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CORE

THEMATIC ANALYSIS IN THE FIELD OF BIOWASTE IN **Municipality of Söderhamn, Sweden**

INVENTORY OF EXPORTABLE GOOD PRACTICES & INVENTORY OF SITES, FACILITIES, AREAS AND INSTRUMENTS TO BE IMPROVED DURING THE COOPERATION

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1. Introduction

General context

Biowaste comprises biodegradable garden and park waste, food waste from households, offices, restaurants, canteens and retails as well as waste from food processing plants.

Composting (treatment in the presence of oxygen) leads to soil improvers; anaerobic digestion (treatment in absence of oxygen) to biogas[1].

Across the EU, between 118-138 million tons of biowaste are generated annually; of them, only 40% is recycled into quality compost and digestate.

Moreover, up to 50% of municipal solid waste - on average - is organic, so this fraction seems central for the circular economy.

In the case of rural environments with low-density population, the management of the organic fraction is environmentally and economically impactful, since a contaminating and expensive process is required to collect, transport and treat small amounts of organic waste dispersed in distant and sparsely populated villages.

Prevention of biowaste and the normalization of quality composting could contribute to the drastic reduction of this fraction and of the effects derived from its management. The product obtained can be used as soil-improving material and fertilizer in local and regional parks and gardens or in the form of biogas, while further uses could be promoted.

Despite the fact that regional and local policies in force all over Europe observe the transition of the waste management sector towards a circular economy, the treatment of biowaste is often not sufficiently developed, notwithstanding its potential to comply not only with circular economy but also with the mitigation of climate change.

The project rationale

In the frame described, the Interreg Europe project CORE – Composting in Rural Environments - intends to be an accelerator for rural territories to develop *composting* further.

The project brings together regional and local administrations with competences on biowaste management from 8 rural regions from all over Europe, which are accompanied and supported in the project by the European Compost Network (ECN), in the role of advisory partner.

[1] Even if the project literature uses the word "*composting*" by default, CORE project addresses both composting and anaerobic digestion and also prevention and separation in rural areas, as steps conditioning the process. However, for the sake of simplification the word "*composting*" is used in a generic way, representing all of them though in practical terms.

For 4 years, the partners will export and import experiences on biowaste treatment, with the expected result of new projects and improved policies with regard to biowaste in all the partner territories.

The purpose of the Thematic Analyses projected

Interreg Europe is a programme for exchange of experiences and policy improvement. In line with it, the “studies/analyses” authorized for financing have not a research or scientific purpose, as this is not the programme rationale.

The goal of “studies/analyses” in an Interreg Europe context has to be them to contribute to and to facilitate the process of exchange of experiences and policy and territorial improvements.

Accordingly, the Thematic Analyses authorized in CORE must serve for each partner territory to prepare, during semester 1, the 4 years of cooperation to come, defining in advance – in the form of a roadmap – (I) what local experiences will be shared with the partners during the years to come and (II) what local resources could be further developed/ improved thanks to the knowledge gained during the cooperation. This information will be systematized in the form of inventories.

These inventories won´t be immovable, as during the project new exportable experiences and new areas for improvement can emerge; but the purpose is each partner territory making, from the very beginning, an exercise of self-reflection useful to plan their part in the cooperation and the benefits they could obtain out of it, listing a good number of experiences to be shared and a series of local gaps that hopefully could be fulfilled thanks to the experience gained in the project.

The following pages offer a template model to inventory such information.

The Thematic Analyses are conceived to be useful for each partner producing them, as they are setting up the milestones for partner during the cooperation: what will be provided, what is expected to be improved. They should be roadmaps for the different project teams, serving as reference documents throughout the project. Despite their primarily local interest, they will be uploaded in the CORE webpage “Library” section as a proof of the work done and as possible inspiration for others.

It is possible that in order to obtain the information required – inventories of practices and improvement areas - different means are needed, such as meetings with different local actors, interviews, surveys, revision of documents. If needed, they are valid in the way that they contribute to the fulfilment of the inventories requested.

Last, but not least, mentioning that stakeholders can play a central role in this exercise of self-reflection and planning. Involve them!

2. Regional Context

Swedish context

In Sweden, more and more municipalities have collected food waste from households but also commercial kitchens and restaurants since the 1990s. Today, 256 out of 290 municipalities collect food waste to varying extents. The most common collection system for food waste from residential households is a separate container. There are also multi-compartment bins, which is a growing system used in roughly 60 municipalities, where different fractions are sorted in separate batches in two large bins. Food waste treatment has developed from mostly composting to today's facilities to produce biogas and biofertilizer.

Municipality of Söderhamn

In the Municipality of Söderhamn, the collection of household food waste started in 2012 and was implemented between 2012-2014. The system is managed by the Municipalities own infrastructure company Söderhamn Nära, in charge of the municipalities water supply, heat/electricity, IT and waste management. About 930 tons are being collected annually.

The household is provided with two separate bins, brown and green in color, where the brown bin is used solely for household food waste purposes. The separation is done using brown paper bags that are provided for free and can be picked up in several locations all over the municipality. The green bin is used for mixed household garbage.

The bins are being collected every two weeks using a dual collection system where both bins are being collected at the same time with a two-compartment truck.

It is then transported to the municipal dump to be transshipped to trucks and transported to the regional biogas plant EkoGas, to be processed into biogas and biofertilizer. The biogas is then upgraded to vehicle fuel and the biofertilizer is replacing mineral fertilizers for local farmers. Both end products are being used within the region.

- Total amount of collected food waste annually:
  - 18 483 tons

- Produced Biogas energy:
  - Raw Gas 23 gwh
  - Vehicle Gas 18 gwh - equivalent to 7 250 ton CO2

- Produced Bio Fertilizer:
  - 15 408 tons – 13,9 tons phosphor are being re circulated to arable land.

Regulations

As from January 1, 2024, all households in Sweden must separate their food waste on mandatory basis. Before this was an optional choice. If the household choose to have both bins (one for food waste and one for combustible waste), the tax for the collection was lower than if only one bin was used. This system has been very well received and 81% of all households are today using “the brown bin”, 19% are not yet separating their food waste. The aim is to reach 100% from 2024 and onwards when the new law comes into effect on January 1, 2024.

Even if there is a requirement to have both bins, you can have your own home compost for food waste at your house. This must be reported to the municipality and is injunctive with a fee. The municipality is providing information and support on how to build your own compost in a sufficient way and gives information on what systems can be used. The recommendations are that animal food waste (meat, fish etc.) are being recycled in the brown bin to prevent problems with rodents. The municipality is doing inspections on regular basis. Around 28,8 tons are being reported to be home composted annually. Compost for garden materials is allowed without mandatory reporting to the municipality.

Aims

The main aim is to increase the amount of collected food waste for recycling due to higher grade of correctly sorted material without increasing total amount of food waste.

Another aim is also to increase the purity of the sorted material from any plastic residue. Today the purity is about 96 % with a target of 98%.

3. Inventory of Good Practices to be shared during the cooperation[2]

Local Good Practices on Community Composting[3]	
Title:	
Location of the practice:	
Short summary:	**N/A**
Responsible organization:	

Local Good Practices on Individual Composting[4]	
Title: **Municipality of Söderhamn regulation on home composting**	
Location of the practice:	Municipality of Söderhamn
Short summary:	The Municipality is monitoring the total amount of home composted food waste and functioning as an advisor. To keep track on how much food waste is being composted within the household instead of being collected by the Municipality. Giving advice and knowledge on how to build and maintain the compost.
Responsible organization:	Municipality of Söderhamn

[2] If needed, more tables can be added; equally, those not needed can be deleted.
[3] Even if the Good Practices under this category where already shared in Thematic Seminar I in Ciudad Real, please insert them in the document so that it can be as much comprehensive as possible.
[4] Even if the Good Practices under this category where already shared in Thematic Seminar I in Ciudad Real, please insert them in the document so that it can be as much comprehensive as possible.

Local Good Practices on Centralized/Industrial Composting and Anaerobic Digestion[5]	
Title: **Food waste collection and anaerobic digestion system**	
Location of the practice:	Municipality of Söderhamn and Region of Gävleborg
Short summary:	The system which is in place for larger scale collection of sorted household food waste. Being recycled into Biogas and Biofertilizer at the regions anaerobic plant.
Responsible organization:	Söderhamn Nära and EkoGas

Local Good Practices on Prevention of Organic Waste	
Title: **Reduced food waste in schools**	
Location of the practice:	Municipality of Soderhamn and Sweden
Short summary:	The school organization must follow national guidelines (The Swedish Food Agency's advice - Good meals at school) regarding meals for children and students where good conditions are created at the meal, in order to thereby reduce food waste.
Responsible organization:	Municipality of Soderhamn (all Swedish municipalities)

Local Good Practices on Regulation for Composting	
Title: **New law on separation of food waste**	
Location of the practice:	Municipality of Söderhamn, Sweden nationwide
Short summary:	From January 1, 2024, a new law is put in place to make it mandatory for households and businesses to separate their food waste.
Responsible organization:	Söderhamn Nära, Municipality of Söderhamn

[5] Even if the Good Practices under this category where already shared in Thematic Seminar I in Ciudad Real, please insert them in the document so that it can be as much comprehensive as possible.

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Local Good Practices on Training of Master Composters and Engagement of Citizens and Organizations of the Rural Areas in Composting

Title:	
Location of the practice:	
Short summary:	**N/A**
Responsible organization:	

Local Good Practices on Good Use and Different Uses of Compost and Digestate-based Products

Title: **Biogas and biofertilizer**	
Location of the practice:	Region of Gävleborg
Short summary:	Food waste is converted into biogas through anaerobic digestion. The biogas is then used as vehicle gas. When producing biogas, a nutrient-rich rot residue is formed which is used as biofertilizer. The biofertilizer, which is then spread on the fields of farmers in our area, returns important nutrients to the soil where crops are to grow.
Responsible organization:	Ekogas

Local Good Practices on Smart Composting in Rural Areas

Title:	
Location of the practice:	
Short summary:	**N/A**
Responsible organization:	

Local Good Practices not fitting any of the previous topics

Title: **Analysis of waste**	
Location of the practice:	Organization of Söderhamn municipality
Short summary:	Analyses have been made of the garbage in various municipal operations to see how much food waste is thrown away as combustible waste.
Responsible organization:	Municipality of Soderhamn (environmental educators)

Title: I**nternal information to the municipal organization**	
Location of the practice:	Municipality of Söderhamn
Short summary:	Two environmental educators, who are employed by the municipality, have been out to the municipality's departments and managers and informed them about waste sorting. They have also sent out information digitally to all municipal employees.
Responsible organization:	Municipality of Soderhamn (environmental educators)

Title: **Composting in Preschool**	
Location of the practice:	Municipality of Soderhamn (Broberg Preschool)
Short summary:	A preschool in the municipality is composting their food waste trough hot composting and with bokashi buckets. This is done together with various cultivation projects, and the children are involved to introduce environmental thinking at an early age.
Responsible organization:	Municipality of Soderhamn (Broberg Preschool)

4. Inventory of sites, facilities, areas and instruments to be improved thanks to the cooperation

Local Resources to be improved thanks to the cooperation	
Name: **Production of biosoil**	
Type of resource	Potential product
Short description of the need for improvement:	Today, biofertilizer is produced from the liquid rotting residue that occurs during the production of biogas. The solid residue contains plastic that cannot be filtered out in its entirety. The mass is used as construction soil or is incinerated. An improvement would be to refine the soil through more steps of sieving to produce biosoil that can be sold to the public.
Responsible organization:	Ekogas

Local Resources to be improved thanks to the cooperation	
Name: **Education and spreading awareness**	
Type of resource	Plan
Short description of the need for improvement:	The purity of the organic waste needs to increase, and a greater proportion of food waste needs to be collected and not thrown away in combustible waste. To achieve these goals we need to inform, educate and make it easier to make it easier to do it right.
Responsible organization:	Municipality of Soderhamn / Söderhamn Nära

Local Resources to be improved thanks to the cooperation	
Name: **Small-scale composting for educational purposes**	
Type of resource	Potential composting site
Short description of the need for improvement:	The knowledge and awareness of composting needs to be improved. We have a cooperative that could run a small-scale cultivation and composting to employ and train unemployed people. It will have an educational purpose and also becomes part of the cultivation cycle.
Responsible organization:	Stenbacken housing and work cooperatives

5. Conclusions

The municipality of Söderhamn has a very good system in place for the larger scale collection of food waste, with an already high level of 81 % of the households participating. When the new law comes into effect on January 1, 2024, the brown bin for food waste is mandatory for all households and all businesses are required to separate their food waste.

The aim and challenge are to create the behavioral changes needed to be able to sort the household waste material correctly and get the biowaste as clean from plastic residue as possible. The result of this will be a higher amount of food waste being recycled into biogas and biofertilizer without increasing the actual total amount of food waste. It also increases the awareness of how much food are thrown away. Focus also needs to be put on information and education around the importance of the cleanliness of the sorted food waste, so that plastics are removed as much as possible.

Positive outcome so far

- The system is already in place and is now going to expand.
- A change in behavior has already been seen.
- Citizens more aware of how much food is thrown away.
- Less food waste is going in mixed household garbage and more into recycling.

Challenges to work further with

- Change of behavior
- To keep the food waste pure enough from plastic residue.
- Households need to get better at sorting.
- Finding a more efficient way of cleaning the material on site.
- Increase the collection through higher grade of correct separation, not through more food waste.

These aims are stated in the municipalities Cycle Plan which is the strategic document for sustainable waste disposal and resource utilization.

Further work needs to be done in regards of behavioral changes, awareness and education. Also, how the education can be brought into preschools and schools. We can gain a lot of knowledge from the partners in the CORE project within these areas.