LET´S PUT OUR HEADS TOGETHER. TO KEEP AHEAD.

SWEDISH CASES OF SOURCE-SEPARATION SEWAGE SYSTEMS
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Source Separated systems for wastewater and food waste – experiences, implementation, economy and societal benefits (SVU report 2017-04)

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H+ Helsingborg

- New settlement in Helsingborg
- Strong environmental ambitions
- Blackwater systems will be installed in the first exploiting phase including 300 apartments
Vacuum system for blackwater

- A combination of vacuum and low pressure system transport the blackwater to a central collection tank

Food waste is transported through kitchen waste disposers and a gravity system to a separate collection tank

Greywater is transported through a gravity system to a separate collection tank
RECO LAB

Nordvästra Skånes Vatten och Avlopp AB

Testbäddar inom miljöteknikområdet
Hölö, Södertälje

- Hygienisation of blackwater from individual vacuum-to-tank systems
- Liquid composting with urea added
- Stored and used as a fertilizer on farmland
- Positive experiences from appx 5 years of operation
- A challenge is to force the house owners to install vacuum systems
Munga, Västerås

- Housing area in transition from holiday camp to permanent living in Västerås, including 279 houses
- Municipal responsibility for water and sanitation
- Västerås has a policy promoting recycling of nutrients where costs are reasonable
Munga, Västerås

- **System solution:**
  - Low pressure systems for black- and greywater
  - Collection of blackwater in a tank for further truck transportation to farmland for hyginization and use as fertilizer
  - Local treatment of greywater with sandfilters
  - Water supply from the city
Experiences of technical components in source separation systems

<table>
<thead>
<tr>
<th>Component</th>
<th>Experiences</th>
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</thead>
<tbody>
<tr>
<td>Kitchen waste disposers</td>
<td>Positive experiences from the operation</td>
</tr>
<tr>
<td></td>
<td>Challenge: decrease the water use</td>
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<tr>
<td>Gravity systems</td>
<td>A few experiences, all positive</td>
</tr>
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<td></td>
<td>Challenge: decrease the water use</td>
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<tr>
<td>Vacuum system</td>
<td>A lot of stoppages in old systems</td>
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<td>New systems work properly</td>
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</table>
Experiences of treatment and recovery processes in source separation systems

<table>
<thead>
<tr>
<th>Component</th>
<th>Experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digestion</td>
<td>Great potential but only a few tests</td>
</tr>
<tr>
<td>Liquid composting</td>
<td>Sensitive and vulnerable process</td>
</tr>
<tr>
<td>Liquid composting + urea hygienisation</td>
<td>Well functioning but dependent on urea</td>
</tr>
<tr>
<td>Struvite production</td>
<td>Well functioning in test areas (Europe)</td>
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<tr>
<td>Membrane technology</td>
<td>Well functioning in (only a few) test sites</td>
</tr>
</tbody>
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Economic analysis
Costs distributed over different stakeholders

<table>
<thead>
<tr>
<th>Category</th>
<th>Annual costs per capita [SEK capita⁻¹]</th>
<th>Källsortering</th>
<th>Konventionellt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hushåll</td>
<td>100%</td>
<td>146%</td>
<td>105%</td>
</tr>
<tr>
<td>Avfalls-</td>
<td>100%</td>
<td>0%</td>
<td>90%</td>
</tr>
<tr>
<td>huvudman</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA-</td>
<td>100%</td>
<td></td>
<td>103%</td>
</tr>
<tr>
<td>huvudman</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jordbruk</td>
<td>100%</td>
<td></td>
<td>97%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>69%</td>
</tr>
</tbody>
</table>
Incomes

Årsintäkt per capita [SEK capita⁻¹]

- Biogas: 100%, 106%, 160%
- Slam & Näringsämnen: 100%, 124%, 337%
- Summa: 100%, 113%, 230%

Legend:
- Konventionellt
- 10% källsortering
- Källsortering
Conclusions

- Important needs of planning for good implementation: 1) A need for adaption of the regulations, 2) Need for strong involvement from agriculture including proper contracts, 3) need for strong cooperation and education of the building sector, 4) Communications with house owners

- The cost analysis showed that source separations system are 20% more expensive than conventional sewage systems to implement in new build areas

- Source separation systems has the potential to better match a circular economy regarding nutrients and could therefore be selected for new built areas or renovation areas. This project showed that the experiences are few but positive regarding blackwater systems. There is however a need to develop the planning and implementation issues.
Thank you for your attention!