



SWEDISH CASES OF SOURCE-SEPARATION
SEWAGE SYSTEMS
ERIK KÄRRMAN

Source Separated systems for wastewater and food waste – experiences , implementation, economy and societal benefits (SVU report 2017-04)

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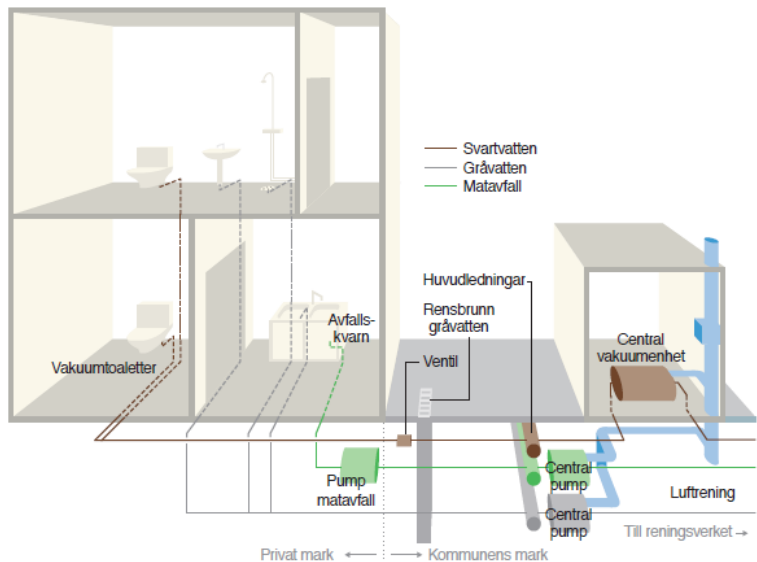
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H+ Helsingborg

- New settlement in Helsingborg
- Strong environmental ambitions
- Blackwater systems will be installed in the first exploiting phase including 300 appartments



H+ Helsingborg

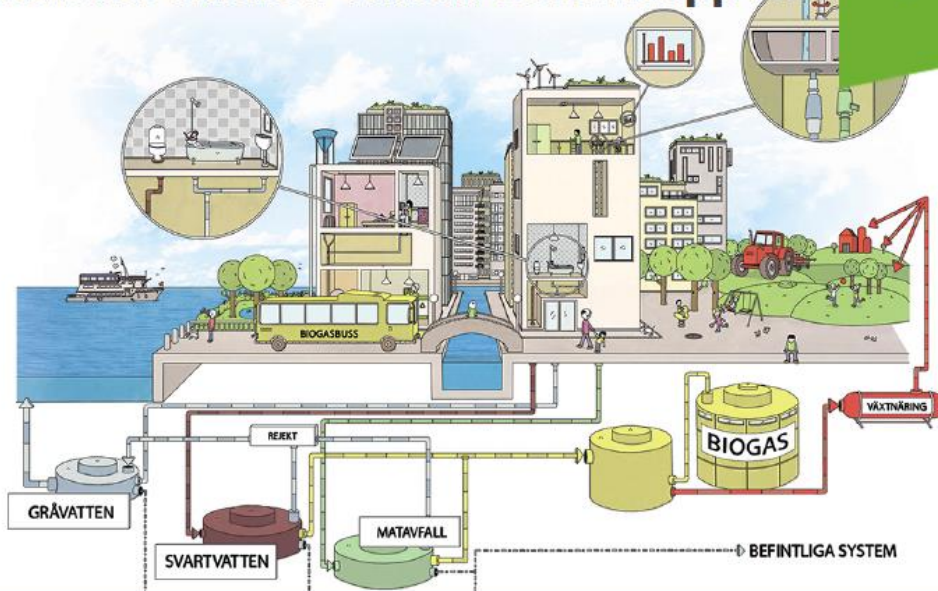


- Vacuum system for blackwater
 - A combination of vacuum and low pressure system transport the blackwater to a central collection tank
- Food waste is transported through kitchen waste disposers and a gravity system to a separate collection tank
- Greywater is transported through a gravity system to a separate collection tank

RECO LAB

Nordvästra Skånes Vatten och Avlopp AB

Testbäddar inom miljöteknikområdet



VINNOVA

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

Component	Experiences
Kitchen waste disposers	Positive experiences from the operation Challenge: decrease the water use
Gravity systems	A few experiences, all positive Challenge: decrease the water use
Vacuum system	A lot of stoppages in old systems New systems work properly

Experiences of treatment and recovery processes in source separation systems

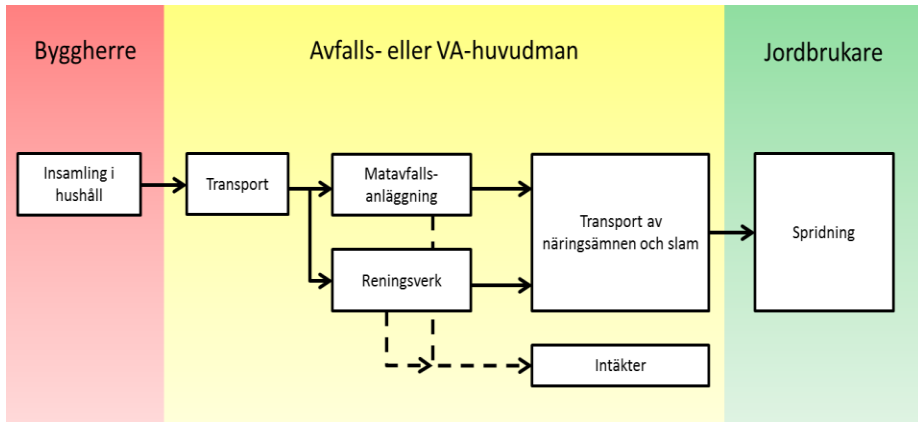
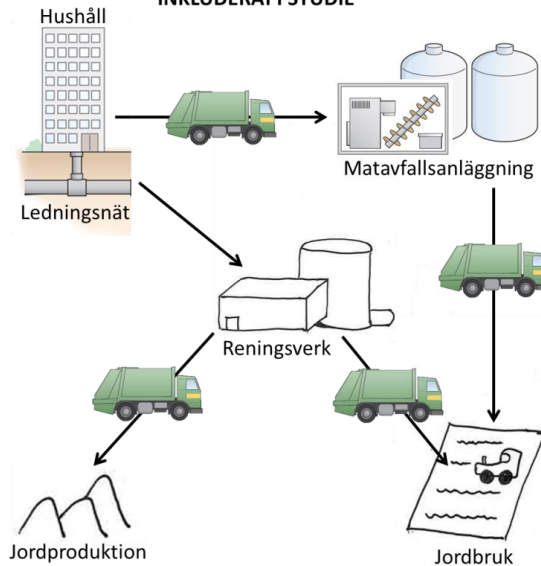
Component	Experiences
Digestion	Great potential but only a few tests
Liquid composting	Sensitive and vulnerable process
Liquid composting + urea hygienisation	Well functioning but dependent on urea
Struvite production	Well functioning in test areas (Europe)
Membrane technology	Well functioning in (only a few) test sites

Economic analysis

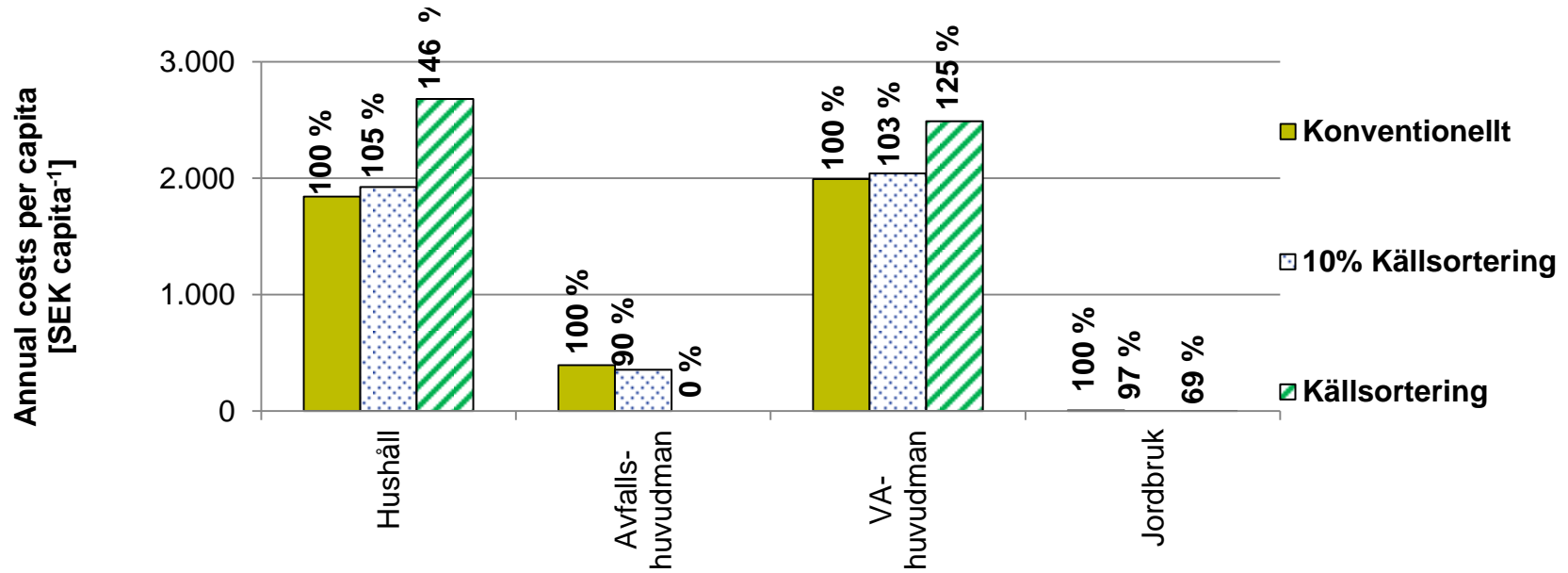
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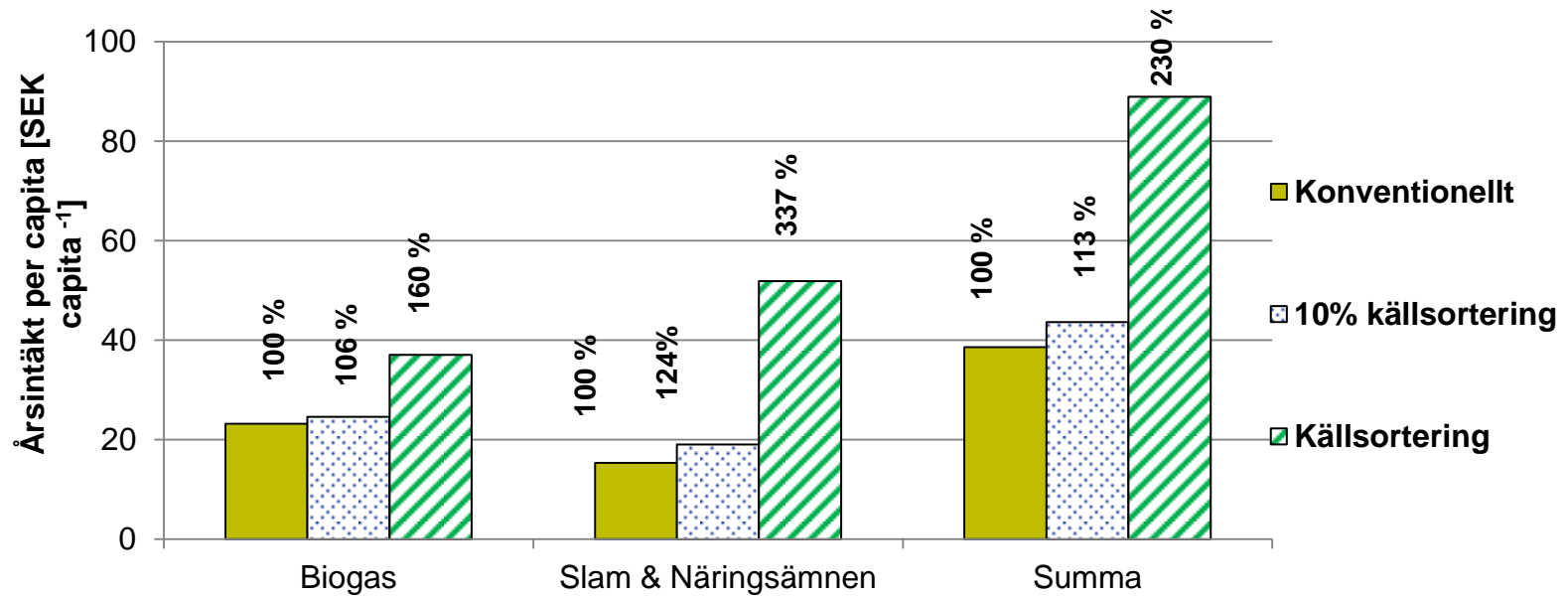
INKLUDERAT I STUDIE



Costs distributed over different stakeholders



Incomes



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 separation systems 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.

