

UNITED NATIONS DEVELOPMENT PROGRAMME

PROJECT DOCUMENT
[Lebanon]Empowered lives.
Resilient nations.**Project Title:** Towards a Decentralised Waste Management Integrated Response in Lebanon (TaDWIR)**Award Number:** 00135923**Project Number (Output):** 00127018**Implementing Partner:** UNDP (DIM)**Start Date:** 1 May 2021**End Date:** 30 November 2024**Brief Description**


This project is designed to support Lebanon's waste management systems in a time in which the country is plagued by multiple crises. After the waste-crisis of 2015 Lebanon has tried to regain control over its failing services and infrastructure in this field. The EU and many other international organisations have provided support, but the risk is high that all these efforts may render in vain if this aid would come to a standstill in this critical period.

The EU-UNDP TaDWIR project is addressing this risk by aiming to improve the overall environmental and financial sustainability of Lebanon's waste management system. The specific objectives are to reduce volumes of waste that go to landfills, to improve qualities of waste that go to waste-facilities in general and to upgrade national systems for governance and cost coverage of managing municipal solid waste.

This project document is elaborated to implement the agreement signed between the EU and UNDP (contract reference: ENI/2021/428-769) signed in December 2021.

Contributing Outcome: UNSF Outcome 3.1 Environmental Governance Improved; CPD Outcome 4.3. Number of national development plans and processes integrating: biodiversity, renewable energy, energy efficiency, sustainable consumption and production, climate change, sound chemical management, sustainable consumption & production and ecosystem services values; CPD Output Indicator: - 4.2.1. No. of environmental initiatives implemented in productive sectors - 4.2.2. No. of solid waste, water and waste water management initiatives implemented Output Indicator Indicative Output(s) GEN 1	Total resources required:		USD 22,470,100
	Total resources allocated:		
		EU:	USD 22,270,100 (EUR 19,750,000)
		UNDP	USD 200,000
	To be mobilised from Private Sector:	None	

Agreed by (signatures):

United Nations Development Programme (UNDP)	
DocuSigned by:	
	
A21CEEC1EE0E48D... Ms. Celine Moyroud	
Resident Representative	
Date: 02-Feb-2022	

Annex I

DESCRIPTION OF THE ACTION

Title of the Action: Towards a Decentralised Waste Management Integrated Response (TaDWIR) in Lebanon

Implementation period: 1 May 2021 – 30 November 2024¹

Summary

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For hazardous waste

1. Hazardous HCW is a stream of great concern because of its direct impact on safety, health and the environment. The responsibility for this waste is completely with its producers being the public and private actors in the healthcare sector. This sector is already very active in this field but there still are major shortcomings that have to be addressed. Not all institutions in the healthcare sector participate in the existing services for collection and treatment of infectious waste, while for cytotoxic and pharmaceutical wastes there are no collection services and treatment facilities available. Besides that, the overall financial, organisational and governance sustainability of the existing systems is weak (and further eroded by the ongoing crisis) and backup arrangements are absent. The project will focus on supporting the sector in solving these problems.

2. E-waste and Batteries can have direct adverse effects if not collected and treated as needed. Unsafe handling may lead to fires and mixed collection with municipal waste will lead to contaminations that obstruct further recycling. Apart from some small-scale activities, there's no system in place to safeguard separate collection and treatment. The private sector of producers, importers, wholesalers and resellers of these electronics can be held responsible also here but is showing no sign of initiatives. The project will support the National Government in setting up a system of Extended Producer Responsibility.

For municipal waste

3. While Mixed Municipal Waste may not be a good resource for producing compost it may still serve as a valuable input for producing Refuse Derived Fuel. The proposed sub-project will build on the existing

¹ The implementation period of the action is compressed to 1 May 2021 and 30 November 2024 noting the underlying Financing Agreement between the EU and the Lebanese Authorities currently ends by December 2024. However, as the original scope of the project and the scale of activities is originally forecasted for 6 years, UNDP will aim at coordinating with the Lebanese Authorities and the EU to extend the deadline beyond December 2024 within the first year of implementation of this activities in order to ensure that an extension is granted. Once the EU's agreement with the Lebanese authorities is extended, an addendum to the EU-UNDP contribution agreement will be requested by UNDP from the EU given that UNDP and the EU already note and agree that the current deadline of end of 2024 is not sufficient to complete the implementation of activities.

material recovery facilities, upgrade those to refine and ensure the segregation of metals, organics and inert contents to the extent possible and treat the RDF to produce pellets or fluff that can be used in cement kilns or other suitable industrial furnaces based on a thorough market assessment for such output and considering other uses as well.

4. There's no separate collection and treatment of organic waste in Lebanon. This can be considered as an important weakness as organic waste is the most important component in municipal waste. A positive development could start with supporting some municipalities on demonstration projects for separately collecting and composting **Green Municipal Waste** from parks, gardens and fruit and vegetable markets at a scale large enough to make such an intervention commercially viable given the changing financial situation and the market dynamics vis-à-vis compost importers. This type of composting will lead to a high-quality compost that can meet standards for agricultural use. Such a treatment operation could then be the starting point for including more separately collected organic waste from other sources such as the food and horeca sector.

For non-municipal waste

5. Currently there is a major problem for the paper mills to acquire separately collected **Cardboard and Paper Waste** to serve as a feedstock for their operations. The collection market is highly disturbed. There are a number of measures that can be considered to improve and professionalize this niche market. Municipalities or paper mills will be helped to structure the activities of private and informal collectors through permits and, if needed, the National government will be supported to introduce Extended Producer Responsibility regulations for this waste and for packaging in general. At the same time the importance of the paper mill industry may be strengthened through reducing bottlenecks in international trade.

6. **Slaughterhouse Waste** is generated at a rate of 40,000 tons of waste per year. It is produced as a fully segregated stream in a very specific branch of business but nevertheless, it is currently directly mixed up and collected with municipal waste. As with other streams this immediately reduces the recycling potential and also severely contaminates the municipal waste while threatening public health. Experiences from other countries and an EU funded project in Lebanon show that separate collection and treatment through rendering is feasible and viable as long as it is done on a large (national) scale. It is proposed to assess the needs in the sector and determine the opportunity of a slaughterhouse waste management system. The project could consider supporting investments in waste treatment system.

7. There are a number of **Other Special Wastes** that may have a potential for reducing risks and improving recycling, when collected and treated separately. Examples may be industrial and municipal wastewater sludges, wasted car tires etc. The project will remain open to assess these streams during the mid-term review.

For overall SWM system improvement

8. There's a strong need for improved governance and financial management in this field. The absence of **Full Cost Coverage** for municipal waste management services is indeed a major risk. Waste management is about public health and safety and about protecting the environment. It needs stable cash-flows that cover investments and operational expenses and should not be dependent on general budgets and political priorities. The progressive introduction of fees and taxes are also a condition for incentivizing increased prevention and recycling. And overall, it's also a chance to reduce the burden on these general budgets and stimulate decentralization.

I. Development Challenge (Need for Action)

As part of the 2017 UNDP Country Programme Document, solid waste management was flagged as one of the critical development areas where crisis and long-term development assistance overlap. UNDP's strategy in Lebanon focuses on several aspects of environmental governance including the effective management of solid waste and wastewater, the improvement and protection of water resources, and providing beneficiaries with access to clean energy sources at the central and decentralized levels. UNDP set the priority to support government to pursue medium to long-term strategies on integrated waste management, ensuring that environmental considerations are mainstreamed into the national crisis response as part of its priorities. Since then, UNDP has been actively engaged at both policy and local implementation level in the sector. Technical guidelines, a draft national integrated solid waste management strategy and assistance to the coordination of the solid waste sector within the larger Syria crisis response have been provided by UNDP. Furthermore, municipal level projects and the design, construction and operation of larger waste facilities at the level of union of municipalities have been successfully implemented over the years in line with the overall development strategy response and as part of UNDP's strategic support to host-communities within the Lebanon Crisis Response Plan (LCRP).

In 2017, the Annual Action Programme of the EU approved the TaDWIR Programme with the object "to enhance the capacity of the Beirut and the Governorate of Beirut and Mount Lebanon (BML) in waste management in order to alleviate tensions in the country related to health and environmental hazards hence preserving Lebanon's stability". Since then, the scope of the original TaDWIR programme of the EU has changed considerably as a result of major events in the country. The geographical focus was widened to cover the entire national territory and a scoping study conducted by LDK, a leading European environment consulting firm, reported in March 2020, revisited the entire portfolio of waste management in Lebanon in order to re-orientate TaDWIR's preferred results. These proposed results were:

1. Improved policy and governance of the national waste sector
2. Management solutions developed for special streams of waste
3. More performant and resilient MSWM facilities

With regard to the second proposed result the scoping report used a broad baseline study and multicriteria analysis to conclude that TaDWIR's priority shortlist should be on Hazardous Healthcare Waste (HCW), E-waste and Batteries². The other evaluated waste streams (Chemical process waste, Oil and liquid fuel waste, Construction and demolition waste, Agricultural and Food preparation waste and End-of-life vehicles) did not make it to the proposed shortlist. The shift in focus was discussed extensively in 2021 between UNDP and the EU as well as with stakeholders also taking into account results of recent and ongoing studies on, for example, healthcare waste undertaken by UNDP within the current year (2021) as part of and in

² Based on Lebanese Legislations there is no clear definition for e-waste and batteries. However, In Annex 1B of Decree 5606/2019 e-waste and batteries were classified as Hazardous waste. This classification is based on Basel convention (Annex VIII – List A), which was endorsed by Lebanese Parliament in 1994 through Law 387/1994.

As for EU definitions:

Waste Batteries and Accumulators (Directive 2006/66/EC): any source of electrical energy generated by direct conversion of chemical energy and consisting of one or more primary battery cells (non-rechargeable) or consisting of one or more secondary battery cells (rechargeable) which is waste within the meaning of Article 1(1)(a) of Directive 2006/12/EC (any substance or object in the categories set out in Annex I which the holder discards or intends or is required to discard).

Waste Electric and Electronic Equipment (WEEE) (Directive 2012/19/EU): equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields and designed for use with a voltage rating not exceeding 1 000 volts for alternating current and 1 500 volts for direct current which is waste within the meaning of Article 3(1) of Directive 2008/98/EC, including all components, sub-assemblies and consumables which are part of the product at the time of discarding. Article 3(1) of Directive 2008/98/EC defines waste as any substance or object which the holder discards or intends or is required to discard

preparation for the larger TaDWIR project, slaughterhouse waste and cardboard and paper waste. The EU and UNDP agreed to set the start date of the Action as 01 May 2021 and UNDP initiated the needed assessments and analysis needed to scope the project. It led to the integrating conclusion that TaDWIR's overall objective should be:

To improve the overall environmental and financial sustainability of Lebanon's waste management system by reducing volumes of waste that go to landfills, improving qualities of waste that go to waste-facilities in general and by introducing national systems for cost coverage of managing municipal solid waste.

Improving overall waste quality acknowledges the priority on hazardous HCW, E-waste and Batteries given that they are critical waste streams that currently are a major source of hazardous waste contamination to the municipal waste stream and that removing those from the mixed municipal waste would significantly, albeit not totally, reduce the level of toxicity of the remaining municipal waste. This is also particularly important given that the LDK and other studies have concluded that reducing contamination levels in waste is very much needed in order to improve recyclability of municipal waste.

The conclusion aligns with the other part of the objective being the reduction of waste-flows to landfills and dumpsites. While existing MRF³ facilities across the country are experiencing difficulties in producing quality output of compost and recyclables, the focus of these facilities should gradually shift more towards producing Refuse Derived Fuel (RDF⁴). For this shift an upgrade of these facilities is needed in order to produce high quality RDF, meeting the input restrictions of the market.

Such an improved role of the MRFs is not enough. The LDK study also concluded that still many special waste streams are or can be easily segregated at source but nevertheless end up in commingled municipal waste, thus losing their potential to be recycled. Among these are specific streams of green waste, cardboard and paper and slaughterhouse waste. Still then, a number of studies, including the SOER 2020⁵ report, concluded that Lebanon's waste management cannot become resilient nor sustainable if not underpinned by a firm system of governance and cost recovery that is able to make the system more self-sufficient and less dependent of public budgets. So, revisiting the objective of TaDWIR and considering the results of the scoping report leads to defining four new outputs as presented in Figure 1. For achieving these four outputs, eight sub-projects are needed as given in figure 1, of which seven are dealing with specific types of waste and the eighth covers the output on financial sustainability.

The choice of the first seven projects in this project description, thus aligns with the focus of the EU LDK-scoping report on special waste streams. While affirming the selected streams from the scoping (hazardous HCW, E-waste, Batteries), this present project description acknowledges the need to make additional progress on other prioritized streams (municipal waste, cardboard and paper waste and slaughterhouse waste) but also creates room to add sub-projects in case of shifting priorities given the current, volatile situation on solid waste management in Lebanon needs new priorities (other special waste streams), should the project financing permit.

³ Material Recovery Facility; waste management facilities that recovers recyclables or recyclable fractions from municipal and other waste through manual, mechanical and/or other treatment.

⁴ Refuse Derived Fuel; a product processed from waste in such a way that its calorific value is increased and its chemical and physical characteristics are optimised in order to make it suitable for use as a secondary fuel, mostly in industrial furnaces.

⁵ Lebanon State of the Environment and Future Outlook: Turning Crisis into Opportunity, MoE, UNDP, UNICEF, UNHCR (2020)

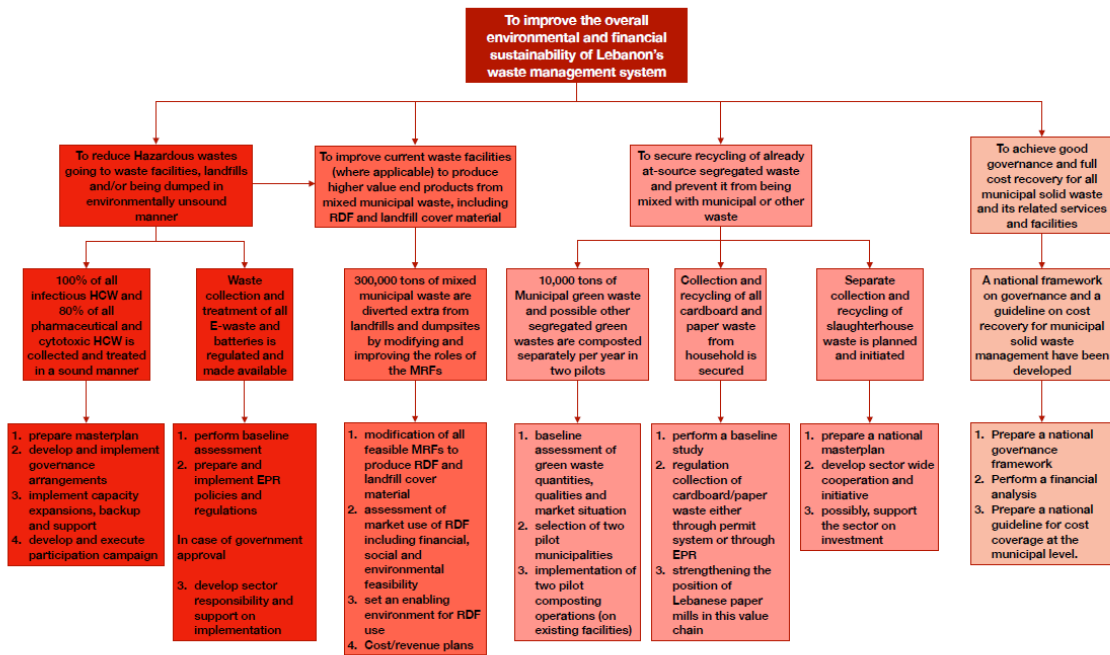


Figure 1. Objective and outputs of the TaDWIR project

When plotted against responsibilities and roles the following Table 1 shows how these special waste streams need the involvement of the private and public sector.

Table 1. Responsibilities and the role of the National Government

Waste stream or aspect	Responsibility for execution	Role of National Government
Hazardous HCW	Producers (healthcare sector)	Low, mainly monitoring and enforcement
E-waste and batteries	Producers (electronics sector)	High, introducing EPR and monitoring
Mixed municipal waste to RDF	Municipalities	Low, monitoring
Green municipal waste	Municipalities	Low, setting standards for compost and monitoring
Cardboard and paper	Municipalities and Producers (packaging)	Medium, monitoring, market ordering and possibly EPR
Slaughterhouse waste	Producers (slaughterhouse sector)	Low, monitoring and enforcement
Other special wastes	Depends on type of waste	Not yet known
Full cost recovery	Municipalities and Government	High, introduction national guideline followed by implementation

The table shows that the role of the national government with regard to the special wastes remains low (legislation, planning, permitting and monitoring) except for those waste streams where the introduction of EPR systems is considered (E-waste and batteries and possibly Cardboard and paper). This important role on introducing EPR systems can be considered as temporary because, after implementing EPR, the role is reduced to monitoring. A strong role is considered to be needed for the sub-project on full cost recovery.

The below sub-sections elaborate the urgency for needed actions and does so for every individual waste stream. This elaboration is divided into three parts being background, analysis and relevance.

1.1 Hazardous HCW

Relevance of the Action

In preparation for this project proposal, and specifically for the component on health care waste (HCW) management, UNDP hired the services of a specialized environmental consultancy firm to analyse the status of the sector and collect relevant quantitative data to enable the targeted design of the project activities. The background information, root cause analysis and design of the interventions for HCW in this project proposal is based on data from outputs of the study which will continue to be worked on into 2022.

Lebanon's healthcare is challenged in many ways. A succession of crises has put the system under pressure. Nevertheless, regular services are proceeding and are producing waste that has to be taken care of. Healthcare waste (HCW) is of specific concern as it may contain infectious, pharmaceutical and cytotoxic components that may affect the safety and health of employees and the general public if not taken care of properly (see box 1 for comparison of Lebanese and EU definitions).

Lebanon's healthcare infrastructure comprises 183 hospitals operating over 18,000 beds. These hospitals are supported by a dense network of more than 750 laboratories, dispensaries, medical clinics, research centres and vaccination centres. Currently, these institutions are generating an annual 6,000 tons of hazardous HCW per year of which 5,800 tons is infectious waste and around 200 tons is categorized as pharmaceutical and cytotoxic waste. Furthermore, data shows that the majority of HCW is generated by the private sector, which owns 75% of the hospitals in the country – most of which (49%) are located in Mount Lebanon.

Lebanese Decree 13389 (11/6/2004)	EU List of Waste
The decree provides terminology and definitions for wastes from healthcare facilities. It differentiates between Hazardous Infectious Waste, Non-Hazardous Municipal like Waste and Special Waste.	The EU List of Waste uses European Waste Codes for its classification. The below categories may be part of HCW as per their properties of being hazardous through their infectious, chemical or otherwise dangerous character
Potential infectious waste: Wastes from departments of infectious diseases (isolation), all wastes containing visible quantity of blood, waste with faeces/urine with potential of disease transmission and waste containing specified fluids. Special wastes: pharmaceuticals including cytotoxics including emptied containers, pathological and anatomical parts, animals used in research, drugs	18 01 03* and 18-02 02*wastes whose collection and disposal is subject to special requirements in order to prevent infection. 18 01 06* and 18 02 05*chemicals consisting of or containing hazardous substances 18 01 08* and 18 02 07*cytotoxic and cytostatic medicines 18 01 10* amalgam waste from dental care

Box 1 Comparison of Lebanese and EU definitions

Through earlier interventions by the government and the healthcare sector itself, systems of separate handling of this waste within the institutions were implemented. For infectious waste, a dedicated system of separate collection and treatment services was put in place in order to prevent and reduce the harmful potential of the waste. Currently there exist 5 facilities that are treating infectious waste in Lebanon, namely:

- Arcenciel (NGO) with 3 locations in Jisr al Wati, Zahle and Saida started up in 2012, 2014 and 2020 respectively
- Abbasiyeh (Municipality) with 1 location started up in 2010
- AWM (Private company) with 1 location in Choueifat, started up in 2019

The type and capacity of treatment are listed in Table 2 below. It is important to mention that the AWM facility is working on a temporary permit from MoE, and has so far not reached its claimed capacity as listed in the table.

Table 2 Description of type and capacity of existing treatment facilities for infectious HCW

Existing facilities	Type	Capacity (tons/year)
AeC Jisr wati	Steam sterilization (Hydroclave)	2,190

AeC Saida	Microwave (Ecosteryl)	2,184
AeC Zahle	Steam sterilization (Hydroclave)	1,872
Abbasiyeh	Steam sterilization (Ecodas T300)	281
AWM	Pyrolysis in 2 units	1,248
Total existing capacity	7,457 including AWM 6,527 excluding AWM	

In addition, there are 2 Pharmaceutical and Cytotoxic (or other hazardous non-infectious) Waste Storage Facilities:

- Treveria (Private company) with 1 facility in Fanar

RayMondo (Private company) with 1 facility in Roumieh. These facilities have submitted EIA's for their operations.

The main service provider for infectious waste is Arc-en-Ciel (AeC) which is an NGO that has been operational since 1995 as a "NGO for the provision of public service" and currently treats an estimated 80% of all infectious medical waste. This NGO collects the waste from the hospitals and brings it to the treatment centres where it is destroyed under controlled circumstances using autoclave and microwave technology. The two other, smaller, providers mentioned above, operate similar services. Not all infectious waste is covered by these services. Based on available data the following overview (Table 3) can be provided.

Table 3 Overview of healthcare institutions and their participation for infectious waste

Participation for infectious waste	Number of institutions	Participating institutions	Coverage
Hospitals	183	144	78%
Vaccination centers	87	78	90%
Laboratories	125	92	74%
Medical clinics	200	49	25%
Research centers	4	4	100%
Total	599	367	61%

Furthermore, these services do not include the separate collection and destruction of pharmaceutical and cytotoxic waste. As such, an annual 1,300 tons of infectious waste and 200 tons of pharmaceutical and cytotoxic waste are not managed properly and mostly end up in mixtures with regular municipal waste on dumpsites and landfills where it exposes workers, citizens and the environment to its harmful effects.

The situation is even more adverse, taking into account that the capacity for collecting and treating infectious waste is not able to cover expected growth in healthcare activities. Projections show that by 2025, 2030 and 2035 a shortfall of 5%, 15% and 25% is expected respectively and therefore there is a need to increase treatment capacities in the tune of 4,400 tons/year within five years from now.

These shortfalls in terms of infrastructure and operational capacity touches on a general weakness of the current service provision in health care waste management and the lack of an overarching masterplan or strategy. As a result of this historic gap in the country, the NGO AeC expanded its service provision to the extent possible to fill the infrastructure and service delivery gap throughout the years and with the support of various donors; most recently to treat COVID-19 healthcare wastes. Although the service provision of AeC has since been growing and the healthcare sector is rather satisfied with it

(based on a recent assessment of hospital perception survey⁶), there are some serious concerns on its continuity and resilience (especially in cases of emergency or when back-up is needed). These same concerns apply also to Abbasiyeh and AWM because of the following considerations:

1. A recent assessment by Elard 7 reveals serious doubts on the financial feasibility of current services. Losses and inability to cover operational expenses are reported and cashflow scenarios show negative rates of return.⁸ These conclusions already take into account the fact that there is no system of full cost accounting as most of the investments are covered by (international) aid and land/housing is provided for free. That means that the situation is de facto even worse. The financial crisis has further deteriorated the situation as customers are less willing to pay. Besides that,⁹ there is little known¹⁰ about the operators' accounting methods for tariffs, salaries, reservations and provisions for future investments. ⁸
2. The organisational structures of the operators are reported as being poor and/or inexperienced. For regular business under positive circumstances this may not be apparent but under current circumstances this may become more visible. AeC, and also Abbasiyeh, are heavily relying on external funding which can be advantageous on the short term as it may help them during the current crisis. It is however not a solid basis for long term continuity.
3. The legal position of AeC and its services raises questions because AeC is not bound by stringent institutional arrangements and liabilities are unclear. Since their start there has not been an evaluation or tender that could challenge AeC's performance. At the same time AeC's market coverage has grown to a monopolist level of 80% and this may lead to lock-in, restricted competition and difficult market entry for newcomers. Such situations normally show a need for some market governance.

AeC is playing an important and appreciated role with regard to infectious waste. The Lebanese situation with an NGO, being a de facto monopolist actor in an unregulated open market domain is however a rather unconventional one and may raise questions on level playing field and on the responsibilities and liabilities of the organization and its management. Therefore and for the longer term, there is a need to also consider the governance of this sector and to analyse its future structure in terms of regulation.

And eventually this, again, brings up the fundamental question of continuity. The Lebanese society is best served by a guaranteed availability of the treatment capacity and collection services and treatment capacity for hazardous HCW under any circumstance. This calls for stable operations and actors but also for back up provisions in case these services would fail. The healthcare sector should play an important role in structuring such provisions; possibly in close cooperation with operators of existing landfill sites. One could think of designating specific landfills to fulfil such a back-up role. Such provisions do not exist at this moment. This makes the whole system vulnerable.

With regards to the legislation, the UNDP study that assessed the legal structures in the HCW sector analysed the current legislative procedure and practices in Lebanon while benchmark its regulations to EU regulations. The study has identified the gaps in the legislative procedures along the value chain, standards and technical guidelines. To address these legislative gaps, the study has recommended several actions for each responsible stakeholder such as MoE, MoPH, MoET, MoI, CoM and municipalities. This includes the strengthening of national institutional arrangements along the entire value chain of HCW (production, storage, transportation and treatment), including the operationalisation of the health care waste management legislation and the role of the Ministry of Industry in the sector. More specifically, the gap analysis has recommended the appointment of the environment police for the enforcement of the legislation on HCW management and creation of an inter-ministerial committee to follow the enforcement of the laws and coordination of different public entities for HCW.

⁶ Preliminary results of UNDP/ELAR study 2021 on healthcare waste management in Lebanon

⁷ Assessment of HCW Management in Lebanon and Priority Interventions – Results of Task III-Infectious HCW Management, ELARD, November 2021

⁸ Preliminary results of ELARD Study 2021 on the assessment of healthcare waste management in Lebanon

Action is relevant and needed for a number of reasons:

- Unmanaged hazardous HCW becomes part of mixtures of general HCW and other types of municipal waste. It then becomes a health risk for workers involved in cleaning, waste collection and treatment facilities and may add to spreading of infectious diseases and contamination of the environment, especially under poorly-managed-dumpsite conditions.
- Being mixed up with other wastes, it reduces the possibilities for recycling as it negatively affects the quality of recycled products.
- The delicate situation of services and infrastructure risks the collapse of this system, especially in crisis situations like the one Lebanon is in now. It would then undo all the important progress achieved in this field during the last 15 years.
- As this type of waste is very sensitive to public relations and public social perception any shortfalls could add to an overall reduction of trust in the healthcare and waste management sector.
- HCW is a priority in EU regulations and under the Basel convention and is also a priority of the Government of Lebanon given the recent hazardous waste legislation that were issued in 2019 and 2020.

Problem analysis

For hazardous HCW there is a relatively good perception of the current situation and the performance of the most relevant actors. Based on these data and on the background and relevance given above, the problem analysis can be summarised as summarized in figure 2 below. It shows that there are four underlying causes for the current situation. The incomplete participation of the sector originates from a combination of limited budgets and priorities not being on managing institutions' waste. Then there's the absence of services for pharmaceutical and cytotoxic waste. This waste legally has to be dealt with but, apparently, it is not within the scope of any planning or governance authority who could take the initiative and decide on making available needed budgets. For these same reasons there also doesn't seem any party who feels responsible for addressing the vulnerability of the current system with an NGO in a monopolistic role and the absence of any back up alternative. The root cause, underlying all these factors is most probably that the sector as a whole does not really embrace its responsibility and is also not forced to do so.

These problems have to be dealt with in order to complete and enforce this very specific waste management system for hazardous healthcare waste. The project will focus on supporting the sector in taking up their responsibility and solving these problems. The legal arrangements are all in place (except for some gaps with regard to classification) and there's not a heavy role for the national and local authorities

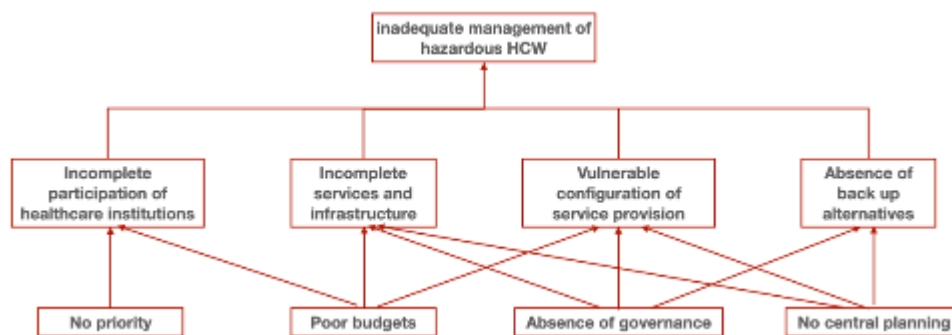


Figure 2. Problem analysis for hazardous HCW

1.2 E-waste and Batteries

Relevance of the action

The current situation with regard to E-waste and spent batteries and accumulators is in no way positive. The SOER 2020 report uses the six EU categories (temperature exchange equipment, screens containing equipment, lamps, large and small household appliances and small IT/telecom equipment) for its assessments. The document reports E-waste generation being at a remarkably high 50,000 tons per year, mainly because of imports of second-hand electronics that reach the waste stream fast. UNIDO, together with the Ministry of Industry came to a similar generation rate in 2019 and calculated the sub-stream of Priority E-waste to be around 35,000 tons per year. The Ministry of Environment assumes a yearly

increase in generation between 2 and 8%. The TaDWIR scoping report⁹ estimates the overall generation of spent batteries at 12,000 tons per year. Of which 10,000 tons is related to lead-batteries, mostly from cars, and the rest is primarily alkaline.

There is no specific legal regulation on E-waste or batteries in the country, like in Europe (see box 2). As a result, most of this waste ends up in the hands of scrap-dealers or is mixed up with regular municipal waste. A large proportion remains stored in households and businesses and a minor part is handed over to specialized E-waste actors. The activities of scrap-dealers are mostly characterised as cherry-picking; selecting valuable items or components and taking out the easy to remove metal parts while discarding all the rest. The valuable items, components and metals are then sold for export. Under these circumstances, almost all Lebanese E-waste ends up burned or buried at landfills or dumpsites.

E-waste	The EU directive on E-waste imposes stringent targets with regard to the collection, recycling and cross-border transports. Without explicitly mentioning Extended Producer Responsibility, the guideline demands all regular components of EPR (including free returns of E-waste to resellers and all costs to be covered by the sector) to be implemented in every country.
Batteries and accumulators	The existing EU Batteries directive will soon be replaced by a new one. Like for E-waste, these guidelines adopt producer responsibility as being the standard for all countries and set targets for collection and treatment.

Box 2 Summary of EU legislation on E-waste and batteries

While there is no public facility working on e-waste collecting or treatment yet, there are some initiatives on improved collection and treatment of E-waste in Lebanon. The most important activities are from Verdetech and Ecoserv. Also, the NGO Beeatoona has some initiatives in this field but only on collection of e-waste and small batteries, not on dismantling and segregation. The characteristics of these actors are summarised in Table 4. Together they are handling some 200 tons of E-waste per year, mostly small IT appliances (classified as Category 2 (screens and monitors) and 6 (Small ITC equipment) under EU-6 categories). Their activities can be characterised as manual dismantling, which is time consuming and limiting the type of material to be recovered. Metal pieces (iron and aluminium) and plastics are taken out and sold in the local market. Motherboards (Electronic boards) are removed and then stored on-site for future export. Those entities are facing challenges in the export and shipment of the retrieved motherboards due to several reasons such minimum quantities required to export set by the recipient foreign companies and lengthy bureaucratic procedures to abide by the Basel Convention measures. It should be noted that partial enforceability of legislations and lengthy bureaucratic procedures are giving clear advantages to informal scrappers, which do not conduct proper dismantling in an environmentally-sound manner and discard the unsellable materials in uncontrolled open dumps. Toner cartridges are accepted but are stored awaiting future recycling.

Table 4 Overview of main actors on E-waste and batteries

Actor	Legal status	Active in this field since	Activities	Permit/ESIA
Verdetech	Private company	2017	Collection of e-waste, dismantling and separation of materials from ICT waste.	Completed
Ecoserv	NGO	2019	Collection of E-waste through 120 drop-zones across Lebanon. dismantling, material separation, refurbishing, recycling and export of e-waste.	None
Beeatoona	NGO	2008	Collection of e-waste through drop-points at limited scale compared to Verdetech and Ecoserv.	None

⁹ Solid Waste Management Portfolio: Support and Evaluation Missionscoping report, TaDWIR Scoping report EU/LDK, March 2020

Foundatio n Diane	NGO	2020	Collection of e-waste and batteries at limited scale compared to Verdtech and Ecoserv. Currently implementing the EU-funded project "Reon batteries". Also invested in Ecoserv through Veridis.	None
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The reasons for these volumes not exceeding 0.5% of national generation lie mostly in lacking regulations, policies, budgets and infrastructure. A due diligence on Ecoserv and Verdtech, performed by UNDP, shows their difficult situation, having to cope with little public interest and a playing field unlevelled by informal and unlicensed competitors.

Some industries admit a kind of responsibility for the final stage of the products they brought to the market (like Ericsson's product-take-back program with Lebanon based telecom provider Alfa) but, in general, Lebanese companies don't seem have their wasted products high on any priority list. There are no expectations on positive changes in this situation without further external incentives.

There's no verified data available on the exact market for spent batteries. The TaDWIR scoping mentions one major player in this field, being the private company Oraibi, which is working on lead-accumulators. It also mentions the work of Fondation Diane on collecting and storing small batteries for future treatment. Funded by EU, Fondation Diane in partnership with AeC and ICU has been implementing the project called "Re-Fit" since 2020. The Re-Fit project aims at undertaking the baseline assessment of the batteries' value chain in Lebanon as well as establishing a collection and disposal facility, compliant with environmental standards for batteries and PV waste. They are still at the stage of the baseline analysis, thus it is expected more information would be available in the future. At the same time, the SOER 2020 report acknowledges the overall lack of information. It mentions that there is a large number of facilities that recycle car-batteries but that only four of them are licensed through the Ministry of Environment. It's safe to assume that most of the larger car batteries are managed by the recycle facilities who will refurbish them or dismantle them for retrieving the lead inside and sell this metal. It remains unclear and worrying how this recycling is performed in practice.

The action described in this project is relevant based on the fact that unmanaged E-waste and batteries inflict a number of environmental and safety risks:

- In the hands of illegal operators this waste may be burned or crushed without any measures to contain gases and fluids, leading to a diffused spread of these emissions from a large number of uncontrolled sites.
- Handling of wastes that are containing wasted batteries run the risk of fires and explosions.
- If this waste ends up on landfills and dumpsites it will negatively affect any water coming from these facilities.
- Like other hazardous substances, it reduces the possibilities for recycling regular municipal waste as it negatively affects the quality of recycling products.
- Many countries appraise Extended Producer Responsibility (EPR) schemes as a standard for increasing recycling rates with only a limited input of time and no input budgets. For Lebanon this would be an important alternative of organizing recycling without public financial input. The action would demonstrate the usability of EPR and could pave the way for using it for other waste streams (cardboard and other packaging waste, spent car wrecks and tires)
- E-waste and batteries are a priority in EU regulations and under the Basel convention.

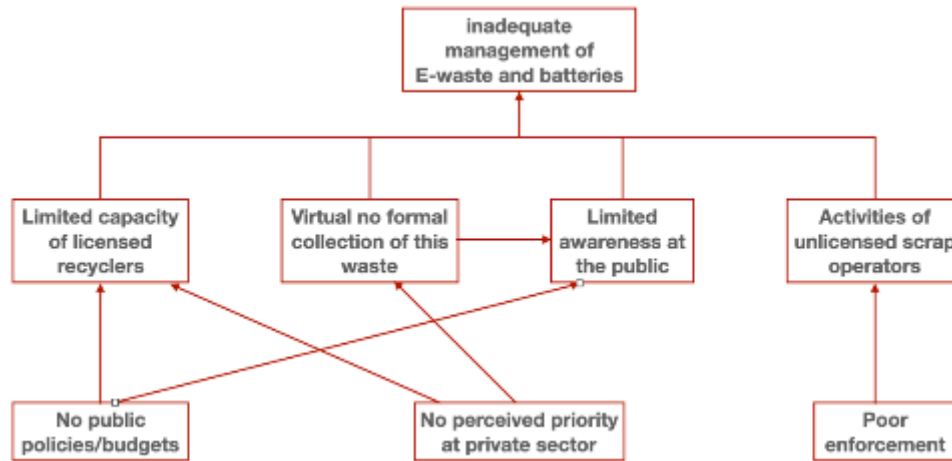
Problem analysis

The absence of a proper baseline does not make it impossible to draw some first conclusions. In general, it can be inferred that there aren't any substantial initiatives in this field so far. The private sector of producers, importers, wholesalers and resellers in the field of electronics and batteries obviously does not feel any urgency with regard to responsibilities for their post-consumer products. And they are also not challenged by the Lebanese government to do so. Eventually this leads to a standstill in which any attempts that are made by private companies and NGOs, remain futile. The two licensed operators on E-waste have already put forward that their ability to grow in collection and treatment is hampered by a lack of guidance by the national government. Also, the municipalities do not have the funding or means to support in managing this waste stream. Under such circumstance, the awareness of the public is not incentivized

through easy access to collection services. The absence of enforcement of permits/licenses is felt in a number of ways. It induces illegal competition leading to low volumes and low prices and withholds the legal operators from taking further steps.

Public authorities cannot be expected to take the initiative for collection and treatment of these wastes as this would put the burden of financing such schemes on their shoulders in a situation in which they are already restricted due to the economic crisis. It would also not be in line with international best practices that show that, even under more prosperous economic conditions, countries decide to impose this responsibility on the sector itself. And that would also be the best way up for Lebanon.

Figure 3 Problem analysis for E-waste and batteries



1.3 Mixed Municipal Waste

Relevance of the action

Before the 2020 crisis, Lebanon's waste generation was at 2.7 million tons of mixed municipal waste (MMW). The 2018 figures in Table 5 show the rates per day across the governorates (SOER 2020 report) and reveal that most waste is produced in the governorates Mount Lebanon and North Lebanon. Reports show that since 2020 generation rates have dropped considerably (20 to 35% are mentioned). It is still unclear whether and how these rates will climb up again.

Table 5 Waste generation across the governorates in 2018

Governorate	Waste generation in tons per day
Akkar	430
Baalbek-Hermel	350
Beirut	614
Bekaa	740
Keserwan & Ftouh-Jbell	533
Mount Lebanon	2,558
Nabatieh	516
North Lebanon	1,050
South Lebanon	551
Total	7,342

The composition of the waste shows high organic contents that are typical for developing countries. But percentages of paper, cardboard, metals and plastics are also substantial. The composition is expected to have changed since 2020, probably leading to less paper, plastics, metals and glass. The composition does hold some promises for recycling although the real problem is in the fact that this municipal waste is a mixture that is brought in intense contact already in the households and businesses and is then further mixed and compressed during collection and storage, leading to cross-contamination of all components.

Table 6 Average waste composition

Waste component	Proportion % (mass)
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Organic fraction	50-55%
Paper and cardboard	15-17%
Plastics	10-13%
Metals	5-6%
Glass	3-4%
Textiles, wood, misc	10-12%

Lebanon shows full coverage of collection services across the country. After the waste crisis of 2015 investments have led to a situation in which 20% of all waste is reported to be diverted for recycling mainly through treatment at Material Recovery Facilities (MRFs). The remaining waste and residues are landfilled (44%) or brought to open dumpsites (36%) although also those figures may have changed since 2020, particularly given that one of the main MRF facilities and the composting facility in Beirut was destroyed in the Port of Beirut explosion (August 2020). Other reports show different data. Data provided for 2019 by OMSAR show an overall treatment in existing treatment facilities of close to 450,000 tons of mixed municipal waste (Table 7) leading to the production of around 40,000 tons of recyclables, 30,000 tons compost-like output and 185,000 tons of residues. When studied in detail it turns out (i) that there is a vast mismatch between these figures and the SOER 2020 report and (ii) that mass balances show inaccuracies that cannot be explained, a similar discrepancy is displayed in the EU's due diligence report prepared by LDK¹⁰ which referred to the quantities of 2018, this discrepancy in mass balances was also highlighted by LDK.

Table 7 Waste treatment in existing treatment facilities across Lebanon in 2019

Facility	In (Tonnes)	Recycl. (Tonnes)	Compost (Tonnes)	Out (Tonnes)
Khiam	5,429.12	452.31	-	918.61
Qabrikha	9,231.94	977.22	1,297.79	3,078.72
Khirbit Silem	3,134.77	634.66	629.03	940.29
Ain Baal	40,232.4	3,570.88	2,078.74	15,158.36
Chouf Swaijani	6,897.67	562.01	2452.36	2557.2
Nabatieh-Chqif	-	-	-	-
Baalbeck	34,255.37	3,046.64	6,149.37	12,966.79
Minieh	10,150.39	914.07	1,662.79	3,809.56
Fayhaa	177,222.52	11,978.44	-	90,322.52
Jib Jenine	21,106.69	2,036.91	1,427.07	7,449.84
Zahle	96,027.32	10,946.82	4,884.16	33,844.42
Bar Elias	40,889.55	3,870.53	7,877.33	14,908.72
Total	444,577.74	38,990.49	28,458.64	185,955.03

Data reliability is an important point of concern as it turns any monitoring and planning into a misty process. But more worries are related to the financial performance of the MRFs and its effects on continuity of their operations. Especially that, due to the economic crisis that started in October 2019, several facilities have been reporting challenges in sustaining their operations, with several facilities submitting official letters in 2021 announcing the stoppage of such operations. An EU due diligence study performed by LDK¹¹ already in 2020 reported major flaws within the Lebanese SWM infrastructure:

- The absence of sound planning of facilities
- Weak design process leading to performances and capacities not in line with design.
- Poor output quality of the products.
- Lack of national standards with regard to operations and products
- Weak governance, legal setting and funding
- Poor monitoring and transparency

In practice this led to the current situation in which there's poor cost recovery which should ensure the sustainability of cashflows, and the inability to generate more revenues from products. On top of that the crisis has led to an overall decrease in quantities of waste generated and a lower content of recyclables in

¹⁰ Solid Waste Management Portfolio: Support and evaluation mission. Due diligence synthesis report ENI 2018/396-926 LDK, May 2020

¹¹ Solid Waste Management Portfolio: Support and Evaluation Mission. Due Diligence Synthesis Report, LDK, May 2020

the MMW due to increased scavenging. The crisis is also affecting operational cost related to rising prices of spare parts and energy, and the general depreciation of local currency.

Municipal waste is not only from households as collection routes also pick up waste from businesses and other producers. Any waste that is still segregated at source, as for example slaughterhouse waste and green waste from parks and markets, thus becomes part of the mixture. There's no system of separate collection of household waste and most of the other waste streams. Initiatives in the last 10 years have focused on treating the mixed waste in order to regain the organic value from it and to prevent too much waste going to the landfills and dumpsites. However, because of the cross-contamination mentioned above, the recycling efficiency has remained low at 30 % of input with residues being sent to landfills and dumpsites. In fact, this percentage is still somehow flattered as the part sent for composting still results in a product that cannot be called compost due to its quality and composition and is used as landfill cover. In fact, it can be concluded that using MRFs to produce quality recyclables and compost from mixed municipal waste is not a feasible concept due to cross-contamination mentioned above.

Considering on one hand the MRFs important roles in reducing the load on landfills and dumpsites, and on the other hand their financial and technical shortcomings, it is obvious that this part of the waste management infrastructure is in dire need of a new perspective.

In light of the ongoing economic crisis, and the depreciation of the local currency, operational expenses have become a critical risk for the sustainability of the operation of these facilities. To make the situation worse, subsidized public electricity blackouts have increased to more than 20 hrs a day making the main reliance on backup generators that are operating on diesel fuel (priced in international currency).

The action described in this sub-project is relevant based on the following considerations:

- MMW is still the largest waste stream going to the landfills and dumpsites.
- The MRFs are too weak, and their performance is too poor to make the impact that is needed.
- There's still a potential in recycling the contents of this waste, thus reducing the use of valuable landfill capacities.
- Financial and operational sustainability of the MRFs has become very critical given the current financial crisis facing the country
- The EU investment in MRFs amounts to a total of around 28 million euro's spread out over 16 facilities¹².
- Its organic content is an environmental threat as it leads to the formation of methane that can only be captured partially and under stringent landfill management. Besides that, the degradation of these organics leads to a highly contaminated leachate and to odour nuisances in the surrounding areas.

Problem analysis

All in all, the situation for MMW is still very weak and is showing no sign of needed progress. Given the problems on the disposal side, especially the continuing lack of landfill capacity, Lebanon faces the risk of failing MRFs and, as a result, increased challenges to cope with the volume and GHG problem of waste management. This makes MMW to one of the most important waste-streams that must be dealt with.

¹² Solid Waste Management Portfolio: Support and evaluation mission. Due diligence synthesis report ENI 2018/396-926 LDK, May 2020

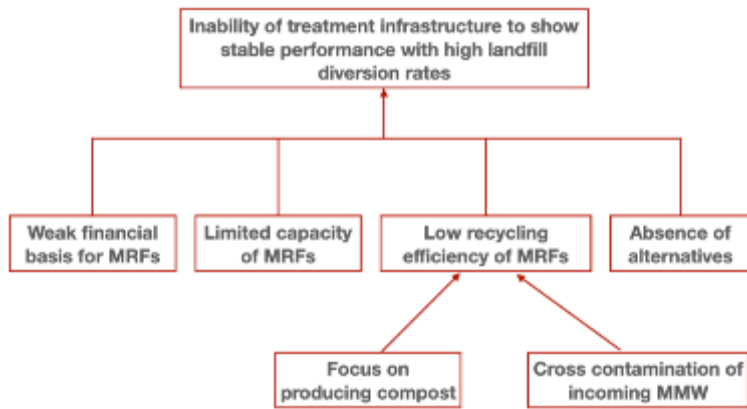


Fig 4 Problem analysis for Mixed Municipal Waste

In their current lay-out and with the context being as it is the MRFs are not capable to substantially contribute to improving this situation. Their financial capabilities are weak, treatment capacities are too low and their impact on reducing volumes is not high enough. In the meantime any alternatives are missing. There is no formal system of separate collection in place and there are no initiatives to do so. This means that there is no perspective for shifting from current dirty-MRF (meaning a mechanical or manual sorting of commingled MMW) to clean-MRF (meaning a mechanical/manual sorting of mixtures of recyclables segregated at source and separately collected). Also, there are no initiatives on implementing large scale dedicated Waste-to-Energy plants. As a consequence, Lebanon will potentially have to deal with growing quantities of commingled Mixed Municipal Waste for at least the next 10 years if the economy recovery. This means that solutions have to be sought to increase, improve and stabilise the role of the MRFs for Mixed Municipal Waste, as it is.

An EU report on chances for RDF in Lebanon¹³ concluded that there's a good potential for RDF and the cement industry is a capable and suitable user for the product. The problem is however that currently MRFs are not able to produce the product at needed industry standards and that environmental standards are not available. The report also suggests that any project in this field should come with awareness campaigns that address public concerns.

In January 2020, MoE issued ministerial decision 58/1 dated 21 January 2020 for the Classification of RDF as a first national legislation document on this issue. This decision provides different classifications for 9 different parameters (Calorific Value, Humidity, Chlorine, Ash content, density, size/dimensions, Mercury, Cadmium, and sulphur), as oppose to CEN343 which provides classifications from only 3 parameters (Calorific Value, Mercury, Chlorine). The decision also highlights the means of sampling as per production capacity. This decision was prepared in parallel with a related ministerial decree (which was not issued), that sets the acceptable characteristics for each parameter, for utilisation at various types of industries. Additionally, the draft decree incentivises the production and utilization of RDF (of specific Classification) and introduces a financial tool for pricing the product.

In 2021, the EU funded a preliminary assessment of RDF production at 4 MRF facilities in the Bekaa area (Baalbeck, Zahle, Bar Elias, and Jeb Janine), the reports highlighted the need to upgrade the existing processing system especially, when it comes, to reducing the moisture content, reducing the chlorine content (especially PVC based products), and remove impurities (rubble, metals - ferrous and non-ferrous).

1.4 Green Municipal Waste

¹³ Technical support to upgrading the solid waste management capacities in Lebanon- Activity 8 – Green Economy – RDF perspectives- October 2018

Relevance or the Action

With more than 50%, organic waste constitutes the largest portion of municipal waste in Lebanon (see § 1.3). Nevertheless, there are no substantial or large-scale initiatives on separate collection of organic waste in the country. The MRFs try to segregate the organics from the mixed waste but with little success.

Looking at non-municipal types of solid waste, the conclusion may be that there are chances for recycling in specific organic wastes such as agricultural waste, forest residues, food industry waste and horeca waste. In reality, opportunities are few:

- Agricultural waste is often burned or ploughed under, and international experiences show that farmers are not willing to replace these cheap alternatives and to invest in recycling.
- The same holds for forest residues; the producers of this waste stick to directly returning their residues in the forest, unless there is clear market such as for wood for cooking and heating.
- Food waste is often very wet and cannot be classified as solid waste. It is also very specific for a certain kind of food industry making centralised solutions not feasible. Besides that, its production dispersed with many small producers spread out over the country. Larger producers may seem interesting but reality is that they can take care of their own problems.
- Horeca waste is even more dispersed. Treating this waste would need separate collection on a daily basis as a (very expensive) prerequisite.

There are however some organic waste streams that are (or can easily be) separately produced at the source. Typically, these organic wastes could result into good quality compost when processed under well-managed circumstances. Good examples are waste from parks and markets. Municipalities themselves are among the producers of this waste. This holds in particular for municipalities that are maintaining larger parks and green zones within their territory and municipalities that operate larger markets for food and vegetables. These municipalities could easily keep this waste segregated for further treatment in order to reduce costs, landfill usage and GHG emissions. But currently these wastes end up being mixed with other municipal wastes and, as a result, their recycling potential is instantly destroyed.

Lebanon lacks a good overview of these organic wastes. There's no insight into sources, qualities and quantities which makes it very difficult to plan for treating this waste. Still, it can be assumed that there are opportunities to start small-scale operations in this field with low investments and low financial risks.

The relevance of this action should be in gaining more insights in the generation and opportunities for this waste. Outdoor composting this part of municipal waste is really the "low-hanging fruit" within any program on increasing waste recycling¹⁴. It will lead to low-cost operations that may well be competitive to costs of landfilling. Treating the waste would lead to decreased landfill usage, reduced levels of GHG emissions and the production of valuable compost. Other alternatives may be indoor composting and anaerobic digestion. Indoor composting of this waste is indeed possible but is expensive and is only used for rapidly degrading organic waste that produces odour emissions. Municipal green waste decomposes very slow and as a result, its odour emissions are very low. Anaerobic digestion is even more expensive and is not usable for slowly degrading organic waste with a high content of wood-like components.

Some small enterprises, such as Compost Baladi, are specialised in compost production but face issues in marketing their products.

Problem analysis

The current problem is that green municipal waste, although having a potential for producing high quality compost, is being landfilled or dumped. There are few service providers offering composting services for this waste and also the municipalities themselves did not initiate any meaningful initiatives so far. The underlying reason for this may be the lack of incentives for municipalities, who in general have limited financial resources from one side, limited market for such products, where farmers expect to get it for

¹⁴ Sustainable financing and policy models for municipal composting, Urban development series knowledge papers no. 24, World Bank, september 2016

free, and are only willing to pay for standardized marketed products (this has changed in light of the ongoing economic crisis), additionally, local legislations by the ministry of agriculture such as decision 507/1 dated 2012 that prohibits the registration of compost from waste streams as a product, or other factors that may be affecting the market. Another reason that is considered is that the absence of national guidelines and standards with regard to composting and compost may be the root cause. Those arguments would however only hold for large scale facilities producing larger volumes of compost to be sold on the agricultural market. For small scale initiatives, which do not come with high investments and risks and which may produce small quantities of compost that can be used by the municipalities themselves, as in this case, this absence of standards cannot be the problem. The municipal scale is very much fit for initiating local, small scale open air composting of municipal green waste in which the produced compost is used by the municipalities themselves. Demonstrating this possibility in a few pilots may incentivize other municipalities to do the same.

1.5 Cardboard and Paper Waste

Relevance of the Action

Lebanon's waste contains a little more than 15% of paper and cardboard, adding up to a total of 350-400,000 tons per year. The country is home to 5 pulping mills of which 2 are producing tissues and toilet paper and 3 are producing (semi-finished) cardboard products. The latter 3 are the main users of F. Their combined annual input of raw materials is around 130,000 tons per year. Before 2019 the mills were provided with a good 65,000 tons of Cardboard and Paper Waste (CPW) per year, coming from within the country. Assuming that this quantity reflects all CPW collected separately in the country, would mean that more than 80% of the waste still ends up on landfills and dumpsites. The situation may be a little more positive because of reported exports of CPW from Lebanon to Turkey and other countries¹⁵.

This situation with limited CPW recycling further worsened due to the economic crisis and the Port of Beirut blast. CPW deliveries dropped to around 5,000 tons per year because of the destruction of two MRFs in the capital and a steep increase of the activities of informal collectors and some NGOs. These newcomers to the market try to negotiate better prices for their waste, challenging the mills with exporting the CPW to other countries. It is unknown what the exact situation at this moment is and whether exports have indeed grown as they are said they have.

The mills are not able/willing to pay these higher prices because also they are already a victim to the economic crisis and high electricity prices. For them, buying CPW from abroad, as an alternative feedstock for the mills, is not an option due to severe import restrictions for waste related products. It has led to a situation in which the sector is operating at very low capacities and some operators report that risks of bankruptcies are imminent.

Actions in this field can be considered relevant when they lead to a more resilient and sustainable system of collection and treatment of CPW. It reduces the pressure on landfills and leads to valuable resources, brought back into the value chain (circular economy). Another consideration is one of employment. Currently, the paper mills provide some 400 direct and 1,000 indirect jobs. A sustainable value-chain for CPW within Lebanon may safeguard jobs for this workforce.

Problem analysis

Although the current market situation is not entirely clear, it looks like there's an important flaw regarding the position of official collectors of this waste. The economic crisis has shown that their official status does not protect them from being competed by a growing group of informal actors. In general, these newcomers do not commit to the quality and continuity of the system, nor do they respect the needed position of the MRFs and Lebanese paper mills. It is however more complex. The MRFs' operations were also not optimal before the economic crisis. Their volumes were already low and the quality of the CPW they delivered to the mills wasn't too good. Besides that, the financial basis of the MRFs was fragile all the time, leading to an overall weak supply chain for the mills. And then, this problematic position of the collectors, MRFs and mills was further worsened by the Beirut blast.

¹⁵ Waste Management Outlook for West Asia, UNEP, 2019

The effects of this continuing situation may be that official collectors are quitting, that MRFs stop recycling CPW and that some of the mills go bankrupt. And that will eventually lead to a future waste management problem in which there are less collectors, MRFs and mills to do the job.

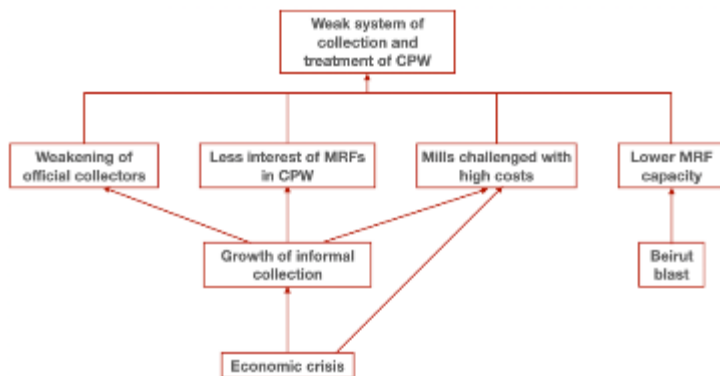


Fig 5 Problem analysis for Cardboard and Paper Waste

1.6 Slaughterhouse waste

Relevance of the Action

Lebanon is home to 62 registered slaughterhouses and to an unknown number of unregistered ones. Together they produce an estimated 60,000 tons of waste per year. Most of these slaughterhouses are located in Mount Lebanon (50%) and Baalbek Hermel (25%). The majority is municipality owned or contracted. Similar types of waste are produced by butcher shops while also animal breeding leads to comparable waste types, both however with unknown quantities. All this waste is mixed with municipal waste and brought to dumpsites and landfills, washed into the sewer or illegally dumped.

The waste is problematic because of its unhygienic character, and it may threaten the health of waste-workers. But it also leads to unhygienic conditions and uncontrolled emissions and odour-nuisance at the sites where it is disposed of. For these reasons legal obligations have been implemented but, unfortunately, they have not been enforced and have so far not led to needed initiatives. The EU project, PROMARE, implemented through World Vision, conducted some investigations related to dealing with the treatment of this type of waste in the city of Choueifat between the years 2019 and 2020.

Improvements in this field are highly relevant as they directly affect the health and safety of workers and neighbouring citizens that are directly exposed to the waste. Other considerations are that mixing slaughterhouse waste with other municipal waste leads to cross-contamination leaving the latter one less fit for any type of recycling.

While slaughterhouse waste is rich in proteins and organic matter, making it very suitable for recycling by rendering and/or anaerobic digestion, this opportunity is fully lost by its current handling. Actions improving this situation would therefore lead to increased recycling of this waste, would improve the quality of mixed municipal waste and would reduce the negative effects of GHG and other emissions from landfills and dumpsites.

Problem analysis

Although a number of legal obligations are in place, the separate collection and treatment of this waste stream is still fully absent. The Choueifat project has pinpointed three major gaps being a lack of infrastructure, incomplete legislation and absence of planning and poor implementation of permitting requirements. The underlying root cause for these shortfalls is however still unclear.

A possible explanation may be that affordable and safe management of this waste can only be reached at larger volumes. Best practices from other countries do acknowledge this economy of scale. Collecting and treating this type of waste in an adequate and safe manner calls for a national, and maybe even a monopolised, infrastructure. It could also be that the current situation, in which municipalities have

multiple roles and interest regarding slaughterhouses, does not provide the optimal conditions for well-balanced considerations that are needed to move forward. Both explanations call for some national guidance. Because the situation is unclear it is not possible to provide a more in depth analysis of the problem.

1.8 Governance and Finance

Relevance of the Action

In order to make waste management a success, the actors need to work according to their roles and responsibilities defined within a well-designed Governance framework. The national government has the important role of designing and implementing this framework followed by guiding the waste management through a system of planning and monitoring. Municipalities are the linking pins in the network as they are the ones who control urban cleaning and waste collection and are involved in all disposal and treatment facilities. The private sector may pick up the role of service provider and operator of these facilities. The framework should come with needed decentralization and financial arrangements.



Figure 6 Roles and responsibilities in waste governance

Decentralisation is a key building block of Law 180 of 2018 which provides the framework for municipalities to design, implement and operate municipal waste facilities however these need to be in line with the broader national systems and approved by the Ministry of Environment. However, to date, most municipalities do not have the capacity to design or assess facilities of the scale needed and several related implementation decrees remain missing.

Financial sustainability is at the core of waste management governance. Despite Lebanon's legally embedded principle of "polluter pays", the country still fails a system in which the costs of waste collection and treatment, including costs of overhead, awareness and enforcement campaigns, are passed on to the producers that invoke them. Municipalities are only allowed to charge their citizens for city cleaning. The other costs need to be paid through the Independent Municipal Fund. It leads to a highly untransparent situation in which the municipalities are kept dependent on decisions at the national level.

The LDK scoping study reports all-inclusive costs for city cleaning, collection and treatment of waste, varying between a low \$20 per ton in rural areas with open dumps and \$170 per ton in urban areas¹⁶. A rough estimate may then lead to a sum of around 400 million USDs per year being spent on waste management across the country and weighing entirely on the national budget and thus paid through national taxes and/or other country-level sources. There is no connection whatsoever between waste generation and the expenses needed for dealing with this waste. Nor is there a clear link between the municipalities' incoming cash for waste management and their efforts in this field. It leads to a kind of institutional inertia with municipalities not taking initiatives as they are not competent on generating needed revenues. On the other hand, the national government has the responsibility to guide the way forward and has control of the money but is not capable of implementing any policies as they are not on the ground in the municipalities. And anyway, the national government is confronted with numerous other

¹⁶ TaDWIR Scoping report

tasks and responsibilities, turning any decision on solid waste management into a struggle with other priorities.

The absence of decentralisation and cost recovery arrangements is a highly relevant topic because of the following reasons:

- The absence of decentralisation of roles and responsibilities to the municipal level is a threshold for further initiatives with regard to waste management.
- The availability of dedicated, reliable and transparent cashflows is the most important prerequisite for reducing the vulnerability of waste management
- It is also a necessary condition for incentivizing prevention and recycling.
- Covering waste management costs by the government puts a heavy burden on the national budget.
- Continuing this situation obstructs needed decentralisation in this field

Problem analysis

The management of solid waste, and especially municipal solid waste, is an essential public utility that needs:

- decentralisation of roles and responsibilities to the right level
- continuous reflection on the roles of public and private actors
- continuity and stable cashflows,
- a division between operational and political responsibilities
- and decentralised operational and financial management by the municipalities (or groups of municipalities).

All this is missing in Lebanon. Without full cost recovery and a good system of governance, the waste management system will remain weak, and it will be very difficult to gain any progress to improve operations and increase recycling.

II. Strategy

2.1 Hazardous HCW

The current situation calls for an orchestrated strategy addressing both the weaknesses of the current system and its extension to all hazardous streams of HCW and all actors that are producing these. There are a number of stakeholders involved in Hazardous HCW, related to such a strategy. Nevertheless, not all actors' stakes are equally important. The table below provides a ranking of the stakeholders in this field.

Table 8 Stakeholder ranking hazardous HCW

Rank	Stakeholder	Stake	Leverage
1	National Government	Compliance of all actors with regulations, standards and minimum requirements for collection, treatment and market ordering are safeguarded and monitored while public costs for this waste are nihil.	High, because of legal authority
2	Healthcare Institutions	Waste is collected and treated within the limits set by the government, uninterrupted and at the lowest possible costs.	High, because of responsibility as producer
3	Service providers	A situation in which services can be provided in an open and levelled playing field.	Intermediate, because of quality offered services
4	Municipalities	Municipal waste, budgets and facilities are not burdened by hazardous HCW.	Intermediate, because able to refuse hazardous HCW
5	NGOs	Safe disposal of hazardous HCW is warranted and jobs are created.	Low, only addressing irregularities in case legal obligations are not met

The top 3 stakeholders should play a dominant role in any strategy. Of these 3, the sector of healthcare institutions must be considered as being the most important actor. The institutions are the responsible producers whose liabilities are not limited to what happens inside the hospital premises. Considering this, the strategy should aim at establishing a situation in which the healthcare sector itself takes the initiative to improve the situation, to meet standards set by the national government and to do so themselves or with the help of service providers. All of this should be performed in a market ordering that guarantees quality services, continuity at low or acceptable prices.

2.2 E-waste and Batteries

To this day there is neither a national policy nor any important market initiative on E-waste and batteries. This implies a near-greenfield situation that's not obstructed by already existing systems. In such a situation the strategy could aim at implementing the most ideal solution for these waste streams being a system of Extended Producer Responsibility. The most important stakeholders for this strategy are listed below.

Table 9 Stakeholder ranking E-waste and batteries

Rank	Stakeholder	Stake	Leverage
1	National Government	Compliance of all actors with regulations, standards and minimum requirements for collection, recycling, treatment and market ordering are safeguarded and monitored while public costs for this waste are nihil	High, because of legal authority
2	Producers, importers, wholesalers and resellers of E-waste and batteries	Waste is collected and treated within the limits set by the government, uninterrupted and at the lowest possible costs.	High, because of responsibility as producer
3	Consumers	Access to collection points for this waste at no cost	High, because consumers' awareness needs to be addressed
4	Municipalities	Municipal citizens are serviced for this waste at no costs.	Intermediate, because of possible role in collection
5	Service providers	A situation in which services can be provided in an open and levelled playing field.	Intermediate, because they will be contracted by the PRO
6	NGOs	Safe disposal of E-waste and batteries is warranted and jobs are created.	Low, only addressing irregularities in case legal obligations are not met

Within this context the strategy is to reach all of the sorted material to be collected and a maximum recycling of E-waste and batteries through a system of EPR, preferably to be implemented voluntarily by the sector within constraints set by the national government and in close cooperation with the municipalities.

2.3 Mixed Municipal Waste

There will be no system of separate collection for municipal waste very soon and also, there will be no alternative such as mass-incineration. Therefore, the system will have to deal with the volumes as they are now. And in addition, the levels of contamination will also not drastically be lowered in such a way that current MRF-operations will lead to acceptable compost qualities.

The network of existing MRFs may nevertheless be at the centre of a feasible and fast solution for MMW as these facilities are already sited and permitted for processing waste. Their operations will then have to be shifted and upgraded and the only way to do so is to focus on the following approach:

- Proceed with mechanically and manually sorting any valuables (metals, glass, etc...) and bulky parts.
- Reclaiming the high-calorific contents of the remaining waste, such as contaminated paper/cardboard/plastic/wood/textile fractions, and turning it into RDF if an appropriate (environmentally, socially and financially) viable market is found
- Processing the remaining organic and inert fraction through bio-stabilization, resulting in a dry and heavy fraction that can be used as daily coverage on the landfills thus replacing the use of soil/gravel
- Reduce their operating costs and optimise processes through energy efficiency and alternative sources of energy.

The most important stakeholders for this strategy are listed in Table 10. Although the operators are important, the primacy must be attributed to the municipalities. They are the actors with a dominant interest in well-performing MRFs, and also the ones that are in control for directing the waste to the facilities and deciding on changes in the operations and products. The government's role is mainly in setting up standards for the use of RDF (composition and analyses). The cement industry and the landfills also play a key role as they are the ones to decide on receiving and using the products in this new set-up.

Table 10 Stakeholder ranking Mixed Municipal Waste

Rank	Stakeholder	Stake	Leverage
1	MRF operators	Continued and improved operations of the MRFs	High, because of being legally contracted for operating the facilities.
2	Municipalities	Undisturbed and sustainable treatment of their waste at the lowest possible costs.	High, because they are the owners of the waste, terrains and often also the facilities. They need to deliver the waste and have targets on its recycling
3	Government	Responsible for issuing standards on quality and certified control of products derived from waste	High, because standards are needed to initiate markets.
4	Cement and other industries	Stable operations at lowest costs also when replacing their fuel	High, because of needed cooperation for using the RDF
5	Landfill operators	Undisturbed operations of the landfills at the lowest possible costs.	Intermediate, because of needed cooperation for using the stabilised material.

2.4 Green Municipal Waste

Lebanon needs initiatives producing high quality compost from waste. Such a solution will not come from treating commingled municipal waste but instead needs to be based on uncontaminated organic waste streams. These streams are present and green municipal waste from parks and markets is one of them. As these streams are smaller in volumes and not homogeneous in their composition, such an approach calls for dedicated initiatives on a smaller and more distributed scale.

As said, green municipal waste from park and garden maintenance and food markets may be one of such approaches. The waste can be collected in separate containers brought to a composting area and then treated through open air windrow composting that requires minor investments and simple operations. The municipal scale is very suitable for such an approach. Typically, such operations would treat an input of 10-20,000 tons per year. An opportunity may be in using existing MRFs or landfill sites to perform this composting once a feasibility assessment is undertaken to determine capability to accommodate such activities. This would lead to synergies in using land, facilities, machinery and workforce.

It is considered that this alternative is an easy and cheap option for those municipalities that have the availability of this type of waste. For this reason, the strategy should only aim at showcasing the option by using one or two demonstration projects. The strategy also considers that such demonstration projects could draw the attention of other producers of similar waste (restaurants, food industries, private garden owners, private greenery service providers) that may add to the feasibility of such an approach.

There are a limited number of stakeholders involved (see Table 11) and this observation could further enhance the success of the strategy. The most important ones are of course the municipalities that are involved.

Table 11 Stakeholder ranking Green Municipal Waste

Rank	Stakeholder	Stake	Leverage
1	Municipalities	Undisturbed and sustainable treatment of their waste at the lowest possible costs.	High, because of waste ownership
2	MRF or landfill operators	Improving the financial basis of their operations.	Intermediate, because of facility ownership
3	Other producers of similar waste	Interested in improved treatment of their waste	Low, just an option for improvement
4	Government	Responsible for issuing standards on quality and certified control of products derived from waste	Low, because, in general and for high capacity activities. standards are of course needed to initiate markets, but in this case the municipalities can make use of the produced compost for their own purpose.

2.5 Cardboard and Paper Waste

The exact situation for CPW needs further investigation in order to be able to formulate a suitable strategy in more detail. But already now it looks like this market needs some kind of structuring in order to prevent the current difficult economic situation from disrupting the collection and recycling of this waste for a long period.

The most important stakeholders for the strategy are listed below. The structuring could comprise support to the municipalities to strengthen the legal position of the official collectors and to stimulate their performance in order to increase their volumes and the quality of the collected cardboard and paper. That could, in turn, improve the performance of the MRFs and also the resource position of the mills. But again, the strategy needs to start with an assessment of the exact market situation.

Table 12 Stakeholder ranking Cardboard and Paper Waste

Rank	Stakeholder	Stake	Leverage
1	MRF operators	Sustained availability of paper mills	High, because of facility ownership
2	Paper mill operators	Sustained operations at lowest possible costs	High, because of facility ownership
3	Official collectors	Sustained operations shielded by their official status	High, because of their official status
4	Municipalities	Municipal citizens are serviced for this waste at lowest costs.	Intermediate, because of waste ownership in case it is not collected
5	Government	Responsible for regulating import and export.	Intermediate, because of role in import and export of CPW.
6	Informal collectors	Possibility to be active on this market when needed	Low, because of their expedient interest

2.6 Slaughterhouse Waste

Also here, the situation regarding this waste needs more clarity. But expectedly, there will be a strong role for the National Government and a strong need for the entire sector of operators in the meat production value chain to pick up their responsibility. Based on this the strategy will consist of a combination of national masterplanning and involving the sector in order to have them fulfil their duty of care. In case of a positive outcome, this approach may be followed by support in implementing the masterplan.

The stakeholders are listed below. Not shown separately in this Table are the municipalities as they should, in this case, primarily be regarded as part of the sector.

Table 13 Stakeholder ranking Slaughterhouse waste

Rank	Stakeholder	Stake	Leverage
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1	National Government	Safe and sustainable treatment of Slaughterhouse and similar waste	High, because of national responsibility with regard to sound waste management and market ordering.
2	Sector (meat production value chain operators)	Waste is collected and treated at the lowest possible costs	High, because of waste ownership

2.8 Governance and Finance

The strategy is to prepare and implement a nation-wide system of governance and of cost recovery at the municipal level. It should start at the national level. The government needs to initiate a system of waste governance depicting the roles of all public authorities and private actors. It should include the decentralization of cost recovery to the municipalities and, in order to prevent chaos, must do so in a structured and uniform way.

The system should at least:

- Reflect the polluter pays principle
- Be transparent and affordable
- Acknowledge the municipalities pivotal role regarding waste management
- Increase the financial sustainability of municipal waste management
- Encourage further improvement and recycling rates in this sector

The strategy recognizes the fact that implementation could exceed the planning of the TaDWIR project.

III. Results and Partnership (Strategy elaboration)

Expected Results

The all-embracing objective of the project (Impact) is **to improve the overall environmental and financial sustainability of Lebanon's waste management system**

Taking into account the strategy for each waste stream, the specific objective (outcomes) are as follows:

Outcome 1. To reduce hazardous waste going to waste facilities, landfills and/or being dumped in environmentally unsound manner (Hazardous HCW, E-waste and batteries)

Outcome 2. To improve the management of municipal waste by improving current waste facilities and their products and to set first steps towards composting municipal waste (Mixed municipal waste and municipal green waste).

Outcome 3. To secure recycling of already at-source segregated non-municipal waste and prevent it from being mixed with municipal or other wastes (Green Municipal waste, Cardboard and Paper waste, Slaughterhouse waste, and other special wastes).

Outcome 4. To improve the governance of the waste sector

For the individual outcomes, the following overall results will be targeted (outputs):

Results 1

1.1.1 Infrastructure capacity and systems to accommodate the treatment of 100% of all infectious HCW

1.1.2 80% of all pharmaceutical and cytotoxic HCW are in place

1.2 Waste collection and treatment of E-waste and batteries is regulated and made available

Results 2

2.1 300,000 tons of mixed municipal waste are diverted extra from landfills and dumpsites by modifying and improving the roles of the MRFs

2.2 10,000 tons of Municipal green waste and possible other segregated green wastes are composted separately per year in two pilots.

Results 3

3.1 Collection and recycling of cardboard and paper waste from source is secured

3.2 Separate collection and treatment of slaughterhouse waste is separately collected and treated (to be decided upon)

Results 4

4.1 A national framework on governance and a national guideline on cost recovery for municipal solid waste management have been established

In the below section, key activities for each waste stream are described in detail.

Result 1.1 Hazardous HCW

Objectives

Mirroring the problem analysis, the below figure summarizes how a set of means, comprising enhanced participation and well managed financials, planning and overall governance, will lead to improved management of hazardous HCW.



Figure 7 Objective analysis Hazardous HCW

The overall object of this action can therefore be phrased as “guaranteeing reliable, safe and sustainable collection and treatment of all hazardous HCW”.

Activities

The means, listed in the figure above will be operationalized by using a set of six coherent activities:

- **Activity 1.1.1: Prepare Masterplan for HCW Management**

The problem field calls for a masterplan that will provide an orchestrated approach. This masterplan will cover the entirety of Lebanon and will use the year 2035 as a planning-horizon. The plan will make use of revised projections of waste volumes, qualities and regional origins over this planning period, as collected in the current commissioned UNDP-study on health care waste management. In addition, it will describe existing services and infrastructure and it will use a techno-economic review to establish economies of scale. The projections, the current situation and the economies of scale will lead to a planning of needed capacities over the entire planning period including the impact of the COVID pandemic and emergency backup capacity needs.

Using this planning, cashflow schemes will be made of Capex and Opex leading to projections of needed investments, working capital, costs per ton, needed revenues and tariffs. Based on this, the plan will evaluate the character of the market regarding possibilities for free competition vs. needed monopolies, given the objectives of this project. Stakeholder consultations will play an important role in this evaluation. The main stakeholders, being the healthcare sector and the main service provider, AeC, will be challenged to assess their roles and responsibilities.

The plan will also assess legal aspects of market structuring, permitting and service provision. It will reach conclusions on levelling the playing field, on needed or optional market structuring and on the outlines of needed governance. AeC’s current legal position will be assessed. It is foreseen that AeC will preserve its important role albeit maybe in a changed market configuration. The project aims at reaching a plan that is supported by the healthcare sector, relevant ministries and the service providers.

- **Activity 1.1.2: Develop and Implement Governance Arrangements**

This activity will build on the master planning results. It will further elaborate needed roles and responsibilities of all stakeholders. Depending on the masterplan results, governance arrangements will cover aspects such as service levels, legality, enforcement, transparency, continuity, financials and reasonable pricing. Governance can be structured and imposed, both by the sector itself and/or by the national government. It will explicit these roles, elaborate possibly needed changes in national legislation and it will consider the needs to improve service delivery and monitoring at the national level. It will build on the legal analysis for the sector already undertaken by UNDP.

- **Activity 1.1.3: Implement Capacity Expansion and Infrastructure Support for HCW Treatment**

Infectious HCW

It is expected that the action plan will show the need for extra capacity for the treatment of around 4,000 tons of infectious waste per year, as proposed by the recent ELARD study. The planning, which is short-term technical assessment per facility which will be conducted nearly in tandem with the engineering

design for the needed infrastructure, will show how, by whom and where this capacity will be implemented. This activity will cover the design, financing, tendering, construction and commissioning of the capacity.

Pharmaceutical and Cytotoxic HCW

It is expected that the masterplan will show the need for an initial capacity for the collection and treatment of more than 200 tons of pharmaceutical and cytotoxic waste per year. Based on economies of scale, this capacity is expected to be covered by only one central facility, sourced by an optimized logistic system. Uncertainty in current and projected generation of this type of waste makes it necessary to base the design on a higher capacity. For now, the project considers a capacity of 500 tons per year appropriate. This activity will consider an in-depth analysis of the pharmaceutical and cytotoxic waste sector and consider designing and implementing a solution that would include the design, financing, tendering, construction, and commissioning of the capacity. Financing may be covered on a co-financing basis from within the budget of the project if funding from the private sector or other sources can be guaranteed.

Back-up Provision

The project addresses the collection of the waste from the institutions as the pivotal part of the system. Evacuation of the waste from the institutions must be guaranteed daily and under all circumstances. Any incident at the treatment facilities may eventually risk obstructing upstream collection services. For this reason, back up arrangements must be available. A distinction must be made between infectious waste on one side and pharmaceutical/cytotoxic waste on the other. The project considers that, in such circumstances, temporary landfilling of the infectious waste in a separate, dedicated part of a designated landfill to be a good option. For pharmaceutical and cytotoxic waste, temporary storage awaiting treatment at a later stage, is considered a good option.

These backup arrangements must be elaborated into more detail regarding protocols, roles, responsibilities, financial aspects, site selection, operational guidelines etc.

Capacity building

Within this activity, a main sub-component will include capacity building activities for service providers including AeC in terms of technical know-how, internal managerial support (planning and control cycles, standard operating procedures, structures and institutional set-ups such as staffing, etc.), financial oversight, etc. This is envisioned to be implemented through various national and international experts that would transfer knowledge and best practices to improve the overall capacity for implementation and raise the professional level.

- **Activity 1.1.4: Develop and Execute Participation Campaign (Awareness Raising)**

The activities will aim at 100% participation of all actors in the field of healthcare that are generating hazardous HCW. This participation includes all three types of hazardous HCW (infectious, pharmaceutical and cytotoxic). For this, a participation campaign will be elaborated and executed comprising push and pull measures. Push-measures will consist of syndicate actions towards their members and of legal enforcement by using existing permitting and accreditation systems. Pull measures will use awareness campaigns expressing the sector's responsibilities and describing available services and their prices. The execution of the participation campaign will be planned according to the availability of adequate services and capacities.

Result 1.2 E-Waste and Batteries

Objectives

The objective of this action is to provide adequate management of E-waste and wasted batteries in Lebanon. For this objective an adequate and more comprehensive system of collection and treatment of this waste stream is needed. Having such a system will also lead to diminishing activities of uncontrolled scrap operators. There is no need for the national or local authorities to set up this system. The responsibility for organising and funding it is transferred (or given back) to the private sector through an EPR scheme comprising producers, importers, wholesalers and resellers. Ideally such a system is voluntary but expectedly it needs an obligatory arrangement put in place through a national regulation and/or policy. The role of the government would then be limited to monitoring the EPR performance and licensing recyclers.

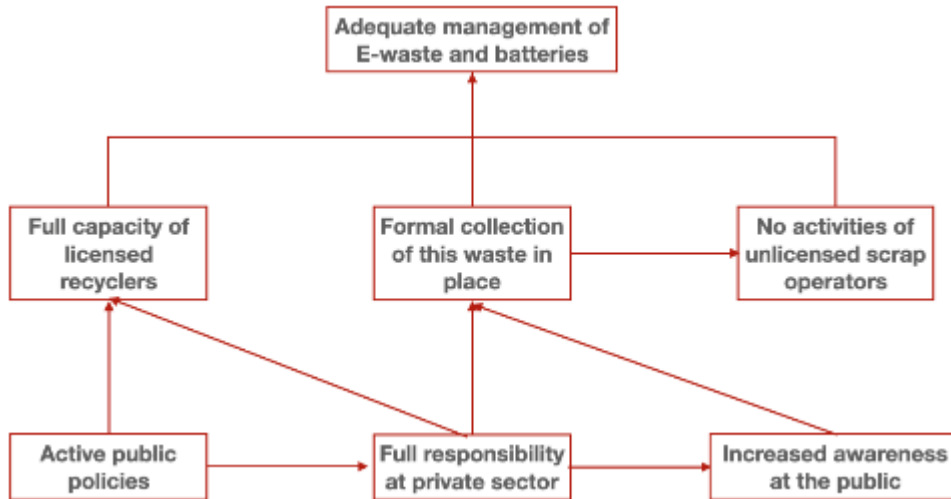


Figure 8 Objective analysis Hazardous HCW

The overall objective of this action can be summarized as “Providing adequate management of E-waste and batteries through the introduction of EPR”

Activities

The means, listed in the figure above will be operationalized by the following activities:

- **Activity 1.2.1: Perform Baseline Assessment of E-waste and Batteries.**

The situation regarding E-waste and batteries waste disposal/treatment streams is not well documented. A baseline study should fill in this gap through a set of investigations:

- Mapping the entire value chain of production, imports, wholesale, reselling, use and discarding of these products. This part should typically provide insights in quantities, types, values and all actors (including syndicates) across the country, including regional differences and expected developments.
- It should also elaborate systems for collection/reversed logistics, dismantling and recycling and the need for export of recycled materials and components.
- Based on this the study must provide indications of total costs and revenues for such a system while accounting these to specific types of this waste (for example following the EU categories).
- An evaluation of international best practices on EPR for E-waste and batteries is needed and any alternatives will have to be matched with the Lebanese context to acquire insights on usability and feasibility. The recent Adelphi study¹⁷ may be a good starting point for this evaluation.
- Existing Lebanese laws and regulations must be evaluated in order to conclude on needed changes.
- An inquiry into the opinions of the sector on EPR and on the willingness to voluntarily participate, will be part of the assessment.

- **Activity 1.2.2: Support the implementation of EPR policies and regulations**

Based on the baseline assessment, decisions are needed on how to implement the EPR. It is anticipated that the national strategy on waste management will need to be updated in accordance to newly collected data and the relevant EPR decrees/decisions should be drafted. The MoE is the responsible party for such changes but also the MoI and MoET are competent as they govern the industrial and commercial market.

¹⁷ Analysis of Extended Producer Responsibility Schemes – Assessing the

The project will support the Ministries by providing capacity building on all aspects of EPR. Aid will be provided in discussions with sector representatives and other stakeholders on how to move forward.. The project will then support the competent Ministries in drafting needed texts for the National Strategy and for any needed legal documents. Much depends on the sectors voluntary willingness to adopt an EPR scheme on its own initiative. A voluntary EPR is preferred as it is quicker to set up and reduces administrative management and costs. Two major prerequisites are that such a voluntary EPR is binding all sector operators and adheres to strict guidelines on nationwide coverage, governance, recycling goals, environmental standards, transparency, cost-accounting, fair competition and free product returns for all consumers. Any non-binding character of such voluntary schemes may require mechanisms to prevent free-riding of individual actors.

In case there is no willingness for setting up a voluntary EPR, the Lebanese government must be prepared to legally impose a system.

- **Activity 1.2.3: Support the development of sector responsibility and EPR implementation (conditional on the government's approval)**

In case of government approval, as described in Activity 1.2.2, the project will proceed by supporting the sector in organizing itself and in adopting its role in a voluntary or compulsory EPR scheme. Also here, a program on capacity building will be provided. In case of strong sector-focus on self-organization, the project will additionally support the sector to acquire broad participation.

Assistance to the sector will primarily be on preparing and implementing the EPR. It will cover such aspects as

- Designing the PRO role (Producer Responsibility Organization) and assigning this role to an existing or new entity. International standards on PRO-requirements (independency and transparency) will be followed.
- Preparing fund management, governance, budgeting, financing, tariff setting and cost accounting procedures.
- Implementing a Planning and Control Cycle including legally needed monitoring and reporting.
- Preparing all needed arrangements with municipalities on collection infrastructure.
- Organizing contractual arrangement with recyclers in and outside Lebanon.
- Preparing public awareness programs.

The project will support both the Ministries and the sector while implementing the EPR. This support may include support on year-to-year planning, monitoring, awareness campaigns, problem solving and annual evaluations.

Result 2.1 Mixed Municipal Waste

Objectives

The improvement must lead to resilient network of MRF facilities that are able to reduce the volume of waste that has to be landfilled, along with optimised operations and stable finances. The resilience must come from an improved balance between revenues and costs, from increased throughputs, from professional operational management and from adequate contractual positions on both the input and the output side. The recycling should preferably be done by recycling its calorific contents of Mixed municipal waste and by reducing the organic contents of the residues. This also reduces the formation of landfill gas and leachate and reduces the need for using soil/sand/gravel for daily coverage which normally uses 5-10% of the landfill capacity.

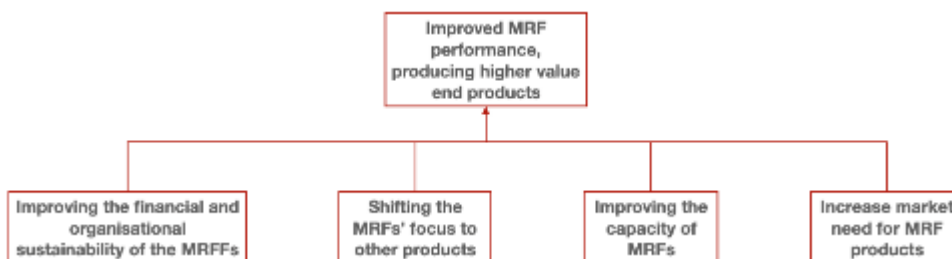


Figure 9 Objective analysis Mixed Municipal waste

Activities

The objectives mentioned above will be pursued by a set of four activities.

- **Activity 2.1.1: Assessment of market use of RDF including financial, social, and environmental feasibility**

Parallel to activity 1, a market assessment will be made for the use of RDF within and outside Lebanon. It will build on already performed research performed by LDK on behalf of the EU. The assessment will discuss applicable legal requirements and will give an overview of all appropriate utility and industry furnaces that may be able to use RDF. These possibilities will then be assessed in more detail. Required volumes, specifications, transport costs and needed feed-in investments will be summarized. Interviews will be performed to acquire more insights in demand, pricing and needed contractual arrangements. This activity shall compliment and validate already conducted studies by previous EU and other funds. The assessment will be concluded by performing an overall evaluation of financial, environmental and social aspects of RDF market use.

- **Activity 2.1.2: Modification of feasible MRFs to increase the production capacity and to produce RDF and landfill cover material**

This activity will start by performing an economic assessment of MRFs to establish their feasibility for playing their new roles. It will build on earlier evaluations of the MRFs performed by LDK on behalf of the EU in 2018. For those feasible MRFs feasibility studies will be carried out to increase their capacities and to modify installations and operations in order to produce RDF and stabilize the residue while increasing their overall treatment capacity. The plan will comprise all technical, financial and organisational aspects of the feasible MRFs. It will also include underpinned guarantees that these modifications will lead to needed RDF specifications and volumes including the needed lab testing and analysis to ensure RDF is also chemically and physically suitable for.

The approved studies will then be executed once activity 2.1.3 is confirmed (market assessment). Execution will cover the design, financing, tendering, construction and commissioning of the modifications.

- **Activity 2.1.3: Set enabling environment for RDF use**

The use of RDF is new in the Lebanese context. RDF standards will be needed to further enable the use of RDF. The project will support the Lebanese government in the process of setting up these standards including their needed verification and laboratory standards. The project will also produce suitable documents and perform an information campaign to explain the rationale of using RDF for energy and industrial uses. International best practices will be used as examples. It will implement required upgrades at selected Facilities and/or support local authorities with logistics as a pilot intervention based on the output of the Activities 2.1.1 & 2.1.2.

- **Activity 2.1.4: Cost/revenues plans and implementation**

Parallel to activity 1, a support plan will be made and implemented where feasible in order help the MRFs in reducing their electricity costs and other expenditures, in initiating new activities that will lead to synergies and in improving their contractual positions for both, incoming waste and outgoing products. Reduction of operational expenses shall be considered through implementing upgrades, to be established in a technical and financial feasibility study.

For this last part of the approach, the following items may be considered:

- Utilization of solar panels and / or RDF to provide electricity and reduce the electricity cost
- Aerobic digestion / Anaerobic Digestion/ Methanization, to generate electricity
- Recovery of methane from landfills and potential for power generation
- Install overhead electric grabbers at reception areas to replace feeding loaders and reduce diesel consumption and thus operation costs
- Assess green status of existing motors and gearboxes of existing equipment (belts, trommel screens), and potential replacements with newer green (energy friendly) products.

- Assess green status of existing equipment and machinery and consider replacing them with more eco-friendly products.
- Others (Including general assessment and identifying potential interventions that might reduce the operation cost).

Result 2.2 Municipal Green Waste

Objectives

The objective for this sub-project is to demonstrate the financial and technical feasibility of recycling municipal green waste through small-scale open-air composting and prevent it from being mixed up with other municipal waste and being landfilled. The underlying objective is to convince municipalities and others of such an approach.

Activities

- **Activity 2.2.1: Perform a baseline assessment of green waste quantities, quality and market situation**

A baseline assessment will be performed. It will map the expected qualities and quantities of municipal green waste (MGW) across the country. In addition, the study will provide insights in the way these wastes are handled currently, and the main operators and stakeholders. In order to ensure municipalities' efficient action towards green waste management, the assessment will prioritize the analysis of gender dynamics in waste generation and management activities focusing on the key role of women and children. Also, an inventory will be made of other special waste streams that may be co-composted along with MGW.

Based on international best practices, and given the expected type and scattered quantities of MGW the only feasible way for treating MGW is through open air composting. As this material holds a high percentage of slowly degradable components degradation will go slowly and without too much odour emissions. Therefore, indoor composting is not needed and digestion is not usable at all. The assessment will deliver a standard design for small-scale open-air composting this waste and will summarize its Capex, Opex and resulting costs per ton for three different capacities. These costs will then be used to assess the feasibility of the approach on the national level.

- **Activity 2.2.2: Selection of Two Regional Pilots**

Based on the results of Activity 1, a selection will be made of two municipalities that would serve two large regions (governorates) or similar scale of implementation with suitable volumes and possibilities for siting the composting activities. Otherwise, the viability and impact of such activities would not be considered feasible. Most likely, but to be confirmed once the project is initiated, Bekaa, Akkar and Nabatieh could have such potential as they recently benefit from EU support. Preferably these sites should be located on existing waste treatment facilities. Needed contractual and operational arrangements with these two municipalities will be made.

- **Activity 2.2.3: Implementation of two pilot composting operations (on existing facilities if and where possible)**

This activity will cover the design, financing, tendering, construction and commissioning of the composting facilities.

Result 3.1 Cardboard and Paper Waste

Objectives

The objective for this sub-project is to strengthen the value chain of collection and recycling of CPW within Lebanon. It starts with strengthening the position of the official collectors and is followed by support to the MRFs to improve their CPW output again and to deliver it to the paper mills. Also, these paper mills need support in order to safeguard their competitive position on a level playing field with international competitors and clients.

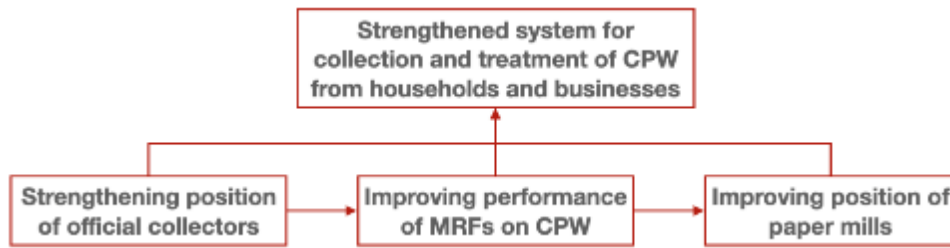


Figure 10 Objective analysis for Cardboard and Paper Waste

Activities

- Activity 3.1.1: Perform a baseline assessment of the CPW value chain

A baseline assessment will be performed. It will map the quantities, qualities, actors, workforce and prices for CPW on the Lebanese market, including existing imports and exports of these materials. The assessment will study any flaws in this value chain that make it vulnerable to economic crises and other disruptions. It will lead to advises on how to make the system more resilient and dedicated to its role to increase recycling and overall sustainability and will use international best practices as a reference. The CPW value chain assessment will integrate gender through identifying where women are, and where they are not in the different nodes of the value chains including their level of engagement and participation. The assessment will also identify VC dynamics focusing on conditions in women and men interact at the vertical and horizontal levels. Finally, the assessment will investigate the gendered behaviours towards CPW consumption, production and recycling decisions of all household members.

- Activity 3.1.2: Improving the regulation of the collection and MRF-handling of CPW

The project will improve the performance and resilience of CPW collection and MRF handling of this waste. It will do so based on the results of Activity 3.2.1. This may lead to support for the municipalities on improving the position of official collectors and increasing collected volumes to technical support for the MRFs to increase volumes and improve qualities of their CPW activities, but it may also lead to first initiatives on implementing an EPR system for CPW or packaging waste in general.

- Activity 3.1.3: Improving the position of Lebanese papermills in the (international) value chain

This activity will work on improving the position of the papermills in the CPW value chain. Interviews will be performed with all papermills, their associations, the Association of Lebanese Industrialists and relevant Ministries in order to evaluate the current position of the mills and measures that can be taken for improvement. The angle from the TaDWIR project will remain on strengthening the resilience of CPW recycling in Lebanon. But at the same time, it is anticipated that a level economic playing field, inside and outside Lebanon, will contribute to the stability of the CPW value chain in Lebanon as a whole.

Result 3.2 Slaughterhouse Waste

Objectives

The exact situation regarding slaughterhouse waste is not exactly clear. Two conclusions can however be drawn, and they are that the problem needs to be addressed on the national level and that improving the sector performance on its waste management is indeed a sector responsibility and obligation.

Based on the urgent need for safe and separate solutions for this waste, the objective can be formulated as follows: to achieve handling, collection and treatment of slaughterhouse waste and similar animal-related waste from butchers and animal breeding entirely separated from other wastes.

Activities

- Activity 3.2.1: Prepare a national masterplan on slaughterhouse waste

The activity will produce a baseline study on this waste, mapping all actors and stakeholders, and waste volumes and quantities, including their current destination. This baseline will also provide an overview of international best practises including their financial aspects and needed scales. Based on this, representatives of the sector and of the relevant ministries will be invited to join a project team to prepare a national masterplan. The masterplan will cover a period of at least 10 years. It will describe the current situation and needed changes, roles and responsibilities, needed services and infrastructure, investments and cashflows and legal and other arrangements needed to secure obligatory participation of all producers of this waste.

- **Activity 3.2.2: Develop sector wide cooperation and initiative**

The masterplan will be used to develop and establish the sector wide cooperation, supported by national enforcement, if needed. The established cooperation will need to take the initiative for implementations and will be supported in doing so.

- **Activity 3.2.3: Support the sector on needed investments.**

If needed, the sector will be supported on implementing the needed infrastructure. This may involve support on the design, financing, tendering, construction and commissioning of facilities.

Result 4.1 Governance and Finance

Objectives

The preparations needed for this project will expectedly going to take a considerable time. The object is therefore that implementing the systems for cost recovery have started and that full cost coverage will be achieved.

The activities under this result are consecutive; each activity is dependent upon the achievements made in the previous activity. Only when the national governance framework is defined and agreed, the second activity on setting-up cost recovery system can be started, and only when the cost recovery system is defined, the preparation national guidelines for cost recovery at municipal level may begin.

Activities

- **Activity 4.1.1: Prepare a National Governance framework for waste management**

A national governance framework, as described in paragraph 1.8 and building on already existing legislation such as Law 80/2019, is needed that will provide clarity and transparency to all actors in the field of waste management. The framework will attribute and define roles and responsibilities thereby incorporating decentralization to the right level enabling the delineation of waste catchments areas needed for landfilling and service zone specifications that take into consideration existing and planned facilities. A well defined governance framework will improve other important processes such as masterplanning and legislation in the field of solid waste management in addition to the adoption of a waste catalogue building on previous studies and assessments.

- **Activity 4.1.2: Undertake needed financial analysis to set-up appropriate cost-recovery system**

In order to prepare the cost-recovery system, an assessment of financial and related social aspects has to be performed. This includes an assessment of affordability, an assessment of possibilities to use EPR systems in order to divert costs to the private sector, a study on the usability of specific taxation to contribute to the cost recovery system while achieving specific SW targets (waste reduction, diverging to more environmental products, divergence towards circularity of products, etc...), operation cost for the municipal waste facilities needs to be undertaken in addition to an overview of the previous and on-going contracts. Financial cost estimates are to be estimated based on operation and maintenance costs depending on quantities of waste received.

- **Activity 4.1.3 Prepare national guidelines for cost recovery at the municipal level**

Should municipalities / unions of municipalities be vested with the authority to levy taxes (fiscal decentralisation), national guidelines are needed for implementing systems of full cost accounting and recovery. The guideline must be binding for all Lebanese local authorities and villages. It must impose decentralisation of revenue-systems for municipal waste management while preserving a unified approach across the country. The guideline should acknowledge the principals of "Polluter pays" and the need for full cost coverage meaning that all direct and indirect costs inflicted by the waste of the polluter (and nothing else) should be reflected in the fee or tax that he/she has to pay.

A fee/tax system typically is imposed per household and per business. It should preferably be collected separately for example as a dedicated monthly or yearly tax/fee, as a part of a combined tax/fee on real estate or as a percentage on electricity bills. The revenues should preferably be earmarked for waste management. Setting fees/taxes should follow a transparent yearly process-cycle according to a preset-pret structure (as for example in Fig 11) and should also be evaluated afterwards in the same cycle. Fee/tax-systems may involve provisions for differentiation (according to wealth or income), exemptions (for low-income households), cost-sharing and unifying (i.e. transport costs), adaptation (for citizens to get accustomed) and for incentivizing prevention and recycling. The preparation of the guideline will also

include drawing up a spreadsheet for calculation of needed fees, based on expected Capex and Opex and incorporating the provisions mentioned above. This system should be prepared in a dynamic and interactive database (model) that could cater to any changes on the ground at municipal level where applicable and feasible. This would provide a tool for municipalities that would support the cost-recovery of their systems.

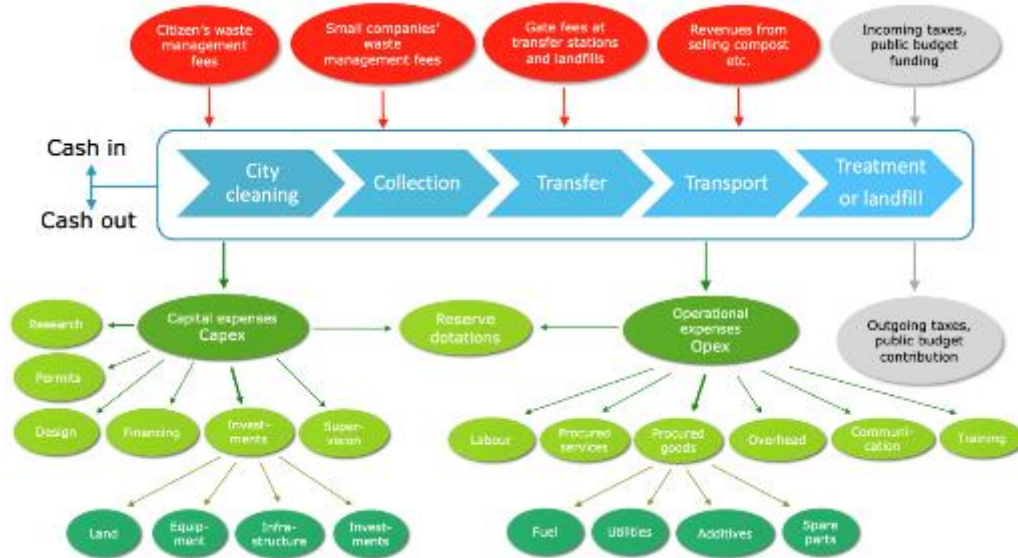


Fig 11 Example of a revenue/costs accounting structure for waste management

Risks and Assumptions

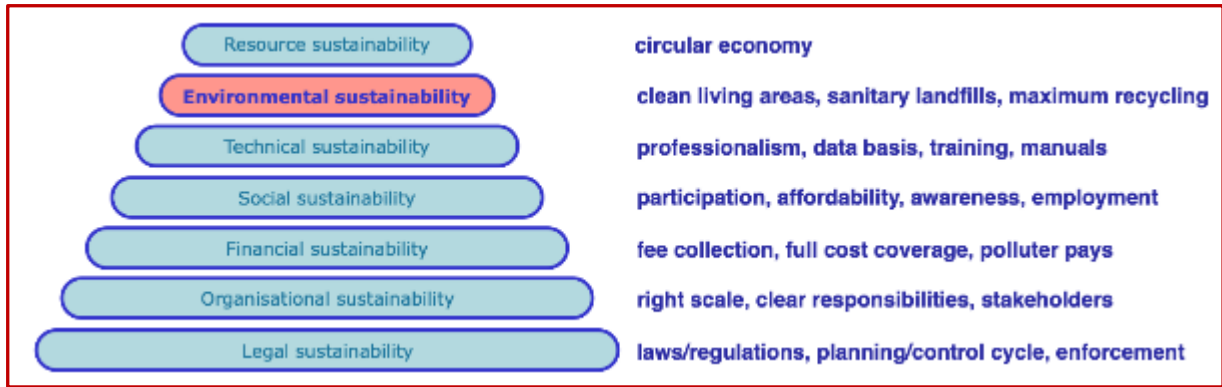
The project will be executed under difficult political, economic and financial circumstances. Because of this, the dominant overall risk is that some relevant actors will not assign a high priority to participating. This and other risks, including their mitigation will be described in more details below, if needed specified per objective or sub-project.

Sort	Risk	Mitigation
General	No interest and/or no priority assigned to project by relevant stakeholders	<ul style="list-style-type: none"> The project should secure a letter of commitment per sub-project of all competent Ministries. Similar letters of commitment will be needed from all relevant sector associations during starting up the project or after finalizing initial baseline assessment studies. In certain sub-projects this may lead to the need to find alternative partners. In case of unwillingness at the sectors, the projects may require assistance by the government or local authorities to subside any reluctance.
	Disruptions of project progress due to external causes	<ul style="list-style-type: none"> The project will use its contingency arrangements and will immediately call for a Project Board meeting should this occur Any major disruptions that cannot be mitigated in the project will lead to a redefinition of (parts of) the project according to the project arrangements.
Financial	Anticipated investments in new, existing or extended infrastructures or services turn out to be not feasible/viable	<ul style="list-style-type: none"> Specific support (grants) are available for improving feasibility as indicated in the activities If so, these parts of the project will be re-defined and agreed upon in accordance with the project arrangements and in consultation with the project board if not already indicated in the DoA. If no feasible options are available these parts of the project will be considered for termination.

	Affordability of costs for collecting and treating the waste is considered too low	<ul style="list-style-type: none"> Affordability will be researched during all initial assessments. It will be assessed by referencing these costs against other operational expenditures of the sectors and international benchmarks. If not affordable on a certain scale, larger scales will be considered If not affordable on the short term, a transitional period may be adopted. If still not affordable the sub-project/activity will be re-defined or even discontinued in accordance with the project arrangements
Operational	Existing service providers or facility operators reject any changes to their current roles	<ul style="list-style-type: none"> The project will respect existing positions as much as possible, as long as they do not negatively affect the overall objectives of the project, do not obstruct further progress and do not infringe Lebanese laws and policies. In case of conflicting interests, the situation will be discussed with the competent authorities. UNDP will engage with relevant authorities (MoE, CDR and others) from the start of the project to ensure lessons learnt, needs and buy-in of decision-makers related to operations of SWM facilities
	Potential clients for recycled products are not willing to buy or use them	<ul style="list-style-type: none"> The project will research market demand for any products during assessments Financial and market assessments for recyclables/value chains are pre-requisites for any interventions in this sector In certain cases, the project may require assistance by the National Government to subsidize this reluctance.
Social	Technologies, products and/or sites are not accepted by the public or interest groups	<ul style="list-style-type: none"> All choices will follow the national protocols on environmental and social impact assessment in order to weigh all objections brought forward. Awareness campaigns will be initiated or intensified when needed.
Security	Deterioration in security situation or civil unrest could hinder the implementation of the project	<ul style="list-style-type: none"> Project to coordinate closely with the UN Department of Safety and Security Business continuity plan to be activated should the security situation decline Project board meetings will be requested should the situation so require to determine how to overcome any security challenges that may arise
Political	Changes in the political environment may lead to the neglect of the solid waste sector or to its collapse	<ul style="list-style-type: none"> Project board meetings will be called for as needed should this situation arise Redesign the project to accommodate any political changes within the limitations of its scope Close coordination and networking at the technical level between all stakeholders/partners could potential overcome this risk

Sustainability and Scaling Up

Sustainability is a broad term that has to be operationalised in order to make turn in into an effective ruler for following project progress. The project will distinguish seven types of sustainability as depicted below.



This pyramid provides a usable framework for factors that jointly lead to overall sustainability. The individual factors can be described as follows:

- **Legal sustainability** - Needed laws and regulations are implemented and enforced. An operational planning and control cycle is practiced, at least at the national level.
- **Organizational sustainability** - Services and infrastructure are aligned with the needed economy of scale. Political and operational responsibilities are clearly defined, separated and attributed. All stakeholders are able to play their role.
- **Financial sustainability** - An SWM-fee system is implemented and it ensures full cost coverage. Cashflows are earmarked for SWM in order to prevent interference with other priorities. Fees reflect the polluter-pays-principle.
- **Social sustainability** - All citizens enjoy SWM services. Ongoing awareness campaigns promote their participation. The fee-system takes affordability into account by using an appropriate differentiation scheme.
- **Technical sustainability** - Infrastructure, services and maintenance reflect the state-of-art. Clear manuals and instructions are implemented and assessed on a regular basis. Professionalism is achieved through continuous capacity building. Data collection is an integral part of the core activities.
- **Environment sustainability** - City cleaning and collection show 100% coverage. Disposal facilities are in place. Their use is limited to the minimum through the implementation and promotion of recycling activities.
- **Resource sustainability** - A maximum reduction of the need for primary raw materials and energy is achieved through dedicated design of products and services and circular business models.

The first six of these sustainability criteria will serve as a “ruler” to assess progress during project execution. At the start of the project a scorecard will be elaborated using these sustainability criteria and a baseline-score will be established.

IV. Indicative Action Plan (Multi-year work plan complemented with annex 3 – Multiyear budget plan)

The Gantt chart below provides the timing of all activities and sub-activities in the Action between 2022 and 2024, however, the official start date of the Action is considered as of 01 May 2021 noting that UNDP conducted technical assessments and analysis to scope the Action during that period. Although the original scope of the project and the scale of activities is originally forecasted for 6 years, the EU Agreement with the Lebanese Authorities ends by November 2024. Accordingly, the below compressed action plan is presented meeting the abovementioned deadline.

UNDP aims at coordinating with the Lebanese Authorities and the EU, to extend the deadline beyond November 2024 within the first year of implementation of this activities in order to ensure that an extension is granted. Once the EU's agreement with the Lebanese authorities is extended, an addendum to the EU-UNDP contribution agreement will be requested by UNDP from the EU given that UNDP and the EU already note and agree that the current deadline of end of 2024 is not sufficient to complete the implementation of activities.

		2022												2023												2024											
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
0	General																																				
	Preparations																																				
1.1	Hazardous HCW																																				
1.1.1	Masterplan plus revision																																				
1.1.2	Governance																																				
1.1.3	Implement capacity expansion and support																																				
1.1.4	Participation campaign																																				
1.2	E-waste and Batteries																																				
1.2.1	Baseline assessment																																				
1.2.2	Preparing policies and regulations																																				
1.2.3	Preparing sector responsibility																																				
2.1	Mixed Municipal Waste																																				
2.1.1	Modification of feasible MRFs																																				
2.1.2	Market study on RDF use																																				
2.1.3	Set enabling RDF environment																																				
2.1.4	Cost/revenue plans																																				
2.2	Municipal Green Waste																																				
2.2.1	Baseline assessment																																				
2.2.2	Selection of pilot municipalities																																				
2.2.3	Implementation of pilots																																				
3.1	Cardboard and Paper Waste																																				
3.1.1	Baseline assessment																																				
3.1.2	Improving regulation of collection and MRF																																				
3.1.3	Improving position of paper mills																																				
3.2	Slaughterhouse Waste																																				
3.2.1	Preparation of National Masterplan																																				
3.2.2	Sector development																																				
3.2.3	Sector support on needed investments																																				
3.3	Other Special Wastes																																				
3.3.1	Study other wastes/Development framework																																				
4.1	Cost Recovery																																				
4.1.1	Preparation National Governance Framework																																				
4.1.2	Financial analysis																																				
4.1.3	Preparation of National Guideline																																				

V. Governance and Management Arrangement (Project Implementation Arrangements)

Implementation modality

This project will be implemented under the Country Programme Action Plan using UNDP Direct Implementation Modality (DIM) in accordance with UNDP's Programme and Operations Policies and Procedures (POPP). In implementing project activities, UNDP may partner with international NGOs or other UN agencies under programmatic cooperation, with local NGOs/CSOs through low-value grants funding scheme, with contractors to supply works, goods and services, consultants and subject matter experts. All these partners will be selected and contracted according to UNDP rules and regulations.

Governance

UNDP will monitor the progress towards intended results, and will ensure high-quality managerial, technical and financial implementation of the project, and will be responsible for monitoring and ensuring proper use of administrated funds to the assigned activities, timely reporting of implementation progress as well as undertaking of mandatory and non-mandatory evaluations for each of their respective components.

A '**Project Board**' will be set up and will be responsible for making, by consensus, management decisions for the project when guidance is required by the Project Manager, including recommendation for UNDP approval of project plans and revisions. The Project Board will meet every year or more frequently as needed by the project. The Project Board will also provide direction and overall oversight and ensure all activities are well coordinated with other on-going activities within the sector and by other donors. Given that this project is one implemented directly by UNDP, the board will consist of only UNDP Resident Representative and the Representative of the EU Delegation. .

In specific, the responsibilities of the Project Board include:

- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints
- Address project issues as raised by the project manager
- Provide guidance on new project risks, and agree on possible countermeasures and management actions to address specific risks
- Agree on project manager's tolerances as required
- Review the project progress, and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans
- Appraise the annual project implementation report, including the quality assessment rating report; make recommendations for the work-plan
- Provide ad hoc direction and advice for exceptional situations when the project manager's tolerances are exceeded and
- Assess and decide to proceed on project changes through appropriate revisions.

Project "**Technical Advisory Committees**" (TAC) will be set up in line with the various waste streams and include national counterparts at the technical level (heads of departments or services from the Ministry of Environment, Ministry of Public Health, Ministry of Industry, and others), key scientists, stakeholders working in the sector and others (with the understanding of limiting conflicts of interest). The TAC will provide technical insight into the project work activities as needed and ensure coordination with other activities and project in the sector. The TAC would also discuss state-of-the-art approaches in each sector and provide insight into the challenges facing the sector so that the project activities can be geared towards substantive and focused interventions.

Project Management/Project office costs

The Action will cover all costs required to implement project activities as described in the present Description of the Action and the Annex III –Budget for the Action. Below is the list of project staff whose full costs will be charged to the Action:

1. Project Manager and Advisor: will be responsible for day-to-day management, financial, administrative & procurement control. Will coordinate between the various results and will be the focal point to key stakeholders.

2. Finance Officer: will provide administrative and logistical support & will liaise with the Country Office on financial, administrative and operational activities
3. M&E and Reporting Officer: will be responsible to consolidate all results and to support consolidated and writing the overall project reports as well as monitoring on indicators and evaluating project progress milestones
4. Project Coordinator on health care waste: will be mostly focused on the hazardous waste output/result that relates to the infectious and other medical waste as well as the e-waste streams. The project engineer will also support on other hazardous waste projects should they arise and will be an expert in this field
5. Project Coordinator on municipal waste: will provide technical support focused on the remaining waste streams related to the municipal waste, mostly the green waste/composting, upgrading of municipal waste facilities and support on the other types of waste streams
6. Project coordinator on industries: will provide technical support focused on the waste streams related to industries and the private sector including the e-waste and batteries as well as the industrial waste (cardboard and paper) and other potential waste streams
7. Site Engineer and Coordinator: will be responsible for the oversight and technical design and implementation support for all the pilot projects and all the infrastructure component of implementation
8. Field Engineer: will support the Site Engineer and Coordinator in terms of on-the-ground follow-up on implementation including supervision of contractors and coordination on a day-to-day basis with beneficiaries
9. Project drivers (2): will be responsible for the missions undertaken within the project. Will maintain vehicle logs & the vehicles.
10. Communication Officer: will be responsible for all communication and outreach activities (planning, organization, design...)

Project Manager & Advisor would have extensive project management experience, preferably including solid waste management. The project coordinators should have experience in respective types of waste streams. The roles and responsibilities of these staff are detailed in the justification in Annex III Budget of the Action.

Furthermore, to ensure efficient and effective project implementation the salaries of the following UNDP country office staff will be partially charged to the Action: Programme Manager, Programme Associate, Operations Manager, Security Officer, Head of Procurement, and Procurement Officer.

The roles and responsibilities of the country office staff engaged in project implementation is detailed in the Annex III Budget of the Action in the justifications tab.

In addition, the Budget for the Action also provides for the costs of travel and subsistence costs for staff and other persons directly assigned to the operations of the project; office rent costs, depreciation costs, rental costs or lease of equipment and assets composing the project office; costs of maintenance and repair contracts; costs of consumables and supplies, costs of IT and telecommunication services, costs of electricity and water, costs of facility management contracts, including security and insurance costs, as required for the operations of the project.

The Description of the Action accommodates for two evaluations during the project lifetime: one at midterm and one at the end, Should more evaluations be needed, this would be considered during implementation. During the midterm review (expected by end of 2022 – early 2023), progress will be evaluated in comparison to the end date of the project and the need for an extension, in addition to the types of waste streams targeted by the project. Should other types of special waste streams become a priority as a result of needs on the ground, this will be considered.

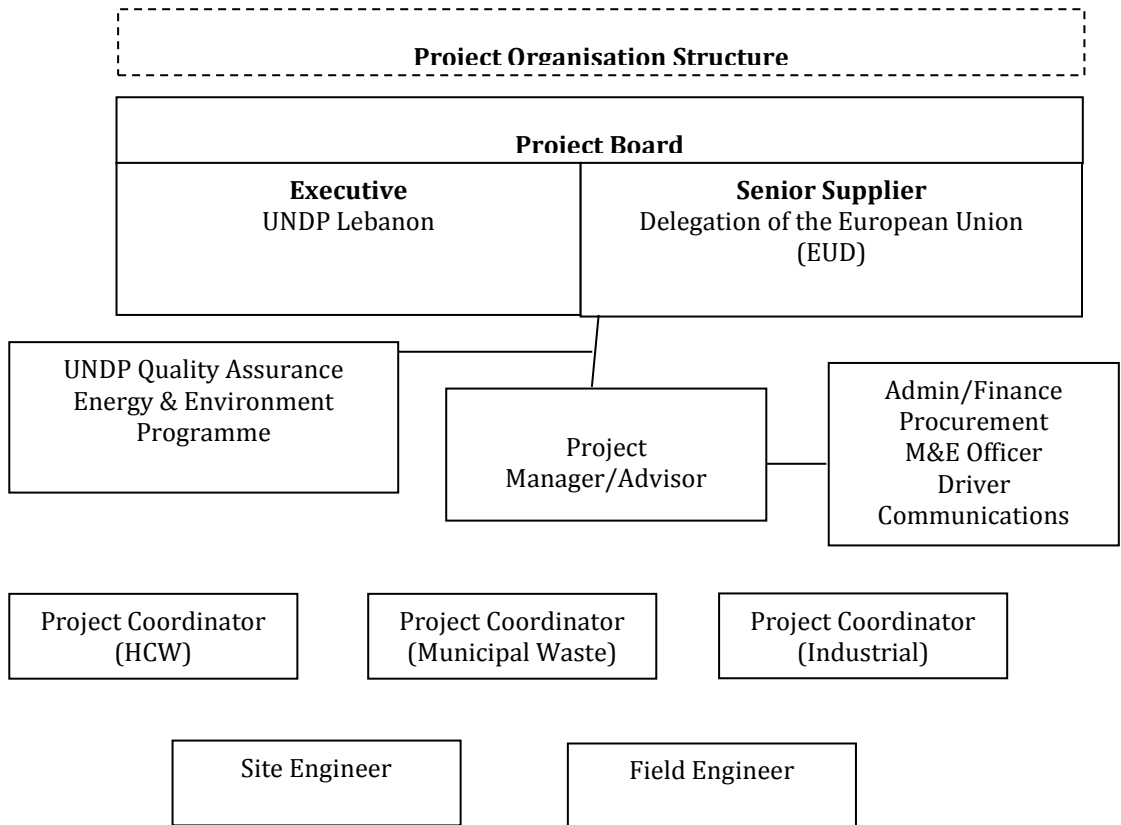


Fig 12: Project organisation

VI. Results Framework (Logical Framework)

	Indicator	Baseline	Target	Source and mean of verification	Assumptions
		(value & reference year)	(value & reference year)		
Intended Outcome as stated in the UNSF/Country Programme Results and Resources Framework		3.1. Environmental Governance Improved			
Outcome Indicators as stated in the CPD Results and Resources Framework including baseline and targets		CPD Outcome 4.2. National Environmental Management Strengthened CPD Output Indicator - 4.2.1. No. of environmental initiatives implemented in productive sectors - 4.2.2. No. of solid waste, water and waste water management initiatives implemented			
Applicable outputs from UNDP Strategic Plan		1.4.1 Solutions scaled up for sustainable management of natural resources, including sustainable commodities and green and inclusive value chains			
Impacts (Overall objectives)					
To improve the overall environmental and financial sustainability Lebanon's waste management system	a- % of landfill reduction b- cost recovery system c- increase in quantities of HCW being treated			Project reports National reports and data	Political will and stability are the key risks and pre-requisites to the achievement of this objective.
Natural resources protected and managed to enhance sustainable productivity and livelihoods	d. Number of people directly benefitting from initiatives to protect nature and promote sustainable use of resources disaggregated by sex				
Purpose					
To contribute to the reduction of volumes of mixed municipal and other wastes ending up in landfills or in unsanitary dumpsites and reduction in the hazardousness of municipal waste streams	% volume of waste going to landfills and open dumps	80%	60% (last year)	Landfill operator reports Council of Development & Reconstruction and MoE solid waste reports Project assessment reports	The achievement of the specific objectives (outputs) will translate into this impact (theory of change) Political will and stability in Lebanon are a pre-requisite to the achievement of the overall objective

Outcomes (Specific Objectives)					
1. To reduce hazardous waste going to waste facilities, landfills and/or being dumped in environmentally-unsound manner (hazardous HCW, e-waste and batteries)	(%) tons of HCW (all types) being treated	15%	5% (last year)	Reports from hospitals and clinics Annual reports from HCW treatment facilities (submitted to MoE or collected by the project)	The achievement of the two targets (Result 1.1 and 1.2) will translate into this output. Full engagement of the partners on the ground is needed
2. To improve the operational and financial efficiency of current waste facilities (where applicable) to produce higher value end products from municipal waste and optimize operation cost	Improved operational efficiency of MRF facilities	-	10%(last year)	Project assessment reports	The achievement of the target (Result 2.1) will translate into this output. Willingness of local authorities and the Ministry of Environment to upgrade and engage on the issue of the MRFs is needed as well as the market for outputs being conducive
3. To secure recycling of already at-source segregated waste and prevent it from being mixed with municipal or other wastes (cardboard and paper waste, slaughterhouse waste and other special waste)	Number of waste streams where recycling is enhanced	2 (CPW and Slaughterhouse)	4 (CPW, slaughterhouse, e-waste, and green waste)	Project reports National assessment and report (Ministry of Environment)	The achievement of the four targets (Result 3.1-3.4) will translate into this output. Market stability and the continued viability and operation of the industrial sector in Lebanon needs to be available
4. To improve the governance of the waste sector	Cost recovery system designed	0	1 (last year)	Ministry of Environment reports	The achievement of the targets (Result 4.1) will translate into this output. Political will to work on and introduce cost-recovery is key
Results					
1.1 Infrastructure capacity and systems in place to accommodate the treatment of 100% of all infectious HCW and 80% of all pharmaceutical and cytotoxic HCW are in place	1.1.a: % of Infectious HCW collected and treated in a sound manner 1.1.b: % of pharmaceutical and cytotoxic HCW collected and treated in a sound manner.	1.1.a: 85% 1.1.b: 15%	1.1.a: 100% (last year) 1.1.b: 80% (last year)	Healthcare and HCWM facilities.	- Master plan and proposed governance arrangement adopted by the national government and the healthcare sector - Full participation of all actors in the field of healthcare - Extended capacities of collection and treatment for all hazardous HCW from all healthcare institutions - Available back up capacities and

					protocols for treatment of hazardous HCW
1.2 Waste collection and treatment of E-waste and batteries is regulated and made available	1.2.a: % of consumers with access to the collection services for e-waste and batteries 1.2.b: Implementation of EPR	1.2.a: 0% 1.2.b: None	1.2.a: 20% (last year) 1.2.b: at least 1 EPR(last year)	E-waste household stational survey (Baseline : 2021 UNDP-UNU household survey)	- EPR implementation approved by the national government - Full participation (either voluntary or forced) of the sector on implementing the EPR and all its regulations.
2.1 10-20% of mixed municipal waste that are received by targeted MRF facilities are diverted from landfills and dumpsites by modifying and improving the roles of MRF	2.1.a: Amount % (tons/year) of mixed municipal waste in targeted MRF facilities is diverted from landfills and dumpsites in the form of RDF	0%	10-20% (last year)	MRFs	- There are MRFs that are feasible to increase their capacities and to modify installations and operations in order to produce RDF and stabilize the residue while increasing their overall treatment capacity. - There is an appropriate size of market for RDF in Lebanon.
2.2 MRF operation cost is optimized by reducing at least 20% of energy costs	2.2 % of energy costs reduced	0%	20 % (last year)	MRF electricity bills Energy bills	
2.3 Segregated municipal green waste in two pilot sites are composted seperately	3.1.: Amount (tons/year) of municipal green waste and possible other segregated green wastes composted separately in two pilots			Reports from targetted MRF facilities for compositing.	- There are at least two municipalities with suitable volumes and possibilities for siting the composting activities
3.1 Collection and recycling of cardboard and paper waste from source is secured	3.2.: Amount (tons/year) of cardboard and paper waste collected and recycled in Lebanon			Lebanese paper mills	- Engagment and collaboration of Lebanese papermills
3.2 Collection and treatment of slaughterhouse wasteis secured (if possible)	3.3.: % of all slaughterhouse waste separately collected and treated.	0%	70% (last year)	(Baseline study will be undertaken during the project)	- Masterplan and proposed initiatives adopted by the naitonal government and the sector - The willingness and comittement of the sector to collaborate for the implementation of the masterplan
4.1 A national framework on governance and a national guideline on cost recovery for municipal solid waste management have been established	4.1.a: % of municipalities that adopt and implemented the national guideline on cost coverage for MSW.			Municipalities and its unions.	- Adoption and implementation of the guideline by municipalities

Activities					
1.1.1 Prepare masterplan for HCW management	endorsement of the masterplan by one of the public sectors or by key stakeholders				
1.1.2 Develop and implement governance arrangements	a- Reduction of illegal practices b- Enhancement of sustainability (financial and technical)				
1.1.3 Implement capacity expansion and infrastructure support for HCW treatment	a- enhance capacity of Cytotoxic/Pharmaceutical waste treatment 500T/year b- Back up Provision c- capacity building for service providers	a- 0 tonnes/year b- None c- None	a- 500T/year facility (last year) b- 1 back up facility (last year) c- at least 1 capacity building event per year		
1.1.4 Develop and execute participation campaign (awareness raising)	a- Push event, integrating gender b- Pull event, integrating gender	a - b-	a- at least 2 during project b- at least 2 during project		
1.2.1 Perform baseline assessment of E-waste and batteries	conduct 1 baseline assessment study	0 studies	1 assessment study (2nd year)		
1.2.2 Prepare and implement EPR policies and regulations	a- Drafting EPR legislations b- Capacity building for ministries on EPR c- Support Ministry in drafting texts for national strategy d- support in setting voluntary EPR	a- 0 b- 0 c- 0 d- 0	a- At least 1 draft legislation (2years) b- at least two events (2 years) c- at least 1 text (last year) d- support at least 1 EPR (last year)		

1.2.3 Support the Development of Sector responsibility and EPR Implmentation(conditional on the government's approval)	<ul style="list-style-type: none"> a- Adopting EPR scheme b- capacity building c- Designing PRO d- Preparing needed procedures e- Planning and Control Cycles f- arrangements with municipalities on collection g- contractual arrangements with recyclers h- preparing public awareness programmes 	<ul style="list-style-type: none"> a- 0 b- 0 c- 0 d- 0 e- 0 f- 0 g- 0 h-0 	<ul style="list-style-type: none"> a- At least 1 (last year) b- at least 3 events c- At least 1 design (last year) d- at least 3 procedures (last year) e- at least 2 cycles (last year) f- g- at least 2 arrangements (least year) h- at least 1 campaign per year 		
2.1.1 Assessment of market use of RDF including financial, social, and environmental feasibility	market assessment study				
2.1.2 Modification of feasible MRFs to increase the production capacity and to produce RDF and landfill cover material	<ul style="list-style-type: none"> a- Assessment and feasibility studies for MRF macilities b- plan to modify their capacities towards RDF production c- Implementation of upgrades 	<ul style="list-style-type: none"> a- Studies in 2018 b- 2021 for 4 facilities c- 0 	<ul style="list-style-type: none"> a- at least 5 MRF facilities (last year) b- at least 2 MRF facilities (last year) c- at least 2 MRF facilities (last year) 		
2.1.3 Set an enabling environment for RDF use	<ul style="list-style-type: none"> a- suitable documents b- information campaigns 	<ul style="list-style-type: none"> a- 2 documents by EU b- None 	<ul style="list-style-type: none"> a- at Least 3 new documents (last year) b- at least two campaigns (last year) 		

2.1.4 Cost/revenues plans and implementation	a- technical and financial feasibility studies b- implementation	a- None b- None	a- for at least 5 MRF facilities (last year) b- at at least 2 MRF facilities (20% improvement power) (last year)		
2.2.1 Perform a baseline assessment of green waste quantities, quality and market situation	a- baseline assessment including gender considerations b- standard design for small scale composting	a- None b- None	a- 1 assessment study (2nd year) b- standard design (last year)		
2.2.2 Selection of Two Regional Pilots	a- selection of two municipalities b- contractual and operational arrangements	a- None b- None	a- (2nd year) b- last year		
2.2.3 Implementation of two pilot composting operations (on existing facilities if and where possible)	a- design and permitting b- construction/Implementation	a- None b- None	a- within 2 years b- last year		
3.1.1 Perform a baseline assessment of the CPW value chain	Baseline assessment, including gender considerations	None	1 study (within 2 years)		
3.1.2 Improving the regulation of the collection and MRF-handling of CPW	a- Improve collected volumes of CPW b- technical support/training to MRFs and other stakeholders c- implement EPR for CPW and packaging	a- b- 0 c- 0	a- 15% (last year) b- 2 events/year c- 1 (last year)		
3.1.3 Improving the position of Lebanese papermills in the (international) value chain	a- Interviewing papermills and relevant stakeholders b- enhance sales c- implement changes in facilities	a- 0 b-	a- at least 1 with each stakeholder (first 2 years) b- increase sales by 15% (at least 5% in Lebanon and at least 5% outside		

			Lebanon) (last year)		
3.2.1 Prepare a national masterplan on slaughterhouse waste	a- Develop a baseline b- Develop and 10 year masterplan	a- 0 baseline b- 0 masterplan	a- 1 baseline (first 2 years) b- 1 masterplan (last year)		
3.2.2 Develop sector wide cooperation and initiative	Regular meeting and coordination between stakeholders		at least 4 meetings a year (last year)		
3.2.3 Support the sector on needed investments (if needed)	design and/or implementation of at least one facility	-	1 facility (last year)		
4.1.1 Prepare a National Governance framework for waste management	develop governance framework		1 framework by second year		
4.1.2 Undertake needed financial analysis to set-up appropriate cost-recovery system	a- Assessment of financial and social aspects that considers gender equality b- Assessment of affordability and of possibilities of EPR c- Assessment of use of taxation d- Assessment of Operation cost e- cost recovery system	a- 0 b- 0 c- 0 d- 0 e- 0	a- 1 study (first 2 years) b- 1 study (first 2 years) c- 1 study (first 2 years) d- 1 study (first two years) e- 1 system (last year)		
4.1.3 Prepare a national guideline for cost recovery at the municipal level	Develop the national guideline	-	1 guideline (last year)		

VII. Monitoring and Evaluation

Monitoring Activity	Purpose	Frequency	Expected Action
Track results progress	Progress data against the results indicators in the RRF will be collected and analysed to assess the progress of the project in achieving the agreed outputs.	Quarterly Beginning and end of Project	Slower than expected progress will be addressed by project management. The results of the surveys will be used to provide baseline data and for project's monitoring and evaluation
Monitor and Manage Risk	Identify specific risks that may threaten achievement of intended results. Identify and monitor risk management actions using a risk log. This includes monitoring measures and plans that may have been required as per UNDP's Social and Environmental Standards. Audits will be conducted in accordance with UNDP's audit policy to manage financial risk.	Quarterly	Risks are identified by project management and actions are taken to manage risk. The risk log is actively maintained to keep track of identified risks and actions taken.
Learn	Knowledge, good practices and lessons will be captured regularly, as well as actively sourced from other projects and partners and integrated back into the project.	Quarterly	Relevant lessons are captured by the project team and used to inform management decisions.
Annual Project Quality Assurance	The quality of the project will be assessed against UNDP's quality standards to identify project strengths and weaknesses and to inform management decision making to improve the project.	Annually	Areas of strength and weakness will be reviewed by project management and used to inform decisions to improve project performance.
Review and Make Course Corrections	Internal review of data and evidence from all monitoring actions to inform decision making.	Annually	Performance data, risks, lessons and quality will be discussed by the project board and used to make course corrections.
Project Progress Report	Project Progress Reports (including final report) will be submitted to the EU in line with Article 3 of the GCs. A summary of annual Project Progress Report will be presented to the Project Board and key stakeholders, consisting of progress data showing the results achieved against pre-defined annual targets at	Semi-annually, annually, and at the end of the project (final report)	

	the output level, the annual project quality rating summary, an updated risk log with mitigation measures, and any evaluation or review reports prepared over the period.		
Project Review (Project Board)	The project's governance mechanism (i.e., Project Board) will hold regular project reviews to assess the performance of the project and review the Multi-Year Work Plan to ensure realistic budgeting over the life of the project. In the project's final year, the Project Board shall hold an end-of project review to capture lessons learned and discuss opportunities for scaling up and to socialize project results and lessons learned with relevant audiences.	Annually	Any quality concerns or slower than expected progress should be discussed by the Project Board and management actions agreed to address the issues identified.

VIII. Legal Context

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of Lebanon and UNDP, signed in 1986. All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner."

This project will be implemented by UNDP in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

IX. Risk Management

1. UNDP as the Implementing Partner will comply with the policies, procedures and practices of the United Nations Security Management System (UNSMS.)
2. UNDP as the Implementing Partner will undertake all reasonable efforts to ensure that none of the project funds are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.
3. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (<http://www.undp.org/ses>) and related Accountability Mechanism (<http://www.undp.org/secu-srm>).
4. UNDP as the Implementing Partner will: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability

Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.

5. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.
6. UNDP as the Implementing Partner will ensure that the following obligations are binding on each responsible party, subcontractor and sub-recipient:
 - a. Consistent with the Article III of the SBAA, the responsibility for the safety and security of each responsible party, subcontractor and sub-recipient and its personnel and property, and of UNDP's property in such responsible party's, subcontractor's and sub-recipient's custody, rests with such responsible party, subcontractor and sub-recipient. To this end, each responsible party, subcontractor and sub-recipient shall:
 - i. put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
 - ii. assume all risks and liabilities related to such responsible party's, subcontractor's and sub-recipient's security, and the full implementation of the security plan.
 - b. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the responsible party's, subcontractor's and sub-recipient's obligations under this Project Document.
 - c. Each responsible party, subcontractor and sub-recipient will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, subcontractors and sub-recipients in implementing the project or programme or using the UNDP funds. It will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.
 - d. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to each responsible party, subcontractor and sub-recipient: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. Each responsible party, subcontractor and sub-recipient agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.
 - e. In the event that an investigation is required, UNDP will conduct investigations relating to any aspect of UNDP programmes and projects. Each responsible party, subcontractor and sub-recipient will provide its full cooperation, including making available personnel, relevant documentation, and granting access to its (and its consultants', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with it to find a solution.
 - f. Each responsible party, subcontractor and sub-recipient will promptly inform UNDP as the Implementing Partner in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.
 - g. Where it becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, each responsible party, subcontractor and sub-recipient will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). It will provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.
 - h. UNDP will be entitled to a refund from the responsible party, subcontractor or sub-recipient of any funds provided that have been used inappropriately, including through fraud or corruption,

or otherwise paid other than in accordance with the terms and conditions of this Project Document. Such amount may be deducted by UNDP from any payment due to the responsible party, subcontractor or sub-recipient under this or any other agreement. Recovery of such amount by UNDP shall not diminish or curtail any responsible party's, subcontractor's or sub-recipient's obligations under this Project Document.

- i. Where such funds have not been refunded to UNDP, the responsible party, subcontractor or sub-recipient agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to such responsible party, subcontractor or sub-recipient for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.
- j. Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.
- k. Each contract issued by the responsible party, subcontractor or sub-recipient in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from it shall cooperate with any and all investigations and post-payment audits.
- l. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project or programme, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.
- m. Each responsible party, subcontractor and sub-recipient shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to its subcontractors and sub-recipients and that all the clauses under this section entitled "Risk Management Standard Clauses" are adequately reflected, *mutatis mutandis*, in all its sub-contracts or sub-agreements entered into further to this Project Document

X. Annexes

1. Social and Environmental Screening
2. Risk Analysis
3. Multiyear Budget Plan
4. Communication and Visibility Plan
5. Quality Assurance - Initiation

Annex 1 - Social and Environmental Screening

The completed template, which constitutes the Social and Environmental Screening Report, must be included as an annex to the Project Document. Please refer to the Social and Environmental Screening Procedure and Toolkit for guidance on how to answer the 6 questions.

Project Information

<i>Project Information</i>	
1. Project Title	Towards a Decentralised Waste Management Integrated Response in Lebanon (TaDWIR)
2. Project Number	Award Number: 00135923, Project Number:00127018
3. Location (Global/Region/Country)	Lebanon

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?

Briefly describe in the space below how the Project mainstreams the human-rights based approach

The TaDWIR project is aiming to improve the overall environmental and financial sustainability of Lebanon's waste management system. The specific objectives are to reduce volumes of waste that go to landfills, to improve qualities of waste that go to waste-facilities in general and to upgrade national systems for governance and cost coverage of managing municipal solid waste.

Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment

The project promotes the participation of women equally as men in the awareness raising programme. Assessments and data collected will be gender disaggregated to the extent possible.

Briefly describe in the space below how the Project mainstreams environmental sustainability

The proposed project aims at improving the overall environmental and financial sustainability of Lebanon's waste management system by reducing volumes of waste that go to landfills, improving qualities of waste that go to waste-facilities in general and by introducing national systems for cost coverage of managing municipal solid waste. Improving overall waste quality acknowledges the priority on hazardous HCW, E-waste and Batteries given that they are critical waste streams that currently are a major source of hazardous waste contamination to the municipal waste stream and that removing those from the mixed municipal waste would significantly, albeit not totally, reduce the level of toxicity of the remaining municipal waste.

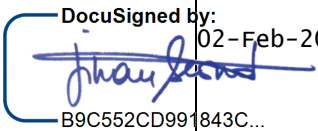
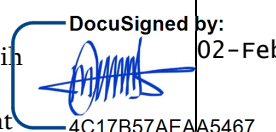
Part B. Identifying and Managing Social and Environmental Risks


<p>QUESTION 2: What are the Potential Social and Environmental Risks?</p> <p><i>Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any “Yes” responses). If no risks have been identified in Attachment 1 then note “No Risks Identified” and skip to Question 4 and Select “Low Risk”. Questions 5 and 6 not required for Low Risk Projects.</i></p>	<p>QUESTION 3: What is the level of significance of the potential social and environmental risks?</p> <p><i>Note: Respond to Questions 4 and 5 below before proceeding to Question 6</i></p>			<p>QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?</p>
<i>Risk Description</i>	<i>Impact and Probability (1-5)</i>	<i>Significance (Low, Moderate, High)</i>	<i>Comments</i>	<i>Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.</i>
No risks identified	I = P =	Low Risk		
	I = P =			
	I =			

	P =			
	I =			
	P =			
[add additional rows as needed]				
	QUESTION 4: What is the overall Project risk categorization?			
	Select one (see <u>SESP</u> for guidance)			Comments
	<i>Low Risk</i>	<input checked="" type="checkbox"/>		
	<i>Moderate Risk</i>	<input type="checkbox"/>		
	<i>High Risk</i>	<input type="checkbox"/>		
	QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?			
	Check all that apply			Comments
	<i>Principle 1: Human Rights</i>	<input type="checkbox"/>		
	<i>Principle 2: Gender Equality and Women's Empowerment</i>	<input type="checkbox"/>		
	<i>1. Biodiversity Conservation and Natural Resource Management</i>	<input type="checkbox"/>		
<i>2. Climate Change Mitigation and Adaptation</i>	<input type="checkbox"/>			

	3. Community Health, Safety and Working Conditions	<input type="checkbox"/>	
	4. Cultural Heritage	<input type="checkbox"/>	
	5. Displacement and Resettlement	<input type="checkbox"/>	
	6. Indigenous Peoples	<input type="checkbox"/>	
	7. Pollution Prevention and Resource Efficiency	<input type="checkbox"/>	

Final Sign Off

<i>Signature</i>	<i>Date</i>	<i>Description</i>
QA Assessor Jihan Seoud Programme Manager 	02-Feb-2022	UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have “checked” to ensure that the SESP is adequately conducted.
QA Approver Mohammed Salih Deputy Resident Representative 	02-Feb-2022	UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have “cleared” the SESP prior to submittal to the PAC.

<p>QA Approver DocuSigned by:  Celine Meyrou Resident Representative</p>	<p>02-Feb-2022</p>	<p>UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.</p>
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SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		Answer (Yes/No)
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? ¹⁸	No
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	No
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	No
5.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
6.	Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	No
Principle 2: Gender Equality and Women's Empowerment		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	No
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No

¹⁸ Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

<p>4. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services?</p> <p><i>For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being</i></p>	No
<p>Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below</p>	
<p>Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management</p>	
<p>1.1 Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services?</p> <p><i>For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes</i></p>	No
<p>1.2 Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?</p>	No
<p>1.3 Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)</p>	No
<p>1.4 Would Project activities pose risks to endangered species?</p>	No
<p>1.5 Would the Project pose a risk of introducing invasive alien species?</p>	No
<p>1.6 Does the Project involve harvesting of natural forests, plantation development, or reforestation?</p>	No
<p>1.7 Does the Project involve the production and/or harvesting of fish populations or other aquatic species?</p>	No
<p>1.8 Does the Project involve significant extraction, diversion or containment of surface or ground water?</p> <p><i>For example, construction of dams, reservoirs, river basin developments, groundwater extraction</i></p>	No
<p>1.9 Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)</p>	No
<p>1.10 Would the Project generate potential adverse transboundary or global environmental concerns?</p>	No
<p>1.11 Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area?</p> <p><i>For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.</i></p>	No

Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant ¹⁹ greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	No
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? <i>For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding</i>	No
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	No
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	No
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms	No

¹⁹ In regards to CO₂, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

	of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions? ²⁰	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? <i>If the answer to the screening question 6.3 is “yes” the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.</i>	No
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No

²⁰ Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	No
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	No
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? <i>For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol</i>	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

Annex 2 – Risk Analysis

Project Title: Towards a Decentralised Waste Management Integrated Response in Lebanon (TaDWIR)	Award ID: 00135923	Project ID: 00127018
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#	Description	Date Identified	Type	Impact & Probability (1: low to 5: high)	Countermeasures / Mngt response	Owner	Submitted, updated by	Last Update	Status
1	No interest and/or no priority assigned to project by relevant stakeholders	11 Jan 2022	Political	P = 2 I = 2	<ul style="list-style-type: none"> The project should secure a letter of commitment per sub-project of all competent Ministries. Similar letters of commitment will be needed from all relevant sector associations during starting up the project or after finalizing initial baseline assessment studies. In certain sub-projects this may lead to the need to find alternative partners. In case of unwillingness at the sectors, the projects may require assistance by the government or local authorities to subsidize any reluctance. 	Project Manager	Programme Manager		

2	Disruptions of project progress due to external causes	11 Jan 2022	Political	P = 2 I = 2	<ul style="list-style-type: none"> The project will use its contingency arrangements and will immediately call for a Project Board meeting should this occur Any major disruptions that cannot be mitigated in the project will lead to a redefinition of (parts of) the project according to the project arrangements. 	Project Manager	Programme Manager		
	Changes in the political environment may lead to the neglect of the solid waste sector or to its collapse	11 Jan 2022	Political	P = 1 I = 3	<ul style="list-style-type: none"> Project board meetings will be called for as needed should this situation arise Redesign the project to accommodate any political changes within the limitations of its scope Close coordination and networking at the technical level between all stakeholders/partners could potential overcome this risk 				
	Anticipated investments in new, existing or extended infrastructures or services turn out to be not feasible/viable	11 Jan 2022	Financial	P = 2 I = 3	<ul style="list-style-type: none"> Specific support (grants) are available for improving feasibility as indicated in the activities If so, these parts of the project will be re-defined and agreed upon in accordance with the project arrangements and in consultation with the project board if not already indicated in the DoA. If no feasible options are available these parts of the project will be considered for termination. 	Project Manager	Programme Manager		
	Affordability of costs for collecting and	11 Jan 2022	Financial	P = 3 I = 3	<ul style="list-style-type: none"> Affordability will be researched during all initial assessments. It will be assessed by referencing these costs against other operational 	Project Manager	Programme Manager		

	treating the waste is considered too low				<p>expenditures of the sectors and international benchmarks.</p> <ul style="list-style-type: none"> • If not affordable on a certain scale, larger scales will be considered • If not affordable on the short term, a transitional period may be adopted. • If still not affordable the sub-project/activity will be re-defined or even discontinued in accordance with the project arrangements 				
	Existing service providers or facility operators reject any changes to their current roles	11 Jan 2022	Operational	<p>P = 3 I = 2</p>	<ul style="list-style-type: none"> • The project will respect existing positions as much as possible, as long as they do not negatively affect the overall objectives of the project, do not obstruct further progress and do not infringe Lebanese laws and policies. • In case of conflicting interests, the situation will be discussed with the competent authorities. • UNDP will engage with relevant authorities (MoE, CDR and others) from the start of the project to ensure lessons learnt, needs and buy-in of decision-makers related to operations of SWM facilities. 	Project Manager	Programme Manager		
	Potential clients for recycled products are not willing to buy or use them	11 Jan 2022	Operational	<p>P = 4 I = 4</p>	<ul style="list-style-type: none"> • The project will research market demand for any products during assessments • Financial and market assessments for recyclables/value chains are pre-requisites for any interventions in this sector • In certain cases, the project may require assistance by the National 	Project Manager	Programme Manager		

					Government to subsidize this reluctance.				
	Technologies, products and/or sites are not accepted by the public or interest groups	11 Jan 2022	Social	P = 2 I = 2	<ul style="list-style-type: none"> All choices will follow the national protocols on environmental and social impact assessment in order to weigh all objections brought forward. Awareness campaigns will be initiated or intensified when needed. 	Project Manager	Programme Manager		
	Deterioration in security situation or civil unrest could hinder the implementation of the project	11 Jan 2022	Security	P = 2 I = 3	<ul style="list-style-type: none"> Project to coordinate closely with the UN Department of Safety and Security Business continuity plan to be activated should the security situation decline Project board meetings will be requested should the situation so require to determine how to overcome any security challenges that may arise 	Project Manager	Programme Manager		

Annex 3 - Multiyear Budget Plan

1. Budget for the Action			All Years				Year 1*			
Costs	ATLAS Description	ATLAS Budget Code	Unit ¹³	# of units	Unit value (in USD)	Total Cost (in USD) ³	Unit	# of units	Unit value (in USD)	Total Cost (in USD)
1. Human Resources¹⁴										
1.1 Salaries (gross salaries including social security charges and other related costs, local staff) ⁴										
1.1.1 Technical										
Programme Manager	Salary Cost NP staff	61100	Per month	35	4,330	151,533	Per month	12	4,330	7,793
Project Manager & Advisor	Contractual Services - Individual	71400	Per month	32	10,845	347,042	Per month	9	10,845	97,605
Project Coordinator (HCW)	Contractual Services - Individual	71400	Per month	29	6,850	198,640	Per month	6	6,850	41,098
Project Coordinator (industry)	Contractual Services - Individual	71400	Per month	29	6,850	198,640	Per month	6	6,850	41,098
Project Coordinator (municipal waste)	Contractual Services - Individual	71400	Per month	29	6,850	198,640	Per month	6	6,850	41,098
Site Engineer and Coordinator	Contractual Services - Individual	71400	Per month	23	6,850	157,542	Per month	0	6,850	-
Field Engineer	Contractual Services - Individual	71400	Per month	23	5,166	118,826	Per month	0	5,166	-
1.1.2 Administrative/ support staff										
Programme Associate	Salary Cost GS Staff	61200	Per month	35	2,889	101,099	Per month	12	2,889	3,466
Head of Procurement	Salary Cost NP staff	61100	Per month	35	3,363	117,700	Per month	12	3,363	4,035
Operations Manager	Salary Cost NP staff	61100	Per month	35	2,207	77,259	Per month	12	2,207	2,649
Security Officer	Salary Cost NP staff	61100	Per month	35	1,618	56,632	Per month	12	1,618	1,942
Procurement Officer	Contractual Services - Individual	71400	Per month	35	4,583	160,405	Per month	12	4,583	5,500
Finance Officer	Contractual Services - Individual	71400	Per month	29	3,986	115,582	Per month	8	3,986	31,885
Drivers	Contractual Services - Individual	71400	Per month	29	3,986	115,582	Per month	6	3,986	23,914
Communications Officer	Contractual Services - Individual	71400	Per month	29	4,224	122,508	Per month	0	4,224	-
M&E and reporting officer	Contractual Services - Individual	71400	Per month	29	6,850	198,640	Per month	0	6,850	-
1.2 Salaries (gross salaries including social security charges and other related costs, expat/int. staff)										
International Backstopper	International consultants	71200	Per day	75	850	63,750	per day	25	850	21,250
1.3 Per diems for missions/travel										
1.3.1 Abroad (staff assigned to the Action)										
1.3.2 Local (staff assigned to the Action)										
1.3.3 Seminar/conference participants										
Subtotal Human Resources						2,545,020				323,333
2. Travel										
2.1. International travel	Travel	71600	Per flight	10	3,000	30,000	Per flight	0	3,000	-
Subtotal Travel						30,000				-
3. Equipment and supplies										
3.1 Purchase or rent of vehicles	Equipment and Furniture (Vehicle)	72200	Per vehicle	2	50,000	100,000	Per vehicle	1	50,000	50,000
3.2 Furniture, computer equipment	Equipment and Furniture (Office equipment)	72200	per unit	10	3,000	30,000	per unit	5	3,000	15,000
3.3 Spare parts/equipment for machines, tools	Insurance and Security costs	63500	per year	3	10,000	30,000	per unit	1	10,000	10,000
Subtotal Equipment and supplies						160,000				75,000
4. Local office										
4.1 Vehicle operating and maintenance costs	Materials and goods (Fuel)	72300	Per month	30	1,000	30,000	Per month	6	1,000	6,000
4.2 Office rent	Rental and Maintenance premises (Office rent)	73100	Per month	30	3,500	105,000	Per month	6	3,500	21,000
4.3 Consumables - office supplies	Office supplies	72500	Per month	30	200	6,000	Per month	6	200	1,200
4.4 Other services (tel/fax, electricity/heating, maintenance)	Miscellaneous office expenses including depreciation	74500	Per month	30	300	9,000	Per month	6	300	1,800
Subtotal Local office						150,000				30,000
5. Other costs, services										
5.1 Publications (all guideline reports)	Audio-visual and printing production costs	74200	per publication	10	20,000	200,000	per publication	0	20,000	-
5.2 Expenditure verification/Audit	Audit fees	74100	per verification	6	10,000	60,000	per verification	0	10,000	-
5.3 Evaluation costs	International consultants	71200	per evaluation	2	50,000	100,000	per evaluation	0	50,000	-
5.4 Translation, interpreters	Contractual services individuals	71200	per page	50	500	25,000	per page	0	500	-
5.5 Costs of conferences/seminars	Contractual services companies	72100	per conference	10	500	5,000	per conference	0	500	-
5.6 Visibility actions	Communication & audio visual equip	72400	per event	12	5,000	60,000	per event	1	5,000	5,000
5.7 Capacity building and training	Training workshops and conferences	75700	per event	20	2,500	50,000	per event	0	2,500	-
Subtotal Other costs, services						500,000				5,000

6. Other: Implementation											
6.1 Outcome 1: Hazardous Waste Value Chain											
1.1.1 Prepare masterplan for HCW management	Contractual services companies	72100	Per Activity	100%	100,000	100,000	Per Activity	50%	100,000	50,000	
1.1.2 Develop and implement governance arrangements	Contractual services companies	72100	Per Activity	100%	200,000	200,000	Per Activity	50%	200,000	100,000	
1.1.3 Implement capacity expansion and infrastructure support for HCW treatment	Contractual services companies	72100	Per Activity	100%	6,000,000	6,000,000	Per Activity	0%	6,000,000	-	
1.1.4 Develop and execute participation campaign (awareness raising)	Contractual services companies	72100	Per Activity	100%	50,000	50,000	Per Activity	0%	50,000	-	
1.2.1 Perform baseline assessment of E-waste and batteries	Contractual services companies	72100	Per Activity	100%	100,000	100,000	Per Activity	20%	100,000	20,000	
1.2.2 Prepare and implement EPR policies and regulations	Contractual services companies	72100	Per Activity	100%	200,000	200,000	Per Activity	0%	200,000	-	
1.2.3 Support the Development of Sector responsibility and EPR Implementation	International consultants	71200	Per Activity	100%	200,000	200,000	Per Activity	0%	200,000	-	
6.2 Outcome 2: Municipal Waste Value Chain											
2.1.1 Assessment of market use of RDF including financial, social, and environmental feasibility	Local consultants	71300	Per Activity	100%	100,000	100,000	Per Activity	0%	100,000	-	
2.1.2 Modification of feasible MRFs	Contractual services companies	72100	Per Activity	100%	2,463,342	2,463,342	Per Activity	0%	2,463,342	-	
2.1.3 Set an enabling environment for RDF use	International consultants	71200	Per Activity	100%	100,000	100,000	Per Activity	0%	100,000	-	
2.2.1 Cost/revenues plans and implementation	Contractual services companies	72100	Per Activity	100%	1,950,000	1,950,000	Per Activity	0%	1,950,000	-	
2.2.1 Perform a baseline assessment of green waste quantities, quality and market situation	Contractual services companies	72100	Per Activity	100%	100,000	100,000	Per Activity	0%	100,000	-	
2.2.2 Selection of Two Regional Pilots	Contractual services companies	72100	Per Activity	100%	50,000	50,000	Per Activity	100%	50,000	50,000	
2.2.3 Implementation of two pilot composting operations	Contractual services companies	72100	Per Activity	100%	1,000,000	1,000,000	Per Activity	0%	1,000,000	-	
6.3 Outcome 3: Other materials value chain											
3.1.1 Perform a baseline assessment of the CPW value chain	Contractual services companies	72100	Per Activity	100%	100,000	100,000	Per Activity	0%	100,000	-	
3.1.2 Improving the regulation of the collection and MRF-handling of CPW	Contractual services companies	72100	Per Activity	100%	600,000	600,000	Per Activity	0%	600,000	-	
3.1.3 Improving the position of Lebanese papermills in the (international) value chain	Contractual services companies	72100	Per Activity	100%	1,000,000	1,000,000	Per Activity	0%	1,000,000	-	
3.2.1 Prepare a national masterplan on slaughterhouse waste	Contractual services companies	72100	Per Activity	100%	250,000	250,000	Per Activity	0%	250,000	-	
3.2.2 Develop sector wide cooperation and initiative	Contractual services companies	72100	Per Activity	100%	250,000	250,000	Per Activity	0%	250,000	-	
3.2.3 Support the sector on needed investments (if needed)	Contractual services companies	72100	Per Activity	100%	2,000,000	2,000,000	Per Activity	0%	2,000,000	-	
6.3 Outcome 4: Waste Governance											
4.1.1 Prepare a National Governance framework for waste management	Contractual services companies	72100	Per Activity	100%	100,000	100,000	Per Activity	0%	100,000	-	
4.1.2 Undertake needed financial analysis to set-up appropriate cost-recovery system	Contractual services companies	72100	Per Activity	100%	200,000	200,000	Per Activity	0%	200,000	-	
4.1.3 Prepare a national guideline for cost recovery at the municipal level	Contractual services companies	72100	Per Activity	100%	500,000	500,000	Per Activity	0	500,000	-	
Subtotal Other						17,613,342				220,000	
7. Subtotal direct eligible costs of the Action (1-6)						20,998,362				653,333	
8. Indirect cost (GMS - 7% EU, 8% Other resources)									1,471,737		47,585
9. Total eligible costs of the Action, excluding reserve (7+ 8)									22,470,100		700,918
10. Provision for contingency reserve (maximum 5% of 7, subtotal of direct eligible costs of the Action)									-		-
11. Total eligible costs (9+10)									22,470,100		700,918
12. - Taxes ¹¹									-		-
- Contributions in kind ¹²											
13. Total accepted 11 costs of the Action (11+12)									22,470,100		700,918

* Year 1 budget covers the period 1 May 2021 to 31 Dec 2022 given the retro-active start date of the action as of 1 May 2021 approved by the EU.

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Total EU contribution in EUR	€	19,750,000.00	EUR
Info Euro Rate of December 2021		1.1276	Euro to USD
Total EU contribution in USD	\$	22,270,100.00	USD
EU Contribution to direct costs		20,813,178	USD
EU 7% Indirect costs		1,456,922	USD
Total EU Contribution		22,270,100	USD
Other Contribution to direct costs		185,185	USD
Other Contribution 8% Indirect costs		14,815	USD
Total Other Contribution		200,000	USD
Total cost of the action		22,470,100	USD

EU's Info Euro Rate:
<https://ec.europa>

Annex 4 - Communication and Visibility Plan

The project will use communication and visibility (C&V) as a tool to enhance project progress and sustainability, to ensure awareness and participation of citizens, institutions and businesses, to demonstrate progress and results to stakeholders and to show EU's donor participation. The specific character of the project, being an ensemble of 8 related but still very different subprojects, calls for both, dedicated C&V at the subproject level, and general C&V at the project level.

This Annex will describe the objectives along with describing the target groups and the key messages. It will then address the C&V activities and their scheduling. Evaluation will be described by identifying the main indicators and their verification. The annex will be concluded by summarizing needed resources.

I. Objectives

Communication objectives

- 1 To support the advancement and quality of the project by increasing the participation of all relevant stakeholders.
- 2 To grow awareness and support among the general public by disseminating its beneficial results
- 3 To display the commitment of EU and UNDP on improving Lebanon's waste management performance.

Target groups and messages

There are several target groups because the project has a number of sub-projects. Target groups are therefore differentiated for the overall project and for the individual sub-projects as shown in the table below. The table includes descriptions of the groups and also provides the key messages per project. Objective 1 will be dominant in communications on the level of sub-projects, but also there, activities on public awareness and donor visibility will be part of the project. Objectives 2 and 3 will primarily fall within communications on the overall project.

Project	Target group	Description	Key messages
Overall project TaDWIR	General public	The public will need to be informed on the progress of the project both, regarding its beneficial effects and regarding needed public awareness and participation on specific subprojects.	The efforts of the EU and UNDP lead to a safer and healthier environment. Its effectiveness strongly depends on public participation
	National CSOs and NGOs	These organization will be informed on a regular basis regarding progress and their possible roles.	The efforts of the EU and UNDP lead to a safer and healthier environment. Its effectiveness may be improved by the support of CSOs and NGOs.
	International donors and institutions	The international community will be informed on Lebanon's progress in this field in order to enable their programs being adapted accordingly, when needed.	Take notice of the positive results of the EU/UNDP project and consider to adapt and increase your contribution in this field.
Hazardous HCW	National healthcare sector	This sector is the key actor and needs to be informed in order to acquire full participation.	Waste management is an integral part of your responsibilities and the only way to act is to participate in the sector-wide services.
	Government	The government is the other key actor and needs to be included because of its role on enforcing conformity with legal requirements.	Law enforcement is key in order to improve safety and health for workers and the broader public, especially regarding HCW.
	Local authorities	Local authorities need to be informed on forcing healthcare institutions towards the dedicated collection services in order to protect their citizens, workers and facilities.	Forcing healthcare institutions to conform to separate collection of HCW is key in order to improve safety and health for workers and the broader public.
E-waste and batteries	National electronics and electrical equipment sector	This sector is the key actor and needs to be informed in order to acquire full participation.	Waste management is an integral part of your responsibilities and it's preferable to take the initiative yourself.
	Government	The government is the other key actor because of its needed role in implementing EPR.	EPR for this waste is an opportunity for improvement using only little legal and no budgetary efforts.
	Municipalities	The municipalities need to be informed about the consequences of implementing EPR, especially regarding their changing roles.	Here is a chance for offering extended collection services to your citizens at little to no costs.
Mixed municipal waste	Municipalities	These are the key actors, their participation is needed because existing waste facilities need to be adapted.	Decentralised solid waste facilities operations need to be adapted in order to give more impact.
	Solid waste operators (private sector)	Also the operators will be informed about needed changes in their operations.	Decentralised solid waste facilities operations need to be adapted in order to give more impact.

	Industrial sector (potential users of RDF)	This sector is key in the new approach as they are expected to be the clients for using RDF.	Here is a chance to improve your carbon footprint and to align with corporate responsibilities. Cooperation in this field will strengthen your positive image.
Municipal green waste	Municipalities	The sub-project will need to reach out to some municipalities in order to include them to demonstrate the usefulness of green waste composting. The other municipalities will need to be informed on any progress in order to incentivize replication.	Composting MGW is the low hanging fruit. It will enable your municipality to recycle more and to prevent GHG emissions at low costs.
	Local horeca and food sector	Local actors in this field may be informed in order to make them consider to bring their waste for co-composting	Here is a chance to join in a local project to recycle your organic waste at low costs.
Cardboard and paper waste	Municipalities	Municipalities will be a target group because they are the ones who are able to (re)structure the collection of CPW.	Municipal collection permits for CPW are crucial for increasing CPW collection and assuring its continuity for the long term.
	Decentralised waste facilities operators	These actors will need to be informed and included in order to raise the volumes and qualities of CPW.	Existing solid waste facilities can improve their operations in order to produce more and cleaner CPW. It helps to return to needed CPW recycling ratios and beyond.
	National pulping mills sector	The sector plays a pivotal role in order to secure continuation of Lebanon's captive recycling capacity.	The sector can still play an important role in Lebanon's recycling infrastructure. A coalition with municipalities, MRFs and the national government is needed.
Slaughterhouse waste	National sectors of slaughterhouses, butchery, and animal breeding	These sectors will be addressed in order to have them participate in setting up and execution and national plan for this waste.	Waste management is an integral part of your responsibilities and it's preferable to take the initiative yourself.
	Government	The government may need to take the initiative for the national plan or urge the sectors to do so.	Good management of slaughterhouse waste is of utmost hygienic concern. It needs national initiatives and structuring.
Governance and cost recovery	Government	All relevant branches of the Government need to be addressed to play their role in designing nationwide arrangements for governance and cost recovery	Good governance in this field is needed as it is blocking any progress. Municipalities must be equipped with the right tools and responsibilities.

	Municipalities	Municipalities need to be informed and included as their roles and responsibilities will drastically change as a result of this sub-project.	You are the hinges on which waste management is hanging and moving. Strengthen your roles and responsibilities in accordance with new rules on governance and cost recovery.
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II. Activities

Tools and Channels

The project will use an array of tools and channels to address the target groups. Most target groups are professional organizations. Approaching them requires a distinct set of tools and channels when compared with the public. Below the most important tools and their use are summarized:

- **Press Events:** At specific moments the project will address its start and progress by organizing press events and press releases. These events can be at the formal start and finalization of the project and its sub-projects but also at moments with major achievements such as signing of contracts and the inauguration of new investments.
- **Seminars/webinars/congresses:** In order to reach groups of professionals, the project will use seminars and webinars for dissemination of, knowledge, reports, results etc. Typically, such events will be part of the specific sub-projects. An example may be the presentation of best practices on EPR systems to representatives of the government and local authorities.
- **Leaflets and posters:** Leaflets and posters that will be in the most part electronic will be used to support specific goals, mainly for the purpose of informing larger groups of the general public. Examples may be the use of leaflets to inform the public on new collection points for E-waste and batteries and leaflets that explain the important role of official collectors for CPW.
- **e-Newsletters:** For specific sub-projects, newsletters or brief news summaries will be used to inform participants on a regular basis.
- **Website:** The project will have its own dedicated website however all publications will be posted on the UNDP website. All videos and documentaries will be posted on Youtube.
- **Guidelines:** Technical and financial guidelines will be used to communicate best practices, tools, standards in order to spread the use of new knowledge, technologies and experiences.
- **Social media:** The project will use social media, such as WhatsApp and LinkedIn to support exchanges within specific groups of stakeholders.

Main activities and schedule

At the start of the project and the sub-projects, more dedicated C&V plans will be made comprising a description and planning of all main activities.

Evaluation

The project foresees the following frequencies (during the full implementation of the project) in the use of C&V tools per sub-project.

Project	Press events	Seminars/webinars	Leaflets/banners	e-Newsletters	Guidelines
Overall TaDWIR project	4		3	3	
Hazardous HCW	1	2		3	1
E-waste and batteries	2	2	2	3	
Mixed municipal waste	1	2		3	1
Municipal green waste	1	1	1	3	1
Cardboard and paper waste	1	1	1	3	1
Slaughterhouse waste	1	1		3	1
Governance and cost recovery	2	2		3	

The overall project will report about the C&V activities that took place.

III. Resources

The communication and visibility activities will be implemented in accordance with article 11 of the Financial and Administrative Framework Agreement concluded between the European Union and the United Nations, article 8 of the Annex II to the EU-UNDP Contribution Agreement (General Conditions) and the Joint Visibility Guidelines for EC UN Actions in the field²¹.

At the project level a Communication Officer will be assigned with the task to integrate all C&V activities across the project and to report on its execution and achievements. All needed resources will be covered by the project-budget.

²¹ <https://ec.europa.eu/europeaid/node/45481>

Annex 5 – Quality Assurance – Initiation