

A comparison of drivers behind implementation of source separation systems in three urban pilot areas in Northern Europe.

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Abstract

A renewed trend of larger implementations of pilot areas with source separation systems is currently emerging in Northern Europe. This study investigates the drivers behind the decision of involved stakeholders to implement source separation systems as well as the importance of the previously existing pilot areas in the decision-making process. It was found that the most important drivers were governmental, especially local environmental goals. Experiences from existing smaller pilot areas were shown crucial for decisions to implement the larger pilot areas, as was intensive stakeholder co-operation, due to the fact that source separation systems transcends traditional boundaries between energy, waste and water sectors. The results hold implications for policy makers and municipalities initiating a transition to more sustainable wastewater management.

Keywords

Source separation; drivers; blackwater; greywater; food waste; wastewater management

INTRODUCTION

Today wastewater management faces emerging concerns regarding energy efficiency, resource recovery and emission of greenhouse gases. A possible way forward to address these challenges is that of source separation systems for urban wastewater management which utilizes a more resource oriented sanitation concept. Such systems have also seen a re-dawned interest in the 2010's with several larger pilot areas planned in Netherlands, Belgium, Germany and Sweden. Despite the potential environmental benefit of source separation systems there are obstacles that might hinder successful implementations of pilot areas with such systems (Meinzinger, 2010; Larsen & Gujer, 2013). A successful implementation of urban source separation infrastructures therefore relies on strong drivers and committed stakeholders. It is thus of great interest to investigate and compare the drivers of the stakeholders behind the currently planned pilot areas. This study investigated these drivers with aim of providing potential stakeholders and policy makers with an understanding of the process of changing urban wastewater infrastructure systems.

MATERIAL AND METHODS

The material was based upon interviews with project leaders for three pilot areas in Northern Europe (Table 1). In addition, project leaders of two already existing pilot areas were interviewed as well to see how the drivers have changed since these proof-of-concept installations from the previous decades. The drivers considered in the study (*governmental, internal, market external* and *non-market external*) were based upon the work of Delmas & Burbano (2011) but adapted to context of the study.

Table 1. Selected existing and planned pilot areas with source separation systems.

Existing	Country	Households	Start-up year
Flintenbreite	DE	110	1999
Noorderhoek	NL	250	2010

Planned	Country	Households	Construction start
Jenfelder Au	DE	650	2013
Schipperskaai	BE	400	2017
H+	SE	320	2017

RESULTS AND DISCUSSION

The results from interviews (Table 2) showed that while earlier pilot areas with source separation systems were driven by university collaboration and proof-of-concept installations the currently planned pilot areas mainly have *governmental* drivers. It was clear that specific local environmental goals are the main driver for these new areas and that source separation systems were identified as a solution to reach the set environmental goals of the areas. External drivers, such as pressure and demands from media or NGO's, were never expressed to be important.

Furthermore, the experiences drawn from the existing pilot areas were crucial for all of the planned areas in their decision to implement source separation systems on a larger scale. Of special importance were proven long term technical feasibility and user acceptance. Finally, since source separation systems transcend waste, water and energy sectors implementation caused issues in regards to jurisdiction, areas of responsibility and economic issues between waste and water utilities. Increased stakeholder cooperation was shown to over-come these issues.

Table 2. Drivers for the decision to implement source separation systems in existing and planned pilot areas. Results presented as a gradient table.

		Existing areas		Planned areas		
		Flintbreite	Noorderhoek	Jenfelder Au	Schipperskaai	H+
Governmental drivers	National goals					
	Area goals					
Internal drivers	Decreased operation costs					
	Gaining knowledge					
Market external drivers	Marketable products					
	Financial support					
Non-market external drivers	Demands from media/ NGO					
	University collaboration					

Legend: **White:** Not considered or of no influence on the decision to implement.
Light grey: Considered as important and contributed to the decision to implement.
Dark grey: A main driver for the decision to implement source separation systems.

CONCLUSIONS

- The presented study gives clear hints to policy makers that governmental action can promote change and transformation in urban infrastructure and wastewater, waste and energy management by setting meaningful environmental goals for the urban development within their municipalities.

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