



Twinning Project

PHARE RO/06/IB/EN/06

Romania - North Eastern Region

# Selection of composting system

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# Outline

- Scale of composting
- Home composting
- Decentralised: small-scale outdoor composting
- Centralised: Large-scale outdoor or indoor composting
- School composting

# What scale of composting?

**Large-scale, high-tech:**



**Small-scale, low-tech:**



**And anything in between ....**

## Small vs. Large - 1

| Small-scale   | Large-scale   |
|---|---|
| Need for low-tech solution  | Require high-tech solutions   |
| Much of the work can be done by manual labor                        | Need for mechanical equipment as work cannot be done by manual labor                |
| Low investment costs  | High investment costs   |
| Materials and equipment are simple and can be obtained locally      | Part of materials and equipment have to be imported                                 |
| Need for small land areas   | Need for large land areas that are scarce and expensive in cities                   |
| Compost can be used in the local community; less need for marketing | Marketing compost is essential to have revenues from the waste treatment technology |

## Small vs. Large - 2

| Small-scale   | Large-scale  |
|---|--|
| Small distances for transport   | Large distances for transport have to be covered both for waste and product transport  |
| Transport can be done by man driven vehicles  | Transport has to be done by motorized vehicles   |
| Operation are done by people who are normally mostly not skilled  | Operations have to be done by private companies with skilled personnel   |
| Private or community-based (local area) activity  | Activities typically organized by municipality and private companies   |
| People are involved in MSW management; as a result people are more aware and feel responsible; better opportunity to start source separation of waste | People are not actively involved in MSW management and unwilling to pay for the services; source separation will not be successful |

## Costs and benefits

Low-tech



High-tech

Increasing control of process: temperature, oxygen, mixing, reduction of emissions (odor, ammonia)

Increasing quality of product

Increasing costs (from €5/ton to €50/ton)

# Home composting

| Positive aspects  | Negative aspects  |
|---|---|
| Bin composting at home needs low investment costs.      | Lack of knowledge with citizens which waste to compost and how to compost |
| Bins can be made of locally available materials         | Quality of compost can be poor  |
| There are no costs for transport                        | The bin can easily attract insects, rodents and other scavenging animals  |
| Compost can be used in home gardens                     | The bin can spread annoying odours  |
| Bin composting can be done independently by individuals | Only applicable for low-rise buildings with gardens                       |
| Composting does not rely on public involvement          |   |

# Resources

- Home composting: It's second nature! Part I, I and III

# Decentralised composting

| Positive aspects   | Negative aspects   |
|--|--|
| Small-scale system needs low investment costs                                | The operation of the composting can be troublesome as no or insufficiently skilled personnel is available. |
| Operation can be done in windrows with manual labour                         | This can result in technical failure of the system (odours, low compost quality)                           |
| Compost can directly be used by the community in their gardens or by farmers | Lack of space in urban areas and possibly opposition from the neighbourhood                                |
| Low costs for transport of waste and compost                                 | You need an organization to organize and coordinate the composting activities                              |
| Decentralised composting rely less on public resources/involvement           |  |

# Resources

- Video BOKU
- Video Van Iersel

# Centralised composting

| Positive aspects   | Negative aspects   |
|--|--|
| Large-scale operation could profit from economies of scale | Large-scale operation needs large investment costs<br>Therefore need for involvement from municipalities, regional authorities, etc.                               |
| Skilled personal can be appointed and trained for the job  | Large-scale asks for mechanization of the process  |
|  | Transport is needed for transport of incoming waste and produced compost<br>Less appropriate in rural areas where large distances have to be covered for transport |
|  | Large land area is required  |
|  | Markets have to be developed for compost   |

# Resources

- Video GICOM
- Video Essent

## Approach - 1

- Introduction of home composting in rural areas
- Establishment of decentralised composting by farmers in urban areas
  - Start with market and restaurant waste
  - Source separation and composting of household waste
- No centralised composting at this moment

## Approach - 2

- Home composting
  - Municipality has to be involved to start public awareness campaigns, hand out composting bins, etc.
  - Example: Belgium (OVAM) Compost Masters program

### Decentralised composting

- Composting has to be organised by municipality, farmers, or other institutes
- Expertise is necessary for successful implementation

## Success factors for introduction of composting

- Have a proper waste characterization: type and amounts
- Be sure source separated biodegradable wastes are available
- Select technology which suits city/region best
- Involvement of local community is necessary (communication)
- Set-up demonstration (pilot) projects
- Committed management and operation of composting plant
- Monitoring of waste treatment and feed-back to public

# Consolidation of composting practices

- Expert centre for (biodegradable) waste management for
  - Capacity building
  - Disseminate knowledge
  - Organize workshops
  - Consultancy on design and implementation
  - Troubleshooting
  - Etc.



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