

## DIVERTING WASTE BY ENCOURAGING REUSE AND RECYCLING (DAWERR)

The Diverting Waste by Encouraging Reuse and Recycling Activity (DAWERR) is a five-year activity funded by the United States Agency for International Development (USAID) that aims to establish sustainable solid waste diversion and valorization solutions in collaboration with municipalities in various rural areas, thereby improving the social, environmental, and economic well-being of Lebanese citizens.



DAWERR aligns with USAID/Lebanon's objective to introduce financially sustainable solutions that increase the reuse, recycling and monetization of solid waste, which would reduce the amount of solid waste that goes to landfills. DAWERR will be implemented in phases. During the first year, DAWERR will develop composting value chains and strengthen existing recycling value chains for recyclable materials. From the second year onwards, DAWERR will replicate successful pilots from Year 1 and develop integrated Solid Waste Management (SWM) solutions in unions and/or clusters of municipalities.

DAWERR is implemented by the US-based ECODIT LLC in partnership with the following Lebanese organizations: Berytech, Compost Baladi, ECODIT Liban and ELARD.

## DAWERR Objectives

- ✓ Build the capacity and commitment of municipalities to provide improved SWM services either directly or indirectly
- ✓ Empower communities to sort at source and participate actively in the various stages of recycling value chains
- ✓ Develop successful business models that create green economic opportunities and generate net incomes for the local communities along the recycling value chains

## DAWERR in Year One

Starting in Year I, DAWERR will develop sustainable composting value chains for organic waste and strengthen existing recycling value chains for recyclable materials in six selected municipalities as solid waste diversion and valorization pilots (the "pilots"). Specifically, DAWERR will provide targeted technical, financial, and business support to the selected rural municipalities, their communities, and partners to design, implement, and manage the "pilots".

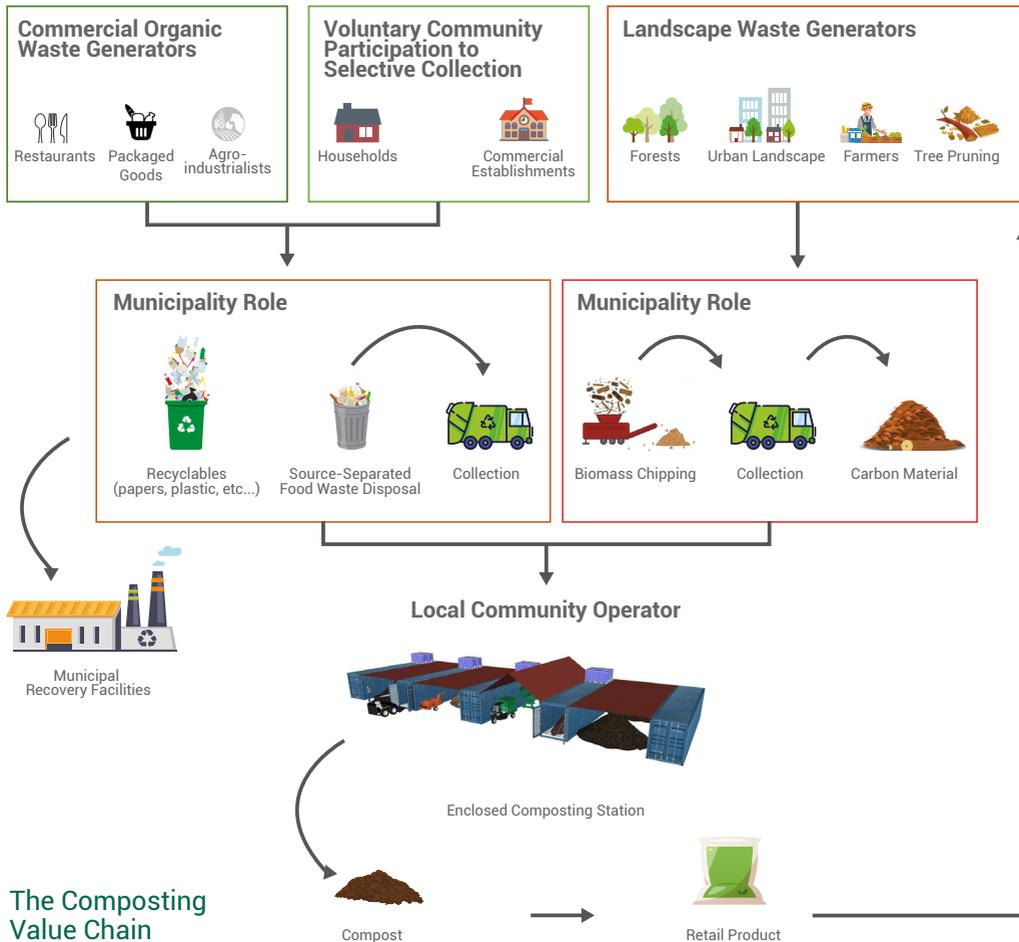
As part of the pilots, DAWERR will support municipalities, local communities, and private sector entities in developing sustainable composting value chains for organic waste, including:

- ✓ Providing source separation, collection, and composting of organic waste (representing 50% of the total municipal solid waste)
- ✓ Creating demand for the compost produced for agricultural, landscaping, or other uses as soil conditioner / fertilizer supplement
- ✓ Facilitating linkages with existing material recovery facilities and engaging the private sector to strengthen value chains for other, non-organic recyclables



The diagram below illustrates the composting value chain: The local community - commercial and non-commercial waste generators, including households - sort their organic waste and deposit them in specific bins. The municipality then collects these source-separated organic wastes and transports them to the composting station, where the local operator applies low-cost, appropriate biodegradation technologies to produce compost that is used by farmers in their agriculture practices.

In parallel, DAWERR will engage with private sector operators and facilitate linkages with existing material recovery facilities for the collection and recovery of non-organic recyclables.



The Composting Value Chain

## Enclosed Composting System

DAWERR proposes to pilot the composting of pre-sorted organic waste, mixed with carbo-rich chipped wood, in pre-manufactured, enclosed and airtight containers equipped with an aeration floor and process controls to ensure the best possible composting of the organic matter.

These containers are equipped with an exhaust system, a condenser, and a bio-filter to minimize uncontrolled odor emissions.

Leachates are collected and used in humidifying the organic waste during the composting process.

The advantages of the enclosed composting system include the following:

- Fully enclosed, airtight intensive rotting with controlled exhaust air collection and exhaust for air purification
- Significantly reduced rotting times
- Assured sanitation of the compost produced
- Medium space requirements and footprint

Illustrative Daily Input Capacity:

Three (3) Metric Tonnes of organic waste + 750 Kg of carbon material



Woodchipper shredding tree branches

# Project Stakeholders: Roles and Responsibilities

 <p>Municipality</p>	<ul style="list-style-type: none"> <li>• Allocate a site to host the composting station</li> <li>• Secure the necessary permits and provide ancillary facilities such as water and electricity supply for the composting station</li> <li>• Manage or supervise the selective collection of pre-sorted organic waste</li> <li>• Oversee and monitor the implementation, operation and sustainability of the pilot</li> <li>• Ensure that the composting station is properly operated and managed</li> <li>• Secure buy-in and support from the local community</li> <li>• Cooperate with neighboring municipalities in sharing resources and facilities to collect and process pre-sorted recyclables such as existing equipment, collection services, and material recovery facilities</li> </ul>
 <p>Community Members, Commercial and Non-Commercial Entities</p>	<ul style="list-style-type: none"> <li>• Participate in the project's implementation through local committees, town hall meetings, and regular consultations</li> <li>• Take part in education, awareness, and behavior change activities on SWM practices</li> <li>• Sort waste at source</li> </ul>
 <p>Non-Government Organizations (NGOs) and Community-Based Organizations (CBOs)</p>	<ul style="list-style-type: none"> <li>• Benefit from training on SWM and behavior change communication</li> <li>• Encourage community participation in project implementation, specifically women, youth, and Persons With Disabilities</li> <li>• Organize awareness campaigns on SWM best practices, as well as their environmental and health benefits</li> <li>• Outreach to incentivize people to sort at source and contribute to the project</li> <li>• Mobilize local stakeholders and influential bodies to ensure maximum support</li> </ul>
 <p>Social Enterprises/Private Sector</p>	<ul style="list-style-type: none"> <li>• Collect and recycle pre-sorted recyclables and organic waste</li> <li>• Think up innovative ideas to identify, test, and disseminate current and new models for incentivizing communities to participate fully in a municipal solid waste diversion program</li> <li>• Manage and operate the composting station/ facility sustainably</li> </ul>



Compost thermometer measuring compost temperature

## Become a Leading Municipality! Join DAWERR and Help Your Community

By taking part in DAWERR, you:

- ✓
- Give your municipality the chance to implement sustainable improved municipal Solid Waste Management (SWM) services
- ✓
- Establish a successful business model that creates green economic opportunities
- ✓
- Generate net incomes along the value chains for your local communities

Join us in transforming Lebanon's Solid Waste Management sector!

For more information [☎ 81/397595](tel:81397595) [✉ info@dawerr.org](mailto:info@dawerr.org)



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