### Water and Environment Support

in the ENI Southern Neighbourhood region



# RE-6-REG/ST/P2P

EU and Mediterranean policy context on waste management and circular economy

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## The big picture





## What is biowaste ?





- European definition: 'biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers and retail premises and comparable waste from food-processing plants'.
- Food waste includes "edible" food waste and "non-edible" food waste
- Other biodegradable waste : paper, wood, etc.







## Why is biowaste important?

Figure 6. Greenhouse gas emissions in the upstream supply chains of EU-27 household consumption domains in 2020 (million tonnes CO<sub>2</sub>e)



Source: EEA and European Topic Centre for Circular Economy and Resource Use, based on Exiobase v3.8.1.

- Biowaste is **34%** of municipal waste
- Food waste is about 60% of municipal biowaste
- Food is one of the main source of carbon emissions in Europe
- Significant impact of biowaste landfilling
- Great potential of compost and digestate to store carbon and improve the quality of soils









#### • Waste Framework Directive:

- Sorting obligation for biowaste on 01/01/2024
- Importance of biowaste for reaching the 65% recycling target for municipal waste by 2035
- Upcoming targets on food waste prevention?

### • Landfill Directive:

Importance of biowaste to reach the <10% municipal waste sent to landfilling by 2035





- The Industrial Emission Directive sets requirements for the operations of composting plants and anaerobic digestion plants above a certain capacity
- The Animal by-product Regulation lays rules for units treating biowaste including animal by-products, as well as on the use of their outputs







#### The EU Fertilising Products Regulation

- Compost and digestate among the categories of fertilising products
- Set criteria covering safety, quality and labelling to be marketed in the EU
- Possibility to follow national criteria if not exported
- Criteria on:
  - Content of hazardous substances and impurities
  - Input material (e.g. source separated biowaste)
  - Process: temperature, time, hygienisation for ABP
- Rules on accreditation and external controls





### Food waste in Europe





## 131 kg/cap/yr of food waste in Europe

### • Households: more than 50%

• A significant share is likely to be avoidable







### Focus on municipal biowaste



Source: ETC/WMGE compilation based on data provided by the European Environment Information and Observation Network (Eionet) through an EEA and European Topic Centre on Waste and Materials in a Green Economy (ETC/WMGE) survey (ETC/WMGE, 2019a), complemented with data from the European Reference Model on Municipal Waste (ETC/WMGE, 2019b) and Eurostat (2019).

- Bio-waste represents one of the largest fraction of municipal waste
- About 40% is collected separately (probably lower for food waste)





## Key drivers and enablers





#### • Main driver: constraint on residual waste

- Lack of treatment capacity
- Landfill/incineration taxes
- Local opposition against new incinerator/landfilling plant
- But also enablers:
  - Technical support
  - Financial incentives to reward/compensate investments and operational costs.







### Illustration: Province of Styria



- End of the 80s: landfill remediation policy
- 1/3 of landfilled waste was biowaste
- Introduction of:
  - Landfill tax
  - Strategy: "as centralised as required and as decentralised as possible"
  - Communication, selective collection, treatment units, studies and standards for the use on land



## Illustration: the Catalan landfill tax



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- Landfill tax introduced in 2004
- Half of the revenues to invest in biowaste facilities
- Other half given back to local authorities depending on the biowaste sorting performances
- Tax refund if:
  - Biowaste collection implemented
  - Coefficients according to the quality
- Impacts:
  - Generalisation of biowaste separation
  - Doubling the sorted quantities
  - Reduction of contamination (15% to 8.5%)





## The use of compost and digestate



- **Compost**: effective soil improver, regular applications impact:
  - Soil organic matter
  - Soil structure, water retention
  - Carbon storage
- **Digestate**: valuable biofertiliser containing nutrients, can help to reduce the use of chemical fertilisers







## The market for compost and digestate



- Quality standards: defined in EU Fertiliser, but different national/regional standards
  - Limits for contaminants and impurities
  - Limits on application doses
  - Depends on the type of soil, existing pollution, etc.
- Quality management systems:controlling the application of quality standards on input material, processes, compost/digestate control, application





### The importance of quality



- Quality of input material: significant impact on the final quality of compost/digestate
  - Conventional bags / compostable bags / no bags
  - Quality control during collection or when entering facility
- Pre-sorting operation:
  - Removal of (some) contamination
  - Limited effect
  - Removal of biowaste
- Quality of the process







## The role of decentralised treatment

- Different types:
  - Home-composting
  - On-site composting
  - Community composting
  - On-farm composting
  - Small-scale AD...
- Advantages:
  - Limited logistics
  - Flexibility for users
  - Social aspects

- In different contexts:
  - Remote areas (saving collection costs)
  - High-rise building (flexibility, reduction of collection)
  - Also in cities
- Challenges
  - Not necessarily adapted regulation
  - Some countries has set specific, lighter rules
  - Requires involvement of key local players





## The example of Besançon (France)





#### 64% of the

- Houses: home-composting or worm composting
  - Subsidised equipment
  - Free training sessions
- High-rise building with green areas: shared containers
  - Provide equipment and training
  - Master composters
  - Wooden chips provided during 2 years
- Otherwise: shared containers
  - Possibility to subscribe
  - Locked access
  - Managed by the local authority
  - Analysis and publication of quality
  - Free distribution of compost when ready



### Intermediary scale





### Local, short-circuits

- Different collection equipment, wooden chips to reduce collection frequencies
- Connection with local users







## Other valorisation routes for biowaste



- Many different innovative valorisation routes to be investigated
- Various degree of maturity / scale
- Challenges:
  - Technological (efficiency, working with heterogeneous feedstock...)
  - Economic balance
  - Legal aspects...





### Some challenges with biowaste management

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## Some useful resources



- BIOBEST fer pågy
- Biowaste collection for high-quality compost and digestate
- Case studies, guidelines
- Innovative valorisation routes for biowaste and wastewater sludge
- Focus on project development assistance
- Promising waste-based « alternative fertiliser »
- Connection with end-users







- Survey filled by experts from Lebanon, Israel, Morocco, Egypt, Jordan, and Tunisia
- Organic waste is a major fraction: from 40% to 70% of municipal waste
- Organic waste separation implemented in some areas and for some waste producers, but not widespread
- Some composting units, but in general lack of collection and treatment infrastructures.







#### Main challenges reported:

#### • Organisation/coordination:

- Lack of local governance
- Lack of coordination among the different stakeholders at the different levels
- Lack of coordination among the municipal waste players

#### • Economic aspects:

- No cost recovery
- No waste tax/fee
- Limited resources to invest in infrastructure and research





### Summary





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### Thank you for your attention





