

CLIMATE CHANGE, ENERGY AND ENVIRONMENT

TOWARDS SUSTAINABLE WASTE MANAGEMENT IN CYPRUS

Challenges and Policy Recommendations

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Cyprus' waste management system faces major challenges and lacks full alignment with EU directives.



Key facilities operate inefficiently, with low reuse and recycling rates and continued reliance on landfilling, especially in certain districts.



Non-compliance risks persist regarding municipal and packaging waste recycling targets, as well as landfill reduction goals.



Taxpayers bear the cost of inefficiencies, delays, and poor policy decisions, highlighting the need for coordinated zero-waste strategies.



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TOWARDS SUSTAINABLE WASTE MANAGEMENT IN CYPRUS: CHALLENGES AND POLICY RECOMMENDATIONS

INTRODUCTION

Compared to other EU countries, Cyprus produces above-average municipal waste, remains heavily dependent on landfills, and lags significantly in recycling and recovery rates. In 2022, Cyprus' municipal waste generation reached 673 kg per capita, significantly surpassing the EU average of 513 kg per capita¹. Additionally, 75% of municipal waste is still being landfilled, while recycling rates remain below EU averages, with only 39% of plastic packaging waste being recycled (2022). These figures underscore the scale and urgency of the challenge. Additionally, public concerns have been raised about the oversight of waste infrastructure and the coordination between national and local authorities. Notably, the mismanagement of facilities such as the Limassol Integrated Waste Management Facility (OEDA Pentakomo) has further highlighted systemic weaknesses, including poor governance and a lack of interdepartmental coordination. Furthermore, Cyprus' geographic limitations, combined with its heavy reliance on tourism and import of resources, exacerbate its waste management challenges and further complicate efforts to meet EU waste management targets.

The European Commission's Report *COM(2023) 304* identified Cyprus as one of the Member States at risk of failing to meet critical targets, including preparing 55% of municipal waste for reuse and recycling by 2025, and reducing landfill use to a maximum of 10% by 2035; and has intensified its monitoring of Cyprus' waste management progress, underscoring concerns about governance and the country's capacity to meet its EU obligations. With the EU pushing for a circular economy through the actions defined in *COM(2020) 98*, adapting Cyprus' waste management practices is not only essential to avoid environmental degradation and financial penalties but also presents a significant opportunity for alignment with European Green Deal objectives and the achievement of multiple Sustainable Development Goals (SDGs), particularly SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production).

PROBLEM STATEMENT

Cyprus' waste management system faces significant challenges that hinder its compliance with EU directives and the achievement of key targets. The primary factors contributing to these challenges include:

- **Excessive Municipal Waste Generation:** In 2022, Cyprus generated 673 kg of municipal waste per capita, significantly surpassing the EU average of 513 kg. This strains the country's waste management infrastructure and poses a significant challenge to achieving EU waste reduction targets.
- **Low Recycling and Reuse Rates:** Cyprus remains at risk of missing the 2025 targets of preparing 55% of municipal waste for reuse and recycling, as well as achieving a 65% recycling rate for packaging waste. Current recycling rates are below EU averages (41%, 2022), with only 39% of plastic packaging waste being recycled in Cyprus. This reflects challenges in the effective collection, sorting, and processing of recyclable materials, particularly plastics.
- **Over-Reliance on Landfills:** Cyprus is far from meeting the 2035 target of limiting landfill use to a maximum of 10% of municipal waste. In 2022, 55% of municipal waste is still being landfilled, also emphasizing the need to reduce biodegradable waste and improve alternative waste disposal solutions. By 2020, at least 70% of the Construction and Demolition Waste should have been recycled, as defined in the Waste Laws of Cyprus and the Waste Framework Directive. However, in 2020 this target was achieved partially, i.e. 57% recycling of CDW and the remaining 43% is landfilled.
- **Management and Closure of Landfills:** The final two non-compliant waste disposal areas in Limassol and Nicosia have been decommissioned, and rehabilitation efforts are currently in progress. However, facilities such as the Limassol Integrated Waste Management Plant (OEDA Pentakomo) and the Koshi Integrated Waste Management Facility (OEDA Koshi) have encountered operational challenges, prompting public concerns regarding the effectiveness of government oversight and management.

All municipal solid waste from the Nicosia, Larnaca, and Famagusta Districts is processed at the Koshi

¹ Source: Eurostat

Integrated Waste Management Facility (OEDA Koshi). However, the facility was not originally intended to manage a volume of 195.000 tonnes annually, as the initial plan anticipated the development of a new integrated solid waste management facility for the Nicosia district following the closure of the Nicosia landfill—a project that was not implemented. Additionally, a landfill site continues to operate in the Paphos district.

- **Policy and Governance Failures:** Inadequate communication and coordination between national authorities present challenges that contribute to delays in the implementation of effective waste management policies and strategies.
Cyprus has not yet fully established an integrated and sufficient network of waste management facilities for mixed municipal waste, including the necessary infrastructure for pre-treatment of waste prior to landfilling, facing the risk of not reaching out the target set by the EU that no more than 10 % of municipal waste be sent to landfill by 2035.
- **Circular Economy (CE):** In 2021, Cyprus adopted its National Action Plan for the Circular Economy 2021-2027. It focusses on key materials and sectors of the economy, including the primary, industrial and service sectors, with waste policy being a fundamental and transversal component. Circular economy policy elements have also been included in the new National Municipal Waste Management Plan 2022–2028 and National Waste Prevention Plan 2022–2028, alongside measures and action to reduce waste and increase reuse and recycling. However, no national CE targets have been adopted².
- The circular material use rate in Cyprus for the period 2011-2020 is well below the EU average, 3,4% for Cyprus whilst the EU average was 12,8% for 2020.

ALIGNMENT WITH SDGS

Cyprus' waste management challenges are directly connected to several United Nations Sustainable Development Goals

Table 1
Targets and Current EU and CY levels (Eurostat)

	EU (%)	CY (%)	EU GOALS
Recycling Rate of Municipal Waste (% of total municipal waste generated) (SDG11)	49,8 (2021 estimate) 48,7 (2022 estimate)	14,0 (2021 provisional) 14,8 (2022 provisional)	60% 2030
Circular material Use Rate (% of material input for domestic use) (SDG12)	11,5 (2022 estimate) 11,8 (2023 estimate)	8,5 (2022 estimate) 5,4 (2023 estimate)	24% 2030
Recycling Rate of Packaging Waste	65,4 (2022 estimate)	69,5 (2022)	55% (2022) 65% (2025)
Municipal Waste Generated and Landfilled	23% (513kg/capita) (2022)	55% (673kg/capita) (2022)	10% (2035)

(SDGs), particularly SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production). Addressing these challenges is essential for promoting sustainable urban development, fostering responsible resource use, and contributing to global sustainability efforts.

THE CYPRUS RECOVERY AND RESILIENCE PLAN 2021-2026 (RRP)

The Cyprus Recovery and Resilience Plan (RRP) 2021–2026 aims to foster sustainable recovery and enhance the country's resilience and preparedness through targeted investments and reforms. These efforts are designed to support Cyprus in addressing the challenges and leveraging the opportunities presented by the green and digital transitions. In the area of waste management, the RRP outlines specific practices and initiatives that require coordinated advancement by designated entities.

Reform 5: The Department of Environment is the responsible body tasked with implementing Reform 5 from the RRP, which involves **establishing a coordinating body** between the central and local government to improve the effectiveness of waste management practices through enhanced coordination between the Central Government (Department of Environment) and Local Authorities (Municipalities, Communities). The primary objective is to support the implementation of municipal solid waste management policies through both top-down and bottom-up approaches. This administrative framework will serve as a catalyst for reducing municipal solid waste, enhancing resource efficiency, and promoting sustainable waste management practices, including reuse, recycling, and separate waste collection.

Investment 11: Aims to create a **network of collection points and recycling hubs**, focusing primarily on waste management and the implementation of the waste management hierarchy. It includes the establishment of 50 prefabricated Green Kiosks in mountainous and remote areas facilitating the separate collection of dry recyclable waste and seeks to enhance public awareness and boost recycling efforts.

Investment 12: Promotes the circular economy model by focusing on sustainable waste management practices and investments aimed at increasing recycling efforts. Specifically, it supports an **integrated waste separation system**, where organic waste is processed either in dedicated facilities or through home composting. It also emphasizes the separate collection of organic waste by households and incorporates the implementation of the **"Pay As You Throw" (PAYT) Scheme**. Additionally, public awareness units on home composting will be promoted, particularly in rural areas, along with investments in composting facilities and home composting units in these regions. It supports the establishment of two reuse centres, along with a network of collection shops for reusable items by the end of 2023 and the construction and operation of a network of green recycling kiosks to serve remote communities by 2026.

Reform 4: Seeks to promote the adoption of circular economy principles in the industrial sector through an **awareness campaign** targeting the business community and consumers, highlighting the prospects and business opportunities offered by the circular economy.

NATIONAL ACTION PLAN FOR THE CIRCULAR ECONOMY 2021-2027

The European Green Deal outlines a roadmap for a resource-efficient and competitive EU, targeting net-zero greenhouse gas emissions by 2050 and decoupling economic growth from resource use. The EU adopted its first Circular Economy Action Plan in 2015 and introduced a new plan in 2020 to accelerate the transformation needed. The new plan aims to reduce waste and support Europe's transition to climate neutrality.

In 2021, Cyprus adopted its National Action Plan for the Circular Economy 2021-2027 which is significantly funded by the Thalia Program 2021-2027, which utilises resources from Cohesion Policy Funds, as well as the RRP and other national resources. The National Action Plan for the Circular Economy includes a series of measures, some of which are also part of the RRP, and aim at managing waste as a resource, enhancing separate collection of municipal waste and improving the quality of recycling.

Table 2³

Implemented and planned actions for solid waste management

Action Description	Timeline	Budget (EU)
Programme for the techno-economic support of local authorities for the establishment of a separate collection system for municipal solid waste and the implementation of a pay-as you-throw scheme.	2022 - 2027	25,000,000
The Municipal Solid Waste Reduction Programme for the Coastal Hotel and Related Tourism Infrastructure in Limassol and Paphos.	2022 - 2023	6,400,000
Programme for the prevention, separate collection and recovery of municipal waste for the mountainous areas of Cyprus.	2021- 2026	1,500,000
Creation of a coordinating body between central government and local government for waste management.	2023 - 2025	900,000
Installation of 50 autonomous mechanical composters in remote and semi-remote areas.	2022 - 2025	7,000,000
Creation of two reuse and repair centres and a network of stores.	2022 - 2025	4,000,000
Installation of 50 green kiosks in remote and semi-remote areas.	2022 - 2025	3,300,000

REFORM OF LOCAL GOVERNMENT AUTHORITIES

The recent reform of local authorities in Cyprus and the establishment of District Local Government Organisations is poised to significantly enhance solid waste management through several key changes.

Five regional authorities have been created in Nicosia, Limassol, Larnaca, Paphos, and Famagusta to oversee services such as water supply, sewerage, waste management, and development licensing. This centralization is expected to reduce operating costs and enhance service quality.

Local authorities are now mandated to establish separate collection systems for various municipal waste streams, including organic waste. This initiative aims to increase recycling rates and reduce landfill dependency. Moreover, local authorities should adopt Pay-As-You-Throw (PAYT) Schemes.

OBLIGATIONS OF LOCAL AUTHORITIES

Local Authorities must implement measures to prevent municipal waste generation and manage waste in accordance with the waste hierarchy, as stipulated in the **Waste (Management of Municipal Waste by Local Government Authorities) Regulations 2022 [KDP 292/2022]**. These obligations include:

Preparation of Local Action Plans:

Local Authorities were required to develop and implement either independently or in collaboration with other municipalities and/or community service clusters, a **six-year local action plan for the prevention and effective management of municipal waste** by 31st of December 2023. Plans must be aligned with the waste hierarchy established in the Waste Act 2011 and its subsequent amendments, covering all relevant activities within their administrative boundaries, ensuring that Local Authorities actively contribute to the objectives set by national legislation and EU directives.

Regulatory Measures:

Local Authorities within their administrative boundaries, either individually or in cooperation with other municipalities and/or community service clusters, must implement regulatory measures, to establish a **mandatory system for source separation of municipal waste at the point of origin, and its separate collection for various categories of municipal waste** including recyclables, hazardous household waste, and organic waste. The European Commission has noted that disparities in staffing and technical expertise among local authorities have led to inconsistent implementation. Addressing resource gaps is essential to prevent inequalities between regions in the quality of waste services.

Implementation of a "Pay as You Throw" (PAYT) Scheme:

With the "Pay As You Throw" (PAYT) scheme, **source separation and separate collection of recyclable and organic/biodegradable waste** are established, aiming to reduce

³ Source: ETC CE Report 2022/5 – Cyprus

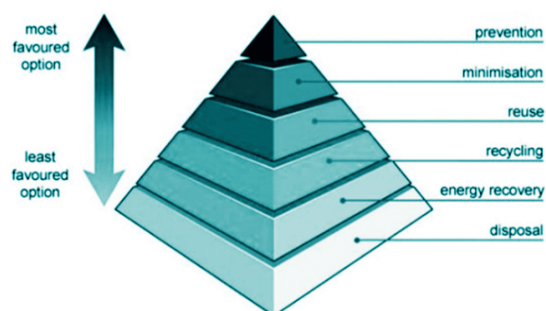
the landfilling of biodegradable materials, increase recycling and reuse rates, and prevent waste generation. For its effective implementation, it is necessary to strengthen the separate collection programs for all municipal waste streams, including recyclables, batteries, waste electrical and electronic equipment, and organic waste. Additionally, the construction of anaerobic digestion plants, composting units, and pasteurization facilities for the treatment of organic waste is essential.

By October 2024, the Department of Environment received 43 Expressions of Interest from Local Authorities Service Clusters to participate in the PAYT and their review was completed.

MUNICIPAL WASTE MANAGEMENT PLAN 2022-2028

The Municipal Waste Management Strategy 2022-2028 outlines the actions and measures to be implemented by 2028, and builds on the policy framework established in the 2015-2021 Strategy. It emphasizes compliance with the obligations of the European Waste Management Directives on municipal waste and the full utilization of the existing waste management infrastructure, including the Green Points network. A key principle of the Strategy is the application of the waste management hierarchy and the adoption of best practices to enhance efficiency and sustainability.

Figure 1
Waste Management Hierarchy



DRAFT NATIONAL WASTE GENERATION PREVENTION PROGRAM (NWP) 2022-2028

The National Waste Generation Prevention Programme (NWP) 2022-2028 will be implemented in parallel with the Municipal Waste Management Plan 2022-2028 and local Municipal Waste Prevention and Management Action Plans. The NWP establishes waste prevention targets across various sectors, including tourism, construction, textiles, food, and electronic equipment management. It promotes and supports sustainable production and consumption models, such as the PAYT scheme. Information dissemination and public awareness initiatives for both producers and consumers are key components in the NWP.

LIFE-IP CYZERO WASTE PROJECT

The [LIFE-IP CYzero Waste project](#), which is coordinated by the Department of Environment, aims to support the implementation of EU and national legislation on waste management and the circular economy by driving the full execution of the NWP Strategy and address critical gaps identified in the Environmental Policy Implementation Review Report for Cyprus (2022) and the Early Warning Report for Cyprus (2022), contributing to more effective and sustainable practices.

IMPLEMENTATION STRATEGIES AND RECOMMENDATIONS



Modernization of Infrastructure and Funding Opportunities

- Development of **new collection systems/ methods and advanced technology infrastructure**.
- The transition **towards a zero-waste economy** relies heavily on technological advancements that optimize resource use, reduce waste generation, and enhance circular economy practices but Cyprus is lagging.
- **Urgency for upgrading key waste management facilities** and urgency for fading out landfilling practices.
- **Leverage funding opportunities** referred to in COM(2023) 304.



Circular Economy Initiatives

- **Promotion of circular economy initiatives and strengthening of waste prevention, reuse, and reuse measures.** Innovative projects such as “Kot-Kot A Circular Economy Solution for Food Waste Management” can offer solutions for diverting biodegradable waste from landfills. However, coordinated actions are needed.
- **Engagement of local communities and businesses** in sustainability practices and the adoption of circular economy approaches, such as material reuse, sharing, and repair. Innovative initiatives have been developed by KyKOIKOdromio Circular Economy Actions for All - [Library of Things](#) and used items [sharing platform](#) and promotion of repairs, but need local authorities support as well as governmental support.



Education and Capacity Building

- **Implementation of capacity-building and knowledge-development programs** to enhance knowledge and skills related to zero waste management and circular economy practices for both producers and consumers.
- Targeted **capacity-building programs** for Central Government, Local Authorities and relevant management boards staff to improve their experience

in zero waste management and circular economy practices.

- **Public education and awareness campaigns** to foster community engagement and promote sustainable waste management and circular economy practices.
- **Collaborations between local NGOs and initiatives** such as *LIFE-IP CYzero WASTE*, to strengthen community participation and enhance education, capacity building and awareness campaigns.



Alignment of Policies and Regulatory Reforms

- Establishment of **clear operational frameworks** for central government, Local Authorities and District Local Government Organisations regarding waste management, including clarification of roles, levels of involvement, and a defined operational structure, to ensure consistency in policy implementation.
- **Establishment of Coordination Body** between the Central Government and Local Authorities to facilitate the transition to more effective waste management measures.
- **Strengthen inter-agency coordination** between Central Government, District Local Government Organisations and Local Authorities to ensure consistency in policy implementation.
- Development of **compliance frameworks** aligned with COM(2023) 304 ensuring Cyprus meets its landfill reduction and recycling targets by 2035.
- Development of a **clear framework for Environmental Impact Assessments** for waste management projects, clarifying roles, levels of involvement, and operational guidelines.



Databases, Monitoring and Accountability

- Establishment of **transparent mechanisms for monitoring the performance** of waste management facilities.
- Creation of a **representative and functional waste database** to improve data collection, monitoring, and reporting.

CONCLUSION

Cyprus' waste management system faces significant challenges in meeting EU targets, primarily associated with delays, suboptimal policy decisions, and the absence of timely and effective interventions by the Government since 2001. The restructuring of local government represents a critical reform; however, its success hinges on clear delineation of responsibilities, adequate resource allocation, and robust coordination between Central, District Local Government Organisations and Local Authorities.

Key measures, such as the implementation of the "Pay-As-You-Throw" (PAYT) Scheme, the expansion of waste separation infrastructure, and enhanced public engagement, are vital for reducing waste and increasing recycling rates. Additionally, investments in modern waste treatment facilities and capacity-building initiatives will further strengthen these efforts.

By addressing systemic inefficiencies and promoting accountability, Cyprus can not only fulfil its environmental obligations but also transform its waste management challenges into opportunities for sustainable development and alignment with EU directives.

ABOUT THE AUTHOR

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Her professional activities extend to standardization and sustainable development, where she is an active participant in the National Standardization Group for the Circular Economy and other international committees. In 2021, she was appointed to the European Industry Advisory Forum, and in 2022, she was elected President of the International Solar Energy Organization of Cyprus (2022-2024). Additionally, she is a Member of the Energy Committee of the Cyprus Scientific and Technical Chamber and serves on the Climate Change Committee of the International Women's Alliance (2023-2025).

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Challenges and Policy Recommendations



Modernization of Infrastructure & Circular Economy Transition

- Upgrade waste management facilities, phase out landfilling, and adopt advanced collection systems and technologies to support a zero-waste economy.
- Strengthen circular economy initiatives, promoting waste prevention, reuse, and repair through local and government-supported projects, while increasing engagement with businesses and communities.



Education, Capacity Building & Regulatory Alignment

- Implement capacity-building programs for government and local authorities to enhance expertise in waste management and circular economy practices.
- Establish clear operational frameworks, defining roles and responsibilities at all levels of government, and create a Coordination Body to improve policy execution.
-



Monitoring, Compliance & Data Management

- Develop compliance frameworks to ensure Cyprus meets landfill reduction and recycling targets by 2035.
- Establish transparent monitoring mechanisms for waste management performance and create a comprehensive waste database for

Further information on the topic can be found here:

www.fescyprus.org