



# **Pilot Windrow Composting Facility & Recyclables Sorting in Mafraq**



# UNDP Composting and Women Engagement

# Composting Units

- Project agreement was signed on May 5<sup>th</sup>, 2017
- Completed infrastructure and furnishing works at the facility site with three months delay
- Technical and operational training started on Sep 17<sup>th</sup>, 2017; official operation started on Oct 1<sup>st</sup>, 2017
- Design intake rate: 33tons per day with density of approx. 450kg/m<sup>3</sup>
- Land requirement: approx. 9,515m<sup>2</sup> with 7,000m<sup>2</sup> of composting area

# Composting Units:



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# Composting: UNDP Composting and Women Engagement

**Future Pioneers**, a national member of the Economic and Social Commission of Western Asia (ESCWA) in Jordan and through this project the first partnership modality collaborated between the government, local private partners and small NGOs and community based organizations from the community was created.

Future Pioneers was the implementing partner with UNDP to join up with the Joint Service Commission of Mafrq.

The main objective is to enhance the livelihoods and income generation opportunities through community-based aerobic windrow composting of high-quality fertilizers of marketing value.

The daily intake capacity of the pilot project was 40 tons.



# Composting: UNDP Composting and Women Engagement

This livelihoods project was supported by 3 local NGOs that aided in packaging the product in small amount and selling it to retailers.

## Activities:

- 1) Expand the production capacity of existing composting facility in order to receive 120 tons of manure and organic waste on a daily basis to produce 90 tons of quality compost.
- 2) Select local women for participation in project activities
- 3) Recruit participants from 'vulnerable communities' and incorporate them into the capacity building program
  - 12 women from 9 selected local CBOs
  - Creating openings for as many as 108 Jordanian and Syrian women
  - 20 local male workers trained
- 4) Indoor facilities have been established in the selected CBOs



## As many as 40 jobs are to be created:

- Direct/on-site jobs: 15 positions filled by women, 15 by men
- Indirect jobs – 10

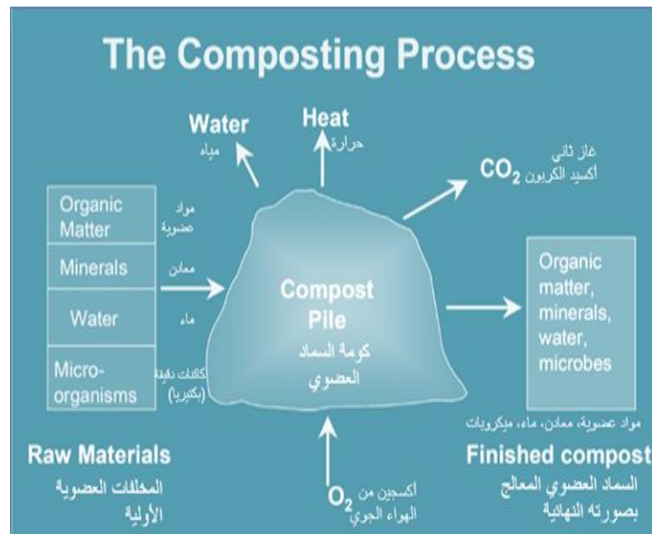


# **GLZ Project at The Community Level for Waste Sorting and Composting**

# Composting: Waste-to-Positive Energy

The project includes the establishment of a facility for the treatment of organic waste of various sources to produce and manufacture treated compost and reduce the negative environmental effects resulting from the use of untreated municipal manure-based fertilizer.

Additionally, the project will reduce the organic waste transferred to the landfill and prolong the operational life of the landfill. This project is considered as a legal entrance aiming to dispose animal wastes safely and sustainably.



- Introducing recycling activities as a conduit for labor-intensive employment within refugee-hosting communities
- Ensure the sustainable, efficient and high-quality production of recyclables and compost within the municipal infrastructure by reinforcing its marketable quality and quantity
- Establishment of two composting facilities – one in Irbid, the second in Karak.
- In order to facilitate the capacity of a daily intake between 15-30 tons of organic waste, the facility was designed on a 64,749.7 m<sup>2</sup> plot. This initial, pilot capacity was designed with the prospect of expanding operations, reaching up to as much as 40 tons a day.
- For 30 tons per day, we should need up to 7000 m<sup>2</sup>, 40 tons – 8-9000 m<sup>2</sup>
- Primary and Secondary activities: Reception and preparation of raw materials; piling, turning and treatment; producing compost and storage; packaging and marketing.
- The anticipated input strategy in the pilot phase is 60% bio-waste separated at source from the municipal areas and 40% fresh livestock manures (poultry and cattle). The municipality will deliver the wastes from these sources on a daily basis.

# Composting: Waste-to-Positive Energy

## Operational Plan for the management of the sorting station for Greater Karak Municipality

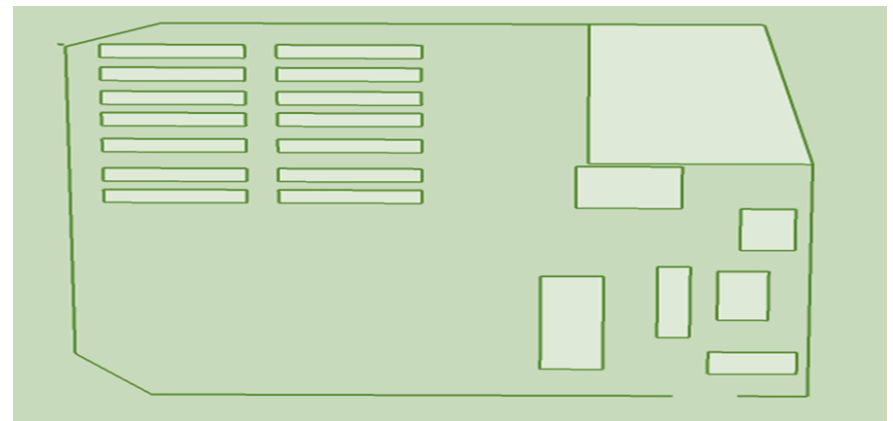
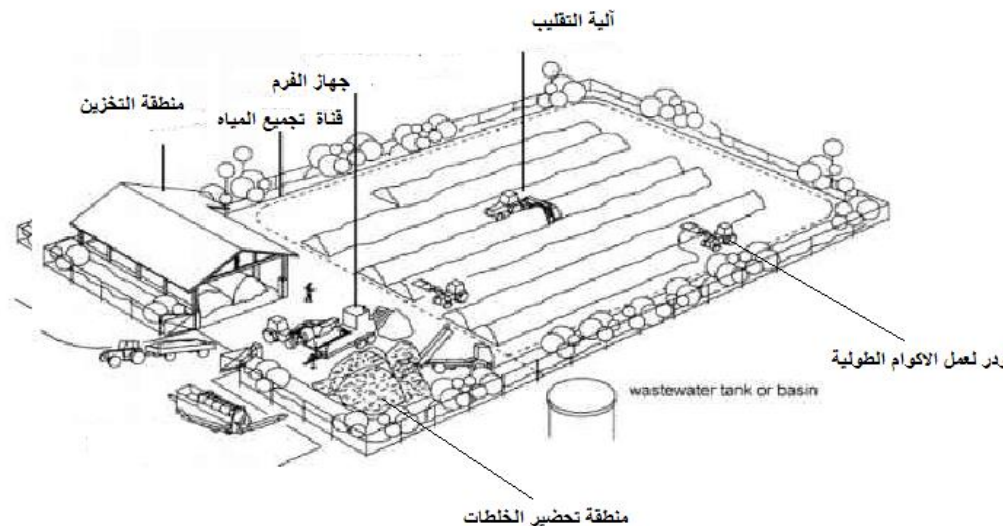
### Station Description:

The establishment of a plant for (compost) in the method of windrow composting within a suitable land area of approximately 16 acres and equipped with equipment and specialized mechanisms suitable for proper operation according to the initial design capacity of 15-20 tons per day of organic waste.

### Area:

The total area is approximately 16 acres with the following details:

- The building area: 60 × 70 m
- The area of the matrix is 45 m<sup>2</sup>.
- The distance between arrays is 1.5 m.
- Longitudinal distance between matrices 7 m.
- The closest distance between the matrix and fence 7 m.
- The surface of the operations is 2% tilted to collect the juice on the assembly channel.



# Recycling and Sorting Stations

**Recall: Short-term Period (2017-2019):** The optional target for the Northern Region is to process input materials for re-use and recycling up to about 33,000 tons annually by 2019.

The target in this field is to continuously increase the coverage of the MSW collection system to cover 100% of the population by 2024.

**Sorting-At-Source (SaS)** is essential for maintaining value of wastes at time of disposal for later re-use, recycling and/or recovery.

Generally, any increase of separation efficiency at source will bring higher recovery rates; however, it also increases operational complexity, time requirements, capital and operational costs of MSW process.





# Recycling and Sorting Stations: Waste-to-Positive Energy/ GIZ project

The project uses waste recycling and recovery strategies combined with labour intensive programs and Cash for Work (CfW) incentive based models for creating income generation potentials for the most vulnerable groups of the local society (Jordanian citizen and Syrian refugees) in Jordan.

## Project aims:

- - Strengthen resilience of civil society and local institutions in refugee host communities
- - Develop participatory systems to establish labor-intensive material recovery and processing systems
- - By way of the above goals, create income generation potentials for the most vulnerable groups in Jordan

## Recycling Strategies:

- Incentive-based public cleaning campaigns.
- Materials Recovery Facility (MRF) for separating commingled recyclables by mechanical means. MRF to be designed to separate recyclables from mixed MSW of high calorific value for Refusals Derived Fuel (RDF) manufacturing
- SaS – fixed waste containers – in the commercial and household clusters, in addition to static hydraulic containers.
- Incentive-based labour programs for Jordanians and Syrians as a mechanism to improve livelihoods by incorporating training activities through GIZ's Cash-for-Work initiative for work placement at the facilities.

# Recycling and Sorting Stations: Operational Model of Sorting Facilities

## Project Components:

### Final Sorting Facility:

The facility is designed to receive up to 20 tons per day.

The facility would receive only dry recyclable waste fractions not organic or bio-waste.

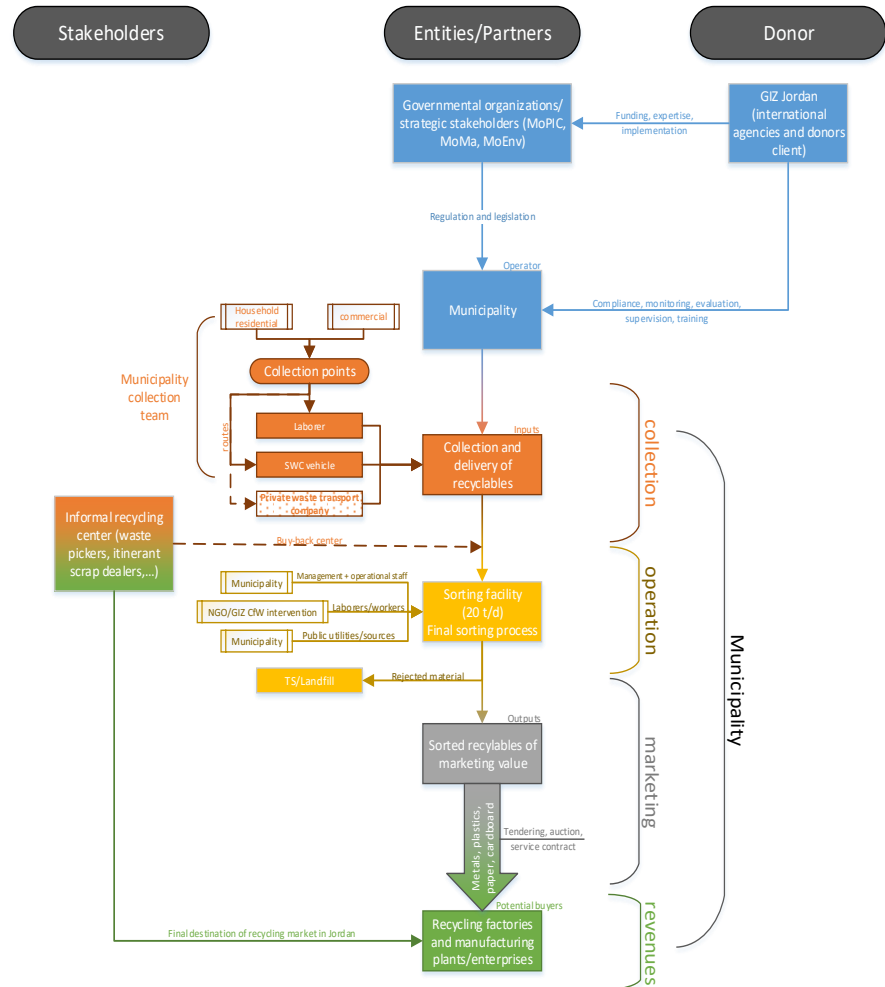
### Collection system:

A separate collection system would be established for the purposes of the recycling project. The system shall include collection points (containers), mean of collection and transportation (SWC compactor vehicle), collection laborers, and routes of waste collection.

Informal recycling center provides a secure area for informal waste pickers and scrap dealers to gather materials in collaboration with the facility.

### Storage and Marketing:

Following the final waste sorting processing operations, recyclables would be stored in balers and marketed by the municipality.



# Recycling and Sorting Stations: Process Map for Sorting Station

