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THEMATIC ANALYSIS IN THE FIELD OF BIOWASTE IN **FLANDERS (Belgium)**

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

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1. Regional Context

Central in the state of play and evolution of Flemish biowaste policies (prevention, selective retrieval, treatment and use) is the Flemish Action Plan 'Actieplan Voedselverlies en Biomassareststromen circulair (2021-2025)'. This plan builds on the achievements and unresolved challenges of the Food Supply Chain Roadmap on Food Loss 2015-2020 and the Action Plan for the Sustainable Management of (Residual) Biomass Streams 2015-2020. A strong interaction exists between this action plan and other Flemish policy plans. Biomass and food is one of the five important themes within the Transition to the Circular Economy and the "Vision - in 2050 Flanders will be Circular". The actions in the plan also support the objectives and ambitions of the Flemish Energy and Climate Plan 2021-2030. The Plan also connects with the European policy framework by endorsing the 2018 European Bioeconomy Strategy and the EU Green Deal. Via this Action Plan Flanders focuses on evolving towards a (more) circular food system by prevention of organic/food losses and valorizing residual flows via material, nutrient and energy recuperation pathways.

More specifically this action plan is structured around three material cycles amongst which
- Cycle 1: food (waste and residual) flows from producer to consumer and
- Cycle 2: biomass residual flows such as garden waste.

To close loops in each of the 2 Action Plan's cycles 3 types of actions – 3 pillars following the materials hierarchy and the cascading principle – are set out:
- Pillar 1: More prevention, less loss,
- Pillar 2: Better sorting and collection, and
- Pillar 3: Higher value valorisation.

Thereby the Flemish action plan guides all stakeholders towards reducing, reusing and recycling organic waste flows. As to recycling the Flemish plan accentuates and highlights the most futureproof and high-grade valorisation cycles amongst which (pre-)digestion, (post-)composting, and use of the resulting end products in substrates or directly as fertiliser/soil improver are crucial valorisation pathways.

In Flanders the private individual can compost his/her vegetable, fruit and garden (vfg-)waste at home in the garden. More than 40% of the Flemish population composts food-/garden waste at home. Notwithstanding planning an intensified selective retrieval of vfg-waste in Flanders as of 2024 – through implementation of the Lokaal Materialenplan (2023-2030) – the target for 2025 is keeping up this level of '**home composting'**. During the last 25 years home composting has gained much more importance compared to '**neighborhood composting'**. Extensive studies have been carried out into the good and bad practices of such types of small scale composting (and of using the produced compost in the private gardens).
*On a rural scale 'farm composting' or '**on-farm composting'** has been carried to some degree by farmers over the last decades but without specific policy (licencing, quality control, use). Since 2021 a cooperative farm composting-model is launched for which a legislative framework is currently being established by the relevant stakeholders including Vlaco (cfr Cmartlife C12.3) to ensure the environmentally sound use of biomass waste streams from agricultural waste and residue streams (incl manure) and landscape management in on-farm composting.*

Another (main) pathway – as to treatment of vfg- and green waste and other biowastes in Flanders – is and remains '**professional composting'** ànd/or '**anaerobic digestion (AD)**' (=fermenting). All the composting and AD sites in Flanders are affiliated to Vlaco. As to the legal requirements for organic treatment of biowaste the main elements are these:

- BAT: The best ways to proceed with professional processing (including composting and AD) are described in VITO's Best Available Techniques (BAT). These BAT reports include an inventory of the measures that prevent or limit environmental nuisances resulting from the operation of composting and fermentation plants, as well as the BAT advice relating thereto.
- Quality Assurance:
    - VLAREM I determines which environmental permit is applicable; this is described in section 2.2.3 in annex 1.
    - VLAREM II describes in section 5.2.2.3 which specific sector conditions must be met regarding storage and composting.
    - In VLAREM III, chapter 3.14.4.1.1 you will find the general provisions for the biological treatment of waste.
    - In case biowaste treatment involves kitchen waste, or other animal by-products, one must also take into account the EU rules on animal by-products (Regulation 1069/2009 and EU 142/2011).
    - Trading compost or digestate implies complying with the Royal Decree on Trade in Fertilisers, Potting Soil and Soil Improvers (KB 28/1/2013) which requires an exemption ('ontheffing') for compost and digestate as these recycled resources are not on the list of permitted products. The exemption and authorized use are defined by the FOD legislation (=Federal agency on Health, Food Chain Safety and Environment) and monitored by the FAVV (=Federal Agency for Food Safety).
    - Further relevant legislations for (marketing end-products from) composting and anaerobic digestion are the Flemish Manure Decree and the restricted input lists (federal and regional) regarding allowed feedstocks for anaerobic digestion of biowaste/organic residual streams.
    - Monitoring previous legal requirements and certifying conformity with VLAREMA (for reaching the raw material-statute) is done through Vlaco's quality control – including checking inputs and self-control procedures as well as process and end product thresholds.
      If all the parameters above are fulfilled the organic treatment site will receive (yearly) from Vlaco a 'keuringsattest' (certificate of approval).
- Policy and legislation: Vlaco monitors and drives biowaste policies in Flanders for all stakeholders (professional and households)
- Research: Vlaco is involved in setting up research projects and campaigns aiming at increasing knowledge and marketability of end products compost and digestate. In this capacity Vlaco can share its experience with other CORE members and is equally interested in learning about potential insights and improvements from other stakeholders in the CORE consortium: in particular on a topic such as success factors of raising awareness on food loss prevention and separation of biowaste at home, and on a topic such as home composting in more rural areas as well as new insights on cooperative, small scale composting-models. These insights could be transposed to the Flemish reality.

Vlaco has 30 years of experience in this field.

2. Inventory of Good Practices to be shared during the cooperation[1]

Local Good Practices on Community Composting[2]	
Title: **Community Composting 't Compostjen**	
Location of the practice: Short summary: Responsible organization:	**Lokeren (B)** In the hamlet of Heiende (Lokeren, B), they have more than 20 years of experience on working around neighbourhood composting. 100 households bring their vegetable, fruit and garden waste together at agreed times. What is involved? Who participates? How many persons responsible? How does the government / (inter)municipality supports it? Every household has a garden and can compost at home, yet why do they prefer the neighbourhood composting? Where does the compost go to? What beneficial effects does it have for society? **Intermunicipal Waste Association IDM / 't Compostjen npo**
Title: **Community Composting Willebroek-Zuid**	
Location of the practice: Short summary: Responsible organization:	**Willebroek (B)** In the hamlet of Willebroek-Zuid (Willebroek, B) there is a Neighbourhood Composting Park where residents of the surrounding high-rise buildings can deliver vfg-waste in small quantities. One small, filled bucket can be brought per turn and only at 2 specific hours through the week. Is this sufficient? How do they approach management? What is done with the compost? **The Municipality of Willebroek**
Title: **Community Composting and Gardening Craenhofkens**	
Location of the practice: Short summary:	**Leopoldsburg (B)** This community garden contributes to ecological and biocycle thinking, it wants to spread the word and wants to take on an educational and connecting role. It wants to be an example in everything related to the biocycle 'at home'. All the leftovers from the vegetables are composted on site and their compost is used in the vegetable gardens. Branches also turn into wickerwork, grass is mulched with, chickens keep everything weed-free, cooking classes are held with the vegetables harvested there ... A perfectly closed loop at community garden level.

[1] If needed, more tables can be added; equally, those not needed can be deleted.

[2] 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.

Responsible organization:	**Craenhofkens npo**

Local Good Practices on Individual Composting[3]

Title: **Demonstration site on home composting and closed loop gardening Comité Jean Pain**

Location of the practice:	**Londerzeel (B)**
Short summary:	The Comité Jean Pain npo was founded back in 1978, with the aim of publicising the so-called "Methode Jean Pain", a French technique for converting coppice and prunings into valuable compost. The technique quickly found favour because, at that time, large quantities of prunings from parks and gardens were still massively burnt. This method was the basis of green composting in Flanders and beyond. Over the years, the visitors' centre of the Comité Jean Pain npo has become a meeting place for community gardeners, for those who like to experiment, for development helpers from all over the world (looking for solutions to drought, wind erosion ...). One can come to Comité Jean Pain for guided tours on compost, on breakdown organisms, on mulching, pruning wood management.... In short: all the recycling techniques about which Vlaco communicates.
Responsible organization:	**Comité Jean Pain npo i.a.w. Vlaco npo**

Title:	
Location of the practice:	
Short summary:	
Responsible organization:	

[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.

Local Good Practices on Centralized/Industrial Composting and Anaerobic Digestion[4]

Title: **Professional vfg-waste pre-digestion (with production of biogas, electricity and greenhouse-used CO2) followed by composting (with compost used as soil improver and growing media component)**	
Location of the practice: Short summary:	**Beerse (Merksplas, B)** A larger scale vfg-composter is that of IOK where ±60.000 tons of vfg-waste (including kitchen-waste) and green waste (from parks, public domain) are treated yearly: the selectively retrieved vfg-waste is shredded, stripped of impurities, heated and fed into a dry thermophilic anaerobic digester that yields digestate and biogas. Biogas is upgraded (membrane technology) for gas grid injection. IOK plans to capture the CO2 (of biogas upgrading) and use it as nutrient in greenhouses. The digestate is then mixed with green waste, and composted in a closed hall. This process lasts min. ±4 weeks with min. 3 turns, after which compost is sieved (16mm) from the overflow fraction (recirculating to shredder/start of composting process). To ensure hygienisation minimum temp/time-conditions are upheld and controlled. The sieved matter matures, including turning of the piles, outside for about 8 to 10 weeks until a high quality compost is obtained.
Responsible organization:	**Intermunicipal Waste Association IOK Afvalbeheer**

Title: **Professional vegetable-fruit-garden (vfg)-waste pre-digestion followed by composting**	
Location of the practice: Short summary:	**Schoonaarde (Dendermonde, B)** Another larger scale vfg-composter is that of Verko. The selectively retrieved vfg-waste is shredded, stripped of impurities, heated and fed into a dry thermophilic anaerobic digester that yields digestate and biogas / elecricity. The digestate is then further composted and sieved. To ensure hygienisation minimum temp/time-conditions are upheld and controlled. The composting site was recently completely renovated. More detail can only be given in a later CORE phase.
Responsible organization:	**Intermunicipal Waste Association Verko**

Title: **Professional green waste composting**	
Location of the practice: Short summary:	**Lochristi (B)** DiCa Gardens is a company with about 20 employees. For both private individuals and companies, they put their backs into many small and large new-build or renovation projects where gardens need to be (re)laid or maintained.

[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.

	Instead of bringing garden waste to a large-scale, professional composting company, DiCa gardens chose to collect and compost green waste (not vfg-waste) themselves under the name DJ Compost. They have the necessary permits to do so. Green compost can be purchased from them.
Responsible organization:	**DiCa-tuinen / DJ-compost**

Local Good Practices on Prevention of Organic Waste

Title: **Non-stop communication, on more than avoidance or home composting …**	
Location of the practice:	**Flanders (B)**
Short summary:	All biocycle information that is spread to the public is nicely dosed and structured. Flanders has 'accepted' that prevention is more than composting organic residues; you can also reduce the organic fraction in many other substantive ways (food loss reduce, using perennials, chicken keeping, several ways of lawn and braches management). The message must be kept warm and constantly repeated or given a fresh look.
Responsible organization:	**Vlaco npo, i.c.w. Intermunicipal Waste Associations and Municipalities**

Title: **The low-threshold communication**	
Location of the practice:	**Flanders (B)**
Short summary:	Our communication to citizens is neither pompous, complicated nor childish. We consciously choose this communication methods to reach as many citizens as possible. F.i. chicken campaigns, competitions, leisure events, training courses, workshops, articles in the waste newspapers … are an extension of that vision.
Responsible organization:	**Vlaco npo, i.c.w. Intermunicipal Waste Associations, Municipalities and OVAM (Flanders' Public Waste Agency**

Title:	
Location of the practice:	
Short summary:	
Responsible organization:	

Local Good Practices on Regulation for Composting

Title: **Quality assurance of compost – An 'average' example**	
Location of the practice: Short summary: Responsible organization:	**Flanders (B)** A lot of aspects are part of a good Quality Assurance system - Legal obligation; - Compost and digestate products; - Clear end-of-waste criteria; - Input / process / output / reasoned use; - Sampling and analysis under recognition; - Benchmarked with ECN-QAS; - Extra quality? → Vlaco-label Organic residue treatment facilities, process control and end product control. They came about because of the phased out landfilling of household waste. **Vlaco npo**

Title**: Organic household waste policy is more than VFG-waste collection alone**	
Location of the practice: Short summary: Responsible organization:	**Flanders (B)** Green waste from gardens can be brought to container parks, as well as prunings. Facilitating as much as possible and making it as easy as possible for citizens are essential elements to succeed. **Vlaco npo, i.a.w. Municipalities, Intermunicipal Waste Associations, Educational Centres, Schools and OVAM (Public Waste Agency of Flanders)**

Title:	
Location of the practice: Short summary: Responsible organization:	

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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: **Implementing a Home Composting scheme, with the help of Master Composters**	
Location of the practice:	**Flanders (B)**
Short summary:	To inform, Vlaco has a 'direct' and a 'indirect' approach. - The 'Direct approach' includes organizing courses, events.... That is done by Vlaco staff or Vlaco teachers. This approach includes also: developing educational material, leaflets and articles, focus on social media; facilitating the use of compost recipients. - The 'Indirect approach' consists of Master Composter (MC) training. Around 5.000 MCs have been trained the last 25 years; 2.000 are still active. MCs are volunteers that assist (inter)municipalities in promoting the BioCycle at Home, in their own municipality, in a team supported by a municipal officer. One of the reasons for the MC success is their credibility and hands-on experience; they use their own words, work in their own village, and can demonstrate things. MCs give personal or local advice. To do this properly, they use (Vlaco's) guidelines.
Responsible organization:	**Vlaco npo**

Title:	
Location of the practice:	
Short summary:	
Responsible organization:	

Title:	
Location of the practice:	
Short summary:	
Responsible organization:	

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

Title: **Compost and digestate processing, types and disposal**	
Location of the practice:	**Flanders (B)**
Short summary:	Compost is used in agriculture, horticulture, parks, gardens and incorporated into various other products. Currently, 16 different end products are available (garden compost, lawn compost, manure compost, dried and pelletised digestate …) Compost use is promoted through communication, supply in recycling parks and online info on points of sale.
Responsible organization:	**Vlaco npo, and all compost and digestate producers**

Title: **Giving a try to 'other' ways of professional processing of organic residues**	
Location of the practice:	**Flanders (B)**
Short summary:	Besides professional composting and digestion plants, there are a number of other techniques that could be used in rural areas. We are talking about farm composting, biochar production, making insulation blocks, among others.... We would also be happy to explain these more 'special' methodologies at a CORE meeting.
Responsible organization:	**Research Centres i.a.w. Vlaco npo**

Title:	
Location of the practice:	
Short summary:	
Responsible organization:	

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Local Good Practices on Smart Composting in Rural Areas

Title: **Subsidising of composting systems: a good asset in getting home composting accepted by citizens**.	
Location of the practice:	**Flanders (B)**
Short summary:	Communicating about composting will partly encourage people to start composting themselves, but in Flanders they needed an extra push. Subsidising a number of items that can simplify composting (such as containers, tools, etc.) proved to be an extra incentive.
Responsible organization:	**Vlaco npo and OVAM (Public Waste Agency of Flanders)**

Title: **Permanent research and testing of small-scale composting systems, compost and digestate based products and useful compost related gardening techniques**	
Location of the practice:	**Londerzeel (B) and other places**
Short summary:	When new products come on the market that have a link to the (home) composting process, we work with f.i. research institutes but also the Comité Jean Pain (see earlier) to carry out an (in situ) tests. Some of these are: - Composting – in situ!! - of moss, theebags and coffeepads, bioplastics… - Composting in big vs. small composting recipients - Composting in compost tumblers, balls … - Composting in several types of wormeries - Compost demo tests in agri- and horticultural sites and in gardens - Digestate derivate demo tests in agri- and horticultural sites and in gardens. In this way, we try to be able to answer questions from individuals and address problems if these products come onto the market.
Responsible organization:	**Vlaco npo**

Title: **Embedding of composting in schools**	
Location of the practice:	**Flanders (B)**
Short summary:	Practice combined with education; you can't start early enough and it does pay off. A small state of our school approach.
Responsible organization:	**Vlaco npo, i.a.w. Municipalities, Intermunicipal Waste Associations, Educational Centres ans Schools**

Local Good Practices not fitting any of the previous topics

Title: **The use of biowaste containers combined with differential tariffs**	
Location of the practice:	**Flanders (B)**
Short summary:	Almost everywhere in Flanders a differential tariff (DifTar) is applied for biowaste collection. The importance of uniformity, regarding rules on (treatment and collecting of) (VFG)-waste, regarding communication and regarding subsidizing, were important to get that tariff implemented. How it was done will be explained.
Responsible organization:	**The Intermunicipal Waste Associations**

Title: **The investing in Food Loss Prevention**	
Location of the practice:	**Flanders (B)**
Short summary:	When food is lost for human consumption for any reason, we talk about food loss. Research shows that one-third of all food produced for human consumption worldwide is lost. This happens throughout the food chain, from farmer to consumer. Every year, nearly 900,000 tons of edible food is lost in Flanders. A quarter of this is thrown away by households at home. The lion's share of this food waste ends up in the residual waste bag and in the incinerator. How we (intend to) address food loss in Flanders and what steps will be taken to do so will be explained. This item is not about composting per se, but about how, by handling food correctly, you can greatly reduce the amount of vfg waste (cost).
Responsible organization:	**Vlaco npo, i.a.w. Municipalities, Intermunicipal Waste Associations, Educational Centres, Schools and OVAM (Public Waste Agency of Flanders)**

Title:	
Location of the practice:	
Short summary:	
Responsible organization:	

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

Local Resources to be improved thanks to the cooperation	
Name: **Neighbourhood Composting**	
Type of resource	▪ **composting site** ▪ installation ▪ product ▪ **potential composting site** ▪ potential installation ▪ potential product ▪ regulation ▪ programme ▪ plan ▪ other: _____
Short description of the need for improvement:	**There are currently neighbourhood composts in Flanders, but their numbers are declining and it is not always easy to keep them active and to ensure that the quality of the processed material and of the final product are OK. Maybe other partners can inform us.**
Responsible organization:	**Vlaco npo**

Local Resources to be improved thanks to the cooperation	
Name: **'Smart' platforms / methods to encourage people to…**	
Type of resource	▪ composting site ▪ installation ▪ product ▪ potential composting site ▪ potential installation ▪ potential product ▪ regulation ▪ programme ▪ plan ▪ other: **digitalization**_____
Short description of the need for improvement:	**We feel the need for more digitisation and low-threshold, interactive online tools in home and neighbourhood composting and circular gardening. How can we address this need and how are other European regions responding to this problem?**
Responsible organization:	**Vlaco npo**

Local Resources to be improved thanks to the cooperation	
Name: **Small scale anaerobic digestion plants and pocket digestion**	
Type of resource	▪ composting site ▪ installation ▪ product ▪ potential composting site ▪ **potential installation** ▪ potential product ▪ regulation ▪ programme ▪ plan ▪ other: _____
Short description of the need for improvement:	**In Flanders, we are keeping our finger on the pulse regarding methodologies for processing organic residues at home. We are regularly asked how to digest organic residues at home. Vlaco has no experience with this, but wants to inform citizens correctly where and when necessary.**
Responsible organization:	**Vlaco npo**

Local Resources to be improved thanks to the cooperation	
Name: **Farm composting in Flanders**	
Type of resource	▪ composting site ▪ installation ▪ product ▪ potential composting site ▪ potential installation ▪ potential product ▪ **regulation** ▪ programme ▪ **plan** ▪ other: _____
Short description of the need for improvement:	**Flemish policy is pushing for Farrm composting to be introduced in order to, among other things, get more carbon into the soil in agricultural areas, help slow down the leaching of nitrogen, etc. A more extensive concept of Farm Composting is currently being investigated in Flanders. It is being checked what Farm composting preconditions might be in terms of input, process, output, regulation, contamination, transport, cost-benefit, positive and negative sampling, code of good practice... . We hope to get additional info from other partners here.**
Responsible organization:	**Vlaco npo, i.a.w. research centres like Ilvo, Inagro, VLM**

Local Resources to be improved thanks to the cooperation

Name:	
Type of resource	▪ composting site ▪ installation ▪ product ▪ potential composting site ▪ potential installation ▪ potential product ▪ regulation ▪ programme ▪ plan ▪ other: _____
Short description of the need for improvement:	
Responsible organization:	

4. Conclusions

In Flanders, we have quite a lot of experience in terms of biological cycles and processing organic residues. The large- and small-scale methodologies for this are well established and communication is coherent. We are happy to show our CORE partners exactly how we do it in Flanders; perhaps our approach can inspire other countries and regions in Europe.

Some examples are:

- the quality control/certification of compost and digestate production;
- the production of green energy when processing organic residues;
- raising awareness among citizens and communities about small-scale composting and waste treatment;
- ...

But there are clearly still a number of areas for improvement around which we want to work and improve in the coming years/decades. For this, we hope to find inspiration, knowledge and experience from the other CORE participants. For example:

- There are currently neighbourhood composting plants in Flanders, but their numbers are declining and it is not always easy to keep them active, and to ensure that the quality of the processed material and of the final product are OK. We hope that other partners can inform us.
- We feel the need for more digitisation and low-threshold, interactive online tools in home and neighbourhood composting and circular gardening. We saw some good examples in Spain (1st Study Visit). How can we address this need and how are other European regions responding to this problem? We hope to find more information about this issue.
- In Flanders, we are keeping our finger on the pulse regarding methodologies for processing organic residues at home. We are regularly asked how to digest organic residues at home. Vlaco has no experience with this, but wants to inform citizens correctly where and when necessary. We are curious how other core partners are dealing with this and what the future prospects are in the other regions.
- Flemish policy is 'pushing' for farm composting to be introduced in order to, among other things, get more carbon into the soil in agricultural areas, help slow down the leaching of nitrogen, etc. A more extensive concept of Farm Composting is currently being investigated in Flanders. It is being checked what Farm composting preconditions might be in terms of input, process, output, regulation, contamination, transport, cost-benefit, positive and negative sampling, code of good practice... . This seems to us to be an element that plays very much in rural regions. We hope to get additional info from other partners here.