# Oman Strategy of Bio-waste Management and Implementation of Biogas Plants

World Biogas eFestival
Business Development Department
Oman Environmental Services Holding Company (be'ah)
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### Oman Environmental Services Company (be'ah) - Vision

To Conserve the Environment of our Beautiful Oman for our Future Generations "



## be'ah: Strategic Goals and Objectives

- 1 Damage Control
  - 2 Restructure WM Services
  - 3 Develop WM Sector
- 4 Support Oman's Economy

be'ah aims to construct and implement a long term municipal solid waste diversion strategy to achieve a diversion rate of 60% by 2025 and 80% by 2030.



## Biowaste assessment and a case study from Barka Landfill



## What is the challenge ?!

WHY DO NOT START
DIVERTING
BIOWASTE FROM
THE LANDFILLS
AND
ADDING VALUE
INSTEAD OF ADDING
COST !!!



Gas emission and Greenhouse gases accumulation/ Global warming/ pollution & diseases

Leachate production / creating another problem

Accumulation of biowaste

reduce volume and increase

space in the landfills leads

process

using

landfills

compacting

Applying
Gas flare and
Gas recovery
system for
preventing
emissions



be'ah
Around 8 million OMR
ORGANIC WASTE ADDS AN
EXTRA COST FOR...



Applying leachate system for Leachate extracting and treatment



### Case study at Barka landfill (2016-2017)

### What is the nature of the organic waste received at the landfill?





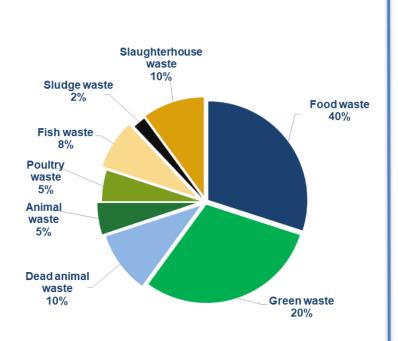


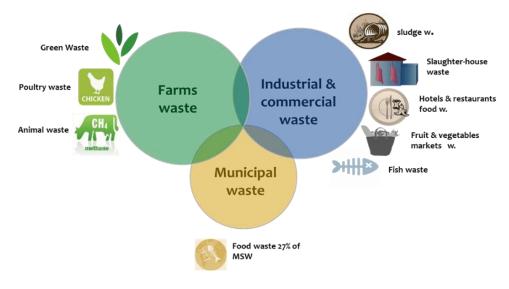






### Biowaste categories received at Barka landfill





Around 2000 tons/day of MSW received at Barka landfill

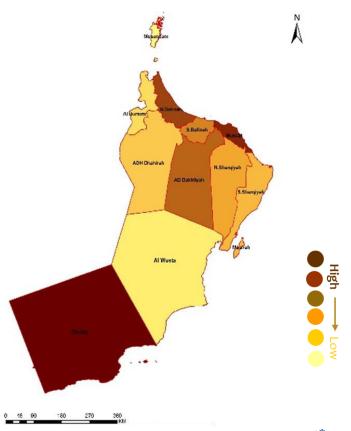
Including 600 tons/day received are Bio-waste

(30% of total waste)



case study and field survey, 2016/ updated 2017

### Organic waste distribution overview



be'ah case study for waste generation in Oman, 2017\*\*

**Food waste** Thousands ton in 2016 estimated around **Million OMR** In 2016 In 2016

be'ah case study for waste generation in Oman, 2013\*\*

# Strategy for diverting bio-waste and Implementation Biogas Plants



### be'ah's strategy for diverting bio-waste: Biogas Plants



**Stage 1**Divert about

900 ton/day

**Biowaste** 

With capacity production of

**10 MW** 

Electricity

Stage 2 Expand to

2000 ton/day

**Biowaste** 

With capacity production of

**20 MW** 

**Electricity** 



### Phase 1: Centralized or Decentralized Biogas plants

### **Decentralized Biogas Plants** OR Oman Agriculture association - OAA **Medium scale** 50 - 90Al Batinah S Barka landfill tons/day Large scale $M_{USCat}$ 150 - 250 tons/day Sultan Qaboos University Large scale 150 - 200 tons/day

### **Centralized Biogas Plant**



Barka landfill Large scale 300 - 500 tons/day

5 - 7 MWel



## Project status and way forward

#### **Project Status**

- Bio-waste assessment of available feedstock was conducted and finalized in 2018.
- Feasibility study was completed in 2019.
- Feasibility results were discussed and presented to project stakeholders (2019-2020)

#### Way forward

- Confirmation of offtake of process outputs and discussion with key authorities to secure feedstock from generators at sources (2020)
- Float a tender for the and construction, development and operations of biogas plants 2021
- Engage key stakeholders from various sectors that contribute to the success of the project (i.e. key generators and other related authorities for output utilization such as Power and digestate off-take by the agriculture sector.



To Conserve the Environment of our Beautiful

Oman for our Future Generations

## Thank you

World Biogas eFestival Business Development Department Oman Environmental Services Holding Company (be'ah) 18<sup>th</sup> of May 2020

