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DECISIVE

A Decentralised Management Scheme for Innovative Valorisation of Urban Biowaste

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Coordination:

Anne Tremier, INRAE,
anne.tremier@inrae.fr

Lead at TUHH:

Ina Körner
i.koerner@tuhh.de

Partners:

Scientific: INRAE, GEOMAR, TUHH, UAB, AU
Industry and Companies: Refarmers, Suez,
PSUtec, ARC, ACR+, aeris, ITS energy, Fundació
ENT, A&T2000

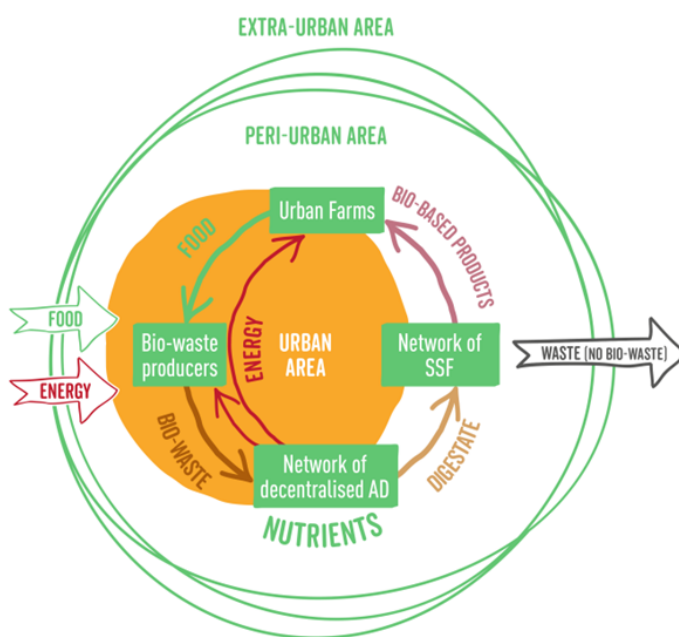
Researchers at TUHH:

Steffen Walk, Jessica Schermuly,
Stefan Deegener, Phillipp Lüssenhop

Project description:

In Europe, urban organic waste is projected to reach 96 Million Mg in 2020. Its management is challenging. Efficient processes are important to create higher value products.

DECISIVE investigates decentralised management with an focus on anaerobic digestion combined with biogas and digestate utilization. Decentral approaches are beneficial e.g. in terms of lower collection needs, higher flexibility, system resilience, citizens involvement, and local employment.



Change of urban metabolism: Closing the organic loop

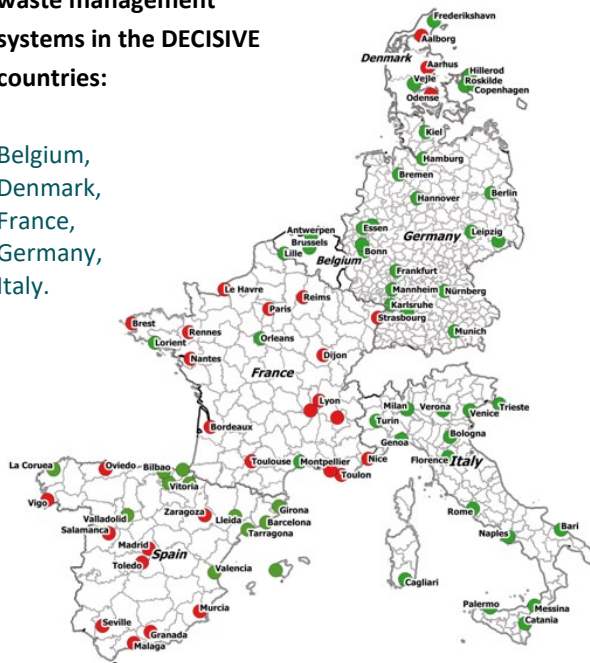
Social, economic and environmental contexts call for the development of circular systems, including management of bio-waste. The residues of local food consumption are a valuable bioresource for local biorefineries, biogas and compost producers. DECISIVE develops and demonstrates decentralised management schemes for innovative valorization of urban bio-waste. Key technology is micro-scale anaerobic digestion with demonstration facilities in Lyon (50 t/a) and Dolina (200 t/a). It is connected with biogas transformation in small stirring motors and digestate fermentation to bio-based pesticides to apply in an urban farm. The selection of a suitable effective management scheme is very location-specific. Therefore the project includes the development of a tool to compare bio-waste management options.

The approach:

- Development of new concepts for bio-waste management including impact indicators.
- Investigation of new technologies, suitable for decentralised bio-waste management.
- Creation of an online tool, aiming at decision support to compare bio-waste management strategies.
- Proof of the innovative concept by demonstration sites with decentralised technologies.

Assessment of bio-waste management systems in the DECISIVE countries:

Belgium,
Denmark,
France,
Germany,
Italy.



Food waste from households and restaurants



Demonstration site in Lyon: micro scale anaerobic digestion - 50 t bio-waste per year

Contribution of TUHH:

The TUHH contribution focuses on the bio-waste collection part. In a first step the status of bio-waste generation, source-separation and collection in the DECISIVE countries was evaluated. It included stakeholder involvement as well as the evaluation of citizens demands for an efficient bio-waste collection system. Furthermore scenarios for decentralized bio-waste collection chains were developed and evaluated. TUHH supported the creation of a collection related database which serves to operate the decision support tool. Also the issue of the accuracy of food waste data was discussed.

Regarding demonstration TUHH carried out investigations with innovative collection schemes in Lübeck. The possibilities in an eco-innovative neighbourhood applying a vacuum-system for toilet waste was investigated regarding coupling with kitchen waste. Furthermore in two areas with different socio-economic conditions an innovation collection scheme was implemented which led to cleaner bio-waste, and better separation rates. Also the food waste avoidance potential from households is studied.

Furthermore, the spatial distribution of food waste generation in Hamburg, and the current pathways of food waste in this city are studied. The development of a business concept is a on-going activity.

General information on DESICIVE:

Website: <http://www.decisive2020.eu/> | **Deliverables:** <http://www.decisive2020.eu/library/> |

Scientific publications: <http://www.decisive2020.eu/scientific-papers/>

TUHH deliverables:

Manns, D.; Schermuly, J.; Körner, I.; Petersen, L.K.; Sanchez, V.M. (2017): D3.5 - Survey on waste collection systems with evaluations for decentralised applications

Link: <https://t1p.de/lvtw>

Schermuly, J.; Walk, S.; Oyedele, V.; Arroyo Cuara, A.; Deegener, S.; Körner, I. (2018): D3.6 - Report on results for household food waste collection and decentralised shredding in the "Lübeck-case"

Link: <https://t1p.de/y0uo>

Walk, S.; Schermuly, J.; Körner, I. (2018): D3.7 - Scenarios for decentralised bio-waste collection chains with a waste collection database for representative situations (pending)

Publications:

Walk, S.; Wardle, D.; Deegener S.; Körner I. (2019): Improving the quality and quantity of source-separated household food waste in areas of different socio-economic characteristics: A case study from Lübeck, Germany. In: Proceedings CEST 2019 - Solid waste management, 16th International Conference on Environmental Science and Technology, Rhodes, Greece

Link: <https://t1p.de/o6yi>

Press releases:

*Born, M. (2020): Harburger Forscher entwickeln Kreislauf für Biomüll. In *Hamburger Abendblatt*, 15.01.20.*

Link: <https://t1p.de/c7ng>

Schmied, F. (2020): Zweite Chance für Müll: TUHH-Wissenschaftler forschen an einer innovativen Bioabfallwirtschaft. Technische Universität Hamburg.

Link: <https://t1p.de/mq04>

Walk, S.; Körner, I. (2019): Biogaspotenzial hängt von der Sammelmethode ab. Edited by Institut für Biogas, Kreislaufwirtschaft und Energie. Weimar (Biogas ist cool - Praxisbeispiele für Marketing, Akzeptanz und Kommunikation).

Link: <https://t1p.de/gyyp>

Frick, K. (2019): Küchenabfall landet im Restmüll und wird verbrannt—das muss sich ändern. Link: <https://www.stern.de/wirtschaft/muell/biomuell--wissenschaftlerin-ina-koerner-spricht-ueber-chancen-der-abfallverwertung-7873210.html>

Air-Djoudi, J. (2017): Die Zukunft der Lebensmittelabfälle: Vorträge, Diskussionen und eine Exkursion in Ökosiedlung. Technische Universität Hamburg

Link: <https://t1p.de/91iw>

