harmonization of municipal solid waste management schemes. • Enhance integrated management of shared water courses
<p>The Bamako Convention on the Ban of the Import to Africa and Control of Transboundary Movement and Management of Hazardous Wastes Within Africa (1998)</p>	<ul style="list-style-type: none"> • The Bamako Convention is focused on prohibiting the dumping and incinerating of hazardous waste in inland water and oceans. • It looks to promote control of transboundary movement of hazardous waste in Africa and waste disposal in an environmentally responsible manner. • The Bamako Convention prohibits the dumping or incinerating of hazardous waste in inland water and oceans, promotes the control of transboundary movement of hazardous waste within Africa and seeks to ensure that waste disposal is conducted in an environmentally sound manner. • SADC member states party to the Bamako Convention includes Comoros, DRC, Mauritius, Mozambique, Tanzania and Zimbabwe.
<p>African Convention on the Conservation of Nature and Natural Resources, 2016</p>	<ul style="list-style-type: none"> • References the Bamako Convention in requiring Parties to take real efforts to manage and process the transboundary movement of hazardous waste. • The Convention requires Parties to establish an integrated management of water resources.

When read together, it is clear that existing SADC Protocols already make provision for, and incorporate, EGS as a core part of regional efforts towards shared environmental management. That the importance of shared management related to issues of environmental concern is already

recognised across several existing SADC protocols should serve to bolster and support greater uptake of trade in EGS across the region, rather than the argument there is insufficient regional support trade in environmental goods and services. Despite this recognition, however, trade in environmental services is less developed than other sectors and, in some SADC countries, almost a non-feature in their services offering (discussed in section 5 in more detail).

The next section discusses findings from the literature review guiding the analysis of SADC member states' readiness for participation in trade in environmental services.

5 SADC Environmental Services market

5.1 Approach

As previously mentioned, information on the SADC environmental services market is limited, with very little available data or trade-related research on the sector or integration in the region. In addition, the structure and diversity of the environmental services market poses unique challenges to understanding the sector and the scope for regional trade.

The state is the central service provider for wastewater and SWM across the region. As a result, while the private sector plays a notable role in environmental services in all member states, the nature of and scope for private participation varies substantially. For example, considering only sewage networks, some countries will have purely state-led management of their sewage networks, other will outright outsource management of a particular sewage grid to the private sector, and many others will have a hybrid approach with some private participation managed by an overarching state entity.

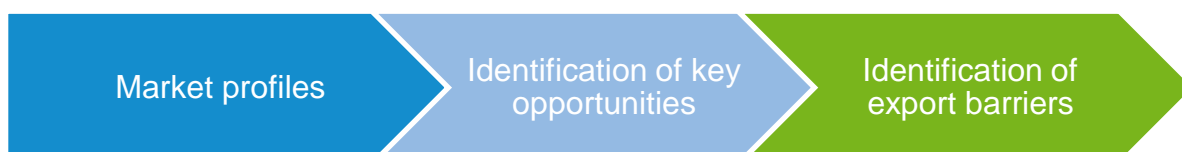
The scope for private participation is further complicated by different models of state management of the sector, with services undertaken by national entities, dozens of individual municipalities, or, in some cases, special project or administrative entities with specific mandates. Some SADC member states' governance structures also permit sub-contracting by local / municipal authorities to private services providers. Lastly, in instances where donor involvement is prevalent in a particular sector, the introduction of PPPs is also a feature, although not always a long-term one and/or has mixed results in terms of successful implementation of PPPs.

The model of private sector participation utilised is crucial to understanding the scope for regional trade. Even a very liberal trade in services regime would be meaningless if the service delivery model selected by the member state does not have a role for the private sector. Similarly, trade in services can still be made burdensome depending on the requirements established for private sector participation, which can act as de facto barriers to entry. While the paper does not speak to the selection of service delivery models or the extent to which the private sector should be involved, areas with high degrees of private sector involvement are naturally better opportunities for regional trade in services.

In order to account for these issues of market structure, and to focus the research in areas in which there is the best potential for regional trade, the study undertakes a three-step assessment:

1. First, individual market profiles are constructed for each SADC member state, assessing the structure of the sector in each market, the regulatory regime and legislative requirements, and the current extent of private sector and regional participation. This scoping utilises both desktop research and surveys from member state focal points, where answers have been provided.
2. Second, this scoping is used to identify key opportunities for regional trade in environmental services. These opportunities meet three conditions: where there is scope for private sector involvement, where there is notable regional capacity and growth, and where there are policy priorities defined by member states.
3. Third, the research focuses-in on these specific priority areas for the investigation of export barriers.

Figure 1: Process flow for the identification of opportunities and export barriers



Section 5.2. below provides an overview of the results of this scoping exercise at individual market level, along with summarising the available macroeconomic data on the sector. Section 5.3. provides brief individual market profiles for each SADC member state. These profiles are developed

using input from member states where provided through the aforementioned questionnaire, and rely on publicly available research and information when otherwise required (i.e. desktop literature review). The identification of opportunities and barriers follow in Section 6.

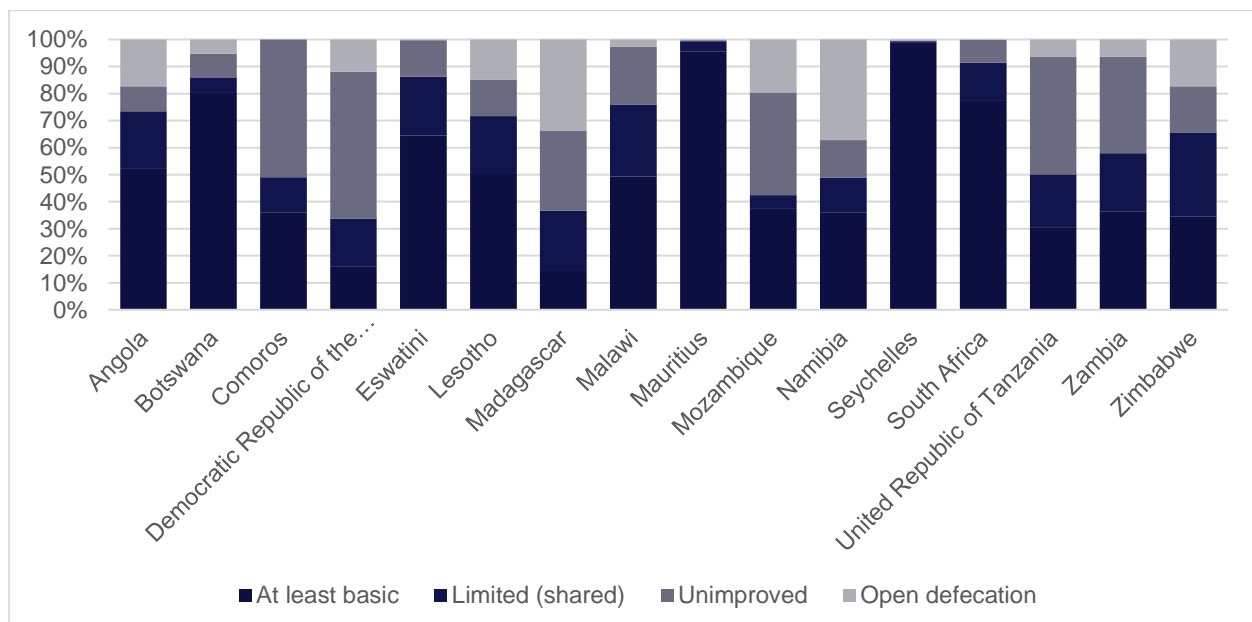
5.2 SADC Market Overview

While there is significant diversity in the SADC environmental services market, this study identifies six notable and overarching trends from the individual market case studies.

First is that there remains **significant scope for the expansion of core environmental services networks** in most SADC markets. All SADC member states have established regulatory regimes for the management of waste and wastewater, along with systems like EIAs; and have utilities and entities providing these services. But despite this, core service coverage is often mixed, with a limited number of households having access to sewage systems or formal garbage collection. There also exists significant regional variation in the quality and coverage of services, particularly between the urban centres and rural area as well as peri-urban areas. Challenges in coverage include inaccessibility of roads and sidewalks for solid waste vehicles, lack of drop-off points for waste and funding shortages to support greater service delivery in especially rural communities and areas.

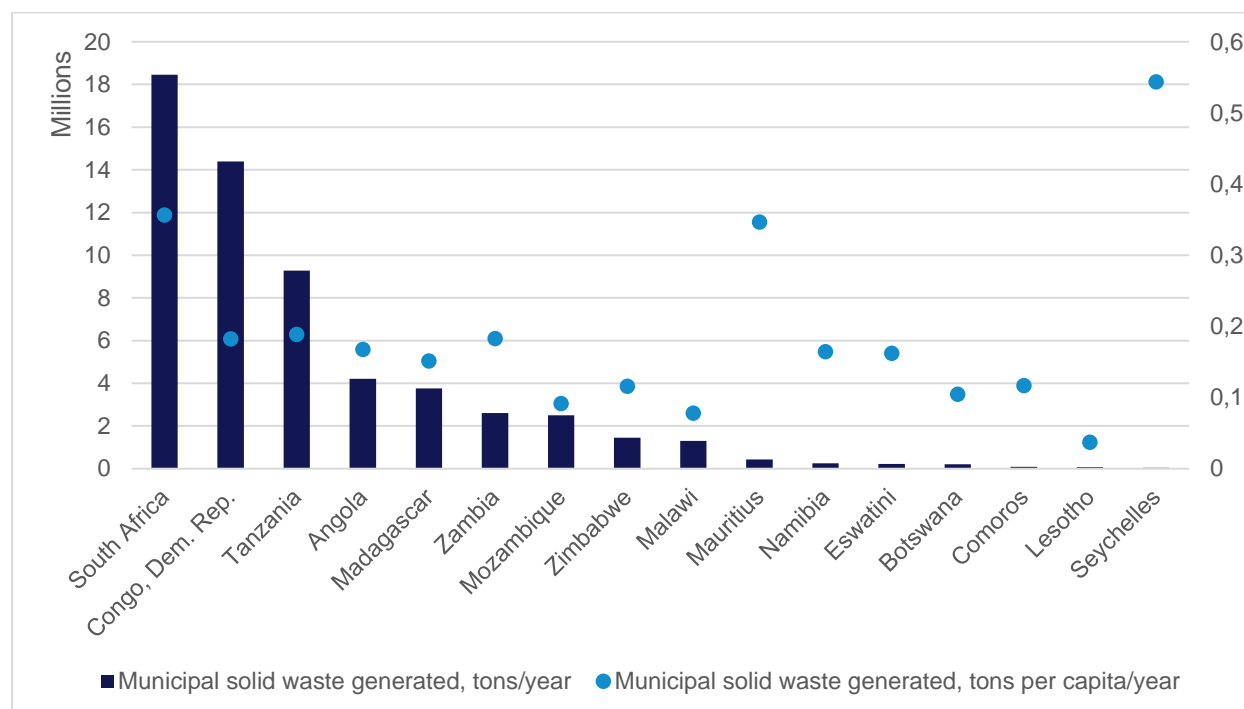
The expansion of core environmental services has been identified as a priority by almost all SADC member states. This prioritisation generally points to the value of these services in addressing existing environmental concerns and challenges related to climate change and often focuses on the adoption of new environmental priorities such as separation at source (largely non-existent across SADC countries), greater recycling of waste within the region (plastics being an important concern for small island states) and e-waste (thereby supporting job creation and more sustainable environmental practices), recycling and reuse of grey water and industrial wastewater, and other innovations that can help bolster the region’s overall service delivery in the waste and sanitation sectors.

Figure 2: Share of population with access to sanitation, by level of service, 2022 (or most recent available)³⁹



³⁹ UNICEF “Joint Monitoring Programme for Water Supply, Sanitation and Hygiene: Estimates on the Use of Drinking Water, Sanitation and Hygiene by Country (2000-2022)” <https://data.unicef.org/topic/water-and-sanitation/sanitation/>.

Figure 3: Municipal solid waste production in SADC member states, most recent year available⁴⁰



Second is that **the public sector remains the core service provider in utility-scale wastewater and waste management services**, albeit with a growing role for the private sector. As can be seen in Table 4 below, all markets employ a public-sector led service model for wastewater collection, while municipalities almost always lead on SWM. While these entities frequently make use of private sector contractors (discussed below), they form the core of service provision and oversee the processes that enable private sector participation.

Table 4: Primary service-delivery provider, utility-scale Environmental Services

Market	Wastewater sewage/treatment	Solid waste collection/handling
Angola	Regional state-owned entities	Local authorities
Botswana	National state-owned entity	Local authorities
Comoros	National state-owned entity	Local authorities
DRC	National state-owned entity	Local authorities
eSwatini	National state-owned entity	Local authorities
Lesotho	National state-owned entity	Local authorities
Madagascar	National state-owned entity	Local authorities
Malawi	Regional state-owned entities	Local authorities
Mauritius	National state-owned entities	Local authorities
Mozambique	National state-owned entities	Local authorities
Namibia	Regional state-owned entities	Local authorities
Seychelles	National state-owned entity	National state-owned entity
South Africa	Local authorities and water boards	Local authorities
Tanzania	Regional state-owned entities	Local authorities
Zambia	Regional state-owned entities	Local authorities

⁴⁰ World Bank, "What A Waste Global Database," 2019, <https://datacatalog.worldbank.org/search/dataset/0039597/What-a-Waste-Global-Database>.

Zimbabwe	National state-owned entity	Local authorities
----------	-----------------------------	-------------------

Third, **the private sector is active in a range of critical environmental services not handled by utilities.** These services occur at multiple steps in the environmental services value chain and are a mix of services complementary to utility-scale provision and address gaps in service coverage. For example, in wastewater, private companies provide factories, mines and farms with services and equipment to pre-treat water to a level suitable for discharge into sewage networks; offering a service that complements and supports the maintenance of grid-scale sanitation systems. More often than not, private companies almost exclusively handle hazardous waste and industrial waste, as well as industrial wastewater. On the other hand, amongst lesser developed SADC members, sewage tankers and private waste collection agencies are common in wealthier areas not suitably served by public utilities. Mozambique, for example, follows a two-prong approach whereby two state agencies are, respectively, responsible for water supply to urban and metropolitan areas on the one hand, and the other focuses on sanitation systems for smaller towns, peri-urban and rural areas instead.

While these activities are typically handled by formal firms, **informal traders make a significant contribution to the environmental services sector.** This is most notable in the case of informal waste pickers, who undertake the primary collection and sorting activities that enable recycling networks in many SADC member states. While many countries acknowledge the presence (and prevalence) of informal waste pickers as part of their waste management value chain, there needs to be greater efforts from governments to integrate and support informal waste pickers' activities and contributions towards important environmental goals such as recycling and reuse. Such effort can include greater focus on encouraging formalisation and organisation of waste pickers, providing for their participation in policies focused on increasing recycling efforts within countries, and creating a safe working environment for their participation in the SWM sector.

Fourth, **private sector participation in utility-scale services is growing.** From the SADC countries surveyed, broad trends in terms of delineation between public and private sector responsibilities include procurement from private sector operators, PPPs, as well as singular, long-term contracts provided to a single service provider for infrastructure management (as was the case in Mauritius). In other instances, companies are increasingly contracted to develop core infrastructure (such as wastewater treatment plants), handle core services (such as waste collection, sorting and recycling), and provide ongoing technical support to maintain and upgrade equipment and facilities. This contracting is governed by a mix of specific licensing regimes, along with more general regulations for PPPs and public procurement. An important proviso, however, is that the growth of private sector participation in public procurement for environmental services also depends on fair / not onerous opening of government procurement to domestic and foreign service providers; or the latter, a challenge already witnessed across the region amid fears of insufficient protection for domestic industries and a fear that liberalisation will result in the 'flooding' of domestic markets with more competitively priced regional service providers.⁴¹

As seen in the case of South Africa (especially with regards to the wastewater and sanitation sector), PPPs are seen as unattractive and viability difficult owing to high expenses and limited access to financing, lengthy and cumbersome processes for licensing and limited expertise within the public sector to structure PPPs. Therefore, PPPs and preferential procurement processes must be 'user-friendly' if SADC governments are serious about growing private sector participation in utility-scale services, and trade in environmental services more broadly. Box 1 below provides an example of the ways in which private sector needs to comply with state requirements in order to participate in service delivery across the five environmental services sub-sector.

⁴¹ Feedback from stakeholder consultations.

Box 1: Snapshot of private sector participation in Mauritius and Malawi (requirements and challenges)⁴²

Requirements for private sector participation in Mauritius (across all five environmental sectors)

1. Comply with specific technical standards
2. Have a proven track record of success/delivery
3. Have a local subsidiary or other local registration (such as with a tax agency or central procurement system) (specific to wastewater management)

Qualifying conditions for public procurement of a service	Wastewater management	Refuse disposal	Sanitation and remediation	Environmental consulting	Specialist services
Comply with specific technical standards		✓	✓	✓	
Have a local subsidiary or other local registration (such as with a tax agency or central procurement system)		✓		✓	
Have a proven track record of success/delivery		✓	✓	✓	
Have suitable local ownership and/or local partners		✓	✓	✓	
Meet gender empowerment standards		✓	✓	✓	
Meet local employment or procurement standards		✓	✓	✓	
Register or become accredited to a specialist environmental agency		✓	✓	✓	✓

Requirements for private sector participation in Malawi

Qualifying conditions for public procurement of a service	Wastewater management	Refuse disposal	Sanitation and remediation	Environmental consulting	Specialist services
Comply with specific technical standards	✓	✓	✓		

⁴² Survey questionnaire, Ministries of Environment and Public Utilities in Mauritius and Malawi Energy Regulatory Authority

Have a local subsidiary or other local registration (such as with a tax agency or central procurement system)					
Have a proven track record of success/delivery	√		√		
Have suitable local ownership and/or local partners					
Meet gender empowerment standards	√	√	√	√	√
Meet local employment or procurement standards	√	√	√	√	√
Meet youth empowerment standards	√	√	√	√	√
Meet other empowerment standards					
Other					
Register or become accredited to a specialist environmental agency	√	√	√	√	√

Fifth, **consulting and technical support services are a small but valuable sector** with strong regional presence. Many SADC member states play host to niche environmental consulting services, which are typically enabled by both local requirements such as the need for EIAs, and by the presence of environmentally sensitive sectors (most notably mining) in many member states. The sector is small but provides high quality, high skilled job opportunities and is expected to be increasingly important as member states undertake the complex transition to environmentally sustainable economic systems in response to climate change. For some countries, such as Mauritius, there is growing recognition of environmental specialist services and environmental consulting as priority import services. Greater willingness to support regional trade in such expertise will, in the long-term, benefit expertise development and knowledge building throughout the region, while also supporting climate change mitigation strategies.

Sixth, **while regional trade remain small, ad hoc evidence suggests that there is a base of cross-border service delivery from which to grow.** While not directly related to trade in environmental services, there is a willingness from SADC member states to work together on shared resources – such as the tripartite agreement between South Africa, Mozambique and Eswatini on resource management for the Incomati and Maputo Watercourses, or Zimbabwe’s regional agreements with SADC neighbours around shared water sources. Both measures indicate a willingness (where relevant) to share responsibility for regional environmental management. With some political will, such efforts can be extended towards projects of regional and mutual benefit and for which private sector has a role to play, especially in still-niche sectors such as air pollution mitigation, noise abatement and pollution management.

Unsurprisingly, regional trade is less common in utility-scale environmental services, given their public-sector led structure, but is much more common in the provision of services to industries, recycling and in environmental consulting, among other areas. Assessing the extent of this regional trade is, however, complicated by a notable lack of reliable regional data. Existing examples garnered from the case studies highlight the exporting of waste materials for recycling or upcycling, provision of specialist environmental services, treatment of wastewater and faecal waste management. Supporting growth in cross-border service delivery can also be achieved through peer learning and shared expertise building especially amongst countries that have greater

expertise in niche services at a government level (as indicated by Mauritius) and also via support of joint ventures between domestic companies and regional foreign service providers.

Data on trade in environmental services is not available for SADC, or for individual SADC member states. But both the evidence collected in the case studies and the available data indicate that trade in the sector is likely under-developed, with substantial room for growth. For example, in the OECD-WTO Balanced Trade in Services data, waste management is categorised alongside a wide range of technical, professional and research services, under the broader category of “other business services”. While this broad category accounts for 11% of SADC services imports from other SADC member states, these technical services likely comprise the bulk of this trade, suggesting that trade in environmental services may be a fraction of a tenth of overall services trade in the region.⁴³

Given this gap, data on the regional trade in waste products may offer some insights on the extent of regional integration in the environmental services sector, and the waste management segment in particular. The market for trade in waste is an indicator both of the extent to which there is active waste sorting and handling in the region, and the extent to which regional partners are involved in the handling of waste. The internal SADC market for waste is sizeable, having surpassed USD 100 million in value in 2019, and recovering from COVID to reach USD 96 million in 2021. Further information of available data on trade in waste can be found in section 6.2.2.

5.3 Market profiles

In order to support the upcoming negotiations, a review was undertaken for each country, identifying:

1. The regulatory frameworks overseeing management of wastewater and sanitation, and waste management in the countries.
2. Identification of existing presence of private sector in these sectors, challenges or enhancing their participation in service delivery and potential opportunities for private sector growth.
3. Where possible, existence of opportunities for regional trade in environmental services.

5.3.1 Angola

5.3.1.1 Wastewater management

Overarching regulation of the water sector in Angola is governed by the Law No. 6/02 (generally referred to as the Water Law, 2002), which provides for the ownership and management of water resources.⁴⁴ Specific standards are defined primarily through a large number of Presidential/Executive Decrees, which cover topics like the treatment of wastewater before discharge into public water sources and empowers the enabling institutions for water regulation. These include the Ministry of Energy and Water (MINEA, which has final oversight of regulation of the sector and of the subsequent entities), the National Water Resources Institute (INRH, which handles water quality testing and governance), the Regulatory Institute for Electricity and Water Services (IRSEA, which handles overarching regulation of utilities), and the network of regional utilities that provide frontline service delivery.⁴⁵

Public water supply in Angola is primarily handled by a network of 16 provincial entities, the Empresa Pública de Águas e Saneamento (EPAS). The largest utility, Empresa Publica de Aguas de Luanda (EPAL), is a Luanda-based utility but is increasingly active in other regions as part of efforts to expand core infrastructure across the country. Despite this, coverage of piped water supply and general public infrastructure remains quite limited. “In Luanda, about 37% of residents

⁴³ OECD and WTO, “Balanced Trade in Services (BaTIS) Dataset,” January 2021, https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm#BaTis6.

⁴⁴ Government of Angola, “Law No. 6/02 (the Water Law),” June 21, 2002, <https://faolex.fao.org/docs/pdf/ang63753.pdf>.

⁴⁵ UNICEF, op. cit.

are connected to the water network, while about 22% get water from public standpipes,⁴⁶ with rates of wastewater grid access even lower, and general access worse in other parts of the country. Even grid-based wastewater handling is regarded as inadequate, with 80% flowing back into natural water systems without adequate treatment.⁴⁷ While 16 of Angola's 18 provinces have active EPAS, only seven (Luanda, Benguela, Bié, Kuanza-Sul, Huambo, Namibe and Uíge) have functional wastewater systems, and only two are in a position to take on financial contracts like debt or private sourcing.⁴⁸

As a result of these gaps, there is extensive private participation in the water sector, but this is primarily limited to costly and inefficient provision of either fresh water or off-grid wastewater handling that fills gaps left by those without access to the grid.⁴⁹ Evidence of grid-scale participation by private companies in the wastewater sector is more limited; however, in the provision of freshwater, French multinational Suez has been involved in the construction, refurbishment and operation of at least two large water treatment plants.⁵⁰ Private companies are playing a key role in a large-scale African Development Bank (AfDB)-funded project to revitalise wastewater infrastructure in a number of coastal towns, but it is uncertain if private contractors will operate these facilities.⁵¹

There does not appear to be evidence of large-scale regional participation in the wastewater sector in Angola.

5.3.1.2 Refuse disposal & Sanitation

Angola's Basic Environmental Law (No. 5/98, 1998) provides the overarching framework for the regulation of the country, including creating the National Environmental Management Programme (*Programa Nacional de Gestão Ambiental*, PNGA) to provide national coordination of environmental efforts, while devolving most core responsibilities to individual provinces.⁵² Specific waste regulations are effected by a range of enabling decrees, most notably the Presidential Decree No. 190/12 (2012), which defines rules for storing, collection and disposal of waste.⁵³

Implementation of waste management regulations is overseen by the Ministry of Environment, while core oversight of SWM is handled by the National Waste Agency (ANR), and primary service delivery is handled at municipal or regional level.⁵⁴ Refuse collection and handling in Angola remains significantly under-developed. For example, in the capital Luanda (home to almost a third of the population), the city is served by a single landfill, Mulenvos – and other areas feature similar dependence on formal and informal landfills.⁵⁵ Efforts to improve waste management are guided by the Urban Waste Management Strategic Plan (PESGRU), which provides a roadmap that aims to improve basic waste management infrastructure and improve uptake of recycling and circular use of waste.

While most waste storage facilities seem to be primarily public, waste collection and handling is primarily driven by the private sector. In Luanda, seven companies are contracted by the city to

⁴⁶ PPIAF, "Performance Improvement of EPAL (Empresa Publica de Aguas de Luanda)," accessed August 3, 2023 <https://www.ppiaf.org/activity/angola-performance-improvement-epal-empresa-publica-de-aguas-de-luanda-0>

⁴⁷ Governo de Angola and United Nations (2021) "Voluntary National Review on the Implementation of the 2030 Agenda: Angola" https://sustainabledevelopment.un.org/content/documents/286012021_VNR_Report_Angola.pdf.

⁴⁸ UNICEF (2023) "Bottleneck Analysis of the WASH Sector in Angola: From a Public Finance Perspective."

⁴⁹ Australia Asia Africa Water (AAAW), "Case Study: Angola." <https://aaawater.net/case-studies/Angola.pdf>.

⁵⁰ "SUEZ Supports Angola with Drinking Water Plant in Luanda - SUEZ Group," June 4, 2020, <https://www.suez.com/en/news/press-releases/suez-pursues-development-africa-supporting-angola-access-to-drinking-water>.

⁵¹ "Angola Coastal Sanitation Project Secures Funding," ConstructAfrica, accessed August 15, 2023, <https://www.constructafrica.com/news/angola-coastal-sanitation-project-secures-funding>.

⁵² Government of Angola, "Basic Environmental Law (No. 5/98)," June 19, 1998, <https://faolex.fao.org/docs/pdf/ang18069.pdf>.

⁵³ Government of Angola, "Presidential Decree No. 190/12 Approving the Regulation on Waste Management," FAOLEX, accessed August 29, 2023, <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC116925>.

⁵⁴ UN-HABITAT, "Country Profile: Angola," July 2022, https://unhabitat.org/sites/default/files/2022/07/angola_en.pdf.

⁵⁵ United Nations Development Programme, "This trash is not mine!," UNDP, accessed August 3, 2023, <https://www.undp.org/pt/angola/blog/trash-not-mine>. (2020) <https://www.undp.org/pt/angola/blog/trash-not-mine>

handle waste collection,⁵⁶ while sorting and handling of waste is typically handled by informal waste pickers - many of whom live in the immediate surrounds of landfills.⁵⁷ Both highlight significant challenges with waste handling, with the latter dependent on extremely poor labourers working in hazardous conditions, while the former has featured challenges with funding and public procurement.⁵⁸ In all components of the waste value chain there is substantial room for improved public oversight, and more tightly controlled regulatory environments for companies.

There is, however, an emerging recycling industry in Angola, both in the informal sector and with formal industrial providers. Companies like AOPacks Angola and EcoLu have primarily been targeting recycling in Luanda, with a focus on sorting and processing plastics waste, while Sunavest has focused on paper recycling.

5.3.1.3 Environmental consulting & Specialist services

Environmental regulations in Angola are primarily overseen by the Ministry of Culture, Tourism and Environment, which implements the National Environmental Management Programme and oversees core private sector environmental compliance requirements, such as EIAs, and issues a wide variety of environmental licenses.⁵⁹ Practical oversight of EIAs and license applications are handled by the National Directorate for the Prevention and Assessment of Environmental Impacts, which makes recommendations to the Ministry on whether to issue an environmental license.⁶⁰

Angola has a relatively large technical consulting sector, in-part to meet the needs of the country's large oil and gas sector. Consulting firms undertaking environmental assessment services need to be registered with the MCTA, and only employees of registered companies can undertake EIAs and other regulatory tasks.⁶¹ It is unclear what requirements must be met in order to be issued an Environmental Consultancy Certificate, or if there are cross-border restrictions on receiving a certificate.

Examples of Angolan environmental consulting firms include Angola Recourse Consultants and Holisticos but, in general, the local industry appears less developed than in comparable SADC markets. Angola appears more dependent on multinational consultancy firms and some large regional firms for environmental consulting services. These patterns may result from the oil & gas industry underpinning a significant portion of the local market, which creates substantial demand for technical services, but also means that much of this is anchored in established supply relationships among large foreign investors.

5.3.2 Botswana

5.3.2.1 Wastewater management

The regulation of wastewater in Botswana is the responsibility of the Department of Water and Sanitation, which reports to the Ministry of Land Management, Water and Sanitation.⁶² The Department oversees the provision of fresh water, the management of waste water, and cross-cutting water management issues, as well as implementing key development plans such as the

⁵⁶ I Magoum, "Luanda Province Entrusts Waste Management to Seven Companies," Afrik 21, April 1, 2021, <https://www.afrik21.africa/en/angola-luanda-province-entrusts-waste-management-to-seven-companies/>.

⁵⁷ United Nations Development Programme, "This trash is not mine!" (2020) <https://www.undp.org/pt/angola/blog/trash-not-mine>

⁵⁸ T Costa "Garbage in Luanda Will Be Collected by Seven Cleaning Operators - Ver Angola - Daily, the Best of Angola," March 29, 2021, <https://www.verangola.net/va/en/032021/Society/24747/Garbage-in-Luanda-will-be-collected-by-seven-cleaning-operators.htm>.

⁵⁹ B Walmsley and S Husselman, "Angola: Environmental Assessment Legislation," in *Handbook on Environmental Assessment Legislation in Selected Countries in Sub-Saharan Africa*, 4th ed. (Development Bank of Southern Africa (DBSA) in collaboration with the Southern African Institute for Environmental Assessment (SAIEA), 2020), <https://www.dbsa.org/sites/default/files/media/documents/2021-05/Chapter%20%20Front%20section.pdf>.

⁶⁰ Ibid.

⁶¹ Ibid.

⁶² Government of Botswana, "Overview: Ministry of Land Management, Water and Sanitation Services," accessed August 24, 2023, <https://www.gov.bw/ministries/ministry-land-management-water-and-sanitation-services>.

National Water Policy (2012).⁶³ The Water Act of 1968 provides the enabling framework for the regulation of water in Botswana, while the Botswana Bureau of Standards (BOBS) maintains key water quality standards.⁶⁴

Wastewater management in Botswana is handled by the publicly owned Water Utilities Corporation (WUC), which is also charged with the distribution of potable water. The WUC was initially a regional body, but its mandate was expanded to national service delivery following a series of reforms implemented between 2009 and 2013.⁶⁵ Botswana has one of the most sophisticated wastewater treatment sectors in the region, with a network of 64 treatment facilities, albeit with a strong reliance on natural processing technologies like stabilisation ponds, wetlands, trickling filters and activated sludge.⁶⁶

As the WUC has a monopoly on piped wastewater management there is relatively limited scope for private participation in the sector in Botswana. Perhaps the most notable role played by the private sector is in the treatment of industrial wastewater, which must comply with WUC standards to be pumped into the broader wastewater system. Industrial treatment is mainly regulated through these standards, but the WUC also maintains a system of Trade Effluent Agreements with private companies and industrial facility operators, which provide a contractual basis for private participation.⁶⁷ The private sector also plays a role in off-grid water supply and management, particularly in sectors active in rural areas, like agriculture and mining.

No examples of regional trade in wastewater management services were identified. Despite being a critically water-strained country, very little wastewater is reused in Botswana, potentially offering scope for regional and private participation, particularly given expertise in this area in neighbouring markets like Namibia.⁶⁸

5.3.2.2 Refuse disposal & Sanitation

Overarching management of waste falls within the mandate of the Ministry of Environment, Natural Resources Conservation and Tourism; particularly through the Department of Waste Management and Pollution Control (DWMPC), but also with a notable role played by the Department of Environmental Affairs.⁶⁹ The Waste Management Act of 1998 provides the regulatory framework for the handling and disposal of waste alongside a range of supplementary guidelines and regulations governing other requirements, such as standards for waste disposal and the handling of plastics waste.⁷⁰

The Waste Management Act defines four types of waste: household/general, industrial, commercial and clinical waste.⁷¹ The collection of household and clinical waste is primarily handled by the councils of individual cities and towns in Botswana, but features a strong role for the private sector

⁶³ Government of Botswana, "Botswana National Water Policy," October 2012, https://www.water.gov.bw/images/Water%20Pitso/Water_Policy__November_2012.pdf.

⁶⁴ Government of Botswana, "Water Act of 1968," December 31, 2008, <https://faolex.fao.org/docs/pdf/bot42103.pdf>.

⁶⁵ Water Utilities Corporation (WUC), "WUC Corporate Profile," July 17, 2023, <https://www.wuc.bw/wuc-content/id/801/corporate-profile/>.

⁶⁶ Office of the Auditor General, Republic of Botswana, "Management of Wastewater Treatment by Water Utilities Corporation," No. 1 of 2020 (Gaborone: Office of the Auditor General, Republic of Botswana, September 15, 2020), https://afrosai-e.org.za/wp-content/uploads/2021/05/PA-Report-Management-of-Wastewater-Treatment_Botswana.2020.pdf.

⁶⁷ Ibid.

⁶⁸ AUDA-NEPAD Water Centres of Excellence, "Country Water Resource Profile: Botswana," 2013, <https://www.nepad.org/file-download/download/public/14253>.

⁶⁹ Government of Botswana, "Overview: Ministry of Environment, Natural Resources Conservation and Tourism," accessed August 24, 2023, <https://www.gov.bw/ministries/ministry-environment-natural-resources-conservation-and-tourism>.

⁷⁰ B Walmsley and S Husselman, "Botswana: Environmental Assessment Legislation," in *Handbook on Environmental Assessment Legislation in Selected Countries in Sub-Saharan Africa*, 4th ed. (Development Bank of Southern Africa (DBSA) in collaboration with the Southern African Institute for Environmental Assessment (SAIEA), 2020), <https://www.dbsa.org/sites/default/files/media/documents/2021-05/Chapter%200%20Front%20section.pdf>.

⁷¹ Centre for Applied Research, "Scoping Report Waste Management in and around Gaborone," March 2013, <https://www.car.org.bw/wp-content/uploads/2016/06/Waste-situation-analysis-greater-Gaborone.pdf>.

as contractors in the collection and handling of waste.⁷² Industrial and commercial waste (and general waste generated by company compounds) is primarily handled by private providers, albeit with licensing and process regulations governed by the DWMPC and the local council.⁷³ Landfills are mostly managed by local councils, with some licensed private providers.

The DWMPC issues licenses for both waste carriers and waste management facilities and, in both cases, licenses are open to foreign services providers. The waste carrier license is a relatively simple procedure, with a basic application form and an inspection of the vehicle used for collection.⁷⁴ Registering a waste management facility requires compliance with a relatively complex but generally standard set of conditions, such as the development of EIAs, a closure and rehabilitation plan, and a range of standard development plans.⁷⁵

There is limited information on the participation of regional companies in either collection, management or recycling activities. The export of waste from Botswana is accounted for, but requires the issuing of a licensing permit, which is primarily focused on the export of waste. There is very limited activity focused on the recycling of waste or industrial symbiosis, but both the revised Integrated Waste Management Policy (launched in April 2021) and a pilot UNDP programme in Gaborone aim to improve recycling activities, starting with plastics and metals, and initially exporting the waste for processing in neighbouring countries.⁷⁶

5.3.2.3 Environmental consulting & Specialist services

In common with markets across the region, Botswana plays host to a number of environmental consulting firms and technical experts, who play a diverse role that is generally anchored by complying with regulations sets by the Department of Environmental Affairs in the Ministry of Environment, Natural Resources Conservation and Tourism. The Ministry also oversees the Department of Wildlife and National Parks, which sets rules on the protection of preserves and countering threats like poaching, and the Forest Conservation Botswana (FCB), an independent agency charged with protection of forested areas. Individuals performing EIAs are required to obtain membership of the Environmental Assessment Practitioners Board (EAPB), which is open to foreign nationals, albeit with higher registration rates than Botswanan citizens or residents.

A number of local and foreign companies are active in the Botswanan environmental consulting sector, including a number of multinationals (like Mott MacDonald). While an imperfect measure of foreign participation in Botswana, of the 108 individuals registered as EIA practitioners in 2023, 12 had citizenships outside Botswana, of which four were from SADC (all originating from Zimbabwe).

Botswana plays host to a selection of larger, regionally active environmental consulting firms, many of which have leveraged experience in Botswana's mining industry to undertake similar work in the broader region. Examples include Ecosurv, a Gaborone-based consulting company that has a presence in all SADC markets except the DRC and the island states; and Karunya Consulting, a Maun-based company with experience across the East-coast of SADC.

Outside of core environmental services – like EIAs and advisory work – Botswana has a number of significant natural reserves and wildlife management areas. These are primarily state-run but include innovative programmes for the inclusion of local communities in conservation initiatives, and of course connect to the broader tourism industry, which is among the most significantly trade service sectors in the country.

⁷² N D Phonchi-Tshekiso, G Mmopelwa, R Chanda. 'From public to private solid waste management: stakeholders' perspectives on private-public solid waste management in Lobatse, Botswana.' Chinese Journal of Population, Resources & Environment, Vol 18, Issue 1, 2020.

⁷³ Centre for Applied Research, op. cit.

⁷⁴ Government of Botswana, "Waste Carrier License," accessed July 26, 2023, <https://www.gov.bw/meteorology-waste-management/waste-carrier-license>.

⁷⁵ Government of Botswana, "Waste Management Facility License," accessed July 25, 2023, <https://www.gov.bw/meteorology-waste-management/waste-management-facility-license>.

⁷⁶ United Nations Development Programme, "Waste Recovery Project to Create Employment and Develop a Strong Waste Recycling Industry in Botswana," UNDP, accessed July 26, 2023, <https://www.undp.org/botswana/news/waste-recovery-project-create-employment-and-develop-strong-waste-recycling-industry-botswana>.

5.3.3 Comoros

The Union of Comoros has several ministries with sub-ministries or directorates. The institutional structure is complex as all three islands have considerable autonomy as well as their own governing bodies, while island governance is decentralised through commissions responsible for development planning and implementation. However, there is a lack of clarity in the division of responsibilities between island and national (union) levels of governance.⁷⁷

Comoros has a National Environmental Policy (1993), which is the overarching legislation overseeing all issues related to environmental management including water and sanitation and waste management. Between 1993 and 2001, Comoros also adopted a National Environmental Policy, and an Environmental Action Plan.⁷⁸ The General Directorate of Environment and Forests (DGEF), is responsible for overseeing environmental sustainability and for the management and implementation of the National Environmental Policy.⁷⁹ Unfortunately, the Policy has significant gaps including an absence of strategy for the energy and water sectors.⁸⁰

5.3.3.1 Wastewater management and sanitation

The Ministry of Agriculture, Fisheries and Environment (MAFE) is responsible for wastewater management and has the mandate to develop policies for town and regional planning, sanitation and the environment and related services. The Comorian Water and Electricity Corporation (MAMWE), is responsible for managing water distribution and the National Water Supply Policy and Law No. 94-037 on the Water Code of 1994 are the relevant legislations overseeing water supply and management in the country.⁸¹

Several donor-funded initiatives are notable in the Comoros. For example, the Italian government plays a key role in sanitary and waste management, as well as the African Development Bank (AfDB) and the European Union, which support a variety of projects in the country. The AfDB has assisted in providing financing to support the implementation of sanitation and drinking water infrastructure projects in several localities, including Moroni, Ouani, Mutsamudu, Fomboni and Mbeni.⁸² Despite these projects, sanitation services are also not widespread in their provision and availability to citizens.

There is no dedicated role for private sector participation in sanitation and wastewater management in the Comoros, although the National Investment Promotion Agency is the responsible institution to support private sector participation.⁸³ There are no notable projects in terms of which trade in services for wastewater and/or sanitation management takes place.

5.3.3.2 Refusal disposal & Waste management

The DGEF is responsible for SWM in Comoros and similar to other SADC countries, SWM and refuse collection and disposal is decentralised and the responsibility of the respective municipalities across the three islands. There does appear, however, to be municipal solid waste (management and handling rules) that guide the process for disposal of municipal waste.⁸⁴ However, there is no national basic law on municipal SWM (although there are municipality policies), no specific budget for waste management and no sanitary landfill in the country.⁸⁵ There also appears to be insufficient human and financial resources available to support refuse disposal and SWM in the country, especially to support the collection of waste in informal settlements.⁸⁶ As a result, less than 35% of

⁷⁷ UNEP Project Document: Building Climate Resilience through Rehabilitated Watersheds, Forests and Adaptive Livelihoods.

⁷⁸ AfDB Comoros Energy Sector Support Project (PASEC) <https://projectsportal.afdb.org/dataportal/VProject/show/P-KM-F00-002#:~:text=The%20project%20has%20three%20major,energy%20projects%20by%20conducting%20appropriate/>

⁷⁹ UNEP Project Document: Building Climate Resilience through Rehabilitated Watersheds, Forests and Adaptive Livelihoods.

⁸⁰ https://greenfiscalspolicy.org/policy_briefs/comoros-country-profile/

⁸¹ AfDB, Sanitation and Wastewater Atlas of Africa, 2020.

⁸² AfDB Comoros – Project for Water Supply and Sanitation <https://projectsportal.afdb.org/dataportal/VProject/show/P-KM-EA0-001>

⁸³ AfDB, Sanitation and Wastewater Atlas of Africa, 2020.

⁸⁴ https://www.sec.gov/Archives/edgar/data/1690384/000161577417003586/s106791_ex10-13.htm

⁸⁵ UN-HABITAT Country Brief: Comoros, 2023 https://unhabitat.org/sites/default/files/2022/07/comoros_en.pdf

⁸⁶ Ibid.

solid garbage is removed daily, while the primary modes of transportation are scarce and pick-up vehicles cannot access numerous locations across various cities.⁸⁷

Private companies are involved in the recovery and recycling of solid waste and there exists private sector companies that are contracted to collect and dispose of municipal solid waste. An example of private sector participation in SWM in the Comoros is a Canadian company responsible for waste collection, in terms of which:⁸⁸

1. The private contractor is bound by Municipal Solid Waste (Management and Handling) Rules that impose an obligation on the private company to adopt suitable process for disposal of municipal waste.
2. The private contractor must demarcate land for establishing of facilities to process, manage and dispose of municipal solid waste.

The high level of donor presence has resulted in further activities in this area:

1. The Italian government working with the Ministry of Agriculture, Fisheries, Environment, Tourism to develop and construct in Moroni an integrated system for municipal SWM (that includes door-to-door separate collection, installation of a centre for collecting materials, and a plant for mechanical biological treatment, amongst others) valued at a total of 1.4 million euros.⁸⁹
2. NORAD, the Norwegian development agency, together with UNDP and the National Waste Management Agency and National Directorate of Environment are working on implementing a recycling programme for the municipality of Fomboni (on the island Moheli). The project started in June 2021 with a 2-year work-plan that will end in June 2024, and private sector participation in the programme is supported and encouraged (and necessary), as discussed in the next section. Under the UNDP/Norad recycling programme, the private sector is designated to work with the Fomboni municipality to manage the financial mechanism and operationalization of plastic waste collection, including a buy-back and recycling recovery system.⁹⁰

However, there is limited information available beyond these donor-led interventions that indicate entrenched and long-term of the private sector in SWM in the Comoros. As is the case with wastewater management, there are no notable projects in terms of which trade in SWM takes place.

5.3.3.3 Environmental consulting and specialist services

Much of the existing information around environmental consulting in the Comoros relates to EIAs. The National Environmental Policy (1993) provides for the framework to conduct EIAs. Decree n°01-052/CE relating to EIAs regulates EIAs and terms of their review by the relevant administrative departments.⁹¹ In addition, the Directorate-General of Environment has the mandate to provide advice on all EIAs that must accompany each application for investment or development.

As is prevalent throughout the region, there is strong private sector participation in the conducting of environmental services - specifically EIAs - as well as participation from NGOs in this regard. Dahari Comoros, for example, an NGO has conducted extensive EIAs for the Comorian government and there are also private companies, incorporated in the Comoros - such as BEE Comoros - that provide EIA and related environmental services in the country. However, while EIA services are often offered across borders, it is unclear where foreign companies (i.e. those not registered in the Comoros) are able to offer EIA and related specialised services in the Comoros.

⁸⁷ Ibid.

⁸⁸ https://www.sec.gov/Archives/edgar/data/1690384/000161577417003586/s106791_ex10-13.htm

⁸⁹ Ministry of Environment, Land and Sea Protection Italy, <https://www.mase.gov.it/pagina/union-comoros>

⁹⁰ UNDESA Establishment of a PET recovery and buy-back centre in Moheli, Comoros Island <https://sdgs.un.org/partnerships/establishment-pet-recovery-and-buy-back-center-moheli-comoros-islands>

⁹¹ IOC Sub Commission for Africa and the Adjacent Island States <https://ioc-africa.org/33-governance-and-legislation/81-comoros.html>

5.3.4 Democratic Republic of the Congo (DRC)

5.3.4.1 Wastewater management

Oversight of wastewater in the DRC falls under the Ministry of Environment and Sustainable Development, while development of the sector is primarily overseen by Ministry of Infrastructure, Public Works and Reconstruction. Despite this, oversight of water in the DRC is complicated by a relatively fragmented regulatory environment, with some limited central regulations like Environmental Protection Act (2011) working alongside a set of narrow national ordinances and rules set by local authorities.⁹² Major gaps exist in the wastewater regulatory environment, most notably being the absence of unified national water quality standards.⁹³

The state of wastewater infrastructure varies significantly in the DRC, reflective the extreme scale and diversity of the country. Most cities in the country have very limited formal sewer systems, and even the capital Kinshasa has only 5% of the population covered by sewage systems.⁹⁴ Distribution of water and management of wastewater is the responsibility of Régie de Distribution d'Eau (REGIDESO), the state-owned water utility. Kinshasa recently completed construction of a donor-funded and Chinese-built water treatment plant, focused more on cleaning water from the heavily polluted Congo River, but there remains limited primary treatment of wastewater in most parts of the country.⁹⁵

Very limited information is available on either private participation in wastewater management, or the role of regional firms in the country. There appears to be some private provision of industrial water treatment, particularly in the mining region of Katanga; and private participation in consulting services to refurbish and restore some existing water treatment facilities, such as the N'djili plant servicing Lubumbashi.⁹⁶

5.3.4.2 Refuse disposal & Sanitation

As with wastewater management, management of solid waste falls under the Ministry of Environment and Sustainable Development with a substantial role for local authorities, and a great deal of diversity in the quality and specifics of the regulatory environment across the country.⁹⁷ While a number of gaps remain, the Environmental Protection Act (2011) provides the core of waste management regulation, governing all major forms of waste and creating limitations on the foreign trade in dangerous wastes.⁹⁸ Waste generated by the mining sector is subject to a range of further regulations, particularly from the Mining Code (2018).⁹⁹

Waste collection, storing and sorting is significantly underdeveloped in the DRC. While responsibility for waste collection and management nominally lies with municipalities, with overarching governance by the Environmental Protection Act, in reality few cities have functional systems. Even the capital Kinshasa, one of the largest cities on the continent, has no formal engineered landfill, and instead relies on networks of poorly managed dumps. Similarly, in

⁹² B Walmsley and S Husselman, "DRC: Environmental Assessment Legislation," in *Handbook on Environmental Assessment Legislation in Selected Countries in Sub-Saharan Africa*, 4th ed. (Development Bank of Southern Africa (DBSA) in collaboration with the Southern African Institute for Environmental Assessment (SAIEA), 2020), <https://www.dbsa.org/sites/default/files/media/documents/2021-05/Chapter%20b%20DRC%20English.pdf>.

⁹³ Ibid.

⁹⁴ "Kinshasa and Brazzaville (DRC and Congo)," International Water Association, accessed August 11, 2023, <https://iwa-network.org/kinshasa-and-brazzaville-congo/>.

⁹⁵ I Magoum, "DRC: Binza Drinking Water Plant Serves 1.5 Million People in Kinshasa," *Afrik 21*, February 27, 2023, <https://www.afrik21.africa/en/drc-binza-drinking-water-plant-serves-1-5-million-people-in-kinshasa/>.

⁹⁶ "Rehabilitation of the N'Djili drinking water treatment plant in Kinshasa, Democratic Republic of Congo," Antea Group, accessed August 11, 2023, <https://int.anteagroup.com/projects/rehabilitation-of-the-n-djili-drinking-water-treatment-plant-in-kinshasa-democratic-republic-of-congo>.

⁹⁷ B Walmsley and S Husselman, op. cit.

⁹⁸ Ibid.

⁹⁹ République Démocratique du Congo, "Code Minier" (Journal Officiel de la République Démocratique du Congo, March 9, 2018), https://congominer.org/system/attachments/assets/000/001/549/original/J.O._n%C2%B0_sp%C3%A9cial_du_3_mai_2018-A4_CODE_MINIER.pdf?1553850117.

Lubumbashi, the vast majority of waste is collected by informal rickshaw operators, with high levels of open burning and a dependence on poorly engineered landfills.¹⁰⁰

With such under-developed infrastructure, there has historically been quite limited formal private sector participation in waste management in the DRC, except to fill the gaps left by the lack of state capacity. However, the private sector seems to be playing a key role in efforts to improve the underlying infrastructure. Turkish multinational Albaryk was expected to take over waste management in Kinshasa in 2022, while Canada's Biocrude Technologies was reportedly developing a recycling plant for organic waste in the city.¹⁰¹ There appears to be a long history of donor initiatives and calls for bids to service waste management in the city, many of which have proved unsuccessful, indicating structural barriers to the development of central infrastructure.

In the mining belt, private companies typically service waste management for mining firms, although poor standards and regulation mean that environmental regulations are often not adequately met. Recycling is limited, but there are emerging investments in the plastic recycling space, including by regional firms. Perhaps the most notable is the development of a plastic bottle recycling plant in Kinshasa by plastic recycler Ok Plast, which runs both a network of collection points for the paid deposit of plastic bottles, and a core recycling plant, which converts waste plastic into items like bottle caps, crates and water pipes.

5.3.4.3 Environmental consulting & Specialist services

National environmental regulations are overseen by the Ministry of Environment and Sustainable Development (MESD), which regulates EIAs and specific regulations like the governance of national reserves.¹⁰² EIAs are issued by the Congolese Environmental Agency (CEA), although significant additional regulations are overseen as part of the mining sector (albeit with a poor record of oversight and implementation of some of these rules).¹⁰³ Consultants are typically expected to be registered with the CEA before they can undertake core environmental consulting activities in the country.

Much of the DRC's environmental consulting sector is clustered around the mining industry, which attracts a number of multinationals and major regional firms to the market, from both SADC and other regions like the EAC. While there are some small local environmental consulting firms, the domestic industry seems relatively under-developed, in part because of the dominance of foreign firms.

5.3.5 Eswatini

5.3.5.1 Wastewater and sanitation management

The Department of Water Affairs, located within the Ministry of Natural Resources and Energy, is responsible for supplying water in rural areas and (to a lesser extent) coordinating and improving the link between water supply projects and sanitation development.¹⁰⁴ The Department of Water Affairs is responsible for administering the Water Act (2003), which creates the National Water Authority tasked with managing and administering Eswatini's water resources. Like other SADC countries, sanitation services are decentralised, and municipal councils are responsible for providing faecal sludge emptying and public toilet services – although there are a few instances in which this service is outsourced to private entities to deliver upon.

¹⁰⁰ A Katumbo et al., "Household Waste Management in Lubumbashi, Democratic Republic of Congo," *Open Journal of Public Health*, June 25, 2020, https://www.researchgate.net/publication/344447674_Household_Waste_Management_in_Lubumbashi_Democratic_Republic_of_Congo. *Open Journal of Public Health*, 2020.

¹⁰¹ B Wansi, "DRC: In Kinshasa, Albaryk Will Take over Waste Management in 2022," *Afrik 21*, January 12, 2022, <https://www.afrik21.africa/en/drc-in-kinshasa-albaryk-will-take-over-waste-management-in-2022/>.

¹⁰² B Walmsley and S Husselman, op. cit.

¹⁰³ Ibid.

¹⁰⁴ Ministry of Natural Resources & Energy Swaziland, <https://www.gov.sz/index.php/home-natural-resource>

The Eswatini Water Services Corporation (EWSC) is an SOE responsible for providing sewerage services wastewater and faecal sludge treatment in urban areas throughout the country. The EWSC currently operates 10 wastewater treatment plants and complies with environmental standards established by the Eswatini Environmental Authority's Water Pollution Control Regulations (2010) when treating and disposing of wastewater.¹⁰⁵ The Eswatini Environment Authority (EEA) regulates and enforces sewerage services and develops effluent discharge standards. The Department of Urban Growth (part of the Ministry of Housing and Urban Development), which is responsible for urban local government administration, also oversees the building plan approvals and vacuum tanker services associated with sewerage disposal.¹⁰⁶

Across Eswatini 58% of the country has basic sanitation services.¹⁰⁷ Residents in urban areas rely mostly on flush toilets to either a piped sewer system¹⁰⁸ or a septic tank with a soak-pit, while in rural areas, informal settlements and peri-urban areas, residents largely use septic tanks and pit latrines.¹⁰⁹ Challenges for improving sanitation services include limited financial resources, inadequate infrastructure, and a growing population.

Agricultural wastewater is never treated, and most industries do not pre-treat their wastewater before discharging to the main sewerage canal where sewage is conveyed to septic ponds for treatment by Eswatini Water Services Corporation (EWSC). Treated (industrial and domestic) and untreated (agricultural) wastewater eventually finds its way into the main watercourses. Currently, there are no direct uses of greywater in Eswatini.¹¹⁰

The National Water Policy (2018), which provides guidelines for national water resource development and management, recognises the importance of private sector participation and provides for the creation of PPPs to further sanitation service delivery and sanitation infrastructure development. Despite such legislative provisions for private sector participation, however, existing regulations need to be complemented to encompass the entire sanitation value chain to scale private sector participation. The current regulations do not address the following issues: facilitating easier doing business conditions for the private sector (in order to promote their participation and development in this sector) and providing regulations that will guide and enable the public sector (agencies and municipalities) to outsource these services to private sector providers.¹¹¹ Additionally, the private sector faces additional competition vis-à-vis subsidies provided to public services as well as the high costs associated with importing relevant materials for sanitation service delivery.¹¹²

Faecal sludge emptying services in Eswatini are provided exclusively by vacuum trucks. The service is delivered by both private companies (limited cases) and public sectors (municipal councils), and tariffs vary greatly amongst operators. In other instances, municipal councils provide faecal sludge emptying service and public toilet service; in a few cases the service is outsourced to the private sector.¹¹³ In rural areas and small towns, the service efficiency is much lower than in urban areas.¹¹⁴ Reuse of treated sludge is not common in Eswatini.

Packaged wastewater treatment plants are provided by the private sector to non-sewered institutions or industries. There are currently 12 packaged plants in operation throughout the country. The private sector provides construction/installation, operation, maintenance and

¹⁰⁵ EWSC Services, <https://www.swsc.co.sz/services/wastewatermanagement/>

¹⁰⁶ National Sanitation and Hygiene Policy, 2019

¹⁰⁷ Ibid.

¹⁰⁸ There are 24 sewerage systems including wastewater treatment plants in the country.

¹⁰⁹ National Sanitation and Hygiene Policy, 2019

¹¹⁰ Swaziland Private Sector Competitiveness Project 2015, <http://eea.org.sz/wp-content/uploads/2020/08/FINAL-SPSCP-ESMF-October-2015.pdf>

¹¹¹ National Sanitation and Hygiene Policy, 2019

¹¹² Ibid.

¹¹³ Ibid.

¹¹⁴ Ibid.

monitoring services.¹¹⁵ The private sector is responsible for providing faecal sludge emptying services, operation of public toilet and provision or temporary toilet for special events, construction and operation of wastewater treatment package plants.

5.3.5.2 Refuse and waste management

Generally, cities and major towns dispose of their solid waste in dumpsites, while smaller towns burn their solid waste in the open. Waste collection is also not consistent, and the frequency of waste collection depends on the municipality in question and the affluency of the area, and waste from peri-urban areas are often not adequately collected. Waste is collected in non-compartmentalised vehicles and waste separation is not practiced in any of the cities and towns in Eswatini.¹¹⁶ Once waste reaches a landfill or dumpsite, recyclables are extracted by waste pickers who collect different types of plastic, paper, metal and cardboard from the dumpsites. These waste pickers work independently of the establishment, without any direct linkage to any authority responsible for the dumpsite or landfill.¹¹⁷ It is estimated that only 30% of waste is recycled in Eswatini,¹¹⁸ despite the National Solid Waste Management Strategy's (2000) provisions to support small enterprises and cooperatives to participate in waste service delivery, especially recycling.¹¹⁹

Regulation of the waste sector is overseen by three key authorities:¹²⁰

1. The Eswatini Environment Authority (EEA) is the lead agency for environmental management, including waste management at national, regional and local levels. The EEA is responsible for developing environmental policies, guidelines, regulations and strategies.¹²¹
2. The Ministry of Housing and Urban Development (MHUD) is responsible for household and commercial waste management undertaken by urban local government bodies such as city councils, town councils and town boards. Similarly, disposal of medical waste is overseen by the Ministry of Health.

The role of local government is most critical in the implementation of waste management services in Eswatini, and obligations of local authorities are defined in the Environment Management Act (2002) and the Waste Regulations (2000). The key responsibility of local authorities is to provide waste management services for the areas under their jurisdiction by securing funds from national institutions (MHUD) or grants from international donors, apart from the revenue they generate from services provided to residents.

Government remains the main actor in development and, unfortunately, this has resulted in the crowding out of the private sector.¹²² Nevertheless, waste management is an area with growing private sector participation and there are opportunities for such entities to work together and network within the country. The proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated in cities and towns stands at 73%.

¹¹⁵ National Sanitation and Hygiene Policy, 2019. Package wastewater treatment plants are decentralized pre-engineered and prefabricated facilities to treat wastewater on-site. The final effluent can be released safely into the environment such as receiving streams, rivers, etc. Typical applications are industries and manufacturing facilities, educational campuses, construction sites, recreational areas, government compounds, small and medium size communities, etc.

¹¹⁶ R Singh (2021) Solid Waste Management in Eswatini: Challenges and Opportunities, Centre for Science and Environment, <http://www.indiaenvironmentportal.org.in/files/file/Eswatini%20Report%20Jan%202022.pdf>.

¹¹⁷ Ibid.

¹¹⁸ Ibid. Here, the term "recycled" as per EEA is used for reuse, upcycling and downcycling of material done by households or commercial establishments at point of generation or community level.

¹¹⁹ National Solid Waste Management Strategy for Swaziland: Status Quo Analysis Report (2020) <http://eea.org.sz/wp-content/uploads/2020/08/statusquo.pdf>

¹²⁰ R Singh, op. cit.

¹²¹ Duties and responsibilities of EEA are fully defined in the Environment Management Act of 2002, the Environmental Impact Assessment Regulations, and the Waste Regulations of 2000

¹²² United Nations Second Voluntary National Review Report 2022, <https://hlpf.un.org/sites/default/files/vnrs/2022/VNR%202022%20Eswatini%20Report.pdf>

This progress is attributed to the increase issuance of waste management licenses to the public; for example, in 2020, 82 licenses were issued.¹²³

The Waste Regulations¹²⁴ provide guidance on management of different waste types and establish the duties and responsibilities of relevant stakeholders such as the EEA, local authorities, and waste generators and waste service providers (recyclers, sorters) and stipulate that waste should be collected at least once a week.¹²⁵ Companies, such as [Eco-Buzz Waste Management](#) (an integrated waste management company) are responsible for a range of waste-management activities across the value chain, including hazardous, healthcare waste management and recycling.

With the support of an enabling doing business environment other private sector opportunities for participation in waste management and recycling could include their participation in circular economy in waste sector management, the creation of PPPs to address existing waste management problems, as well as developing partnerships with the private sector to support extended producer responsibility for waste minimisation.¹²⁶

Owing to limited recycling facilities, with selective waste recycling measures, existing information (where available) points to the presence of processing of dry waste in Eswatini with further export to South Africa and Mozambique,¹²⁷ as well as an established presence of informal waste pickers in Eswatini's recycling ecosystem. Eswatini also does not have capacity to destroy hazardous waste and has to send it to South Africa for termination.¹²⁸

5.3.5.3 Environmental consulting & Specialist services

The Eswatini Environment Authority is tasked with, inter alia, reviewing EIAs and strategic environmental assessment reports and administering licences. Relevant legislation overseeing the governance of EIAs includes the Environmental Audit, Assessment and Review Regulations (EAARR, 2000) and the Environmental Assessment Regulations (2022). The former establishes the guidelines and requirements for ESIA and environmental audit reports and requires any new projects that are deemed to have an impact on the environment to obtain an Environmental Compliance Certificate or an Environmental Authorisation Letter from the Eswatini Environment Authority.¹²⁹

Section 9 of the EEARR governs the registration and conduct of environmental assessment practitioners specifically and provides for the participation of foreign service providers via temporary registration granted by the Council of Registration of Architects, Engineers, Surveyors & Allied Professionals. Permission to such foreign service providers are provided in instances where the person is not ordinarily resident in Eswatini, intends to conduct professional services in the country and has a valid work permit.¹³⁰ As is the case in other SADC countries, specialised environmental consulting services are present in eSwatini and there are also examples of South African companies with offices in Eswatini conducting and offering environmental services within the country.¹³¹ Foreign service providers are allowed to participate in and tender for environmental consulting services related to environmental and social impact assessments.¹³²

¹²³ Ibid.

¹²⁴ Waste Regulations falls under Section 18 of the Environment Authority Act of 1992

¹²⁵ R Singh, op. cit.

¹²⁶ Commonwealth Secretariat, op. cit.

¹²⁷ <https://off356.wixsite.com/recycling-eswatini>

¹²⁸ United Nations Second Voluntary National Review Report 2022

¹²⁹ DBSA: African Environmental Assessment Legislation Handbook: Consultation Draft. Chapter 9: Eswatini <https://www.dbsa.org/african-environmental-assessment-legislation-handbook>

¹³⁰ Ibid.

¹³¹ For example, see <https://www.gibb.co.za/swaziland/>

¹³² By way of example: [https://www.esppra.co.sz/sppra/documents/tenders/Eswatini%20Electricity%20Company%20\(EEC\)/1663573132.pdf](https://www.esppra.co.sz/sppra/documents/tenders/Eswatini%20Electricity%20Company%20(EEC)/1663573132.pdf)

5.3.6 Lesotho

5.3.6.1 Wastewater management

The Ministry of Water regulates both fresh and wastewater in Lesotho and coordinates all initiatives in the broader water space. The Ministry is primarily empowered by the Water Act of 2008 that establishes a Commissioner for Water, which provides advice and strategic planning services to the department, and the Water Tribunal, a special court for resolving water-related disputes.¹³³ Water planning is guided by a number of waste and sanitation strategies, although it is unclear which of the strategies is currently guiding development in the country.

The distribution of water and management of wastewater in Lesotho are both handled by the Water and Sewage Company (WASCO). WASCO is a state-owned entity and primarily supplies services to urban centres and larger villages, with a total client base of around 300,000 people (covering 13% of the population, and 80% of the urban population).¹³⁴ With most of the population relying on off-grid wastewater management services, WASCO also regulates the provision of sewage collection services, which is mostly handled by private providers that clear septic tanks and other solutions. WASCO is regulated by the Ministry of Water, while management of the entity as a state-owned enterprise (SOE) is handled by the Ministry of Finance. Waste stabilisation ponds remain the primary means of water treatment but are complimented by a few formal treatment plants (such as the Ratjomose Sewage Treatment Plant), with most waste eventually disposed of in the Mohokare (Caledon) River System.¹³⁵

Private participation is a strong theme of the country's Long-term Water and Sanitation Programme, which identifies a number of avenues for companies to get involved in the sector, mostly by closing gaps in WASCO's service coverage.¹³⁶ This broadly focuses on two pillars: empowering local councils to contract private providers in areas in which WASCO does not have coverage and creating an enabling framework for the establishment of PPPs to deliver core services. However, no active PPPs were identified, and private participation seem to remain mostly clustered in handling off-grid wastewater collection.

Lesotho is a leader in regional integration of the water network, most famously through the provision of bulk water services to South Africa via the Lesotho Highlands Water Project. However, this does not typically extend to wastewater treatment, which is handled domestically. There is regional participation in industrial handling of wastewater, which is mostly treated on-site, opening up opportunities for private companies to install water treatment infrastructure. For example, Lesotho's Mothae Diamond Mine recently contracted South African wastewater treatment company WEC Solutions to install and operate a large off-grid treatment plant at the mine.

Case study: Mothae Diamond Mine and WEC Solutions

The Mothae Diamond Mine is located about 20kms outside Maseru and is co-owned by Lucapa Diamonds and the Government of Lesotho. The mine sits in a sensitive ecological area within the Maluti mountains, and was previously dependent on the use of sewage trucks to ship wastewater to the nearest disposal facility, about 130kms away.¹³⁷ The mine partnered with South African engineering services firm WEC Projects to install, operate and maintain a packaged sewage treatment plant, which provides conventional activated sludge treatment to wastewater generated

¹³³ Government of Lesotho, "Lesotho Water Act, 2008" (Lesotho Government Gazette, December 30, 2008), <https://www.water.org.ls/download/lesotho-water-act-no-15-of-2008/?wpdmdl=5860&refresh=64e72074818161692868724>.

¹³⁴ Ministry of Water, "WASCO Corporate Profile," accessed August 10, 2023, <https://www.water.org.ls/wasco/>, <https://www.water.org.ls/wasco/>.

¹³⁵ L Lekhoana, "Wastewater Production, Treatment, and Use in Lesotho" (UN Water, n.d.), https://www.ais.un-water.org/ais/pluginfile.php/231/mod_page/content/188/lesotho_country_report.pdf.

¹³⁶ Commissioner of Water (Lesotho), "Long Term Water and Sanitation Strategy" (Maseru, Lesotho: Ministry of Energy, Meteorology and Water Affairs, May 2014), <https://www.water.org.ls/download/lesotho-long-term-water-and-sanitation-strategy/?wpdmdl=5935&refresh=64b4f5679479f1689580903>.

¹³⁷ Mining Weekly, "Diamond Mine Sewage Plant near Completion," Engineering News, accessed August 29, 2023, <https://www.miningweekly.com/print-version/sewage-treatment-plant-at-diamond-mine-near-completion-2022-08-05>.

by the mine.¹³⁸ Support services provided by the company also include regular water testing and quality audits, along with the training of local staff.¹³⁹ Advocates of the project note that the initiative provides environmental benefits, while also reducing costs for the mine by avoiding costly transportation of waste, and providing opportunities to deepen trade between Lesotho and South Africa.¹⁴⁰

5.3.6.2 Refuse disposal & Sanitation

Solid waste regulation in Lesotho is governed by the Minister of Tourism, Environment and Culture; but with most waste management handled by local authorities, the Local Government and Chieftainship Ministry also plays a key role in setting waste policies.¹⁴¹ While the Environment Act of 2008¹⁴² provides an overarching framework for the regulation of waste – establishing intergovernmental coordination mechanisms like the National Environmental Council and the Environmental Coordinating Committee, and establishing the powers to set standards for the handling of waste – individual municipalities have scope to set local regulations and licensing regimes.

Refusal disposal is formally handled by individual municipalities in Lesotho, but realistically there is relatively poor formal coverage of sanitation activities, and many villages remain dependent on informal services. Maseru received its first formal landfill in 2006 (before which waste was mostly disposed of with open-burning practises), and even today collection coverage is poor, with multiple parts of the country not covered by formal services or receiving services that neglect key types of waste.¹⁴³ Challenges in waste collection services are typified by the Maseru City Council, which has two trash compactors and four general waste collection trucks for a city of more than 300,000, and which has seen about half of this capacity being unavailable due to a lack of maintenance and repair.¹⁴⁴

There are reportedly about 21 companies involved in the collection and handling of waste, and general sanitation work like street sweeping, but this is complimented by about 40 informal waste pickers who collect recyclable materials at the waste site.¹⁴⁵ While there is no waste recycling in Lesotho, a number of waste collectors supply recycling centres in South Africa.¹⁴⁶

5.3.6.3 Environmental consulting & Specialist services

The Department of Environment oversees environmental regulations in Lesotho, including managing EIA processes and implementing the National Environmental Action Plan (NEAP, 1989), which aims to encourage environmental awareness in major sectors and developments.¹⁴⁷ Beyond EIAs, a wide range of licenses – governing various forms of pollution (ranging from noise to effluent) and major developments (like mines and construction) – are required.¹⁴⁸

¹³⁸ WEC Projects, “WEC Projects Completes Sewage Treatment Plant for Mothae Diamond Mine - WEC Projects,” July 6, 2022, <https://www.wecprojects.com/success-stories/sewage-treatment-plant-lesotho-mine/>.

¹³⁹ Ibid.

¹⁴⁰ Mining Weekly, “Diamond Mine Sewage Plant near Completion.”

¹⁴¹ UN-HABITAT, “Country Profile: Lesotho,” July 2022, https://unhabitat.org/sites/default/files/2022/07/lesotho_en.pdf.

¹⁴² Government of Lesotho, “Lesotho Environment Act 2008,” 2008, <https://faolex.fao.org/docs/pdf/les128916.pdf>.

¹⁴³ M F Senekane, A Makhene, S Oelofse, “A Critical Analysis of Indigenous Systems and Practices of Solid Waste Management in Rural Communities: The Case of Maseru in Lesotho,” *International Journal of Environmental Research and Public Health* Vol. 19, No. 18, 2022

¹⁴⁴ UN-HABITAT, “Profile: Maseru, Lesotho,” December 2018, https://unhabitat.org/sites/default/files/2022/07/maseru_en.pdf.

¹⁴⁵ Ibid.

¹⁴⁶ UNITAR, “Waste Management in Lesotho,” accessed August 10, 2023, <https://stopopenburning.unitar.org/guidance-and-examples/lesotho/waste-management-in-lesotho/>.

¹⁴⁷ B Walmsley and S Husselman, “Lesotho: Environmental Assessment Legislation,” in *Handbook on Environmental Assessment Legislation in Selected Countries in Sub-Saharan Africa*, 4th ed. (Development Bank of Southern Africa (DBSA) in collaboration with the Southern African Institute for Environmental Assessment (SAIEA), 2020), <https://www.dbsa.org/sites/default/files/media/documents/2021-05/Chapter%2013%20Lesotho.pdf>.

¹⁴⁸ Ibid.

While there is provision for the governance of environmental consultants, no regulations are in place to operationalise governance of the sector. Instead, most standards are set through voluntary association the Environmental Assessment Practitioners' Association of Lesotho (EAPAL), which oversees a database of registered practitioners. While it appears foreign consultants can register with EAPAL, there is a condition that "(f)oreign practitioners shall partner with a local environmental assessment practitioner(s) for purposes of skills transfers where necessary".¹⁴⁹

The environmental consulting sector in Lesotho appears to be very under-developed and tends to be served by South African companies and individual consultants, some of which have local offices in Maseru.

5.3.7 Madagascar

5.3.7.1 Wastewater management

The Ministry of Energy, Water and Hydrocarbons provides overarching governance of the wastewater sector in Madagascar and the Ministry of the Environment and Sustainable Development provides broader governance on issues of environmental control. Core regulation of wastewater is governed by the Water Code (formally Law No. 98-029 of 20/01/99), but practical application of numerous aspects of wastewater governance managed through a series of decrees and ordinances.¹⁵⁰ Included amongst these decrees is the creation of the National Authority of Water and Sanitation (ANDEA), which is an autonomous body charged with implementing water resources management in the country.¹⁵¹

Madagascar's wastewater infrastructure is extremely under-developed, with no true wastewater treatment to speak of and very limited piped sewage infrastructure.¹⁵² Madagascar has the lowest share of the population benefiting from advanced sanitation measures in all of SADC, with less than 20% of the population having access to even basic sanitation infrastructure.¹⁵³ Even in the capital Antananarivo, about 99% of households depend on pit latrines, septic tanks or makeshift home solutions, and discharge of septic waste is generally poorly regulated, with waste often discharged into natural water sources.¹⁵⁴ The existing sewage system was largely built during the colonial era (when the population was less than an eighth of its current size), and has suffered from a lack of investment and maintenance.¹⁵⁵

Wastewater management is primarily handled by JIRAMA, the state-owned water and electricity utility. While there is scope for private participation in the management of industrial waste, or filling gaps in supply not provided by JIRAMA or the local municipalities, there does not appear to be a strong national framework for private sector participation.

While these limits on private participation in the underdeveloped wastewater sector also stifle the scope for regional participation, there are some small-scale examples of cooperation. For example, South Africa's Ozone Service Industries has begun providing small scale treatment solutions for

¹⁴⁹ B Walmsley and S Husselman, op. cit.

¹⁵⁰ B Walmsley and S Husselman, "Madagsacar: Environmental Assessment Legislation," in *Handbook on Environmental Assessment Legislation in Selected Countries in Sub-Saharan Africa*, 4th ed. (Development Bank of Southern Africa (DBSA) in collaboration with the Southern African Institute for Environmental Assessment (SAIEA), 2020), <https://www.dbsa.org/sites/default/files/media/documents/2021-05/Chapter%2014%20Madagascar.pdf>.

¹⁵¹ USAID, "Madagascar: Water and Sanitation Profile," March 2010, <https://www.washplus.org/sites/default/files/madagascar2010.pdf>. https://pdf.usaid.gov/pdf_docs/PNADO933.pdf

¹⁵² P Cosoli et al., "Wastewater Treatment and Disposal in Mahajanga, Madagascar - Scientific, Multi- Disciplinary Cooperation," n.d. UPB Scientific Bulletin, Vol. 77, Issue 2, 2015.

¹⁵³ AfDB Sanitation and Wastewater Atlas of Africa, 2020 https://www.afdb.org/sites/default/files/documents/publications/sanitation_and_wastewater_atlas_of_africa_compressed.pdf.

¹⁵⁴ F F F V F Rasolonjatovo, H S Huboyo, and Sudarno, "Proposing a New Strategy to Minimize Domestic Wastewater under the Influence of Human Factor in Antananarivo, Madagascar," IOP Conference Series Earth and Environmental Science, 2021.

¹⁵⁵ Japan International Cooperation Agency (JICA), "Strategies for Infrastructure Sectors in Antananarivo Agglomeration," in *The Project on Master Plan Formulation for Economic Axis of TaToM (Antananarivo-Toamasina, Madagasikara)* (Tokyo, Japan: JICE, 2019).

waste in the port city of Toamasina, effectively allowing recirculation of sewage back into various brown-water use systems.¹⁵⁶

Case study: Ozone Service Industries

The Madagascar operations of American multinational pump and valve supplier Flowserve are located in the port city of Toamasina. While Toamasina is connected to JIRAMA's broader drinking water network, the sewage network remains significantly underdeveloped, with 97% of households reportedly dependent on latrines.¹⁵⁷ As such, Flowserve contracted South African waste treatment firm Ozone Service Industries (now operating as Biozone), to install and operate an off-grid Biozone NoKak Sewage Treatment Plant at their local offices.¹⁵⁸ While a very small scale solution, the unit is designed to provide basic treatment of sewage to a level that enables it to be reused in toilet flushing systems and irrigation systems, providing both a self-sustained solution for the company and relieving some pressure from the broader water grid in the city.

5.3.7.2 Refuse disposal & Sanitation

The Ministry of the Environment and Sustainable Development is charged with governing waste management in Madagascar and implementing the Malagasy Environmental Charter, which provides a broad enabling framework to implement a range of sustainability rules governing issues like climate change. The Charter calls to "Promote an effective system for the management of all national waste such as: medical, agricultural, industrial and household waste" ("*Promouvoir un système efficace de gestion de tous les déchets nationaux tels que : les déchets médicaux, agricoles, industriels et ménagers*").

Management of solid waste in Madagascar is handled by municipalities but, like wastewater, there are serious limitations on waste management capacity. Estimates suggest that only 50% of waste produced in the country is formally collected by waste management facilities. There is limited information available on refuse disposal and collection outside of the capital, but even in Antananarivo there appear to be major gaps in coverage, with only one landfill (Andralanitra) servicing the city.¹⁵⁹

The delivery of core services has reportedly been impacted by a number of governance changes in recent years. For example, waste management in the capital was traditionally handled by Service Autonome de Maintenance de la Ville d' Antananarivo (SAMVA), which has been the focus of significant donor and technical support. But from 2021, the agency was disbanded, in favour of a new Municipal Sanitation Company.¹⁶⁰

Private participation is notable in the waste management sector of Antananarivo, particularly via a number of donor-funded initiatives. This has focused on the development of waste sorting and separation facilities, and on the subsequent development of recycling capabilities.

5.3.7.3 Environmental consulting & Specialist services

The Ministry of the Environment and Sustainable Development (MESD) oversees environmental regulations in Madagascar, with the aim to "(s)afeguard and value our environment and unique natural resources for the well-being of the Malagasy population and the sustainable development of the country".¹⁶¹ EIAs are managed by an agency of the MESD, the National Office for the Environment (ONE), which also oversees a range of environmental audits, permitting processes,

¹⁵⁶ Infrastructure news, "Madagascar Makes Use of SA Technology," May 2, 2012, <https://infrastructure-news.co.za/2012/05/02/madagascar-makes-use-of-sa-technology/>.

¹⁵⁷ D Dirix, F Rossi, H van der Hoek, "Faecal Sludge Management in Toamasina, Madagascar: Emptying – Transport – Treatment," *Journal of Environmental Management*, Vol, 281 2021

¹⁵⁸ Infrastructure news, "Madagascar Makes Use of SA Technology." <https://infrastructurenews.co.za/2012/05/02/madagascar-makes-use-of-sa-technology/>

¹⁵⁹ Agence Francaise de Developpement "Improving Waste Management in Antananarivo," accessed August 10, 2023, <https://www.afd.fr/en/carte-des-projets/improving-waste-management-antananarivo>.

¹⁶⁰ Miangaly Ralitera, "Assainissement - La SMA Remplace Le Samva," *L'Express de Madagascar* (blog), February 24, 2021, <https://lexpress.mg/24/02/2021/assainissement-la-sma-remplace-le-samva/>.

¹⁶¹ B Walmsley and S Husselman, op. cit.

and other certification systems. While EIAs are generally required for the issuance of environmental permits, there is no regulation for the registration or certification of EIA consultants (or of other environmental consultants).

While environmental consulting and impact assessments are underpinned by the private sector, the local consulting industry appears to be very limited. While there are some local firms (such as Revolve Consulting) and some small-scale individual consultants, individual projects tend to depend on global consulting firms. While some regional firms seem to operate in the market, language barriers and strong linkages to French business networks seem to limit the scale of regional trade.

5.3.8 Malawi

5.3.8.1 Wastewater management & Sanitation

The Ministry of Water and Sanitation, established in 2022 as a standalone department, is responsible for water supply and sanitation in Malawi,¹⁶² which generally is the sole remit of the Malawian government.¹⁶³ Its mandate is to ensure the sustainable management of water resources to meet domestic, agricultural and industrial demand as well as developing access to improved sanitation facilities and safe hygiene practices.

Established by the Water Resources Act (2013), the National Water Resources Authority (NWRA)¹⁶⁴ regulates and protects water resources quality from adverse impacts; issues water abstraction and effluent discharge rights; and monitors and enforces conditions attached to permits for water use. District assemblies oversee the implementation of decentralization policies, including water resources management, and implement water and sanitation goals under decentralization reforms. City and regional water boards are responsible for water supply to regions and work with governments and community agencies to implement water and sanitation goals.¹⁶⁵ The Water Resources Board, a parastatal, is charged for water supply and related services, and customers include commercial entities, households, institutions and communal water points. As is common practice across SADC, sanitation in cities and towns are governed by by-laws.¹⁶⁶ Lastly, Malawi has historically had strong donor presence and participation post-independence, and donor presence is prevalent in the sanitation sector. A number of major water infrastructure projects in Malawi (focused on improving water supply to urban areas) are financed by donors, specifically the World Bank. Approximately 88.5% of the seven major water infrastructure projects in 2022/23 were financed by donors and only 11.5% is financed by the Government.¹⁶⁷

Despite ongoing projects, access to safe and adequate sanitation facilities and proper wastewater treatment and disposal remains a significant concern in both urban and rural areas. Depending on the municipality, citizens discharge the untreated wastewater in the storm drains and natural waterways. A small number of households release the wastewater in their household septic tanks, which are further discharged into the soils or is collected by the city councils. In most instances full latrines are abandoned and new ones are dug. Effluents from septic tanks are collected and discharged into sewerage systems by either city councils or private operators who operate emptying business.¹⁶⁸

¹⁶² All Africa 'Malawi: Stakeholders describe creation of Ministry of Water and Sanitation as a step towards achieving goals.' <https://allafrica.com/stories/202202030104.html>.

¹⁶³ Survey feedback from Malawian ministry.

¹⁶⁴ National Water Resources Authority, <http://nwra.mw/>.

¹⁶⁵ M Ravina et al (2021) 'Urban Wastewater Treatment in African Countries: Evidence from the Hydroaid Initiative.' *Sustainability*, <https://www.mdpi.com/2071-1050/13/22/12828>. Referring to the example of Kuzugu municipality.

¹⁶⁶ R Holm et al (2018) 'Sanitation service delivery in smaller urban areas (Mzuzu and Karonga, Malawi).' *Environment & Urbanization*, <https://journals.sagepub.com/doi/epub/10.1177/0956247818766495>

¹⁶⁷ UNICEF, WASH Water Brief, <https://www.unicef.org/esa/media/11836/file/UNICEF%20Malawi%20WASH%20Budget%20Brief%202022-23.pdf>

¹⁶⁸ M Ravina et al, op. cit.

Private sector participation in the wastewater management sector in Malawi is limited but is gradually increasing and has been identified as a priority import sector in the Malawian survey findings. Currently, many entities operate in drilling and consultancy services, masons and technicians, as well as waste collection and transportation in urban areas.¹⁶⁹ The government has expressed its commitment to promoting PPPs to improve water and sanitation services, including wastewater treatment, and treating water and managing wastewater is undertaken by the government with support from private entrepreneurs NGOs and donors.¹⁷⁰ To this end, the Malawi Water Sector Investment Plan (2012) provides for an Investment Plan and associated Funding Plan for the water and sanitation sector in Malawi until 2030.¹⁷¹ However, as a private paid-for service delivered in some smaller cities, the fees are not affordable for all residents and sanitation services cater primarily to high-income areas.¹⁷² Moreover, the somewhat-monopoly in service provision maintained by Water Boards in urban areas across the country “creates a market distortion in the sense that it prevents private operators to enter the market.”¹⁷³

In recognising the importance of private sector participation in the provision of services related to wastewater management and sanitation, the National Water Policy (2005) provides for and supports increased private sector participation, inter alia, that the role of the private sector should include participation across the value chain including:¹⁷⁴

1. Investing in water resources development and sanitation services
2. Provided skilled maintenance services and water supply systems on a commercial basis
3. Provide capacity for consulting and contracting services in the water, sanitation and related industries
4. Conduct research, develop and promote local manufacturing capacity for water and sanitation related services
5. Provide capital for investment in water and sanitation developments – although the market for concessional and commercial loans are still small and unattractive for encouraging private sector participation.¹⁷⁵

Box 2: Examples of private sector participation thus far

- The Pit Emptiers Association (PEA) is a formal network of sanitation entrepreneurs who provide sanitation solution to households and institutions. Services include the emptying of in-situ sanitation facilities, building of improved toilets based on Water for People’s catalogue and the sale of toilet-related products. The association had 15 paid and 43 regular members registered in 2016. Paid members are allowed to hire pick-up trucks (to carry faecal sludge) at a subsidized price.¹⁷⁶
- Two faecal sludge management (FSM) businesses are Mr. Clean Malawi in Mzuzu and WES Management in Blantyre. Mr. Clean Malawi is the primary FSM operator in northern Malawi operating a private company emptying septic tanks and pit latrines of household and commercial customers largely with a fleet of vacuum trucks. Prices are set based on volume removed. Waste is transported to regional municipal sludge ponds.¹⁷⁷

¹⁶⁹ UNICEF Malawi Climate Resilient WASH Financing Strategy 2022 – 2032. <https://www.unicef.org/malawi/media/7831/file/Malawi%20Climate%20Resilient%20WASH%20Financing%20Strategy%202022-2032.pdf>

¹⁷⁰ M Ravina et al, op. cit

¹⁷¹ World Bank Malawi Water Sector Investment Plan, Volume I 2012 <https://documents1.worldbank.org/curated/en/800371468048863175/pdf/801430v10WP0P00Box0379800B00PUBLIC0.pdf>; Malawi Water Sector Investment Plan, Volume II 2012, <http://www.ndr.mw:8080/xmlui/bitstream/handle/123456789/1085/Malawi%20Water%20Sector%20Investment%20Plan-Volume%20II.pdf?sequence=1>

¹⁷² R Holm et al, op. cit.

¹⁷³ UNICEF Malawi Climate Resilient WASH Financing Strategy 2022 – 2032.

¹⁷⁴ National Water Policy 2005, <https://faolex.fao.org/docs/pdf/mlw165858.pdf>

¹⁷⁵ UNICEF Malawi Climate Resilient WASH Financing Strategy 2022 – 2032.

¹⁷⁶ S Collet, M Yesaya, E Tilley, SFD Report Blantyre, Malawi 2018. <https://www.susana.org/resources/documents/default/3-3545-7-1550665329.pdf>

¹⁷⁷ R Holm (2015) A comparative study of faecal sludge management in Malawi and Zambia: Status, challenges and opportunities in pit latrine emptying, <https://ir.library.louisville.edu/cgi/viewcontent.cgi?article=1744&context=faculty>

- Private entrepreneurs are mainly in the construction of latrines, septic tanks, pit emptying, and transportation of waste to the wastewater treatment plants, while some NGOs play a role by supporting the construction of sanitation facilities (mostly in rural areas). For example, Water for People is an international NGO that promotes sanitation through a market-oriented and business-based strategy “Sanitation as a Business (SAAB)”. This involves the establishing sanitation businesses driven by entrepreneurs (small and medium-sized). Businesses range from latrine construction/upgrading to pit emptying businesses targeting households and institutions that demand for it.¹⁷⁸

5.3.8.2 Refuse disposal & Waste management

The Environmental Affairs Department (EAD) under the Environment Management Act (2017) is mandated to coordinate the management of environmental affairs, including issues relating to waste. However, specific responsibilities for waste management lie with various sectoral institutions that are mandated by sectoral legislation¹⁷⁹ as well as service provision by local government. The Minister of Local Government is responsible for waste management service provision and operation of dumpsites, formulation of by-laws and development of waste management infrastructure. In Malawi, waste collection is a function of the local authorities. However, as most local authorities have severe issues with organizing the necessary infrastructure and capacities to manage the waste collection, private parties are contracted by the local authorities to provide the collection of household waste. This is acknowledged by Malawian officials, who recognise that both public and private sector play significant roles in SWM throughout the country, although private actors must have suitable local ownership / partners, meet local procurement standards, and have prior experience in SWM.¹⁸⁰

Unfortunately, these private parties are mostly active in high-income areas, while waste collection is negligible in low-income areas. Low-income households and informal settlements remain neglected.¹⁸¹ In some cities local authorities do not collect door-to-door in some cities but have set up Waste Transfer Stations in terms of which households take their waste to these stations for collection by local authorities.¹⁸²

Overall, the SWM sector in Malawi grapples with challenges stemming from increasing waste generation, inadequate collection and disposal infrastructure, and informal waste handling practices. Approximately 70% of municipal solid waste is not formally disposed of and only 4% is recycled while, on average, waste is collected once a week in the three cities (Lilongwe, Blantyre, and Mzuzu) in Malawi – but only from planned settlements.¹⁸³ Malawi has no lined landfills and instead relies on open dumpsites; there are no sanitary or environmental control mechanisms at an open dumpsite.¹⁸⁴ Figure 4 provides an overview of existing waste collection coverage across each municipality in Malawi.

Figure 4: Maximum potential coverage per municipality / city council¹⁸⁵

¹⁷⁸ S Collet, M Yesaya, E Tilley, op. cit.

¹⁷⁹ Ibid.

¹⁸⁰ Survey feedback from Malawian authorities.

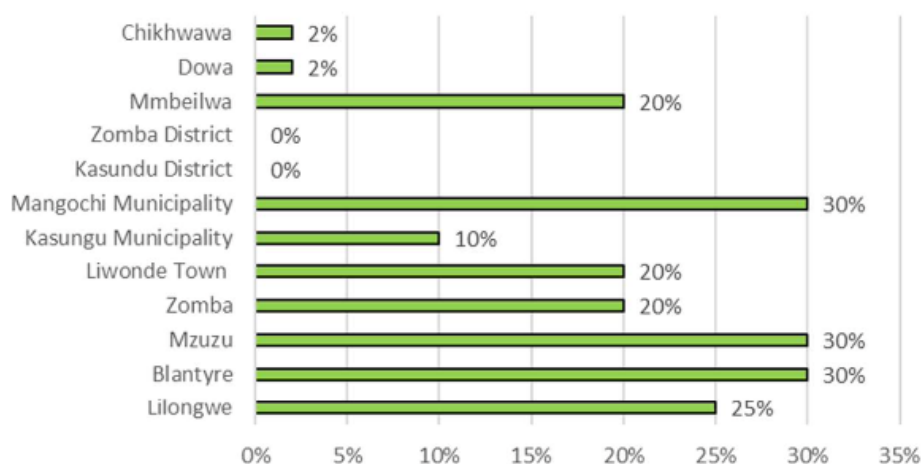
¹⁸¹ For example, although city authorities are meant to provide waste bins in informal settlements, these bins remain uncollected for weeks, sometimes months, due to vehicle shortages or neglect.

¹⁸² TNO (2022) Baseline assessment and analysis of existing circular economy initiatives and key players in Malawi. <https://www.ctc-n.org/system/files/dossier/3b/CTCN%20TA%20Malawi%20Output%202%20Baseline%20Assessment.pdf>

¹⁸³ Ibid.

¹⁸⁴ Ibid.

¹⁸⁵ Ibid.



There exists a huge gap in household service provision for both solid and liquid waste removal offer which, in theory, is an opportunity for the private sector. Among the unmet needs here are the provision of affordable improved (cement) pit latrine slabs; the collection, transportation and treatment of liquid or solid waste; the supporting supply chain; and financing of these enterprises.¹⁸⁶

Although the National Environmental Policy encourages private sector participation, there is no widespread interaction and private sector participation in waste management.¹⁸⁷ Survey responses from Malawian authorities indicate an absence of development in local service providers and their focus / preference on meeting the needs of the local market, as well as difficulty in expanding throughout the region owing regional competition and inability to meet procurement requirements.¹⁸⁸

Nonetheless, pockets of private sector engagement in SWM exists in Lilongwe where SWM is mostly undertaken by private players, while in Blantyre the city council collects the bulk of solid waste. Local authorities contract the companies – mostly SMEs and registered NGOs – that collect waste in Blantyre and obtain their revenues through the city councils. These include Waste Management, DDK Cleaning Services, YODEV Waste Management, and Hope Cleaners. Big players include Shore Rubber and Plan International Private Limited. Others, such as NGO operators, include the likes of Intelligent Waste solution, Innovative Green, and Our World International. In comparison, in the city of Mzuzu, waste collection is only done on a fee-basis and collection is predominantly undertaken by private companies in high-income areas that can afford to pay the required fees.¹⁸⁹

Table 5: Waste collection and disposal by service providers¹⁹⁰

Service Providers	Lilongwe	Blantyre	Mzuzu	Dowa	Chikhwawa
Council	25%	74%	20%	3%	5%
Private Operator	68%	20%	35%	2%	1%
Household self	7%	6%	15%	95%	94%

In terms of waste recycling,¹⁹¹ the Environmental Management Regulations provide for the waste recycling business and stipulates that any recycling business requires a license to operate and

¹⁸⁶ R Holm et al, op. cit.

¹⁸⁷ TNO, op. cit.

¹⁸⁸ Survey feedback from Malawian authorities.

¹⁸⁹ TNO, op. cit.

¹⁹⁰ TNO (2022) Baseline assessment and analysis of existing circular economy initiatives and key players in Malawi

¹⁹¹ TNO, op. cit.

develop solid waste reduction and recycling plans and annual reports. In the long-term, this could help create an enabling path towards greater private sector participation in waste recycling. Currently, however, authorities do not have the capacity or processing facilities to properly collect and manage waste separately, and the private sector also face challenges in transporting waste from households. At the municipal dumpsites, waste separation is done mainly by informal waste pickers, who separate the valuable waste from the non-valuable wastes, often focusing on streams such as plastics, metal, and cardboard. In Malawi, an intermediary sector has emerged of Waste Transfer Centres (aggregators of waste) from which many of the recyclers buy, while there is only small-scale paper recycling in Malawi largely managed by private sector players. Although steel is not exported, other waste metals that are recovered are exported to either South Africa or Tanzania, where they are recycled. Several companies involved in buying and crushing cans, in order to export the bales of crushed cans to South Africa where 30 tonnes of waste cans can generate a profit of US\$ 6500.¹⁹²

Finally, Malawian authorities have indicated a willingness to engage in peer-to-peer learning / information sharing with South Africa, Zambia, Botswana and Namibia.

5.3.8.3 Environmental consulting & Specialist services

The Malawi Environment Protection Agency (MEPA), established through the Environment Management Act (2017) is mandated to ensure the sustainable utilization of natural resources. Its core functions are carried out through three directorates, one of which is the Environmental Assessments and Inspections – this directorate is responsible for control of pollution, inspection and enforcement of environmental standards, environmental impact and social assessments, licensing and permit services.¹⁹³

There is a wide variety of specialist environmental services available in Malawi. According to MEP, the roster of Environmental and Social Impact Assessments (ESAI) experts registered with them exceeds 125.¹⁹⁴ This includes both local consultancy firms and individuals, as well as international consulting firms.

There are a host of domestic private environmental consultancy firms in Malawi, offering a wide range of specialist service related to ESIA, Livelihood Restoration Planning, Resettlement Action Plans (RAPs), Climate Change Adaptation, Resilience, Geographic Information Systems (GIS), Climate Smart Agriculture, Biodiversity, Disaster Risk Reduction, Air Quality Monitoring, and Noise Surveys, among others. While there is a wide plethora of entities in this sector, it appears that the majority of local firms participate only within Malawi rather than offering cross-border services. In addition, multinationals such as SMEC are present in Malawi's specialist consulting services (engineering) for large-scale infrastructure projects, indicating the presence of international companies within the company.

5.3.9 Mauritius

Box 3: Snapshot of findings from the Mauritian case study: opportunities, challenges, and ideas for further regional shared learnings¹⁹⁵

Factors that can potentially limit Mauritian exports of trade in environmental services across the region:

1. Local service providers are focused on the domestic market (wastewater management, refuse disposal, sanitation and environmental consulting)
2. Local service providers are underdeveloped (sanitation, environmental consulting, specialist services)
3. Competition from domestic service providers in regional markets (across all five sectors)

¹⁹² TNO, op. cit.

¹⁹³ Malawi Environment Protection Authority, <https://mepa.mw/>

¹⁹⁴ Ibid.

¹⁹⁵ Information taken from various interviews with Mauritian government stakeholders

4. Competition from international service providers in regional markets (refuse disposal and environmental consulting)
5. Difficulty in complying with procurement rules (refuse disposal and environmental consulting)
6. Lack of opportunity in regional markets (refuse disposal, sanitation and environmental consulting)
7. Lack of skills in domestic markets (environmental consulting)

Sectors / industries for potential Mauritian competitiveness in the rest of SADC region include:

- Collection of general waste.
- Management of End-of-life vehicles.
- Management of E-waste.
- Beverage containers.
- Management of hazardous waste.
- Management of landfill.

Request for intra-SADC learning / engagement on further issues include:

- How are other SADC countries regulating pollution prevention and mitigation and noise abatement and what lessons sharing can they offer in terms of solutions and challenges faced.
- In Mauritius there are no local companies involved in testing of air pollutants such as dioxins and furans, any knowledge / information sharing, trade agreements and peer-to-peer learning within the SADC region, would be welcomed.
- Broad peer-to-peer learning from Botswana, Namibia and South Africa on environmental services management issues.

5.3.9.1 Wastewater management and Sanitation

Mauritius has comprehensive connectivity for water supply with nearly 99% connection for all residents, and 99.8% of the population of Mauritius has access to sanitation facilities, either through on-site disposal such as septic tank, absorption pit, cesspit and leaching field or the national sewerage system. However, only 28% of the population are connected to the sewerage network,¹⁹⁶ and the country faces ongoing challenges with controlling sewage overruns.¹⁹⁷ To this end, the Mauritian government has earmarked 1.3 million rupees to implement sewage infrastructure projects as well as acquiring modern Tipper Lorries for more effective waste collection and disposal throughout the island.¹⁹⁸

The Wastewater Management Authority Act (2000) empowers the Waste Management Authority (WMA) to delegate management of wastewater systems and public sewers via a “Contrat de Délégation” and empowers the WMA to grant licences to private service providers to undertake the collection, treatment and disposal of wastewater and to fulfil any works or services that the WMA is empowered to do.¹⁹⁹ The WMA also licenses private wastewater carriers (under Registration of Wastewater Carriers and Disposal of Wastewater Regulation 2006) for emptying of septic tanks/pits in regions which are unserved.²⁰⁰ The WMA website provides for private contractors to register with the WMA and create online profiles, in order to participate in service delivery and bidding process for tenders. Similarly, the CWA contracts out to private water tankers to dispense water in regions where water supply may be inadequate. Lastly, one of the main Wastewater Treatment Plant at St Martin is being operated by a German private operator, namely Berlin Wasser.²⁰¹

¹⁹⁶ Water Management Authority Mauritius <https://www.wmamauritius.mu/factsheet/>.

¹⁹⁷ DRR Team Mission Report: Mauritius, 2019 <https://english.rvo.nl/sites/default/files/2023/03/DRR-Team-Mauritius-Mission-Report-August-2019.pdf>

¹⁹⁸ Interview with Ministry of Environment, survey questionnaire

¹⁹⁹ National Integrated Water Resources Management (IWRM) Plan

²⁰⁰ Berlinwasser International https://www.bwb.de/de/pressemitteilungen-2015_17105.php

²⁰¹ Office of the United Nations High Commissioner for Human Rights, December 2021, <https://www.ohchr.org/sites/default/files/2022-01/Mauritius.docx>

There are select examples of private Mauritian companies working in the region to deliver water treatment solutions. For example, [SEE](#) offers water treatment and distribution solutions, such as collection, treatment systems, re-use, pumping and pressure-control systems, in public services, hotels, individual homes or offices, and for the industry use in Mauritius and the surrounding region including service delivery in Mayotte, South Africa and Kenya.²⁰² Mauritius is also host to South African enterprises, such as [Gibb](#), which has worked on treatment plants in Mauritius.

The SADC Project Preparation and Development Facility (PPDF) is validating 12 regional projects in several sectors, including water and sanitation. These projects are funded by the European Union (EU) and Kreditanstalt für Wiederaufbau (KfW). The PPDF is also approving the project to build two plants in Mauritius, one for wastewater pumping and the other for effluent treatment.²⁰³

5.3.9.2 Refuse disposal & Waste management

The Solid Waste Management (SWM) division within the Ministry of Environment is responsible for solid and hazardous waste control on the island,²⁰⁴ while local authorities in Mauritius are responsible for the collection and management of waste. Mauritius has new regulations and a new Solid Waste Strategy and Action Plan governing waste minimization (i.e. composting, recycling, reuse etc) as the existing levels for recycling are very low and establishing an autonomous pollution control centre.²⁰⁵

Like many other countries across SADC, private sector presence is found within the SWM industry. In Mauritius, outsourcing to both international and local service providers is common practice and is joint ventures between local and international companies. In particular, the Solid Waste Management Unit indicated that bids are often received from South Africa (which has strong expertise in this sector), as well as being competent and cheaper than European service providers.²⁰⁶

The Public Procurement Act (2006) defines the procurement procedures to be adopted, and standard bidding documents are available for scavenging services and works. Enforcement officers of the SWM Division carry out regular inspections to ensure compliance amongst contractors with the scope or works and, if necessary, penalties are enforced.²⁰⁷ Domestic and commercial waste is collected on a door-to-door basis at least once a week across the island, and solid waste is collected from households by the local council and/or private companies and transported by trucks to one of five transfer stations.²⁰⁸ Thereafter, private contractor trucks take the waste to Mare Chicose Landfill, while waste from southern Mauritius is disposed directly to landfill.²⁰⁹ Private sector can also be found delivering services related to operation and maintenance of the landfill. According to government stakeholders, refuse disposal, environmental consulting and other specialist services are all ear-marked as priority sectors for local development.²¹⁰

Mauritian companies are active participants in SWM activities, including minor recycling activities; with most refuse collection outsourced to the private sector.²¹¹ Contractors have the obligation to reach a minimal percentage (2%) of waste sent to recycling, a requirement often fulfilled by informal

²⁰² SDG Investor Map Mauritius, https://www.undp.org/sites/g/files/zskqke326/files/2023-07/sdg_investor_map_mauritius_-_summary_of_findings.pdf

²⁰³ Zambia / Mauritius: SADC Approves Two Water and Sanitation Projects <https://www.afrik21.africa/en/zambia-mauritius-sadc-approves-two-water-and-sanitation-projects/>

²⁰⁴ DRR Team Mission Report: Mauritius, 2019, op. cit.

²⁰⁵ Ibid.

²⁰⁶ Interview survey, responses from Solid Waste Management Unit.

²⁰⁷ UNIDO (2016) Industrial Waste Assessment in the Republic of Mauritius – Opportunities for Industrial Symbiosis. https://www.unido.org/sites/default/files/2016-11/WP_15_0.pdf

²⁰⁸ Interview survey, responses from Solid Waste Management Unit.

²⁰⁹ Ibid.

²¹⁰ Ibid.

²¹¹ Ibid.

actors or formal SMEs.²¹² For example, ATICS Mauritius employs more than 500 people and is equipped with 60 lorries and specialized equipment and materials. It offers services such as waste collection, stocking, conditioning, treatment and the transportation to the different waste transfer stations or directly to landfill.²¹³ Multinationals, such as [PolyGreen](#) operate in Mauritius in hazardous waste management, while [DonWaste Group](#) provides full-service waste management and recycling in Mauritius, in addition to having operations in Namibia.

Non-government organisations such as [We-Recycle](#) are also involved; collecting waste from a network of public and private bins, from specific collection points, as well as the commercial sector, separating waste and providing plastics and cans to recycling companies thereafter.

Box 3 – Private Sector Participation²¹⁴

Registered Waste Transport Carriers	Transport municipal and industrial waste to transfer stations and landfills.
Recyclers	Recycle plastics into new items; refine exhausted oil; recycle glass.
Recyclers of waste by export	Export recycled waste fractions.

In addition, the Ministry of the Environment signed a contract with the company Polyeco for the operation of a hazardous waste storage facility and the creation of a specialized quality control laboratory for the analysis of hazardous waste.²¹⁵ Mauritius also makes provision for the participation of informal waste pickers in the waste sector through the “Local Government (Registration of Scavenging Contractors) Regulations 2004” that define the conditions for registration of scavenging contractors (defined as persons who offer services to collect and transport waste).²¹⁶

Export markets for waste from Mauritius:

1. Paper & Cardboards - India, Hong Kong
2. PET bottles - India, South Africa, Europe and Turkey
3. Used Batteries - India, South Korea
4. E-wastes (Printed circuit boards) - Belgium
5. Cooking oil - The Netherlands

Source: Waste Management division

A list of registered recyclers and exporters as at 27 December 2019 is available online²¹⁷ on the Ministry of Environment, Solid Waste Management and Climate Change website. While the list does not specify where processed waste is exported to, there are approximately 30 companies exporting waste.²¹⁸ Local company websites, such as [WeCycle](#), appear to indicate recyclable materials are exported to countries including India, Indonesia, South Korea and Madagascar. Others, such as [Groupe Recyclar](#) upcycle and sell recycled plastic products.

5.3.9.3 Environmental consulting & Specialist services

Housed within the Ministry of Environment is the Environmental Assessment Division, tasked with ensuring that (i) environmental impacts of major development projects are foreseen and addressed from the inception stage through to the EIA mechanism, and (ii) processing applications for EIA licences and preliminary environmental report approvals. The Environment Protection Act, 2002 (amended 2008) oversees the regulation of EIAs. There is no formal requirement for EIA consultants to be certified in Mauritius; nor does it appear that EIA consultants need to be

²¹² UNIDO (2021) Industrial Waste Management – Cost Structure Review in the Republic of Mauritius. <https://www.unpage.org/news/industrial-waste-management-in-mauritius/>

²¹³ SDG Investor Map Mauritius, op. cit.

²¹⁴ UNIDO, Inclusive and Sustainable Industrial Development Working Paper Series, 2016

²¹⁵ DRR Team Mission Report: Mauritius, 2019, op. cit.

²¹⁶ The Local Government Act, Mauritius <https://environment.govmu.org/Documents/SWMD/reg%20of%20scavenging.pdf>

²¹⁷ Registered Recyclers and Exporters as at 27 December 2019, <https://environment.govmu.org/Documents/SWMD/list%20of%20recyclers.pdf>

²¹⁸ Interview with Solid Waste Management unit, survey responses

practitioners in Mauritius / have a commercial presence in the country in order to participate in specialist environmental consulting services.²¹⁹

Mauritius is well-regarded as a business-friendly environment and, consequently, has a well-developed environmental and social governance (ESG) consulting sector which includes international (e.g. PWC, EY, KPMG) and domestic consulting firms. The Ministry of Environment, Solid Waste Management and Climate Change lists more than 65 registered specialist environmental services providers, offering a range of services including EIAs, GIS Mapping, and Noise pollution. However, in terms of regional trade participation, it does not appear that Mauritian companies are operational in services delivery across the region and, as highlighted by the Ministry of Environment, local service providers are under-developed in this sector (and, as a result, most likely not competitive regionally).²²⁰ To this end, therefore, Mauritian stakeholders have identified environmental consulting and specialist services as priority import services.²²¹

5.3.10 Mozambique

5.3.10.1 Wastewater management & Sanitation

The sanitation sector is under-developed in Mozambique and is largely funded by donors and repayable loans. Generally, cities do not have the financial resources to develop urban sanitation,²²² or qualified personnel for sewerage operations, and lack basic equipment and systems to manage the services.²²³ Challenges remain as a result of insufficient inter-government coordination, a lack of coordination amongst municipalities responsible for the construction and operation of sanitation systems, as well as overlaps and inconsistencies with sector policies and strategies.²²⁴ Overall, sanitation levels in rural and urban areas are not high, as depicted in Figure 5 below.

Figure 5: Rate of urban and rural sanitation across Mozambique²²⁵

²¹⁹ DBSA African Environmental Assessment Legislation Handbook: Consultation Draft. Chapter 16: Mauritius, <https://www.dbsa.org/sites/default/files/media/documents/202105/Chapter%2016%20Mauritius.pdf>

²²⁰ Interview with Ministry of Environment and Solid Waste Management unit, survey responses

²²¹ Ibid.

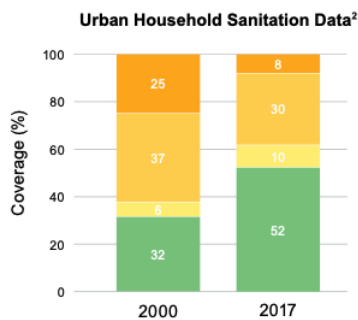
²²² World Bank Mozambique Urban Sanitation Project Appraisal Document Report No: PAD2620, <https://documents1.worldbank.org/curated/en/556331558836037864/pdf/Mozambique-Urban-Sanitation-Project.pdf>.

²²³ Ibid.

²²⁴ USAID 2020 Sanitation Profile: Mozambique, https://www.globalwaters.org/sites/default/files/walis_mozambique_sanitation_profile_2020_en_final.pdf

²²⁵ Ibid.

Urban Sanitation

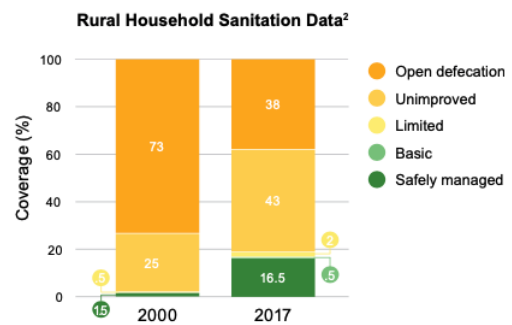


2.5% Households use a toilet linked to a sewer system.

20% Households use a toilet linked to a septic system.

0% Increase in the use of safely managed sanitation facilities between 2000-2017.

Rural Sanitation



0% Households use a toilet linked to a sewer system.

0.5% Households use a toilet linked to a septic system.

15% Increase in the use of safely managed sanitation facilities between 2000-2017.

Located within the Ministry of Public Works, Housing and Water Resources (MOPHRH) is the National Directorate for Water Supply and Sanitation (DNAAS), which is responsible for water supply and the sanitation sector for both rural and urban water supply and sanitation. Housed within this directorate is the Water Supply Asset and Investment Fund (FIPAG), responsible for supplying water to 21 cities and towns, and the Water and Sanitation Infrastructure Administration (AIAS), responsible for sanitation systems of 151 cities and towns since 2009.²²⁶ As is common throughout the region, the Local Government Framework (1997) identifies sanitation service provision as a municipal responsibility.²²⁷ The Water Regulatory Authority Public Institute is responsible for sanitation regulation and stakeholder management.²²⁸

The MOPHRH recognises the need for private sector participation in helping to meet the country's sanitation needs, and the Rural Sanitation Strategy (2021-2030) includes private sector participation and the urban strategy looks to further incorporate private sector on a large-scale development programme.²²⁹

Sanitation and wastewater management in Mozambique follows a two-prong approach in terms of service providers. In Maputo and other large urban areas, water supply is the responsibility of FIPAG. In other instances, and for other areas, Mozambique has local private water service providers called *Fornecedores Privados de Agua* or FPAs (FPAs are numerous and operate small to medium sized piped networks). In 2018, there were over 1800 FPAs across the country with the majority concentrated in the greater Maputo area (58%). Private investment from FPAs has rapidly scaled to meet demand, and FPAs are estimated to cover 23% of the total peri-urban population of Mozambique.²³⁰

AIAS was created in 2009 as a national asset management unit to promote the efficient and financially sustainable management of water supply systems. AIAS currently oversees 130 secondary water supply systems in small and medium-sized urban areas, and rural towns, accounting for 13% of the total Mozambique population. AIAS, a beneficiary of the World Bank,

²²⁶ USAID 2020 Sanitation Profile: Mozambique.

²²⁷ World Bank, op. cit.

²²⁸ World Bank, op. cit.

²²⁹ USAID 2020 Sanitation Profile: Mozambique.

²³⁰ USAID Wash-Fin Mozambique information sheet, https://www.usaid.gov/sites/default/files/2022-05/Transform_WASH_Fact_sheet_March_2022_.pdf

oversees a portfolio of lease contracts with professional operators in more than 40 systems across the country, with 70% being operated by the private sector.²³¹

Despite the presence of small-scale service providers, challenges remain. In most cities in Mozambique, private sector participation is limited to informal and unregulated toilet construction and tank emptying. Onsite facilities have been mainly constructed and emptied by private providers, residents and civil society organisations.²³² Emptying services are mostly carried out by small private operators, from manual emptying machines to small enterprises that combine the emptying and transport of sludge. The biggest challenge is the lack of adequate services for the emptying of latrines and septic tanks due to the difficulty of access roads to the entrance of collection trucks. In these areas, the collection is done by small-scale informal services and buried in the customer's yard, dumped in the sewage system or garbage containers.²³³ World Bank projects – such as the Maputo Peri-urban Sanitation Project – has worked with private operators, training and equipping them to provide improved faecal sludge management and these operators have since expanded their services in other peri-urban areas using own financial resources.²³⁴

It is unclear if foreign-owned private service providers are allowed to deliver services in the country without an existing commercial presence and/or incorporation of subsidiaries in Mozambique.

Case study in regional participation: LONA water supply project for the villages of Namaacha and Lomahacha²³⁵

Status: planned

LONA is a cross-border water supply project to be implemented by the governments of Mozambique and Eswatini jointly for the purposes of developing infrastructure for the collection, supply, treatment and reservation and distribution of water for the towns Namaacha in Mozambique and Lomahasha in Eswatini. Financed by Banco Alemão and KfW, with Development Bank of South Africa as the project executing agency. It is expected that the project will reach coverage of a total of 50 000 inhabitants in 20 years, having commenced in 2018.

Through the SADC Regional Fund for Infrastructure for Water and Basic Sanitation, Eswatini and Mozambique are working to increase and reinforce the supply of water and sanitation with a strong focus on the cross-border areas of the region that share the same river basin, in this case the Umbelúzi Hydrographic Basin.

5.3.10.2 Refuse disposal & Waste management

Waste management is not widespread throughout Mozambique. Although Maputo and other big cities have access to SWM services this is not true for smaller cities and rural areas, which are faced with insufficient service provision across the SWM value chain (i.e. collection, transport, treatment and final disposal).²³⁶ Collection is highly dependent on the affluency and living standards of different neighbourhoods; for example, although municipal dumpsters are found on every block in the centre of Maputo, and are emptied daily, only few municipal dumpsters can be found in peri-urban areas, where most waste is either burned or buried.²³⁷ An absence of proper waste collection equipment and means for subsequent maintenance are amongst the major issues hindering progress in waste collection in Mozambique.²³⁸ Generally municipal solid waste (MSW)

²³¹ USAID Wash-Fin Mozambique information sheet

²³² J Weststrate, et al, op. cit.

²³³ J Barroso et al (2015) Evolução dos serviços de saneamento de águas residuais em meio urbano e alterações climáticas – o caso de Moçambique. AQUAPOR Serviços SA, HIDRA e ENGIDRO. *Cited in: Wastewater Treatment and Management of Fecal Sludge in Mozambique: Current Situation, Challenges and Perspectives. Case study: city of Beira. Assucena Francisco Jane, 2017*

²³⁴ World Bank, op. cit.

²³⁵ <https://www.sadc.int/project-portfolio/lomahasha-namaacha-cross-border-potable-water-supply-project>

²³⁶ J Sallwey, H Hettiarachchi, S Hulsmann (2017) Challenges and opportunities in municipal solid waste management in Mozambique: a review in the light of nexus thinking. *Environmental Science*, <https://www.aimspress.com/article/10.3934/envi-ronsci.2017.5.621>

²³⁷ Ibid.

²³⁸ Ibid.

is dumped in open-air dumpsites across all municipalities and at waste sites, waste is generally burnt, buried and compacted. Waste collection coverage in Maputo is approximately 82%, Beira at 75%, while the national average ranges between 40% to 65%.²³⁹ Lastly, challenges around inter-departmental coordinate, insufficiently trained staff at municipal level, and disagreements between public authorities and private sector has resulted in a lack of coordination for SWM in the country.

The National Environmental Policy (2008)²⁴⁰ governs management of the urban environment and provides for closer coordination between MICOA (Ministry for Coordination of Environmental Affairs) and Municipal Councils, which are trained on SWM issues. MICOA is responsible for design of SWM strategies and drafting of urban SWM plans via the Environment Law 20/1997.²⁴¹ Hazardous waste is managed by MICOA and the Environmental Ministry, while biomedical waste is managed by the Ministry of Health.²⁴² SWM is the responsibility of municipalities (Municipality Law No. 2/1997) and they are tasked with developing programmes and procedures for the removal of solid waste, treatment and disposal, and implementing changes in fees.²⁴³ However, only Maputo and Beira have clear annual SWM plans and programmes.²⁴⁴

Both NGOs²⁴⁵ and private sector actors contribute towards SWM and service delivery within Mozambique. Private companies contracted by local authorities collect MSW from markets, restaurants, and other larger clusters in the community, including high-waste production sites.²⁴⁶ These are often private micro-enterprises (i.e. entrepreneurs) licensed to collect household waste. These micro-enterprises do not have the jurisdiction to transport MSW collected to the municipal dumpsite and, instead, the MSW is collected and transported to private dumpsites for separation of waste and on-selling of valuable materials.²⁴⁷

As a positive development small-scale solid waste collection is now being financed by the municipality in Maputo in the districts Urbanização and Maxaquene, with further roll-out to other districts.²⁴⁸ The Strategy for Integrated Municipal Solid Waste Management (2012)²⁴⁹ recognises the importance of informal waste pickers' contribution towards SWM in the country and (i) promotes their participation in SWM via forums and associations, and (ii) recognises them as priority partners in separate collection.²⁵⁰

Box 4: Case study of SWM in Maputo using private sector²⁵¹

In Maputo, collection services differ depending on locations and private companies provide the majority of services. There are two types of modalities for waste collection in Maputo specifically.²⁵²

²³⁹ Ibid.

²⁴⁰ Política Nacional do Ambiente (PNA) was approved by Resolution No. 5/95 of 3 August 2008.

²⁴¹ A Tas and A Belon (2014) Comprehensive Review of the Municipal Solid Waste Sector in Mozambique. Carbon Africa Limited, <http://www.associacao-mocambicana-reciclagem.org/wp-content/uploads/2017/08/2014-08-05-A-Comprehensive-Review-of-the-Waste-Sector-in-Mozambique-FINAL.pdf>

²⁴² J Sallwey, H Hettiarachchi, S Hulsmann, op. cit.

²⁴³ A Tas and A Belon, op. cit. See also Solid Waste Management Regulations (Decree 13/2006 of June 15th)

²⁴⁴ A Tas and A Belon, op. cit.

²⁴⁵ NGOs have notably taken part in SWM and collection via pilot projects in districts.

²⁴⁶ A Gani et al (2020) Improving the attitude and reaction towards municipal solid waste management in Mozambique. WIT Transactions on Ecology and the Environment, Vol. 247, <https://www.witpress.com/elibrary/wit-transactions-on-ecology-and-the-environment/247/37714>.

²⁴⁷ Ibid.

²⁴⁸ J Sallwey, H Hettiarachchi, S Hulsmann, op. cit.

²⁴⁹ The Strategy characterizes the situation and develops the technical, institutional and management framework for municipal solid waste in the country by 2025 and has a 12-year implementation period. See A Tas and A Belon, op. cit.

²⁵⁰ A Tas and A Belon, op. cit.

²⁵¹ I Tvedten and S Candiracci "Flooding our eyes with rubbish": urban waste management in Maputo, Mozambique. *Environment & Urbanization*, <https://journals.sagepub.com/doi/epub/10.1177/0956247818780090>

²⁵² A Tas and A Belon, op. cit.

1. The first modality uses primarily private contractors, ranging from large firms to microenterprises, for the collection and disposal of SWM in the inner/ high-density formal city. These enterprises have been progressively integrated with municipal employees and community actors into a single system for refuse collection, removal and disposal.
2. The second modality extends SWM services to informal peri-urban households through a two-step approach. First, households must store their waste in their dwellings without disposing of it in public places. Instead, small-scale community-based enterprises are responsible for collecting the waste twice a week (door-to-door) and transporting it to larger containers placed in locations closer to the main roads. The waste is then collected by the large private firms, which have the responsibility for secondary collection, and transported to the municipal disposal site.

There are five major private sector players in Maputo city: Interwaste, Enviroserv, Neoquímica and VisaBeira as well as Ecolife, who won the tender for the Municipal waste collection. The Maputo Municipal Council (MCMC) has contracted two companies, through PPPs: Ecolife is responsible for waste collection in urban areas and Enviroserv, a South African company, collects waste in suburban zones (markets and transport terminals). Unfortunately, Ecolife and Enviroserv do not separate waste upon collection and unload majority of it in the municipal dump. Only a few companies and organizations segregate their waste and force their service provider to direct their recyclable waste to proper final disposal.

Small-scale waste pickers are also instrumental in recycling efforts and to support informal collection, an NGO called Amor has installed 'eco-points' across Maputo to purchase recycled goods from private persons and waste pickers and re-sell them to the recycling sector.

Efforts to improve recycling of waste materials is hindered by the lack of industrial demand for weak recycled materials as most recycled waste is exported from Mozambique. Only plastic (PE—polyethylene, PP—polypropylene), paper and ferrous scrap are recycled and reused within Mozambique. This is because the changing prices for recycled material on the international market make the local market for recyclables unpredictable and unstable, rendering recycling activities within the country to be largely unprofitable for most materials. In addition, existing legislation provides insufficient guidance in terms of reuse and recycling of waste,²⁵³ and the absence of separation at source also leads to the wasting of large amounts of recyclable materials.²⁵⁴

Some local companies buy recycling material further export, and the plastic businesses are mainly held by people originating from India or China, who buy HDP plastic to melt it and produce new plastic objects.²⁵⁵ As an exception, [Topack Industrio de Plasticos](#) operates exclusively in Mozambique, South Africa and Angola in recycling of plastics. Multinationals are present in Mozambique and generally participate in waste recycling and exporting activities, some of which includes:²⁵⁶

- Pagalata Limitada - Pagalata started operations in December 2006. It processes and exports cans, paper, cardboard and glass in Maputo and Matola. Most of the recycling material comes from municipal dumps and the streets of Maputo where about 300 families sort and then sell waste to Pagalata. Since 2010, Pagalata is AMOR's biggest buyer, supporting the association in its efforts to promote waste separation and recycling. Pagalata processes recyclables into raw materials, mainly for export to South Africa and Asia. Pagalata is currently Mozambique's biggest pre-processing unit recycling about 6,000 tons per year, with a constant increase.
- Recicla - Recicla is a cooperative dealing with HDP plastic in Maputo since 2007. Recicla is located close to Hulene dump, with the purpose of creating quality jobs for informal

²⁵³ A Gani et al, op.cit.

²⁵⁴ A Tas and A Belon, op. cit.

²⁵⁵ Ibid.

²⁵⁶ Ibid.

collectors at the Hulene dump and has successfully created 13 jobs, recycling about 250 tons of plastic per year. The organization only covers about 4% of recyclable plastic waste in Maputo therefore allowing enough room for entry by others without compromising its survival.

- Terra Nova Limitada - Terra Nova is a company that has been processing organic waste into compost in Beira since 2009. Through a strong partnership with the municipality the company receives the municipal waste and turns the organic fraction into compost, which is then sold locally. So far, Terra Nova has been operating on a micro-scale level and has not yet reached financial sustainability.
- Reclam - New Reclamation Group - Reclam is a South African scrap company active in Mozambique. Reclam is both a purchaser of loose or compacted scrap, and a processor of inputs.

Generally, the recycling is exported to South Africa and Asian countries – although when prices for paper and other materials are low, the exports cease – while there is an active informal market supporting the recycling and sale of scrap metal to other African countries.²⁵⁷ In 2015 a project between international partners, local NGOs and the Beira municipality started with the aim to implement a waste transfer and recycling centre in Beira to reduce waste disposal at uncontrolled dumpsites; the first MSW transfer station in the country that incorporated recycling of plastics, glass and metal for export or local reuse.²⁵⁸

5.3.10.3 Environmental consulting & Specialist services

Responsibility for the administration of the EIA process in Mozambique falls under the National Environmental Directorate, with powers to delegate to national and provincial EIA authorities. The National EIA Authority is tasked with reviewing and making decisions on EIAs and pre-feasibility reports and issuing environmental licences for projects. The EIA Regulations (Decree 54/2015) establishes the rules governing the EIA process.²⁵⁹ EIAs are to be based on an environmental study conducted by entities registered by the government (discussed in more detail below).²⁶⁰

Mozambique laws allows for the participation of foreign service providers environmental consulting services especially with regards to contracting of private sector actors to deliver EIAs. Under Article 23 of the EIA Regulations, only registered individuals or environmental consulting companies can undertake an EIA in Mozambique. Importantly, non-Mozambican companies that wish to conduct an EIA in the country must either be sub-contracted to a registered Mozambican company or form part of a consortium with a registered company, which will still require submission of a Mozambican work permit.²⁶¹ In addition, for foreign consultancies involved in the project 50% of the consultants are subcontracted Mozambican nationals.²⁶²

5.3.11 Namibia

5.3.11.1 Wastewater management

The Ministry of Agriculture, Water and Forestry oversees wastewater management in Namibia. Governance is enacted in terms of the Water Resources Management Act (2013), with some

²⁵⁷ J Sallwey, H Hettiarachchi, S Hulsmann, op. cit.

²⁵⁸ Ibid.

²⁵⁹ DBSA (2020) African Environmental Assessment Legislation Handbook: Consultation Draft. Chapter 17(b): Mozambique, <https://www.dbsa.org/african-environmental-assessment-legislation-handbook>

²⁶⁰ Environmental LAW No 20 / 1997. The Environmental Law of 1997 provides for a set of environmental management systems: the environment license, the EIA process, environmental audit and system inspection, and offences and penalties for non-compliance.

²⁶¹ DBSA, op. cit.

²⁶² Environmental Assessment in the Netherlands, <https://www.eia.nl/en/countries/mozambique/esia-profile>

effluent standards also included in the Environmental Management Act (2007).²⁶³ The Namibian Water Corporation Act (1997) establishes the wholly publicly-owned Namibian Water Corporation (NamWater), which provides bulk water supplies across the country, including to sanitation systems and large commercial entities like mines. Municipal councils set specific sewage regulations for their region but are guided by a national set of Model Sewerage and Drainage Regulations.²⁶⁴

The management of wastewater is primarily handled at municipal level in Namibia, although most of the country's capacity is concentrated in Windhoek and Walvis Bay. Despite the relatively limited scope of coverage of wastewater infrastructure, Namibia has a sophisticated wastewater processing capacity, in large part because the country faces serious water scarcity.²⁶⁵ Windhoek has an extensive history of reclaiming wastewater, with processed water flowing back into the drinking water, or used for agriculture and industrial uses.

The private sector is actively involved in wastewater management in the cities, with private companies working with the cities in the reclamation of water. For example, Windhoek's water reclamation plant Goreangab is operated by a private company, [Wingoc](#), which is a subsidiary of French multinational Veolia and Indian sanitation company WABAG. Operating licenses for the facility are very long-term in nature, with the previous Wingoc license issued in 2002 for a twenty-year period (which was subsequently extended for a further three years).²⁶⁶ These long-term agreements provide scope for long-term investment in the facility and infrastructure, but also limit the scope for private participation, including from the region.

The extensive reclamation of wastewater in Namibia means that there are high standards for the discharge of industrial wastewater as it needs to be of a high enough quality to avoid comprising existing reclamation infrastructure. This potentially offers some scope for regional participation in developing infrastructure for industrial or mining interests.

5.3.11.2 Refuse disposal & Sanitation

As with wastewater management, refuse disposal and sanitation services are handled at municipal level with much of the institutional capacity concentrated around larger agglomerations like Windhoek and Walvis Bay. The Ministry of Environment and Tourism (MET) provides the broader regulatory environment for waste collection, including by developing frameworks like the National Solid Waste Management Strategy (2017) and implementing central regulations like the Pollution Control and Waste Management Policy (2003).²⁶⁷ The Ministry of Urban and Rural Development plays a key supporting role in these efforts, by assisting local municipalities in their role as the core implementers of waste management.

The Solid Waste Management strategy includes a strong focus on integrating private sector participation within the sector. This primarily focuses on two areas: building a framework for private participation in waste collection, and developing a number of pilot projects to promote recycling.²⁶⁸ Perhaps the most notable was the 2011 the 'Clear Bag Household Recycling project' in Windhoek, which was launched by Namibia's Rent-A-Drum and the Namibia subsidiary of South African company Envirofill.²⁶⁹ The project distributed clear waste bags for recycling to households, with

²⁶³ B Walmsley and S Husselman, "Namibia: Environmental Assessment Legislation," in *Handbook on Environmental Assessment Legislation in Selected Countries in Sub-Saharan Africa*, 4th ed. (Development Bank of Southern Africa (DBSA) in collaboration with the Southern African Institute for Environmental Assessment (SAIEA), 2020), <https://www.dbsa.org/sites/default/files/media/documents/2021-05/Chapter%2018%20Namibia.pdf>.

²⁶⁴ Government of Namibia, "Local Authorities Act 23 of 1992: Model Sewerage and Drainage Regulations," May 21, 1996, <https://faolex.fao.org/docs/pdf/nam175606.pdf>.

²⁶⁵ L G L G Moyo, "Wastewater Production, Treatment and Use in Namibia," 2012, https://www.ais.unwater.org/ais/plugin-file.php/231/mod_page/content/188/wastewater_production_in_namibia_2012.pdf.

²⁶⁶ OECD ed. (2009) *Private Sector Participation in Water Infrastructure: Checklist for Public Action*

²⁶⁷ Ministry of Environment and Tourism (Namibia), "National Solid Waste Management Strategy," 2017, <https://faolex.fao.org/docs/pdf/nam193634.pdf>.

²⁶⁸ Ibid.

²⁶⁹ Global Recycling, "Namibia: Long-Term Market Opportunities Ahead," August 5, 2016, <https://global-recycling.info/archives/525>.

collection and sorting handled by Rent-A-Drum, and with the waste then exported to South Africa for recycling.²⁷⁰

Case study: Clear Bag Household Recycling project Windhoek

In 2010, the city of Windhoek introduced the Clear Bag Household Recycling project. The project aimed to provide clear bags for residents to deposit recyclables like paper, glass, plastics and cans; which would then be collected and sorted by Namibian waste management company Rent-A-Drum.²⁷¹ Recyclable waste is then exported for processing in South Africa via the local office of South African recycling firm Enviro-Fill, while other waste is cleared from the collected waste and sent to the Kupferberg landfill.²⁷² While the programme is relatively small in scale, with only 4%-5% of waste recycling through the clear bag systems, the council aims to build on the success of the initiative to both deepen the reuse of waste and relieve pressure on local landfill sites.²⁷³

The Clear Bag project, and the subsequent operations of waste sorters like Rent-A-Drum, demonstrate that recycling is already significantly regionally integrated in Namibia. In-country regional participation is, however, more limited. While there are linkages – for example, with local e-waste recycling NamiGreen servicing a number of South African subsidiaries operating in Namibia²⁷⁴ – many of these result from the close historical linkages between Namibia and South Africa, and the strong role played by South African firms in the market.

5.3.11.3 Environmental consulting & Specialist services

The Ministry of Environment and Tourism’s Department of Environmental Affairs oversees core environmental regulations, including reviewing EIAs and issuing licenses; most of which is handled by the Department’s Environmental Commissioner.²⁷⁵ A wide range of activities require the issuance of an Environmental Clearance Certificate; including construction, mining, forestry, agriculture, tourism – and core utilities development in areas like energy and water.²⁷⁶ International consultants do not require specific certification to operate in Namibia, although most environmental consultants are members of a voluntary association, the Environmental Assessment Professionals Association of Namibia (EAPAN).²⁷⁷

EAPAN lists about 33 registered members, including a mix of individuals, some local Namibia consulting firms (like Environmental Compliance Consultancy and Enviro Dynamics), and a few multinational companies operating in the market (notably SLR Consulting). Similar to other SACU markets, regional presence in Namibia seems to include a number of South African firms, and operations of global companies operating out of their South African offices.

5.3.12 Seychelles

5.3.12.1 Wastewater management & Sanitation

The Sanitation Master Plan 2010-2025 contains the main strategies for sanitation services in Seychelles.²⁷⁸ The Public Utilities Corporation (PUC) is a parastatal owned wholly by the government of Seychelles. It reports to the Ministry of Environment, Energy and Climate Change

²⁷⁰ Ibid.

²⁷¹ Ibid.

²⁷² Ibid.

²⁷³ New Era, “City of Windhoek - Vision: To Be a SMART and Caring City by 2022,” July 20, 2022, <https://www.pressreader.com/namibia/new-era/20220720/281758453021108>.

²⁷⁴ D Matthys, “MultiChoice, NamiGreen Enter e-Waste Disposal Partnership | Namibia Economist,” Economist Namibia, accessed August 11, 2023, <https://economist.com.na/63687/environment/multichoice-namigreen-enter-e-waste-disposal-partnership/>.

²⁷⁵ B Walmsley and S Husselman, “Namibia: Environmental Assessment Legislation.”

²⁷⁶ Ibid.

²⁷⁷ Ibid.

²⁷⁸ E Tlana and M Martin (2013) The status of waste management in Seychelles, http://www.s4seychelles.com/uploads/6/1/6/7/6167574/s4s_report_status_of_waste_managemanet_in_seychelles.pdf

(MEECC) and is responsible for the (i) production, transmission, distribution and supply of potable water to the main islands of Seychelles and (ii) the treatment and sanitary disposal of wastewater to the environment on Mahé Island. Responsibility for sewage treatment lies with PUC to collect, treat and dispose of wastewater in the environment in a safe manner.

Approximately 85% of the entire population relies on septic tanks with soak pits to dispose their sewage. These septic tanks are constructed either for single households or for household estates. Due to soil and hydrogeological conditions in the country, as well as insufficient design, these septic tanks often do not perform as planned, causing a significant risk of contamination.

However, the largest ongoing challenge is that four sewerage treatment plants in operation cannot adequately cope with current demand.²⁷⁹ Septic sludge is removed with vacuum trucks by private service providers, causing high operation cost for the owners. Currently four wastewater treatment plants (3 activated sludge, 1 RBC) treat water from the four sewer networks. In addition, a number of hotels operate their own sewage treatment plants and some housing estates use (pilot) treatment plants.²⁸⁰

The water and sanitation sectors are still governed by public entities, although some aspects of water supply and treatment of wastewater are undertaken by private operators.²⁸¹ The Seychelles Investment Board (SIB) acts as a coordinator and facilitator between the public and the private sectors. Although available information is sparse, there is an indication that regional private companies are operational in the Seychelles. For example, South African companies – such as [Becon Watertech](#) – specialises in wastewater treatment applications and has subsidiaries across the region including Seychelles and Botswana.

5.3.12.2 Waste management & Refuse disposal

In the Seychelles, waste is disposed into communal bin sites around the island and collected and transported in refused compactor trucks, after which waste is transferred to controlled landfill at Providence. With the exception of PET bottles, large scrap metal and aluminium cans, almost all of the waste generated by the residential and business sectors in Seychelles goes to landfill.²⁸² Implementing appropriate SWM strategies is difficult in the country owing to a lack of funding, capacity, high costs of transportation, insufficient engineered landfills and scarcity of land.²⁸³

The MEECC is responsible for developing and enforcing the implementation of all waste management policies, regulations and legal frameworks. The Waste Enforcement and Permit Division within the Environment Department is responsible for developing all policies regarding waste, waste collection, characterization, treatment and disposal, including the Seychelles National Waste Policy 2018-2023.²⁸⁴ The Landscape and Waste Management Agency (LWMA) administers waste management contracts for waste collection and landfill management. LWMA monitors and manages the different contractors for waste collection, landfill management, beach and road cleaning in the Seychelles.²⁸⁵

Seychelles has also banned the importation of certain Styrofoam products and plastic cups, plates, cutlery, plastic straws etc following the implementation of the Seychelles Sustainable Development

²⁷⁹ PUC Annual Report 2021 <https://www.puc.sc/wp-content/uploads/puc-doc/reports/2021.pdf>

²⁸⁰ African Water Facility Project Appraisal Report Seychelles Integrated and Comprehensive Sanitation Master Plan Project Appraisal Report December 2014
https://www.pseau.org/outils/ouvrages/fae_seychelles_integrated_and_comprehensive_sanitation_master_plan_2014.pdf

²⁸¹ E Tlana and M Martin, op. cit.

²⁸² Ibid.

²⁸³ <https://macce.gov.sc/waste-management/>

²⁸⁴ DBSA (2020) African Environmental Assessment Legislation Handbook: Consultation Draft. Chapter 22: Seychelles, <https://www.dbsa.org/sites/default/files/media/documents/2021-05/Chapter%2022%20Seychelles.pdf>

²⁸⁵ <https://macce.gov.sc/waste-management/>

Strategy 2012-2020 (SSDS).²⁸⁶ Although waste source separation is currently not implemented, the Ministry is working on the Seychelles Waste Master Plan to support this initiative.

The role of the private sector in this sector has significantly grown in the last 10 years, with many operators in the SWM industry.²⁸⁷ The Solid Waste & Cleaning Agency (SWAC) oversees waste collection on the island and, following privatisation of SWM, appointed STAR Seychelles as the primary service provider responsible for municipal waste collection, treatment and disposal, as well as included beach and road cleaning.²⁸⁸ Although STAR Seychelles has historically been the main economic operator in this space, there are nearly 300 smaller operators who are or have been engaged in the commercial sector (data is from 2013).²⁸⁹ However, since 2019, private commercial institutions and entities are obliged to have a contract for waste collection with an approved contractor. The LWMA acts as a middleman in the process of disposing commercial waste. Businesses and establishments are contracted with the agency that in return use waste collection contractors. At the moment there are 19 contractors for the collection of commercial waste while municipal waste is being contracted out by the Ministry of Environment.²⁹⁰

The Solid Waste Management Policy 2014-2018 and the SSDS both reference and provide for increased recycling. However, targets or policies in these documents are not established.²⁹¹ Moreover, STAR has, historically, landfilled all major fractions of waste, with the exception of PET, aluminium cans, and large scrap metal.²⁹² Recycling of biodegradable matter, metal and PET plastic contributes significantly to the reduction of waste ending up in the landfill.

In the Seychelles, there is no formal collection scheme for glass nor large-scale usage of recycled products from glass waste in the Seychelles.²⁹³ However, similar to other SADC countries there is international trade participation in exporting of waste, although in the case of Seychelles much of this waste goes to Asian countries.

A number of businesses have been set up in the last 10 years or so to cope with recyclable waste, either processing said waste locally or exporting them to countries that are willing to buy waste as a raw material in their manufacturing process.²⁹⁴ The informal sector also collects large proportions of PET and cans, taking them to Redeem Centres for financial compensation which is then, in turn, further processed and exported to Mauritius, Russia, China and India.²⁹⁵ From a 2013 study conducted, interviewees highlighted that they dealt with 22 types of waste, which was mainly exported (32%) to countries such as China, India, Vietnam, United Arab Emirates and Mauritius or sold as finished products on the local market (27%).²⁹⁶

5.3.12.3 Environmental Services & Specialist consulting

The Environment Department within the MEECC carries out all tasks associated with the administration of the Environmental Impact Assessment Regulations.²⁹⁷ The Environment Protection Act 2016 establishes the National Environmental Advisory Council and provides for

²⁸⁶ Global Information Society Watch Technology, the environment and a sustainable world: Responses from the global South, 2020 <https://giswatch.org/sites/default/files/gisw2020-seychelles.pdf>

²⁸⁷ E Tlana and M Martin, op. cit. For an example see <https://www.wastea.sc/waste-management-services-seychelles/>

²⁸⁸ Ibid.

²⁸⁹ Ibid.

²⁹⁰ Seychelles News Agency, "Businesses in Seychelles must have approved waste collector by April 1" <http://www.seychellesnewsagency.com/articles/10666/Businesses+in+Seychelles+must+have+approved+waste+collector+by+April>

²⁹¹ A Lai, et al (2016) Solid Waste Management in the Seychelles. [https://ethz.ch/content/dam/ethz/special-interest-usys/tclab/docs/csproducts/cs_2016_report.pdf](https://ethz.ch/content/dam/ethz/special-interest/usys/tclab/docs/csproducts/cs_2016_report.pdf)

²⁹² Ibid.

²⁹³ G Meylan et al (2016) Solid Waste Management in Seychelles. http://uest.ntua.gr/athens2017/proceedings/pdfs/Athens2017_Meylan_Lai_Hensley_Stauffacher_Kruetli.pdf.

²⁹⁴ E Tlana and M Martin, op. cit.

²⁹⁵ G Meylan et al, op. cit.

²⁹⁶ E Tlana and M Martin, op. cit.

²⁹⁷ DBSA, op. cit.

prevention, control and abatement of environmental pollution, environmental authorisation and EIAs.²⁹⁸ Section 50(1) of the Environmental Protection Act of 2016 empowers the MEECC to register a person as an EIA consultant and EIAs can only be conducted by such registered consultants.²⁹⁹ The Seychelles Investment Board's business directly identifies only 3 EIA consultants and one environmental consultancy firm (Island Carbon Consult) in Seychelles. While this is likely not an exhaustive list of EIA experts and firms, it is indicative of the scarcity of such skills in the country.³⁰⁰ As a result it is assumed that provision of EIA services and other specialist environmental consulting services is open to foreign service providers' participation too.

5.3.13 South Africa

5.3.13.1 Wastewater management & Sanitation

The wastewater sector is governed by the Department of Water and Sanitation (DWS) under the legal framework of the National Water Act (1998) and the Water Services Act (1997), (both of which are currently being amended).³⁰¹ As is the case across other SADC countries, the sector involves numerous actors, including local government bodies, municipalities, water boards and private companies – all of whom play a role in the wastewater value chain. Local government (i.e. municipalities, known as water service authorities) are largely responsible for the provision of water and sanitation services, overseeing effective wastewater management (treatment, disposal and regulatory oversight).³⁰² Water service providers, which actually provide the service, are contracted to the water service authorities, covering either the entire service, a part of service (such as bulk provision), or a specific geographical area within a municipality.³⁰³ To this end, there are nine water boards in South Africa and, as public entities, are responsible for primarily providing bulk water to municipalities, bulk wastewater service and, in select instances, also non-potable water directly to end-users.³⁰⁴

Unfortunately, wastewater infrastructure has severely diminished over the years. The status of wastewater treatment works (WWTW) is distressing and there is, generally, urgent need for significant investment in the sector to provide additional capacity for water resources infrastructure (the remit of national government) and water services infrastructure (responsibility of municipalities).³⁰⁵ In particular, estimates show that the country will need more than R900 billion over the next 10 years to meet water and wastewater infrastructure maintenance, upgrading, development etc requirements, of which only 50% will be covered by the national budget.³⁰⁶

South Africa has stringent requirements regarding the number and qualification of staff operating WWTWs, which many municipalities fail to satisfy, and a shortage of technical staff has resulted in poor performance in municipal wastewater treatment.³⁰⁷ Currently, although municipalities (particularly larger ones) already distribute treated effluent from WWTW for non-potable uses (irrigation and industrial uses), the scale of wastewater reuse is limited and dependent on the investment that a municipality or user is willing to make in a distribution network – and uptake remains low especially as municipalities cannot guarantee consistent quality or quantity of

²⁹⁸ Environment Protection Act (2016) Seychelles <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC177682>

²⁹⁹ DBSA, op. cit.

³⁰⁰ <https://investinseychelles.com/business-directory/listings/147-eia-consultants>

³⁰¹ Green Cape Water Market Intelligence Report 2023. https://greencape.co.za/wp-content/uploads/2023/04/WATER_MIR_2023_DIGITAL_SINGLES.pdf

³⁰² Ibid.

³⁰³ N Graham (2021) Barriers and opportunities for water reuse PPPs in South Africa. European Union-South Africa Partners for Growth.

³⁰⁴ Ibid.

³⁰⁵ Department of Water and Sanitation, Green Drop National Report 2022 https://ws.dws.gov.za/IRIS/releases/Report_NATIONAL%20_FINAL_30March22_MNEdit_web.pdf

³⁰⁶ UNDP The South Africa SDG Investor Map 2020. <https://www.undp.org/south-africa/publications/south-africa-sdg-investor-map-2020>

³⁰⁷ N Graham, op. cit.

wastewater.³⁰⁸ Other barriers to widespread availability of sanitation and wastewater infrastructure include the absence of provincial water and sanitation masterplans and aged infrastructure that is unable to dewater sludge.³⁰⁹

As is the case in other SADC countries, wastewater management reflects lower levels of private sector participation compared to other industries. Within the South African context, private sector participation has had limited success in this sector, owing to high expenses and limited access to financing, lengthy and cumbersome processes for licensing and limited expertise within the public sector to structure PPPs.³¹⁰ There are only two large water concessions that have successfully been implemented to date – the Mbombela Concession in Nelspruit and the Dolphin Coast Concession in Ballito.³¹¹ However, both of these concessions were designed and implemented prior to the introduction of procurement legislation in the country. Recognising the need for greater PPP uptake in this sector and easier private sector involvement, a Water Partnerships Office has been created by the DWS to assist municipalities contract for PPPs and independent water producers. The Water Partnerships Office is a ringfenced entity by the DBSA and tasked with accelerating water and sanitation delivery across the country.³¹²

Box 5: Example of water recycling in Durban³¹³

During the 1990s, Durban faced severe sewerage capacity constraints as existing infrastructure could not meet growing needs. In order to address sewerage capacity problems, the eThekweni Municipality implemented a PPP whereby, in 1999, a twenty-year BOOT contract was awarded to Veolia Water Systems consortium, valid until 2021. The plant was designed to treat 48 million litres of water (10% of the municipality's wastewater) and required a total investment of R72 million at the time. The water is sold to the two large off-takers – a paper mill and an oil refinery.

The consortium pays an annual management fee to the municipality, as well as an annual fee for the lease of the municipal land on which it is located. Importantly, the consortium also pays a fee to the municipality to account for lost cross-subsidisation opportunity from the industrial consumers. This payment was only possible because of the profitability of the scheme as a result of two large industrial off-takers with a long-term contract.

In addition, with the advent of the new Water and Sanitation Industry Master Plan, there are renewed opportunities for private sector participation as identified in Figure 6. Private sector involvement could also be enhanced through the following opportunities:

- WWTWs infrastructure – new, upgrades, repairs and maintenance of municipal treatment works
- Resource recovery – circular economy solutions for the beneficiation of wastewater sludge
- Clean technology deployment – renewable energy and energy efficiency interventions.³¹⁴

Whether the public sector is able to implement long-term infrastructure plans that incorporate private sector service delivery, as well as successfully contract private sector to perform such activities, remains questionable. Reports suggest that municipal officials perceive PPPs to be too onerous and time consuming, instead opting for grant-funding or internally funded projects instead, coupled with a shortage of expertise at local government level to adequately manage and implement such projects.³¹⁵

Figure 6: An overview of the water and sanitation industry value chain

³⁰⁸ Ibid.

³⁰⁹ Green Cape Water Market Intelligence Report 2023.

³¹⁰ UNDP The South Africa SDG Investor Map 2020.

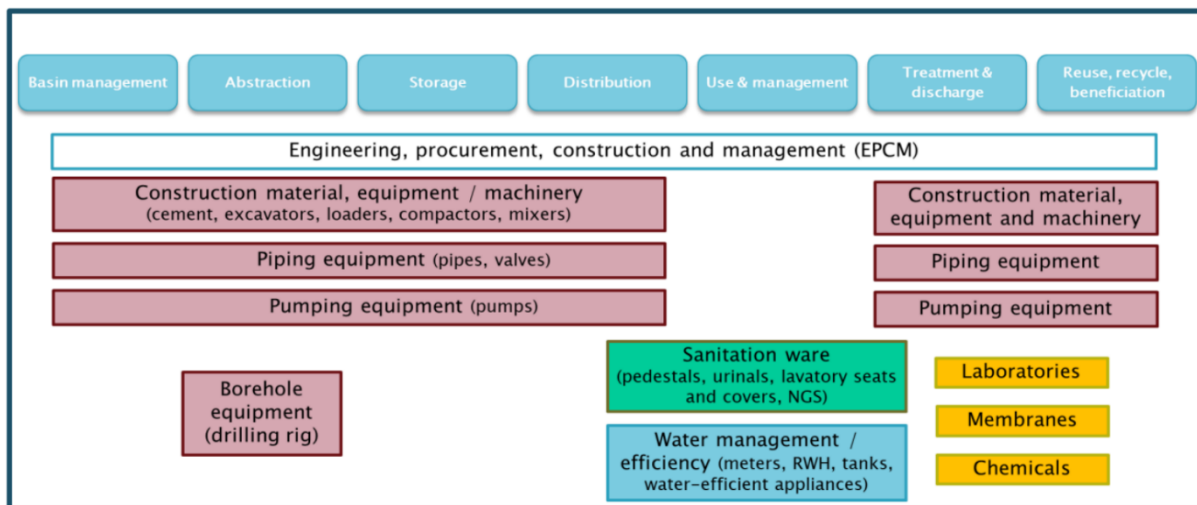
³¹¹ Green Drop Report, 2022.

³¹² Green Cape Water Market Intelligence Report 2023.

³¹³ N Graham, op. cit.

³¹⁴ Green Cape Water Market Intelligence Report 2023.

³¹⁵ N Graham, op. cit.



The Water and Sanitation Industry Master Plan (2022) identifies numerous regional and continental export opportunities, much of which hinges on domestic manufacturing of water and sanitation products, equipment and systems.³¹⁶ Associated with these goods exports are a range of accompanying services, including technical training and support for proper installation and operation of the goods; installation and commissioning services to ensure efficient setup; after-sales maintenance and technical support for optimal performance; customisation consultation based on destination country's requirements; feasibility studies, project planning, and tailored solutions using the goods; remote monitoring and troubleshooting using digital technologies; and project management services for large-scale projects.

5.3.13.2 Refuse disposal & waste management

Responsibility for SWM (refuse removal and disposal) is, like the rest of the region, a primary function of local government (municipalities). Nevertheless, the Department of Forestry, Fisheries and the Environment (DFFE) is the national government responsible for policy and legislation development governing the waste sector, in terms of which there exists a complex regulatory framework overseeing SWM in South Africa. These include:³¹⁷

- National Environment Management Act (1998) (NEMA): main environmental legislation in South Africa.
- National Environmental Management: Waste Act (2008) (NEMWA): oversees waste management practices at a national level including waste collection, licensing, storage and handling of hazardous waste, etc. It also provides guidance on establishing regulations, norms, strategies and guidelines for waste management in South Africa.
- National Waste Management Strategy (2020): promotes separation at source and waste minimisation, includes domestic waste standards collection, standards for waste storage and pricing for waste management.
- Various policy instruments, including the design of new national and provincial waste regulations that will, in the longer-term, promote better waste management regarding organics, plastics and e-waste.³¹⁸

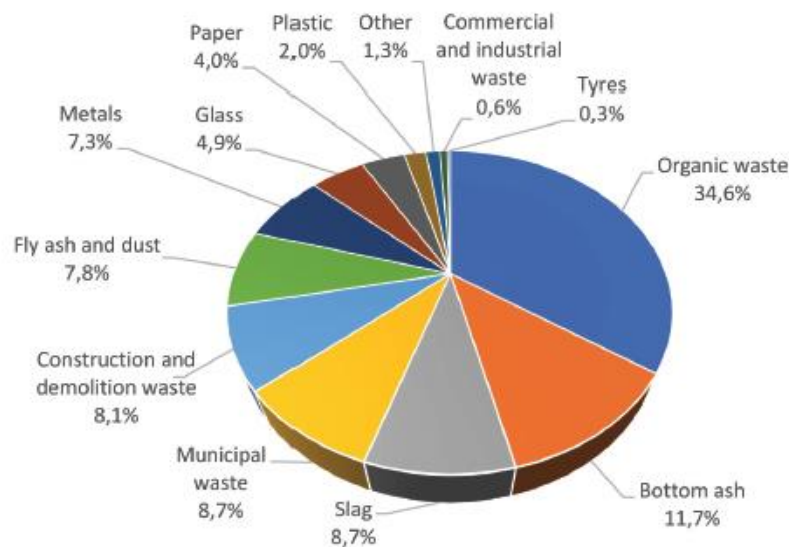
Figure 7: An overview of waste generation in South Africa, 2018³¹⁹

³¹⁶ G Montmasson-Clair, G Chigumira, D McLean, and S Makumbirofa, "Water and Sanitation Industry Master Plan, 2022, https://www.tips.org.za/images/TIPS_Research_Report_-_Water_and_Sanitation_Industry_Master_Plan_2022.pdf

³¹⁷ Western Cape Government: Environmental Affairs & Development Planning. A Guide to Separation of Waste at Source, 2019.

³¹⁸ Green Cape 2022 Waste Market Intelligence Report. https://greencape.co.za/assets/WASTE_MIR_7_4_22_FINAL.pdf

³¹⁹ Department of Environmental Affairs South Africa State of Waste Report 2018.



Within South Africa's SWM governance structures, the NEMWA requires each municipality to develop integrated waste management plans as part of their integrated development plans,³²⁰ and to use their by-laws to manage waste in their municipalities.³²¹ Provincial authorities are responsible for licensing of facilities and designating Waste Management Officer for the province.³²² All municipalities are constitutionally mandated to provide waste collection, removal, storage and disposal generated by households within their boundaries, which can be outsourced to the private sector in-part or fully.³²³ However, across smaller and/or largely rural municipalities, SWM and collection is inefficient and there limited services provided in these regions.³²⁴

As part of the challenges South Africa currently faces, only 50% of municipalities have integrated waste management plans.³²⁵ While the majority of households in urban areas do receive waste services, South Africa does not offer waste collection services across all peri-urban and rural communities, resulting in large amounts being illegally dumped and not collected and treated through formal waste collection systems.³²⁶ Rural provinces have a collection rate below 60% and the challenge remains informal settlements, with waste collection remaining steady at 70% nationwide over the years.³²⁷ In addition, only 11% of waste is diverted from landfilling, despite constraints to continue using existing landfills.³²⁸ Other challenges impeding higher rates of waste collection includes lack of capacity, infrastructure, and waste collection vehicles.³²⁹ Table 6 below

³²⁰ City of Cape Town 3rd Generation Integrated Waste Management Plan 2021, <https://resource.capetown.gov.za/documentcentre/Documents/City%20strategies%2C%20plans%20and%20frameworks/Integrated%20Waste%20Management%20Plan.pdf>

³²¹ DFFE Status of Waste Management in South Africa, Presentation to Parliament February 2022 <https://pmg.org.za/committee-meeting/34368/>

³²² Ibid.

³²³ Green Cape 2022 Waste Market Intelligence Report.

³²⁴ Department of Environmental Affairs South Africa State of Waste Report 2018

³²⁵ DFFE Status of Waste Management in South Africa, Presentation to Parliament February 2022 <https://pmg.org.za/committee-meeting/34368/>

³²⁶ Research shows that 12.7 million tonnes is the estimated total of waste generated per annum, of which 3.67 million tonnes are not collected and formally treated. T Polasi, S Matinise, and S Oelofse, "South African Municipal Waste Management Systems: Challenges and Solutions, 2020, https://wedocs.unep.org/bitstream/handle/20.500.11822/33287/SAM.pdf?sequence=1&isAllowed=y_S

³²⁷ DFFE Status of Waste Management in South Africa, Presentation to Parliament February 2022 <https://pmg.org.za/committee-meeting/34368/>

³²⁸ National Waste Management Strategy 2020.

³²⁹ SALGA Local Government Support Programme on Waste Management. Presentation to Parliament February 2022, <https://pmg.org.za/committee-meeting/34368/>

provides an overview of key municipalities, the status of SWM currently, and proposed new interventions (if identified).

Table 6: Overview of SWM activities amongst South Africa's largest municipalities

Municipality	Landfill interventions ³³⁰	New intervention proposed	Private sector participation	Potential risks + challenges	Formal area waste collection	Informal settlement waste collection
City of Cape Town ³³¹	Limited usage available for existing landfills; identifying alternatives is critical for SWM	Separation at source: 76% of municipalities in Western Cape have separation at source, 24% do not. ³³²		Waste diversion, separation at source and increased material recovery are costly relative to the value of material recovered	100%, weekly kerbside refuse collection	99.74%; weekly door-to-door collection
City of Johannesburg ³³³	Expansion and rehabilitation of select landfills utilising private contractors	Identification and formalisation of informal waste pickers per region to separate domestic waste at source Integration of cooperatives to collect recyclable waste	Private sector contracted for waste collection + recycling	No implementation of separation at source; shortage of integrated waste management plans for Gauteng's municipalities. Majority of municipalities do not have alternative waste treatment programmes ³³⁴	1446649 formal households serviced	260 informal settlements serviced
Ekurhuleni Municipality	Landfills operated and maintained by contracted (private) contractors who manage and operate them on behalf of the City, but the CoE remains the permit holder	Alternative waste treatment model (including separation at source) Development / construction of a plastic recycling facility in Edenvale to replace plastic waste landfilling	Waste collection previously disadvantaged areas largely (60%) outsourced to waste collection contractors	Land scarcity for landfilling across Gauteng	Weekly waste collection through 723 000 formal points	Weekly waste collection through 176 000 informal service points from informal settlements
EThekweni Municipality ³³⁵	Waste is collected from source and transported to either a transfer station or landfill.	New Shongweni Landfill Development. Intensification of separation at source efforts	Envisaged greater private sector participation through 30% private participation via the PPPFA.	Refuse is collected only from 1 039 757 households, and there is a backlog in solid waste collection. The municipality suffers from poor market uptake for	411 468	626 289

³³⁰ Landfills are operated in terms of the NEMA (1998), waste management licences and ECA Permits.

³³¹ City of Cape Town Urban Waste Management. Presentation to Parliament February 2022, <https://pmg.org.za/committee-meeting/34368/>

³³² Western Cape Government: Environmental Affairs & Development Planning. A Guide to Separation of Waste at Source, 2019.

³³³ City of Johannesburg Status of Waste Management in South Africa 2022 <https://pmg.org.za/committee-meeting/34368/>

³³⁴ Gauteng Department of Agriculture and Rural Development (GDARD) Waste Management Presentation. Presentation to Parliament February 2022, <https://pmg.org.za/committee-meeting/34368/>

³³⁵ EThekweni Municipality presentation to Parliament 2022 <https://pmg.org.za/committee-meeting/34368/>

				alternative treatment	waste		
--	--	--	--	--------------------------	-------	--	--

Private participation in the sector is largely concentrated on waste collection (on behalf of municipalities), storage, treatment, recycling and disposal facilities. All waste generated in South Africa, including imported waste is reused, recycled, recovered, treated, or disposed of at a waste management facility.³³⁶ Commercial and industrial waste streams are popular with private waste management firms, given that they are often continuous, homogenous, and found in large volumes (i.e., allow for economies of scale); less contaminated and easier to separate at points of generation; and easier to access from a contractual/procurement perspective.³³⁷ For example, AllWasteSolutions, a portal of waste management suppliers affiliated with the Institute of Waste Management Southern Africa (IWMSA), had nearly 300 firms dedicated to delivering waste-related services. In general, there are a range of locally owned and subsidiaries of international companies present in South Africa in the SWM sector.

However, not all private waste management companies are compliant with integrated waste management plans³³⁸ or compliance with landfill sites,³³⁹ posing challenges for proper waste management going forward. Greater compliance amongst private sector actors will become a necessity if their participation in the industry is to grow in the medium to long-term.

Table 7: Summary of general waste generation and management in South Africa, 2017³⁴⁰

Waste type		Local generation	Imports	Exports	Total tonnage managed	Storage / stockpile	Recycling / recovery	Treatment	Disposal	LOC
GW01	Municipal waste	4 821 430			4 821 430	0.0%	0.0%	0.0%	100.0%	
GW10	Commercial and industrial waste	360 884			360 884	0.0%	0.0%	0.0%	100.0%	
GW14	Fly ash and dust	4 346 080			4 346 080	0.0%	3.1%	0.0%	96.9%	
GW15	Bottom ash	6 489 080			6 489 080	0.0%	3.1%	0.0%	96.9%	
GW16	Slag	4 859 025			4 859 025	0.0%	0.0%	0.0%	100.0%	
GW20	Organic waste	19 247 851	4 048	298	19 251 600	0.0%	49.2%	0.2%	50.8%	
GW30	Construction and demolition waste	4 482 992			4 482 992	0.0%	52.0%	0.0%	48.0%	
GW50	Paper	2 211 225	57 855	129 374	2 139 706	0.0%	58.0%	0.0%	42.0%	
GW51	Plastic	1 113 362	6 748	20 856	1 099 254	0.0%	43.7%	0.0%	56.3%	
GW52	Glass	2 752 636	38 378	11	2 791 003	0.0%	71.2%	0.0%	28.8%	
GW53	Metals	4 035 929	24 168	527 037	3 533 059	0.0%	80.0%	0.0%	20.0%	
GW54	Tyres	174 640		12 473	162 167	76.4%	23.6%	0.0%	0.0%	
GW99	Other	729 615			729 615	0.0%	9.0%	0.1%	91.0%	
TOTAL		55 624 746	131 196	690 050	55 065 893	0.2%	34.5%	0.1%	65.2%	

*Note that percentages may not add up to 100% due to rounding off.

³³⁶ Department of Environmental Affairs South Africa State of Waste Report 2018.

³³⁷ Green Cape, "2020 Market Intelligence Report: Waste", 2020, https://greencape.co.za/assets/WASTE_MIR_20200331.pdf

³³⁸ City of Cape Town 3rd Generation Integrated Waste Management Plan 2021.

³³⁹ Ekurhuleni Waste Management presentation to Parliament 2022, which notes 70% compliance with required specifications for landfilling amongst private sector. <https://pmg.org.za/committee-meeting/34368/>

³⁴⁰ Department of Environmental Affairs South Africa State of Waste Report 2018.

Nevertheless, there are opportunities for private sector to further engage in the SWM industry including the opportunity for municipalities to contract private contractors to run separation of source initiatives and manage the infrastructure as necessary.³⁴¹ The National Waste Management Strategy also support and calls on private sector investment in promoting extend producer responsibility for products post-consumption, which private sector can spearhead implementation thereof, and there are also opportunities in the waste economy for private sector's participation in the commercialisation and scaling of buy-back centres supporting recycling and waste processing.³⁴² However, making this a reality will require better SWM including improving separation at source levels, which are currently very low and, as a result, recycling feedstocks are often of poor quality due to contamination by other materials, notably organic waste.³⁴³

South Africa also has a large informal waste sector, with an estimated 90 000 waste pickers, that operate primarily in the recycling waste. While overall household recycling numbers remain low, the paper and packaging recycling continues to grow, in part a result of the informal sector that collects an estimated 80% to 90% of all paper and packaged recycling in the country.³⁴⁴ In part, the organisation of a portion of informal waste pickers via the [South African Waste Pickers Association](#) has been instrumental in supporting waste diversion away from dumps and into recycling instead.

Other sources suggest that there are an estimated 1800 companies operating in the plastics recycling space, the majority of which are SMEs.³⁴⁵ In terms of the plastics recycling value chain, approximately 43% of all plastic waste is formally and informally collected for recycling (461 449 tons), while 2073 tons are exported to third countries for further processing, and 605583 tons are not collected at all.³⁴⁶ This seems to indicate that there is greater avenue and opportunity for private sector actors to work with across the industry to ensure higher collection rates, further recycling / upcycling and better utilisation of plastic waste that is collected, especially as the industry is based on income generated from high volumes of recycling rates, rather than smaller volumes being recycled.

The government has increasingly begun to realise the importance of waste pickers' contribution to waste management and recycling across the region and, in 2020, the DFFE developed a waste pickers' integration guide for South Africa.³⁴⁷ Other interventions for informal waste pickers include training and skills development to further their participation in the plastic recycling plant in the

Informal waste pickers' inclusion in the South African recycling economy

In Pietermaritzburg, a group of eighty waste pickers, called the Hlanganani MaAfrika Waste Picker Cooperative, secured R10 million from the KwaZulu Natal Department of Cooperative Governance and Traditional Affairs for the construction of a materials recovery facility (MRF) on the New England Road landfill site, while the Mooi River Waste Pickers Cooperative, which is made up of ten waste pickers, were awarded R600 000 by the uMgungundlovu District Municipality to build a MRF at the Mpofana Local Municipality landfill site.

Since then, SAPWA has successfully managed to work with local governments and communities to establish MRF's in Vaalpark of the Free State, and Paarl of the Western Cape, carrying out recycling operations.

Source: GroundWork: A Wastepickers guide to organising

³⁴¹ Western Cape Government: Environmental Affairs & Development Planning. A Guide to Separation of Waste at Source, 2019.

³⁴² GDARD Waste Management Presentation

³⁴³ Green Cape 2022 Waste Market Intelligence Report.

³⁴⁴ Western Cape Government: Environmental Affairs & Development Planning. A Guide to Separation of Waste at Source, 2019.

³⁴⁵ Plastics SA Presentation to Parliament February 2022, <https://pmg.org.za/committee-meeting/34368/>

³⁴⁶ Ibid.

³⁴⁷ Infrastructure News, "State of the South African Waste Industry", 2022, <https://infrastructurenews.co.za/2022/03/10/state-of-the-south-african-waste-industry/>

Ekurhuleni, with off-takers of the plastic pellets created being brand owners (Unilever, Tiger Brands, etc).³⁴⁸

The Regulations regarding the Control of the Import of Export of Waste (2019) establishes the procedures and standards for the import, export and transit of waste in South Africa. It prohibits the import of waste for landfilling, hazardous waste from developed countries (members of the OECD or EU), infectious portions of medical waste, or mixed waste streams. The regulation further contains strict requirements for transboundary movement of waste.³⁴⁹ However, South Africa permits the import of hazardous waste for final disposal from SADC countries in the event that they can demonstrate a lack of adequate disposal facilities to domestically dispose of their hazardous waste in an environmentally sound manner.³⁵⁰

The State of Waste Report from 2018 provides the most comprehensive overview of regional recycling trends including South Africa, reflected in Table 8 below (figures are from 2017 records).

Table 8: Overview of South Africa's participation in intra-regional waste trade

TYPE OF WASTE	INTRA-REGIONAL IMPORT TRADE TRENDS	EXPORT DESTINATIONS (INCLUDING THIRD COUNTRIES)
Organic waste	Eswatini (99%), imported and processed	Botswana (35% exported)
Paper exports	Zimbabwe (22.4%), Botswana (18.4%), eSwatini (8.1%), Lesotho (2.5%), Zambia (2%) and Tanzania (1.7%).	South Africa exports recovered paper to mostly South-East Asian countries, of which India comprises 52% of all recovered paper exports.
Recyclable plastic	Namibia (23.8%), Mauritius (14.4%), the Netherlands (13.2%), Zimbabwe (11%), Germany (8.5%), and Zambia (8.4%).	The majority of recyclable plastic is exported to China and Hong Kong. Mozambique accounts for 15.5% of South African recyclable plastic exports.
Glass cullet and scrap glass	Zimbabwe (33.9%), followed by Namibia (20%), Réunion (15.1%), France (12.5%), and Mozambique (11.1%).	
Scrap metal	The majority was imported from Botswana (49.6%), Namibia (26.5%), Zambia (7.7%), Zimbabwe (3.2%), Eswatini (3.1%), Mozambique (2.7%), and Malawi (1.3%).	In comparison, South Africa primarily exports scrap metal to Asian countries.
Hazardous waste	The majority of hazardous waste imported is from Lesotho (38.2%), followed by Mozambique (35.1%), Botswana (15.2%) and Nigeria (6%). The main reason for the majority of the imports is waste recovery (76.3%), with only 23.7% being imported for final disposal.	In comparison the majority of South Africa's hazardous waste is exported to South Korea (80%, lead acid batteries) and France for filter dust and waste catalysts.

5.3.13.3 Environmental consulting & Specialist services

EIAs were initially introduced as a legal requirement in terms of the Environment Conservation Act (1989). However, since then, the NEMA identifies several environmental instruments (assessments, management frameworks and management programmes) to give effect to section

³⁴⁸ Ekurhuleni Waste Management presentation to Parliament 2022, <https://pmg.org.za/committee-meeting/34368/>

³⁴⁹ DFFE, "National Environmental Management: Waste Act", 2008, https://www.gov.za/sites/default/files/gcis_document/201901/42175gon22.pdf

³⁵⁰ Department of Environmental Affairs South Africa State of Waste Report 2018.

24 of the Constitution (1996), and several iterations of EIA regulations have since been promulgated as part of the NEMA regulations, the latest of which is from 2014.³⁵¹

The DFFE oversees EIA implementation and policy formulation while provincial environmental departments also play a role in assessing and monitoring EIAs within their jurisdictions.³⁵² In terms of the NEMA, Environmental Management Inspectors (EMIs) are officials designated to conduct environmental compliance and enforcement functions in terms of the NEMWA, including EIAs. In terms of the NEMWA, all listed waste management activities must be licenced through an EIA process including EIAs.³⁵³ Regulations (GNR 982) identifies the processes to be followed in order to obtain an environmental assessment, while Listing Notices 1 (contained in GNR 983) and 2 (GNR 984) provide lists of activities that require a Basic Assessment Report and EIA respectively.³⁵⁴

Sectors for which EIAs are mandatory and which are subjected to EIA authorisation include mining, agriculture, energy, tourism, housing, bulk services infrastructure and transport, and waste management.³⁵⁵

In order to deliver EIA services in South Africa, all environmental assessment practitioners (EAPs) must be registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA). EAPASA was established in 2012 and is a specialised body tasked with accrediting and regulating EIA practitioners, ensuring their competence and adherence to professional standards.³⁵⁶

Figure 8: General provisions of NEMA that apply to an application for environmental authorisation³⁵⁷

³⁵¹ Director: IEA National Infrastructure Environmental Impact Assessment Factsheet 2019.

³⁵² DBSA: African Environmental Assessment Legislation Handbook: Consultation Draft. Chapter 23: South Africa <https://www.dbsa.org/african-environmental-assessment-legislation-handbook>

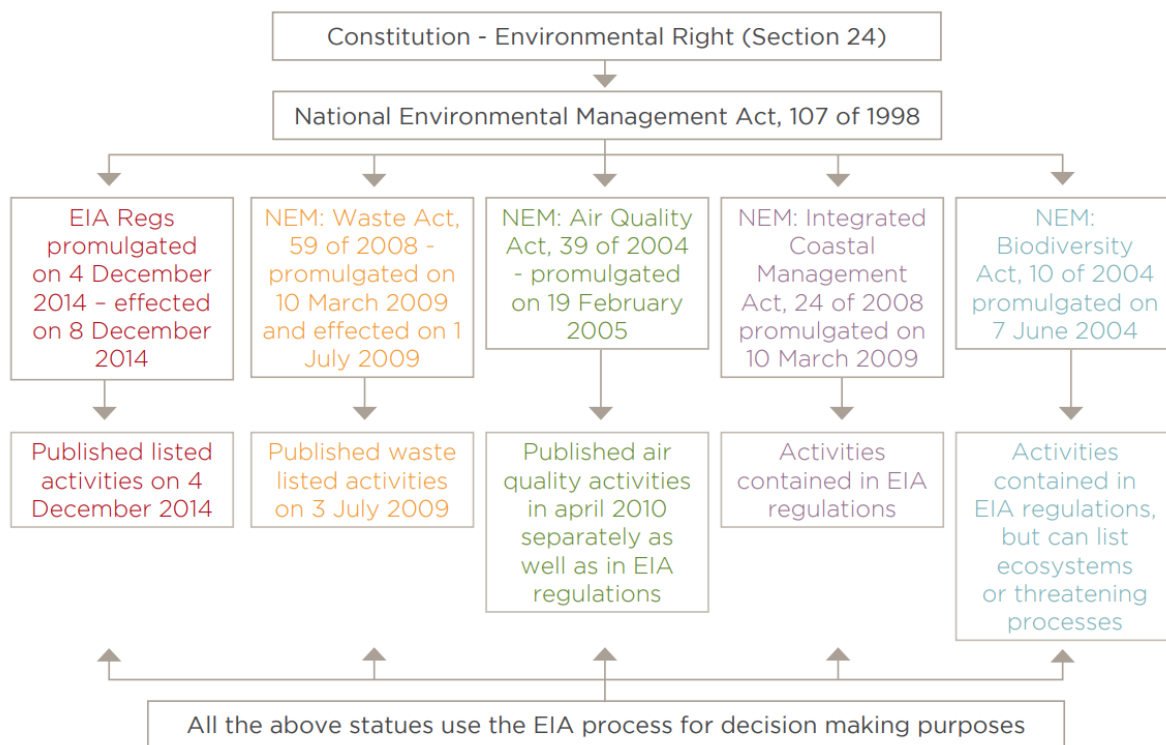
³⁵³ Department of Environmental Affairs South Africa State of Waste Report 2018.

³⁵⁴ DBSA, op. cit.

³⁵⁵ Director: IEA National Infrastructure Environmental Impact Assessment Factsheet 2019.

³⁵⁶ DBSA, op. cit.

³⁵⁷ WCG, "Environmental Impact Assessment: an Introduction", 2015, https://www.westerncape.gov.za/eadp/sites/eadp.westerncape.gov.za/files/atoms/files/EIA_2015.pdf



South Africa has a strong and well-developed EIA sector, in part a result of the need for EIAs for its mining industry. Firms active in mining-waste and clean-up services include both large companies and SMEs, some of which have also started supplying these services internationally.³⁵⁸ South Africa's EIA consulting companies are also documented offering their expertise across the region including Eswatini, Lesotho, Namibia, and Zimbabwe.

As of August 2023, South Africa has more than 1100 registered EAPs and 300 candidate EAPs. Candidate EAPs are qualified to undertake work associated with, or contributing to, environmental assessment on projects, provided that such work is supervised and reviewed by a Registered EAP. Foreign nationals must also have NEMA experience in order to register with EAPASA.³⁵⁹

These high registration numbers in South Africa are indicative of a well-established sector providing environmental consulting services. Another online database of specialist environmental service providers in South Africa lists more than 500 companies.³⁶⁰ Related firms offer a range of services including facilitation of authorisation, permits and licences; environmental compliance audits and monitoring; environmental resources management; environmental rehabilitation plans; and a range of other specialist studies (e.g., geochemical studies, geological investigations, biodiversity impact assessments, groundwater modelling and resources development).

5.3.14 Tanzania

5.3.14.1 Wastewater management

Overarching coordination of the wastewater system is handled by Ministry of Water, with additional oversight by entities including the National Environment Management Council (NEMC). Regulation of the sector is grounded in the Water Resources Management Act of 2009, which defines core responsibilities and ownership in the water sector, and the Water Supply and Sanitation Act of

³⁵⁸ ITC Trade in Environmental Goods and Services: Opportunities and Challenges (2014).

³⁵⁹ <https://eapasa.org/faqs/>

³⁶⁰ Lusha, Environmental Services Companies in South Africa, <https://www.lusha.com/company-search/environmental-services/31/south-africa/38/>

2019. The latter defines the powers of regional water authorities, while also empowering the Energy and Water Utilities Regulatory Authority (EWURA) to oversee some aspects of regulation of the sector, most crucially overseeing licensing and standards.

Wastewater management in Tanzania is primarily handled by municipal entities; for example, wastewater in the capital handled by the Dar-es-salaam Water Supply and Sanitation Authority (DAWASA). However, sewage network coverage is, limited: only 10% of Dar es Salaam covered by piped sewage systems – with the remainder dependent on septic tanks or pit latrines.³⁶¹ Processing of wastewater is primarily dependent on a network of waste stabilisation ponds, although DAWASA announced the development of the city's first formal wastewater processing plant in 2023.³⁶²

The plant is a notable example of growing private sector participation in the sector, with DAWASA awarding a tender to build and operate the plant to UAE water treatment firm Metito.³⁶³ However, this is one of the most notable examples of large-scale private participation in the sector, and most firms operating in the space focus on smaller scale operations that close gaps in coverage by utilities like DAWASA. For example, a number of companies operate waste tankers than can be hired to clear septic systems, but these are typically reported to be expensive and out of reach of most residents.³⁶⁴ As with most markets in the region, private companies also utilise effluent treatment plants to manage industrial emissions, although coverage in some sectors is incomplete and limited to larger operations.³⁶⁵ Efforts to equip industrial facilities, including Export Processing Zones, with wastewater treatment plants are also notable.³⁶⁶

5.3.14.2 Refuse disposal & Sanitation

The Environmental Management Act of 2004 provides the overarching framework for waste management in Tanzania, with specific SWM regulations issued via the act, rather than via a standalone regulatory structure. Implementation of the act is led by the National Environment Management Council, which reports to the Vice-President's office, and which is charged with implementing key strategies like the National Waste Management Strategy of 2018 and the National Solid Waste Management and Action Plan of 2010.

As with wastewater management, refuse disposal and sanitation services are handled by municipalities. The National Waste Management Strategy notes that while there is limited concrete data on waste management, coverage of waste collection and management is relatively limited: collection systems in Dar es Salaam only covering about 58% of generated waste and less than 40% being properly stored or recycled.³⁶⁷ Waste not collected by the city is either burned, buried or disposed in natural lots and fields.³⁶⁸

It is not clear to what extent private companies are contracted to provide waste collection, handling and storage solutions, but it appears that this outsourcing is primarily at the discretion of individual municipalities. Dar es Salaam, for example, has plans to actively encourage investment in waste sorting and recycling, particularly targeting opportunities for smaller firms. There does seem to be scope for private involvement in closing gaps not provided by municipal service providers, but these

³⁶¹ C Yap et al., "Sanitation Challenges in Dar Es Salaam: The Potential of Simplified Sewerage Systems," *Environment and Urbanization* Vol. 35, No. 1, 2023. (April 2023).

³⁶² Zawya, "Tanzania to Develop Its First Wastewater Treatment Plant Project," accessed August 11, 2023, <https://www.zawya.com/en/press-release/companies-news/tanzania-to-develop-its-first-wastewater-treatment-plant-project-nwvruqcc>.

³⁶³ Ibid.

³⁶⁴ K Makoye, "Tanzanian City Gets New Sewage Scheme to Curb Disease, Ocean Pollution," *Reuters*, September 11, 2017, sec. Big Story 10, <https://www.reuters.com/article/us-tanzania-pollution-water-sanitation-idUSKCN1BM134>.

³⁶⁵ J. M. Bidu et al., "Current Status of Textile Wastewater Management Practices and Effluent Characteristics in Tanzania," *Water Science & Technology*, Vol. 83, No. 10, 2021.

³⁶⁶ NatuReS, "Managing Industrial Wastewater in Tanzania: Challenges and Solutions," *NatuReS* (blog), July 6, 2021, <https://nature-stewardship.org/countries/tanzania/managing-industrial-wastewater-in-tanzania/>.

³⁶⁷ Government of Tanzania and UNEP, "National Solid Waste Management Strategy 2018 (Tanzania)," https://wedocs.unep.org/bitstream/handle/20.500.11822/31292/NWMS_Tanzania.pdf?sequence=1&isAllowed=y.

³⁶⁸ Ibid.

have faced challenges of the inability of many users to pay for services, and a complex framework for the development of public private partnerships.³⁶⁹

While there is cross-border movement of waste for recycling, much of this has focused on the shipment of plastics to China – with about sixty Chinese recycling facilities operating in the country, and conducting basic transformation of waste to comply with Chinese restrictions on the import of unprocessed waste.³⁷⁰ By contrast, there appears to be few examples of regional service providers active in Tanzania and much of the country’s regional cooperation efforts have focused on the development of shared standards and practises with the East African Community.

5.3.14.3 Environmental consulting & Specialist services

Environmental regulations in Tanzania are governed by the Vice-Presidents office, through the office’s Division of Environment. The division oversees the National Environment Management Council, which sets and ensures compliance with national environmental standards and certification system.³⁷¹ EIAs are required by larger projects in most sectors, while small projects in a selection of sectors – particularly related to agriculture, forestry and fisheries - similarly require assessments.³⁷²

Tanzania has one of the most stringent regulation systems for environmental consultants, with both individuals and companies required to register with the NEMC, and to regularly renew their license and registration information. Foreign consultants are treated differently to local services providers, with fewer protections from standards like the time it takes to grant an Environmental Experts Certificate, and with foreign certificates only valid for the length of a given project or assessment.³⁷³

Tanzania has a large and active environmental consulting sector, with a number of notable companies, along with the presence of some global firms (like RSK Group). While some of these companies may serve the regional market, the majority seem to primarily focus on domestic clients, with substantial room for further expansion.

5.3.15 Zambia

5.3.15.1 Wastewater management

The Ministry of Water Development and Sanitation leads oversight of wastewater in Zambia, and implements both the general Waste Resources Management Act of 2011, and the Water Supply and Sanitation Act of 1997. The latter establishes the National Water Supply and Sanitation Council (NWASCO), which implements frontline regulatory services like issuing licenses and enforcing standards. Priorities in the sector are set by the National Water Policy of 2010,³⁷⁴ which include efforts to strengthen the water quality assessment system and improve the management of wastewater generated by industry. Specific effluent controls are set by the Water Pollution Control Regulations, which are issued in terms of the Environment Protection and Pollution Control Act of 1990.

Very little publicly available information is available on the wastewater sanitation system in Zambia, with the overwhelming focus of existing research and programmes concentrated on the provision of services in Lusaka. In the case of Lusaka, wastewater management is handled by a public entity,

³⁶⁹ I4ID, “Solid Waste Management Systems Reform in Dar Es Salaam’s Low-Income Areas,” I4ID Systems Change Case Study, 2021. <https://a.storyblok.com/f/191310/774001d480/2021-solid-waste-management-i4id.pdf>

³⁷⁰ Y Xia, “Wealth from Waste? Chinese Investments and Technology Transfer in the Tanzanian Plastic Recycling Industry,” Policy Brief (China Africa Research Initiative, 2019).

³⁷¹ B Walmsley and S Husselman, “Tanzania: Environmental Assessment Legislation,” in *Handbook on Environmental Assessment Legislation in Selected Countries in Sub-Saharan Africa*, 4th ed. (Development Bank of Southern Africa (DBSA) in collaboration with the Southern African Institute for Environmental Assessment (SAIEA), 2020), <https://www.dbsa.org/sites/default/files/media/documents/2021-05/Chapter%2024%20Tanzania.pdf>.

³⁷² Ibid.

³⁷³ Ibid.

³⁷⁴ Ministry of Energy and Water Development, Zambia National Water Policy (2010) <https://www.nwasco.org.zm/index.php/policy?task=download.send&id=54&catid=4&m=0>.

Lusaka Water Supply and Sanitation Company (LWSC), which manages a network of three water treatment plants and seven waste stabilisation ponds.³⁷⁵ Even in the capital grid sewage availability is limited, covering 10% - 15% of the population, and maintenance challenges at treatment plants have left many being non-functional or have limited capabilities.³⁷⁶

As with other markets in the region, grid-based services are primarily offered by public entities, with quite limited involvement of private operators. Two new planned waste treatment plants, at Chunga and Ngwerere, had been announced as part of an EIB-led donor initiative, and involved the issue of public tenders to build and operate the plants.³⁷⁷ However, it does not appear that these plants are yet operational; nor is it clear which companies were selected as operators. Outside of the grid-based sewage system, private companies are active in managing the country's septic tank network, and in treating industrial wastewater.

While it is likely that regional firms provide some services to Zambia's wastewater sector, particularly in the extensive mining facilities in the Copperbelt, specific examples of regional service provision could not be identified.

5.3.15.2 Refuse disposal & Sanitation

The Department of Environmental Management in the Ministry of Green Economy and Environment has overarching responsibility for waste management in Zambia, typically working alongside the Ministry of Local Government, given that frontline waste management activities are provided by local authorities. Core waste management activities are handled by the Zambia Environmental Management Agency (ZEMA), which handles activities like the issuing of licenses for the handling and storage of waste. The Environmental Management Act of 2011 provides the overarching framework for waste regulation in the country, while specific rules on the issuance of waste management permits are overseen by the Environmental Management (Licensing) Regulations of 2013.³⁷⁸

Similar to wastewater, solid waste in Zambia is primarily handled by municipalities, and most available information on waste handling is concentrated around Lusaka. In Lusaka's case, waste is handled by the Waste Management Unit (WMU) of the Lusaka City Council. The WMU manages the city's primary disposal site and collects waste on a fee-based system across the city. The overarching strategy for waste management appears to be government by the 2004 National Solid Waste Management Strategy,³⁷⁹ which identifies a number of challenges, including low waste collection rates – which were estimated at around 40% in the capital - and poor data and oversight of collection in rural and mining regions.³⁸⁰

Private companies are involved in the collection of solid waste in Zambia, but like in many countries in the region, collection is held back by poor oversight by contracting entities (the municipalities in this case) and by low capacities for residents to pay for collection services. Waste sorting is primarily an informal activity,³⁸¹ while storage of waste is limited by the lack of specialist landfill sites in the country – with only one engineered landfill servicing the capital Lusaka. A number of

³⁷⁵ Lusaka Water Supply and Sanitation Company, "LWSC: Corporate Profile," <https://www.lwsc.com.zm/corporate/profile>.

³⁷⁶ D Matzke, "Lusaka Wastewater Project: Social Impact Assessment (ESIA)" (Ministry of Mines, Energy and Water Development (Zambia), September 2016), <https://www.eib.org/attachments/registers/72368092.pdf>.

³⁷⁷ "Zambia: EIB & KfW Welcome Progress in Lusaka Sanitation Project to Double Network Access Underway after Decade of Preparations," European Investment Bank, <https://www.eib.org/en/press/all/2021-256-eib-kfw-welcome-progress-in-lusaka-sanitation-project-to-double-network-access-underway-after-decade-of-preparations>.

³⁷⁸ Zambia Environmental Management Agency, "Waste Management Licence," <https://www.zema.org.zm/service/waste/>.

³⁷⁹ Environmental Council of Zambia, "National Solid Waste Management Strategy (Zambia) 2004"

³⁸⁰ E Kuwema, "Zambia: Lusaka Grapples with Waste Management," *The Times of Zambia*, February 15, 2022, sec. News, <https://allafrica.com/stories/202202150112.html>.

³⁸¹ UNDP, "A Day in a Life of Waste Collectors at Lusaka and Ndola Dumpsites | United Nations Development Programme," <https://www.undp.org/zambia/blog/day-life-waste-collectors-lusaka-and-ndola-dumpsites>

local companies purchase and process recyclable waste, for example Alpha Polyplast converts PET plastics into plastic strapping primarily used in the logistics sector.³⁸²

The landfill, Chunga, has been the site of tensions between government efforts to fence-in the site and the demands for access by informal waste pickers, highlighting some of the challenges around introducing more formal sorting and recycling efforts. However, Zambia is making efforts to include waste pickers into SWM structures. For example, the Centre for Zero Waste and Development in Africa (CZWDA), an environmental non-government organisation works with informal waste pickers to organise them into cooperatives, provides training and upskilling on recycling, and has also organised the first national symposium for waste pickers on plastic pollution, the purpose of which was to promote separation at source and engage on plastic policymaking.³⁸³

5.3.15.3 Environmental consulting & Specialist services

As with waste management, the Ministry of Green Economy and Environment oversees environmental regulation in Zambia, although practical management of inspection and certification processes and the broader implementation of the Environmental Management Act are handled by ZEMA.³⁸⁴ All projects are required to provide a general project brief outlining the project and possible environmental implications, while projects in a wide range of sectors (such as construction, mining, forestry, agriculture, etc) require formal (EIAs, along with complying with specific sectoral requirements).³⁸⁵ Registration of environmental consultants is not required, although was being considered as an additional requirement under the EIA regulations.³⁸⁶

Zambia has a significant set of domestic consulting companies and plays host to a notable number of multinational firms (such as Mott MacDonald and WKC Group).

5.3.16 Zimbabwe

5.3.16.1 Wastewater management & Sanitation

The Zimbabwe National Water Authority (ZINWA) is a state-owned enterprise formed in 2000 in terms of the ZINWA Act (2000) and is responsible for managing the country's water resources and distribution at affordable prices to Zimbabweans.³⁸⁷ It falls within the Ministry of Land, Agriculture, Fisheries, Water and Rural Settlement.³⁸⁸ The National Action Committee for Water, Sanitation and Hygiene (WASH) is an inter-ministerial committee established to assist with rural water supply. In terms of regulatory frameworks, the National Water Policy (2012) guides the development, use and management of water resources, including wastewater management and sanitation, while the National Water Act (2005) provides guidance on the development and utilisation of water resources in Zimbabwe, including dam works and environmental protection against pollution.³⁸⁹ Lastly, the Ministry of Local Government, Public Works and National Housing is responsible for function directing the collection of sewerage charge.³⁹⁰

³⁸² J M Takouleu, "Alpha Polyplast Obtains US\$2.75 Million from Inside Capital for Recycling," *Afrik 21*, June 30, 2020, <https://www.afrik21.africa/en/zambia-alpha-polyplast-obtains-us2-75-million-from-inside-capital-for-recycling/>.

³⁸³ Global Alliance for Incinerator Alternatives (2021) Strengthening Waste Picker Organisation in Africa. <https://www.no-burn.org/wp-content/uploads/2021/12/Strengthening-Waste-Picker-Organising-in-Africa.pdf>

³⁸⁴ B Walmsley and S Husselman, "Zambia: Environmental Assessment Legislation," in *Handbook on Environmental Assessment Legislation in Selected Countries in Sub-Saharan Africa*, 4th ed. (Development Bank of Southern Africa (DBSA) in collaboration with the Southern African Institute for Environmental Assessment (SAIEA), 2020), <https://www.dbsa.org/sites/default/files/media/documents/2021-05/Chapter%2026%20Zambia.pdf>.

³⁸⁵ Ibid.

³⁸⁶ Ibid.

³⁸⁷ JICA (2018) Data collection survey on water supply and sewage sector in Harare city area in Zimbabwe. <https://openjicare-port.jica.go.jp/pdf/12307096.pdf>

³⁸⁸ Zimbabwe National Water Authority, <https://zinwa.co.zw/>

³⁸⁹ Zimbabwe Water Act (1998) <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC026168>

³⁹⁰ JICA, op. cit.

Owing to economic instability and insufficient infrastructure the water supply and sanitation systems and services across rural and urban households have deteriorated significantly over the past decades. As a result, provision of water and sanitation services remains weak with uneven outcomes. Only 29.7% of households in the country have access to improved water sources and sanitation,³⁹¹ and only 37% of the population has access to basic sanitation facilities (in urban areas sanitation access is 43% while in rural areas it is 34%).³⁹² Many pumping stations have damaged pipes and malfunctioning sewage works, and access to safe sanitation is worse than that of access to safe drinking water in Zimbabwe.³⁹³ The majority of the sewerage systems have experienced large-scale blockages, water treatment plants are dysfunctional and lack chemicals while many distribution systems that have fallen into disrepair.³⁹⁴ Low revenues have resulted in large financial deficits in funding operation and maintenance, rehabilitation and the expansion of infrastructure.³⁹⁵

Unfortunately, private sector participation in this sector is largely limited primarily due to existing economic challenges, regulatory complexities and the overarching difficult doing business conditions. A long-term funding crunch (combination of support from development partners and private sector investments) means there is insufficient financial capacity necessary to develop the water sector and encourage private sector participation in the sanitation sector, a situation further compounded by the current non-cost reflective tariff structure, which is adversely affecting the ability of Local Authorities to undertake their mandate of building, operating, upgrading and maintaining water infrastructure including the conveyancing and reticulations systems.³⁹⁶ Moreover, the sewage sector has no simple privatization plans in particular.³⁹⁷ Although there are examples of PPPs in other sectors in Zimbabwe, there appears to be none in the sanitation sector.³⁹⁸

Nevertheless, efforts to improve sanitation and wastewater management in the country should make provision for private sector participation, in terms of which there could be a role played by the private sector in:³⁹⁹

1. Provision of rehabilitation and maintenance of pipelines, pumping stations, sewerage plants, etc, which can be contracted out to private sector under competitive bidding arrangements.
2. Billing and collection services, which offers opportunities for efficiency gains and cost reductions for municipalities or water utilities by contracting out services to qualified private companies rather than building small units within every municipality.

5.3.16.2 Refusal disposal & Waste management

Established by the Environmental Management Act in 2002, the Environmental Management Agency (EMA) is the statutory body responsible for regulating the collection, disposal, treatment and recycling of waste.⁴⁰⁰ SWM in Zimbabwe is primarily the responsibility of local authorities, which are municipal and district councils (i.e. local authorities) tasked with collecting, transporting, and disposing of solid waste within their respective areas. SWM includes household waste,

³⁹¹ Zimbabwe National Development Strategy 2021-2025 <https://faolex.fao.org/docs/pdf/zim203781.pdf>

³⁹² Africa Finance Ministers' Meeting 2020. Zimbabwe country overview 2020. https://www.sanitationandwaterforall.org/sites/default/files/2020-12/2020%20Country%20Overview_Zimbabwe.pdf

³⁹³ JICA, op. cit.

³⁹⁴ Zimbabwe country overview 2020.

³⁹⁵ JICA, op. cit.

³⁹⁶ Zimbabwe National Development Strategy 2021-2025

³⁹⁷ JICA, op. cit.

³⁹⁸ Ibid.

³⁹⁹ AfDB Zimbabwe Infrastructure Report 2019. https://www.afdb.org/sites/default/files/2019/07/09/zimbabwe_infrastructure_report_2019_-_afdb_-_20052019.pdf

⁴⁰⁰ Zimbabwe Environment Management Act (2002) <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC047834>

commercial waste, and industrial waste.⁴⁰¹ In terms of governance, the Zimbabwe Integrated Solid Waste Management Strategy 2014 provides a comprehensive plan for SWM including waste disposal, collection, recycling, waste reduction and other related environmental considerations.⁴⁰²

Unfortunately, rather than improving, Zimbabwe's municipal SWM is on the decline. SWM systems in municipalities only serve formal settlements despite extensive informal settlements emerging in most urban centres, which are generally not served by the waste management systems. As a result, SWM in these areas are largely dysfunctional.⁴⁰³ According to surveys conducted by the Environmental Management Agency (EMA) in 2016 and 2017, municipal solid waste collection in Harare fell from 52% in 2011 to 48.7% in 2016.⁴⁰⁴ Owing to insufficient / lack of bin provisions and irregular waste collection, illegal dumpsites have emerged in high- and low-density suburbs across the country, posing health risks, soil contamination and leeching of contaminants into ground water sources.⁴⁰⁵ Collection of household waste is erratic in both the low and high density suburbs of Zimbabwe,⁴⁰⁶ there is an absence of recycling practices in the country. Lastly, an unwillingness from residents to pay their rates (owing to an absence or irregular service delivery) has resulted in fiscal shortages for the local authorities, reinforcing their inability to fund collection of waste and disposal thereof from suburbs.⁴⁰⁷

There are two types of private sector players are active in the SWM sector in Zimbabwe:⁴⁰⁸

- Waste pickers: The current practice is for waste pickers or so-called "scavengers" collecting recyclables at dumpsites or from big supermarkets but quantitative data to support such practice is scant in the country.
- Small enterprises collecting household and industrial waste.

Unlike other SADC countries, there appears to be little regional participation on SWM (export of waste for recycling, etc), nor any meaningful presence from SADC private sector entities in Zimbabwe's waste sector.

5.3.16.3 Environmental consulting & Specialist services

The Environmental Management Act regulates EIAs and, in turn, the EMA is responsible for regulating, monitoring and approving EIAs.⁴⁰⁹ Specifically, the 2007 Regulations on EIAs and Ecosystems Protection provides for the participation of both foreign and local private sector service providers provided they adhere to the requirement stipulated in the Regulations, which include (amongst others):

1. Registration with the EMA as part of the consultancy roster / EIA consultants
2. Pay the application fee (currently at US\$ 2000 for foreign service providers)
3. Developers are only allowed to engage the services of consultants registered with the EMA.

⁴⁰¹ T Nhubu, et al (2021) Framework for Decentralising Municipal Solid Waste Management in Harare, Zimbabwe. *Advances in Science, Technology and Engineering Systems Journal*.

⁴⁰² Zimbabwe Integrated Solid Waste Management Plan (2014) <https://www.yumpu.com/en/document/read/62915014/zimbabwe-integrated-solid-waste-management-plan>

⁴⁰³ E Makwara and S Magudu (2013) Confronting the Reckless Gambling with People's Health and Lives: Urban Solid Waste Management in Zimbabwe. *European Journal of Sustainable Development*, <https://ecsdev.org/ojs/index.php/ejsd/article/view/41/35>

⁴⁰⁴ EU/ UNEP GRID Geneva <https://dicf.unepgrid.ch/zimbabwe/pollution#section-pressures>

⁴⁰⁵ Ibid.

⁴⁰⁶ N Zikali, et al (2022) Household solid waste handling practices and recycling value for integrated solid waste management in a developing city in Zimbabwe. *Scientific African*, https://www.sciencedirect.com/science/article/pii/S246822762200059X?ref=cra_js_challenge&fr=RR-1

⁴⁰⁷ T Nhubu, et al, op. cit.

⁴⁰⁸ N Zikali, et al, op. cit.

⁴⁰⁹ DBSA African Environmental Assessment Legislation Handbook: Consultation Draft. Chapter 28: Zimbabwe, <https://www.dbsa.org/sites/default/files/media/documents/2021-05/Chapter%2028%20Zimbabwe.pdf>

The EMA's EIA consultant database registered nearly 80 independent and firms as registered consultants.⁴¹⁰ There appears to be a well-developed environmental consultancy sector that includes South African companies with operations in Zimbabwe, together with local domestic firms, the latter constituting the majority of practitioners.⁴¹¹

⁴¹⁰ <https://www.ema.co.zw/index.php/agency/eia-consultants-register>

⁴¹¹ DBSA, op. cit.

6 Barriers to regional trade

6.1 Scoping of opportunities

While there is a great deal of variety in the structure of core environmental services markets in SADC – across wastewater management, SWM and environmental consulting – there are a number of common opportunities for cross-border private sector participation that should be considered when establishing a trade in services regime for the region.

These opportunities are important to consider, because a de facto liberalisation of environmental services in the abstract may not be suitable if it focuses excessively on aspects of the market that are dominated by public service provision. Nominal access to a market's sewage grid services may come with theoretical opportunities, but these are likely to remain unrealised if that grid is solely operated by public providers. As such, the bulk of additional work on identifying barriers to be liberalised under the trade in services talks, will focus on those elements of the sector that offer real opportunities for firms.

Of these, five are considered high-potential opportunities for regional trade:

1. **Operation of water pre-treatment systems for industrial usage:** Services including the installation, maintenance, operation and support of systems that filter and clean water released from industrial, mining or agricultural activities, prior to their release into common sewage systems.
2. **Cross-border recycling services:** Services related to the collection, sorting, bundling and processing of waste for recycling or other further use. This includes traditional recycling activities (such as plastic, glass, paper), as well as next generation technologies like the processing of agricultural waste into biofuels or biochemicals, or the creation of industrial symbiosis networks. As illustrated in the market profiles, these are already underway, but there is room to grow this opportunity further by incorporating recycling of e-waste, plastics, etc regionally and also to start including principles of circular economy usage for furthering the lifespan of certain products.
3. **Environmental consulting and certification services:** Services associated with technical processes, such as undertaking EIAs or providing supporting services for interventions with environmental benefits (such as the design of renewable power plants or of waste facilities). Also includes a broad range of services related to the green transition, such as the development of transition and mitigation plans. There is already a shortage of such services in the region, and affording accreditation and mutual recognition of qualifications in this sector is one way through to promote greater trade in professional services of such a nature throughout the SADC region.
4. **Operation of wastewater treatment plants:** Services related to the installation, maintenance, operation and support of systems that filter and clean water at a grid-sewage system scale. Typically offered via a PPP or as a sub-contract from the state-owned entity leading on wastewater treatment.
5. A potential area for growing interest (although still nascent in the region) is **air pollution control and noise pollution abatement**. As populations in major cities and metropolitan areas continue to grow, there will be an increasing need to manage air and noise pollution – both of which could offer avenues for private sector specialisation and participation in government procurement opportunities.

A number of additional sectors have potential for regional trade but offer greater complexity and are less likely to be offered at a regional level. A further three are classified as potential opportunities for regional trade:

1. **Solid waste management:** Services related to the collection, sorting, handling, storage and disposal of solid waste. Typically offered via a subcontract from the municipality leading on SWM for a given area.
2. **Collection of waste from septic tank systems:** Services related to the collection, sorting, handling, storage and disposal of effluent from septic tank systems, and the

provision and maintenance of these septic systems. Typically offered as a private service to plug gaps in sewage system coverage, but frequently licensed and governed by state entities.

3. **Waste sorting services:** Services specifically related to the sorting and grading of solid waste, in order to enable further processing. This processing could be related to recycling, the sale of waste for use as an input, the use of waste for non-traditional purposes (such as the use of agricultural waste for the production of bioplastics), and/or the disposal of waste, including the handling of dangerous forms of waste like radioactive or medical waste.
4. **Provision of sanitation services** to rural communities and peri-urban settlements: as illustrated, there remains a critical shortage across many SADC countries in reaching the 'last mile' communities in need of sanitation services. In instances where local government is unable to provide such services, opportunities to engage private sector service providers (through PPPs or sub-contracting) should be seriously considered as a way towards both improving the livelihoods of these communities as well as offering greater economic opportunities to smaller businesses from across the region that are able to provide such services and/or promote cross-regional learnings through larger entities partnering with smaller domestic actors to fulfil such mandates.

Across all opportunities, the private sector plays a strong role, but services are primarily domestic in nature, and cross-border services would mainly take the form of domestic subsidiaries of regional firms. These services also currently offer job opportunities to lower skilled workers in many cities in the region, and/or are subject to politically sensitive tender processes – and both complicate liberalisation efforts and the trade-offs involved in regionalising service provision. As such, pursuing these targets contains risks that could undermine broader efforts to liberalise environmental services.

6.2 Barriers in opportunity sectors

6.2.1 Industrial wastewater

In most SADC member states, primary wastewater treatment uses a wide mix of technologies that includes both advanced wastewater treatment plants and traditional treatment measures, like stabilisation ponds. For both sets of technology, there is a specific range of waste types that can be effectively treated. For example, stabilisation ponds are effective at treating sewage effluent, but cannot treat many types of chemical waste. All countries thus maintain strict rules on the quality of wastewater that can be discharged into sewage systems, to ensure the types of waste present can be properly treated by the underlying technology.

Given these considerations, all SADC member states maintain strict rules on the treatment of wastewater produced by industrial firms – here referring to a broad segment of companies including manufacturing, agriculture and mining interests. These companies regularly produce wastewater that features the presence of waste that cannot be treated, whether this be high levels of mineral waste in effluent from mines, or the presence of tanning and dyeing chemicals from firms in the clothing and textiles sector. Moreover, as illustrated in the South African example, commercial and industrial waste streams favour private sector waste management firms as they allow for economies of scale and are easier to access from a contractual perspective.

Effluent standards are typically regulated by the country's water regulator, which undertakes testing activities, inspections of specific sites and, in many cases, issues conditional licenses for the connection of industrial sites to core sewage infrastructure. However, pre-treatment of the wastewater before discharge into the sewage network is typically the responsibility of the company. In many cases, these companies subsequently install infrastructure for wastewater treatment, which is frequently maintained and operated by the external services providers.

This particular opportunity is notable for four reasons. First, delivery of core services are primarily offered by the private sector. Second, industrial wastewater treatment services are a key enabler of industrialisation and are essential to the operation of new investment projects in a manner that

is compatible with existing health and sustainability rules. Third, and closely linked, is that the demand for industrial wastewater treatment is likely to grow along with the industrialisation of the region, and the expansion of strategic industries like agriculture and mining. Fourth, there is strong (but under-realized) capacity for many SADC member states to develop specialisations in industrial wastewater treatment, building off state-led capacity developed in core wastewater utilities to develop private interests.

While there is evidence of regional trade in industrial wastewater services (such as the Mothae Diamond Mine example in the Lesotho case study), it is difficult to gauge the extent of this trade. Most trade in industrial wastewater services are highly fragmented, with individual companies often adopting very varied solutions that are specialised to fit their industry and use case. Companies also use a mix of external contracting of treatment to service providers, the in-housing of servicing capacity for procured solutions, or simply engineering wastewater treatment into their core operations. Where regional service provision is offered, this is most commonly through local representatives of major multinationals (such as Veolia, Xylem and Suez), but with an emerging role for SADC-originating firms. For all firms, it remains unclear to what extent the services sector makes use of local machinery and components, although some upstream component producers in sectors like valve production report working in the wastewater space.

Of the regional firms, South Africa's WEC Projects appears to be the most established, focused on the construction and servicing of industrial wastewater treatment, while Namibia's Aqua Services Engineering and South Africa's Acumen Group were also frequently identified as large service providers. A number of smaller firms operate in the 'smart' water treatment sector, which is a catch-all term encompassing small-scale self-contained treatment systems, and those utilising innovative and more environmentally friendly technologies. Examples include South Africa's NuWater and Alveo Water, and Namibia's Heat Exchange Products (HEPWater). As can be seen by the companies listed above, identified regional service providers tend to be clustered in South Africa and Namibia. Other operators likely are present in SADC markets but may not have been identified due to their operating in specific sectors, which is common for a service in which the likes of mines and farms require very different types of wastewater treatment.

The levels of diversity in the sector also complicates efforts to identify barriers to trade. In general, however, few specific restrictions seem to apply on the cross-border operation on wastewater service provision. Skills in the sector are often in high demand, and many countries have prioritised improving the treatment of industrial effluent, which may offer incentives to work with regional service providers.

Despite this, the underlying activities are very highly regulated, with all SADC member states maintaining strict standards for water quality. These standards have to be adhered to on an ongoing basis, and often need to be considered early in the construction of new developments, as part of receiving planning permissions, connecting to local sewage networks and undertaking EIAs. While most water standards are set at a national level, municipal entities that govern sewage systems and construction licencing are often involved in these processes, and as such service providers need to be cognisant of a very diverse range of regional regulations.

This complexity may prove a more significant barrier to trade than any intentional trade barriers or restrictions on cross border operations. Working to improve both regional standards and the sharing of regulations may help to manage this complexity and encourage greater interoperability between solutions offered in different SADC member states. Improved enforcement of industrial wastewater rules could also encourage investment in the sector, while offering improved compliance with key environmental standards.

Recommendation 1: Strengthen standardisation and information sharing among SADC member states on wastewater treatment standards and procedures in the manufacturing, agriculture and mining sectors.

6.2.2 Recycling

While recycling activities have been ongoing for decades, there has been a step-change in the depth and value of recycling, as countries around the world embrace new recycling technologies

and shift towards green production systems. Waste is increasingly viewed as a key source of inputs into manufacturing and other production processes, and the extent to which a country capitalises on its reserves of waste resources can be a key enabler of competitiveness and the capacity for industrialisation. Industrial symbiosis networks, in which the waste of some companies is sold as an input to other companies, offers opportunities for sellers to monetise their waste, and for producers to source low-cost inputs.

However, recycling, upcycling, industrial symbiosis and most of these next-generation waste reuse technologies remain dependent on a complex process of sorting, screening and categorising waste. Effective reuse of agricultural waste, for example, requires very specific sorting of different types of underlying material, the quality of the material, how it has previously been treated (such as what pesticides were used), how it was stored, when it was produced, and a range of other technical information – with these processes informing how the waste can be used and how it should be processed.

Both the quality and nature of these processes vary significantly across SADC. In many member states, waste sorting is primarily undertaken by informal waste pickers, who sift waste both before collection and at the final dump sites. This sorting process is mainly focused on monetised waste, such as plastic bottles, cans or glass, and offers income opportunities for informal waste pickers, albeit featuring work in extremely poor and unsafe conditions. Most countries do not have legislated requirements for separation at source and even in instances where municipalities might be required to do so, many still fall short of this requirement. In addition, the mixing of solid waste when collected – especially exposure of recyclable waste to organic waste – can compromise the recyclability of plastics, paper and cardboard.

In South Africa and Mozambique, policy provision exists for the participation of informal waste pickers to be included in municipal recycling efforts; however, the successfulness in implementing this policy and the extent of their inclusion is not clear. In fewer other cases, such as Namibia and South Africa, municipal waste collection includes a specified collection system for recycling materials, which is typically outsourced to private providers.

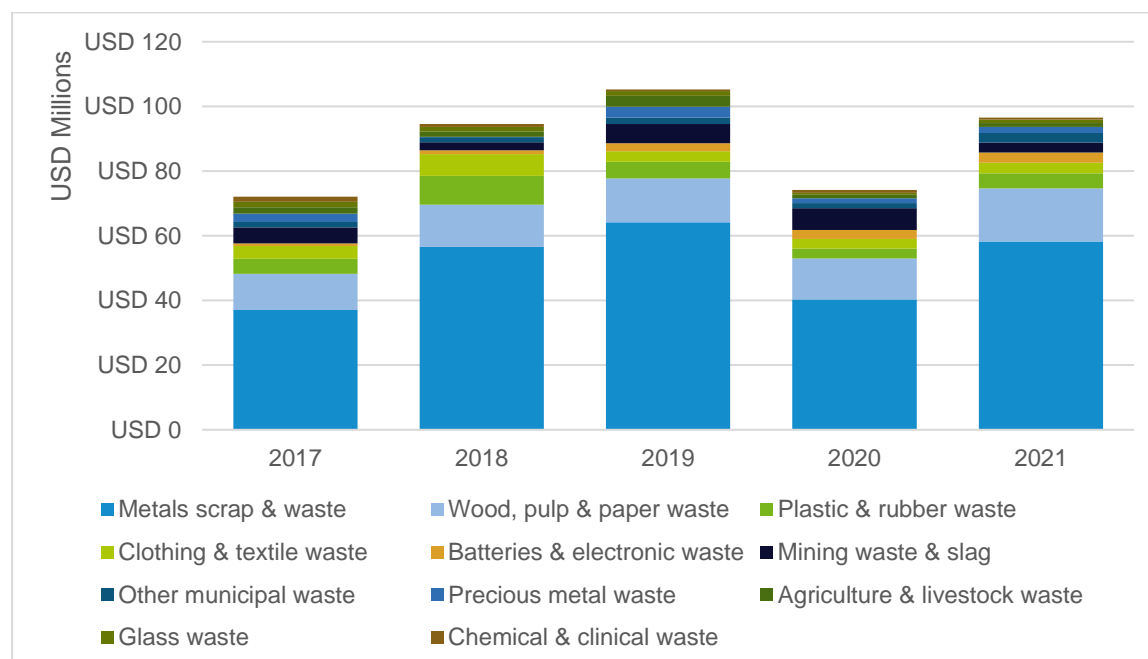
The subsequent processing of this waste varies by market. In many countries, local recycling firms undertake basic processing (crushing or palletising waste), and either export this waste (most commonly to South Africa or China) or process it further into finished products. Other countries (DRC and Tanzania) have foreign economic operators overseeing their recycling activities. The structure of this waste processing similarly varies, with in most cases private companies undertaking recycling activities, with government less likely to contract specific recyclers. Newer forms of recycling, such as the production of bioplastics and biochemicals from agricultural waste, are still a more nascent phase, and tend to take the form of smaller scale, donor-supported projects that partner with technical service providers with expertise in these niche areas.

The current and potential recycling value chain is a mix of goods and services trade. Services firms may have a presence in partner markets at multiple levels of the waste value chain, operating drop-off facilities for recyclable waste, partnering with municipalities in waste sorting activities, or undertaking processing of waste in-market. Depending on the depth of their presence, recyclers may export recyclable waste to processing hubs (notably South Africa), selling into regional waste trade networks that were valued at USD 96 million in 2021.⁴¹²

The overwhelming majority of waste traded in the region is clustered in industries in which waste products are already an established input – most notably in metal scrap and pulp & paper. Scrap metal trade is a particularly sensitive area, given concerns in some countries that illegal exports of scrap may undermine local metals producers, and the trade has been subject to a number of export restrictions in markets like South Africa, although South Africa remains the primary destination for scrap metal exports from the region. Trade in other types of waste is limited, although some categories, notably electronics waste, have been growing, potentially indicating emerging cross-border recycling activities.

⁴¹² CEPPII, “Base Pour l’Analyse Du Commerce International (BACI), HS17 2017-2021,” February 1, 2023, http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37.

Figure 9: SADC trade in waste with SADC, 2021⁴¹³



This trade in waste is, however, very concentrated, with South Africa underpinning 70% of total imports – a trend that is similarly observed in the studies on trade in services covered above.

Table 9: SADC member state exports and imports from other SADC markets, 2021⁴¹⁴

Market	Exports	Imports	Total trade
South Africa	USD 24 100 879	USD 67 988 771	USD 92 089 650
Botswana	USD 23 719 133	USD 5 269 180	USD 28 988 313
Zimbabwe	USD 9 285 184	USD 4 050 588	USD 13 335 772
Namibia	USD 9 785 364	USD 2 412 251	USD 12 197 615
Zambia	USD 9 222 296	USD 2 002 065	USD 11 224 361
Eswatini	USD 3 479 951	USD 4 971 004	USD 8 450 955
Mauritius	USD 906 735	USD 4 443 770	USD 5 350 505
Mozambique	USD 4 169 013	USD 708 421	USD 4 877 434
Malawi	USD 4 337 036	USD 238 469	USD 4 575 505
Lesotho	USD 2 389 623	USD 956 993	USD 3 346 616
DRC	USD 2 202 042	USD 1 136 056	USD 3 338 098
United Rep. of Tanzania	USD 919 683	USD 1 295 900	USD 2 215 583
Madagascar	USD 1 197 903	USD 469 098	USD 1 667 001
Angola	USD 207 716	USD 496 977	USD 704 693
Seychelles	USD 307 562	USD 20 497	USD 328 059
Comoros	USD 266 846	USD 36 926	USD 303 772

With the waste recycling value chain being a mix of trade in goods and services, restrictions on the trade in waste can have an important impact on the scope for service provision (and vice versa). Countries frequently govern what waste can cross borders and how this process is managed, with cross-border waste movement often requiring licensing regimes or being subject to other restrictions. These rules typically aim to prevent the dumping of dangerous or difficult-to-dispose of waste in countries, while restricting the export of waste types that are key inputs into production processes (such as metals waste). A business model seen in a few case studies shows service

⁴¹³ CEPII.

⁴¹⁴ Ibid.

providers providing in-country sorting and collection of waste (in partnership with local firms), and then undertaking actual recycling processes in their country of origin. Restrictions on the cross-border movement of waste good can undermine this model of services trade, by cutting off the crucial processing step and, as such, the trade in services and trade in goods regimes for recycling need to be carefully aligned.

Recommendation 2:

- 2.1. Work to align SADC rules on trade in goods for waste and rules on trade in services for recycling, in order to facilitate in-country service provision with processing in home countries.
- 2.2. Countries should work together to identify opportunities for recycling of waste based on current and future competencies. For example, South Africa processes hazardous waste from neighbouring countries that do not have the facilities to do so; other opportunities could involve other SADC countries agreeing to process and recycle e-waste, batteries, biowaste etc, should there be appetite and financing available to support the development of nascent recycling industries of this nature.

Outside of goods trade restrictions, a number of possible restrictions in services trade need to be carefully assessed. Recycling requires complying with complex multistage regulations, with a single recycling company potentially having to be certified for waste collection, waste storage/handling, and either the export or local processing of waste. As has been detailed in the case studies, multiple countries licensing regimes require partnering with local firms or establishing local operations. These regimes are often designed with the handling of general waste in mind and, understandably, contain strict rules on the handling of general waste that often contains hazardous materials. However, it remains unclear if these general-purpose rules are aligned with the needs of recycling firms taking part in collection and sort activities, given that these activities involve the handling of different types of waste (some of which are less obviously hazardous) and may require special considerations on the speed of processing and the nature of storage.

While there are costs to adding complexity to waste licensing regimes, particularly if this increases the compliance challenges in already heavily regulated industries, there may be value to building regulatory regimes that more effectively distinguish between waste collection and handling for recycling, upcycling, and other types of disposals. This may offer the best means to smooth local presence or partnership rules, since it would enable countries to strategically loosen these restrictions in sectors like recycling where local services providers may not be as developed.

Recommendation 3: Review SADC waste handling regulations to assess the extent to which they enable recycling activities and, where necessary, build suitably differentiated regimes for recycling processors, including enabling easier regional trade in these specialist regimes.

6.2.3 Consulting & certification

Consulting services are perhaps the most varied of all major environmental services traded in the region. While there are some common services offered within this broad category – most notably the completion of EIAs – the scope of environmental consulting has expanded considerably as new environmental concerns, such as the transition to climate compatible economies, have grown in prominence. Issues such as planning for the transformation of energy systems, building climate-compatible industrial development plans, and implementing new technologies and approaches for tasks like waste management all frequently feature support from technical consultants, with specialist environmental services blending into broader technical services like engineering.

Unsurprisingly, environmental consulting differs from other environmental services opportunities by featuring a leading role played by the private sector, with most of the sector dominated by private consultants. Nevertheless, governments are an essential enabler of environmental consulting activities, defining the regulations that require private companies to consider environmental issues, and being large direct procurers of environmental consulting services.

In many cases, governments also set specific regulations governing who can deliver key environmental consulting services. These are typically limited to specific regulatory tasks that

require a reliable quality of service delivery, and EIAs are the most common implementation of these requirements. As can be seen in Table 10, requirements for the governance of EIAs most typically take the form of compulsory or voluntary registration with either independent associations of experts or the regulating entity/Ministry.

Table 10: Requirements for consultants undertaking EIAs

Market	Requirements
Angola	Issuance of an Environmental Consultancy Certificate
Botswana	Membership of the Environmental Assessment Practitioners Board (EAPB)
Comoros	Unknown
DRC	Registration with Congolese Environmental Agency (CEA)
Eswatini	Registration with the Council of Registration of Architects, Engineers, Surveyors & Allied Professionals
Lesotho	Registration with Environmental Assessment Practitioners' Association of Lesotho (EAPAL)
Madagascar	None identified
Malawi	Registration with the roster of Environmental and Social Impact Assessments (ESAI) experts
Mauritius	No formal requirements
Mozambique	Registration in terms of the EIA regulations is a prerequisite for participation; non-Mozambican companies must either be sub-contracted to a registered Mozambican company or form part of a consortium with a registered company, which will still require submission of a Mozambican work permit.
Namibia	Registration with the Environmental Assessment Professionals Association of Namibia (EAPAN)
Seychelles	Registration with the Ministry of Environment, Energy and Climate Change (MEECC)
South Africa	Registration with the Environmental Assessment Practitioners Association of South Africa (EAPASA).
Tanzania	Registration with the National Environment Management Council (NEMC)
Zambia	None identified
Zimbabwe	Registration with the Environmental Management Agency (EMA)

These registration requirements are typically paired with specific standards and fees to be paid, as well as regulations on the duration of registration/certification and the scope of activities a consultant can undertake. While similar registration processes are standard practises around the world, the SADC region features a number of regulations that distinguish between requirements for local and foreign service providers. For example, in Zimbabwe, foreign consultants must pay a USD 2000 fee, while in Tanzania, foreign providers are only issued certificates to operate in the market for the length of a specified project and must renew their authorisation with each subsequent project. In Mozambique, non-Mozambican companies must either be sub-contracted to a registered Mozambican company or be part of a consortium with same – which still requires a Mozambican work permit, whereas in South Africa foreigners are allowed to participate in the delivery of EIA services provided they have NEMA experience.

This two-tier system for local and foreign consultants is occasionally accompanied by requirements to partner with local firms, establish a local presence in the market in question and/or hire locally certified experts. There are very few countries – Mauritius as an example – where barriers to entry as EIA specialists is low. As noted in this study, South Africa does offer more competitive and stronger expertise on EIA services compared to some of its peers, and the presence of South African EIA consultants is well documented in the region.

While the rules governing foreign EIA service providers are not especially onerous, they nevertheless may be a barrier to regional integration, given that many environmental consultants operate as individual contractors or as part of small firms consisting of only a handful of experts. Especially strict rules may have the unintended consequence of enabling larger environmental

consulting firms to enter the market in lieu of smaller players. With the region increasingly embracing a sustainable growth path and expecting a boom in infrastructure investment, there is good reason to expect that EIA capacity will need to grow rapidly in coming years and may require an increased role for regional experts.

While there does appear to be a clear desire to develop domestic consulting capacity in many SADC countries, many of these local operators already have very significant natural advantages, given that assessment for EIAs or similar rules require a detailed knowledge of local regulations and processes. Careful enforcement of standards of knowledge for environmental experts may offer adequate protection for local industries, without the need to rely on two-tier regulatory regimes for local and foreign partners.

Recommendation 4: Review national rules governing foreign consultants undertaking EIAs and other similar regulatory processes. To the extent possible, move from a two-tier system for foreign consultants to a unified national treatment regime with clear standards for experts.

Outside of regulatory processes like EIAs, environmental consulting appears to face few major regulatory barriers, beyond general rules governing public procurement, immigration and cross-border service provision. Expertise in environmental issues tends to be relatively specialised, and cross-border service delivery is a relatively standard occurrence in the sector. While not directly within the scope of the SADC Trade in Services negotiations, there may be scope for broader cooperation in this area, in order to both better integrate the sector and improve competitiveness to unlock opportunities in the rest of Africa. SADC countries have notable skills in environmental consulting activities connected to the mining sector, which could be leveraged to build a hub of expertise that could benefit from deeper continental integration. Options to support the sector could include aligning regional environmental rules and procedures (to build critical mass in key standards or issues) and supporting regional movement of people to enable information sharing and access to education hubs.

6.2.4 Treatment plants

SADC’s wastewater treatment infrastructure is in a state of rapid change, with still relatively underdeveloped sewage and treatment networks being the focus of investment, donor support and private partnerships across the region. While most networks remain relatively traditional – with state utilities or municipalities treating water with methods like stabilisation ponds prior to discharge into natural water sources – the region is facing at least two major shifts.

First is the increasing presence of private sector providers being contracted to build, develop and operate new treatment facilities or renovate and maintain existing facilities. The individual case studies include multiple examples of private participation in the operation of wastewater treatment plants, ranging from Namibia’s long running water reclamation PPP, Wingoc, to newer initiatives like DAWASA’s awarding the UAE’s Metito a contract to develop and operate a state-of-the-art wastewater treatment plant in Dar es Salaam. While comprehensive information on the value of the SADC water treatment sector is not available, Table 11 below demonstrates the scale of these operations in a number of markets, and there is unsurprisingly substantial private sector interest in these opportunities.

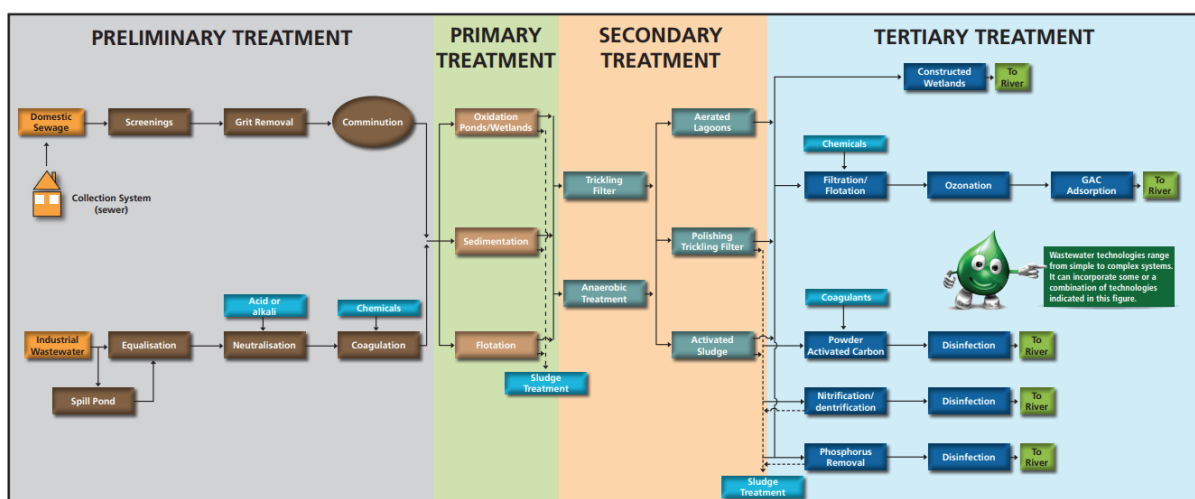
Table 11: Assets and revenue of the largest national SADC wastewater utilities

Country	Largest wastewater utility	Assets	Revenue	Year
Angola	Empresa Publica de Aguas de Luanda (EPAL)			
Botswana	Water Utilities Corporation (WUC)	P14.74 billion (USD 1 billion)	P2.07 billion (USD 152 million)	2021/22
Comoros				
DRC	Régie de Distribution d'Eau (REGIDESO)			

Eswatini	Eswatini Water Services Corporation (EWSC)	E2.98 billion (USD 158 million)	E417.1 million (USD 22 million)	2021/22
Lesotho	Water and Sewage Company (WASCO)	M1.627 billion (USD 86 million)	M225.5 million (USD 11.9 million)	2018/19
Madagascar	JIRAMA			
Malawi	Blantyre City Council			
Mauritius	Wastewater Management Authority			
Mozambique	Water Supply Asset and Investment Fund (FIPAG)			
Namibia	Wingoc			
Seychelles	Public Utilities Corporation (PUC)	SCR 5.4 billion* (USD 405 million)	SCR 227.5 million (USD 17 million)	2021
South Africa				
Tanzania	Dar-es-salaam Water Supply and Sanitation Authority (Dawasa)			
Zambia	Lusaka Water Supply and Sanitation Company (LWSC)			
Zimbabwe	Zimbabwe National Water Authority (ZINWA)			

Second, is a shift in technologies used in wastewater treatment. Broadly speaking, wastewater treatment technologies fall into three core categories: primary treatment (including ponds and other fixtures that use natural processes to clear effluent), second treatment (which add technologies like filtering or aerating, which typically require specialist machinery) and tertiary treatment (typically requiring the use of chemicals and other more active treatment methods). While all countries use a mix of these technologies, SADC has seen increasing investment in more complex waste treatment infrastructure, which requires both large values of investment and more technical operating skills. Newer facilities increasingly also feature some form of value-added output, such as generating energy.

Figure 10: Overview of wastewater treatment technologies⁴¹⁵



Upgrading of wastewater treatment infrastructure and the increasing openness to the private sector both offer opportunities for increased regional trade in the space, however this potential faces a number of challenges. With wastewater treatment plants typically being large-scale operations, with very long contracting periods, windows for companies to bid on opportunities are limited, and service providers tend to be locked-in for long periods of time. Treatment plants are also extremely

⁴¹⁵ Water Research Commission, "Wastewater Treatment Technologies - A Basic Guide," WRC Report 2015 <https://www.wrc.org.za/wp-content/uploads/mdocs/TT%20651%20-%202015.pdf>.

complex and are critical to broader human and environmental health, and as such service delivery in this area tends to attract large multinationals; with SADC not having an obvious champion firm in this space.

These structural challenges notwithstanding, there are few identified barriers in the wastewater treatment sector, beyond those typically associated with public procurement rules and structures for public private partnerships. With few countries having specialised service providers in wastewater treatment (outside of their public utilities), national treatment appears to be the norm, albeit with some local partnership and sourcing requirements as demanded by procurement rules.

On balance, it appears a SADC role in private contracting of wastewater treatment plants could be enabled by both investing in the capacity of domestic capacity (with most multinationals originating as national utilities or major service providers to those utilities) and increasing cross-border cooperation in the expansion of treatment capacity. Improved information sharing may encourage the development of shared norms and standards in the space, which will make it easier to regional firms to engage in the very complex process of bidding for these critical services.

Recommendation 5: Deepen cooperation and information sharing among regional wastewater utilities on their water treatment plant technologies, to both help with the upgrading of regional capacity, and develop common standards and norms that regional service providers can specialise around.

6.2.5 Air & noise pollution abatement

In SADC, the main sources of air pollution include industries (power stations, chemical and cement factories, etc) forest and savannah fires, biomass burning (i.e. firewood and charcoal), transport emissions, and waste burning.⁴¹⁶ All these emissions, coupled with growing populations, requires comprehensive air and noise pollution abatement strategies across the region.

SADC, through its Regional Policy Framework on Air Pollution (2008)⁴¹⁷ provides regional solutions to manage air pollution in terms of which SADC members are to 'endeavour and consider' (thereby suggesting non-binding but rather working towards these goals) working together to control and reduce air pollutants, emissions and greenhouse gases. The Framework on Air Pollution does identify the need for cleaner fuels (reducing sulphur levels and phase out leaded gasoline), clearer vehicles that are equipped with a functional catalytic converter and implement urban planning that includes affordable non-motorised transport, by way of example. However, the full extent to which SADC countries have successfully domesticated and implemented air and noise pollution mitigation strategies, remains mixed in results and outcomes.⁴¹⁸

Nevertheless, economic development goals of industrialisation must be accompanied by mitigation strategies related to air and noise pollution (such as air quality offsetting) that might ensue from economic growth, as well as the importance of supporting green growth, which will require mitigation strategies to prevent air pollution as part of addressing climate change efforts. Governments bear the responsibility for developing and implementing appropriate policies and legislation that address air and noise pollution mitigation strategies and, to this end, industrial development plans must be accompanied by implementable strategies to support air pollution reduction and noise control, especially in urban areas

This is also a sector that is well-suited to private sector services delivery especially given the broad range of specialisation required to address noise and air pollution for different sectors (transport, industries, agriculture, etc). As populations grow, pollution mitigation strategies will become increasingly important and local governments, in partnership with the specialised private sector actors, can work together over long-term contracts to address different control measures that are suitable for the emissions arising from different sectors and industries. Noise abatement and air

⁴¹⁶ SADC Air Quality <https://www.sadc.int/pillars/air-quality>

⁴¹⁷ The Regional Policy Framework on Air Pollution (2008) builds on the The Harare Resolution on the Prevention and Control of Regional Air Pollution in Southern Africa and its Likely Transboundary Effects.

⁴¹⁸ UNEP <https://www.unep.org/interactives/air-pollution-note/>

pollution control are sectors that could also cross-border service delivery, prompting the development of regional expertise, especially in instances where not all countries can support / need a wide range of specialised, domestic environmental expertise of this kind.

Recommendation 6:

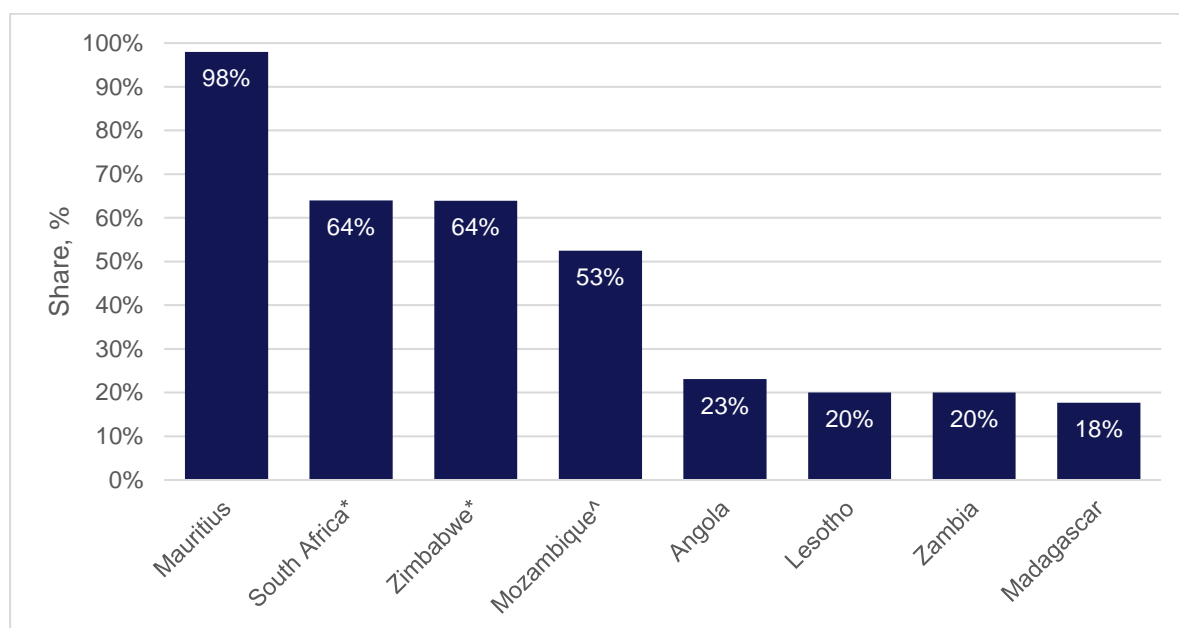
6.1. Regional standards should be identified and implemented with targets to reduce noise and air pollution across different sectors and industries (industries, agriculture, transport, etc) for the purposes of supporting harmonisation of requirements and facilitating easier cross-border private sector service delivery.

6.2. Private sector specialisation should be identified and thresholds for relevant expertise established at a regional level to promote the development of regional skills and expertise in this sector.

6.2.6 Waste collection

Solid waste collection in SADC is overwhelmingly handled by local governments, typically including municipalities for cities and broad regional agglomerations for collections of villages in more rural areas. As explored in the case studies, the state of municipal waste collections systems varies substantially, and typically only the larger cities have robust waste collection networks. Even in these major hubs, collection rates are often poor. The scope of paying customers is also understandably limited, meaning that municipalities typically cross subsidise or directly fund waste collection services.

Figure 11: Share of population covered by waste collection services, in SADC states for which data is available⁴¹⁹



Note: *Refers to total share of households covered by waste collection. ^Refers to total share of waste covered by waste collection. Graph contains all SADC member state data available in the dataset.

Private sector participation in waste collection is very common across SADC, with individual municipalities often procuring collection services from private providers, particularly in larger cities. As with wastewater treatment, these are, of course, regulated by public procurement rules; however, waste collection is also overseen by additional licensing and certification rules. These are often set by both the national environmental regulator, and the local authority contracting to the firms. With procurement distributed among a very wide range of local municipalities, with differing needs and roles for private providers, there is an incredibly diverse range of individual rules

⁴¹⁹ World Bank, "What A Waste Global Database." <https://datacatalog.worldbank.org/search/dataset/0039597/What-a-Waste-Global-Database>

governing waste collection. The procurement of collection services is also sometimes integrated with services related to the sorting and disposing of waste, but this varies by authority and by individual contract.

As a result, while waste collection and associated services are clearly an opportunity for regional trade, the specific rules governing this opportunity are diverse and variable. Scoping these rules is beyond the scope of this paper, but even a comprehensive accounting would likely be of limited use, given that rules seem to change frequently. Typically speaking, many of these rules do not seem to have separate regimes for foreign service providers, beyond those associated with state procurement and the practical consideration that companies will need to have a physical presence in the market to effectively deliver collection services.

This complexity is likely the most significant barrier to regional trade in waste collection services, and efforts could potentially focus on initiatives to better share information and align standards in the sector. Building a platform for individual municipalities to share procurement notices might offer some marginal benefits to overcoming this complexity, while developing a model procurement contract for waste collection may offer some benefits to municipalities seeking to enter the space, while building predictability in their procurement models.

Recommendation 7: Develop a model SWM collection contract, for use by municipalities seeking to integrate private service providers into waste collection activities.

6.2.7 Septic tanks

Septic tank systems play a key role in wastewater management in SADC, primarily as a means to plug holes in the coverage of sewage systems, whether that be in cities or, more crucially, in more rural areas that are not connected to urban sewage grids. Maintaining a septic tank system, or similar off-grid wastewater solution, requires a particular set of support services. Technical services help install and maintain systems, while networks of tankers collect sewage effluent and offload it as a central point for processing, and discharge into sewage networks. To the extent that the latter is the larger portion of this services sector, septic tanks are relatively comparable to the waste collection sector detailed above, creating opportunities for companies in the collection, handling and processing of waste.

Unlike with solid waste collection, the septic tank sector is led by the private sector. While some municipalities do offer collection services as part of their wastewater service delivery, the majority of services are operated by private providers contracting directly with the owner of the system. While many of the identified opportunities were focused on household septic tanks, there is substantial overlap here with industrial wastewater treatment services (discussed above), with companies located in rural areas far from water sources, or adjacent to sensitive water sources, often having to transport their wastewater for disposal and/or further treatment. These industrial systems are not typically septic tanks, but the services delivery mode is similar, with waste ponds drained into tankers and transported to processing centres.

The sector features many of the opportunities and limitations discussed above in the solid waste collection section. On the opportunity side, the prevalence of private providers offers good scope for company participation and helps fill gaps in sewage system coverage that can help municipalities maintain strong wastewater handling systems while developing core infrastructure. Unlike waste collection, there are typically very few legal restrictions on the cross-border trade in sewage systems, beyond compliance with relevant wastewater handling and disposal regulations. Services providers may need to meet some certification requirements, primarily to access the sewage grid for disposal of treated effluent.

However, much like with waste collection, the scope for regional trade in this space is less clear. Septic tank and wastewater collection services are inherently a local service offering, and there were few identified cases of regional trade in this sector. Some small-scale regional trade was identified in the case studies, but these were mainly focused on installing and maintaining of next-generation systems to treat and reuse wastewater (such as the example of Ozone Service Industries in the Madagascar market profile). Most primary wastewater collection services

appeared to be run by local, medium-scale operations, with little obvious role for regional services providers. There may be exceptions to this pattern – such as with the transport of wastewater from very large mines in rural areas – but few were identified.

Given these considerations, maintaining the current open regulatory environment for septic tank and wastewater collection services could offer some potential for regional trade, but there is limited evidence to expect significant growth in this area. SADC member states may unlock some regional trade by working with household-focused collection companies and assisting them to scale-up to offer similar services to mines, agriculture and other industrial sectors. Doing so may offer greater scope for regionalising service delivery and offer some resilience to companies that may be displaced as sewage grids reach more households.

6.2.8 Waste sorting

Waste sorting is among the most important, and most complex, environmental services sectors operating in SADC. Sorting is critical to safely storing different categories of goods, especially management of hazardous items, and is an essential enabler of recycling and reuse of waste. As discussed in the recycling section, SADC has an established waste sorting sector, but these services are primarily offered by the informal sector, with waste pickers sorting waste either prior to collection or at dumps and storage facilities, for sale onward to recycling companies.

The informal waste sorting sector is a highly vulnerable sector, with most participants being very poor and working in very difficult conditions. Policy debates on the sector are often a balancing act between efforts to formalise the sector, which may risk excluding many current waste pickers; and keeping the current model, which exposes workers in the sector to very risky environments. While policy related to waste sorting is beyond the scope of this paper, the informal nature of the sector does complicate regional trade considerations, since it seems very unlikely that such services would be offered by formal regional companies.

Despite this, newer and more complex waste sorting services may have greater potential for private participation. As discussed in the recycling section, this could include sorting of waste that requires specific grading, such as identifying the quality of agricultural waste.

While most specific recommendations on waste sorting are discussed in the recycling section above, sorting is worth separately emphasising because of the sensitivities mentioned above, in which regional integration needs to be carefully balanced with the need to protect informal waste pickers, who are among the most vulnerable economic agents active in the SADC environmental services market. Given this, it is recommended that waste sorting be the subject of further work, including more focused research on how to integrate them in a manner that protects informal traders.

Recommendation 8: Undertake follow-up research on regional integration in the waste sorting sector, with a focus on balancing the promotion of regional trade with the need to protect the informal waste picker sector.

6.3 Implications of SADC trade in environmental services negotiations for Southern Africa under the AfCFTA

Although negotiations under the AfCFTA remain ongoing, Phase II negotiations will provide for discussions on trade in environmental services. Negotiations at a SADC-level, therefore, affords member states the opportunity to prepare for upcoming discussions at a continental level and to understand how and where commitments can and should be made to benefit the region as a whole.

The AfCFTA Protocol on Trade in Services is aligned with the GATS (most favoured nation treatment, transparency and special and differential treatment), and seeks to promote enhanced competitiveness in the services sectors, encourage domestic investment and FDI, and pursue services trade liberalisation in line with Article V of the GATS. The AfCFTA Protocol on Trade in

Services also preserves member states' rights to regulate services sector and afford mutual recognition where possible, or the licensing and authorisation of services suppliers.⁴²⁰

Facilitating trade in environmental services (and services in general, therefore) under the AfCFTA will depend on removal of barriers for foreign private sector actors as well as harmonising regulatory frameworks to support the provision of necessary skills and services across the region and, ultimately, the continent. Moreover, it is important to note that Southern African countries will have to make commitments which exceed those made under GATS and the multilateral level more broadly.⁴²¹

If this is the eventual reality that faces SADC member states, there is need for a strong understanding of individual countries – and the region's – competitiveness and role of the private sector in the environmental services sector to better understand how expansion of services under the AfCFTA can be better harnessed to support the region's positioning as a possible leader in this area, but also for domestic economic growth.

In particular, SADC member states should the following steps as part of the preparation for trade in environmental services negotiations under the AfCFTA:

- Use the SADC negotiations as a tool to identify 'coalition of willing' countries willing to build regional expertise in specific environmental sectors, which would serve to enhance the region's competitiveness at national level.
- Prioritise skills and qualification recognition across the SADC region so that private sector can begin working together and across the region as a way to promote regional, specialised skills development in niche environmental services and consulting.
- Establish peer-to-peer learning mechanisms to ensure that regional actors (especially private sector players) are able to improve their skills and knowledge and access to new technologies, which will help promote their competitiveness across the continent.
- Implement a series of working groups that bring together governments and private sector industry bodies and representatives to prepare a SWOT analysis for each environmental trade in services sector that will identify a long-term implementation strategy to address existing deficiencies, cooperation mechanisms at policymaking levels, and potentially regional investment strategies as part of growing trade in environment services across the region. Such working groups will also help inform how offers can be made, as a collective, under the AfCFTA. Consult with and prepare a comprehensive note of private sector companies already operational in other non-SADC African countries that identifies onerous regulatory requirements, FDI requirements, procurement hurdles and other related challenges that make doing business in these countries challenging for SADC businesses. These challenges should be raised and addressed during the course of the AfCFTA discussions.
- Review national rules and regulations with the intention, where possible, of streamlining requirements so as to encourage cross-border trade in environmental services, and to enhance the region's attractiveness and competitiveness for environmental sector skills and expertise

6.4 Summary priorities

On balance, the eight opportunity sectors for regional trade in environmental services exist in a highly regulated, often state-led economic space. Nevertheless, they offer solid opportunities for regional trade to grow as systems become more sustainable. Some explicit barriers to trade do exist, with some discrimination against foreign service providers in the certification processes for waste handling and environmental consulting. The strong role for government procurement as a driving force of the sector also means that local procurement rules can play a strong rule in

420 Agreement establishing the African Continental Free Trade Area

421 UNECA (2023) op. cit.

influencing regional trade, while the diversity and complexity of underlying regulations may offer some soft barriers for companies that attempt to operate across the region.

Seven recommendations were identified to promote regional trade in environmental services, with these being a mix of national treatment considerations during formal negotiations under the SADC Protocol on Trade in Services, alongside other opportunities for collaboration and supporting companies. These recommendations are summarised below.

Table 12: Initial recommendations to promote SADC trade in environmental services

Opportunity	Recommendations
Industrial wastewater	Strengthen standardisation and information sharing among SADC member states on wastewater treatment standards and procedures in the manufacturing, agriculture and mining sectors.
Recycling	Work to align SADC rules on trade in goods for waste and rules on trade in services for recycling, in order to facilitate in-country service provision with processing in home countries.
Recycling	Review SADC waste handling regulations to assess the extent to which they enable recycling activities and, where necessary, build suitably differentiated regimes for recycling processors, including enabling easier regional trade in these specialist regimes.
Consulting & certification	Review national rules governing foreign consultants undertaking EIAs and other similar regulatory processes. To the extent possible, move from a two-tier system for foreign consultants to a unified national treatment regime with clear standards for experts.
Treatment plants	Deepen cooperation and information sharing among regional wastewater utilities on their water treatment plant technologies, to both help with the upgrading of regional capacity, and develop common standards and norms that regional service providers can specialise around.
Waste collection	Develop a model SWM collection contract, for use by municipalities seeking to integrate private service providers into waste collection activities.
Waste sorting	Undertake follow-up research on regional integration in the waste sorting sector, with a focus on balancing the promotion of regional trade with the need to protect the informal waste picker sector.
Air and noise pollution abatement	<p>Regional standards should be identified and implemented with targets to reduce noise and air pollution across different sectors and industries (industries, agriculture, transport, etc) for the purposes of supporting harmonisation of requirements and facilitating easier cross-border private sector service delivery.</p> <p>Private sector specialisation should be identified and thresholds for relevant expertise established at a regional level to promote the development of regional skills and expertise in this sector.</p>