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Circular Economy in the Waste Sector in Lebanon

Policy brief 5 and its technical notes





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“

It cannot be right to manufacture billions of objects that are used for a matter of minutes, and then are with us for centuries.

Roz Savage

”



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List of Acronyms

AUB	American University of Beirut
CE	Circular Economy
CDW	Construction and Demolition Waste
DRS	Deposit and return system
EBRD	European Bank for Reconstruction and Development
EPR	Extended Producer Responsibility
ELV	End of Live Vehicles
EU	European Union
F&B	Food and Beverage
GEFF	Green Economy Financing Facility
IT	Information Technology
IFIs	international financial institutions
ISWM	Integrated Solid Waste Management
IW	Industrial Waste
KfW	Kreditanstalt für Wiederaufbau
KPIs	Key Performance Indicators
MoE	Ministry of Environment
Mol	Ministry of Industry
MSW	Municipal Solid Waste
NDCs	Nationally Determined Contributions
NEEREA	National Energy Efficiency and Renewable Energy Action
NISWMS	National Integrated Solid Waste Management Strategy
O&M	Operations and Maintenance
OMSAR	Office of the Minister of State for Administrative Reform
PPP	Public Private Partnership
PRO	Producer Responsibility Organization
SDG	Sustainable Development Goals
SMEs	Small and medium-sized enterprises
SWM	Solid Waste Management
TA	Technical Assistance
TaDWIR	Towards a Decentralised Waste Management Integrated Response in Lebanon
UNDP	United Nations Development Programme
WB	World Bank
WEEE	Waste Electrical And Electronic Equipment



A.

Context

The concept of a Circular Economy (CE) is an innovative way of boosting economic development while ensuring environmental sustainability through a life-cycle approach and closing the loop, ranging from production, consumption to end-of-life and waste management back to secondary raw materials. It aims to reduce and/or to eliminate waste and pollution, turning waste into secondary raw materials and useful resources, to promote a cleaner environment, high levels of resource efficiency across the entire value chain and closed material loops. CE also includes measures on designing products by extending their lifetime, reusing, refurbishing or, remanufacturing products at the end of service life, and on recovering or recycling a maximum of resources to avoid waste in production, supply, use and disposal.

The present policy brief aims to identify and assess the gaps for integrating CE concept and principles in the current governance system of waste management in Lebanon and to provide the recommendations on developing respective policy measures and needed support.

Lebanon has suffered multiple economic shocks in the recent history, resulting from an undiversified economy and a lack of a real industrial base. The drivers of economic growth were mostly limited to capital inflows coming from the diaspora, tourism, and real estate. This set up, however, has led to macroeconomic fragility of the economy and financial imbalances and resulted in distancing the country from developing a sustainable industry that could provide stability in the long run perspectives.

Lebanon's economy is generally resource intensive, generating too much waste and having limited means to assimilate the waste back into the production systems. This challenge is among others a result of the missing design of the production systems, available technologies as well as limited human capital to reduce waste generation. The result is the rising amount of waste in the cities, contamination of ecosystems, escalating health problems and increasing greenhouse gas emissions.

The waste generated in Lebanon's economy is a part of the problem, since the waste management is also related to the large amount of used products and waste imported from other countries, which has to be managed (e.g. end of life vehicles (ELV) and electric and electronic equipment). This state of affairs is associated with demographic situation¹ with currently 96.6 % of the population living in urban agglomerations (5,171,646 people in 2023) and efforts to raise ambitions to comply with commitments of the Paris Agreement on Climate Change (2015) and Nationally Determined Contributions (NDCs). Lebanon has

¹ [Lebanon Demographics 2023 \(Population, Age, Sex, Trends\) - Worldometer \(worldometers.info\)](https://worldometers.info/lebanon-demographics/)



updated its national climate pledge known as NDCs to the United Nations Framework Convention on Climate Change marking its renewed commitment to the landmark 2015 Paris Agreement that agrees to advance universal climate actions to limit temperature rise to well below 2 degrees Celsius, while pursuing efforts to limit to a safer 1.5 degrees². At the same time, Lebanon's efforts to meet the Sustainable Development Goals (SDG) and in particular SDG no. 8 on economic growth, SDG no. 11 on sustainable cities and SDG no. 12 on sustainable consumption and production are ongoing³ in the framework of the policies and programmes aimed at the inclusive growth and the initiatives on smart or clean cities. Lebanon's Smart Cities Marketplace⁴ is expected to witness a growth in revenue, with projections indicating a substantial increase to US\$0.39bn by 2023⁵.

Currently, Lebanon lacks a forward-looking and sustainable strategic framework geared to the principles of a CE. The ISWMS has been prepared and finalized in February, 2024⁶ and it is expected that once adopted, all levels of governmental administration in Lebanon could start harmonized process towards transitioning to CE. Until this date, the legal and policy framework do not accommodate a CE roadmap for Lebanon – which should serve as a strategic plan, with set outcomes and milestones necessary for achieving the transition from the linear economy to CE.

The Law No. 80 of 2018 on SWM provides regulations to promote fundamental concepts such as the 3Rs approach (reduce-reuse-recycle), polluter pays principle, economic instruments, and concept of CE. The Decree 5605/2019 regulates the practises on sorting of the household waste at source. Also, there is several initiatives in Lebanon that aim at developing CE mechanisms for the special waste streams, including e-waste, cardboard and paper waste, glass, plastic and used tires, among others.

In the last decade, Lebanon has set up a legal framework for policy instruments to contribute to sustainable and environmentally sound waste management. However, the policy instruments that required to boost the transition to CE have not been implemented such as the waste prevention and separate collection. Additionally, no economic instruments such as taxes, bans on certain waste disposal, prevention programs, and other mechanisms such as green procurement, and special market requirements for targeted waste products have not been introduced so far. Despite inexistant regulatory framework for CE, the local authorities and population express readiness to participate in initiatives aimed at reduction of the waste generation (Box 1).



BOX 1

Local initiatives for reduction of waste

Field data revealed that a number of actions have been taken to reduce generation of waste, through various initiatives, such as reduction of packaging materials, clothes and food donations, home composting and others. About 61 % of the studied towns had such precious initiatives, however 60% did not manage to reach expected results.

² [Lebanon submits updated national climate pledge under Paris Agreement | United Nations Development Programme \(undp.org\)](#)

³ [Sustainable Development Goals | United Nations in Lebanon](#)

⁴ The Smart Cities Marketplace is a concept aimed at speeding up the green transition of cities by improving citizens' quality of life, increasing the competitiveness of cities and industry as well as reaching energy and climate targets.

⁵ [Smart Cities - Lebanon | Statista Market Forecast](#)

⁶ ISWM prepared in frame of Strategic Environmental and Social Assessment Study for Integrated Solid Waste Strategy, funded by World Bank and implemented by LDK



B.

Analysis

The CE approach in a number of economic sectors could not only help Lebanon address the growing challenge of waste management arising from dynamic urbanisation, but could also accelerate economic growth, resulting in multiple other economic co-benefits, such as creating employment (especially for the youth and women), contributing to sustainable tourism and other sectors.

Lebanon is a country facing several challenges in implementing CE with a weak waste management infrastructure, however the CE is an opportunity as it synergises well with industrial policies for instance with “Lebanon Industry 2025 - the integrated vision for Lebanese Industrial Sector”. The projected high population in urban areas (urbanization rate is growing and is expected to reach 98.7 % in 2025), will reach 5,0 million⁷ and will create vast increase in demand for natural resources. As such, the CE will not only be an economic opportunity, but a necessary strategic paradigm for economic development that can foster sustainable economic development while reducing environmental impacts and contributing to sustainable consumption.

Accordingly, the responsible entities of the Government of Lebanon are advised to take a number of necessary measures aimed at transition to the CE and in particular in the sector of waste management as enabler for other sectors. A set of specific measures are proposed based on a systematic analysis that comprises six technical notes, developed below. The analysis is backed up by the findings of the first strategic study under this project, including one-on-one interviews with 80 heads of municipalities (across the 24 districts of Lebanon – excluding Beirut), 24 citizen focus group discussions and about 50 stakeholders (including national, regional, and local authorities, international donors, NGOs, experts, academics, and the private sector).

⁷ [Lebanon Population \(2023\) - Worldometer \(worldometers.info\)](https://worldometers.info/lebanon/population/)



C.

Recommendations

Regulatory framework

The following areas of support by the EU and/or other international donors have been identified:

- Developing the strategic action plans on CE and waste prevention.
- Conducting analytical studies for implementing appropriate CE measures and action plans.
- Amending and developing respective regulations needed for introduction of CE principles.

Institutional Framework and Stakeholders

The following areas of support by EU and/or other international donors have been identified:

- Developing the concept and establishing the organizational structure for CE
- Developing the capacity building and training plan for CE stakeholders

Economic and financial instruments

The following areas of support by EU and/or other international donors have been identified:

- Developing and implementing economic and financial instruments to reduce waste and boost utilization of all categories of waste.

Financing Circular Economy

The following areas of support by EU and/or other international donors have been identified:

- Developing analysis of the financial market for CE and proposal of financial instruments
- Planning and implementing capacity building in the area of CE financial instruments

Monitoring framework for Circular Economy

The following areas of support by EU and/or other international donors have been identified:

- Identifying baselines and indicators for the CE economy
- Developing the Information system for Circular Economy in the waste management
- Developing the institutional set-up for managing the IT for CE
- Capacity building and training in the Information System Management and Maintenance



Priority sectors and waste streams for Circular Economy

The following areas of support by EU and/or other international donors have been identified:

- Conducting analysis for managing the special waste streams
- Developing CE pilot projects and project concepts for implementation and funding
- Further development of EPR systems
- Capacity building in CE project development and implementation

Information, Awareness and Education in CE

The following areas of support by EU and/or other international donors have been identified:

- Planning awareness and information activities on CE
- Institutional building for awareness and information on CE





Technical Note 5.1 – Regulatory framework for circular economy

D.1. Justification⁸

The Government of Lebanon has developed a number of regulations and strategies enabling CE, however their enforcement is still difficult and is being hampered by other urgent matters in need of immediate actions. The ISWMS has been prepared and finalized in February, 2024⁹ and subject to strategic environmental assessment carried out by World Bank (WB) based on the agreement with the Ministry of Environment (MoE). The NSIWM is the starting point and prerequisite for the development of waste-related plans and the implementation of CE principles.

Lebanon Industry 2025, the Integrated Vision for Lebanese Industrial Sector, has been developed under auspices of the Ministry of Industry (Mol). This vision provides for the following operational objectives:

- encouraging green industries by promoting the use of green and energy saving buildings,
- enforcing the concept of green industry
- supporting scientific industrial research to establish and promote the concept of green industry
- encouraging recycling

Similarly, the roadmap for Integrated Household Solid Waste Management for the period 2020-2030 sets long-term (2025-2030) actions focusing on law enforcement, database development and promoting CE¹⁰. Also, the Lebanese Sustainable Consumption and Production National Action Plan was developed to prioritize and mainstream respective measures in the industrial sector's policies and plans. The overview of the regulations on waste management is provided in Appendix 3. The overview of gaps in main regulations addressing the SWM in Lebanon is provided in Appendix 1.

Field data, based on citizen focus group discussions, showed that the lack of waste diversion is a very (if not the most) evident problem to citizens.

⁹ Based on the Solid Waste Management Portfolio: Support and Evaluation Mission, TaDWIR Scoping Report

¹⁰ ISWM prepared in frame of Strategic Environmental and Social Assessment Study for Integrated Solid Waste Strategy, funded by World Bank and implemented by LDK

¹¹ Soer Report Lebanon State Of The Environment And Future Outlook: Turning The Crises Into Opportunities



D.2. Description

Establishing the legal framework is required to address the structural arrangements for CE in the SWM, and to adopt improvements with regard to technical, institutional and enforcement aspects. Complementary to the policy and legal framework the respective institutional arrangements and management tools should be established such as:

- a national solid waste information system (including CE indicators),
- authorities responsible for transition to the CE in the waste and other sectors in the economy.
- national legislation, aligned with EU and international legislation related to CE, along with a harmonisation plan and a methodology of participatory cooperation (e.g. in frame of working groups for the sub-sector/thematic regulations).
- revision of existing policies and development of action plans will favour CE that promote re-use and recycling and mobilize technical assistance aiming at further development of special waste streams management plans.

The specific recommendations in the domain of regulatory framework for CE are provided below:

- Developing the strategic action plans on CE and waste prevention.
 - Developing the Circular Economy Roadmap for Lebanon to serve as a strategic plan by setting desired outcomes and milestones necessary for achieving the transition to CE. The road map would include a framework for implementing CE principles, policy actions and intervention in legislation for transition towards CE. It should account for the characteristics of the Lebanese economy including differences between industries within and outside industrial cities.
 - In the preparation of the Circular Economy Road Map, the recent studies and policy papers should be considered, such as “How Lebanon is Switching to a Circular Economy” by UNDP
 - Preparing a waste minimisation programme with prevention/minimisation targets and actions for main waste streams
 - Developing strategy and action plan for household separate waste collection system for selected waste streams
 - Setting the CE policy measures on integration of waste treatment and waste recycling into the industrial development perspectives built on the results of EU programme GREEN Sawa component green businesses & circular economy of “GReen Economy and Environment through Stronger Advocacy and Wider Accountability”
 - Building climate resilience and resource efficiency measures
- Conducting analytical studies for implementing appropriate CE measures and action plans.
 - Assessment of market potential for application of circular economy principles in management of special categories of waste. The study would focus on the existing SWM regulatory and policy framework, and on mapping all relevant actors to identify the potential of Lebanon to shift into CE. It would map the producers of special categories of waste and assess the current setup (reuse of waste, recovery, recycling, disposal), including a breakdown of quantities.
 - Gap analysis of the existing legal framework to allow a smooth implementation of on the principles of CE¹¹.

¹¹ TaDWIR Scoping Report, March 2020



- Mapping of ongoing and proposed/future interventions, including the description of the context at the local level in light of potential pilot projects and municipality involvement.
 - identification of institutional capacities and deficiencies and potential areas of for improvement
 - Developing an inventory of industrial waste (IW), followed by an action plan for waste prevention to alleviate the overburden on the Municipal Solid Waste (MSW) management sector.
- Amending and developing respective regulations needed for introduction of CE principles
 - Revising the laws and considering adoption of a secondary legislation including recycling targets, definition and concept of source separation, reuse and recovery and waste prevention.
 - Drafting, consulting and implementing law on recycling and EPR needed for transition to CE in the SWM sector.
 - Improving the legal and strategic framework for waste management by amending applicable legislation, policies, and strategic documents to align with international standards and EU principles and directives governing the SWM sector.
 - Adopting a formal e-waste management system, with clearly assigned roles and responsibilities of various authorities, a well-defined licensing system, and an efficient storage and collection network.





D.3. Benchmarking

Waste Separate Collection



Textile Waste | 2025

Countries to establish separate collection of textile waste



Hazardous Household Waste | 2025

Countries to establish separate collection of hazardous household waste



Biowaste | 2023

Countries to ensure that biowaste is collected separately or recycled at source (for example, composting, digestion) or collected separately and is not mixed with other waste types



Plastic Bottles Waste | 2025

Countries to establish the separate collection of at least **77%** of single-use plastic bottles



Plastic Bottles Waste | 2029

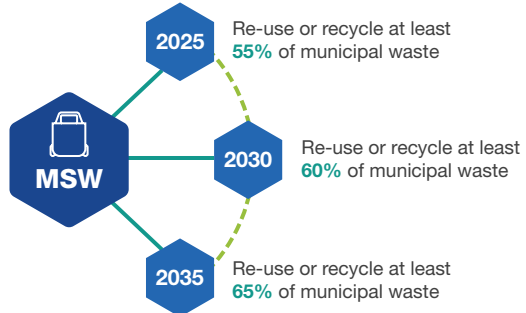
Countries to establish the separate collection of at least **90%** of single-use plastic bottles



Waste Electrical and Electronic Equipment | From 2019

Countries to separately collect **65%** of WEEE

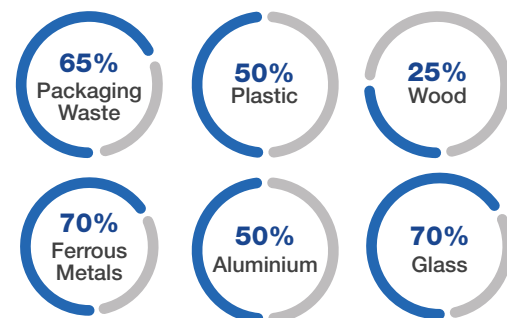
EU targets for reuse and recycle of MSW



EU targets for recycling of special waste streams

Countries to prepare to re-use or recycle at least the target percentage of the special waste stream categories by the time horizon specified

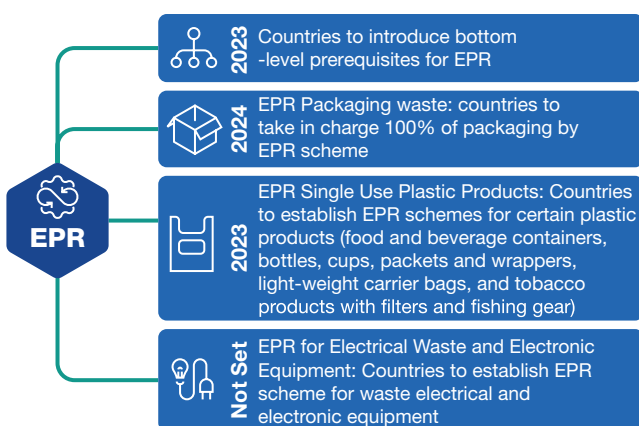
Time Horizon 2025



Time Horizon 2030



Targets for establishing the EPR



EU target to waste prevention policies



Waste Prevention Program



Ban on Products with Negative Externalities

Single Use Plastic Directive (EU 2019/904)



Product Design Requirements

Single Use Plastic Directive (EU 2019/904)



End-of-waste Criteria for Recycled Materials

Fertilizer Regulation (EU 2019/1009)



Minimum Requirements of Product Reparability and Recyclability

Ecodesign Directive (2009/125/EC) and EU Ecodesign implementing regulations (2019)

Restrictions on landfilling of all waste

Landfill Restriction – Landfill Directive (99/31/EC and EU 2018/850)

Countries to limit the share of municipal waste landfilled to **10%**



Landfill Restriction – Landfill Directive (99/31/EC and EU 2018/850)

Waste that is suitable for recycling or other material or energy recovery



Technical Note 5.2 – Institutional Framework and Stakeholders for Circular Economy

D.1. Justification

The development of a sustainable CE that allows for more efficient use of resources and returning recycled materials into production cycles requires effective cooperation between key stakeholders at the Lebanese government level, a modern strategic planning framework, economic sustainability, and reliability in the form of adequate financing for the sector, and active participation of the private sector. These institutional and technical conditions have not been defined yet in Lebanon. The current overall organizational set-up of SWM is not adequate for introducing CE due to the lack of dedicated structures for SWM, written procedures, task descriptions and consequently staff performance evaluations.

The law no. 80 on Waste Management foresees an institutional set-up for implementing ISWMS including SWM Coordination Committee, under the MoE composed of members of the relevant official administrations, economic and academic bodies, and environmental organizations and to be established National Solid Waste Management Authority. Such generally outlined set-up once established could serve for building up full-fledged organizational structures needed for planning and implementing CE actions.

The ministries and entities at all levels and local governments have limited capacities for the monitoring and inspection to ensure effective enforcement of legal requirements. The MoE remains understaffed and incapable of meeting the requirements and challenges of environmental governance and SWM and in particular with regard to the functions of monitoring, inspection and enforcement¹². For instance, there's no clear mandate as to the public administration to be held responsible for monitoring and managing packaging waste and WEEE management.

The private companies and organizations are an important segment for the CE growth with a growing number of SMEs willing to adopt circular business plans and practices. The SMEs are supported by various organizations and by the initiatives funded by international donors. The initiatives undertaken by the private sector are heavily depended on the International donor support. The overview of CE stakeholders in Lebanon is provided in Appendix no. 4.

¹² State of Environment Report 2020

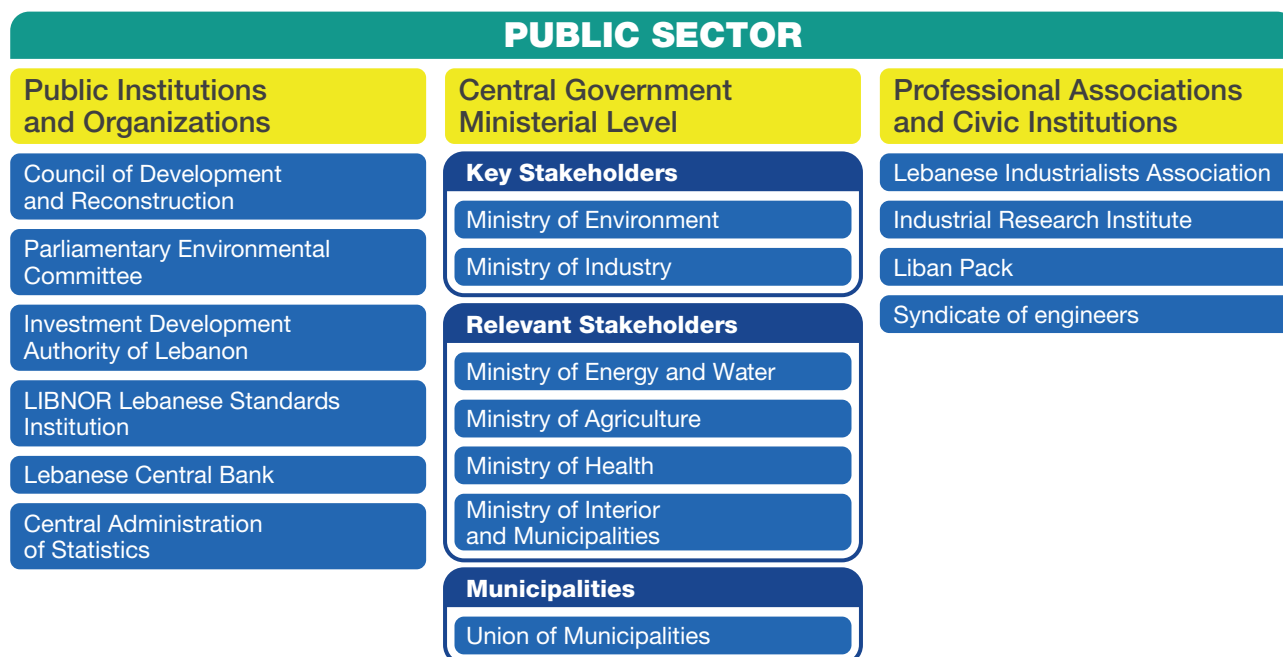


From the Field Data Collection

The mayors and citizens showed resentment against the government attitude to throw the ball in the municipalities' court in the absence of one leading entity to provide the needed support.

The current stakeholders for the integrated solid waste management and CE in the public sector are illustrated in the diagram below:

Figure 1. Stakeholders for Circular Economy in the public sector





D.2. Description

The capacity building of CE stakeholders tailored for specific target groups through modular trainings/workshops is required. This would aim at strengthening organisational and technical capacities of relevant public and private entities involved in waste collection and treatment to increase waste recovery through innovative cross-value chain waste governance for specific waste streams and designing and implementing respective pilot actions (development of EPR schemes / management systems for selected special waste streams).

The diagram below illustrates a simplified institutional set-up for CE based on the analysis of the context and current situation with four identified priority measures.

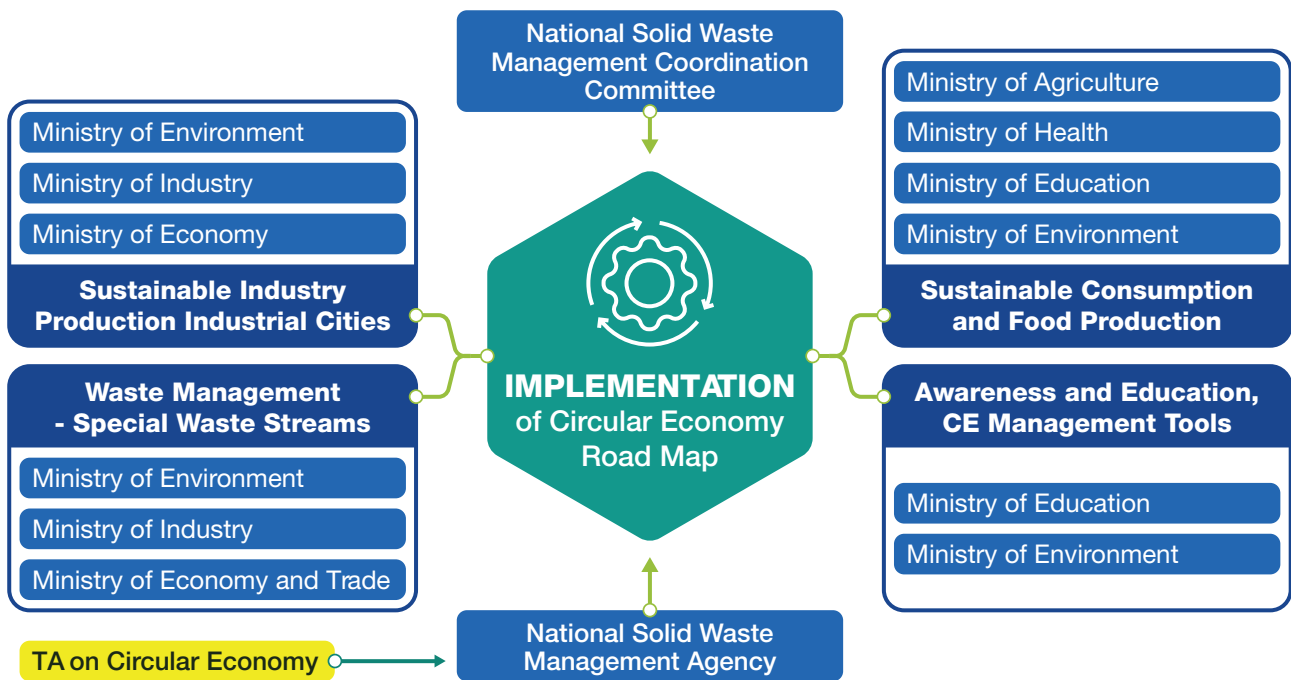


Figure 2. Indicative proposal for institutional set up for CE

The specific recommendations in the domain of Institutional Framework and Stakeholders for CE are provided below:

- Developing the concept and establishing the organizational structure for CE
 - Restructuring public administration to integrate all industrial activities (and the corresponding waste) under the jurisdiction of MoI.
 - Adjusting the structures of MoE and MoI in view of the challenges related to implementing the Road Map for CE and waste prevention plan
 - Developing an organizational structure of MoE for EPR coordination, supervision and monitoring with organisation
- Developing the capacity building and training plan for CE stakeholders
 - Preparing capacity building and recruitment plan for MoE and MoI including the topics on cooperation and coordination public and private sector stakeholders with regard to CE.

Preparing capacity building plan for municipal authorities to improve the technical and institutional performance capability for developing CE projects. The respective units at the



municipalities can be mandated with responsibility for designing/coordinating a detailed training and capacity development plan followed by improvements in SWM operations and on appropriate treatment options including plastic and packaging waste management and on respective policy framework. The training can include the concept for CE and related mechanisms (EPR). The municipalities could be in the future the main partners to the PROs for the successful implementation of the EPR systems. The inception training is conceived as means to build the capacity of municipalities to execute their duties in this respect. The training plan should identify target groups and to build their capacities to actively participate in the CE related initiatives.





D.3. Benchmarking

Poland

- Both the Ministry of Economic Development and Technology and the Ministry of Climate and Environment are engaged in circular economy activities
- A working group was established to facilitate cross-department collaboration.
- A public-private platform known as the Polish Circular Hotspot was set up to bring together national and local government bodies with businesses, entrepreneurs, the scientific community and civil society to jointly develop and apply the concept of a circular economy.
- Key partner helping to facilitate inter-agency collaborations is the Polish Institute of Innovation and Responsible Development (INNOWO)



Finland

- Finnish Innovation Fund (SITRA) prepared national roadmap for a circular economy.
- A steering committee composed of 21 members from businesses, administration, research, and non-government organizations



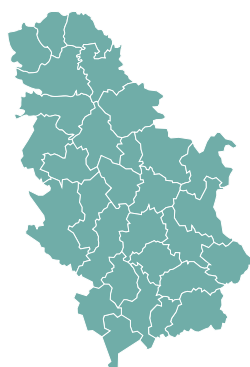
Montenegro

- Chamber of Commerce published the country's first roadmap for a circular economy, supported by UNDP country office and other experts.
- The government set up a CE working group for the green transition, which is coordinated by the Ministry of Economic Development and Tourism
- The CE working group includes key ministries (e.g. of Economy, Ecology, Capital Investments and Agriculture), institutions (e.g. the Chamber of Commerce), donors (e.g. UNDP), business associations and non-government organizations, to design and implement CE measures



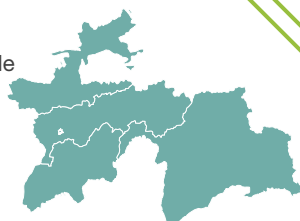
Serbia

- A Working Group for Circular Economy was set up in 2019 with representatives of all the national political institutions as well as several international actors (UNDP, GIZ, OSCE) to define policies in the field.
- Ministry of Environmental Protection, established a dedicated Department for Circular and Green Economy that cooperates with the waste and wastewater management and chemicals divisions.
- Some CE themes are implemented by other ministries
- The Ministry of Economy is implementing circular business models as one of the goals of its Industrial Policy Strategy for 2021–2030.
- The Ministry of Construction, Transport and Infrastructure is implementing measures on urban mobility
- The collaboration between these different actors takes place through joint projects, workshops and information sharing.



Tajikistan

- The National Strategy on Green Economy is implemented by the Ministry of Economic Development and Trade.
- A series of workshops are being set up with UNECE support to inform key stakeholders on the CE models.
- Several ministries are involved in these activities such as the Ministry of Agriculture and the Ministry of Industry.
- The private sector is also engaged in CE policy implementation for example through the presence of the Chamber of Commerce





Technical Note 5.3 – Economic and financial instruments

D.1. Justification

Under the current economic crisis of Lebanon, the industrialists are often not in position to secure the budget for the investment needed to shift into circular economy¹³. The budget of MoE is limited as compared to other Lebanese ministries limiting the capacity of MoE in efficient environmental governance and solid waste management. The missing economic and financial instruments (such as taxes and cost recovery systems) regulated by the existing laws discourage the commercial sector and local authorities to seek business opportunities in the solid waste management¹⁴.

Similarly, the municipalities are not able to recover the collection/treatment costs. The donor funding remains the main source for developing local small-scale waste treatment facilities and operation and maintenance (O&M) is covered by the central budget¹⁵.

The interviewed head of municipalities, in a large-scale survey targeting 80 municipalities in 24 districts of Lebanon, identified the lack of a cost recovery system as one of the three main legal gaps in the waste management sector.

The economic instruments that support the transition towards a CE have not been adopted. The concept for financing instruments for developing green and circular business models is a relatively new. There is no evidence of the use of financing instruments for CE implemented in the market. The international financial institutions (IFIs) and donors have been and remain at the forefront of providing support for financing green business models and initiatives. The credit lines guiding the investment of funds in green and circular business models, based on specific financing criteria are not available on the market.

D.2. Description

The measures on developing and implementing economic and financial instruments to reduce waste and boost utilization of all categories of waste are to be developed. They would include analysing and revising current economic and financial mechanisms and introducing the economic instruments for selected waste streams based on a life-cy-

¹³ Strategic Study no.1

¹⁴ State of Environment Report 2020

¹⁵ State of Environment Report 2020

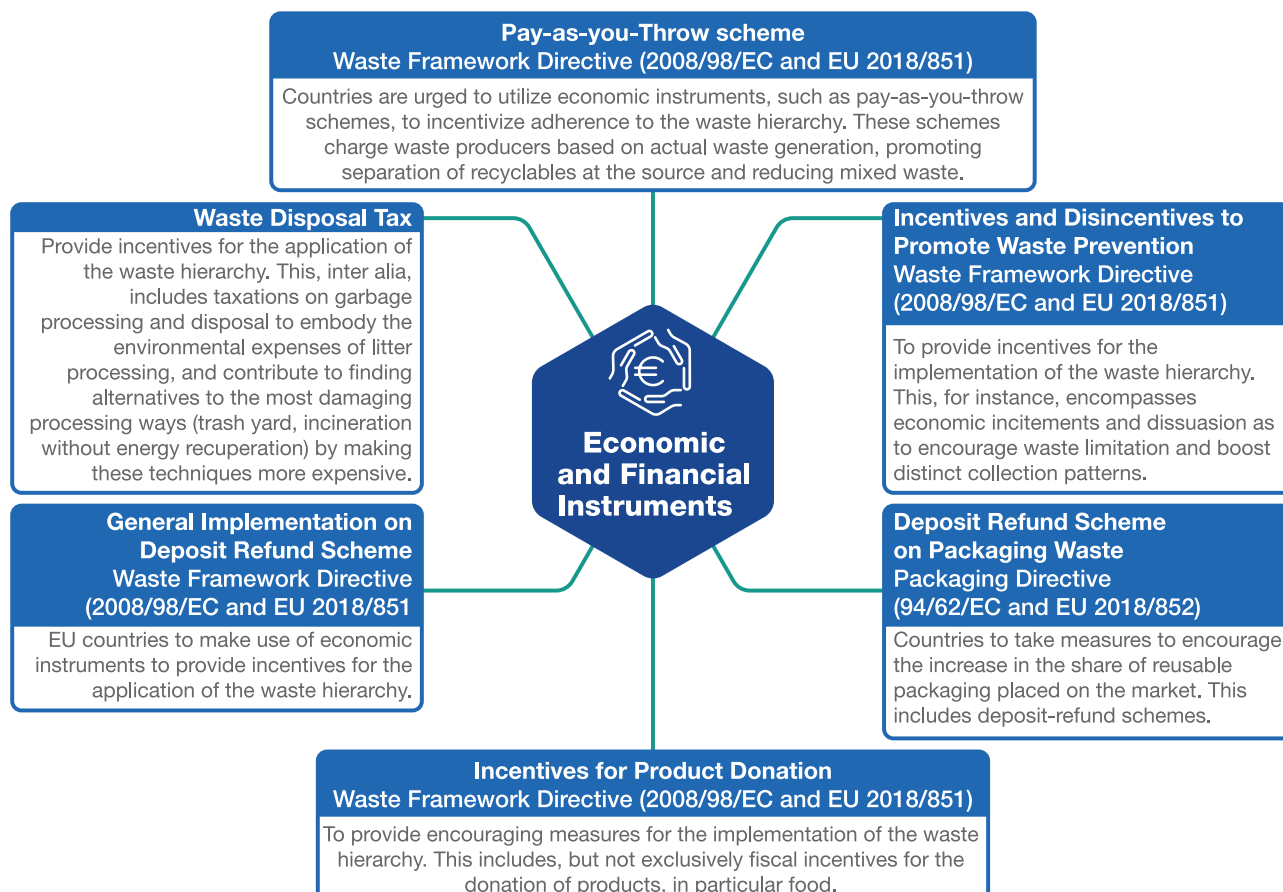


cle analysis. Also the regulations and guidelines for PROs with respective training programmes and developing modalities in cooperation with the municipalities and the waste service operators preparing supporting documents should be prepared.

The specific recommendations in the domain of Economic and financial instruments for CE are provided below:

- Developing and implementing economic and financial instruments to reduce waste and boost utilization of all categories of waste.
 - analysing options and defining recommendations for revising current economic and financial mechanisms and introducing new ones
 - introducing the economic instruments for selected waste streams based on life-cycle analysis
 - preparing the guidelines for PROs with respective training programmes and developing modalities on cooperation with the municipalities and the waste service providers
 - preparing supporting documents (i.e. contracts of PROs with producers, guidelines for municipalities for cooperation with PROs, EPR registry) so that PROs, Ministry of Industry on the industrial cities, municipalities and operators are able to commence the respective activities (separate collection, transport, treatment/ recycling)
 - introducing an import levy on all industrial waste streams (e.g. EEE, tires, vehicles) to ensure that sufficient finances are available to maintain a sustainable e-waste management system and that the costs for managing and monitoring the collection system are covered.

D.3. Benchmarking





Technical Note 5.4 – Financing Circular Economy

D.1. Justification

The political instability and economic challenges faced by Lebanon have hindered progress towards a more sustainable economy affecting the inflow of finance from international organizations for CE developments. The previously available domestic funding options have also been halted due to the ongoing economic crisis. A number of initiatives on the green financing have been however initiated and established.

The Bank Audi and EBRD have established the Green Economy Financing Facility (GEFF) to provide funding for Lebanon's sustainable development. This facility aimed at helping businesses and individuals to invest in commercially viable and profitable projects, which help the country transition to a low-carbon energy system, support sustainability into the future, and fight climate change¹⁶. The GEFF was made available for investment projects in renewable energy, energy efficiency, green buildings, water and wastewater reuse, sustainable land management, material and resource efficiency, and pollution abatement.

The National Energy Efficiency and Renewable Energy Action (NEEREA) is a national financing mechanism that allows private sector entities to obtain subsidized loans for energy efficiency and renewable energy projects. NEEREA is active through all Lebanese commercial banks under the leadership and management by the Central Bank of Lebanon-Banque du Liban¹⁷. NEEREA provides low interest (about 2.5 per cent) long-term loans to residential, commercial, non-profit and industrial users for all energy efficiency and renewable energy projects, including technologies to monitor and control the quality of a production to ensure that the process operates efficiently, with less waste generated.

D.2. Description

For developing the sound and sustainable financial market for CE and financial instruments, a number of measures should be considered. They can be identified and formulated based on reviewing the current situation with existing practices, as well as donors' ongoing and planned activities. In this regard, a management tool shall be developed, based on specific technical criteria, to assess the implementation and financing of potential CE projects.

The specific recommendations in the domain of financing CE are provided below:

- Developing analysis of the financial market for CE and proposal of financial instruments

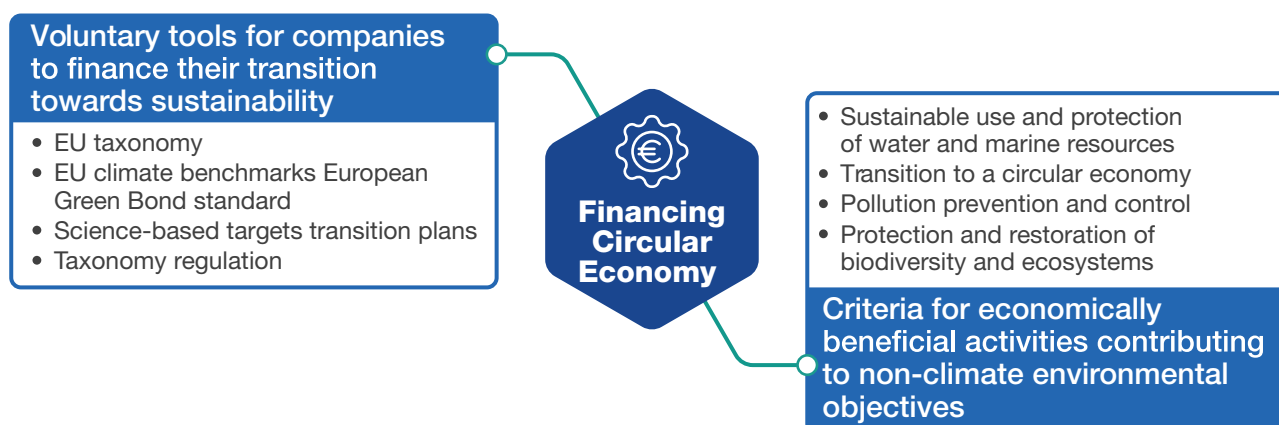
¹⁶ [GEFF Lebanon – Welcome to the Green Economy Financing Facility \(ebrdgeff.com\)](http://ebrdgeff.com)

¹⁷ [NEEREA | LCEC](http://neerea.lcec.org)



- reviewing the existing practices, donors' ongoing and planned activities and establishing the platform for financing Green/Circular Economy projects through donors' programmes
 - developing specific technical criteria for the assessment of potential CE projects and for financing by donors, local funding institutions or private investors.
 - establishing the sustainable financial instruments to accelerate CE growth. The EU Sustainable Finance framework¹⁸ can be considered as a basis for developing financial framework in the context of Lebanon.
 - exploring different mechanisms to allow access to funds domestically for CE businesses via variable financing mechanisms.
- Planning and implementing capacity building in the area of CE financial instruments
 - building the capacity and knowledge of support organisations and CE businesses to explore alternative sources of funding, particularly on sustainable financing mechanisms.
 - establishing the mechanisms for communication and cooperation between the donor community and the public and private sectors

D.3. Benchmarking



¹⁸ [BANKING AND FINANCE - Sustainable finance \(europa.eu\)](https://ec.europa.eu/economy_finance/sustainable-finance-2020)

D.



Technical Note 5.5 – Monitoring framework for Circular Economy

D.1. Justification

A viable and effective strategic planning process for waste management requires integrated and reliable data on SWM. However, many of the strategic documents in the SWM sector have been based on unrealistic assessments of waste quantity and composition, leading to unsustainable investments. Moreover, the lack of quality and reliable statistics hinders reporting to the entity and national statistics institutions (Administration Centrale de la Statistique Republique Libanaise). The current lack of reliable data prevents data-driven planning, leading to inefficient (or non-applicable) decisions and regulations¹⁹. A nation-wide data collection and analysis has not been established that lead to decisions not grounded on the sound information. The SWM databases and statistics are limited to only selected topics of waste streams. The limited capacities for monitoring the collection and treatment of hazardous chemical waste have been often reported solely within the donor funded studies.

D.2. Description

The establishment of the National Solid Waste Information System is required to provide relevant and up-to-date data on the state of the solid waste nationally with reflection on CE indicators. It is crucial to support evidence-based decision-making and to allow systematic monitoring of the laws, policies and all related programs and projects both in the overall SWM and CE.

The system can be an electronic based facility portal with indicators, and reporting mechanisms and processes established. The concept for SWM and CE information system can refer to and be based on the WasteAware Benchmark Indicators for integrated sustainable waste management in cities . It is critical that it should be aligned with all existing and current efforts related to establishing environmental information systems in order to avoid overlapping and to ensure synergies.

The specific recommendations in the domain of monitoring framework for CE are provided below:

¹⁹ Strategic Study no.1

²⁰ [WasteAware Benchmark Indicators - Plastic Smart Cities](#)

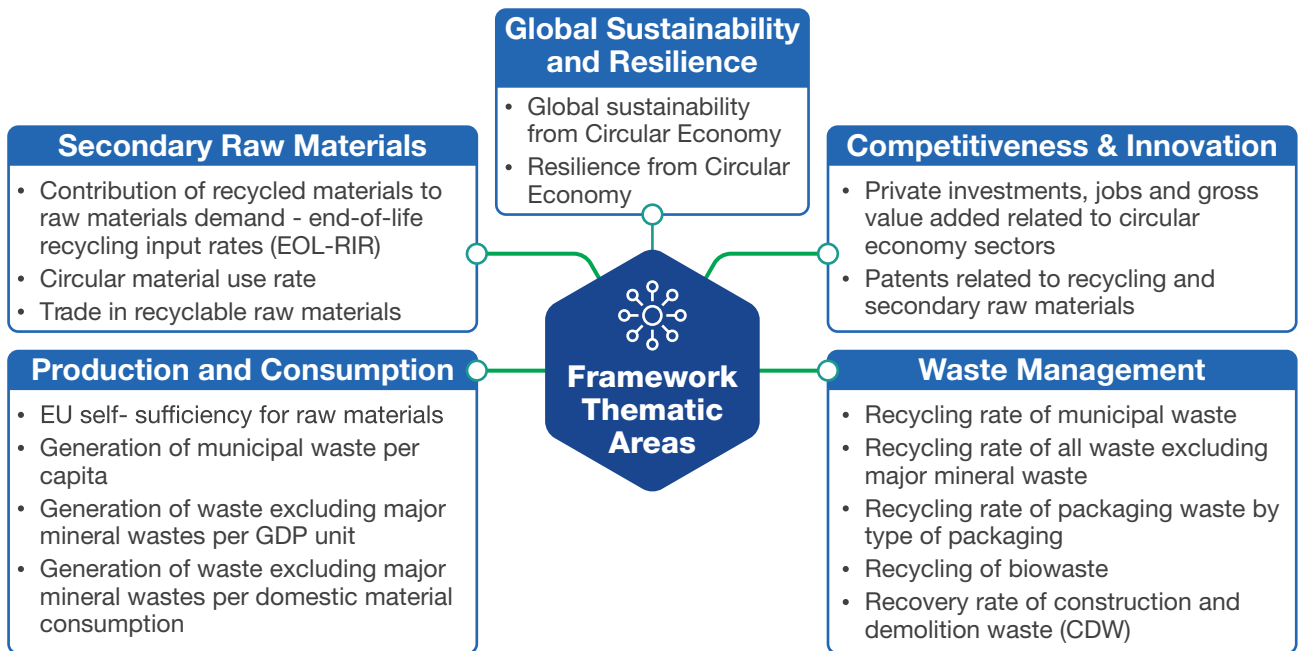


- Identifying baselines and indicators for the CE economy
 - developing Key Performance Indicators (KPIs), within the system of data reporting, storage and analysis
 - developing main and sectoral targets and indicators for the Roadmap for CE across priority sectors and establishing a baseline for these CE targets and indicators
 - developing and consolidating Lebanon's-specific MSW indicators and KPIs
 - establishing baseline data for identified priority CE sectors
 - elaborating a comprehensive set of indicators with scoping and methodologies with all related processes for data verification, analysis and reporting
 - conducting a baseline study on MSW including review of the relevant and available practices of data collection and reporting and carrying out a data gap analysis
- Developing the Information system for Circular Economy in the waste management
 - developing Information Technology (IT) systems/tools for waste management/prevention to help MoE and Mol assess and report on all aspects of waste management such as quantities generated, management practices (collection, storage, treatment/recycling) applied, with monitoring/reporting requirements. The IT system would also support in implementing waste prevention and minimization measures.
 - developing and establishing the National Municipal Solid Waste Information System. The system shall include a framework for collection and reporting processes and clear roles/ responsibility for providing input, conducting reviews, verifying and analyzing of the data.
 - a complementary system needs to be developed for Mol.
- Developing the institutional set-up for managing the IT for CE
 - setting up a cooperation mechanisms between the various organisations collecting statistical information, introducing a practical reporting system based on weight- based data;
 - designing the SWM information reporting processes with identified roles and responsibilities along with the chain of reporting, developing the reporting template, scoping the Solid Waste information management system requirements, and setting the quality control and monitoring requirements
- Capacity building and training
 - training the relevant staff of MoE and Mol on the application and maintenance of the IT system.





D.3. Benchmarking





Technical Note 5.6 – Priority sectors and waste streams for Circular Economy

D.1. Justification

The potential for a Circular Economy in Lebanon concerns a number of sectors and product life chains. The potential would (1) bring along the opportunities for expansion of new local market and creation of new jobs, (2) contribute to improved waste management systems and (3) reduce environmental degradation. A number of studies²¹ have identified priority sectors and waste streams for which CE principles can be realistically applied in Lebanon such as: bio-waste, e-waste, plastic, paper, construction waste, fabric and glass, among others. As such, the waste sector would then perform the role of a horizontal enabler of the transition to CE.

There are a number of TA projects and initiatives aimed at testing the preparedness for transition to CE in Lebanon. The “Private Sector Transition to a Green and Circular Economy in Lebanon” project implemented by UNIDO and funded by EU, aims among other objectives at introducing CE principles to Lebanon’s Food and Beverage industrial sector²². The successful initiatives have been noted and one of them is SICOMO paper recycling factory that use their own and its neighboring industries waste and SWM facilities for producing the energy at their on-site waste-to-energy facility with a capacity of 2.5 MW thermal energy, converting about 80-100 tons of waste daily to produce energy. There is a potential for reuse of waste materials such as aluminum, steel, plastic, copper and others that are exported as “scrap” upon approval of Mol. The Mol does not collect the data on the amount of “scraps” that has usually commercial value and can be considered for recycling or reuse processes.

The Mol identified four areas where the development of industrial cities would likely create a positive environment for investments. The identified areas are:

- Shakadif village in southern Lebanon,
- Tebna Industrial City near Saida,
- Dmoul Industrial City close to Tyre,
- Terbol Industrial City in the Bekaa Valley

The positive outcomes of managing waste in the industrial cities are anticipated due to the following factors:

²¹ Such as The Paper “Towards a Circular Economy in Lebanon” issued in 2020

²² Strategic Study 1 Enablers for a sustainable solid waste management system in Lebanon



- industrial activities are contained in the designed areas and specific locations;
- waste management data are managed by the Mol;
- waste management facilities are managed solely by one entity -Mol

In comparison, factories located outside industrial cities are scattered and under the responsibility of various municipalities and transferring their waste mixed with municipal waste contributing to bottlenecks of the SWM facilities operated by municipalities. This situation comes from that the IW is considered often, as second priority compared to other streams (e.g. healthcare waste), which prevents from implementing IW related policies and actions.

There are many donor driven initiatives on management specific waste streams. Currently, there is however no systemic and regulated solution on a national level nor even on a regional level for managing the special waste streams. The studies for management of e-waste and medical waste are currently being developed under TADWIR. The other studies were developed to propose solutions for managing the special waste streams and hazardous waste by the Research and Development centers of some industries, and universities, however often the proposed measures remained unimplemented. The examples of the initiatives on managing special waste streams in Lebanon are presented in Appendix 5. The data on special waste streams management is presented in Appendix 6.

D.2. Description

It is recommended to conduct assessment of market potential for application of CE principles in management of special categories of waste. The assessment would need to be tailored to the needs of Lebanon and include mapping of the producers of special categories of waste and identify respective waste quantities. The interests and capacities of manufacturing companies to utilise wastes from different resources, including conditions required by companies as well as interests of institutions and organisations to host waste stock exchange platform should be evaluated.

The specific recommendations in the domain of Priority sectors and waste streams for Circular Economy are provided below:

- Conducting analysis for managing the special waste streams
 - developing a study estimating the quantities and types of food and beverage plastic packaging placed in the market and in the material flow (import, export, production, consumption, waste management), with recommendations to enhance respective data collection and information system
 - developing an assessment study on the policy framework of Food and Beverage (F&B) packaging waste to identify the main policy gaps and bottlenecks to applying the principles of circularity to plastic packaging in the F&B industry
 - assessing quantities of major waste streams (e.g. municipal, industrial, C&D waste, F&B, agricultural waste) and their potential for minimisation/ prevention options
 - developing a data-driven analysis to guide Mol on options for local reuse of currently exported valuable “scrap” and potential for recovery and recycling
 - carrying out the mapping of re-selling/reparation centres in each governorate and/or big city where the citizens can purchase/ repair their electronic devices as well as other consumer goods and establishing the waste/goods exchange platform where



types/quantities of wastes/damaged goods can be exchanged between enterprises (i.e. wastes of one can be used as raw material by other, e.g., waste oils/tyres as fuel for the cement industry)

- developing the cost analysis (investment, operational) and returns (gate fee, sellings, etc.) for pilot projects
- selecting specific geographical areas (e.g. governorate, city, district) for implementing the whole chain of separation, collection, transport, treatment/recycling
- Developing CE pilot projects and project concepts for implementation and funding
 - developing Circular Value Recovery Models, e.g., recovery of materials from separately collected waste, recovery and valorisation of separately collected biomass waste; and other waste generated by industry and energy sectors
 - developing proposals for pilot projects for EPR streams by selecting specific geographical areas (e.g., governorates) where the whole chain of separation, collection, transport, treatment/recycling will be defined and costs (investment, operational) and returns will be estimated. The project proposals could be based on the practices on waste prevention/reduction (and examples of good practices) of EU countries.
 - developing pilot projects for EPR for Construction Demolition Waste (CDW) including assessment of the methods of separation and disposal, safety standards, and inspection procedures
 - developing pilot projects on civic amenity sites with selected municipality and a place identified for bringing separated types of municipal/household waste streams (except the “classical” mixed municipal wastes) by citizens/or private companies (e.g. bulky wastes, small quantities of hazardous wastes such as paints, glues, pharmaceuticals, agro-wastes etc.).
 - developing projects on reuse of non-recyclable IW as an alternative fuel in high-energy demanding industries
 - developing pilot project on CDW following the EU practices on management, safety standards and inspection procedures
 - preparing a portfolio of bankable investment projects and financing scenarios to address any capacities that are missing in order to fully implement the designed collection and treatment schemes for waste recovery and recycling. The source of the data for preparing the pipeline can be sought at relative ministries, Association of Lebanese industrials, Lebanese Incubators and accelerators, National Council for Scientific Research and in the patent department of the Ministry of Economy.
- Further development of EPR systems
 - upgrading the EPR schemes for waste packaging and WEEE by establishing financial flows, fees, payments and regulating the involvement of the informal sector as well as ensuring adequate collection and disposal of other special wastes, such as batteries, car batteries, old tires, refuse oil, ELV, CDW, sludge, animal waste, and medical waste. This action may include measures on integrating informal waste collectors into the recycling system.
 - developing a comprehensive analysis of the existing EPR system and propose amendments to better define responsibilities of municipalities and system operators, reviewing documentation and reporting requirements, including reviewing costs and fees
 - developing Circular Use Models, e.g., reuse, repair, refurbishing and remanufacturing of end-of-life or redundant products, reuse and sharing models based on leasing or pay-per-use; (e.g., design and production of products and assets that increase re-



source efficiency, durability, functionality, modularity, upgradability, easy disassembly, and repair)

- developing concepts for mechanism and calculation formulas for fees/product taxes, and establishing transparent mechanisms to enforce legal requirements.
- establishing Waste Exchange Platform to supply the private and public stakeholders with transparent information about the availability of secondary raw materials. The aim of such facility would be to improve the management of the special categories of waste and strengthen the market of recyclable materials.
- Capacity building in CE project development and implementation
 - developing the capacity building and training plan for the local authorities on CE concepts, benefits, key sectors (CE on industrial scale, circular cities, entrepreneurship, etc.) and best CE practices for the management of special waste streams, waste collection schemes and waste recovery and recycling technologies.

D.3. Benchmarking

The value chains and respective policy measures have been identified by EU as key in the Circular Economy Action Plan.

Special Waste Streams	Policy actions and instruments
Electric and electronic waste/E-waste	• devices are designed for energy efficiency and durability, reparability, upgradability, maintenance, reuse and recycling – (Ecodesign Directive) • electronics and ICT as a priority sector for implementing the ‘right to repair’, including a right to update obsolete software • regulatory measures on chargers for mobile phones and similar devices, including the introduction of a common charger • take back scheme to return or sell back old mobile phones, tablets and chargers; • restrictions of hazardous substances in electrical and electronic equipment
Batteries and vehicles	• rules on recycled content and measures to improve the collection and recycling rates of all batteries, ensure the recovery of valuable materials and provide guidance to consumers; • addressing non-rechargeable batteries with a view to progressively phasing out their use where alternatives exists • sustainability and transparency requirements for batteries taking account of, for instance, the carbon footprint of battery manufacturing, ethical sourcing of raw materials and security of supply, and facilitating reuse, repurposing and recycling.
Packaging waste	• reducing (over)packaging and packaging waste, including by setting targets and other waste prevention measures; • driving design for re-use and recyclability of packaging • reducing the complexity of packaging materials, including the number of materials and polymers used.
Plastics	• restricting intentionally added microplastics and tackling pellets • developing labelling, standardisation, certification and regulatory measures on unintentional release of microplastics, including measures to increase the capture of microplastics at all relevant stages of products’ lifecycle; • developing and harmonising methods for measuring unintentionally released microplastics, especially from tyres and textiles, and delivering harmonised data on microplastics concentrations in seawater;



Construction and demolition waste	• introduction of recycled content requirements for certain construction products, taking into account their safety and functionality • promoting measures to improve the durability and adaptability of built assets in line with the circular economy principles for buildings design³⁶ and developing digital logbooks for buildings • promoting initiatives to reduce soil sealing, rehabilitate abandoned or contaminated brownfields and increase the safe, sustainable and circular use of excavated soils.
Textiles	• developing eco-design measures to ensure that textile products are fit for circularity, ensuring the uptake of secondary raw materials, tackling the presence of hazardous chemicals • providing incentives and support to product-as-service models, circular materials and production processes, and increasing transparency through international cooperation; • boosting the sorting, re-use and recycling of textiles, including through innovation, encouraging industrial applications and regulatory measures such as extended producer responsibility.
Food, water and nutrients	• facilitate water reuse and efficiency, including in industrial processes. • develop an Integrated Nutrient Management Plan
Single-use plastic products	• labelling of products such as tobacco, beverage cups and wet wipes and ensuring the introduction of tethered caps for bottles to prevent littering; • developing rules on measuring recycled content in products
Waste tires	• the EC banned the landfilling of end-of-life tyres • extended producers responsibility schemes have been created collecting, recycling and recovering end-of-life tyres.
Municipal solid waste	• the target of maximum 10% waste landfilled was set and 65% of recycled
Glass (construction)	• targets on C&D waste such as glass 70% • mandatory provisions on dismantling and sorting of glass in renovation and demolition works. • mandatory audits carried before demolition or renovation of large buildings. • ban landfill deposit of economically recyclable glass such as single clear glass panes and insulating glass units.
Refuse-derived fuel	• the production of refuse-derived fuel and solid recovered fuel should be from non-recyclable wastes
Bio-Food Waste	• reduction targets set by the end of 2030 by 10%, in processing and manufacturing and by 30% (per capita), jointly at retail and consumption (restaurants, food services and households)



Technical Note 5.7 – Information, Awareness and Education in CE

D.1. Justification

The lack of “streamlined” public awareness about the importance of waste separation and recycling is a major contributing factor to the current situation of Lebanon. Despite some limited activities in schools, there are no regular and continuous public awareness programs. The communication plan for the sector of waste management has been developed under the Solid Waste Management Portfolio: Support and Evaluation Mission²³. The plan includes the action on developing educational and informational materials on SWM concepts including CE, Life Cycle Assessment, waste hierarchy and polluter pays principles. Yet, the wider population is not systematically informed on the decision making, public policy development and strategic planning. For instance, the decisions at the local level are not consulted with populations²⁴ leading to loss of interest in learning about the local initiatives. A national comprehensive awareness program have not been prepared and only municipal initiatives actions aimed at awareness and involvement have taken place at the local level²⁵.

Based on 24 focus group discussions, in all 24 districts of the country (except Beirut), the citizens blame the NGO awareness initiatives for inadequate planning and lack of continuity of support or absence of follow up by local authorities.

D.2. Description

Increasing awareness on the concept and practises of CE by implementing a countrywide public awareness raising campaign for identified target audience and stakeholders and with specific and measurable objectives. The awareness campaign would include, among other topics waste sorting at source and promoting household composting. The campaign should be aligned with the target audience, and be based on key messages, communication techniques and monitoring tools. Messages and recommendations should then be developed with wider public and decision makers.

A numerous analysis and policy papers have been prepared that call for increasing public awareness in the integrated solid waste management. For instance Hall Open Science in the Paper “Solid Waste Management in Lebanon: Lessons for Decentralisation” pro-

²³ UN Environment Document Repository Ref: ENI 2018/396-926

²⁴ The public participation principle of Law 444/2002, and the public consultation requirement of EIA decree 8633/2012.

²⁵ State of Environment Report 2020



motes involving citizens and informal recycling actors to promote environmentally sound practices of the CE. Also, it recommends that MoE and local authorities organise policy dialogues and debates and involve CSOs and citizen groups in planning and implementing SWM projects including waste reduction, source separation and recycling. It is crucial to raise awareness of the waste management sector in an ongoing manner, while simultaneously constructing the necessary infrastructure to improve efficiency.

The specific recommendations in the domain of Information, Awareness and Education in CE are provided below:

- Planning awareness and information activities on CE
 - developing activities to raise awareness about proper waste separation, collection, and disposal through up to-date, gender-sensitive, inclusive, and informative awareness-raising campaigns across all levels of government.
 - supporting reduce-reuse initiatives and awareness raising built on the results of EU programme GREEN Sawa (component non state actors of Green Economy and Environment through Stronger Advocacy and Wider Accountability)²⁶
 - developing main messages of the campaign, communicated through different channels, to focus on environmental, social and economic arguments and benefits of waste selection, recovery and recycling. The campaign should highlight best practices and success stories, with a focus on “regular” people and their achievements.
 - setting specific activities that allows building consensus and shared understanding towards a common goal, such as environmental protection and sustainable waste management/resource recovery.
 - integrating the concepts of circularity in the economy and waste management at different levels of formal and informal education
 - enhancing the skills and capacities of youth by developing CE programs that capture their interest and attention.
- Institutional building for awareness and information on CE
 - setting up the system for a systematic public communication and awareness programmes by municipalities including budget allocations

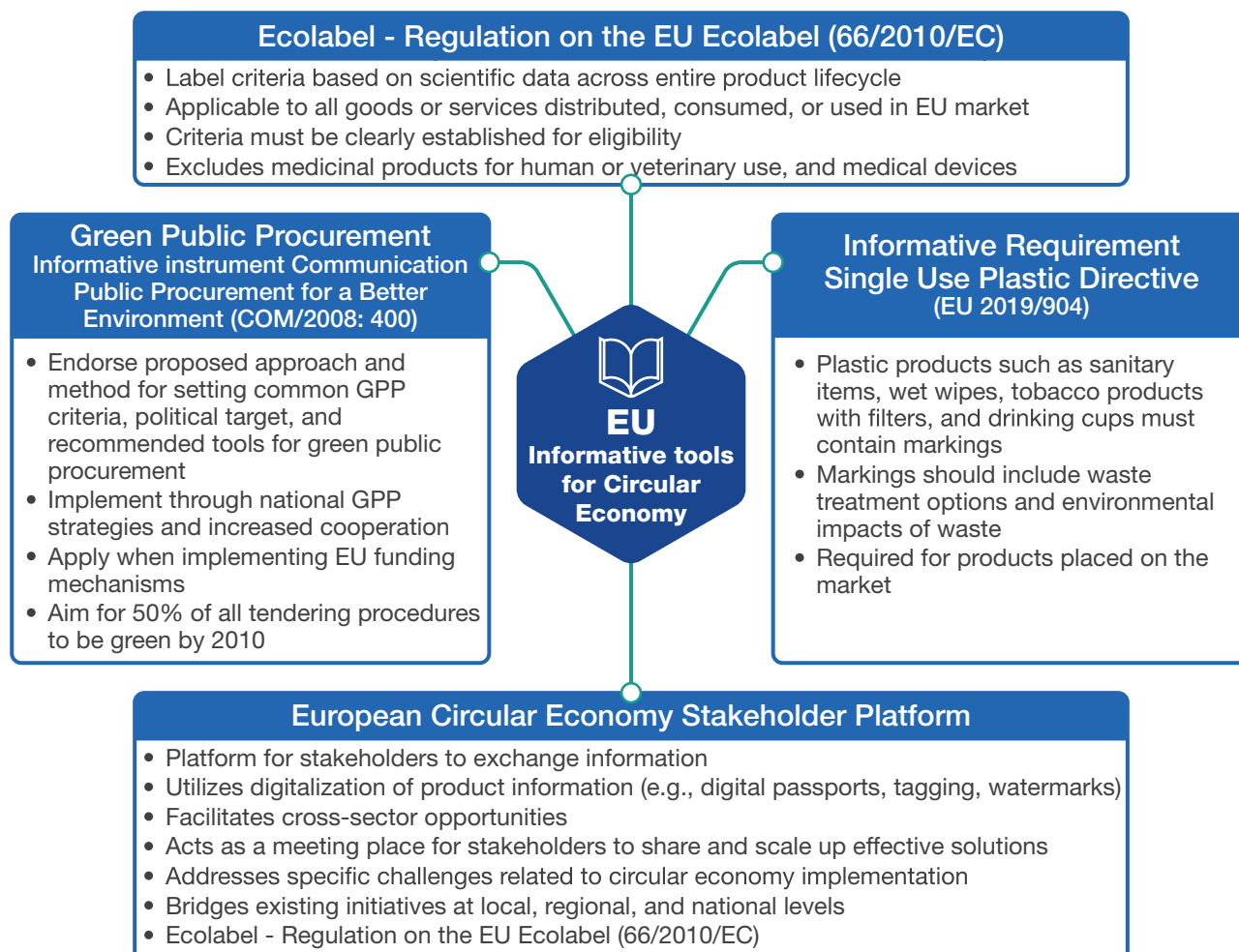


²⁶ TaDWIR Scoping Report, March 2020,



D.3. Benchmarking

The EC has established a number of instruments and facilities regarding the information and awareness on CE. The selected most important are presented in the table below:





Appendix 1

The overview of gaps in main regulations addressing the SWM in Lebanon

Topic/Waste Category	Regulation (not adopted/ adopted but not implemented, under preparation etc.)
Laws on waste management (general)	• Law 80/2018 (On integrated solid waste management) • Environmental Governance Law 251/2014 • Decree 8735/1974 assigning SWM as a municipal responsibility; • Decree 9093/2002 providing municipalities with an incentive to host a waste management facility; • Decree 1117/2008 that provides incentives to the Municipalities hosting a sanitary landfill
MOE Decree 5605 /2019	Segregation at the source of the streams 1/ dry recyclable materials (plastic, metal, glass, paper, cardboard and 2/ wet materials (Organic material and food waste) and Waste Residues.
Laws on "polluter pays" and "producer responsibility" principles	Not adopted
Electric and electronic waste	Decree No. 5606/2019 on the determination of the fundamentals of hazardous waste management, which includes e-waste
Packaging waste	Not adopted/regulated
Construction waste	Not adopted/regulated
Waste tires	Not adopted/regulated
End of life vehicles	Not adopted/regulated
Waste batteries and accumulators	Not adopted/regulated
Waste oils	Not adopted/regulated
Sewage sludge	Not adopted/regulated
Lightweight plastic carrier bags	Not adopted/regulated
Single-use plastic products	Not adopted/regulated



Appendix 2

Waste Management Data - Lebanon

The table below has been prepared based on available studies and reports, by contracted organizations and companies, under national and international initiatives for the advancement of the waste management sector in Lebanon. The list of reference reports and studies is provided in Appendix 15.

Waste Management Indicator/ Baseline data	Data
Population	6,848,925
Number of municipalities having access to waste collection services	1,058 .
Municipal Solid Waste (MSW) generated daily per capita	1.05 kg
Total quantity of solid waste generated (t/y)	2,700,000 tons per year
Total quantity of waste generated (t/d)	6700 ton per day
Total quantity of waste generated commercial sector	900 ton of waste per day
National estimate for waste recovery	13%
Share of paper and cardboards in MSW generated	15-17%
Share of plastic in MSW generated	10-13%
Share of metal in MSW generated	6 %
Share of glass in MSW generated	4 %
MSW collection coverage is estimated at for urban areas	100% ²⁷
MSW collection for rural areas	99%
Final disposal sites	3
Share of MSW landfilled	48%
Share of MSW openly dumped	29%
Share of MSW recycled	8 %
Percentage sent of Waste-to-energy facility	2%
Collected by informal sector	1%
Percentage sent to material recovery facility	65%
Percentage sent to material recovery facility for recycling sent for recycling	5%
Percentage sent to material recovery facility for composting sent to dumpsites	32%
Total share of disposed waste in the landfills	44%
Total share of disposed waste in dumpsites.	36%
Total share of recovered non-organic materials delivered to the recycling industry	6%

²⁷ https://www.retech-germany.net/fileadmin/retech/05_mediathek/laenderinformationen/Libanon_RA_ANG_WEB_Laenderprofile_sweep_net.pdf



Appendix 3

The overview of the regulations on waste management

The Law No.80 of 2018 on Integrated Solid Waste Management (ISWM) is the most recent and important milestone for further development of an adequate legislative framework for the SWM sector of Lebanon. The Law provides foundations for decentralized and NISWMS (currently under development) and promotes fundamental concepts such as the 3Rs approach ("reduce," followed by "reuse" and then "recycle.") polluter pays principle, economic instruments and CE. The law does not however include important elements necessary for the effective transition to the CE. For instance, the regulations on the specific streams in order to maximize recycling/reuse, and respective economic and management mechanisms such as "Pay as you throw", Extended Producer Responsibility, taxes on specific materials have not been there provided. The law does not either include definitions nor priorities for waste management hierarchy, nor specific principles of the CE in the waste management. For instance, the recycling targets have not been defined for specific waste streams. The specific concepts for waste prevention have not been provided and standards for disposal of specific hazardous materials (e.g. asbestos-containing waste).²⁸ However the general definitions on the source separation, reuse and recovery have been provided (art.3).

The Law no. 444 of 2002 on environmental protection contains principles of sustainable consumption and production and provides a number of measures such as:

- supporting cleaner manufacturing processes,
- maintaining ecosystems,
- prohibiting practices that could degrade natural resources,
- obligating for environmental assessments,
- setting landfill standards and promotes recycling.

The decree no. 167, 17/2/2017 regulates tax relief on investments in environmental protection, particularly on the purchase of technology for monitoring environmental impact or quality, renewable energy, or waste management.

The law on air quality protection no. 78, 13/4/2018 establishes measures to promote clean air, reduce impacts on the environment and human health, and supports in meeting its international obligations on climate change.

²⁸ State of Environment Report 2020



Decree No. 5606/2019 provides for determination of the fundamentals of hazardous waste management, which lists e-waste as hazardous waste.

The draft decree household solid waste sorting-at-source, based on the Court of State recommendation number 603/2018-2019 of 21/8/2019 was approved.





Appendix 4

The overview of CE stakeholders in Lebanon is provided

Name of Entity	Description of roles and mandates
Ministry of Environment	• formulating general environmental policy on protection of the environment through specific strategies, plans, programs, projects, activities and studies • drafting of laws including for the integrated management of various types of waste • monitoring implementation of the strategies • setting monitoring standards and regulations (chemicals that pose a danger to the environment, limit values for non-hazardous solid waste, construction and layout of waste treatment centres) • reviewing and evaluating studies and specifications for the construction and development of WM centres by other entities (EIAs); • participating in steering committees for the establishment and operation of treatment centres and landfills
Ministry of Industry	• developing green economy policies in industry • establishing the sector policies for green technologies and waste streams (E-waste, batteries chemical process waste)
Council of Development and Reconstruction	• developing research studies for development and reconstruction projects, including waste management. • planning the country's infrastructure (incl. SWM facilities). • managing the process, post-project operations), the collection and transport of solid waste, • launching tenders for SWM incl. the drafting of specifications for disposal facilities. • drawing -up plans for the SWM projects. • overseeing the establishment of principles for SWM • planning agreements with Solidere²⁹ for construction of infrastructure to support waste collection activities.in Beirut
Office of the Minister of State for Administrative Reform	• implementing SWM projects • supervising SWM facilities • supporting operations of SWM facilities by managing subsidies to operational costs financed through the national budget

²⁹ The Lebanese Company for the Development and Reconstruction of Beirut Central District s.a.l.



Ministry of Finance	monitoring the Independent Municipal Fund setup for funding overall waste management (including collection, transfer, treatment and final disposal)
Ministry of Interior and Municipalities	conducting (the General Planning Department) studies on towns and villages regarding collection and treatment of household waste
Municipalities/ Unions of Municipalities	- identifying SWM projects - identifying industrial and agricultural waste treatment sites. - street cleaning - collecting taxes for street cleaning
Parliamentary Environmental Committee	revising and approving of SMW laws and regulations
Ministry of Health (MoH)	establishing the policies for managing healthcare waste
Ministry of Agriculture (MoA)	establishing sector policies for managing agricultural and food preparation waste
Operators of waste treatment facilities	- operating and maintaining SWM facilities - collecting, transferring and treating municipal waste designing facilities
Ministry of Economy and Trade	elaborating, coordinating and implementing plans for trade and economic development
Ministry of Public Work and Transportation	- setting, implementing and monitoring all policies related to land and maritime transport - constructing, rehabilitating, and maintaining public roads and government buildings - setting and implementing air transport policies, controlling the air traffic - setting and putting into practice land use policies
Ministry of Social Affairs	planning and providing social protection and assistance
IDAL - Investment Development Authority of Lebanon	- promoting Lebanon as a key investment destination, and attracting, facilitating and retaining investments in the country. - providing investors with a range of incentives and business support services. - Identifying priority sectors for investment potential and impact on socio-economic growth, including Agriculture, Agro Industry, Industry, IT, Media, Technology, Telecommunication and Tourism sectors.
LIBNOR Lebanese standard institution	issuing, publishing and amending national standards and authorizing the use of the Lebanese Conformity Mark proving the compliance of products to Lebanese standards
Lebanese Industrialists Association	- supporting business development and operations - administering a program for Lebanese industrial firms aiming to improve their wastewater management. Implementing the Industrial Wastewater Treatment (IWT) Project funded by the Community Support Program (CSP) at the United States Agency for International Development (USAID). - developing and enhancing the culture of industrial wastewater treatment - promoting sound treatment of wastewater, and complying with the environmental regulations
Industrial Research Institute	- conducting studies, industrial research and scientific testing, calibration, inspection and certification (system, product and personnel). - ensuring an adequate service regarding technical and scientific support to the Lebanese industrialists and the national economy, especially in the framework of the partnership's agreements with the European Community and Lebanon's integration in the World Trade Organization (WTO)



The Lebanese Cleaner Production Centre (LCPC)	• assisting the Lebanese industrial enterprises to export their products within the process of Lebanon's accessing the World Trade Organisation
The Federation of Chambers of Commerce, Industry & Agriculture in Lebanon	• providing consular services to members, which include certification of origin and authentication of commercial documents. • managing the membership roster of the Chamber includes around 15000 enterprises mostly located in the area of Beirut and Mount Lebanon where the major economic activity is concentrated.
American University of Beirut (AUB)	• conducting research studies on economic and public services including waste management and sustainable development
Ministry of Energy and Water	• setting policies for energy, water, resources, mines and quarries
Bank Audi	• providing financing to Lebanese businesses to invest in high-performing technologies
KAFALAT s.a.l.	• assisting small and medium sized enterprises (SMEs) to access commercial bank funding by issuing the financial guarantees • providing SMEs with loan guarantees based on business plans / feasibility studies that show the viability of the proposed business activity. • Supporting SMEs and innovative start-ups that belong to one of the following economic sectors: Industry, Agriculture, Tourism, Traditional Crafts, High Technology
Central Administration of Statistics	• collecting, processing producing and disseminating social and economic statistics at the national level and providing all users with evidence-based information for decision making. • supervising statistics produced by other ministries and public administrations as well as improving methods and harmonizing statistics.
Liban Pack	• a national central point for all economic operators concerned with packaging, including: manufacturers, users, converters, suppliers, designers, testing institutions, packaging specialists • providing training and educational programs and students
Euro-Lebanese Centre For Industrial Modernisation	• improving the performance of Lebanese manufacturing enterprises • advising and assisting manufacturers in improving their performance on both national and international markets and in facilitating access to long-term financial resources. • implementing the EU co-financed Integrated SME Support Programme (ISSP), aimed at helping Small and Medium Enterprises in Lebanon by providing a combination of legislative, business development and financing support. • holding the Business Development Centres (for established manufacturing SMEs and start-ups), • implementing QUALEB (quality programme), • sub-Contracting and Partnership Exchange, • supporting Cleaner Production Centre (CPC) hosted at the Industrial Research Institute (IRI) which already offers a wide range of business services, ELCIM will become a permanent centre providing continuing assistance, business advice and specialized services to manufacturing SMEs.
EcoSwitch Coalition	• managing a network of organisations, funded by Switchmed, that provide support programs to eco-entrepreneurs in the country.
Cedar Environmental	• an engineering company focused on designing, building and operating small-scale sorting and composting plants to recycle household waste based on the partnership with a municipality to design, build and operate a recycling plant for paperboards, and plastics for construction materials



Appendix 5

Initiatives on managing special waste streams in Lebanon

Topic/Waste Category	Description of the Action/Pilot, Technical Assistance Project
Extended Producer Responsibility	TADWIR
Electric and electronic equipment, and batteries	TADWIR, National E-waste Monitor Lebanon 2022 – UNDP, Unitar, From the people of Japan.
Packaging waste	Nudawwer under SwitchMed II UNEP worked with Lebanese NGO - Nusaned on a community-based pilot in the Mar Mikhael - Gemmayze area in Beirut on reduction and prevention of food waste and packaging waste to divert them from landfills using concepts of circular economy.
Construction and demolition waste	UNDP Project Circular Economy of Construction" within RE-MED initiative, implemented by AUB
Glass	Recycling project by Cedar Environmental
Waste tires	SwitchMed Incubation Program supported TIREVOLUTION
End of life vehicles	Lebanon Sustainable Low-Emission Transport Systems" project funded by Global Environment Facility aims to reduce greenhouse gas emissions and improve the quality of life in Lebanon by transitioning towards sustainable mobility
Sewage sludge	In 2010, FAO developed the Lebanese Guidelines on Sewage Sludge Use in Agriculture and the Lebanese Wastewater Reuse Guidelines; yet none have been officially endorsed (MoEW, 2019b).
Plastic including Lightweight plastic carrier bags and Single-use plastic products	Baseline Study WES National Activity in Lebanon in partnership with the Ministry of Environment. Plastic Waste Management and Opportunities for a Circular Economy in Rural Lebanon; AUB
Refuse-derived fuel	TADWIR/UNDP
Medical Waste	TADWIR/UNDP
Bio-Food Waste	Private Sector Transition to a Green and Circular Economy in Lebanon", implemented by UNIDO and funded by EU
Unintentionally released Persistent Organic Pollutants	World Bank Reduction of UPOPs Through Waste Management in a Circular Economy



Plastic and Single Use Plastic

The EU funded “Water and Environment Support in the ENI Southern Neighbourhood Region” (WES) project
EU funded Bahr Bala Plastic Project by Lebanon EcoMovement and Lebanon Environment Forum (21 initiatives funded)
UN HABITAT Reducing Marine Litter in the Mediterranean through Waste Wise Cities Lebanon (ReMaL)
Recycle Lebanon and Ecosouk





Appendix 6

The data on overview of the managing special waste streams management

Bio-waste

For the managing bio-waste, the renewable materials can be used as feedstock for products to produce various types of feedstock, such as biogas or bioplastics. The CE in agri-food could also entail introducing practices such as a reduction of intensive farming that depletes the soil, extracts and overuses resources such as water and fertilizers, and leads to large-scale impacts on global climate. The table below presents the selected main data on biowaste in Lebanon:

Table 1. Main data on bio-waste in Lebanon

Percentage MSW composted	15 %
Percentage of food waste in SWM generated by households (urban)	50%
Percentage of food waste in SWM generated by households (rural)	55 %
Percentage sent to material recovery facility for composting anaerobic digestion,	4%
Percentage sent to material recovery facility for composting rejected landfills and dumped,	41%

E-Waste

The value-chain of electronic goods in Lebanon has a market potential studied and evidenced by the number of studies. The CE practices would include the phases of designing new products, repairment, reuse and sale on the second hand market. The important element of CE practices for e-waste would also include recovery of valuable materials such as gold, silver, copper, platinum, palladium, iron, aluminum, indium, gallium and rare earth metals. The table below illustrates the potential of the market for management of WEEE and its potential for application of CE principles in Lebanon.

Table 2. Main data on WEEE in Lebanon Data on WEEE in 2021

The generation of e-waste	51,000 Tons
The generation of e-waste (batteries and light equipment) in households	15%
The generation of e-waste (batteries and light equipment) in business	12%
The total stock of WEEE	659 kt.



WEEE placed on the market (entering the stock of households and businesses)	63 kt
WEEE discarded from the stock and became e-waste	46 kt
Managed in an environmentally sound manner	0.09 kt
Contents of mercury in WEEE	71 kg
Contents of lead in WEEE	81 t
Contents polybrominated diphenyl ethers in WEEE	63 t
Contents of iron in WEEE	19.5 kt
Contents of aluminium in WEEE	2.5 kt

Plastics

The reduction of plastic pollution requires innovative design of the products and packaging that result in improving the recyclability of plastics, reducing leakages in recycling systems of hazardous additives and chemicals. The phasing out of plastics in the manufacturing process and replacing it with renewable feedstocks such as biological nutrients is one of the response addressing the circular economy principles. The table below provides main information on the plastic waste management in Lebanon.

Table 3. Main data on plastic waste in Lebanon³⁰

Amount of plastics generated yearly in Lebanon	133 thousand tonnes
Value of imported plastic as a raw material	USD 695 million
Proportion and amount of Single Use Plastic produced for the F&B sector (UNDP, 2022)	35% or 42,134 tonnes/year
Plastic waste produced per person per day	0.09 kg - 0.14 kg
Share of the total plastic waste quantity recycled (ELARD)	25.4% (LDPE, HDPE, PET)

Paper and packaging

The paper and cardboard industry is the sector of great potential for the CE in Lebanon. More than 338 firms work in the paper and printing sector with capacity to absorb recycled paper in the country. The table below provides main information on the paper and paperboard waste management in Lebanon.

Table 4. Main data on waste packaging and packing in Lebanon³¹

Value of imported paper paperboard and pulp ³²	17.11 million USD
The quantity of imported paper	90,000 tons
The total yearly quantity of paper sorted and sold	110,160 tons

Construction and Demolition Waste

Disposal of construction and demolition (C&D) waste is not regulated in Lebanon. The CDW is considered as special waste stream and is managed in the system for MSW. CDW is usually dumped in open spaces such as rivers and valleys. Only rarely it is used a backfilling materials (in landfills). The table below provides main information on the construction and demolition waste management in Lebanon.

³⁰ Source ELARD, 2021, Sweepnet 2014

³¹ source e EU funded Environmental Governance report

³² Year 2019

**Table 5.** Main data on plastic waste in Lebanon³³

Quantity of ceramic industry (tiles, flags), cement industry waste	73,000 tonnes per year
CDW dumped at private landfills (cement industry)	71,000 tons/year
Number of Construction and Demolition Waste Dumpsites ³⁴	324
Volume of Construction and Demolition Waste Dumpsites	2160 536 m ³

Textiles

Textile industry produces clothes, home linen, curtains, bed covers and table cloths etc. Almost all of these can be profitably recycled. Unregulated clothing imports are a major constraint on profitable fabric recycling. The table below provides main information on the textile industry in Lebanon.

Table 6. Main data on textile in Lebanon Mol 2017³⁵

Value of clothing was imported into Lebanon	572.8 million USD
The number of clothing and textile factories	237 factories

Glass

Glass is 100% recyclable and provides great potential to ensure circular material flows and contributes to global material recovery and job-creation. The opportunities for glass recycling in Lebanon have been researched in beverage, construction and automobile sectors. The table below provides main information on the glass generation in Lebanon.

Table 7. Main Data on glass waste³⁶

Consumption of coloured bottles a year	71 M
Quantity generated per month ³⁷	6 tons

³³ Source Country report on the solid waste SWEEP NET 2014 and MOE/UNDP, 2017)

³⁴ For Year 2016 - (Source: MOE/UNDP, 2017)

³⁵ Source Mol 2017

³⁶ Source: SOER

³⁷ Average amounts of collected material reported by recycling facilities



Appendix 7

Analyzed Documents

- National E-Waste Monitor Lebanon 2022 – UNDP, Unitar, From The People Of Japan
- Towards A Circular Economy In Lebanon, 2020, Acted
- The Lebanon Municipal Solid Waste Crisis And Pathways Forward, 2018, Arthur D'Little
- SOER Report Lebanon State of the Environment and Future Outlook: Turning The Crises Into Opportunities
- American University of Beirut Plastic Waste Management And Opportunities For A Circular Economy In Rural Lebanon
- Reduction of UPOPs Through Waste Management in a Circular Economy (P172770) FINAL Environmental And Social Management Framework (ESMF) February 15, 2022
- Sustainable Consumption and Production, How Lebanon Is Switching to a Circular Economy Building Climate Resilience and Resource Efficiency, UNDP, 2023
- Lebanon Country Profile, 15/08/2020 Prepared for SCP/RAC by Antoine Karam
- Guide to Municipal Solid Waste Management, American University of Beirut, 2016
- Country report on the solid waste management in Lebanon.
- The integrated vision for Lebanese Industrial Sector, Lebanon Industry 2025, Ministry of Industry



Appendix 8

Benchmarking for Technical Note 5.1

The below presented table provide overview of targets and benchmarks for SWM set by the European Union (EU) countries (mainly based on the Waste Framework Directive, Single use plastic Directive (EU 2019/904) and Circular Economy Action Plan).

Table 8. Waste Separate Collection - EU targets

Waste Separate Collection		
Category of Waste	Target Description	Time Horizon
Textile Waste	Countries to set up (establish) separate collection of textile waste	2025
Hazardous Household Waste	Countries to set up (establish) separate collection of hazardous household waste	2025
Biowaste	Countries to ensure that biowaste is collected separately or recycled at source (for example, composting, digestion) or collected separately and is not mixed with other waste types	2023
Plastic Bottles Waste	Countries to establish the separate collection of at least 77% of single-use plastic bottles	2025
Plastic Bottles Waste	Countries to establish the separate collection of at least 90% of single-use plastic bottles.	2029
Waste Electrical and Electronic Equipment	Countries to separately collect 65% of WEEE	from 2019

In 2021, the recycling rate of municipal waste in the European Union (EU-27) was estimated at 49.6 percent (material recycling and composting), the highest figure recorded in the indicated period. The recycling rate of municipal waste in the EU has almost doubled since 2000³⁸. The amount of municipal waste generated per capita amounted to 527 kg in the EU in 2021. The table below provides the EU targets for reuse and recycle of MSW.

Table 9. EU targets for reuse and recycle of MSW

Waste Separate Collection		
Category of Waste	Target Description	Time Horizon
Municipal Waste	Countries to prepare to re-use or recycle at least 55% of municipal waste	2025
Municipal Waste	Countries to prepare to re-use or recycle at least 60% of municipal waste	2030
Municipal Waste	Countries to prepare to re-use or recycle at least 65% of municipal waste	2035

³⁸ [EU: recycling rate of municipal waste 2000-2021 | Statista](#)



The EU has set recycling targets for packaging waste. By the end of 2024, the EU countries should ensure that producer responsibility schemes are established for all types of packaging waste. The following table shows the respective targets for recycling:

Table 10. EU targets for recycling of special waste streams

Waste Separate Collection		
Category of Waste	Target Description	Time Horizon
Packaging Waste	Countries to recycle at least 65% of all packaging waste	2025
Packaging Waste	Countries to recycle at least 70% of all packaging waste	2030
Plastic	Countries to prepare to re-use or recycle at least 50% of plastic	2025
Wood	Countries to prepare to re-use or recycle at least 25% of plastic	2025
Ferrous Metals	Countries to prepare to re-use or recycle at least 70% of plastic	2025
Aluminium	Countries to prepare to re-use or recycle at least 50% of plastic	2025
Glass	Countries to prepare to re-use or recycle at least 70% of plastic	2025

The EU has introduced the concept of responsibility of companies throughout the entire life cycle of their products (Extended Producers Responsibility). The manufacturers and resellers must therefore adopt a proactive approach in reducing the environmental footprint of their products and exploring strategies to minimise the utilisation of non-recycled materials.

Examples of EPR requirements

Collection fee for products, Collection rate targets, Carbon footprint declaration, Minimum content of recycled.

Examples of product groups

Packaging, Batteries, Electronic products, Plastics, Furniture, Paints, Chemicals, Energy-related products, Iron, Steel, Cement, Aluminium.

The following table provides for specific targets for establishing the EPR in EU countries.

Table 11. Targets for establishing the EPR

Targets for establishing the EPR		
Waste stream for EPR	Target Description	Time Horizon
General Extended Producer - Responsibility	Countries to introduce bottom-level prerequisites for EPR	2025
EPR Packaging Waste	Countries to take in charge 100% of packaging by EPR scheme	2030
EPR on Single Use Plastic Products	Countries to establish EPR schemes for certain plastic products (food and beverage containers, bottles, cups, packets and wrappers, light-weight carrier bags, and tobacco products with filters and fishing gear)	2023
EPR for Electrical Waste and Electronic Equipment	Countries to establish EPR scheme for waste electrical and electronic equipment	Not set

In order to support the EU countries transition to the CE the following restrictions on land-filling of all waste have been introduced:



Table 12. EU restrictions on landfilling of all waste

Restrictions on landfilling of all waste		
Theme	Diversion Target	Time Horizon
Landfill Restriction – Landfill Directive (99/31/EC and EU 2018/850)	Countries to limit the share of municipal waste landfilled to 10%	By 2035
Landfill Restriction – Landfill Directive (99/31/EC and EU 2018/850)	Waste that is suitable for recycling or other material or energy recovery	from 2030

Preventing waste is one of the top priorities of EU waste policy aimed at achieving potential economic and environmental benefits. The EU's 2020 action plan defines waste prevention as the primary option in the waste hierarchy, above reuse and recycling. The table below provides the EU targets related to waste prevention policies:

Table 13. EU targets related to waste prevention policies

EU targets related to waste prevention policies		
Regulated Topic	Diversion Target	Time Horizon
Waste Prevention Program	Countries to establish waste limitation schemes including specific food waste prevention Frameworks	N/A
Ban on Products with Negative Externalities - Single use plastic Directive (EU 2019/904)	Countries to ban plastic products with negative externalities (cutlery; plates; straws cotton bud sticks; beverage stirrers; sticks to be attached to and to support balloons; food containers made of expanded polystyrene; products made from	77% separate collection target for plastic bottles by 2025 – increasing to 90% by 2029 incorporating 25% of recycled plastic in PET beverage bottles from 2025, and 30% in all plastic beverage bottles from 2030
Product Design Requirements - Single use plastic Directive (EU 2019/904)	Countries to place on the market plastic bottles that contain at least 25% of recycled content	2025
End-of-waste Criteria for Recycled Materials - Fertilizer Regulation (EU 2019/1009) -	If an (organic) fertilizer bears the CE marking (safety, health and environmental protection requirements.), it no longer constitutes waste Organic fertilizers are manufactured, among other things, from recycled biodegradable waste from the food industry or from non-animal agricultural by-products.	N/A
Minimum Requirements of Product Reparability and Recyclability - Ecodesign Directive (2009/125/EC) and EU Ecodesign implementing regulations (2019)	Ecodesign requirements for household dishwashers the minimum requirements of energy efficiency or even reparability and recyclability for certain products put on the EU market (dishwashers, laundry machines, etc.)	From 1 March 2021:



Appendix 9

Benchmarking for Technical Note 5.2

The overview of the institutional arrangements for the CE in the selected countries is provided in the table below:

Table 14. Overview of the institutional arrangements for the CE

Country	Institutional Arrangements for Implementing Circular Economy policies
Poland	- Both the Ministry of Economic Development and Technology and the Ministry of Climate and Environment are engaged in circular economy activities - A working group was established to facilitate cross-department collaboration. - A public-private platform known as the Polish Circular Hotspot was set up to bring together national and local government bodies with businesses, entrepreneurs, the scientific community and civil society to jointly develop and apply the concept of a circular economy. - Key partner helping to facilitate inter-agency collaborations is the Polish Institute of Innovation and Responsible Development (INNOWO)
Finland	- Finish Innovation Fund (SITRA) prepared national roadmap for a circular economy. - A steering committee composed of 21 members from businesses, administration, research, and non-government organizations
Serbia	- A Working Group for Circular Economy was set up in 2019 with representatives of all the national political institutions as well as several international actors (UNDP, GIZ, OSCE) to define policies in the field. - Ministry of Environmental Protection, established a dedicated Department for Circular and Green Economy that cooperates with the waste and wastewater management and chemicals divisions. - Some CE themes are implemented by other ministries - The Ministry of Economy is implementing circular business models as one of the goals of its Industrial Policy Strategy for 2021–2030. - The Ministry of Construction, Transport and Infrastructure is implementing measures on urban mobility - The collaboration between these different actors takes place through joint projects, workshops and information sharing.
Montenegro	- Chamber of Commerce published the country's first roadmap for a circular economy, supported by UNDP country office and other experts. - The government set up a CE working group for the green transition, which is coordinated by the Ministry of Economic Development and Tourism - The CE working group includes key ministries (e.g. of Economy, Ecology, Capital Investments and Agriculture), institutions (e.g. the Chamber of Commerce), donors (e.g. UNDP), business associations and non-government organizations, to design and implement CE measures



Tajikistan

- The National Strategy on Green Economy is implemented by the Ministry of Economic Development and Trade.
 - A series of workshops are being set up with UNECE support to inform key stakeholders on the CE models.
 - Several ministries are involved in these activities such as the Ministry of Agriculture and the Ministry of Industry.
 - The private sector is also engaged in CE policy implementation for example through the presence of the Chamber of Commerce
-





Appendix 10

Benchmarking for Technical Note 5.3

Deposit-refund schemes (DRS) are successfully operating in more than a dozen EU countries. They apply to different packaging waste and they effectively increase the recycling rate and reduce environmental pollution. DRS charge users an extra fee when they buy a product, which is refunded, if the product packaging is returned for recycling or reuse. The table below presents the overview of economic instruments foreseen by the EU directives and applicable for introducing CE principle and respective targets.

Poland: New deposit return scheme from 2025

The system encompasses plastic bottles for beverages up to 3L, reusable glass bottles for beverages up to 1.5L, and metal containers up to 1L for all drinks. Disposable glass containers remain exempt from the system. The deposit is capped at a maximum of PLN 2 per package (EUR 0.46). All stores, irrespective of size, are mandated to collect the deposit. Larger stores exceeding 200 m² must ensure the collection of deposit-bearing packaging. Smaller stores may participate in collection voluntarily. Municipalities are permitted to participate in the collection of packaging from the DRS (Deposit and Return Systems) provided they have a formal agreement with system operators. The DRS Operator may be a joint-stock company based in Poland, representing those entities who introduce products in beverage packaging. Several deposit return systems may operate at the same time. Entrepreneurs failing to adhere to the deposit system or achieve specified collection levels will be subject to a “product fee” of PLN 25 per kilogram (EUR 5.71).

Table 15. EU Economic instruments for transition to Circular Economy

EU Economic for transition to Circular Economy	
Theme	Diversion Target
General Implementation on Deposit Refund Scheme - Waste Framework Directive (2008/98/EC and EU 2018/851)	EU countries to make use of economic instruments to provide incentives for the application of the waste hierarchy. This encourage the efficient collection of used products and materials.
Deposit Refund Scheme on Packaging Waste - Packaging Directive (94/62/EC and EU 2018/852)	Countries to take measures to encourage the increase in the share of reusable packaging placed on the market. This, inter alia, includes deposit-refund schemes.



Incentives for Product Donation - Waste Framework Directive (2008/98/EC and EU 2018/851)	Countries to make use of economic tools to provide encouraging measures for the implementation of the waste hierarchy. This includes, but not exclusively fiscal incentives for the donation of products, in particular food.
Incentives and Disincentives to Promote Waste Prevention - Waste Framework Directive (2008/98/EC and EU 2018/851)	Countries to make use of economic tools to provide incentives for the implementation of the waste hierarchy. This, for instance, encompasses economic incitements and dissuasion as to encourage waste limitation and boost distinct collection patterns.
Pay-as-you-Throw scheme - Waste Framework Directive (2008/98/EC and EU 2018/851)	Countries “to make use of economic instruments to provide incentives for the application of the waste hierarchy. This, inter alia, includes pay-as-you-throw schemes that charge waste producers based on the actual amount of waste generated and provide incentives for separation at source of recyclable waste and for reduction of mixed waste.”
Waste Disposal Tax	Countries to make use of economic instruments to provide incentives for the application of the waste hierarchy. This, inter alia, includes taxations on garbage processing and disposal to embody the environmental expenses of litter processing, and contribute to finding alternatives to the most damaging processing ways (trash yard, incineration without energy recuperation) by making these techniques more expensive.



Appendix 11

Benchmarking for Technical Note 5.4

The EC developed the voluntary tools for companies can use to finance their transition towards sustainability include:

- EU Taxonomy
- EU climate benchmarks European Green Bond standard
- Science-based targets transition plans
- Taxonomy regulation³⁹

The criteria were developed for economic activities making a substantial contribution to one or more of the environmental objectives other than climate, and namely to:

- Sustainable use and protection of water and marine resources
- Transition to a circular economy
- Pollution prevention and control
- Protection and restoration of biodiversity and ecosystems

³⁹ Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment



Appendix 12

Benchmarking for Technical Note 5.5

The EU has developed the Monitoring Framework for the CE. It consists of information on the indicators set for monitoring the progress in transition to CE. This framework has been split into the 5 thematic areas with respective indicators. The thematic and indicators for CE are presented in the table below:

Table 16. EU indicators for Circular Economy

EU Monitoring framework for Circular Economy	
Thematic	Specific Indicators
Production and consumption	• EU self- sufficiency for raw materials • Generation of municipal waste per capita • Generation of waste excluding major mineral wastes per GDP unit • Generation of waste excluding major mineral wastes per domestic material consumption
Waste management	• Recycling rate of municipal waste • Recycling rate of all waste excluding major mineral waste • Recycling rate of packaging waste by type of packaging • Recycling of biowaste • Recovery rate of construction and demolition waste (CDW)
Secondary raw materials	• Contribution of recycled materials to raw materials demand - end-of-life recycling input rates (EOL-RIR) • Circular material use rate • Trade in recyclable raw materials
Competitiveness and innovation	• Private investments, jobs and gross value added related to circular economy sectors • Patents related to recycling and secondary raw materials
Global sustainability and resilience	• Global sustainability from Circular Economy • Resilience from Circular Economy



Appendix 13

Benchmarking for Technical Note 5.6

The value chains and respective policy measures have been identified by EU as key in the Circular Economy Action Plan.

Table 17. EU policy measures on special waste streams

Special Waste Streams	Policy actions and instruments
Electric and electronic waste/E-waste	• devices are designed for energy efficiency and durability, reparability, upgradability, maintenance, reuse and recycling – (Ecodesign Directive) • electronics and ICT as a priority sector for implementing the ‘right to repair’, including a right to update obsolete software • regulatory measures on chargers for mobile phones and similar devices, including the introduction of a common charger • take back scheme to return or sell back old mobile phones, tablets and chargers; • restrictions of hazardous substances in electrical and electronic equipment
Batteries and vehicles	• rules on recycled content and measures to improve the collection and recycling rates of all batteries, ensure the recovery of valuable materials and provide guidance to consumers; • addressing non-rechargeable batteries with a view to progressively phasing out their use where alternatives exists • sustainability and transparency requirements for batteries taking account of, for instance, the carbon footprint of battery manufacturing, ethical sourcing of raw materials and security of supply, and facilitating reuse, repurposing and recycling.
Packaging waste	• reducing (over)packaging and packaging waste, including by setting targets and other waste prevention measures; • driving design for re-use and recyclability of packaging • reducing the complexity of packaging materials, including the number of materials and polymers used.
Plastics	• restricting intentionally added microplastics and tackling pellets • developing labelling, standardisation, certification and regulatory measures on unintentional release of microplastics, including measures to increase the capture of microplastics at all relevant stages of products’ lifecycle; • developing and harmonising methods for measuring unintentionally released microplastics, especially from tyres and textiles, and delivering harmonised data on microplastics concentrations in seawater;



Construction and demolition waste	- introduction of recycled content requirements for certain construction products, taking into account their safety and functionality - promoting measures to improve the durability and adaptability of built assets in line with the circular economy principles for buildings design³⁶ and developing digital logbooks for buildings - promoting initiatives to reduce soil sealing, rehabilitate abandoned or contaminated brown-fields and increase the safe, sustainable and circular use of excavated soils.
Textiles	- developing eco-design measures to ensure that textile products are fit for circularity, ensuring the uptake of secondary raw materials, tackling the presence of hazardous chemicals - providing incentives and support to product-as-service models, circular materials and production processes, and increasing transparency through international cooperation; - boosting the sorting, re-use and recycling of textiles, including through innovation, encouraging industrial applications and regulatory measures such as extended producer responsibility.
Food, water and nutrients	- facilitate water reuse and efficiency, including in industrial processes. - develop an Integrated Nutrient Management Plan
Single-use plastic products	- labelling of products such as tobacco, beverage cups and wet wipes and ensuring the introduction of tethered caps for bottles to prevent littering; - developing rules on measuring recycled content in products
Waste tires	- the EC banned the landfilling of end-of-life tyres - extended producers responsibility schemes have been created collecting, recycling and recovering end-of-life tyres.
Municipal solid waste	the target of maximum 10% waste landfilled was set and 65% of recycled
Glass (construction)	- targets on C&D waste such as glass 70% - mandatory provisions on dismantling and sorting of glass in renovation and demolition works. - mandatory audits carried before demolition or renovation of large buildings. - ban landfill deposit of economically recyclable glass such as single clear glass panes and insulating glass units.
Refuse-derived fuel	the production of refuse-derived fuel and solid recovered fuel should be from non-recyclable wastes
Bio-Food Waste	reduction targets set by the end of 2030 by 10%, in processing and manufacturing and by 30% (per capita), jointly at retail and consumption (restaurants, food services and households)



Table 18. EU informative tools for Circular Economy

⁴⁰ [Homepage | European Circular Economy Stakeholder Platform \(europa.eu\)](#)



Appendix 15

List of referenced reports and studies on waste management data

- Study Reports of EU Project Towards a Decentralised Waste Management Integrated Response in Lebanon, SWEEP NET /GiZ
- Solid Waste Management in Lebanon: Lessons for Decentralisation, 2019,
- SOER Report, UNDP, 2020,
- Towards a Circular Economy in Lebanon, ACTED Lebanon, 2020,
- Plastic Waste Management And Opportunities For A Circular Economy In Rural Lebanon, American University of Beirut, 2023,
- Reduction of UPOPs Through Waste Management in a Circular Economy (P172770) Final Environmental and Social Management Framework (ESMF), February 15, 2022,
- The Lebanon municipal solid waste Crisis and pathways forward Arthur D Little, September 2018,
- National E-Waste Monitor, UNDP,
- How Lebanon Is Switching To A Circular Economy, Switchmed, 2023,
- Unpacking Solid Waste Management Policies In Lebanon: Heinrich Boell Stiftung Beirut, August 2022,
- Lebanon Country Profile, Switched/EU, August 2020,
- Report of EU Baseline Situation In Lebanon and Potential Policy Measures in Relation to On-the-Go Food And Beverage Single Use Plastics Water and Environment Support,
- Impact evaluation of ARLA SWM component Final Evaluation report, September 2020

