



THEMATIC ANALYSIS
IN THE FIELD OF BIOWASTE IN
Brandenburg, Germany

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

Local Photo in line with the topic

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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 biogas¹.

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

Brandenburg has about 2.6 Mio. inhabitants and a surface of nearly 30.000 km². With an average population density of 87 inh./km² Brandenburg is one of the rural federal estates of Germany. The mean population density of Germany is 232 inh./km². Brandenburg is distributed in 18 counties (14 rural counties and 4 cities). There are 17 public waste management authorities (örE), responsible for the waste management, including collection and processing of the organic wastes.

The Waste Management Plan of Brandenburg sets the framework for waste. The requirements defined therein are to be obeyed in waste management. The Waste Management Authorities of the counties set a Waste Management Concept, which reflects the given framework and realizes the waste management according to the Waste Management Plan.

According to the Circular Economy Law (Kreislaufwirtschaftsgesetz KrWG), wastes including organic wastes have to be collected separately. In most of the areas in Brandenburg, the örEs offer containers for separate organic waste collection on voluntary basis. In three urban areas, the container for separate organic waste collection is obligatory, just in case of availability of individual composting on the property of the waste producer the container is non-obligatory. In two areas, there is no separate waste collection for organic waste. The ratio of citizens with a container for organic waste ranges from none (in the counties where no separate collection is conducted), to 6% (in the rural area of the county Ostprignitz-Ruppin) up to 91 % in the urban areas of Potsdam. Most of the örEs also provide containers for organic waste for the commercial sector. The commercial sector can also use other facilities, such as private composters, to dispose their organic wastes. The disposal of organic wastes from animal products from the commercial sector in facilities for common organic waste treatment is prohibited due to danger of epidemics, however, for such kind of wastes special treatment plants are available.

The containers for organic wastes are commonly emptied every two weeks, in areas with very low population density the emptying is conducted on request.

In all counties of Brandenburg there are sites where the private and commercial sector can bring their organic wastes e.g. to civic amenity sites or privately run composting plants. The abundance of sites to bring organic waste differs from county to county. While in some counties the distance to the next site is less than 15 km, in other counties the distance can exceed 30 km.

Some of the örE collect organic wastes from gardens and greeneries regularly. Therefore, special bags are distributed; commonly there is a fee for those bags. The civic amenity sites and the bags for organic waste of gardens and greeneries are particularly used during the vegetation period. After Christmas, the majority of the örE offer the collection of Christmas trees.

The costs for the separated collection is included in the waste fees, the costs for emptying the container of organic waste are due. There are different tariffs for the collection and disposal of organic waste among the örEs, commonly the costs for emptying of the organic waste container is less than for the one of municipal waste. An identification system (e.g. RFID-Transponder) is used to quantify the number of emptying of each container.

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Most private composting plants demand a fee for disposal, for the private sector bringing organic waste from greeneries to the public amenity sites is for free.

The average collection rate in Brandenburg of organic wastes is 27 kg/capita and year. This rate is the lowest of all Federal States of Germany, the average collection rate is 64 kg/capita and year (data from 2020). The statistic refers exclusively to the organic waste collected in the containers. Waste from greeneries brought to the collection sites add up to 61 kg/capita and year in Brandenburg. Overall, 88 kg/capita and year of organic wastes were collected in 2020, while it is 128 kg/capita and year in Germany.

The Ministry of Agriculture, Environment and Climate Protection (MLUK), responsible for the Waste Management Plan of Brandenburg, aims to increase the collection rate to 45 kg/capita in 2025 and to 54 kg/capita in 2029. In order to reach this goal, the MLUK promotes the introduction of the organic waste garbage can in all counties on voluntary basis for separate waste collection. Further, information campaigns of the örE shall raise the awareness for organic wastes separation.

Most of the collected organic waste is processed in composting plants, either private or public ones. Overall, in Brandenburg exist 71 composting plants.

However, the goal of the Waste Management Plan of Brandenburg is to gain energy of the organic waste in the first step by anaerobic digestion and to obtain a compost of good quality in a second step by composting the residues of anaerobic digestion for application as fertilizer in agri- and horticulture. There are nine private and two public anaerobic digestion plants in Brandenburg. The plants are sparsely distributed, in some counties there is no anaerobic digestion plant.

The capacity of the both types of waste treatment plants (composting and anaerobic digestion) is sufficient for the organic wastes in Brandenburg; however, regarding the objective to gain energy of the organic wastes, there is still a need to establish additional anaerobic digestion plants.

Commonly, the compost quality obtained in the aerobic and anaerobic treatment plants fulfill the requirements according to the Ordinance of Biowastes (Bioabfallverordnung) as well as further quality standards set by certification (e.g. by the association for compost, Gütegemeinschaft Kompost). Since energy costs and costs of fertilizers rose in the last years, the demand of compost drastically increased, however, in some areas there is a surplus in some areas of Brandenburg, therefore, the interconnection between producer and user of compost still has to be improved.

3. Inventory of Good Practices to be shared during the cooperation²

Local Good Practices on Community Composting³

Title:

Location of the practice:

Short summary:

Responsible organization:

Brandenburg.

There is no public Community Composting in the State of Brandenburg.

Local Good Practices on Individual Composting⁴

Title: Individual Composting Consultation

Location of the practice:

Short summary:

Brandenburg / Germany

In Brandenburg, the public waste authorities of the counties (örE) are obligated to consult citizens regarding waste management. This includes consultation for individual composting in order to obtain a compost of good quality, to decrease eutrophication, to prevent from unwanted animals populating the composting sites, to reduce climate gas emissions, and further.

Some of the örE refer to the abundant information guidelines published by the Environmental Agency of State of Germany (Umweltbundesamt, UBA) or the association for composting (e.g. Gütegemeinschaft Kompost e.V.), other örE publish own guidelines on their webpages or by distributing brochures. Besides brochures, the örE join special public events to inform citizens about proper composting.

Individual Composting is an obligatory precondition for exemption from the requirement of an organic waste garbage can in three urban areas. Individual composting is only accepted as an alternative if there is about 30 m² up 50 m² of garden area per household / person.

Responsible organization:

Ministry of Agriculture, Environment and Climate Protection of Brandenburg, public waste management authorities of the counties

² If needed, more tables can be added; equally, those not needed can be deleted.

³ Even if the Good Practices under this category were 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 were 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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Title: Low Emission Composting

Location of the practice: Brandenburg

Short summary:

For a low-emission design of the rotting processes of biowaste in composting plants with open heap composting and windrow composting, the Federal State of Brandenburg published recommendations for optimizing the four process stages of biowaste treatment:

- Storage and preparation of material,
- production of the rotting mixtures and preparation of the rotting body,
- monitoring and control of the rotting processes,
- packaging and storage of the sales products.

These recommendations serve as a guide and tool for life cycle assessment for the plant operation and as well as for internal and external monitoring of compost quality and emissions of composting process. They apply for both rotting in open and rotting in closed composting plants. By optimizing the process design, the release of climate-relevant gases can be reduced.

Responsible organization: State Office of Environment, LfU Brandenburg

Local Good Practices on Centralized/Industrial Composting and Anaerobic Digestion⁵

Title: Anaerobic Digestion; Organic Waste Treatment Plant in the Lausitz Region

Location of the practice: Brandenburg, Lausitz Region

Short summary:

The Waste Management Association Schwarze Elster (AEV) is responsible for collection, transport, recycling and disposal of wastes in the counties "Elbe-Elster" and "Oberspreewald-Lausitz", a rural area of 2,468 km² and about 182.000 inhabitants.

The AEV introduced the organic waste collection in 2016 as pilot study to evaluate organic waste disposal habits of citizens as well as to explore the quality of the waste. Meantime the former mechanical biological waste treatment plant was reconstructed for processing organic waste only; further, a biogas plant for electricity production was installed. In the year 2019 the garbage can for organic waste was introduced on voluntary basis, simultaneously a public information campaign of proper waste separation was conducted. In the end of 2021, the annual collection rate per capita of 37 kg exceeds the mean collection rate of Brandenburg of 27 kg. The collection rate is continuously rising. Together with the waste from greenery 8,126 Mg of organic waste were collected. The anaerobic digestion plant has

⁵ Even if the Good Practices under this category were 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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a capacity of 24,000 Mg per year, the capacity is also used by the adjacent city Cottbus to treat organic wastes. In the plant the collected organic waste is processed by anaerobic digestion. Thereby, about 180 kWh of electricity per Mg is produced. Afterwards, the organic waste is composted. The quality control during the whole treatment process guarantees a compost which can be used as fertilizer and planting substrate.

Responsible organization: Abfallentsorgungsverband Schwarze Elster

Local Good Practices on Prevention of Organic Waste

Title: Forum of Waste Prevention

Location of the practice: Brandenburg

Short summary:

The Forum of Waste Prevention is a consortium of stakeholders including the Ministry of Agriculture, Environment and Climate Protection, the Waste Management Authorities of the counties, representatives of commercial entrepreneurs, as well as citizens to network and work together on the prevention of waste.

The aim of waste prevention generally refers to mineral wastes, packaging waste and common municipal waste; the prevention of organic wastes from foods is included as well. Main player of prevention of organic waste is the food bank "Tafe!", a non-profit, charitable organization that sells and distributes food to people financially disadvantaged.

Responsible organization: Ministry of Agriculture, Environment and Climate Protection of Brandenburg

Local Good Practices on Regulation for Composting

Title: Legal Framework at federal and state level of Organic Waste Management

Location of the practice: Germany

Short summary:

At the federal level the waste management is regulated in several acts and ordinances

The Circular Economy Act (KrWG) promotes the conservation of natural resources and the sustainable management of wastes. According to the KrWG wastes should be prevented, reused, recycled or thermally used. The disposal of waste on landfills should be only the option when all other options

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are unsuitable; mostly due to public welfare, e.g. regarding contaminated wastes or when they are technically impossible or economically unreasonable. According to the KrWG the different waste fractions have to be collected separately, also the fraction of organic waste.

The Ordinance for Organic Wastes (BioAbfallV) defines the requirements and quality standards for organic waste to be used as fertilizer in agri- and horticulture.

The Ordinance of Fertilizer (DüV) regulates the application of fertilizers and compost in the agri- and horticulture.

The Ordinance of Mass Balance Flow (StoffBiV) defines the requirements for farms to evaluate in- and output of nutrients on their sites, including inputs of nutrients by compost application.

The Federal Immission Control Act (BImSchG) and the Federal Immission Control Ordinance (BImSchV) regulate the operation of organic waste treatment plants.

Responsible organization:

Federal Parliament of Germany; Federal Ministry of Environment, Nature Conservation, Nuclear Safety and Consumer Protection.

Title: Framework on state level for Organic Waste Treatment

Location of the practice:

Brandenburg

Short summary:

Brandenburg has implemented an ordinance on the disposal of compostable waste and of waste from greeneries and foods outside of approved waste disposal facilities by incineration and self-composting (Waste Composting and Incineration Ordinance - AbfKompVbrV)

The ordinance regulates the preconditions and the handling of both incineration and self-composting.

Thus, waste from foods and greenery may be disposed on the property by rotting, especially by its composting and incorporation into the soil. No significant odor shall be emitted in the process. Materials containing or contaminated with pollutants, such as oil and paint residues, materials treated with pesticides or wood preservatives, may not be included, insofar as they may have an adverse effect on the soil and groundwater. Decomposition must take place in such a way that no rodents are attracted. A permission is not required.

Regarding the burning of waste from greenery the ordinance differentiates according to the origin of the plant waste.

The burning of vegetable waste from households and gardens is generally prohibited.

Besides the burning of vegetable waste from agriculture, horticulture and landscaping or from the maintenance of traffic routes, bodies of water, parks, cemeteries or other green spaces outside waste disposal facilities is only permitted with the approval of the waste management authority of the counties.

Prerequisite is that recovery is not possible or not reasonable, in particular due to the nature of the waste, and that the well-being of the general public welfare is not impaired and no significant nuisance is caused to the neighbourhood.

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Forestry waste may be burned without a permit if this is necessary for reasons of forest protection or for reasons of cultural technology, if recovery is not possible or not reasonable and if the recreational function of the forest is not permanently impaired.

Responsible organization: Ministry of Agriculture, Environment and Climate Protection of Brandenburg

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

Title: Engagement of Organizations in Composting

Location of the practice:
Short summary:

Brandenburg

The Waste Management Authorities of the Counties (örE) as well as the Chamber of commerce are committed to consult the citizens regarding waste management according to the Circular Economy Act. Besides, there are two associations working on the best practice of composting and the best practice of the application of composts, which advise plant operators, farmers, government and citizens.

The örE and further organisations are engaged in the consultation in composting by brochures, activities in special public events, congresses, and further.

Responsible organization: Waste Management Authorities of the Counties, Gütegemeinschaft Kompost e.V., Förderverband Humus e.V.

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

Title: Framework for Compost and Organic Waste Application

Location of the practice:
Short summary:

Germany

In Germany compost and digestate-based organic materials are regarded as waste according to the Circular Economy Act until they are applied onto the sites. Thus, there are no processed organic wastes as products.

The use of compost and processed wastes from anaerobic digestion in agri- and horticulture is regulated in the Ordinance for Organic Wastes (BioAbfallV) as well as in the Ordinance of Fertilizer (DüV). Commonly the application of 20 Mg compost within three years is permitted, up to 30 Mg if the compost comply with the stricter threshold values for contaminants. The application up to 120 Mg compost is permitted for recultivation of devastated sites, greeneries or landscaping.

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The application of organic wastes from anaerobic digestion onto sites of horticulture is prohibited, just aerobically sanitized organic wastes are permitted to apply.

The application of organic waste to forestry land may only be carried out in justified exceptional cases with in agreement with the forestry authority. Besides contaminants, the BioAbfallV also defines threshold values for impurities, such as plastics in the compost.

Responsible organization: Federal Parliament of Germany; Federal Ministry of Environment, Nature Conservation, Nuclear Safety and Consumer Protection

Local Good Practices on Smart Composting in Rural Areas

Title:

Location of the practice: See above: low-emission design composting

Short summary:

Responsible organization:

Local Good Practices not fitting any of the previous topics

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

Local Resources that can be improved through the cooperation

Name:

Type of resource

- composting site
- installation
- product
- potential composting site
- potential installation
- potential product
- regulation
- programme
- plan
- other: Waste Management Plan of Brandenburg

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Short description of the need for improvement:

According to the German Circular Economy Act (KrWG), each federal state has to set up a Waste Management Plan (AWP) which includes the (i) objectives of waste avoidance, reuse and recycling, (ii) the measures of waste avoidance and waste management, (iii) the required measures to achieve the objects of (i), and (iv) setting the framework to secure adequate disposal facilities for private households and commerce. The AWP of Brandenburg is the obligatory framework for the waste management concepts of the Public Waste Management Authority of the counties or municipalities (örE). The AWP addresses to all kind of wastes including organic wastes from greeneries, food and food production or similar wastes regarding following aspects:

- separation and collection of organic waste: setting the framework for increase of separate collection
- disposal system: setting the framework for disposal systems (containers or brings systems)
- public relations: setting up an information system for composting and use of organic wastes
- disposal facilities: setting the framework for disposal facilities such as composting or fermentation treatment plants.

According to the KrWG the AWP has to be reviewed every six years regarding the waste statistics, the practical application of waste management, the state of the art and the achievement of the defined goals. The AWP has to be updated if necessary and adapted to the current situation.

The framework set for the Public Waste Management Authorities by the AWP results in a high level of the performance of waste management and a high level of the state of the art of the techniques applied for collection, separation and processing (aerobic composting, anaerobic digestion).

Due to the framework conditions defined in the AWP, moderate to high collection rates of organic waste from private households and proper processing and reuse of organic waste result are realized. However, up to now, the objectives of separate waste collection are not fully achieved yet and improvements of the AWP are necessary.

The lessons learnt in the project may result in an improvement of the AWP and its practical application. Since in the update-process of AWP all affected stakeholders are involved, the outcomes from the Interreg Project can be discussed directly and adapted to practical conditions. There is still a necessity to raise separation rates, create more local treatment facilities as well as to improve the quality and the acceptance of composts from organic waste and to increase the demand. The Interreg project and the involvement of stakeholders and external experts may directly result in increased capacity and an improvement in the performance of waste management systems, finding an adequate solution for the adaption of the AWP. Besides the prevention of waste occurrence, proper separation and processing of organic wastes mitigates the emissions of greenhouse gases.

Responsible organization:

Ministry of Agriculture, Environment and Climate Protection of Brandenburg

Local Resources to be improved thanks to the cooperation

Name:	
Type of resource	<ul style="list-style-type: none"> ▪ composting site ▪ installation ▪ product ▪ potential composting site ▪ potential installation ▪ potential product ▪ regulation ▪ programme ▪ plan ▪ other: <u>Waste Management Concepts of Waste Management Authorities of the Counties</u>
Short description of the need for improvement:	<p>According to the German Circular Economy Act (KrWG), the <u>Waste Management Authorities of the Counties</u> (örE) have to set up a Waste Management Concept (AWK), which includes the objectives of waste management defined in the Waste Management Plan of the federal State. The AWK of Brandenburg is the framework for the waste management in the counties and municipalities.</p> <p>The AWK is regularly adapted to actual conditions in the county as well as to the legal framework, here the Waste Management Plan of Brandenburg. The AWK includes also financial aspects for waste management (e.g. tariffs).</p> <p>The lessons learnt in the project may result in an improvement of the AWK and its practical application. Since the örE are involved as stakeholders in CORE, the outcomes from the Interreg Project can be discussed directly and adapted to practical conditions. There is still a necessity to raise separation rates in all counties, create more local treatment facilities as well as to improve the quality and the acceptance of composts from organic waste and to increase the demand. The Interreg project and the involvement of örE may directly result in increased capacity and an improvement in the performance of waste management systems, finding an adequate solution for the adaption of the AWK.</p>
Responsible organization:	<u>Waste Management Authorities of the Counties</u>

5. Conclusions

The performance of the waste management in Brandenburg is on a moderate to high level. The amount of separately collected organic waste was increased from 3 kg/capita and year (2013) up to 27 kg/capita and year (2020) by introducing containers for organic wastes in most counties in Brandenburg. Fourteen out of 18 of the counties offer a special container

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for organic waste, regularly collected; further the counties offer a centralized bring system and special plastic bags for waste from greeneries, which are regularly collected. Overall, the amount of organic waste collected in 2020 is 223,087 Mg; most of the waste originates from greeneries centrally collected in civic amenity sites or at private composting facilities. Of the collected organic waste the majority is composted, the minority is anaerobically processed to gain energy and composted afterwards.

Although the waste management is on a moderate to high level, the collection rates of organic waste are still to be improved to decrease the amount of solid municipal waste incinerated and to improve the recycling of nutrients. Several counties do not offer or oblige to have separate containers for organic wastes. Besides there are just few waste treatment plants for anaerobic digestion. Transport distances are long, decentralized smaller treatment facilities are missing. Public awareness for separating organic waste from common household waste still has to be improved by public information campaigns.