CASE STUDY NAME

Decentralized Integrated Sludge Management (DISM)

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Rationales

Why?

- Sludge is being wasted in 29 WWTP
- For example, in middle governorate only, 6 WWTP generate 6000 tons of dried sludge per year
- Transported to dump sites or accumulated on site

- High transport costs 300,000 JOD/y
  - Environmental hazards
  - Missing out valuable resource

- Similar situation prevail in nearly all WWTP

In small decentralized WWTP, treatment of sludge would not be feasible. Thus mixing with other sources of biomass would improve the process.
### Description of the case study

<table>
<thead>
<tr>
<th>Project’s name</th>
<th>Country</th>
<th>City</th>
<th>Start Date-End Date</th>
<th>Water Sources</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISM</td>
<td>JORDAN</td>
<td>KARAK (TBC)</td>
<td>2015 - 2019</td>
<td>Biosolids + RECLAIMED WATER</td>
<td>Fodder</td>
</tr>
</tbody>
</table>

### Sources

<table>
<thead>
<tr>
<th>Origin</th>
<th>Mainly domestic</th>
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<tbody>
<tr>
<td>Sludge produced</td>
<td>200 kg DS/d</td>
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### Uses

<table>
<thead>
<tr>
<th>Crop</th>
<th>Maize</th>
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</thead>
<tbody>
<tr>
<td>Surface</td>
<td>1 ha (with farmers part’n (TBC))</td>
</tr>
</tbody>
</table>

### Biosolids Reuse Chain

See slide

*After energy capturing, drying and then applying mixed organics product for maize production + range lands*
How do I illustrate the question:
Which practices and technologies to create effective, safe and cost effective water reuse chain?

Wastewater treatment plant

Electricity

Sludge

Organic waste

Manure

Co-digester

Compost

For land application
How do I illustrate the question:
Which practices and technologies to create effective, safe and cost effective water reuse chain?

- Anaerobic digestion
  - Co-digestion of multiple substrates ➔ higher yield.
  - Generates biogas (CH4 and CO2)

- Generate electricity
  - From methane gas (reduce GHG)

- Generate compost
  - Fertilizer or soil conditioner
  - Giving nutrients and improve water retention in soil