United Nations Development Programme

**CASE STUDIES: THE ROLE OF THE PRIVATE SECTOR**

# Harnessing the role of private sector in waste management through South-South and Triangular Cooperation for inclusive urbanization


The report was conducted as a collaboration between UNDP's Istanbul International Centre for Private Sector in Development (UNDP ICPSD) and UNDP South-South and Triangular Cooperation Headquarters (UNDP SSTC).

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Uzbekistan | Tashkent
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Bahrain | Manama
Thailand | Bangkok
Malaysia | Kuala Lumpur
Indonesia | Jakarta

# Abbreviations

| | |
|---|---|
| **ACA** | Argentinean Association of Cooperatives |
| **ADB** | Asian Development Bank |
| **AMMC** | Moroccan Capital Market Association |
| **ASEAN** | Association of Southeast Asian Nations |
| **BYMA** | Argentine Stock Exchange |
| **CEAMSE** | Ecological Coordination Society of the State Metropolitan Area |
| **CEV** | Landfill and Recovery Centres |
| **CMF** | Financial Market Council |
| **EBRD** | European Bank for Reconstruction and Development |
| **EU** | European Union |
| **GDP** | Gross Domestic Product |
| **GG-NAP** | Green Growth National Action Plan |
| **GHG** | Greenhouse Gas |
| **ICMA** | International Capital Market Association |
| **IFC** | International Finance Corporation |
| **ICPSD** | Istanbul International Centre for Private Sector in Development |
| **INDC** | Intended Nationally Determined Contributions |
| **ISDB** | Islamic Development Bank |
| **ISTAC** | Istanbul Environment Management Industry and Trade Company |
| **ISWM** | Integrated Solid Waste Management |
| **JICA** | Japan International Cooperation Agency |
| **JP** | Joint Programme |
| **KPKT** | Ministry of Housing and Local Government |
| **MBT** | Mechanical Biological Treatment |
| **ME** | Municipal Enterprise |
| **MOE** | Municipally Owned Enterprise |
| **MRV** | Measurement, Reporting and Verification |
| **MSW** | Municipal Solid Waste |
| **MTP** | Medium Term Program |
| **NAP** | National Adaptation Plan |
| **NDC** | Nationally Determined Contribution |
| **NGO** | Non-Governmental Organization |
| **OECD** | Organization for Economic Cooperation and Development |
| **OM** | Operations Management |
| **PPP** | Public Private Partnership |
| **PS** | Private Sector |
| **RCD** | Recycling of Construction and Demolition Waste |
| **RRR** | Reduce, Reuse and Recycle |
| **SCEEP** | State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection |
| **SDG** | Sustainable Development Goal |
| **SOE** | State Owned Enterprise |
| **SRF** | Solid Recovered Fuel |
| **SRI** | Sustainable and Responsible Investment |
| **SSTC** | South-South and Triangular Cooperation |
| **SWM** | Solid Waste Management |
| **TSKB** | Industrial Development Bank of Türkiye |
| **UN** | United Nations |
| **UNDP** | United Nations Development Programme |
| **UNICEF** | United Nations Children's Fund |
| **UNODC** | United Nations Office on Drugs and Crime |
| **UNOSSC** | United Nations Office of South-South Cooperation |
| **WEEE** | Electrical and Electronic Equipment Waste |
| **WHO** | World Health Organization |
| **WTE** | Waste to Energy |

# Executive summary

This report aims to provide a snapshot of the municipal waste management ecosystems in the main cities of certain countries in the Global South. In particular, it focuses on existing private sector led good practices, inclusive growth and sustainable financing, that have the potential to be upscaled through South-South and Triangular Cooperation (SSTC). The report specifically refers to Municipal Solid Waste (MSW). The primary objective of this report is to examine the status of waste management in different case studies and to identify the central issues impacting sustainable practices. In addition, the report aims to identify common challenges and novel approaches to waste management through the analysis of these case studies.

The study reveals that a lack of coordination in waste management responses, insufficient enforcement of regulations and limited public awareness constitute the primary challenges in the Global South. Nonetheless, the research also highlights pioneering initiatives from diverse stakeholders, including government-led initiatives like Türkiye's Zero Waste Program, technology integration such as Malaysia's employment of smart bins, and successful Public Private Partnership (PPP) ventures in Bahrain, all of which have yielded positive outcomes in waste management within Global South countries. Furthermore, many of the recommendations are aligned with UNDP's Chemical and Waste Hub vision surrounding zero-waste, circular economy, and waste hierarchy principles.

In summary, the report suggests fostering collaboration among nations through SSTC and by involving the private sector in waste management endeavours. The focal point of these recommendations is the enhancement of the private sector's role. The report proposes that well-structured contracts, community engagement and technological integration represent the most effective pathways for developing sustainable waste management systems in the Global South through private sector involvement. By identifying and showcasing effective waste management strategies and innovative policies, the aim is to encourage, replicate and extend these collaborative approaches, ultimately contributing to a future characterized by comprehensive urban development.

# Chapter 1
# Introduction

**Rapid industrialization and urbanization in many parts of the world have led to a surge in waste generation.[1] Currently, over 50 percent of the world's population has settled into urban areas; a staggering 4.2 billion people are living in cities.[2] By 2030, a predicted 60 percent of the population will transition from rural to urban areas, representing up to 1.5 billion inhabitants.[3] The urban population is set to increase substantially by 2045 to 6 billion; by 2050, it is expected that seven out of 10 inhabitants will be residing within urban areas.[4]**

The current urban trends indicate growth in specific regions located in the Global South, especially in Africa and Asia. The urban population in Africa is expected to increase from 40 percent to 56 percent by 2050.[5] Similar patterns are illustrated in Asia, with urban growth rising from 48 percent to 64 percent.[6] Insufficient infrastructure, unreliable power systems, congested roads, inadequate public transportation, inefficient ports, and subpar schools act as barriers to human and social development, diminishing cities' competitiveness and economic prospects.[7]

As the world becomes increasingly more urbanized, waste levels have dramatically risen with the growth of the urban population. The importance of proper waste management has been recognized and emphasized through the UN 2030 Agenda and Sustainable Development Goals (SDG). In 2022, the global production of Municipal Solid Waste (MSW) amounts to 2.01 billion tonnes per year.[8] With a world population of 7.8 billion, this equates to a footprint of 0.79 kg per person per day.[9] This figure is forecasted to increase by 73 percent to 3.4 billion tonnes by 2050,[10] with the world population projected to reach 9.8 billion that year.[11]

Statistically, we can deduce that the process of unplanned and rapid urbanization directly correlates with the increasing levels of waste generated.[12] The haphazard urbanization in the world's developing regions creates pockets of high- and low-income areas, leading to logistical issues that affect the provision of waste collection and transportation services.[13] The continuously increasing population levels, economic development, rise in community living standards and rapid levels of urbanization have immensely accelerated the MSW generation rate in the Global South.

Between 2000 and 2017, the domestic material consumption per capita has increased by over 40 percent from 8.7 to 12.2 metric tonnes. This has specifically occurred in targeted regions in the Global South within Asia and Africa, such as the increase in domestic material consumption from 8.6 to 18.9 tonnes in Eastern and South-Eastern Asia, and an evident rise from 6.9 to 11.5 tonnes in Northern Africa and Western Asia between 2000 and 2017.[14] In 2022, 63 million tonnes of plastic waste was dumped in landfills, 51 million tonnes discharged into nature and around 13 million tonnes leaked into the ocean worldwide. In addition, only about 4 percent of this plastic waste is recycled, with an additional 10 percent downcycled.

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1 United Nations Habitat, *The Value of Sustainable Urbanization,* The World Cities Report 2020, 2020. Accessed 24 July 2023.

2 World Bank, *Urban Development,* 3 April 2023, https://t.ly/UQFVA. Accessed 23 July 2023.

3 *Ibid.*

4 United Nations Development Programme (UNDP), *Sustainable Urbanization Strategy,* 2016, https://t.ly/XUY7C. Accessed 23 July 2023.

5 United Nations Development Programme (UNDP), *Rapid urbanisation: Opportunities and challenges to improve the well-being of societies,* 2017, https://t.ly/dFuh1. Accessed 24 July 2023.

6 *Ibid.*

7 *Ibid.*

8 Cheapa Waste Skips, *Global Waste Statistics,* 2022, https://t.ly/2g3dd. Accessed 14 August 2023.

9 Macro Trends, *World Population Growth Rate 1950–2023,* 2023, https://t.ly/JZ_jC. Accessed 23 July 2023.

10 Cheapa Waste Skips, *Global Waste Statistics,* 2022, https://t.ly/hKsNt. Accessed 14 August 2023.

11 United Nations (UN), *World population projected to reach 9.8 billion in 2050, and 11.2 billion in 2100,* 2023, https://t.ly/z02T8. Accessed 23 July 2023.

12 Chen, Ying-Chu, *Effects of Urbanization on Municipal Solid Waste Composition,* Waste Management, vol. 79, Elsevier BV, Sept. 2018, pp. 828–36. https://t.ly/InjUE.

13 Smart Citiev Dive, *Seven Differences Between Waste Management in the Global North and Global South,* 2017, https://t.ly/oblVg. Accessed 23 July 2023.

14 United Nations (UN), *The Sustainable Development Goals Report,* 2021, https://t.ly/iofpr. Accessed 23 July 2023.

Compared to communities residing within the Global North, the Global South has faced severe consequences due to non-sustainably managed waste. This is particularly clear in low-income countries within the Global South, where states could improve their financial and technical capacities to advance their regulation of the disposal of waste. The overall population could benefit from additional awareness and incentives to participate in waste management practices. This current lack of awareness may be attributed to insufficient waste management education integrated into the school curriculum and government campaigns that do not achieve their objectives.

Furthermore, much of the existing infrastructure and facilities for waste management are not kept in pace with technological and economic growth, resulting in lower efficiency and capacity. Many of these challenges in the Global South exist for waste collection, processing and disposal. The services provided are irregular or unavailable in many places. Collection vehicles are limited in number, and are often undermaintained and unreliable, causing delays. Open dumping practices are quite common, with waste materials getting dumped at roadside, along railways, and along rivers and water channels. Much of the time, various kinds of dangerous waste – such as industrial hazardous waste and biomedical waste – are brought to the same sites.

However, despite the significant waste management challenges faced by many cities in the Global South, a number of these urban centres have managed to develop innovative solutions with the active involvement of the private sector. These successful efforts have enabled these cities to address more effectively the complexities of urbanization. Moreover, many of these achievements have the potential to be replicated and adapted in other cities to achieve comparable results. In this context, the key role of South-South and Triangular Cooperation (SSTC) becomes evident. As advocated in Sustainable Development Goal 17 of the 2030 Agenda and other recent global frameworks, SSTC is emerging as a powerful tool to facilitate the replication and dissemination of innovative experiences. This approach holds the promise of more substantial and far-reaching impact.

It is important to emphasize that the cities studied in this report are located in countries that are either already actively engaged in SSTC at the national level, or are in the process of initiating such engagement. This favourable backdrop allows these cities to consider further sharing their successful stories and best practices with other urban centres in the Global South facing similar challenges.

This report specifically refers to Municipal Solid Waste (MSW). This includes food waste, paper, plastic, rags, metal, and glass, although demolition and construction debris are often included in collected waste, as are small quantities of hazardous waste, such as electric light bulbs, batteries, automotive parts, and discarded medicines and chemicals.[15] The report that follows will assess the current waste management situation and showcase some examples of the private sector from the Global South engaging in effective waste management practices. These examples have been selected from middle-income countries located in the Global South from all Southern geographical regions, and from countries that are already formally engaged in SSTC at national level, which could facilitate the sharing of their good practices with others. It also analyses successful experiences in solid waste management under the jurisdiction of municipalities/local authorities in the Global South.

[15] US Environmental Protection Agency, *Municipal Solid Waste,* 2013, https://t.ly/1m436. Accessed 21 July 2023.

Chapter 2

# The roles of the public and private sector

**Local authorities/municipalities are responsible for managing solid waste appropriately, effectively, efficiently and sustainably. The major challenges surrounding waste management stem from a lack of organization, limited financial capabilities, and the complexity and multi-dimensionality of waste management systems. Municipal budgets are often limited and only a small percentage of the allocated budget is used in waste management, compared to other municipal services. Therefore, waste management is a challenge for the local authorities, particularly in the developing countries in the Global South. Increasing waste generation and the burden it poses on municipal budgets, due to the excessive costs associated with waste management, makes it a challenge that is difficult to overcome.**

For context-appropriate policy and action to occur, waste management requires knowledge and expertise at multiple levels. As a result, sustainable solutions for waste management must be evaluated more collaboratively, and existing good practices on waste management with private sector involvement should be promoted, for example through SSTC, to enable peer learning, knowledge sharing and exchanges, which can lead to a multiplier effect. Many groups of stakeholders, including waste producers (public and private institutions and facilities; industrial zones), regulators, legislators, consultants, contractors, process and equipment suppliers, educators, non-governmental organizations (NGOs), media, the general public and the private sector should be involved in national waste management policies and strategies.

All relevant stakeholders can play a critical role in ensuring a comprehensive and collaborative approach to waste management. However, their engagement should be in accordance with the supervision of legislative bodies, such as central and local authorities.[16] In recent years, three general trends in waste management institutions and legislation have become evident in the Global South. These are the creation of institutions for the strengthening of environmental policies and strategies, the development of more focused environmental legislation, and the increase of workforce capabilities through education and training.

Other than the legislative and institutional arrangements, and the need for capacity building and raising awareness, financing the operations to make waste management more sustainable emerges as another challenge. Due to the high cost, financing waste operations is often very difficult for developing countries in the Global South.

Collaborative action can support local authorities in unlocking the financing instruments and tools needed for effective waste management. For instance, engaging the private sector in waste management can provide a solution to operational cost barriers. The private sector has the potential to deliver more consumer driven services compared to the public sector, either within the same budget or at a reduced cost. Private enterprises often exhibit higher efficiency, due to their flexibility in utilizing labour and their ability to motivate employees through incentives, career advancement opportunities and other means.

To maximize the efficiency of the waste management system through some innovative financial and technological solutions: engaging the private sector can be instrumental. While local authorities are responsible for solid waste services, the private sector has long been both formally involved in the municipal solid waste sector through outsourcing arrangements, and informally involved through waste pick-up and sorting.[17] This engagement can take place in a variety of ways.[18] National governments in the Global South often lack incentives and initiatives to facilitate private sector solutions, therefore making these more effective when introduced at a local level.

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[16] United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), *Introduction Types of Wastes,* 1999, https://t.ly/B1NcD. Accessed 23 July 2023.

[17] United Nations Habitat, *World Cities Report 2022: Envisaging the Future of Cities,* 2022, https://unhabitat.org/wcr/. Accessed: 21 July 2023.

[18] World Bank, *The private sector – an engine for growth and stability in fragile countries,* 2019, https://t.ly/12jAG. Accessed 23 July 2023.

Chapter 3

# Country case studies

**Argentina** | Buenos Aires

**Azerbaijan** | Baku

**Bahrain** | Manama

**Colombia** | Bogota

**Indonesia** | Jakarta

**Jordan** | Amman

**Malaysia** | Kuala Lumpur

**Morocco** | Casablanca

**Thailand** | Bangkok

**Tunisia** | Tunis

**Türkiye** | Istanbul

**Uzbekistan** | Tashkent

# ARGENTINA

Population

**45 million**

Urban

**92 %**

GDP

**$455.172 billion**

Per Capita

**$9.929**

## International climate agreements and Nationally Determined Contributions (NDCs)

Argentina ratified the Basel Convention in 1992,[19] the Kyoto Protocol in 2001,[20] the Paris Agreement in 2016,[21] and the Kigali Amendment to the Montréal Protocol in 2019.[22] According to the country's updated NDC report, Argentina aims to maintain a relative constancy in gas emissions based on the growth of urban solid waste disposed of in landfills.[23] Within the framework of the circular economy strategy entitled the RenovAr Programme, [24] the Argentinean Government is currently promoting the use of biogas. In the period 2015–2020, nearly 100 biogas projects have been launched in five out of 23 provinces.[25]

## Green framework for green financing instruments

In Argentina, the environmental agenda is gradually becoming a priority in both government and private sector entities. In particular, private sector companies have begun to incorporate green best practices, as investors wish to place their money in projects with positive social and environmental impacts, in line with the latest developments. The traditional stock market in Argentina offers good scope for this option.[26] Interest in sustainability motivates companies to engage in environmental best practices. The Argentine Stock Exchange (BYMA) publishes a sustainability index for companies, to increase awareness of the benefits of sustainability among the capital markets.[27] BYMA also has a bonds panel, which includes companies whose funds will be applied exclusively to finance or refinance partly or fully eligible green, social or sustainable projects. Fourteen bonds were issued in 2021 (six social, six green and two sustainable).[28] In Argentina, debt placements with positive impact purposes are increasingly successful and more relevant bonds are expected to be introduced.

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19 Basel Convention, *Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal,* 1992, https://t.ly/bZQRm. Accessed 23 July 2023.

20 United Nation Treaty Collection, *A Kyoto Protocol to the United Nations Framework Convention on Climate Change,* 1997, https://t.ly/i8Uk-. Accessed 23 July 2023.

21 United Nations Climate Change, *Argentina*, 2016 https://unfccc.int/node/28578., Accessed 24 July 2023.

22 United Nations Environment Programme (UNEP), *Country Data,* 2023, https://ozone.unep.org/all-ratifications. Accessed 23 July 2023.

23 United Nations Climate Change, *NDC Registry,* 2023, https://t.ly/KcDPV. Accessed 23 July 2023.

24 World Bank, *Argentina Renewable Energy Auctions,* 2018, https://t.ly/RgFrl. Accessed 25 July 2023.

25 Holland Circular Hotspot, *Waste Management Country Report: Argentina,* 2021, https://t.ly/4SJHM. Accessed 25 July 2023.

26 Bloomberg Linea, *Investor Interest Blossoms in Argentine Green Bonds,* 2022, https://t.ly/mzDQh. Accessed 25 July 2023.

27 *Ibid.*

28 *Ibid.*

# Buenos Aires


Population (2022)

**15.369.919**

GDP (2021)

**$381.762**

Waste Production (tonnes/year)

**2.664.500**

Responsible Party: **Municipality**

Private Sector Presence: **CEAMSE**

## Solid waste management (SWM) statistics and main challenges

Each day, the city of Buenos Aires produces a staggering 7,500 tonnes of waste.[29] Unfortunately, a substantial majority – ninety percent – of this waste finds its way into landfills located in the neighbouring province. Notably, nearly 20 percent of the entire waste generated in the country is gathered within the confines of Argentina's capital city, Buenos Aires.[30]

Despite the implementation of environmental and social projects in waste management, the system lacks waste separation at the first stage, due to the limited knowledge of waste sorting that local residents possess. The facilities are therefore required to operate at overcapacity and waste workers are faced with an increasing workload. In the case of Argentina, there is a need for efficient and country-wide practices with a focus on community education.

UNDP Argentina is currently conducting research[31] and exploring opportunities to solve this issue through involving the citizens in data collection on the solid waste of households in Buenos Aires, in cooperation with the Faculty of Agronomy of the University of Buenos Aires and the Citizen Lab.[32] The ongoing research was launched in 2019 within the Environmental Citizen Science Project and focuses on citizens' abilities to segregate household waste. Other challenges include the absence of sufficiently effective legislation on waste management, the high prevalence of informality, precarious work, low income, hazardous work and even child labour.[33]

However, it is necessary to work on expanding effective solid waste management throughout the country and for the waste to arrive at facilities in a segregated state. Although there are private sector led good practices in solid waste management, these are still not sufficient and there is a need for new investments. In order to improve the current waste management system, it is a top priority for the authorities in Argentina to harness the role of the private sector in SWM.

## Major actors and good practices

The two biggest companies in Argentina working on SWM are based in Buenos Aires. One of them is Ecological Coordination Society of the State Metropolitan Area (CEAMSE),[34] which was founded in 1977 and belongs in equal share to the Government of the Autonomous City of Buenos Aires and the Government of the Province of Buenos Aires. It carries out the entire management of urban solid waste in the Metropolitan Area of Buenos Aires, and the development and conservation of green and blue spaces. The total population currently served is 14 million inhabitants, and 85 percent of the city's total waste is received by CEAMSE.[35] In 2014, CEAMSE launched the first plant in South America to carry out mechanical biological treatment (MBT) of municipal solid waste. The plant is located within the CEAMSE Norte III Environmental Complex in the Province of Buenos Aires and is focused on the recovery of materials, as well as the reduction of solid waste sent to final disposal. Its treatment capacity is currently 1,200 tonnes per day.

As an example of good practice, CEAMSE also launched a Municipal Solid Waste Reduction Project[36] in January 2014. This project aims to encourage citizens to reduce the amount of waste sent to landfills through source separation, resource recovery, recycling and resource valorization. The city is also implementing awareness campaigns through CEAMSE to educate citizens on how to treat waste in a sustainable manner. During the initial stage, the project achieved a 44 percent waste disposal reduction and 78 percent during a second stage. The project has also created new job opportunities and greater social participation and transparency in the waste and recycling chain. Four thousand five hundred urban waste-picker jobs have been created, with 2,000 more expected, in a sustained effort to create long-term formal employment growth.

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29 C40 Cities, *Buenos Aires' Circular Economy Network,* September 2022, https://shorturl.at/mozBO. Accessed 14 August 2023.

30 Deutsche Welle, *Overflowing landfills,* 2012, https://shorturl.at/sFKS6. Accessed 25 August 2023.

31 United Nations Development Programme (UNDP), *PNUD Argentina,* 2023, https://www.undp.org/es/argentina. Accessed 23 July 2023.

32 Lab Cuidadano. https://www.labciudadano.net/. Accessed 24 July 2023.

33 Partnerships For Action On Green Economy (PAGE), *Inventory of policies related to the green economy in Argentina,* 2023, https://t.ly/sBQx6. Accessed 5 September 2023.

34 CEAMSE. https://www.ceamse.gov.ar/. Accessed 21 July 2023.

35 CEAMSE, *Complejo Ambiental Norte III,* 2023, https://www.ceamse.gov.ar/area-de-cobertura/norte-iii/. Accessed 21 July 2023.

36 CEAMSE. https://www.ceamse.gov.ar/. Accessed 25 August 2023

In addition to this, CEAMSE has 11 'social plants' where 724 people work. These are operated in cooperation with independent reciparque (waste pickers).[37] CEAMSE provides the building infrastructure, equipment and logistics. Collectively, these plants process between 15,000 and 19,000 tonnes of solid urban waste per month. This separated waste comes from several municipalities (Hurlingham, Morón, San Isidro, Tres de Febrero and Vicente López), as well as from private actors. The plants are responsible for its separation, with an approximate material recovery of 7 percent.[38]

In addition to CEAMSE, a number of startups and businesses are contributing to waste management. One example is WINIM, a startup operating in Argentina's waste management sector. WINIM operates an app through which surplus food items, which would otherwise be discarded by food companies or retailers, are sold. Moreover, WINIM collaborates with female entrepreneurs in underserved communities, providing products at equitable prices and directing donations to mitigate the impact of poverty.[39]

Another notable example of a successful practice is demonstrated by Genneia, the largest renewable energy company in Argentina. This company actively seeks secondary uses for materials used in its energy generation facilities. In particular, this approach extends to the reuse of materials from the company's renewable energy initiatives. Through collaborative efforts, a total of 47 large wooden spools and 730 pallets were donated and recycled. These repurposed materials were ingeniously transformed into furniture that benefits schools and local communities.[40]

Another example of good practice is the plastics recycling plant of the Argentinean Association of Cooperatives (ACA), in Santa Fé Province's Cañada de Gómez. In this plant, discarded containers and silo bags from the associated cooperatives are processed into new containers, bags and plastic pellets, to be sold within various industries.[41] In three years of operation, 9,000 tonnes of plastics were recuperated, which is approximately half of the volume used in the cooperatives. The plant is not financially profitable yet, however, a significant amount of polyethylene is being recycled.[42]

Another positive step towards improving waste management in Argentina is being made on the way to a circular economy. One example of this progress is the introduction of the Sello Verde (Green Seal), which recognizes institutions that practice responsible waste management in government, residential and commercial buildings. As of September 2022, 142 institutions have been awarded the Sello Verde.[43]

A final positive step towards effective waste management is green bonds. Green bonds help raise funds for projects that address climate change and waste management. Banco Galicia – one of Argentina's largest privately-owned banks – issued a green bond to raise US$100 million to expand its lending programme for climate-smart projects in 2018. This was the first green bond to be issued by a private financial institution in Argentina, signalling Banco Galicia's commitment to financing projects with a positive environmental impact.

In the past decade, the City of Buenos Aires has seen significant growth in recycling activities. In 2015, approximately 35 percent of residents reported regular recycling practices. By 2022, this figure had risen to over 50 percent. This positive trend is partly due to the city's efforts to expand its recycling capacity, which doubled between 2016 and 2019. In addition to this, Buenos Aires has implemented regulations on single-use plastics, which have contributed to waste reduction. These measures have resulted in a monthly reduction of 2 million plastic straws and an annual reduction of 500 million plastic bags in stores.[44]

Furthermore, like other countries, Argentina is working with international organizations to improve its waste management system. A notable example is Argentina's recent agreement with the European Investment Bank (EIB) to provide long-term financing for an integrated waste management programme in the country. This programme covers several provinces, including Buenos Aires, Rio Negro, Salta, Santa Cruz and Santiago del Estero.[45]

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37 Reuters, *Argentine waste pickers find livelihood, community in mountain of trash,* 2019, https://shorturl.at/cxAQW. Accessed 21 July 2023.

38 *Ibid.*

39 WINIM. https://www.winim.com.ar/en. Accessed 14 August 2023.

40 Clean Technica, *Circular Economic Practices in Argentina,* 2023, https://shorturl.at/elmJR. Accessed 23 July 2023.

41 Holland Circular Hotspot, *Waste Management Country Report: Argentina,* 2021, https://shorturl.at/tBFP4. Accessed 24 July 2023.

42 *Ibid.*

43 Clean Technica, *Circular Economic Practices in Argentina,* 2023, https://shorturl.at/jrAJ1. Accessed 23 July 2023.

44 *Ibid.*

45 European Investment Bank (EIB), *Argentina – Integrated Waste Management FL,* 2022, https://t.ly/VNZ6n. Accessed 24 July 2023.

Snapshot

# Private sector led good practices

## State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

- **CEAMSE** is a state-owned company in Argentina responsible for managing municipal solid waste in the Metropolitan Area of Buenos Aires. The company oversees waste collection, disposal, and recycling initiatives in the region.
  - Launched the first MBT facility in South America
  - Launched a MSW reduction project
  - Implemented awareness campaigns to educate citizens on how to treat waste in a sustainable manner
- **ACA** is an organization that represents and supports cooperatives in Argentina. Cooperatives are collective enterprises owned and operated by their members, and ACA serves as a platform for these cooperatives to collaborate, share resources, and advocate for their interests.
  - Built a plastics recycling plant, mainly recycling polyethylene

## Private sector

- **WINIM**

  WINIM offers a platform for both major food producers and smaller retailers to effectively market their excess products at substantial discounts. This business operates through a mobile app, which is divided into two primary segments to accommodate various seller scales. On one hand, there's a dedicated unit tailored for small-scale retailers, including restaurants, enabling them to sell their surplus on a daily basis. On the other hand, the app incorporates a distinct section designed for prominent food producers, facilitating the sale of their surplus items through WINIM markets.

- **Genneia**

  Genneia proactively explores alternative uses for materials employed in their energy production site setups. Importantly, this mindset extends to repurposing materials from their renewable energy projects.

## Innovative policies

- **UNDP Argentina, Faculty of Agronomy of the University of Buenos Aires, the Citizen Lab**

  In 2019, UNDP Argentina initiated a collaborative project under the Environmental Citizen Science Project, concentrating on citizens' skills in segregating household waste. Its inaugural "Waste Lab" experiment involved residents participating in surveys about environmental habits and waste management beliefs. Notably, higher engagement correlated positively with specific participant groups defined by age and education. Although the effects on predispositions were less clear due to the already heightened awareness among citizen science volunteers, education and age were linked to more environmentally-friendly behaviours, even before the intervention. These findings emphasize the significance of tailoring policies to various age groups when addressing waste management strategies.[46]

## Available innovative financing mechanisms

- **BYMA: Sustainability Index**

  BYMA publishes a sustainability index for companies to raise awareness among the capital markets regarding the benefits of sustainability, and has a special fund reserved for sustainable projects.

- **European Investment Bank (EIB) Framework Loan**

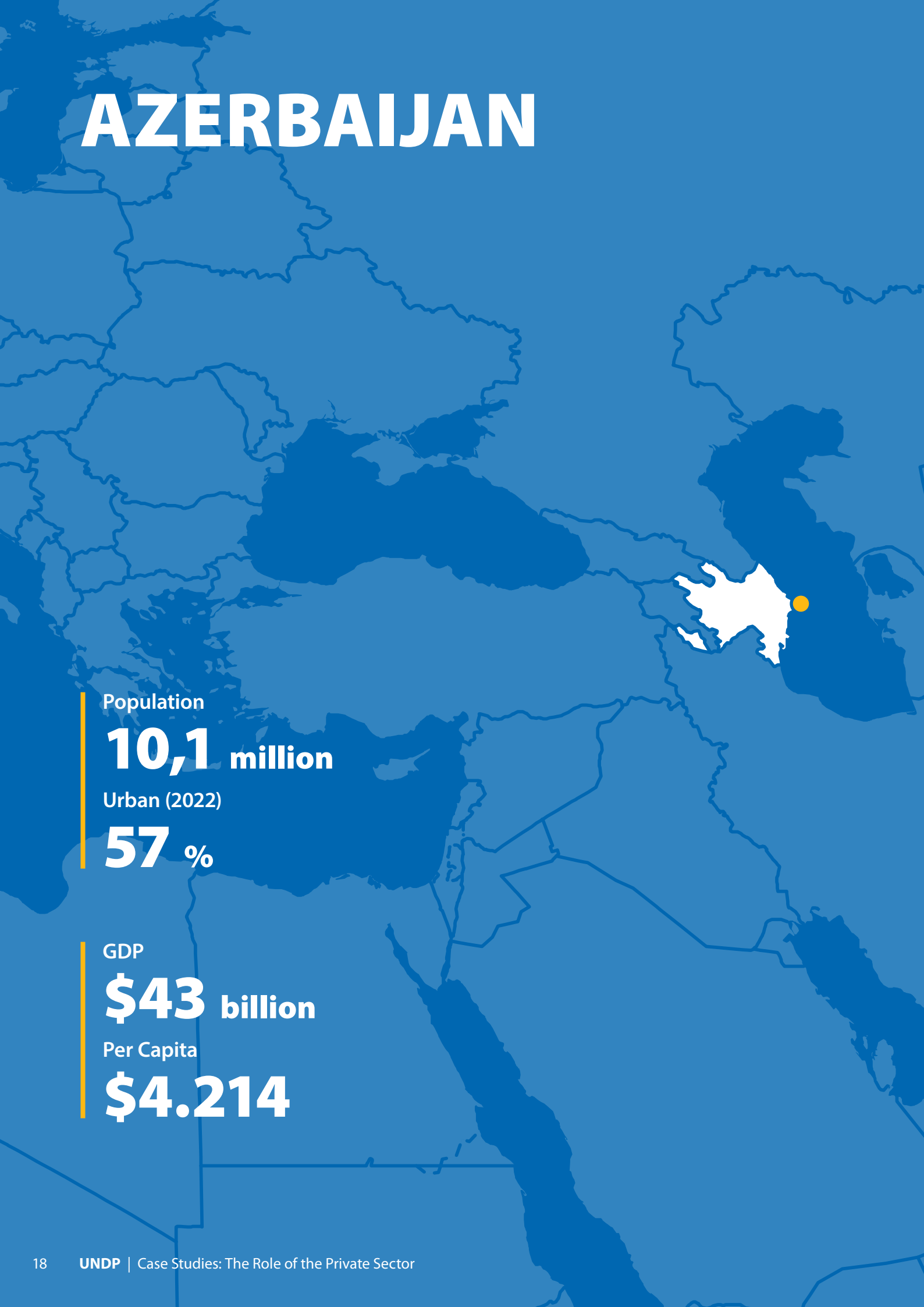
  The EIB will provide long-term financing for the economic life of the assets, which would not be available from the market. Its financing will help reduce the negative externalities associated with waste management activities in terms of pollutants and greenhouse gas emissions, as well as the costs associated with damage to the environment and public health.

- **Banco Galicia: Green Bond**

  First green bond issued by a Banco Galicia entity, US$100 million to finance climate-related projects.

[46] United Nations Development Programme (UNDP), *Environmental Citizen Science and its Effects on Participants, Governance, and Innovation: Evidence of Two Small-Scale Experiments,* 2022, https://t.ly/vCXyV. Accessed 14 August 2023.

# AZERBAIJAN



Population

**10,1 million**

Urban (2022)

**57 %**

GDP

**$43 billion**

Per Capita

**$4.214**

## International climate agreements and Nationally Determined Contributions (NDCs)

Azerbaijan has not ratified the Kigali Amendment to the Montréal Protocol yet.[47] The country ratified the Basel Convention in 2001,[48] the Kyoto Protocol in 2000[49] and the Paris Agreement in 2017.[50] According to the country's updated NDC report, Azerbaijan aims to develop modern solid waste management systems in the country's large cities.[51]

## Green framework for green financing instruments

As of June 2022, Azerbaijan had not yet developed a green framework, and was not yet utilizing any green financing instruments, such as bonds or sukuk.

[47] United Nations Environmental Programme (UNDP), *Country Data,* 2023, https://ozone.unep.org/all-ratifications. Accessed 24 July 2023.

[48] Basel Convention, *Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal,* 1992, https://t.ly/4AJcV. Accessed 25 July 2023.

[49] United Nations Climate Change, *Azerbaijan,* 2016, https://unfccc.int/node/61012. Accessed 24 July 2023.

[50] *Ibid.*

[51] United Nations Climate Change, *NDC Registry,* 2023, https://t.ly/blJgp. Accessed 24 July 2023.

# Baku

Population (2022)

**2.401.108**

GDP (2021)

**N/A**

Waste Production (tonnes/year)

**1.200.000**

Responsible Party: **Governors (Vilayat)**

Private Sector Presence: **Tamiz Shahar**

## Solid waste management (SWM) statistics and main challenges

Baku is one of the most polluted cities in the South Caucasus, with 7 percent of its territory occupied by solid waste.[52] One of the largest rubbish processing plants in Europe has operated in the city for five years. However, of the 1.2 million tonnes of yearly waste produced, only 16 percent is sorted or incinerated.[53]

In Azerbaijan, a significant proportion of collected waste is dumped informally. In Greater Baku, continued illegal dumping undermines the efficiency of the processed, treated or recycled waste. The city's treatment and disposal facilities run at just half capacity and entail high operating costs. In addition to this, current spending on modern waste facilities alone cannot support an effective MSW disposal system in Azerbaijan. Approximately 50 percent of the waste collected in Greater Baku fails to meet authorized treatment and disposal standards, including materials recovery and waste-to-energy facilities.[54]

A number of solutions could be implemented to enhance the country's waste management systems. Firstly, the entire waste management chain could be improved through the introduction of appropriate financial incentives, more adequate solid waste treatment and disposal methods, and more effective enforcement and accountability mechanisms, including in the processes of waste collection, transportation and final disposal. In Azerbaijan, closing illegal dumpsites has not significantly decreased waste dumping practices, and uncontrolled disposal continues in peri-urban areas of Baku. To address dumpsite cleanup, complementary measures are required to strengthen institutional accountability. Merely closing illegal dumpsites will not sufficiently overcome these issues. Both the causes that led to the creation of dumpsites and public awareness need to be targeted.

Secondly, recycling efforts could be bolstered by increasing recycling facilities, enhancing public awareness and participation, and closing gaps in legislation. Recycling initiatives have been inconsistent and public awareness campaigns have been ineffectively implemented.

Thirdly, solid waste management could be strengthened through clearer and more specific solid waste management legislation. Uncertainty in defining waste categories raises concerns about proper classification as MSW, according to the Law on Industrial and Household Waste. Additionally, the absence of clear rules and defined responsibilities regarding waste management practices further hampers effectively implementing sustainable waste management.

Finally, the fragmented nature of the waste management process, along with institutional conflicts of interest arising from unclear roles and infrastructure deficiencies, pose barriers to private sector involvement. Moreover, low public awareness and insubstantial state incentives in waste management contribute to a reduced demand for waste management services, creating further challenges for private sector investment in the country.[55]

It is important to prioritize interventions that ensure a minimum threshold of viability and reforms that may enable meaningful progress in the private sector. It is also important to focus on key policy and institutional reforms, to enable the sector to improve its performance in a sustainable way. In Azerbaijan, investment projects tend to be much more effective in delivering the expected results when the sector has gone through a minimum threshold of reforms at an earlier stage, which creates an enabling environment to absorb investments with favourable and sustainable development results.[56]

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52 OC Media, *Drowning in rubbish: Baku's waste management headache,* 2018, https://t.ly/uUopd. Accessed 24 July 2023.

53 *Ibid.*

54 World Bank, *ARP II Integrated Solid Waste Management Project,* 2021, https://t.ly/wCJyj. Accessed 22 July 2023.

55 Shukurov, Eldar. Interview with Waste Management Company, Conducted by Yunis Sharifli, 13 July 2023

56 *Ibid.*

## Major actors and good practices

In Baku, waste management is led by a state-owned company, Tamiz Shahar (meaning 'clean city').[57] Operating almost entirely with state funds, it provides waste disposal services in Baku. The company has delivered several important projects, such as the Waste-to-Energy Plant. In 2012, it commissioned a material recovery facility with a capacity to recycle 200,000 tonnes of waste per year and recover recyclable materials. In addition to this, it is conducting an active publicity campaign to raise public awareness of waste issues, such as plastic pollution and wastewater management, and encourage people to protect the environment through proper waste management. To further increase its recycling capacity, Tamiz Shahar is currently undertaking another significant project: the establishment of the Balakhani Recycling Park. The overall objective of the company is to establish an up-to-date and sustainable waste management system in Baku, and bring the latest innovations in the waste management sphere to the country through sharing experience with foreign countries and international companies.[58]

In 2012, Azerbaijan's Parliament started imposing fines for illegal dumping. In addition to the Government's efforts, there are also several volunteer groups and private companies in Baku working on improving the waste management system. For example, the youth movement Green Baku was founded in 2010. This group recently organized a campaign in Baku to collect paper, polyethylene, plastic and aluminium cans for recycling. The recyclables gathered by volunteers were later taken to the Tamiz Shahar plant. Green Baku also launched a startup in early 2017, producing products such as notebooks, envelopes and stickers made out of recycled paper.

There are also public-managed initiatives, such as a 2015 campaign by the State Agency of Civil Services and Social Innovation that encouraged people to collect wastepaper in exchange for tree seedlings to plant. Unfortunately, this campaign failed to gain sufficient public traction.[59] Implementing appropriate technical measures to mitigate environmental risks associated with landfills and improve waste disposal practices, is one of the key components of the National Solid Waste Management Development Strategy 2018–2022 – the first phase of the Government's 20-year strategy.[60]

Both public and private sector efforts have been made to enhance the waste management system in Azerbaijan, but there is still a need to further expand and amplify these initiatives. In 2017, the encouragement of private sector involvement in waste management began with the establishment of the Balakhani Industrial Park. Occupants of the industrial park have been incentivized through a range of stimulating measures, including tax and custom duty exemptions for a period of 10 years. However, these exemptions are contingent upon the adoption of efficient and environmentally-friendly technologies, as well as the ability to become competitive market players in waste collection, transportation and recycling activities.[61] There are a number of private companies involved in waste management in Azerbaijan, such as Sundance Azerbaijan, Anmeksan and Waste Management Company.

Azerbaijan is also working with international organizations to accelerate its green transition and develop its waste management capacity. In this context, the Integrated Solid Waste Management Project, funded by both the World Bank and the Republic of Azerbaijan, and executed as part of the Absheron Rehabilitation Program, holds immense importance for the nation.[62] The project aims to support the reforms carried out for the systematic and continuous organization of the collection, and utilization of solid municipal waste.[63] Finally, Azerbaijan is discussing the issuance of green bonds for sustainable investment with the World Bank[64] and the Asian Development Bank (ADB).[65]

As the country is at the initial stages of SWM compared to many other countries in the Global South, providing knowledge and experience sharing through SSTC may support the country in improving its current SWM system through implementing and scaling up good practices.

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57 Tamiz Shahar. https://tamizshahar.az. Accessed 24 July 2023.

58 *Ibid.*

59 OC Media. "Drowning in rubbish: Baku's waste management headache." OC Media, 2018, https://t.ly/tG0xU. Accessed 24 July 2023.

60 Huseyova, Hajar. "Solid Waste Management in Azerbaijan." Institute for Development and Diplomacy, 6 June 2023, https://t.ly/fw0Se. Accessed 24 July 2023.

61 *Ibid.*

62 World Bank, *Azerbaijan - Contaminated Sites Rehabilitation Project : Resettlement Plan - Absheron Rehabilitation Program,* 2008, https://t.ly/sASr-. Accessed 5 September 2023.

63 World Bank. "Azerbaijan – Second ARP Integrated Solid Waste Management Project: procurement plan." World Bank, 2023, https://t.ly/WApT9. Accessed: 24 July 2023.

64 Central Bank of the Republic of Azerbaijan. "Central Bank holds event on green bonds and sustainable finance." Central Bank of the Republic of Azerbaijan, 2022, https://t.ly/YmpMr. Accessed 21 July 2023.

65 Azernews, *ADB stands by issuing green bonds in Azerbaijan,* 2022, https://www.azernews.az/business/202476.html. Accessed 22 July 2023.

Snapshot

# Private sector led good practices

## State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

**Tamiz Shahar: Waste-to-Energy Plants, SOE**

- This company has established an up-to-date and sustainable waste management system.
- Tamiz Shahar runs promotional campaigns to increase public awareness on waste problems and to encourage people to protect the environment through proper waste treatment.
- It is leading the establishment of the Balakhani Recycling Park.

## Private sector

**Waste Management Company**

Waste Management Company deals with the disposal of drill cuttings and fluids. The facility provides temporary storage and management of hazardous waste from offshore and onshore operations in Azerbaijan.

**Sundance Azerbaijan**

Sundance Azerbaijan is responsible for melioration of contaminated soils with various chemical compositions for the protection of the environment in the Republic of Azerbaijan, and the utilization of toxic production wastes. It was created with the best practices of the world's leading companies operating in this field, including methods of work and cutting-edge technologies with deep knowledge and experience.

**Anmeksan Treatment Inc.**

Established in 2018, Anmeksan Treatment Inc. leverages its knowledge, experience and resources to focus on wastewater treatment, in accordance with its sectoral objectives.

## Innovative policies

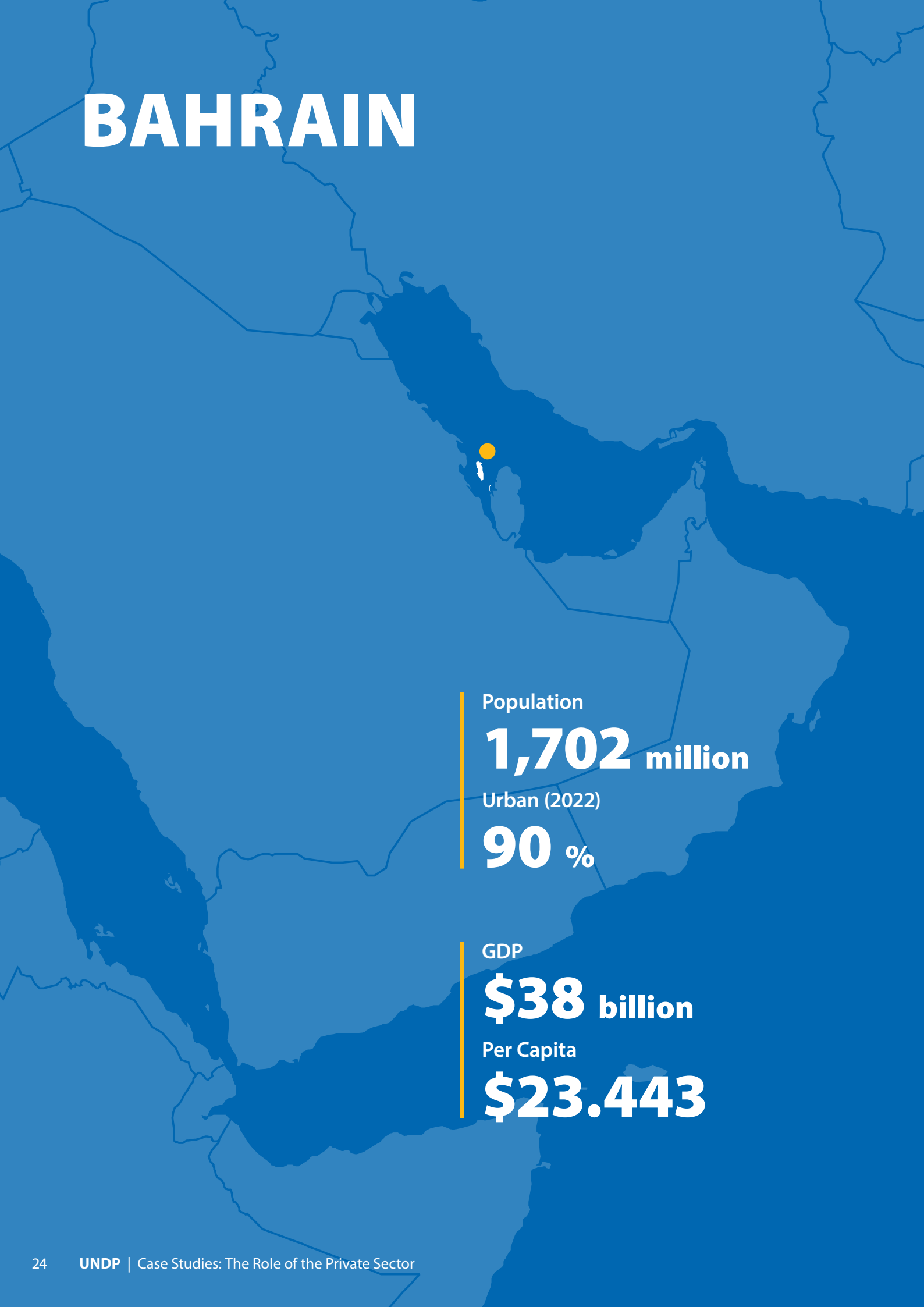
**Youth movement: Green Baku**

This group has launched volunteering initiatives for waste collection and recycling.

## Available innovative financing mechanisms

There is no evidence that innovative financing mechanisms are currently available in Azerbaijan.

# BAHRAIN



Population

**1,702 million**

Urban (2022)

**90 %**

GDP

**$38 billion**

Per Capita

**$23.443**

## International climate agreements and Nationally Determined Contributions (NDCs)

Bahrain has not ratified the Kigali Amendment to the Montréal Protocol yet. The country ratified the Basel Convention in 1992, the Kyoto Protocol in 2006 and the Paris Agreement in 2016. Within the framework of its NDC submitted in 2021, the Kingdom of Bahrain is actively pursuing economic diversification and considers sustainability as the pillar of its growth. Despite its low annual greenhouse gas (GHG) footprint, estimated approximately below 0.1 percent of the global GHG footprint, the Kingdom of Bahrain strives to avoid and reduce emissions in its economic development. Simultaneously achieving environmental and economic goals lies at the heart of the country's NDC. This means that the NDC focuses not only on reducing greenhouse gas emissions (mitigation), but also on reaping additional benefits from actions related to climate change adaptation and economic diversification.[66]

## Green framework for green financing instruments

Sustainability is one of the main guiding principles of Bahrain's Economic Vision 2030, which provides a comprehensive strategy to achieve sustainability and ensure a smooth transition to a greener economy.

Bahrain has achieved remarkable progress towards the SDGs. Infracorp – the infrastructure and sustainability arm of GFH Financial Group – announced the issuance of a $900 million sukuk on the London Stock Exchange in March 2022, which is touted to be the first green sukuk issued by a Bahraini entity. The proceeds will be used to accelerate infrastructure development across the Gulf, North Africa and South Asian regions. According to Moody's, sukuk issuance activity is expected to stand between $160 and $170 billion in 2022.[67]

## Solid waste management (SWM) statistics and main challenges

Bahrain produces around 1.2 million tonnes of solid waste every year and one third of this amount is produced in the capital, Manama.[68] Municipal solid waste is characterized by a high percentage of organic material (60 percent) mainly composed of food wastes.[69] Manama's notably high percentage of recyclables in the form of paper (13 percent), plastics (7 percent) and glass (4 percent), makes Bahrain's Municipal Solid Waste (MSW) a good recycling feedstock.[70] Waste collection and disposal operations in Manama, as well as in other cities of Bahrain, are managed by several private actors. Gulf City Cleaning Company is active in Manama and Muharraq.[71] The main SWM method is collecting solid waste and dumping it at the municipal landfill site in Askar, the only landfill in Bahrain.

Bahrain has good practices in terms of Public Private Partnership (PPP) models within the waste sector. The Askar Waste-to-Energy Project is a pioneering PPP venture based on a build-operate-transfer model.[72] The $480 million waste incineration facility will treat 390,000 tonnes of solid wastes per year, thereby generating 25 megawatts (MW) of power which will be fed into the national grid. The project is expected to increase the life span of Askar landfill. The project is expected to commence operations in 2026, to ease the solid waste management situation in the capital city Manama and provide an alternative means of power production in the country.[73]

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66 United Nations Climate Change, *NDC Registry.* https://t.ly/5izh0. Accessed 22 July 2023.

67 Arab News, *Bahrain issues $900m first-ever green Sukuk on London Stock Exchange,* 28 March 2022, https://t.ly/A8LVk. Accessed 25 August 2023.

68 Euro Monitor International, *Manama City Review.* https://t.ly/d8kxU. Accessed 22 July 2023.

69 Bio Energy Consult, *Municipal Solid Wastes in Bahrain,* 8 November 2022, https://t.ly/Ui3m0. Accessed 22 July 2023.

70 Waste & Recycling, *Bahrain: An overview of solid waste management in Bahrain,* 24 February 2019, https://t.ly/Uvbr9. Accessed 22 July 2023.

71 Eco Mena, *Solid Waste Management in Bahrain,* 11 August 2022. https://www.ecomena.org/solid-waste-bahrain/. Accessed 22 July 2023.

72 *Ibid.*

73 Global Data, *Askar Waste-To-Energy Project,* 2022, https://t.ly/ALQnK. Accessed 5 September 2023.

# Manama

Population (2023)

**709.000**

GDP (2021)

**N/A**

Waste Production (tonnes/year)

**N/A**

Responsible Party: **The Ministry of Municipalities and Agriculture Affairs**

Private Sector Presence: **Gulf City Cleaning Company**

## Major actors and good practices

Bahrain has one of the highest per capita municipal solid waste generators worldwide, estimated to be more than 1.80 kg per person per day.[74] The highest portion of this amount comes from the capital, Manama. Bahrain's generation of waste per capita is increasing with large scale infrastructure developments.[75] The main challenge in residential waste collection, in relation to the gated communities in which they operate, is the effort required to incentivize residents to reduce their waste footprint by separating recyclables, especially in the absence of legislation. The lack of specific legislation on waste management creates another challenge for Bahrain. There is a need for modernization to keep pace with technological advances and to provide more authority to ensure that disciplinary and enforcement measures are in place.[76] To address these challenges, the country – including the capital Manama – needs strong private sector engagement in SWM.

Snapshot

## Private sector led good practices

### State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

- **Askar Waste-to-Energy Project**

  This project is an exemplary implementation of the PPP model. The plant will convert waste into energy, generating 25 MW of electricity per year, a figure that is expected to rise, while alleviating Manama's waste management problems.

### Private sector

- **Gulf City Cleaning Company**

  This company undertakes waste collection and disposal operations in Manama, as well as in other cities of Bahrain, along with various private actors. It utilizes the Askar landfill site, the only landfill in Bahrain.

### Available innovative financing mechanisms

- **Infracorp: Green sukuk**

  Infracorp was the first Bahraini entity to issue a green sukuk. A $900 million sukuk was issued on the London Stock Exchange, with proceeds going towards improving infrastructure development.

[74] Waste & Recycling, *Bahrain: An overview of solid waste management in Bahrain*, 24 February 2019, https://t.ly/QCTfd. Accessed 22 July 2023.

[75] *Ibid.*

[76] *Ibid.*

# COLOMBIA

Population

**50 million**

Urban (2022)

**82 %**

GDP

**$271.438 billion**

Per Capita

**$5.334**

## International climate agreements and Nationally Determined Contributions (NDCs)

Colombia ratified the Basel Convention in 1997,[77] the Kyoto Protocol in 2001,[78] the Paris Agreement in 2018[79] and the Kigali Amendment to the Montréal Protocol in 2021.[80] According to the country's NDC report,[81] Colombia has a set of sectoral targets for solid waste management, entitled Comprehensive Solid Waste Management, that consists of management and promotion of mechanical treatment systems, use of recyclable materials, biogas collection, conduction and burning systems in landfills, and use of biogas in landfills (generation of electrical energy). Additionally, the country aims to capture and burn 20 percent of the methane generated in landfills, by the separation of solid waste at the source in municipalities with urban populations of less than 20,000 inhabitants.

## Green framework for green financing instruments

In September 2021, Colombia became the first South American country to issue a sovereign green bond in its local currency, because of the growing interest in energy transition-focused investment class.[82, 83] Demand from investors was so high that the size of the bond was increased by 50 percent from the Peso 500 billion originally sought.[84] Investors displayed an appetite that came in at 4.6 times higher than what Colombia made available with the bond.[85] Some 40 percent of the funds raised would go to water projects, 27 percent to transportation and 14 percent to energy projects.[86] The eligible areas for use of the funds being raised include waste and circular economy, along with other environmental areas such as water management, ecosystem services and biodiversity, clean transportation, non-conventional energy, energy efficiency and sustainable agriculture. The bonds will finance eligible expenditures that will contribute to achieving the country's environmental goals and international commitments. Colombia has also launched a green framework aligned with the four main components of the International Capital Market Association's (ICMA) Green Bond Principles, to finance investment projects that contribute to achieving the goal of reducing its carbon footprint in the world.[87] The Colombian Green Taxonomy is the instrument that will guide issuers and investors in developing a solid, transparent and integrated green market.[88] These initiatives provide useful market intelligence that can harness the private sector for SDG-aligned SWM investments in Colombia.

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77 Basel Convention, *Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.* https://t.ly/bxNjm. Accessed 23 July 2023.

78 United Nations Climate Change, *Colombia,* 2016, https://unfccc.int/node/61039. Accessed 23 July 2023.

79 *Ibid.*

80 United Nations Environment Programme (UNEP), *Country Data.* https://ozone.unep.org/all-ratifications. Accessed 23 July 2023.

81 United Nation Climate Change, *NDRC Registry.* https://unfccc.int/NDCREG. Accessed 23 July 2023.

82 S&P Global, *Forecasting how today's energy mix evolves into the energy mix of tomorrow,* 2023, https://t.ly/8KSkK. Accessed 23 July 2023.

83 Environmental Finance, *Green bond of the year – sovereign: Republic of Colombia,* 2022, https://t.ly/1B6he. Accessed 31 July 2023.

84 S&P Global, *Forecasting how today's energy mix evolves into the energy mix of tomorrow,* 2023, https://t.ly/FVmPk. Accessed 23 July 2023.

85 *Ibid.*

86 *Ibid.*

87 *Ibid.*

88 Greenomy, *Colombia's Green Taxonomy: A First in Latin America.* https://greenomy.io/blog/colombias-green-taxonomy. Accessed 31 July 2023.

# Bogota

Population (2023)

**11.508.000**

GDP (2021)

**$58 million**

Waste Production (tonnes/year)

**2.167.129**

Responsible Party: **Municipalities**

Private Sector Presence: **N/A**

## Solid waste management (SWM) statistics and main challenges

Bogota is the largest city in Colombia, with a population of 11,508,000. Over the past decade, Bogota has contributed 26 percent of Colombia's gross domestic product.[89] The city's population grew at an average annual rate of 1.39 percent during this period, which is directly related to the amount of solid waste generated. Bogota produced an average of 2,167,129 tonnes of waste per year over the past decade, with the largest share coming from municipal solid waste (69.3 percent). The average breakdown of solid waste production is as follows: 234,566 kg per day from the residential sector; 77,771 kg per day from the commercial sector; 560 kg per day from the institutional sector; and 505 kg per day from large generators, primarily the manufacturing sector. Of the total waste generated, approximately 67.7 percent is organic waste and 32.2 percent is inorganic waste. It's worth noting that per capita waste generation in Bogota is lower than the global average of 0.8 to 1.6 kg per person per day, underscoring the need to implement effective measures to maintain or slow waste growth.[90]

Recycling activities in Bogota involve the extraction of recyclable and reusable materials from mixed waste. This sector is characterized by labour-intensive work, low wages, minimal capital investment, unregulated and undocumented labour, and limited technological advances. Marginalized populations are often involved in this work. Currently, the city recycles 357 tonnes per day, although the potential is estimated to be around 1,000 tonnes per day. This highlights the importance of recycling for waste recovery, extending the life of landfills, engaging marginalized populations, reducing poverty, and promoting an integrated and sustainable approach to waste management.

However, there are several challenges that pose threats to recycling associations in Bogota. First and foremost, fostering a recycling culture among the population is a critical hurdle. By raising awareness and promoting responsible waste management habits, the community can be empowered to actively participate in recycling initiatives, ultimately increasing their effectiveness.

In addition, the lack of stable and supportive legal frameworks and regulations for waste pickers and waste management contributes to the prevalence of informal work in the sector. By establishing clear legal structures, waste pickers can gain access to better resources, training and financial support, enabling them to transition into more profitable and sustainable businesses, while also formalizing labour in this sector.[91]

Furthermore, the nascent recycling systems in Bogota collect and process a very limited range of materials with potential for reuse. This exacerbates the challenges faced by recycling associations, making it difficult to collect sufficient quantities of materials for profitable operations. However, there is scope for growth. By improving infrastructure and streamlining processes, recycling associations can increase their capacity to collect and process greater volumes of materials, ultimately leading to more sustainable and profitable operations.

Finally, improper waste disposal exacerbates environmental problems in the city and prevents valuable materials from being recovered and used effectively. Returning waste materials to the production chain offers a valuable way to reduce environmental impacts and harness the economic potential of recycling. By implementing proper waste management practices and resource recovery strategies, environmental problems can be mitigated while ensuring that valuable materials are effectively reused.[92]

In summary, the lack of a recycling culture among the population, legal instability, the absence of inclusive regulations for waste pickers, and inadequate waste disposal practices all pose threats to recycling associations in Bogota. Addressing these challenges will support the promotion of sustainable waste management, increasing recycling rates, and fostering the profitability and viability of recycling businesses.

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89 Macro Trends, *Bogota, Colombia Metro Area Population 1950-2023,* 2023, https://www.macrotrends.net/cities/20837/bogota/population. Accessed: 25 August 2023.

90 Pardo Martínez, C.I., Piña, W.A., *Solid waste management in Bogotá: The role of recycling associations as investigated through SWOT analysis,* Environ Dev Sustain 19, 1067–1086 (2017). https://doi.org/10.1007/s10668-016-9782-y

91 WEKA, *Colombian waste pickers called to re-invent themselves,* 9 July 2021, https://t.ly/erYsM. Accessed 23 July 2023.

92 Pardo Martínez, C.I., Piña, W.A., *Solid waste management in Bogotá: The role of recycling associations as investigated through SWOT analysis,* Environ Dev Sustain 19, 1067–1086 (2017). https://doi.org/10.1007/s10668-016-9782-y

## Major actors and good practice

According to the findings in the SDG Investor Map developed by the Colombian Government and UNDP, it is obvious that business opportunities are abundant in the SWM sector. On the SDG Investor Platform, there is currently an SWM Opportunity[93] for the Colombia market, which consists of an investment for plants that collect, separate and treat construction and demolition waste (RCD), which can be transformed and reused as raw material in the manufacture of new products. These can then be sold back to construction developers as substitutes of natural inputs. It is a medium-term opportunity with a market of $1 billion, and with more opportunities to be proposed.

Since 2011, Bogota has been implementing the Zero Waste Program, with the primary objective of reducing waste and increasing recycling rates. This programme places a strong emphasis on active community and workforce participation, supported by education and training initiatives. Informal waste workers play a vital role in the city's recycling efforts, currently responsible for approximately 16 percent of waste collection and recycling. Recognizing their significant contributions, the Constitutional Court issued a ruling in 2011, mandating the inclusion of informal workers in an improved and sustainable waste management system in the future.[94] This ruling underscores the city's commitment to integrating informal waste workers into the formal waste management framework, ensuring their rights are protected and acknowledging their crucial role in recycling activities. Through the integration of these workers into a more sustainable waste management structure, the Zero Waste Program aims to enhance their working conditions, and foster a more inclusive and effective waste management system in Bogota.

In Bogota, recycling associations actively participate in waste management efforts. These associations consist of waste pickers who have been actively advocating for their labour rights as recyclers. They strive to improve their working conditions and gain recognition and inclusion within the city's waste management system. The waste pickers have demonstrated strong leadership, perseverance and a high level of organization, which has facilitated the formulation of policies, strategies, programmes, and local and national laws aimed at recognizing their work, ensuring fair wages, providing opportunities for them to become authorized waste service providers, and involving them in the development of comprehensive waste management plans for cities.

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93 United Nations Development Programme (UNDP), *RCD recycle Model.* https://t.ly/l2mV9. Accessed 23 July 2023.

94 Urban Sustainability Exchange, *Zero Waste Program.* https://t.ly/z2t-f. Accessed 23 July 2023.

Snapshot

# Private sector led good practices

### State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

After conducting our research, we have found no evidence that private sector good practices were available in this country.

### Private sector

**Market opportunities are available within the construction and demolition waste sector (RCD).**

### Innovative policies

**Zero Waste Program**

The Zero Waste Program has the primary goal of reducing waste and increasing recycling rates. This programme places a strong emphasis on active community and employee participation, supported by education and training initiatives.

**Green Taxonomy**

The objective of Colombia's Green Taxonomy is to provide clarity for those who invest in green projects and initiatives, by enabling them to understand whether an investment is classified as green within Colombia. Based on this new classification standard, the first version of the Colombian Taxonomy will bring resources to projects, activities, initiatives and assets that contribute to meeting environmental objectives.

### Available innovative financing mechanisms

**ICMA: Green bonds and framework**

- Colombia was the first South American country to issue a green bond. The bond is $196 million in size and was eligible to use in waste and circular economy along with other environmental areas, such as water management, ecosystem services and biodiversity, clean transportation, non-conventional energy, energy efficiency and sustainable agriculture.
- ICMA's green framework is a useful initiative for harnessing the private sector's capabilities to achieve the SDGs.

# INDONESIA

Population

**273,5 million**

Urban (2022)

**58 %**

GDP

**$1.1 trillion**

Per Capita

**$3.869**

## International climate agreements and Nationally Determined Contributions (NDCs)

Indonesia ratified the Kigali Amendment to the Montréal Protocol in 2022.[95] The country ratified the Basel Convention in 1993,[96] the Kyoto Protocol in 2004[97] and the Paris Agreement in 2016.[98] According to the updated NDC report (2021),[99] the country is committed to developing a comprehensive strategy to improve policy and institutional capacity at the local level, reduce landfill waste by promoting the Reduce, Reuse and Recycle Initiative, and utilizing waste and garbage for energy production. The Indonesian Government is committed to further reducing emissions from the waste management sector through comprehensive and coherent policy development, institutional strengthening, improved financial and funding mechanisms, technology innovation and sociocultural approaches.

## Green framework for green financing instruments

The Republic of Indonesia has developed a Green Bond and Green Sukuk Framework which complies with the ICMA green bond principles,[100] under which it plans to finance and/or refinance eligible green projects via the issuance of green bonds and green sukuk.[101] Many of the projects being undertaken by the Indonesian Government to address climate change mitigation and adaptation will also deliver important social benefits, and involve a range of stakeholders, such as international organizations and private sector companies. The objectives in the framework include improving waste management, transforming waste to renewable energy sources and rehabilitating landfill areas.[102] It therefore provides a promising opportunity for the private sector to invest in SWM.

Indonesia is also working with the U.S. Agency for International Development (USAID) on blended finance to implement circular economy and waste management projects. The partnership uses both public and private financing – combining the strength of USAID's technical expertise with private investment – and targets local, well-positioned recycling companies that reduce the amount of plastic entering oceans.[103] Moreover, Indonesia Infrastructure Finance (IIF) issued the Sustainable Financing Framework, defining 11 green and social categories of eligible projects and a transparent governance process compliant with the International Capital Markets Association standards. It was the first Sustainability Bond issued by a non-banking financial institution in Indonesia.[104]

Finally, Indonesia also issued a Sustainable Development Goals (SDG) Bond in 2021. Indonesia became the first country in Southeast Asia to issue an SDG bond in the global debt capital market, raising EUR 500 million (US$584 million). The bond will allow the Government to finance social and environmental projects, further demonstrating its commitment to the SDGs.[105]

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95 United Nations Environment Programme, *Country Data.* https://ozone.unep.org/all-ratifications. Accessed 23 July 2023.

96 Basel Convention, *Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.* https://t.ly/L3LZe. Accessed 23 July 2023.

97 United Nations Climate Change, *Indonesia,* 2016, https://unfccc.int/node/61083838383838383. Accessed 23 July 2023.

98 *Ibid.*

99 United Nations Climate Change, *NDC Registry.* https://t.ly/MhPIm. Accessed 23 July 2023.

100 Directorate General of Budget Financing and Risk Management. https://t.ly/vRdlQ. Accessed 24 July 2023.

101 United Nations Development Programme (UNDP). https://t.ly/bT9Sp. Accessed 23 July 2023.

102 Directorate General of Budget Financing and Risk Management. https://t.ly/mcyPI. Accessed 23 July 2023.

103 Urban Links, *Blended Finance: A Blueprint to Support a Circular Economy in Indonesia,* 28 February 2023. https://t.ly/-mdsG. Accessed 1 August 2023.

104 World Bank, *Indonesia's first sustainability bond from a non-bank financial institution focuses on green and inclusive development,* 21 July 2022, https://t.ly/Ukpkk. Accessed 1 August 2023.

105 United Nations Development Programme (UNDP), *The Indonesian SDG Bond: A Leap Towards Financing the SDGs,* 7 October 2021, https://t.ly/z9nTC. Accessed: 1 August 2023.

# Jakarta

Population (2022)
**11.074.811**

GDP (2021)
**$304 billion**

Waste Production (tonnes/year)
**2.281.250**

Responsible Party: **Local Authorities**

Private Sector Presence: **N/A**

## Solid waste management (SWM) statistics and main challenges

Indonesia's tropical and archipelagic landscape makes the country one of the world's richest in terms of biodiversity. At the same time, it makes the country vulnerable to climate change.[106] Being placed between two oceans, Indonesia faces greater exposure to plastic pollution than land-bound countries. Like in all emerging countries, the increasing volume of municipal solid wastes in Indonesia constitute a serious environmental problem, and urbanization has magnified the need for adequate solid waste disposal and treatment.[107] In Indonesia, nearly 3 million people are engaged in waste recycling, including informal collection. In 2017, Indonesia's population of 250 million generated around 65.8 million tonnes of solid waste,[108] of which 6.8 million tonnes[109] were plastic waste.

Indonesia produces roughly 64 million tonnes of municipal waste per year, with 60 percent estimated to be organic food waste, 14 percent plastic waste, 9 percent paper waste and the remainder composed of metal, glass, textiles, rubber and other materials.[110] Higher levels of waste generation are generally seen in more urbanized and higher income areas; as income and consumerism increase, so do waste generation rates. Around half of Indonesia's population live in cities. Currently, approximately 39 percent of urban solid waste is collected in Indonesia, while around 40 percent of existing urban households do not have access to waste collection services.[111]

Currently, the focus of waste management efforts in Indonesia, including Jakarta, is primarily on the transportation of waste from its sources to temporary storage and ultimately to landfills. However, the state of waste management in Jakarta is critical due to the increasing amount of waste generated without proper management practices in place. At present, waste segregation at the source remains limited, and a significant portion of waste is directly dumped in open dumps or landfills. In Jakarta, the primary component of the waste generated is organic waste, accounting for 49.7 percent of the total. With a population of 11 million, Jakarta produces approximately 8,369 tonnes of municipal solid waste per day, covering a total area of 664.01 km2.[112]

The issue of waste management in Indonesia is multifaceted and influenced by a number of factors. The significant amount of waste generated in Indonesia presents a challenge, but also an opportunity for resource optimization. By implementing efficient recycling and waste-to-energy programmes, Indonesia can harness the value of this waste stream and turn it into a potential source of raw materials and energy, thereby reducing its environmental impact.

While there are issues related to low levels of service management, limited landfill space and inadequate waste management institutions, these challenges open doors for improvement. In terms of waste management methods, existing practices in Indonesia are not fully aligned with environmental considerations. The predominant methods of waste management in landfills are open dumping and controlled landfill techniques. However, alternative methods are available, including composting, incineration, sorting and recycling, although their implementation is not widespread. Investing in modern waste management infrastructure, creating new waste management institutions and adopting innovative service delivery models will not only address these challenges, but can also create jobs and stimulate economic growth.[113]

Addressing waste management challenges requires comprehensive and sustainable approaches. These include raising public awareness about waste management and environmental protection, increasing the number of waste management facilities and institutions, and overcoming cost barriers. By adopting more environmentally-friendly practices, Indonesia can work towards effective waste management while mitigating the negative environmental impacts associated with current methods.

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106 United Nations Development Programme (UNDP). https://t.ly/1tihZ. Accessed 23 July 2023.

107 Maniatis, K., et al., *Solid Waste Management in Indonesia: Status and Potential,* Resources and Conservation, vol. 15, no. 4, 1987, pp. 277–290, doi:10.1016/0166-3097(87)90075-7.

108 United States Agency for International Development (USAID), *Clean Cities, Blue Ocean.* https://pdf.usaid.gov/pdf_docs/PA00XWPP.pdf. Accessed 23 July 2023.

109 *Ibid.*

110 *Ibid.*

111 *Ibid.*

112 Asia-Europe Foundation (ASEF), *Waste Management in Indonesia and Jakarta: Challenges and Way Forward,* October 2021, https://t.ly/xflCz. Accessed 24 July 2023.

113 Waste4Change, *The Increasing Need for Responsible Waste Management Services in Indonesia,* 28 April 2022, https://t.ly/1g04B. Accessed 23 July 2023.

As an emerging country with a dispersed territory and a very large population, Indonesia needs both more efficient and integrated SWM (ISWM) methods, as well as private sector engagement to ensure the necessary equipment and technical knowledge to implement them. These needs and gaps create important market opportunities for the private sector, which would also considerably contribute to the achievement of several SDGs.

## Major actors and good practices

In Indonesia, the financing of waste management predominantly relies on local budgets, as waste fees are typically not collected in cities and regencies. The allocated funds for waste management generally range between 1 percent and 4 percent of the local budget. Waste fees are usually collected from residents to cover the transportation of waste from its sources to temporary storage facilities.

The low overall collection rate, insufficient funding and the irregularity of collection services have led to wide variations across municipalities in organizational structure, collection, disposal and payment mechanisms, resulting in inconsistent waste and financial data. Household waste is typically collected door-to-door by private companies or recycler associations contracted by community or neighbourhood organizations, primarily using handcarts, motorcycles[114] and trucks. Informal waste collectors work within these recycler associations and also collect from other locations in the city, as well as landfills. Maids and servants collect recyclables from households, and waste buyers are also part of this informal sector, purchasing recyclables door-to-door.

Waste is generally first brought to temporary shelters by residents themselves, for temporary disposal. Formal collection of recyclable waste is uncommon and what is collected is mainly handled by informal waste collectors through collection services or scavenging. While not entirely informal, waste banks provide a method for managing recyclable waste. In Indonesia, the private sector has also supported waste banks. For example,

[114] Waste4Change, *The Increasing Need for Responsible Waste Management Services in Indonesia,* 28 April 2022, https://t.ly/1g04B. Accessed 23 July 2023.

Unilever has provided resources to some waste banks to reduce their virgin plastic footprint and support recycling practices. The Indonesian Government has also reportedly endorsed the waste bank concept as "currently the best way of dealing with waste across the country."[115]

Numerous private companies play a crucial role in the waste management sector, with Waste4Change serving as an exemplary model of private sector engagement in waste management in Indonesia. The company's core focus lies in waste collection services and extended producer responsibility. Moreover, Waste4Change actively conducts research on waste management in Indonesia, offering consultations to various companies and government entities, while collaborating with international organizations like the World Bank on waste management projects.

Furthermore, the company is dedicated to organizing diverse training programmes and community-based initiatives, such as the 3R School, which aims to heighten public awareness of proper waste management practices. Since its establishment in 2014, Waste4Change has undertaken 63 community-development initiatives and conducted over 300 waste management projects. Such efforts exemplify how private sector involvement can significantly impact waste management development in Global South countries, both directly and indirectly.[116]

To promote waste reduction and innovative waste management practices, various private and public sector initiatives have been implemented to divert waste from landfills. One such initiative involves using plastic as an ingredient in asphalt mixtures, increasing asphalt stability by up to 40 percent. Another effort is the mobile application called Gringgo, which enables users to photograph waste items. These are then identified using image recognition technology and associated with a market value. This helps educate waste workers about the value of different materials, optimizing their operations and maximizing their income.

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[115] Unilever, *Strategy and goals,* 2023, https://t.ly/egGyz. Accessed 25 August 2023.

[116] Saras, Anindya. Interview with Waste4Change. Conducted by Yunis Sharifli, 27 July 2023.

Additionally, the Octopus waste management app has emerged as a promising solution. This application facilitates household waste reduction by delivering product refills directly to customers' homes without plastic packaging, encouraging people to minimize plastic usage within their households.[117] Another notable programme is the Plastic Bank initiative, which has been operational since 2019. This social enterprise engages ocean stewards to collect plastic waste, and use it as currency to alleviate poverty and combat ocean plastic pollution. By implementing a reward system, where collectors receive cash or other benefits, Plastic Bank Indonesia has successfully prevented one billion plastic bottles from ending up in the ocean. The collected plastic waste is then sent for recycling. These initiatives demonstrate how innovative approaches and reward systems can effectively tackle waste management challenges, while simultaneously addressing environmental issues and poverty reduction.[118]

Like other countries, Indonesia also cooperates with international organizations. In particular, World Bank plays an important role in waste management projects. World Bank supports projects[119] on SWM in urban and metropolitan cities, and also supports research[120] on waste management. There continues to be a lack of environmentally sound options for waste disposal in Indonesia. Open dumping and waste burning continue to be common practice across the country. Deficiencies in existing urban and rural SWM infrastructure leave both populations with no choice but to dispose of waste in ways that are harmful to the environment. In addition, limited law enforcement also contributes to waste problems and creates another challenge for private companies to carry out their work effectively.[121]

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117 Asia-Europe Foundation (ASEF), *Waste Management in Indonesia and Jakarta: Challenges and Way Forward,* October 2021, https://t.ly/32B20. Accessed 24 July 2023.

118 Cision, *Plastic Bank Indonesia stops 40 million kilograms of plastic from polluting the ocean,* 16 March 2023. https://t.ly/gNIgK. Accessed 23 July 2021.

119 World Bank, *Indonesia – Improvement of Solid Waste Management to Support Regional and Metropolitan Cities,* 5 December 2019, https://t.ly/cm8Pd. Accessed 23 July 2023.

120 World Bank, *Plastic Waste Discharges from Rivers and Coastlines in Indonesia,* 20 May 2021, https://t.ly/-p8k0. Accessed 23 July 2023.

121 Saras, Anindya. Interview with Waste4Change. Conducted by Yunis Sharifli, 27 July 2023.

Snapshot

# Private sector led good practices

## State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

- **Waste4Change**

  This company is committed to organizing various training programmes and community-based initiatives, such as the 3R School, which aims to raise public awareness of proper waste management practices.

## Private sector

- **Waste4Change**

  Waste4Change boasts a wealth of expertise in waste management across Jakarta and various regions in Indonesia. The primary objective is to enhance solid waste management practices by conducting comprehensive analyses and pinpointing the most suitable systems and programmes. Additionally, the company places a strong emphasis on community-based projects aimed at raising public awareness about effective waste management.

## Innovative policies

- **Developing a waste management model**

  Indonesia's government is committed to developing a comprehensive strategy regarding policy, increasing capacity at a local level and reducing landfill through the RRR model, as well as commitments to create waste-to-energy plants.

- **Gringgo**

  Gringgo allows users to photograph waste items, which are then identified using image recognition technology and assigned a market value. This helps educate waste collectors about the value of different materials, optimizing their operations and maximizing their revenue.

- **Plastic Bank initiative**

  The Plastic Bank initiative engages ocean stewards to collect plastic waste and use it as currency to alleviate poverty and combat ocean plastic pollution. By implementing a reward system where collectors receive cash or other benefits, Plastic Bank Indonesia has successfully prevented one billion plastic bottles from ending up in the ocean.

## Available innovative financing mechanisms

- **Green bond/sukuk initiatives**

  Indonesia has developed green frameworks which conform with the ICMA principles, aiming to finance or refinance eligible green projects.

- **SDG Bond**

  SDG Bonds offer an innovative form of financing that can catalyse more funding for socially and environmentally conscious projects.

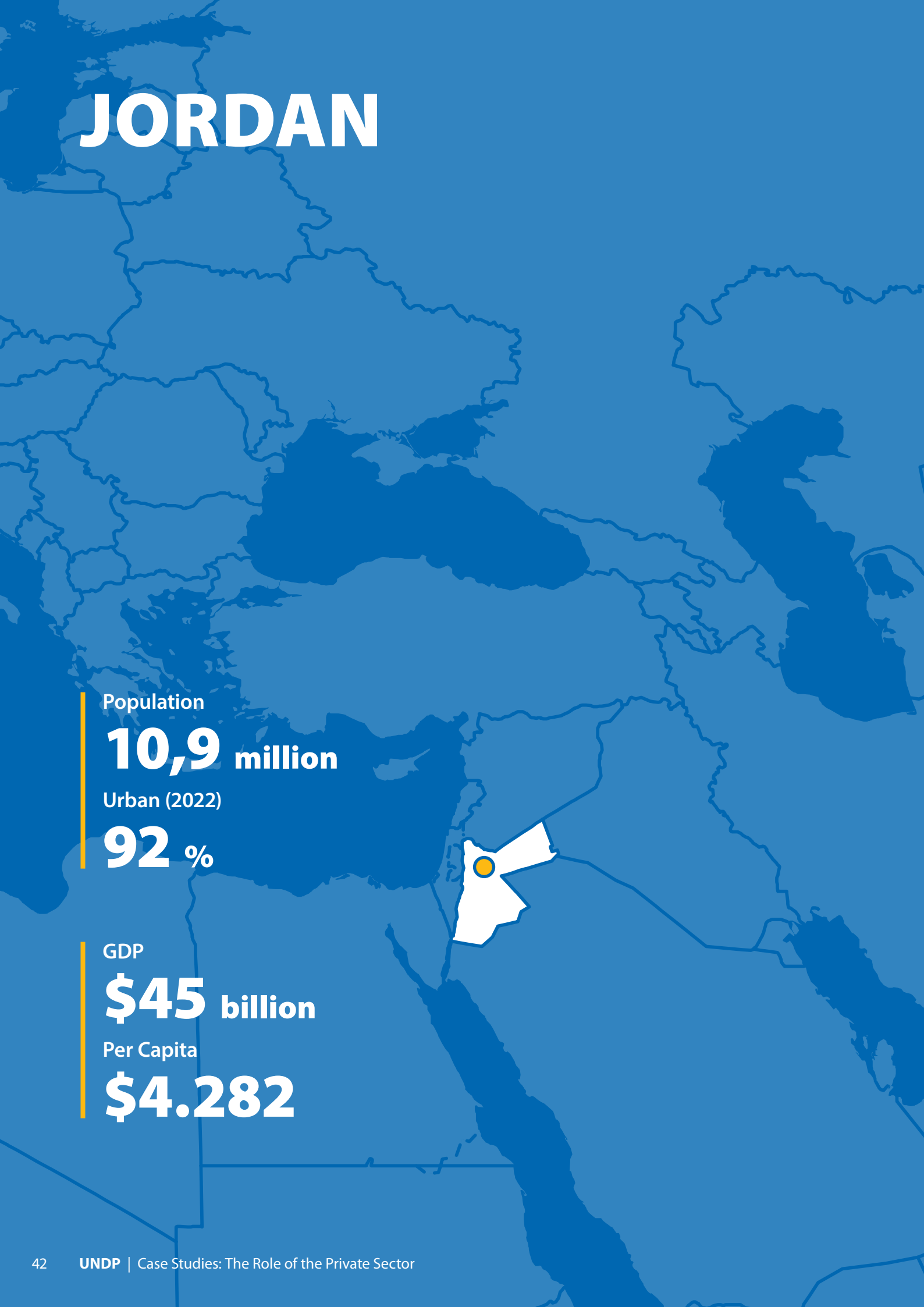
- **Sustainability Bond**

  The main objective of the bond is to finance environmental and social categories of eligible projects, and to foster a transparent governance process in accordance with the standards of the ICMA.

- **Blended finance**

  Combining USAID's technical expertise with private investment, the partnership targets local, well-positioned recycling companies that are reducing the amount of plastic entering oceans around Indonesia.

# JORDAN



Population

**10,9 million**

Urban (2022)

**92 %**

GDP

**$45 billion**

Per Capita

**$4.282**

## International climate agreements and Nationally Determined Contributions (NDCs)

Jordan ratified the Basel Convention in 1992,[122] the Kyoto Protocol in 2003,[123] the Paris Agreement in 2016[124] and the Kigali Amendment to the Montréal Protocol in 2019.[125] Within the country's NDC Action Plan, waste management is one of the key sectors where mitigation actions are prioritized. In 2012, the waste sector accounted for 6 percent of Jordan's total greenhouse gas (GHG) emissions.[126] The sector will contribute to the NDC target by implementing the biogas collection and utilization from Al-Dhulil, Al-Salt and Madaba domestic solid waste landfill. The proposed projects aim at collecting the generated biogas, treating it for impurities, generating electricity by introducing biogas generators and connecting the generated electricity to the national electricity grid.

## Green framework for green financing instruments

Since 2017, green growth is a national priority for Jordan. The Green Growth National Action Plan 2021–2025 (GG-NAP)[127] was created to expand on Jordan's climate and sustainable development ambitions by mainstreaming green growth objectives into sectoral strategic frameworks. Sector-level action plans were developed for each of the priority green economy sectors, including the waste sector. Each sectoral plan provides applicable actions to achieve national green growth objectives. Within this context and according to the sectoral plan, several projects are at various levels of readiness in terms of waste management.[128]

Some projects require feasibility analysis, while others are ready to be invested in. Many are suitable for PPP or direct private sector investment, and some are opportunities to leverage climate finance. The sectoral plan aims at capturing the economic potential and the development of successful PPP models, which is critical to enhance the private sector's investment in the waste sector and therefore help reduce the burden on municipalities and open the space for innovative practices. When waste is diverted from landfills, it extends the lifespan of these waste facilities. Apart from economic benefits to the Government and companies, jobs are created through the development of new material processing industries.[129]

In March 2023, Jordan Kuwait Bank (JKB) made a significant milestone by issuing the first-ever green bond in Jordan, with backing from the International Finance Corporation (IFC). The IFC, a prominent investor, committed up to $50 million to support this five-year bond issued by JKB – a leading private sector bank in the country. The financing package comprises up to $36 million from IFC's own resources, along with a blended finance co-investment of up to $10 million from the Canada-IFC Blended Climate Finance Program, and an additional $4 million from the Netherlands-funded MENA Private Sector Development Facility, both of which are implemented by the IFC. This collaboration highlights the commitment of various entities to promoting sustainable finance and addressing climate-related challenges in Jordan.[130]

Jordan is also working with the World Bank on blended finance to manage green projects. A blended finance package was put together to finance the expansion of the As-Samra Wastewater Treatment Plant. The project was implemented by the Samra Wastewater Treatment Plant Company Limited (SPC), a private operator. SPC was contracted under a build-operate-transfer (BOT) contract to finance, upgrade and operate the treatment plant. The overall financial package also included public funding provided as Viability Gap Funding (VGF). This included contributions from the Government of Jordan and a grant from the Millennium Challenge Corporation (MCC).[131]

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122 Basel Convention, *Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.* https://t.ly/jTPkn. Accessed 23 July 2023.

123 United Nations Climate Change, *Jordan,* 2016, https://unfccc.int/node/61090. Accessed 23 July 2023.

124 *Ibid.*

125 United Nations Environment Programme (UNEP), *Country Data.* https://ozone.unep.org/all-ratifications. Accessed 23 July 2023.

126 *Ibid.*

127 The Global Green Growth. https://gggi.org/about/. Accessed 23 July 2023.

128 *Ibid.*

129 *Ibid.*

130 Euro Money, *Is Jordan ready for sustainable finance?,* 3 May 2023, https://t.ly/K3YQ2. Accessed 24 July 2023.

131 World Bank, *Blended financing for the expansion of the As-Samra wastewater treatment plant in Jordan,* 2016, https://t.ly/3pCAB. Accessed 1 August 2023.

# Amman

Population (2022)
**2.206.163**

GDP (2021)
**$23 billion**

Waste Production (tonnes/year)
**1.000.000**

Responsible Party:
**Common Service Council**

Private Sector Presence: **N/A**

## Solid waste management (SWM) statistics and main challenges

The waste sector in Jordan, especially in the capital of Amman, is highly impacted by demographic challenges, such as mass influxes of refugees. Improved living standards are also adding more pressure on the services provided by the Government in all stages of SWM. Municipal waste gathered in Jordan's 19 landfills doubled between 2012 (830,485 tonnes)[132] and 2019 (1,662,939 tonnes).[133]

Jordan has implemented several pilot projects for waste separation and recycling. However, there is room for improving the practical expertise and the resources necessary for driving the required modernization of the waste sector and to scale up interventions in order to mitigate climate change, particularly in the separation and treatment of recyclables.[134] Jordan is also endeavouring to expand the domestic Measurement, Reporting and Verification (MRV) system to cover the transport and waste sectors in the short term. As part of a government pilot project, biogas is being collected and utilized from three domestic solid waste landfills in Al-Dulayl, Al-Salt and Maddaba.[135]

Increased knowledge and understanding among the general public about the importance of waste management practices could stem the increase of waste generation. Low public awareness and social barriers pose challenges and contribute to the generation of more waste. For example, certain practices, such as the use of single-use plastics, prioritize convenience over proper waste management, despite their negative environmental impact. Additionally, consumption patterns, particularly during social gatherings or events, contribute to food waste due to the preparation of large quantities of food. The desire to ensure that guests are well-fed can lead to an excess of food being prepared, resulting in a higher likelihood of food being wasted.[136]

Another challenge for Jordan is the low level of private sector involvement in SWM. Most of the active recycling pilot initiatives in Jordan are primarily initiated and supported by NGOs and various international agencies, with funding plans typically focused on the short to medium term.[137]

## Major actors and good practices

During the past five years, Jordan has made significant advancements in addressing the waste sector's challenges. The Government adopted a National Municipal Solid Waste Management Strategy (2015–2034), which aims to modernize SWM practices and implement the Reduce, Reuse and Recycle approach within a span of 20 years.[138] The strategy sets short-, mid- and long-term goals for the various waste treatment activities proposed, including recycling and reducing the quantities of bio-waste that end up in landfills. It also mentions the importance of the reduction in greenhouse gases as a main performance indicator for approving the municipal solid waste management projects.

The private sector also plays an important role in Jordan's waste management. WAKILEH is one of the waste management companies that focus on researching and investigating the various decentralized wastewater treatment technologies available worldwide and promoting public awareness on waste.[139] Jordan is actively collaborating with international organizations and multiple nations to enhance its waste management capabilities. Notable instances of this partnership include the support received from the European Bank for Reconstruction and Development (EBRD) and the United Kingdom's Department for International Development (DFID), who funded a fleet of waste collection trucks.[140] Additionally, in conjunction with the European Union (EU), the EBRD provided financial aid, grants and technical cooperation to Jordan, bolstering the country's capacity to address SWM issues. These

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132 Heinrich Böll Stiftung, *In Jordan, Governmental Measures are Limited to Solid Waste, Albeit Shy Initiatives for Sorting and Recycling,* 7 October 2020, https://t.ly/v0YbI. Accessed 23 July 2023.

133 *Ibid.*

134 *Ibid.*

135 United Nations Climate Change, *NDC.* https://t.ly/sS73w. Accessed 24 July 2023.

136 Rayya Al Muheisen, *Farmers attribute Jordan's 'alarming' food waste to weak supply chain management,* The Jordan Times, 27 June 2023, https://t.ly/0pMuy. Accessed 24 July 2023.

137 Jordan Green Building Council (JGBC), *Your Guide to Waste Management in Jordan,* 2016, https://t.ly/HVnvR. Accessed 24 July 2023.

138 United Nations Climate Change, *NDC Registry.* https://t.ly/rFhjr. Accessed 23 July 2023.

139 WAKILEH. https://www.wakileh.co/. Accessed 1 August 2023.

140 European Bank for Reconstruction and Development (EBRD), *EBRD and UK's DFID-funded waste collection truck fleet hits Amman's streets,* 23 October 2018, https://t.ly/fvM0z. Accessed 23 Jul 2023.

initiatives exemplify the fruitful collaboration between Jordan and international organizations.[141]

Furthermore, Jordan is actively engaged in promoting public awareness regarding SWM. The Government has collaborated with the EBRD and the EU to raise awareness about waste management in Jordanian schools. This initiative aims to educate and inform students about the importance of proper waste disposal and management.[142]

In addition to this, the Minister of Agriculture in Jordan has partnered with the World Food Programme (WFP) and the Food and Agriculture Organization (FAO) to launch the No Food Waste initiative. This programme seeks to empower and support local initiatives that are actively working in the field of food waste management in Jordan. These collaborative efforts demonstrate the Government's commitment to increasing awareness and addressing the issue of waste management in the country.[143]

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[141] European Bank for Reconstruction and Development (EBRD), *EU and EBRD support renewable energy in Jordan's municipal services,* 7 December 2016, https://t.ly/c-6GY. Accessed 23 July 2023.

[142] *Ibid.*

[143] Jordan News, *Jordan produces 1 million tonnes of food waste annually,* 26 June 2023, https://t.ly/y2v3s. Accessed 23 July 2023.

Snapshot

# Private sector led good practices

## State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

- **Biogas Collection: Al Dulayl, Al Salt and Madaba Plants**

  The Government has launched pilot projects aiming to collect biogas from solid waste from major plants, treat it for impurities and use the collected biogas to generate electricity.

## Private sector

- **WAKILEH**

  WAKILEH has researched and investigated the various worldwide available decentralized wastewater treatment technologies and spread awareness of the advantages of decentralized wastewater treatment in Jordan.

## Innovative policies

- **GG-NAP**

  This action plan was created to mainstream green initiatives into sectoral strategic frameworks. Projects operating in accordance with the plan are suitable for PPP or direct foreign investment models, which are critical to enhance private sector involvement.

- **No Food Waste initiative**

  The aim of this programme is to strengthen and support local initiatives that are actively working in the field of food waste management in Jordan. This collaborative effort is a demonstration of the Government's commitment to raising awareness and addressing the issue of waste management in the country.

## Available innovative financing mechanisms

- **Green bonds**

  Backed by the International Finance Corporation (IFC), Jordan Kuwait Bank (JKB) issued the country's first green bond. The issuance of green bonds provides investors with the opportunity to support projects that promote clean energy, reduce carbon emissions and support sustainable development in the country.

- **Blended finance**

  Finance for the expansion of As-Samra Wastewater Treatment Plant was provided by a blended financial package. To finance, upgrade, and operate the treatment plant, the Samra Wastewater Treatment Plant Company Limited (SPC) was recruited through a build-operate-transfer (BOT) contract.

# MALAYSIA

Population

**32,37 million**

Urban (2022)

**78 %**

GDP

**$336 billion**

Per Capita

**$10.401**

## International climate agreements and Nationally Determined Contributions (NDCs)

Malaysia ratified the Basel Convention in 1993, the Kyoto Protocol in 2002, the Paris Agreement in 2016 and the Kigali Amendment to the Montréal Protocol in 2020. According to the updated NDC report (2021), the country is planning for waste (and wastewater) infrastructures to become more sustainable, efficient and effective while avoiding areas that are environmentally sensitive and adopting nature-based solutions for these areas.[144]

## Green framework for green financing instruments

Malaysia has a developed Islamic financial market. It has been developing its framework with government support since the 1970s, and has continued to pioneer Islamic finance instruments. For instance, it issued the first green sukuk in 2017, following the introduction of the Sustainable and Responsible Investment (SRI) Sukuk Framework in 2014. The first green sukuk was issued by the Securities Commission Malaysia (SC) to finance the construction of large-scale solar photovoltaic power plants in Kudat, Sabah. In addition, in August 2017, Quantum Solar Park Malaysia Sdn Bhd launched a green SRI sukuk of RM1 billion, to fund the construction of Southeast Asia's largest solar photovoltaic plant project. In December 2017, PNB Merdeka Ventures Sdn Bhd issued an unrated green SRI sukuk of up to RM2 billion via the sukuk programme, to fund the construction of the Merdeka 118 Tower. The country's sukuk programme is the first adopter of the Association of Southeast Asian Nations (ASEAN) Green Bond Standards. In January 2018, Sinar Kamiri Sdn Bhd issued a green SRI sukuk of up to RM245 million, to finance a 49 megawatt (MW) solar photovoltaic facility. In April 2018, UiTM Solar Power Sdn Bhd issued a green SRI sukuk of up to RM240 million, to finance the development and operation of the 50 MW utility solar power plant.

Moreover, the Value-Based Intermediation (VBI) concept, introduced by Bank Negara Malaysia in 2017, is designed for the Islamic finance industry. Its primary objective is to ensure that intermediation functions align with the maqāṣid al-Sharīṣah, which represents the intended outcomes of Shari'ah principlesVBI aims to achieve these results by incorporating practices that generate positive and sustainable impacts on the economy, community and environment. This approach is in line with shareholders' expectations of sustainable returns and long-term interests. The intended outcomes of VBI are reflected in the triple bottom line framework, which encompasses people, planet and profit/prosperity. This framework is consistent with the Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development and the Principles for Responsible Banking (PRB) established by the United Nations Environment Programme Finance Initiative.[145]

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[144] United Nations Climate Change, *NDC Registry.* https://t.ly/psxZ-. Accessed 24 July 2023.

[145] International Federation of Accountants (IFAC), *Facilitating SDGs with Islamic Finance (Part 2) Value-Based Intermediation: Championing the Social Finance Agenda in Malaysia,* IFAC, 31 October 2022, https://t.ly/rui0U. Accessed 1 August 2023.

# Kuala Lumpur

Population (2022)
**8.419.566**

GDP (2019)
**$60 billion**

Waste Production (tonnes/year)
**1.364.735**

Responsible Party: **Local Government**

Private Sector Presence: **N/A**

## Solid waste management (SWM) statistics and main challenges

IIn Malaysia, the rapidly increasing population is generating a high volume of solid waste. Estimated in 2021 to be 38,427 metric tonnes per day (1.17 kg/capita/day),[146] 82.5 percent of this waste is disposed of in landfills.[147] By 2022, the amount of MSW collected was projected to be 14 million metric tonnes per year.[148]

Malaysia plays a significant role in the global plastic industry, with approximately 1,300 plastic manufacturers currently operating within the country. For more than two decades, the plastic sector has consistently recorded the highest growth rates among all industries. Studies estimate that Malaysia has produced a total of 0.94 million tonnes of mismanaged plastic waste, with a potential leakage of between 0.14 million and 0.37 million tonnes into marine environments. The sources of this waste are varied, with 58 percent originating from residential areas, 23 percent from commercial activities, 2 percent from institutional establishments, and the remaining 17 percent from other sources, including recyclables sold to the informal sector, litter and uncollected fly-tipped waste.[149]

More than half of this mismanaged plastic waste is collected in the country's capital city, Kuala Lumpur. In Kuala Lumpur alone, around 1 million tonnes of municipal solid waste (MSW) are generated annually. With a residential population of slightly over 1.8 million people, this translates to an average waste generation rate of 1.52 kg per resident per day (555 kg/capita/year). Unfortunately, Malaysia was ranked eighth among the top ten countries worldwide responsible for mismanaged plastic waste.[150] Contributing to this is its recycling rate, which has significant scope for improvement. In 2020, this rate was due to reach just 28.1 percent, further contributing to the country's insufficient waste management practices.[151]

Since 82.5 percent of the waste collected is disposed of at dumping sites, with only negligible portions treated,[152] the country is in urgent need of sustainable SWM systems. This presents a significant opportunity for the private sector to engage and invest in more sustainable SWM solutions. Private sector involvement in SWM and recycling in Kuala Lumpur has so far been limited, leading to mixed outcomes. As a result, waste management is still primarily perceived as a government responsibility rather than a green growth market opportunity. While there is considerable business potential in plastic waste recovery and recycling, private sector engagement mainly focuses on downstream activities, such as recycling and treatment. This narrow focus restricts operational efficiency and cost-effectiveness in plastic waste management.[153]

Despite the available business potential, significant capital investment by the private sector in SWM faces challenges in the current context. These challenges include uncertainties in the legal framework, inconsistent implementation of regulations, low fees, lack of reliable data, limited access to start-up capital and inadequate accounting for lifecycle costs. Additional technical and policy support is required in Kuala Lumpur to facilitate competitive bidding processes, establish appropriate scope and performance specifications in contracts, evaluate the qualifications of private sector companies and monitor performance in accordance with contractual provisions.

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146 Malaysian Investment Development Authority (MIDA), *Waste to Energy for A Sustainable Future,* December 2021, https://t.ly/MG-DA. Accessed 24 July 2023.

147 *Ibid.*

148 *Ibid.*

149 United Nations Economic and Social Commission for Asia and Pacific (UNESCAP), *Kuala Lumpur, Malaysia.* https://t.ly/38wiT. Accessed 25 July 2023.

150 World Bank, *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050,* 2018, https://t.ly/K6Kzm. Accessed 28 August 2023.

151 Business Today, *KDEBWM: Elevating Malaysia's Waste Management Landscape To A Global Standard,* 24 January 2022, https://t.ly/-rVG2. Accessed 28 August 2023

152 Malaysian Investment Development Authority (MIDA), *Waste to Energy for A Sustainable Future,* December 2021, https://t.ly/Jy50g. Accessed 24 July 2023.

153 United Nations Economic and Social Commission for Asia and Pacific (UNESCAP), *Kuala Lumpur, Malaysia.* https://t.ly/-C9Cz. Accessed 25 July 2023. World Bank, *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050,* 2018, https://t.ly/-65CB. Accessed 28 August 2023.

## Major actors and good practices

Addressing the country's SWM related concerns, the Government seeks to increase the recycling rate of household waste to 40 percent under the Twelfth Malaysia Plan (12MP).[154] This five-year development roadmap from 2021 to 2025 aims to advance green growth by implementing a clean, green and resilient development agenda with a whole-of-nation approach. Waste will be managed holistically and sustainably by enforcing waste separation at the source, and intensifying the Reduce, Reuse and Recycle (3R) Initiative. Waste separation and recycling facilities will be enhanced, particularly in residential, institutional and commercial areas. These efforts are in line with the National Cleanliness Policy 2019, which aims to reduce waste pollution as well as promote the circular economy and waste-to-wealth initiatives.

Waste management companies also play a crucial role in promoting sustainable waste management practices and raising public awareness about environmental issues. Thanam Industry[155] and Bukit Tagar EnviroParks (BTEP)[156] are notable examples of such companies in the country. Thanam Industry focuses on waste management solutions, aiming to efficiently handle and process various types of waste to minimize their environmental impact. By implementing advanced waste management techniques, the company contributes to a cleaner and greener environment. On the other hand, BTEP also actively participates in waste management activities while emphasizing the importance of education and public awareness.

The Malaysian Government also utilizes digital infrastructure, such as the Solid Waste Information Management System (SWMIS), to enhance waste management. SWMIS includes a Smart Bin System that alerts contractors when bins are full, saving time, resources and costs. Location tracking improves collection efficiency and prevents garbage overflow, promoting public hygiene. This digital solution improves waste management practices in Malaysia.[157]

As a long-term solution, the Government plans to construct an Integrated Waste Treatment Facility. The target is to have at least one waste-to-energy (WTE) plant in each state, to move away from being dependent on solid waste disposal sites. Each plant will contain material recovery facilities and use technologies such as the WTE thermal treatment plant, where non-recycled solid waste can be converted into heat, steam and renewable energy. The Ministry of Housing and Local Government (KPKT) also plans to implement seven solid waste treatment plants. The construction of a centralized sanitary solid waste landfill and WTE plant will consider the waste generation capacity and distance of the collection area, to ensure more optimal and efficient SWM.

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[154] New Strait Times, *Gearing towards a low-carbon, circular economy, green-growth nation,* 27 September 2021. https://t.ly/r0P6P. Accessed 28 August 2023.

[155] Thanam Industry. https://thanam.com.my/recycling-and-beyond/. Accessed 1 August 2023.

[156] Bukit Tagar EnviroParks (BTEP). https://www.berjayaenviroparks.com.my/en/homepage/. Accessed 1 August 2023.

[157] United Nations Economic and Social Commission for Asia and Pacific (UNESCAP), *Kuala Lumpur, Malaysia.* https://t.ly/IxsQY. Accessed 25 July 2023.

Snapshot

# Private sector led good practices

## State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

- **KPKT: Ministry of Housing/Local Authority**

  The KPKT is aiming to construct seven solid waste treatment plants, combined with waste-to-energy (WTE) plants. This will greatly increase capacity, allowing for more optimal and efficient waste management.

## Private sector

- **Thanam Industry**

  Thanam Industry is constantly evolving to stay ahead in the recycling frontier, from its business practices, to the methods or technology it uses. It manages business activities beyond conventional recycling.

- **Bukit Tagar EnviroParks (BTEP)**

  Bukit Tagar EnviroParks (BTEP) is the premier sanitary landfill in Malaysia, developed to provide long-term solid waste management solution for Kuala Lumpur and Selangor. A fully engineered facility employing modern technology and international best practices, BTEP sets the benchmark for solid waste management in Malaysia.

## Innovative policies

- **National Cleanliness Policy**

  This policy aims to reduce waste pollution and promote the circular economy and waste-to-wealth initiatives.

- **Solid Waste Information Management System (SWMIS)**

  SWMIS includes a smart bin system that alerts contractors when bins are full. This saves time, resources and money. Location tracking improves collection efficiency and prevents overflow, promoting public health.

## Available innovative financing mechanisms

- **Sustainable and Responsible Investment Sukuk**

  Malaysia has a developed Islamic finance market, with a framework that has been developing since the 1970s.

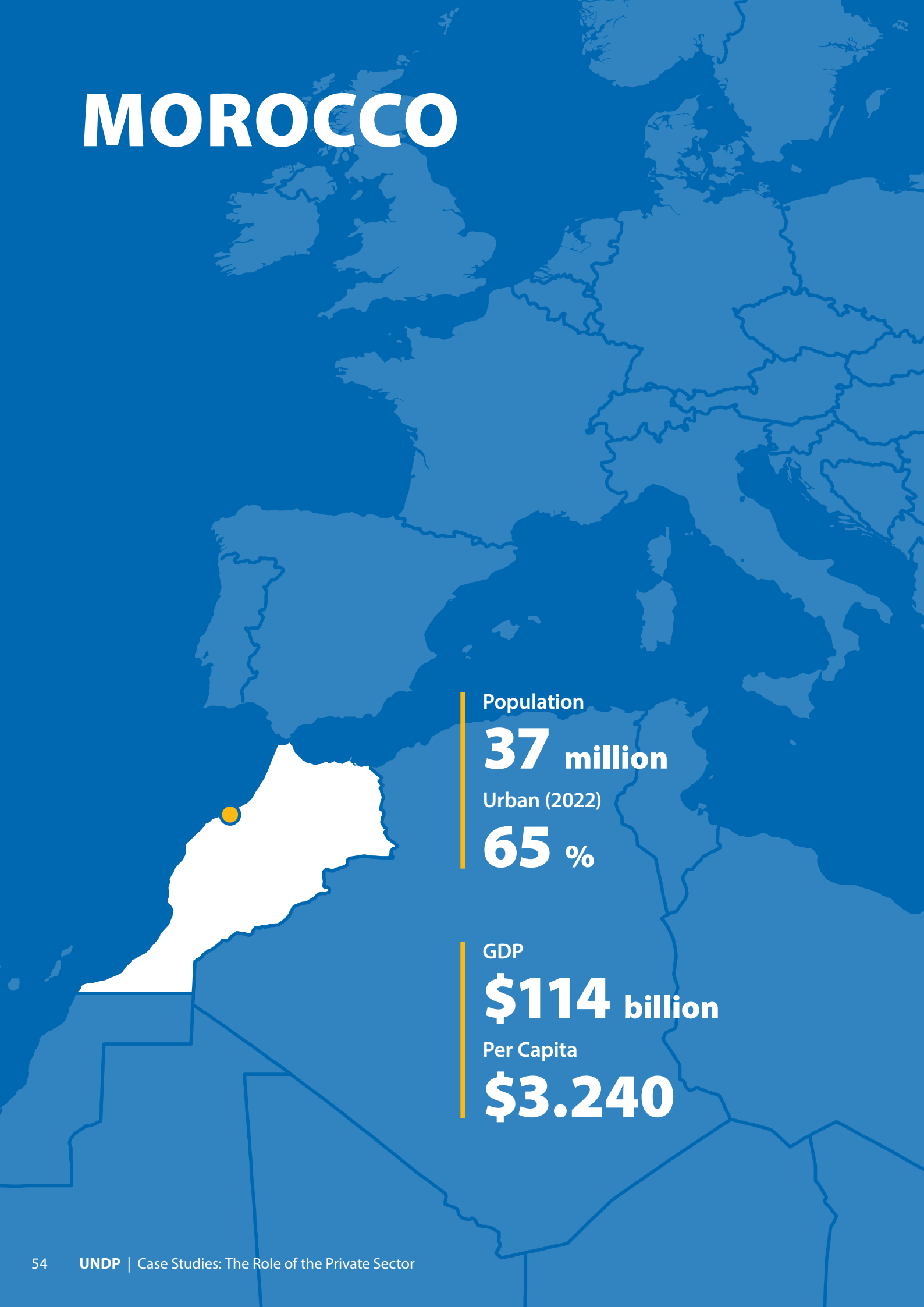
- **First green sukuk issued**

  The first green sukuk was introduced in 2017 and has funded multiple Photovoltaic Plant Projects.

- **Value-Based Intermediation (VBI)**

  The VBI aims to facilitate the implementation of an impact-based risk management system, for assessing the financing and investment activities of Islamic financial institutions in line with their respective VBI commitments. The VBI Assessment Framework also serves as a reference for other financial institutions intending to incorporate environmental, social and governance (ESG) risk considerations in their own risk management system.

# MOROCCO



Population

**37 million**

Urban (2022)

**65 %**

GDP

**$114 billion**

Per Capita

**$3.240**

## International climate agreements and Nationally Determined Contributions (NDCs)

Morocco ratified the Kigali Amendment to the Montréal Protocol in 2022.[158] The country ratified the Basel Convention in 1996,[159] the Kyoto Protocol in 2002[160] and the Paris Agreement in 2016.[161] Following its Paris Agreement commitment, Morocco put forward an enhanced and ambitious Nationally Determined Contribution (NDC) to the UNFCCC secretariat in June 2021, raising its NDC ambition to a 45.5 percent reduction of its greenhouse gas emissions by 2030.[162] Of this target, 18.3 percent is unconditional, and the remaining 27.2 percent is conditional to international assistance.[163] Key strategic and operational tools support Morocco's NDC implementation, including the National Climate Plan, the Sustainable Development Plan, and the National Climate Change and Biodiversity Commission.

Since 2015, Morocco undertook considerable efforts to advance its climate policies. While the country's initial Intended Nationally Determined Contributions (INDC) adopted ambitious targets, subsequent NDCs demonstrated significant increases in ambition. The Climate Action Tracker highlights that Morocco's 2016 NDC is among a limited number that have been assessed as compatible with the 1.5° Celsius goal set by the Paris Agreement. This rating indicates that Morocco's commitments are consistent with the more ambitious goal of limiting global warming to 1.5° Celsius. This target is recognized as more demanding, but as essential for averting significant climate-related consequences. In 2016, Morocco also started drawing up its National Adaptation Plan (NAP), which allowed the country to develop an inclusive framework to support adaptation planning and priority actions. The revised NDC includes key sectoral strategies and targets for all seven sectors covered for mitigation, including the waste management industry.[164]

According to the 2021 NDC report of Morocco, the country has a waste reduction and recovery strategy. Among other objectives, this strategy aims to reduce waste disposed of in controlled landfills and improve the recycling-recovery rate by 2030.[165] Its recycling and recovery targets are: 20 percent recycling of household and similar waste, 20 percent recovery of organic matter, 10 percent energy recovery from waste, 25 percent recycling of industrial waste and 70 percent recycling of end-of-life vehicles.[166] As part of this strategy, Morocco also aims to create sustainable green jobs, in particular with the integration of waste pickers, the creation of more landfill and recovery centres (CEV), encouraging the creation of recycling units and increasing the number of public-private agreements.

## Green framework for green financing instruments

Morocco has a developing green bond market and a supporting regulatory infrastructure as part of its commitment to a lower-carbon economy. The Moroccan Capital Market Association (AMMC) published a green bond framework and practical guidelines for green bond issuance in 2016.[167] In the same year, the Kingdom announced it would buy $100 million[168] in green bonds issued by the World Bank, which has been using this mechanism to help support loans for climate change mitigation projects in several countries. Morocco's green bonds tend to support a switch to cleaner energy, which aligns with SWM good practices.

The State is also working with the EIB on waste management and climate finance. EIB has announced new technical assistance for the municipality of Chefchaouen in 2023. With the goal of providing support through the Urban Climate Finance Gap Fund, the project aims to improve the management, treatment and recycling of organic waste in the region. The initiative is designed to improve the municipality's efforts to manage organic waste in a sustainable way and to enhance its contribution to climate change mitigation and environmental protection.[169]

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158 United Nations Environment Program (UNEP), *Country Data.* https://ozone.unep.org/all-ratifications. Accessed 24 July 2023.

159 Basel Convention, *Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.* https://t.ly/kQAcw. Accessed 24 July 2023.

160 United Nations Climate Change, *Morocco,* 2016, https://unfccc.int/node/61120. Accessed 24 July 2023.

161 *Ibid.*

162 NDC Partnership, *Morocco Submits Enhanced NDC, Raising Ambition to 45.5 Percent by 2030,* 25 June 2021, https://t.ly/lIKlj. Accessed 24 July 2023.

163 *Ibid.*

164 *Ibid.*

165 United Nations Climate Change, *NDC Registry.* https://t.ly/_Zxw1. Accessed 24 July 2023.

166 *Ibid.*

167 White & Case. https://www.whitecase.com/insights/recent-insights. Accessed 24 July 2023.

168 Oxford Business Group, *Morocco's green bonds supporting a switch to cleaner energy,* 2019, https://t.ly/f89Cu. Accessed 24 July 2023.

169 European Investment Bank (EIB), *Morocco: EIB global, through the City Climate Finance Gap Fund, supports waste management services in Chefchaouen,* 13 April 2023, https://t.ly/_VXSN. Accessed 1 August 2023.

# Casablanca

Population (2022)

**3.840.396**

GDP (2019)

**$36 billion**

Waste Production (tonnes/year)

**1.460.000**

Responsible Party: **Local Authorities**

Private Sector Presence: **Geocycle**

## Solid waste management (SWM) statistics and main challenges

In Morocco, despite innovations and strong commitment of the Government, there remains much scope for strengthening waste management practices. In line with its environmental and climate goals, Morocco has developed extensive institutional legislation to regulate and promote the improvement of waste collection and treatment systems. However, the political governance framework requires greater efficiency to create sustainable outcomes.

Waste sorting practices need to be strengthened in the country, as only a few factories make it possible to recycle a small portion of industrial waste. Recycling organic products seems to be increasing, however Morocco is far from ensuring the efficient recovery of its waste. With an annual growth rate of 3 percent and more than 5 million tonnes of solid waste generated throughout the country, the management of municipal solid waste in Morocco is in need of several improvements. These include the development of more adequate infrastructure and increased funding in areas outside the major cities. There are currently 300 unregulated open dump sites and approximately 3,500 waste pickers, 10 percent of whom are children who live on and around these open dump sites.[170] Implementing sustainable waste management practices will improve the well-being of these individuals, while mitigating the impact of unregulated waste on the environment.

According to the Ministry of Energy Transition and Sustainable Development, the household waste recycling rate in Morocco was only 6 percent in 2015 (the most recent reference year), equating to just 420,000 tonnes out of a total of 7 million tonnes annually.[171] This situation persists, despite a plethora of projects, including a national waste treatment programme which provided for a recycling rate of 20 percent in 2022 – a goal pushed back to 2030. While industrial waste is partly recycled (12 percent, predominantly comprised of plastic, paper/cardboard and metals), as elsewhere in the Maghreb, most household waste is burned. Much can be done to increase awareness and understanding among the Moroccan population of the serious health effects of unhygienic disposal.

The strategies currently being implemented are often undermined because they are based on European models that are not well-aligned with Moroccan habits. For example, in Morocco, nearly 80 percent of household waste is organic, compared to less than 30 percent in Europe.[172] These particularities point out that, in order to achieve several SDG goals by improving SWM, Morocco requires waste management practices suitable for its societal, economic and geographical structures.

## Major actors and good practices

The growing attractiveness of the Moroccan waste market is capturing the interest of major service companies who wish to invest in the sector and specialize in new areas. In 2016, the State created the Coalition for Waste Valorization (COVAD) to coordinate all the companies involved in the various waste treatment and circular economy sectors.[173] COVAD regularly organizes symposiums and workshops for private stakeholders and public decision-makers, to promote collaboration between the public and private sectors and minimize conflicts in projects.[174]

In the country, Averda and Geocycle Morocco are the main private actors in SWM. Geocycle Morocco is part of the international network of Geocycle companies specializing in waste management. A major player in Morocco since 2007, the company currently has four platforms for the pre-treatment of hazardous and non-hazardous waste.[175] In addition, Geocycle Morocco has embarked on the pre-treatment of household waste to produce local solid recovered fuel (SRF) within its first platform in Oum Azza, located near the Rabat landfill. [176]

The company invested 200 million dirhams in waste management between its creation in 2007 and 2019. The company operates the treatment of industrial waste, hazardous industrial waste, biomass and agricultural waste, and – since 2017 – the treatment of household waste. The company is the national

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170 WOIMA, *Drowning in Waste – Case Morocco.* https://t.ly/bpXQN. Accessed 24 July 2023.

171 Le Monde, *Au Maroc, malgré des innovations, le recyclage des déchets reste embryonnaire.* https://t.ly/cwy2J. Accessed 24 July 2023.

172 Africa News, *Swiss company helps recycle Morocco's organic waste,* 20 December, https://t.ly/UEj9X. Accessed 28 August 2023.

173 Climate Chance, *WASTE Moroccan society's uneven response to the proliferation of waste,* 2020, https://t.ly/u2FAs. Accessed 16 August 2023.

174 Oxford Business Group, *Morocco's green bonds supporting a switch to cleaner energy,* 2019. https://t.ly/NfNOZ. Accessed 24 July 2023.

175 Geocycle Maroc. https://t.ly/GKZWG. Accessed 24 July 2023.

176 Geocycle, *First Municipal Solid Waste pre-processing platforming Morocco,* 20 February 2018, https://t.ly/tQjpO. Accessed 28 August 2023.

leader in the treatment of industrial and household waste. It started its activities with the first hazardous waste treatment platform in El Gara, with an annual capacity of 40,000 tonnes, before opening another two platforms in 2015 in Tangier and Bouskoura. A third platform has been operational since 2017, with an investment of 61 million dirhams. It specializes in the treatment of household waste, with a reception capacity of 90,000 tonnes per year.[177]

The site is unique in Morocco – the first example of a group setting up a platform next to a landfill site, to sustainably treat household waste. Using a grinding and bio-drying system, it produces solid recovered fuel, an alternative to imported fossil fuel. This solution is beneficial in terms of SWM, because it extends the life cycle of landfills. In the meantime, Geocycle Morocco is continuing its investments in the other platforms, the group owning five pre-processing sites and six co-processing facilities.[178]

To meet demand, the Tangier platform, which specializes in non-hazardous industrial waste, needed to double its processing capacity of 10,000 tonnes per year, by the end of 2019.[179] Manufacturers in Morocco, particularly those in the Renault ecosystem, are becoming increasingly interested in recycling their waste. The waste treatment and recovery market in Morocco is yet to improve and Geocycle Morocco intends to take advantage of that. The group aims to double the quantities of waste treated by 2022 or 2023, to no less than 400,000 tonnes annually.[180]

The Municipality of Casablanca has dedicated 260 hectares for acquisition by private actors to house the treatment plant and sorting centre for household and similar waste in the metropolis. According to initial estimates, the project should require a budget of 4 billion dirhams (US$396 million).[181] The project will be conducted by the Local Development Company Casa Baia, which will launch a call for tenders. (In Morocco, local development companies are created at the initiative of local authorities, in the form of public limited companies, to carry out economic activities falling within the areas of competence of the municipality. They thus constitute real bodies for the execution of the projects of the municipality.)[182]

Through this new project, the city intends to radically change the methods used to date in waste management in Casablanca. The goal is to move towards a recovery of recyclable materials and only organic products will be disposed with landfilling. While the focus on landfilling organic products isn't the most optimal strategy, as organic waste can be treated through composting and anaerobic digestion, it represents a step in the right direction. Other waste – such as cardboard, paper and plastic – will be recycled. This is a more environment-friendly approach to limit soil pollution, as well as groundwater. After the acquisition of the land, construction work on the new unit should begin no later than 2023.[183]

Similar to other countries, international organizations play a crucial role in supporting Morocco's development of waste management systems. To address these challenges, the Government of Morocco has actively pursued partnerships and funding agreements with renowned institutions. One notable example is the collaboration with the Dutch Development Bank (FMO) and the European Investment Bank (EIB). Through funding agreements, the assistance of these institutions allows for the development and implementation of sustainable waste management projects and initiatives.[184]

Furthermore, Morocco has also formed a partnership with the World Bank to establish a comprehensive municipal waste management plan. This collaboration's initial aims included restoring around 80 landfill sites, improving waste pickup services and increasing recycling by 20 percent, all by the year 2020.[185] By working together, this partnership endeavours to improve waste collection, disposal, and recycling practices across the country.

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177 Mohamed Amine Hafidi, *200 millions de dirhams investis par Geocycle Maroc depuis 2007,* Le Matin, 30 June 2019, https://t.ly/9uilm. Accessed 24 July 2023.

178 *Ibid.*

179 *Ibid.*

180 Challenge, *Geocycle Maroc retrouve le chemin de la rentabilité,* 15 November 2019. https://t.ly/qP_ai. Accessed 28 August 2023

181 Benoit-Ivan Wansi, *MOROCCO: Casablanca obtains land for municipal waste treatment,* Afrik 21, 11 May 2022, https://t.ly/C7Z1e. Accessed 28 Augus 2023.

182 Par Zakaria Boulahya, *Tout savoir sur Casa Bay'a, la nouvelle SDL en charge de l'environnement à Casablanca,*Medias 24, 19 October 2018, https://t.ly/vieD2. Accessed 24 July 2023.

183 Mohamed Badrane, *Casablanca s'offre 260 hectares pour le traitement de ses déchets,* Aujourd Hui, 5 May 2022, https://t.ly/f30QT. Accessed 24 July 2023.

184 Oxford Business Community, *Modernisation of Morocco's waste-management infrastructure receives international support,* 2018, https://t.ly/-vBPb. Accessed 24 July 2023.

185 Bio Energy Consult, *Solid Waste Management in Morocco,* 7 February 2022, https://t.ly/39Wa9. Accessed 24 July 2023.

Snapshot

# Private sector led good practices

## State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

- **Landfill Recovery Centres (CEV)**

  Morocco is aiming to launch more landfill and recovery sites, increasing their overall waste management capacity.

- **Municipality of Casablanca/Casa Baia: ME**

  The municipality has dedicated 260 hectares of land for private actors to be used in housing the facilities for waste treatment, delegating the project to a local development company, and also the public limited company Casa Baia, further engaging the private sector.

## Private sector

- **Geocycle Morocco: Solid Recovered Fuel**

  A national leader in managing industrial and household waste, Geocycle has four major platforms for pre-treatment of hazardous and non-hazardous solid waste. Geocycle also utilizes household waste through waste treatment processes and generates solid recovered fuel.

- **Averda**

  Averda collects household waste from hundreds of thousands of homes and sweeps the streets to make sure they are litter-free – not just with state-of-the-art machines but with hard-working hands. This work extends to all kinds of places, including beaches, souqs and even a 21.1 km marathon course.

## Innovative policies

- **Integration of waste pickers**

  Involving vulnerable groups in the informal waste management sector improves both waste management and green employment opportunities.

- **Coalition for Waste Valorization (COVAD)**

  COVAD coordinates waste treatment and circular economy sectors, fostering collaboration among public and private stakeholders. Through symposiums and workshops, it promotes cooperation, minimizes conflicts and advances sustainable waste valorization.

## Available innovative financing mechanisms

- **AMMC: Green bonds**

  Morocco has developed a green framework with aims to mitigate the effects of climate change. Morocco's green bonds mainly support clean energy, in line with SWM good practices.

- **National Adaptation Plan**

  This inclusive framework was developed in conjunction with UNDP to support adaptation planning and priority actions.

- **City Climate Finance Gap Fund**

  The City Climate Finance Gap Fund is a climate action trust fund that provides early-stage project preparation support to cities in developing countries.

# THAILAND

Population

**69,8 million**

Urban (2022)

**53 %**

GDP

**$502 billion**

Per Capita

**$7.189**

## International climate agreements and Nationally Determined Contributions (NDCs)

Thailand has not ratified the Kigali Amendment yet. The country ratified the Basel Convention in 1997, the Kyoto Protocol in 2004 and the Paris Agreement in 2016. According to the country's updated NDC report (2021), waste management is one of its prioritized mitigation areas in terms of technology development. Thailand therefore aims at promoting waste-to-energy technologies and improving waste management technology, as well as relevant systems at subnational and local levels.[186]

## Green framework for green financing instruments

In 2018, IFC was the sole investor in a $60 million green bond issued by TMB Bank, a prominent bank in Thailand. The primary objective of this investment is to support the expansion of financing opportunities for private sector investments that help address climate change challenges. This milestone marks the first issuance of a green bond by a commercial bank in Thailand and is an important step in promoting sustainable finance and environmentally responsible investment in the country.[187]

Thailand developed a Sustainable Financing Framework in July 2020 to issue green, social and sustainability bonds and loans, and use the proceeds to finance existing and future government loans or expenditures. The Framework defines eligibility criteria in seven green areas: clean transportation; renewable energy; energy efficiency; sustainable water and wastewater management; sustainable management of living natural resources; terrestrial and aquatic biodiversity conservation; and green buildings. In 2022, the Government Housing Bank of Thailand took a significant step towards sustainable financing by issuing its first sustainability bonds. Proceeds from the sustainability bonds issued by the Housing Bank of Thailand will be used for both refinancing, and environmental and social projects.[188] Moreover, Thailand officially adopted the Green Taxonomy in July 2023. The Green Taxonomy provides a blueprint for a green future for the nation's business community, government and experts.[189]

The Government also supports PPP projects to attract the private sector and develop waste management. The Integrated Waste Management Project in Rayong Province and the Waste Management Project in Phuket are both PPP projects that help develop effective waste management in the country.[190]

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186 United Nations Climate Change, *NDC Registry.* https://t.ly/wKoyd. Accessed 24 July 2023.

187 International Finance Corporation (IFC), *TMB Issues Thailand's First Green Bond for $60 Million,* 7 June 2018, https://t.ly/w-Z6w. Accessed 1 August 2023.

188 Asia Development Bank (ADB), *Government Housing Bank of Thailand Issues First Sustainability Bond with ADB Support,* 9 December 2022, https://t.ly/0W1X0. Accessed 1 August 2023.

189 Climate Bonds Initiative (CBI), *Launch of the Thailand Green Taxonomy will accelerate the country's decarbonization drive,* 5 July 2023, https://t.ly/tFN1I. Accessed 1 August 2023.

190 Asia Development Bank (ADB), *Green Infrastructure Investment Opportunities: Thailand,* 2021, https://t.ly/ZmDQy. Accessed 1 August 2023.

# Bangkok

Population (2022)

**10.899.698**

GDP (2019)

**$146 billion**

Waste Production (tonnes/year)

**3.650.000**

Responsible Party: **Municipality**

Private Sector Presence: **N/A**

## Solid waste management (SWM) statistics and main challenges

Like the rest of the world, Thailand faces the issue of escalating waste production, particularly in the form of plastic waste. Bangkok faces significant waste management challenges, evident in the existence of open-air dumps in city centres, the absence of street litter bins, an impractical recycling system and excessive reliance on plastic grocery bags.

Up to 250,000 tonnes of plastic waste imported from other countries continues to flow into Thailand each year through the international plastic waste trade, despite the Thai Government's ban on four more single-use plastics in 2022.[191] In 2022, the total volume of solid waste in Thailand amounted to over 26 million metric tonnes.[192]

With more than 12 million individuals, Bangkok grapples with a staggering daily waste generation of around 10,000 tonnes. This is just a portion of the massive nationwide waste production, which amounts to nearly 27 million tonnes each year. Out of the approximately 4.85 million tonnes of solid waste generated annually in Bangkok, a mere 930,000 tonnes – equivalent to 19 percent – is effectively separated and recycled. This indicates a significant gap between the total waste produced and the amount that undergoes proper recycling and diversion from landfills.[193]

The excessive usage and production of plastic have recently garnered public attention, leading to initiatives aimed at combating and reducing plastic waste throughout the capital city. However, despite these efforts, the situation remains problematic. The Chao Phraya River continues to be one of the most polluted rivers globally, indicating the severity of the issue. Additionally, there is a lack of major recycling companies that provide widespread waste collection and organization of separated materials. Public initiatives to address the problem are rare and have proven ineffective thus far.[194]

In Thailand, 90 percent of the total waste in disposal sites are disposed of legally in landfills.[195] The Government's efforts to reduce the country's waste have encountered several challenges that have hindered progress. Firstly, there is a significant lack of integration between the public and private sectors in waste management. Many companies in the recycling business find it difficult to comply with government mandates such as quality standards and waste sorting and separation, further exacerbating waste management challenges. The production of plastics remains high, despite the Government's master plan to reduce production and consumption. Furthermore, citizens face difficulties in recycling if their apartments or workplaces do not have direct contracts with waste management companies.

Secondly, the absence of separate bins on the streets and limited waste reduction initiatives – primarily driven by expats – contribute to the problem. This lack of attention has resulted in the emergence of open-air dumps, roadside dumps and vacant lot dumps throughout the city. Bangkok is burdened with unmanaged landfills that have multiplied over the years, posing environmental hazards and threatening nearby residents.[196]

The third issue is limited storage capacity. Limited storage space in Bangkok poses a significant challenge to waste collectors and aggregators, in their collection and processing efforts. Waste businesses in the city are predominantly run by families who use their own homes and yards as storage areas for collecting and sorting waste. The availability of storage space directly affects the income-generating potential of waste workers, as it determines the amount of waste they can collect and sell. The collectors we spoke to reported that their storage facilities are constantly overflowing, forcing them to use the sidewalks as temporary sites. When storage space is completely exhausted, aggregators are often forced to sell the waste immediately, without the opportunity to properly sort it or maximize its value. Increasing storage capacity within Bangkok's waste management infrastructure is an essential step toward promoting more sustainable waste collection practices, improving the livelihoods of waste workers, mitigating

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191 Heinrich Böll Stiftung, *Thailand's Plastic Waste Conundrum.* https://t.ly/SzbUn. Accessed 25 July 2023.

192 Statista, *Volume of solid waste in Thailand from 2012 to 2022,* 2023, Chinda, Thanwadee, Natthida Leewattana and Nichanan Leeamnuayjaro. *The Study of Landfill Situations in Thailand,* School of Management Technology, Sirindhorn International Institute of Technology, Thammasat University, 2012, https://t.ly/b75yC. Accessed 28 August 2023.

193 Stockholm Environment Institute (SEI), *Living with trash: Bangkok's waste pickers and the recycling economy,* 3 December 2021, https://t.ly/UcYfR. Accessed 28 August 2023.

194 Woima, *Drowning in Waste – Case Bangkok, Thailand.* https://t.ly/BfSRG. Accessed 25 July 2023.

195 Chinda, Thanwadee, Natthida Leewattana and Nichanan Leeamnuayjaro, *The Study of Landfill Situations in Thailand,* School of Management Technology, Sirindhorn International Institute of Technology, Thammasat University, 2012, https://t.ly/wMJoU. Accessed 28 August 2023.

196 Woima, *Drowning in Waste – Case Bangkok, Thailand.* https://t.ly/3w2Cv. Accessed 25 July 2023.

environmental concerns and optimizing the overall value extracted from the waste stream.[197]

Lastly, waste pickers, who play a vital role in the circular economy, endure poverty, livelihood insecurity, health risks and social stigma in their daily work. They operate within the informal sector, selling recyclable waste to small or medium-sized waste dealers in Bangkok. These dealers then sell the waste either to larger dealers or recycling facilities. The challenging circumstances faced by waste pickers underscore the need for improved support, recognition and initiatives, to enhance their well-being and integration into the formal waste management system.[198]

## Major actors and good practices

In Thailand, the management of municipal solid waste (MSW) and industrial waste is organized by the Royal Thai Government, with distinct responsibilities assigned to the central government, regional governments and local governments. The central government plays a key role in developing and promoting regulations, policies and standards related to waste management. It sets the overall framework and guidelines for waste management practices in the country.

To address these waste issues, the Government adopted several policies.[199] The National Solid Waste Management Master Plan (2016–2021) contains four important measures: reduce waste generation and improve waste collection by applying the 3Rs (Reduce, Reuse and Recycle) waste management principle, and improve the efficiency of waste separation to reduce disposal of waste; increase waste recovery and disposal by introducing integrated technologies such as waste-to-energy systems; improve the legal framework surrounding waste management; and encourage public involvement by promoting education, awareness campaigns and capacity building. In an effort to systematically address the plastic waste predicament, the Government of Thailand introduced the Roadmap for Plastic Waste Management 2018–2030 in April 2019.[200] Moreover, they have pledged to develop a National Action Plan on Marine Plastic Debris, aligning with Sustainable Development Goal (SDG) 14, which aims to "conserve and sustainably use the oceans, seas, and marine resources."[201]

Regional governments serve as intermediaries between the central government and local governments. Their responsibilities include coordinating and facilitating communication and collaboration between the various levels of government. Local governments are entrusted with the task of waste management within their respective jurisdictions. However, they typically do not handle waste disposal directly.

Instead, they engage private companies that have been granted the right to manage waste by the Pollution Control Department. These private companies are contracted by local governments to carry out waste collection, transportation and disposal activities.[202] The private sector is also investing in waste management projects in Thailand. A good example of private sector involvement in waste management projects is SUEZ's investment to open its first recycling plant in Bangkok.[203]

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197 Stockholm Environment Institute (SEI), *Nothing to waste here: Five lessons about informal waste workers to improve urban waste systems,* 7 October 2022, https://t.ly/43v00. Accessed 25 July 2023.

198 Stockholm Environment Institute (SEI), *Living with trash: Bangkok's waste pickers and the recycling economy.* 3 December 2022, https://t.ly/qPj6d. Accessed 25 July 2023.

199 Climate Action Tracker, *Thailand.* https://t.ly/ag3oB. Accessed 25 July 2023.

200 The world Bank, *Plastic Waste Material Flow Analysis for Thailand.* https://t.ly/Bh5sh. Accessed 25 July 2023.

201 United Nations (UN). *Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development,* 2023, https://t.ly/S1FsH. Accessed 28 August 2023.

202 Michikazu Kojima, *Toward Regional Cooperation of Local Governments in ASEAN,* Ide-Jetro, 2019, https://t.ly/sGqWw. Accessed 25 July 2023.

203 SUEZ Group, *SUEZ Opens Its First Plastic Recycling Plant in Thailand Dedicated To Reversing Plastic Pollution Crisis In Asia*, 4 December 2020, https://t.ly/fFFev. Accessed 1 August 2023.

Snapshot

# Private sector led good practices

## State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

- **SUEZ Plastic Recycling Plant**

  This plant will convert 30,000 tonnes of Thailand's plastic packaging waste into high quality post-consumer recycled (PCR) plastic as a long-term solution to the plastic pollution crisis, producing high quality secondary materials for the plastics industry. The plant also has one of the highest water reuse rates for recycling plants in Thailand, avoiding 35,000 tonnes of greenhouse gas emissions annually, equivalent to planting 1.5 million trees.

## Private sector

- **SUEZ Group**

  Faced with growing environmental challenges, SUEZ has been working for more than 160 years to provide essential services that protect and improve the quality of life. SUEZ allows its customers to provide access to water and waste management services with resilient and innovative solutions.

## Innovative policies

- **The National SWM Master Plan**

  This plan aims to apply the 3R principle, improve efficiency, reduce disposal of waste, increase waste recovery rates, introduce WTE systems, improve the legal framework regarding waste management and encourage public involvement.

- **The Green Taxonomy**

  The taxonomy can be used to issue green bonds, green loans, label investment funds, calculate insurance ratios, collect statistics, implement special support measures and much more. All of this will require additional documentation and policy decisions, but the core of the new system is already in place.

## Available innovative financing mechanisms

- **Green bonds**

  The goal is to expand financing for private sector investments that help address climate change. This is the first green bond issued by a commercial bank in Thailand. The pioneering green bond will provide an alternative source of long-term green financing in the country.

- **Developed Sustainable Financing Framework**

  This framework was developed to issue green bonds for current or future government loans and expenditures, with only green-focused projects being eligible for funds.

- **Blended finance**

  This approach is designed to finance green projects, such as renewable energy and waste management projects.

- **Public Private Partnership (PPP)**

  These partnerships finance green projects in the country in collaboration with private sector investments.

# TUNISIA

Population

**11.867.000**

Urban (2022)

**70 %**

GDP

**$41 billion**

Per Capita

**$3.521**


## International climate agreements and Nationally Determined Contributions (NDCs)

Tunisia ratified the Basel Convention in 1996,[204] the Kyoto Protocol in 2003, the Paris Agreement in 2017[205] and the Kigali Amendment to the Montréal Protocol in 2021.[206] Waste management is one of the sectors listed in Tunisia's NDC report to mitigate environmental challenges, and the country aims at preserve soils, water resources and public health through a better management of solid waste.[207]

## Green framework for green financing instruments

Tunisia introduced a regulatory framework for green finance in 2019.[208] The Financial Market Council (CMF) has taken on the project and has distributed a guide for issuing green, socially responsible and sustainable bonds, which can take the form of sukuks, including green bonds which are used to finance projects relating to renewable energies, energy efficiency, sustainable waste and water management, sustainable land use, clean transport and adaptation to climate change, particularly infrastructure investment. Further to this, the CMF makes available socially responsible bonds whose proceeds must be exclusively oriented towards the (re)financing of projects with a positive social impact. Finally, there are sustainability bonds whose proceeds are used exclusively to (re)finance a combination of green and social projects. However, as of November 2021, no Tunisian company had issued the latter securities, which could attract institutional investors.[209]

Industrial polluters in Tunisia are numerous and in various sectors, such as the chemical industries and cement factories. The primary bond market, largely dominated by banks and financial institutions, can thus become more dynamic by attracting private sector companies, which could open up opportunities for SWM investments.

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[204] Basel Convention, *Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.* https://t.ly/3S4-s. Accessed 25 July 2023.

[205] United Nations Climate Change, *NDC Registry.* https://t.ly/4Gx7t. Accessed 25 July 2023.

[206] United Nations Environment Programme (UNEP), *Country Data.* https://ozone.unep.org/all-ratifications. Accessed 25 July 2023.

[207] *Ibid.*

[208] Managers, *Les premières obligations vertes tunisiennes se font toujours attendre,* 1 November 2021, https://t.ly/fstpe. Accessed 25 July 2023.

[209] *Ibid.*

# Tunis

Population (2022)

**2.439.404**

GDP (2020)

**$14 billion**

Waste Production (tonnes/year)

**657.000**

Responsible Party: **Municipality**

Private Sector Presence: **Many Small Companies**

## Solid waste management (SWM) statistics and main challenges

Tunisia produces more than 2.5 million tonnes of waste each year,[210] and a quarter of this amount is collected in the capital, Tunis. The country is experiencing an average increase in waste volume by 3 percent, with 0.8 kg produced per capita, per day in urban areas.[211] Biodegradable organic waste constitutes around 68 percent of the Municipal Solid Waste (MSW) stream. MSW collection covers 80 percent of urban areas but just 10 percent of rural areas. There are 10 controlled landfills with a capacity of 1,788,000 tonnes per year and four other semi-controlled landfills with a capacity of 62,000 tonnes per year. Five other discharges with a nominal capacity of 0.466 million tonnes per year are being built and five other controlled discharges with an average capacity of 0.433 million tonnes per year are being planned.[212] However, despite these systems, many municipal landfills do not meet sanitary standards and waste is often dumped in unauthorized areas. In addition to this, only 4–7 percent of MSW is composted and 4 percent recycled.[213]

Borj Chakir, the country's largest landfill, is on the southern outskirts of the capital Tunis. Opened in 1999, the site occupies 120 hectares of former agricultural land planted with olive trees and grains. The only controlled and regulated landfill in the Tunis region, Borj Chakir receives an estimated 3,000 tonnes of solid waste per day—well above the 44 tonnes per day allowed in EU landfills. But despite this substantial intake of waste, nearby communities are awash in plastic bags and their water is polluted by run-off.

While the country struggles to handle its own waste, it also imports European waste and dumps it in landfills and informal dump sites.[214] Almost 400 private companies are authorized by the Ministry of Environment to collect, transport and recycle plastics. There is also a small informal sector for recycling food packaging.

Tunisia faces various challenges that contribute to its growing waste management problem. In 2018, partisan disagreements in municipal councils hampered effective decision-making on waste management and local waste management initiatives. This continues to hinder the progress of waste management initiatives at the local level.

Secondly, municipalities may currently face challenges in managing the growing volume of waste due to resource and capacity constraints. The problem is exacerbated by inadequate funding from the central government. To overcome these hurdles, it is imperative to strengthen control structures by implementing stronger regulatory frameworks and enforcement measures. Equally crucial is the need to raise awareness of the critical importance of preserving public health and protecting the environment from pollution. By addressing these factors together, communities can pave the way for more effective waste management and a healthier, cleaner environment.

Additionally, waste pickers, known as *barbechas*, largely operate within the informal sector. They face low wages and poor working conditions, highlighting the need for better support and formal recognition of their contributions.[215]

Adopting a public private partnership (PPP) approach in waste management service delivery could create opportunities for investors to directly value and utilize sorted waste materials like plastic, paper and metal. This can generate employment, stimulate the economy and provide a solution to the Government's financial constraints. Furthermore, exploring waste-to-energy initiatives can present additional benefits. Overall, Tunisia requires a highly efficient and integrated waste management system that addresses these challenges and encompasses comprehensive solutions for sustainable waste management, resource recovery and environmental preservation.

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210 Eco Mena, *Solid Waste Management in Tunisia,* 29 May 2021, https://t.ly/QTydn. Accessed 25 July 2023.

211 *Ibid.*

212 Deutsche Gesellschasft für İnternationale Zusammenarbeit (GIZ), *Report On The Solıd Waste Management In Tunısıa,* 2014. https://t.ly/Yh3qE. Accessed 28 August 2023.

213 Africa News, *Plastic waste becomes a burden in Tunisia,* 19 December 2021, https://t.ly/Ffs4b. Accessed 28 August 2023

214 The National News, *Rubbish conundrum: Tunisia cannot handle its own waste, so why is it importing Europe's?,* 1 November 2021, https://t.ly/3bjaT. Accessed 28 August 2023.

215 Malak Altaeb, *Solving Tunisia's growing waste management problem,* Middle East Institute, 31 March 2022, https://t.ly/D2CqS. Accessed 25 July 2023.

## Major actors and good practices

The main establishment responsible for the SWM is the National Waste Management Agency (ANGed), a non-administrative Tunisian public establishment placed under the supervision of the Ministry of the Environment. The ANGed works mainly to promote the quality of life of citizens and to improve environmental protection through the implementation of integrated and sustainable waste management. The mission and attributions of the agency also cover the development and reinforcement of adequate infrastructure; assistance to municipalities and industrialists; the launch of collection, recycling and recovery channels; development of an enabling framework for private sector participation; and job creation. However, it is difficult to say that Tunisia has an efficient and integrated SWM system.

Besides governmental organizations, the waste management sector also sees active participation from private sector entities. Internationally recognized companies like ECOTI[216] and KGS Group[217] play a significant role in waste management processes within the country. Despite the presence of private sector players, their contribution primarily revolves around 4.5 percent of waste collection and transportation through agreements with local authorities. However, they hold full responsibility – operating at 100 percent – for the management of transfer stations and landfills through contracts established with ANGed.[218]

Tunisia collaborates with international organizations to enhance its waste management capabilities. Within this framework, the Tunisian Government has partnered with the World Bank to secure a loan of EUR 113.6 million. This funding will support the Sanitation PPP Support Project, designed to enhance the quality of wastewater management services in specific regions across the country.[219]

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[216] ECOTI. https://www.ecoti.com.tn/notre-groupe/. Accessed 2 August 2023.

[217] KGS Group. http://www.group-kgs.com/. Accessed 2 August 2023.

[218] Malak Altaeb, *Solving Tunisia's growing waste management problem,* Middle East Institute, 31 March 2022, https://t.ly/0xAUI. Accessed 25 July 2023.

[219] World Bank, *World Bank Provides €113.6 Million to Improve Wastewater Management Services in Tunisia through PPP Contracts,* 6 June 2023, https://t.ly/MaEzk. Accessed 2 August 2023.

Snapshot

# Private sector led good practices

## State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

- **ANGed: Integrated Sustainable Waste Management (SOE)**

  This agency works to improve environmental protection through implementing an integrated and sustainable waste management plan. ANGed also improves infrastructure, and assists municipalities and industrialists with their waste management.

## Private sector

- **KGS Group**

  KGS Group is a dynamic, privately owned group of companies established in 2009, with over a decade of experience in providing innovative solutions to clients across Europe, Africa and the Middle East. Each company provides focused and specialized solutions to meet a specific need in its respective field, including ecological and environmental services, industrial maintenance, construction, logistics and consulting.

- **ECOTI**

  ECOTI is a leading environmental and waste management group in Italy and abroad. The DECO Group specializes in the design, construction and management of waste treatment plants and waste recycling.

## Innovative policies

- **Strong commitment to South-South and Triangular Cooperation (SSTC)**

  Tunisia carried out many projects within the framework of the SSTC, receiving support from various multilateral institutions. These have provided their expertise and technical assistance to Arab and African countries in a multitude of different areas.

## Available innovative financing mechanisms

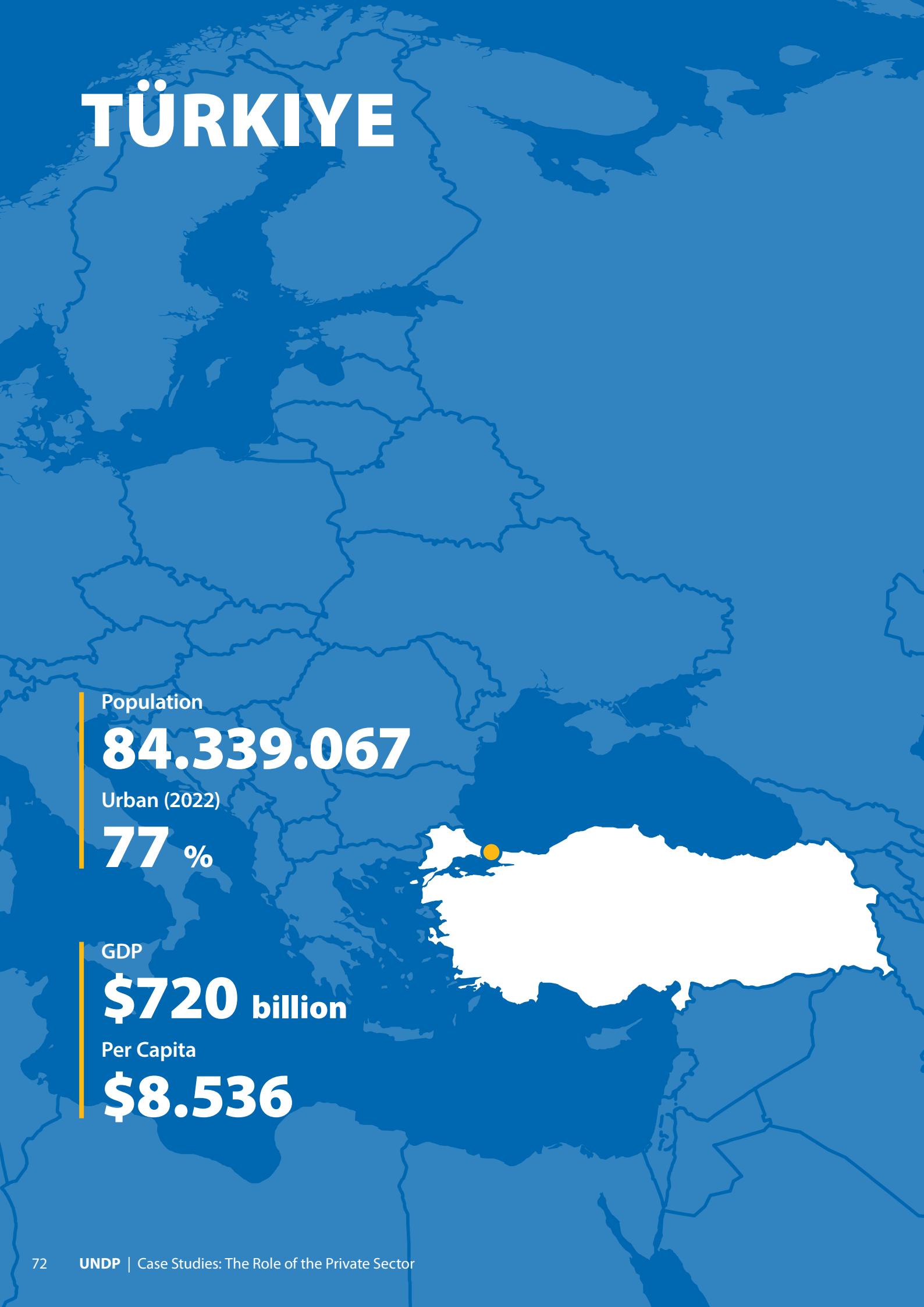
- **CMF: Green Bond Framework**

  This has developed and promoted the issuance of green, socially responsible and sustainable bonds.

- **Public Private Partnership (PPP)**

  The activities of the Tunisia Sanitation PPP Support Project will be structured around three components: wastewater management, infrastructure rehabilitation and retrofitting.

# TÜRKIYE



Population

**84.339.067**

Urban (2022)

**77 %**

GDP

**$720 billion**

Per Capita

**$8.536**

## International climate agreements and Nationally Determined Contributions (NDCs)

Türkiye ratified the Basel Convention in 1994,[220] the Kyoto Protocol in 2009[221] and signed the Paris Agreement in 2021.[222] The country ratified the Kigali Amendment to the Montréal Protocol in 2021.[223] Türkiye submitted its 2015 Intended Nationally Determined Contributions (INDC) as its NDC in 2021; however, the country will need to submit an updated NDC target to be in line with the Paris Agreement. This first NDC leaves much room for improvement, as it allows GHG emissions to essentially double, compared to current levels.[224] The country's NDC outlines a number of solid waste management targets. These targets include actions such as diverting solid waste to controlled landfills and adopting strategies such as reuse, recycling and other recovery methods to obtain secondary raw materials for energy production or waste reduction. In addition to this, the NDC emphasizes energy recovery from waste through processes such as material recycling, bio-drying, bio-methanization and composting, as well as advanced thermal processes or incineration. Another priority is the recovery of methane gas from managed and unmanaged landfills and the use of industrial waste in other sectors as alternative raw materials or fuels, following an industrial symbiosis model. The NDC also highlights the importance of research into the reuse of waste from livestock and poultry farms, as well as the remediation of unmanaged landfills and the mandate to divert waste to managed landfills.[225]

## Green framework for green financing instruments

The first green/sustainable bond in Türkiye was issued by the Industrial Development Bank of Türkiye (TSKB) in 2016 at $300 million.[226] The proceeds are used for private sector investments in renewable energy, energy efficiency and other activities that reduce greenhouse gas emissions. In 2017, TSKB issued the world's first subordinated sustainable bond.[227] In December 2019, Turkish bank Garanti BBVA issued a five-year US$50 million green bond to support renewable energy and climate-friendly projects. Garanti BBVA also issued a US$50 million green bond in 2020, and provides financing for renewables in Türkiye.[228] Yapı Kredi Bank issued its first green bond, a five-year US$50 million instrument, in January 2020.[229] İşbank issued its debut 10-year US$50 million green bond (also the first 100 percent green bond in Türkiye) in August 2019, followed by a new five-year US$13 million green bond in February 2021.[230]

Akbank issued its first green bond, a four-year US$50 million instrument, during the COVID-19 pandemic.[231] TSKB further issued a new sustainable bond worth US$350 million at the beginning of 2021.[232] In 2017, Garanti BBVA signed an agreement with the International Finance Corporation (IFC) to issue US$150 million in mortgage-backed securities over a period of five years, which primarily finances environmentally-friendly projects, mostly focusing on energy-efficient building, under the category of Green Mortgages.[233] In addition, a Green Mortgage for €75 million (TL 313 million) was agreed with the European Bank for Reconstruction and Development (EBRD) in August 2021.

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220 Basel Convention, *Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.* https://t.ly/i5SVd. Accessed 25 July 2023.

221 United Nations Climate Change, *Türkiye.* https://unfccc.int/node/61221. Accessed 24 July 2023.

222 *Ibid.*

223 United Nations Environment Programme (UNEP), *Country Data.* https://unfccc.int/node/61221. Accessed 25 July 2023.

224 Climate Action Tracker, *Türkiye.* https://climateactiontracker.org/countries/turkey/. Accessed 25 July 2023.

225 United Nations Climate Change, *NDC Registry.* https://unfccc.int/NDCREG. Accessed 25 July 2023.

226 World Bank, *Unlocking Green Finance in Turkey,* February 2022, https://t.ly/rz-Ud. Accessed 25 July 2023.

227 TSKP, *Our Sustainability Journay,* 2023, https://t.ly/9vV0C. Accessed 28 August.

228 Garanti Bankası, *Climate Change 2021,* 2021, https://t.ly/ev7-Y. Accessed 28 August 2023.

229 Yapı Kredi, *Green Bond IR Release,* 2020, https://t.ly/v8PuE. Accessed 28 August 2023.

230 World Bank, *Unlocking Green Finance in Turkey,* February 2022, https://t.ly/J42f0. Accessed 25 July 2023.

231 Akbank, *Green Bond,* 2020, https://t.ly/qSn31. Accessed 28 August 2023.

232 TSKP, *Our Sustainability Journay,* 2023, https://t.ly/Iox_4. Accessed 28 August.

233 Garanti Bank, *İçsel Bilgilere İlişkin Özel Durum Açiklama Formu,* 2017, https://t.ly/81rBS. Accessed 28 August 2023

# Istanbul

Population (2023)
**15.848.000**

GDP (2021)
**$82 billion**

Waste Production (tonnes/year)
**6.570.000**

Responsible Party: **Municipalities**

Private Sector Presence: **İnteraktif Çevre**

A green transformation financing package of 20 billion TL[234] prepared by Ilbank, in cooperation with the World Bank and Japan International Cooperation Agency (JICA), was also put into service by municipalities for use in the first half of 2022. As SWM investments are eligible for green bonds, this instrument is a great opportunity to finance SDG-aligned SWM projects.

The Green Deal Action Plan/Medium Term Program (MTP) aims to power Türkiye's transition to a more sustainable, greener economy in line with the goal of making Europe the first climate neutral continent by 2050. The MTP includes a Green Transition section that emphasizes the implementation of targets and actions included in the Green Deal Action Plan. The MTP consists of policy changes focusing on supporting investments, which increase efficiency and aim at limiting the increase in greenhouse gas emissions.

Emlak Katilim Bank has added an innovative sukuk model to the market and has realized the issuance of Türkiye's first green sukuk, based on the labour-capital partnership through the Special Fund Pool Participation Account. The bank entered the sukuk market in April 2020 and has issued more than 15 billion TL of sukuk since. With its latest issuance of green sukuk, Emlak Katilim Bank has made an annual contribution of approximately 2000 tonnes reduction in carbon emissions.[235]

The Government collaborates with international organizations for Public Private Partnership (PPP) ventures aimed at funding waste management initiatives. In this context, a partnership between France's Suez Group and Turkish waste management firm Altas has successfully obtained a €9 million loan for a circular economy-driven project valued at €15 million. The project focuses on establishing an integrated solid waste management system in Türkiye's Canakkale province through a PPP arrangement.[236]

The Government of Türkiye, together with UNDP and UNDP Istanbul International Centre for Private Sector in Development, developed an SDG Investor Map where the waste sector is clearly addressed as an SDG aligned investment opportunity.

## SDG Investor Platform

On the SDG Investor Platform, there are currently two private sector opportunities related to SWM for Türkiye. The first is a medium-term project (5–10 years) that consists of investing in the building and operating of recovery facilities for solid waste, with a market size of $1 billion.[237]

The second is a short-term waste collection project (0–5 years) that consists of investments in building and operating waste collection and/or sorting facilities, with the same market size.[238]

[234] Hürriyet, *Yeşil dönüşüm için belediyelere 20 milyar TL*, 22 February 2022, https://t.ly/ii0m5. Accessed 25 July 2023.

[235] Anadolu Agency, *Emlak Katılım'dan Türkiye'nin "ilk yeşil sukuk" ihracı*, 11 November 2021, https://t.ly/Gnc6D. Accessed 25 July 2023.

[236] Balkan Green Energy News, *Turkish circular economy-based solid waste PPP secures EUR 9 million loan*, 5 June 2019, https://t.ly/--I3r. Accessed 2 August 2023.

[237] United Nations Development Programme (UNDP), *Recovery Facilities for Solid Waste.* https://t.ly/kCP6u. Accessed 25 July 2023.

[238] United Nations Development Programme (UNDP), *Waste Collection and/or Sorting Facilities.* https://t.ly/UWMzT. Accessed 25 July 2023.

## Solid waste management (SWM) statistics and main challenges

Despite strong public initiatives to improve SWM practices in Türkiye, there is considerable scope for improvement in terms of good practices. The country generates 28,858,880 tonnes of solid municipal waste per year, with a waste collection coverage rate of 77 percent.[239] However, its waste disposal rate is just 69 percent.[240] In addition to this, uncovered landfills are potential sources of toxic waste and microbial diseases.

The economic tools to diminish pollution need to be strengthened, and financial sources for investments could be boosted. Additionally, illegal dumping could be reduced by bolstering capacity for the treatment and disposal of hazardous waste. Recycling rates are low due to the lack of technical facilities, with limited funding and reporting available. The recycling sector in Türkiye also suffers from low environmental consciousness, on both public and industrial levels. In addition to this, Türkiye is the destination for European waste exporters. In 2019, the country took in 11.4 million tonnes of waste from EU countries,[241] three times more than in 2004, according to Eurostat.

However, there are also economic interests that make the country a last-resort plastic waste-taker for Europe. Türkiye imported about 600,000 tonnes of plastic waste in 2019.[242] Given that Türkiye lacks good practice in dealing with its own recycling, this compounds SWM challenges in the country. In a 2020 OECD report, Türkiye ranked lowest among member countries in terms of its overall waste-recovery rate. According to the Turkish Statistics Institution, slightly over 12 percent of the country's municipal waste was recovered in 2018.[243]

Developing good waste management practices in Türkiye will require a new approach to waste separation. Commonly, in Türkiye, household waste is collected in a single bin. Private waste collectors facilitate sorting by recovering recyclable waste from the bins. They then sell the materials to recycling facilities. These sorters are among the lowest-earning workers in the country. Introducing good waste separation practices would improve their labour conditions.

This information on SWM in Türkiye shows that despite solid public initiatives, the country still needs public consciousness and adequate technical capacities to improve SWM practices. Türkiye therefore presents good practices for other countries, while also remaining in need of more effective solutions.

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239 Waste Atlas, *Turkey.* https://t.ly/23jlx, Accessed 25 July 2023.

240 *Ibid.*

241 Uğurtaş, Selin, *Why Turkey became Europe's garbage dump,* Politico, 18 September 2020, https://t.ly/tjctU. Accessed 25 July 2023.

242 *Ibid.*

243 *Ibid.*

## Major actors and good practices

In Türkiye, municipal waste is the responsibility of municipalities, as a regional management approach by the Ministry of Environment and Urbanization. The country's municipalities union is implementing municipal waste management projects through mutual cooperation. Ongoing initiatives towards improving the municipal solid waste management in Türkiye aim to establish a waste management system that conforms to EU legislation, covering the establishment of necessary waste treatment facilities and transfer stations, reducing the amount of waste, ensuring recycling and reuse, and reducing waste transportation costs. Urban waste is collected by the municipalities on a scheduled basis, as a regional management activity. The common method of waste disposal in the country is landfilling. The metropolitan municipalities and other municipalities are responsible for all stages of waste services.

The leading private sector actor in SWM in Türkiye is Istanbul Environment Management Industry and Trade Company (ISTAC Inc.), which is a premier waste management company. In 1994, ISTAC Inc. was established as a municipal corporation in Istanbul. The company was the first landfill operator and quickly became one of Türkiye's largest recycling, waste services and disposal companies. By focusing on high-quality public services, ISWM practices and environmental research and development, ISTAC Inc. holds a unique reputation for environmental management. ISTAC Inc., whose headquarters are located in Istanbul, has more than 40 operation units[244] and it employs over 4,000 personnel.[245] ISTAC's mission is to provide solutions to ensure zero negative environmental impact for a more habitable environment and to raise environmental awareness.

Another private sector actor engaging in SWM in Türkiye is İnteraktif Çevre. This consultancy was established in December 2015 as a joint initiative between Kibar Group and The Heritage Group, the latter of which has been operating in the USA since 1930 and offers solutions in waste management, zero waste consultancy and environmental consultancy.[246] İnteraktif Çevre started to operate in June 2016. It provides a comprehensive total waste management consultancy to industrial facilities, develops competitive solutions in this area and supports its customers in obtaining added value from waste. Enabling its customers to report their waste online, İnteraktif Çevre acts as a consultancy firm to minimize the risks in the field of SWM and to ensure environmental services. In line with the zero-waste approach and sustainable development goals, the company also provides training and inspection services for customers, to implement efficient waste management systems.

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[244] Istanbul Environment Management Industry and Trade Company (ISTAC). https://t.ly/uAVY0. Accessed 24 July 2023.

[245] *Ibid.*

[246] Kibar Group, https://www.kibar.com/en/, Accessed 25 July 2023.

The widest public initiative related to SWM is the Zero Waste Project. It was established in Türkiye in 2017 to reduce waste by recycling products and repurposing hazardous waste. The project added $2.3 billion[247] to the Turkish economy, due to the material saved from the reduction of waste. It also works to improve awareness of recycling processes among citizens, by implementing separate recycling bins in cities to sort different types of waste. In the same context, the Government supports farmers in maximizing their profits through recycling agricultural waste. Another goal of the project is to raise the recycling rate to 35 percent in the next two years. This will result in the employment of an additional 100,000 people in recycling and an annual income of $2.7 billion.[248]

Under the supervision of the Ministry of Environment and Urban Planning, the Zero Waste Project aims to expand across the entire country by 2023. Another aspect of the project is education within the same framework, to encourage communities to participate in recycling. An education programme was launched in schools to inform children of the importance of waste reduction. In addition to reducing waste from food and material, an initiative was created to decrease waste in the water. The Zero Waste Blue programme launched in 2019 as an annex of the Zero Waste Project in Türkiye. The programme aims to diminish waste in the seas.

[247] TSKP, *Green Transformation of Turkish Industry,* 24 November 2021, https://t.ly/1fFAp. Accessed 25 July 2023.

[248] The Borgen Project, *The Zero Waste Project in Turkey,* 13 May 2021, https://t.ly/T3xmR. Accessed 25 July 2023.

Snapshot

# Private sector led good practices

## State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

**ISTAC Inc.:**

ISTAC Inc. is the first landfill operator in Istanbul and one of the largest recycling, waste services and disposal companies of Türkiye. It provides high-quality public services, and integrated and sustainable waste management while continuously conducting environmental research and development.

## Private sector

**İnteraktif Çevre (zero waste management consulting)**

İnteraktif Çevre provides consultancy services on various areas such as waste management, zero waste consultancy and environmental consultancy. İnteraktif Çevre enables industrial companies to gain added value from their waste generation, while remaining environmentally friendly.

**Integrated Waste Management System**

EBRD, Suez and Altas secured a 29-year concession for circular economy waste services in Canakkale, Cardak, Kepez, Lapseki and Umurbey.

## Innovative policies

**Zero Waste Project/Zero Blue programme**

This is the widest public initiative regarding solid waste management in Türkiye. The project aims to increase recycling and repurposing hazardous waste materials and raise consciousness among the public for waste management.

## Available innovative financing mechanisms

**Green bonds**

Akbank, Yapi Kredi Bank and Garanti Bank issued their own green bonds to finance green projects.

**Sustainable bonds**

In 2017, TSKP issued sustainable bonds for using private sector investments in renewable energy, energy efficiency, and other activities that reduce greenhouse gas emissions.

**Green Deal Action Plan/Medium Term Program (MTP)**

- This action plan aims to power Türkiye's transition to a more sustainable, greener economy in line with the goal of making Europe the first climate neutral continent by 2050.
- MTP includes a Green Transition section that emphasizes the implementation of targets and actions in the Green Deal Action Plan. The MTP consists of policy changes focusing on supporting investments, which increase efficiency and aim at limiting the increase in greenhouse gas emissions.

**First green sukuk issued**

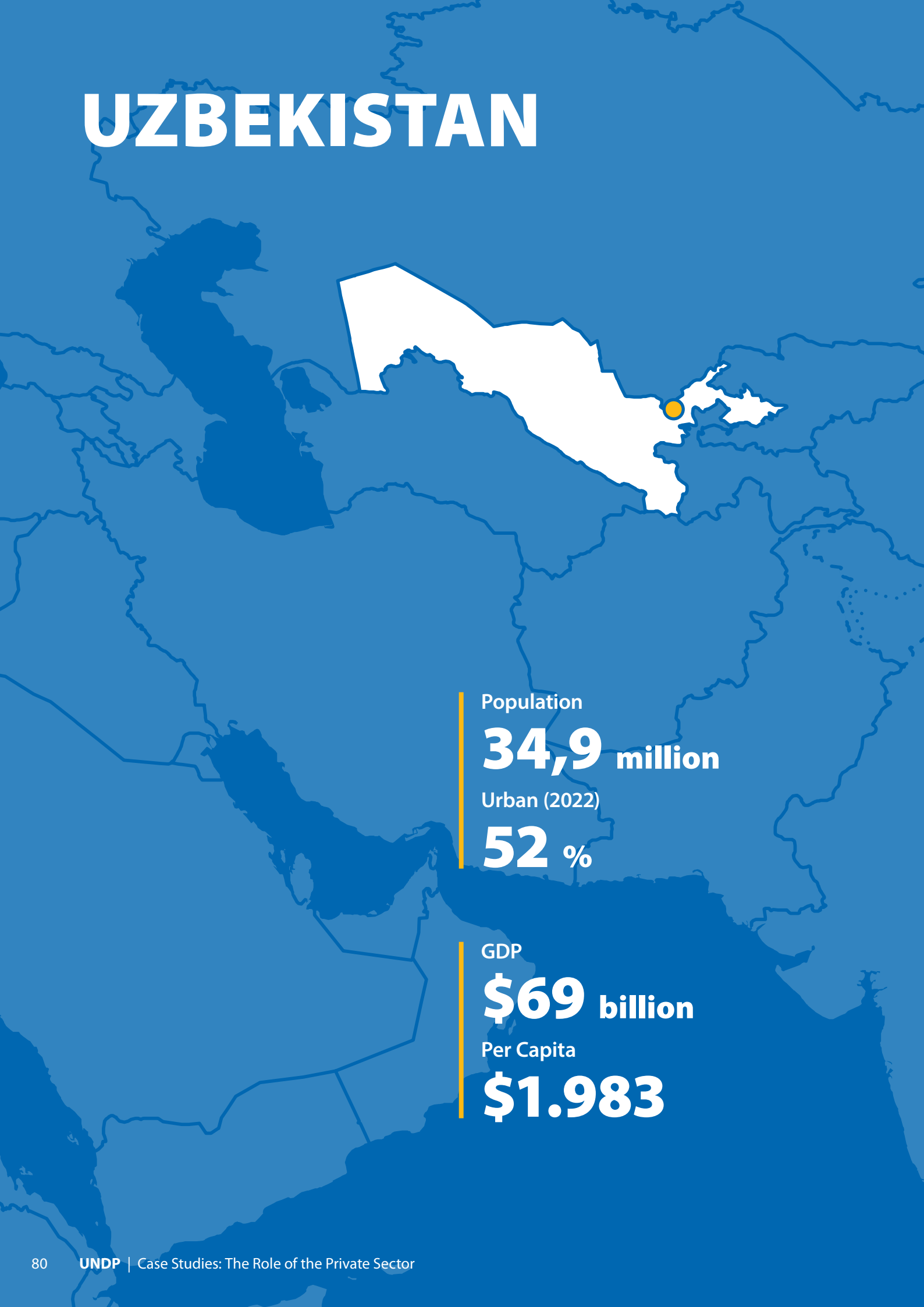
Emlak Katilim Bank has added innovative sukuk models to the market, in accordance with the principles of participation finance, and has realized the issuance of Türkiye's first green sukuk, based on labour-capital partnership through the Private Fund Pool Participation Account.

**Ilbank/World Bank/JICA: 20 billion TL Green Transformation Package**

**Green Mortgage**

Garanti BBVA has entered into a partnership with the International Finance Corporation (IFC) to initiate the issuance of mortgage-backed securities spanning a period of five years. These securities will predominantly fund projects aligned with environmentally conscious initiatives, with a specific emphasis on energy-efficient construction falling under the Green Mortgages classification.

# UZBEKISTAN



Population

**34,9 million**

Urban (2022)

**52 %**

GDP

**$69 billion**

Per Capita

**$1.983**

## International climate agreements and Nationally Determined Contributions (NDCs)

Uzbekistan ratified the Basel Convention in 1996, the Kyoto Protocol in 1999, the Paris Agreement in 2018 and the Montréal Protocol in 1993. The Republic of Uzbekistan set a target of reducing specific greenhouse gas emissions per unit of GDP by 35 percent below 2010 levels by 2030.[249] This is an increased reduction compared to the first NDC, which included a target of 10 percent below 2010 levels. The revised NDC also strengthens adaptation measures, particularly in agriculture.[250] Uzbekistan is working to align its NDC with its Strategy for Transition to Green Economy by 2030.[251]

## Green framework for green financing instruments

Uzbekistan is yet to develop a green framework. However, the UNDP is currently working with the Uzbek Government on establishing an integrated financial framework for sustainable development in Uzbekistan. The Joint Programme (JP) entitled Establishment of an Integrated National Financing Framework for Sustainable Development in Uzbekistan was implemented by UNDP, UNICEF, WHO and UNODC. The goal of the JP is to help the Government of Uzbekistan strengthen the overall financing framework for its national development strategies and public finance management.[252]

Once the JP is completed, the Government will have a long-term integrated planning/financing framework for climate change and environment protection; policy guidelines to mobilize selected alternative financing solutions such as green bonds/sukuk; and a national mechanism to channel confiscated and recovered proceeds of crime towards the SDGs.[253]

A pre-feasibility study for the issuance of green sukuk in the Republic of Uzbekistan has been published by the UNDP in conjunction with the Uzbek Government, Capital Market Development Agency of the Republic of Uzbekistan and the Islamic Development Bank (ISDB). The study aimed to explore the opportunities and challenges for green sukuk projects and allowed for a pre-feasibility analysis for green sukuk projects. The UNDP, Capital Market Development Agency of the Republic of Uzbekistan, Islamic Development Bank and the Istanbul International Centre for Private Sector in Development (ICPSD) conducted the study.[254]

In July 2021, Uzbekistan achieved a notable milestone by issuing a $235 million sovereign SDG Bond. This marked the first instance in the region and the second globally. The bond effectively channelled funds from international investors into public projects aligned with SDGs across seven key domains: Education (SDG 4), Water Management (SDG 6), Health (SDG 3), Green Transport (SDG 11), Pollution Control (SDG 11), Natural Resources Management (SDG 15) and Green Energy (SDG 7).[255]

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249 United Nations Development Programme (UNDP), *Uzbekistan*. https://t.ly/qBEk5. Accessed 25 July 2023.

250 *Ibid.*

251 *Ibid.*

252 United Nations Development Programme (UNDP), *Establishment of an Integrated National Financing Framework for Sustainable Development in Uzbekistan.* https://t.ly/ET5bz. Accessed 25 July 2023.

253 *Ibid.*

254 Istanbul International Centre for Private Sector in Development (ICPSD), *Pre-Feasibility Study for Green Sukuk Issuance in the Republic of Uzbekistan is published,* 16 April 2021, https://t.ly/6QrbT. Accessed 25 July 2023.

255 United Nations Development Programme (UNDP), *Uzbekistan releases its first SDG Bond Allocation and Impact Report,* 17 November 2022, https://t.ly/0IcJd. Accessed 2 August 2023.

# Tashkent

Population (2022)

**2.574.000**

GDP (2017)

**UZS 23.200.900**

Waste Production (tonnes/year)

**500.000**

Responsible Party: **Local Council**

Private Sector Presence: **Maxsustrans**

## SWM statistics and main challenges

Uzbekistan generates over 12,000 tonnes of municipal solid waste (MSW) daily, equivalent to over 4 million tonnes in a year.[256] The capital, Tashkent, with its 2.5 million population, currently produces over 500,000 tonnes annually.[257] Uzbekistan is continuing to produce more than 7 million tonnes of waste each year. Only 19 percent of this is treated and adequate waste management services are not yet available in all of Uzbekistan's cities. Authorities are continuing their efforts in line with the Paris Agreement. They also support the national SWM strategy, which is one of the priorities for Uzbekistan, where less than half the population benefits from modern waste management services.[258] In particular, the Horezm region, with a population of 1.7 million, and Karakalpakstan, which occupies one-third of Uzbekistan's territory, are the main regions where waste management infrastructure needs to be developed.[259]

In April 2019, the President of Uzbekistan approved an SWM strategy for the period of 2019–2028, with the goal of an effective waste management system. It aims to achieve this through sectoral reforms, including fostering sector dialogue, reforming policy, enacting legislation, reorganizing and strengthening sector institutions, investing in physical infrastructure, and promoting private sector creation of MEs and SOEs, such as Mahsustrans and *toza hududs*. With the support of agencies such as Asian Development Bank (ADB) and EBRD, Uzbekistan can further develop its waste management efforts.[260]

## Major actors and good practices

One of the leading examples of major actors in waste management is the company Mahsustrans. To ensure proper sanitation and waste management services, the municipality *khokimiyat* of Tashkent manages the state-owned enterprise Mahsustrans in Uzbekistan. The enterprise includes 12 district branches of Tashkent, a branch of Maxsustrans Supply Service and a branch of "Centralized Freight". Initially named Spetstrans, Mahsustrans was established following the decision of the Executive Committee of the Tashkent City Council of People's Deputies on 6 December 1988, "on changes in the management structure of the Main Department of Landscaping."[261]

The establishment is entrusted with the targeted collection and removal of household waste from enterprises and organizations, industrial processing and waste disposal. Mahsustrans has established contracts with more than 378,400 agents and 21,252 businesses, organizations, housing and communal services companies and homeowners' partnerships.[262]

Another organization in the waste management sector is the SOE Beautification Department of Tashkent City. The Cabinet of Ministers of Uzbekistan reached the resolution that the department is responsible for "sanitary cleaning objects of beautification (sweeping, watering, cleaning, dust control, snow removal, anti-icing, mechanical cleaning of irrigation facilities management and flushing streets) with seasonal requirements." The department and its 11 district branches across Tashkent provide sanitation services and are partially involved in the removal and disposal of waste from the main streets in the city. The department is obliged to work alongside Mahsustrans, according to the regulations set by the Cabinet of Ministers and under the budget of the Tashkent City local government.[263]

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256 Livable Cities, *Tashkent solid waste management,* July 2017, https://t.ly/9fzq9. Accessed 25 July 2023.

257 *Ibid.*

258 European Bank for Reconstruction and Development (EBRD), *EBRD improves solid waste management in western Uzbekistan,* 28 March 2022, https://t.ly/JJUeY. Accessed 25 July 2023.

259 *Ibid.*

260 Asia Development Bank (ADB), *Proposed Loan Republic of Uzbekistan: Sustainable Solid-Waste Management Project,* March 2020, https://t.ly/LDRMI. Accessed 25 July 2023.

261 Mahsustrans, *About us,* 2023, https://t.ly/07YBu. Accessed 28 August 2023.

262 Haydarov, Husan, *Overcoming Waste Management Inefficiencies: A Comparative Case Study Between Seoul Metropolitan City, Korea With Tashkent, Uzbekistan,* 2013, KDI School of Public Policy and Management, MA Thesis. https://t.ly/tHL07. Accessed 25 July 2023.

263 *Ibid.*

*Toza hududs* (state unitary enterprises) are the regional companies responsible for SWM in the Horezm and Karakalpakstan regions. The Minister of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan and the Republican Association of Specialized Enterprises for Sanitary Cleaning were established to improve the SWM systems and to build the capacity of SCEEP association, and *toza hududs*. Each *toza hudud* manages the solid waste system and collects fees for its services in its respective region.

The solid waste collection fees are set to return the full cost of the system's installations in approximately 10 years. The Republican Association of Specialized Enterprises for Sanitary Cleaning was established in October 2018 to support *toza hududs* in organizational matters, technical measures for operation and maintenance, monitoring and analysis of collection services, and introducing technology for SWM. Both *toza hududs* and the association are under SCEEP and are 100 percent government owned.[264]

Uzbekistan is also embarking on a transformation of its SWM system guided by the principles of Zero Waste, as outlined in a presidential decree dated 31 May 2023. The decree's objective is to enhance the country's ecological and environmental safeguards by implementing a system that involves distinct collection and disposal methods for various categories of household waste. The decree outlines a shift towards the segregation and appropriate disposal of household waste, based on its specific categories. In addition, the decree introduces a circular economy approach, emphasizing increased recycling and efficient incineration to minimize reliance on landfills for waste management.[265]

Uzbekistan is also working with international organizations to develop its waste management capacity. The EBRD is addressing priority environmental issues in Western Uzbekistan by providing up to US$120 million in long-term sovereign loans to toza hududs.[266] In addition to its collaboration with the EBRD, Uzbekistan is also working with the World Bank to enhance its waste management capacity. Specifically, Uzbekistan is cooperating with the World Bank on the Tashkent[267] and Bukhara[268] Solid Waste Management Projects.

These projects aim to improve the technical, financial and institutional aspects of waste management in the respective cities of Tashkent and Bukhara. The partnership with the World Bank will provide Uzbekistan with expertise, resources and support to develop sustainable waste management practices.

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[264] Asia Development Bank (ADB), *Sustainable Solid-Waste Management Project: Report and Recommendation of the President,* 11 January 2021, https://t.ly/FFPwP. Accessed 25 July 2023.

[265] Gazeta.uz, *Uzbekistan to adopt Zero Waste principles for solid waste management,* 5 June 2023, https://t.ly/YLKE_. Accessed 2 August 2023.

[266] European Bank for Reconstruction and Development (EBRD), *EBRD Improves Solid Waste Management in Western Uzbekistan,* 28 March 2022, https://t.ly/DKtf3. Accessed 25 July 2023.

[267] World Bank, *Uzbekistan – Tashkent Solid Waste Management Project,* https://t.ly/dzhcw. Accessed 25 July 2023.

[268] *Ibid.*

Snapshot

# Private sector led good practices

## State Owned Enterprises (SOEs) and Municipal Enterprises (MEs)

- **Mahsustrans (Maxsustrans): SOE**

  This enterprise is entrusted with the targeted collection and removal of household waste from enterprises and organizations, industrial processing, and waste disposal.

- **Beautification Department of Tashkent City: SOE**

  This enterprise provides sanitation and waste collection/disposal services in collaboration with the Mahsustrans company in Tashkent city.

- ***Toza hududs*/EBRD: SOE**

  Addressing environmental issues in western Uzbekistan by extending long-term sovereign loans to *toza hududs* – the regional utility companies responsible for solid waste management in Horezm and Karakalpakstan.

## Innovative policies

- **Zero Waste Program**

  Uzbekistan will adopt zero waste principles in its SWM system in 2023, with the goal of gradually achieving full recycling and incineration at all landfills.

## Available innovative financing mechanisms

- **SDG bonds**

  The bonds effectively channel funds from international investors into public projects in line with the Sustainable Development Goals (SDGs) in seven key areas: Education (SDG 4), Water Management (SDG 6), Health (SDG 3), Green Transportation (SDG 11), Pollution Control (SDG 11), Management of Natural Resources (SDG 15) and Green Energy (SDG 7).

- **Pre-feasibility study for green sukuk issuance**

  A pre-feasibility study was performed for the introduction of green sukuk projects in Uzbekistan by UNDP, ICPSD, the Uzbek Government and the ISDB.

- **The Joint Programme (JP)**

  Implemented jointly by UNDP, UNICEF, WHO and UNODC, the goal of the JP is to help the Government of Uzbekistan strengthen the overall financing framework for its national development strategies and public finance management.

Chapter 3

# Conclusion: Best practices and persistent barriers to waste management in the Global South

**The findings of this research demonstrate that waste management practices in the Global South can be improved in order to reduce severe consequences such as air pollution, water pollution, soil contamination and the spread of waste that pollutes ecosystems. Exposed and contaminated landfills further exacerbate these issues, leading to the pollution of drinking water and the potential transmission of infection and disease. Threats to urban inhabitants and environmental security can be reduced through the proper handling of electronic waste and industrial debris.**

From the outset, this report highlighted the negative impact of rapid and unplanned urbanization on waste management in the Global South, which strains waste management and disposal capacities, resulting in a decline in economic and social development. This research highlights several common problems that hinder the pursuit of effective waste management strategies in the Global South.

The first challenge in these countries is limited public awareness and underdeveloped waste management systems and practices. Inadequate public awareness and involvement not only hinders effective waste management initiatives, but also adds complexity to recycling procedures, placing greater demands on local government.

Secondly, research shows that a significant portion of waste pickers in these specific countries work informally, and face challenges such as low wages and unfavourable working conditions. In addition, the lack of stable work schedules for informal workers negatively impacts the overall effectiveness of waste management practices. Recognizing the vital role these workers play and providing them with greater support is paramount.

The third challenge relates to legal frameworks and regulations. Our study reveals the presence of ambiguous and unclear waste management laws in almost all case countries. The lack of precise delineations for different waste classifications leads to uncertainties regarding the proper categorization of municipal solid waste (MSW). In addition, the lack of well-defined guidelines and obligations regarding MSW exacerbates the barriers to the efficient implementation of sustainable waste management practices.

The fourth shared challenge arises from constrained budgets and diminished engagement from local administrations, both of which obstruct the adoption of impactful waste management and recycling strategies. Establishing systems for managing municipal solid waste incurs substantial costs, making it complex to fund. As a result, when faced with a multitude of pressing concerns, several municipalities accord lower precedence to waste management. Furthermore, even after setting up waste management infrastructure, sustaining financial stability remains an ongoing and noteworthy obstacle.

Finally, the private sector's limited participation is a significant obstacle to achieving efficient waste management. The burden of waste management falls primarily on central and local governments, resulting in a fragmented process and conflicting institutional interests. The inadequacy of the waste management infrastructure – which includes collection mechanisms, treatment facilities and recycling centres – exacerbates the complexities faced by the private sector.

By taking a snapshot of the waste management sector in the Global South, particularly in those capital cities supported by the private sector, this research has identified and highlighted a variety of good practices, actions and successful experiences that can be transferred between countries in the South-South context. This proves that, while challenges exist, the Global South has instigated successful experiences in waste management that others can learn and benefit from through SSTC.


The UN General Assembly has described SSTC as "an important element of international cooperation for development, that offers viable opportunities for developing countries in their individual and collective pursuits of sustained economic growth and sustainable development." [269] This emphasizes that South-South cooperation is not a substitute for – but is complementary to – North-South cooperation. Sharing know-how and expertise among countries is crucial to development, particularly in the developing regions of the world.

The research findings indicate that each country has adopted innovative approaches to waste management, despite encountering common challenges. These approaches serve as a foundation for sharing experiences among nations. One noteworthy example is the Zero Waste Program implemented by Colombia and Türkiye.[270] These programmes have effectively reduced waste and increased recycling rates in both countries. They prioritize active community and workforce participation, supported by educational and training initiatives. The success of these programmes provides valuable examples and insights for other countries in the region, demonstrating the benefits of comprehensive waste management strategies.

Another commendable practice can be observed in Azerbaijan, with the establishment of the Balakhani Industrial Park.[271] The incentives provided to the park's occupants, such as tax and customs duty exemptions for a period of 10 years, have encouraged private companies to actively engage in and contribute to waste management policies. This initiative serves as an excellent model for other countries in the region, showcasing effective methods to attract private sector involvement and integrate companies into waste management practices.

The third noteworthy practice involves leveraging digital infrastructure to enhance waste management strategies. Indonesia's mobile apps, Gringgo and Octopus, along with the Plastic Bank initiative, exemplify how technology-driven programmes and applications can play a positive role.[272] These apps facilitate household waste reduction by delivering product refills directly to customers' homes, reducing plastic packaging and promoting responsible plastic

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[269] United Nations Environment Programme (UNEP), *United Nations Environment Programme Strategy for South-South and Triangular Cooperation,* 2020, https://t.ly/BPR0P. Accessed 29 August 2023.

[270] Urban Sustainability Exchange, *Zero Waste Program,* https://use.metropolis.org/case-studies/zero-waste-program. Accessed 23 July 2023.

[271] Tamiz Shahar, https://tamizshahar.az. Accessed 24 July 2023.

[272] Asia-Europe Foundation (ASEF), *Waste Management in Indonesia and Jakarta: Challenges and Way Forward,* October 2021, https://t.ly/Ev0_0. Accessed 24 July 2023.

usage. The Plastic Bank initiative creates economic incentives for individuals to address waste management challenges, simultaneously tackling environmental issues and poverty reduction.[273] Similarly, Malaysia's Solid Waste Information Management System (SWIMIS) is a good example of utilizing digital infrastructure to improve collection efficiency, prevent garbage overflow and promote public hygiene. These experiences from Indonesia and Malaysia highlight the advantages of digital tools in waste management.[274]

The fourth commendable practice involves countries' collaborations with international organizations. Such cooperation not only helps attract investment and secure loans for South countries but also provides opportunities for educational traineeships. For instance, Jordan's partnership with the European Bank for Reconstruction and Development (EBRD) aims to raise awareness about waste management in Jordanian schools. Additionally, the Jordanian Ministry of Agriculture collaborated with the World Food Programme (WFP) and the Food and Agriculture Organization (FAO) to launch the No Food Waste initiative, empowering and supporting local initiatives actively involved in food waste management. These examples demonstrate the benefits of cooperation with international organizations.[275]

The fifth notable practice focuses on attracting private companies to participate in waste management efforts. The Bahrain Public Private Partnership (PPP) model, known as the Askar Waste to Energy Project, exemplifies an efficient collaboration that follows the build-operate-transfer model.[276] This pioneering venture successfully engages the private sector in waste management. Similarly, Istanbul Environment Management Industry and Trade Company (ISTAC Inc.) in Türkiye serves as a positive example of how municipal corporations can contribute effectively to waste management.[277] Both cases offer valuable lessons and can be viewed as useful examples for other countries in the region.

Finally, Morocco's Coalition for Waste Valorization (COVAD) provides an excellent model for coordinating companies involved in various waste treatment activities, promoting collaboration between the public and private sectors, and minimizing conflicts in waste management projects.[278]

It is notable that many of these good practices were possible thanks to the involvement of the private sector. In the same way in which the private sector has supported the cities analysed throughout this report in overcoming challenges related to waste management, the private sector is also in a position to help others in learning from and adapting these good practices, through SSTC. Indeed, recent global frameworks on SSTC increasingly encourage the participation of a diversity of actors in SSTC, not only governments per the traditional approach to SSTC, but also non-state actors such as academia, civil society organizations, international finance organizations, the private sector and others.

In the case of the private sector, these frameworks highlight that its involvement can further expand and enhance the outreach of SSTC by increasing the number and scope of SSTC modalities such as knowledge exchanges, technology transfers, mutual learning, peer-to-peer support and innovative financing, among others. In particular, the 'Outcome Document of the 2nd UN High-Level Conference on South-South Cooperation (BAPA+40, 2019)' recognizes that there has been an expansion of the number of relevant actors in development, including the private sector, and calls upon the establishment and promotion of innovative development solutions and partnerships, involving various stakeholders at different levels, including the private sector.[279] Furthermore, the document notes that upscaling effective private sector involvement, where appropriate, can multiply the potential of development cooperation and mitigate risks when resources are limited, highlighting the need to further mobilize resources and engage the private sector in SSTC initiatives for sustainable development.[280]

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273 Cision, *Plastic Bank Indonesia stops 40 million kilograms of plastic from polluting the ocean,* 16 March 2023, https://t.ly/IBJKV. Accessed 23 July 2021.

274 United Nations Economic and Social Commission for Asia and Pacific (UNESCAP), *Kuala Lumpur, Malaysia,* https://t.ly/X6I8y. Accessed 25 July 2023.

275 Jordan News, *Jordan produces 1 million tonnes of food waste annually,* 26 June 2023, https://t.ly/aAGee. Accessed 23 July 2023.

276 Eco Mena, *Solid Waste Management in Bahrain,* 11 August 2022. https://www.ecomena.org/solid-waste-bahrain/. Accessed 22 July 2023.

277 Istanbul Environment Management Industry and Trade Company (ISTAC), https://www.istac.istanbul/en/corporate/about-us. Accessed 24 July 2023.

278 Climate Chance, *Moroccan society's uneven response to the proliferation of waste,* 2020, https://t.ly/c0mNJ. Accessed 16 August 2023.

279 United Nations (UN), *Buenos Aires Outcome Document of the 2nd High-Level United Nations Conference on South-South Cooperation: draft resolution/submitted by the President of the General Assembly,* 2019, https://digitallibrary.un.org/record/3799433. Accessed 16 August 2023.

280 *Outcome Document of the 2nd UN High-Level Conference on South-South Cooperation (BAPA+40, 2019),* paragraphs 16, 28.B., 28.F., and 31.C., available at: https://t.ly/-u99J.

Chapter 4

# Policy recommendations for private sector engagement

**The following recommendations have been developed after identifying which good solid waste management (SWM) practices in this report could potentially be implemented in other countries. They also take into consideration the key challenges that remain to be addressed. The recommendations are based on the report's research and take into account the socio-political and economic landscapes of developing countries, with the aim of guiding policymakers and waste management practitioners to leverage the role of the private sector in establishing a self-sustaining enterprise with minimal reliance on government involvement in the Global South. It recognizes the limited regulatory framework for waste management in these regions and emphasizes the need for adaptability to local dynamics.**

## 4.1 Effective governance and contracting

While facilitating the tender process is crucial, it alone doesn't ensure successful private sector participation. A project's sustainability greatly depends on the presence of a clearly defined contract. A "well-defined contract" is a legally binding agreement between two or more parties that is written clearly and comprehensively, leaving no room for ambiguity or misunderstanding. Such a contract typically includes explicit terms, conditions, and provisions that outline the rights and responsibilities of each party involved in the agreement. Insufficient regulatory frameworks in waste management are a common issue, underscoring the need for collaboration between companies and organizations to set higher operating standards.

The partnership between an international organization and a private company can facilitate the contractual enforcement of minimum environmental standards, particularly in regions with lax environmental laws. Key contract elements include scope of work, service standards, contract duration, insurance, liability, equipment, dispute resolution, community involvement and social responsibility.[281] An illustrative case is the Askar Waste to Energy Project, a Bahraini public private partnership (PPP) utilizing the build-operate-transfer model. This initiative effectively engages the private sector and helps reduce complexity for companies in the waste management sector.[282]

In addition to effective contracting, building a waste governance capability is essential in ensuring the long-term success of waste management initiatives. Many regions face institutional gaps, accountability challenges, and a lack of clear responsibility when it comes to waste management. To address these issues comprehensively, cities can adopt a 'Zero Waste' program as Colombia. This approach assesses and enhances the city's waste planning and governance structures, aiming to create a comprehensive, integrated, and forward-looking solid waste management system. By adopting the 'Zero Waste' program at the city level, local authorities can establish clear lines of responsibility, improve accountability, and develop sustainable waste management practices that benefit both the environment and the community.

[281] Collaborative Working Group (CWG), *Private Sector Involvement in Solid Waste Management,* 2005, https://t.ly/Y4BWH. Accessed 4 August 2023.

[282] Eco Mena, *Solid Waste Management in Bahrain,* 11 August 2022, https://www.ecomena.org/solid-waste-bahrain/. Accessed 22 July 2023.

## 4.2 Employment opportunities

Private waste management companies can create job opportunities for local residents in waste collection, sorting, processing, and administrative roles. In particular, case studies show that most of the workers in the collection process are informal workers. Private sector employment of these workers can help increase the number of formal workers and help them adapt to new technologies.[283] In this context, ISTAC Inc. in Türkiye has maintained a unique reputation for environmental management, with more than 40 operating units and employing more than 4,000 people.[284] Creating employment opportunities helps the company build its own human capital pool and reduce its dependence on external help, which promotes sustainable business in the medium and long term.

## 4.3 Digitalization and technology adaptation

New technologies, including smart bins, tracking systems and digital tools, enhance waste management planning and resource allocation for the private sector. Malaysia's Government effectively employs digital infrastructure, utilizing SWMIS to alert contractors when bins are full, saving time, resources, and costs. Location tracking improves collection efficiency and prevents waste overflow, benefiting public health. Introducing rewards or incentives through digital platforms can encourage proper waste disposal and recycling. Indonesia's Gringgo and Octopus mobile apps, along with the Plastic Bank initiative, exemplify technology-driven programmes that contribute positively to waste management.

## 4.4 Community engagement

Private companies may initiate public awareness campaigns to educate communities about waste reduction, recycling and proper disposal practices. The 3R School of Waste4Change in Indonesia is a good example of how private companies organize schools and workshops, in order to change people's behaviour towards waste management.[285]

## 4.5 Extended Producer Responsibility (EPR) Programs:

Implementing waste minimization initiatives, such as bulk purchasing or zero-waste shops, to reduce the generation of single-use plastics and packaging is another positive step that private sector companies can take to improve their reputation, raise public awareness and also contribute to the transition to a circular economy. The plastic recycling plant of the Argentine Association of Cooperatives (ACA) in Cañada de Gómez, Santa Fé Province, is an example of good practice in this regard. This plant processes discarded containers and silo bags from member cooperatives into new containers and bags, as well as plastic pellets, which are sold to a variety of industries.

## 4.6 Revenue generation

To generate revenue, the private sector can offer efficient waste collection services, including on-demand, bulk and specialized handling at premium rates. Recycling facilities can extract valuable materials for sale to manufacturers. Waste-to-energy tech can convert waste into energy for sale. Subscription-based services ensure steady income, while partnerships with local entities provide support and engagement. In this context, Geocycle Morocco is a good example. A major player in Morocco, the company has started pre-treating household waste to produce local solid recovered fuel (SRF) at its first platform in Oum Azza, unique in Morocco and located near the Rabat landfill.[286]

Achieving long-term sustainability requires a multi-faceted approach, including revenue diversification through circular economy strategies, item reuse, and sales. Equally important is recognizing the responsibility of citizens in funding the city's waste management system. It may be imperative that all residents contribute their fair share to the costs associated with waste management. This financial commitment not only ensures the sustainability of the system, but also fosters a sense of ownership and environmental responsibility, resulting in a cleaner and greener community for everyone.

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[283] GIZ, *Creating employment opportunities in waste management,* June 2021, https://www.giz.de/en/worldwide/75211.html. Accessed 7 August 2023.

[284] Istanbul Environment Management Industry and Trade Company (ISTAC), https://www.istac.istanbul/en/corporate/about-us. Accessed 24 July 2023.

[285] Waste4Change. https://waste4change.com/?lang=en. Accessed 14 August 2023.

[286] Geocycle Morocco. https://www.geocycle.com/fr/maroc?address=Morocco. Accessed 7 August 2023.

Supplemental income can be derived from environmental credit initiatives, like carbon credits. Establishing enduring waste management partnerships with municipalities or industries, as well as delivering guidance and education on waste management practices, can bolster financial stability. An exemplar in this arena is the Turkish Circular Economy Platform. This platform encompasses a knowledge centre, an e-commerce portal, assessment tools, and offers training, financial prospects and advisory services to businesses. It serves as a compelling instance of how online platforms can facilitate the expansion of private sector enterprises, aiding them in discovering alternate revenue streams.[287] Likewise, in Argentina, WINIM provides a noteworthy illustration by operating an app that facilitates the sale of surplus food items, which would otherwise be discarded by food companies or retailers.[288]

## 4.7 Cooperation with international organizations

To encourage waste management companies to participate in developing countries, forging partnerships with international organizations holds significant importance. Notably, the World Bank (WB) and the International Finance Corporation (IFC) emerge as strong collaborators capable of assisting countries in project design.[289] Public Private Partnership (PPP) projects are widely regarded as the most effective means of attracting private enterprises to engage in waste management initiatives within developing countries. Among the various contract options, the build-operate-transfer (BOT) contract model stands out as a valuable approach for establishing comprehensive and enduring waste management projects over the long term.[290]

IFC's advisory services have proven instrumental in assessing project feasibility, structuring PPP transactions through transparent tendering processes and enhancing untested legal frameworks governing PPPs. World Bank (WB) also plays a crucial role in the initial stages by mobilizing finance, particularly for critical components like landfill construction. As the tendering process concludes, International Finance Corporation (IFC) can further contribute by providing financing to the winning bidder.[291] In this context, the Askar Waste to Energy Project, a Bahraini PPP, and the Tunisia Sanitation PPP Support Project are good examples of successful cooperation between private companies and international organizations.[292]

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287 Turkey Circular Economy Platform, https://donguselekonomiplatformu.com/en/about-us.html. Accessed 7 August 2023.

288 WINIM, https://www.winim.com.ar/en. Accessed 14 August 2023.

289 Asia Development Bank (ADB), *Case Studies in Private Sector Participation: Solid Waste Management,* February 2017, https://t.ly/_SACW. Accessed 4 August 2023.

290 Asia Development Bank (ADB), *Creating An Enabling Environment for Public–Private Partnerships in Waste-To-Energy Projects,* December 2018, https://t.ly/Ej6d4. Accessed 4 August 2023.

291 World Bank, *Can the Private Sector Accelerate the Shift to a Circular Economy?,* 4 November 2022, https://t.ly/fHUsk. Accessed 4 August 2023.

292 World Bank, *World Bank Provides €113.6 Million to Improve Wastewater Management Services in Tunisia through PPP Contracts,* 6 June 2023, https://t.ly/VtAlm. Accessed 2 August 2023.

# Annex

**Table 1:** Country/Good practices highlights

| | |
|---|---|
| **Argentina** | • BYMA: Sustainability Index<br>• CEAMSE: Mechanical Biological Treatment (MBT)<br>• RenovAr<br>• ACA: Polyethylene Recycling |
| **Azerbaijan** | • Tamiz Shahar: Waste to Energy Plants<br>• Youth Movement: Green Baku |
| **Bahrain** | • Infracorp: Green Sukuk<br>• Askar Energy Plant |
| **Colombia** | • ICMA: Green Bonds |
| **Indonesia** | • Green Bond/Sukuk Initiatives<br>• Developing Waste to Energy plants |
| **Jordan** | • Biogas Collection: Al Dhulil, Al Salt and Madaba Plants<br>• GG-NAP |
| **Malaysia** | • Sustainable and Responsible Investment Sukuk<br>• First Green Sukuk Issued<br>• Photovoltaic Plant Projects<br>• National Cleanliness Policy |
| **Morocco** | • National Adaptation Plan<br>• Integration of Waste Pickers<br>• Landfill Recovery Centres (CEV)<br>• Geocycle Morocco: Solid Recovered Fuel<br>• AMMC: Green Bond<br>• Municipality of Casablanca |
| **Thailand** | • The National SWM Master Plan<br>• Developed Sustainable Financing Framework |
| **Tunisia** | • Strong Commitment to SSTC<br>• Provides Technical Assistance and Capacity Building Services<br>• CMF: Green Bond Framework<br>• ANGed: Integrated Sustainable Waste Management |
| **Türkiye** | • ISTAC Inc.<br>• İnteraktif Çevre (Zero-Waste Management Consulting)<br>• Zero Waste Program/Zero Blue Program<br>• Ilbank/World Bank/JICA: $20 billion Green Transformation Package<br>• Green Deal Action Plan/MBT |
| **Uzbekistan** | • Mahsustrans (Maxsustrans)<br>• Toza Hududs/EBRD<br>• Beautification Department of Tashkent City |

**Table 2:** Global Indicator Framework for SDGs related to waste[293]

| Goal | Target | Indicator |
|---|---|---|
| 6 CLEAN WATER AND SANITATION  | • **6.3**: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally | • **6.3.1**: Proportion of wastewater safely treated<br>• **6.3.2**: Proportion of bodies of water with good ambient water quality |
| | • **6.a**: By 2030, expand international cooperation and capacity-building support to developing countries in water and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies | • **6.a.1**: Amount of water- and sanitation-related official development assistance that is part of a government coordinated spending plan |
| 11 SUSTAINABLE CITIES AND COMMUNITIES  | • **11.6:** By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management | • **11.6.1**: Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities<br>• **11.6.2**: Annual mean levels of fine particulate matter (e.g., PM2.5 and PM10) in cities (population weighted) |
| 12 RESPONSIBLE CONSUMPTION AND PRODUCTION  | • **12.3**: By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses | • **12.3.1**: (a) Food loss index; and (b) food waste index |
| | • **12.4**: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment | • **12.4.1**: Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement<br>• **12.4.2**: (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment |
| | • **12.5**: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse | • **12.5.1**: National recycling rate, tonnes of material recycled |

[293] United Nations (UN), *Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development,* 2017, https://t.ly/uks4y. Accessed 23 July 2023.

**Table 3:** Solid waste typology[294]

Types of waste and the quantities of waste can vary among countries and their urban areas. Table 3 highlights the distinct types of waste in various settlements. In this report, we have examined Municipal Solid Waste (MSW) which is solid waste resulting from, or incidental to, municipal, community, commercial, institutional and recreational activities, and includes garbage, rubbish, ashes, street cleanings, dead animals, medical waste and all other non-industrial solid waste.[295] MSW can be identified in small towns, medium cities and large cities but does not cover informal settlements. The types of waste include food waste, paper, plastic, rags, metal and glass, and demolition and construction debris. It also includes hazardous wastes such as electric light bulbs, batteries, automotive parts, and discarded medicines and chemicals.

| Source of waste | Informal settlement | Small town | Medium city | Large city |
|---|---|---|---|---|
| Household | Predominantly food processing | Predominantly food processing | Wide range of wastes and greater quantity | Wide range of wastes and greater quantity |
| Commercial | Very limited range – probably only from small neighbourhood shops | Limited range of waste with household wastes | Wide range of wastes may be collected from commercial properties | Wide range of wastes may be collected from commercial properties |
| Industry | Industry unlikely; limited as the informal settlements act as commuter areas | Limited range | Limited range often related to agriculture i.e., crop processing or equipment manufacture | More specialist manufacture, grouped into identifiable areas |
| Clinical | Clinics unlikely, as population has insufficient funds | Very limited, as few clinics | Very limited, as few clinics | Waste collected from local clinics and specialist hospitals depending on the size of the population |
| Animals | Household animals | Household animals only | Household animals and perhaps herds on the peri-urban | Potentially large herds in poorer areas |

[294] Cities Alliance, *Solid Waste Management in the Global South,* 2020, https://t.ly/BxOLQ. Accessed 23 July 2023.

[295] Science Direct, *Municipal Solid Waste,* 2020, https://www.sciencedirect.com/topics/engineering/municipal-solid-waste. Accessed 23 July 2023.

**Table 4:** MSW generation in countries analysed in the report (per capita per day)

| | |
|---|---|
| **Argentina** | 0.86 kg (2018)[296] |
| **Azerbaijan** | 1.05 kg (2020)[297] |
| **Bahrain** | 1.80 kg (2021)[298] |
| **Colombia** | 0.77 kg (2018)[299] |
| **Indonesia** | 0.70 kg (2020)[300] |
| **Jordan** | 0.9 kg (2021)[301] |
| **Malaysia** | 1.17 kg (2021)[302] |
| **Morocco** | 0.52 kg (2018)[303] |
| **Thailand** | 1.13 kg (2020)[304] |
| **Tunisia** | 0.8 kg (2021)[305] |
| **Türkiye** | 1.13 kg (2020)[306] |
| **Uzbekistan** | 1.25 kg (2020)[307] |

[296] Holland Circular Hotspot, *Waste management country report: Argentina,* 2021, https://t.ly/_E_I4. Accessed 25 July 2023.

[297] World Bank, *ARP II Integrated Solid Waste Management Project,* 2021, https://t.ly/ILHVl. Accessed 23 July 2023.

[298] Bio Energy Consult, *Municipal Solid Wastes in Bahrain,* 2022, https://t.ly/bMdPm. Accessed 23 July 2023.

[299] Holland Circular Hotspot, *Waste Management Country Report: Colombia,* 2021, https://t.ly/w06is. Accessed 23 July 2023.

[300] Asia-Europe Foundation, *Waste Management in Indonesia and Jakarta: Challenges and Way Forward,* 2021, https://t.ly/SaiKl. Accessed 23 July 2023.

[301] Eco Mena, *Solid Waste Management in Jordan,* 2022, https://t.ly/bgBAG. Accessed 25 July 2023.

[302] Malaysian Investment Development Authority (MIDA), *Waste to Energy for A Sustainable Future,* 2021, https://t.ly/H3B0R. Accessed 23 July 2023.

[303] Ouigmane, Abdellah, et al., *Management of Municipal Solid Waste in Morocco: The Size Effect in the Distribution of Combustible Components and Evaluation of the Fuel Fractions,* Springer eBooks, 2017, pp. 1–13. https://t.ly/vghNL.

[304] Pollution Control Department, *Municipal Solid Waste Management Policy in Thailandm* Pollution Control Department, 2015, https://www.tei.or.th/en/highlight_detail.php?event_id=649. Accessed 29 August 2023.

[305] Eco Mena, *Solid Waste Management in Tunisia,* 2021, https://t.ly/p9r35. Accessed 23 July 2023.

[306] Turkstat, *Waste Statistics,* 2020, https://t.ly/pSyCl. Accessed 23 July 2023.

[307] UzReport, *Tashkent to update its waste management system,* 2020, https://t.ly/YCLHA. Accessed 23 July 2023.