

Household composting, Sofia, Bulgaria



1. Summary

Country/Geographical Area	Bulgaria / Sofia Municipality
Level implementation	Regional
Scale	Roll out
Waste fraction / Specific Waste Type	Biowaste / Biowaste from households (kindergartens and schools)
Target Audience	Inhabitants of Sofia Municipality
Objective	Implementation of decentralised home and community composting in Sofia Municipality
Initiator/coordinator	Sofia Municipality
Other key actors involved	districts (18) + households + kindergartens (24) + schools (5)
Duration	since 2006 onwards
Number in Mapping report	67
Drafted by	Sofia Municipality (SM) 30/04/2011
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2. Context

Sofia Municipality is an urban centre made up of 24 districts with approximately 1,8 million inhabitants. The share of biodegradable waste in household waste is estimated at 52 % of the total weight. It is estimated that the territory of the municipality generates no less than 204.979 tonnes of biodegradable waste (incl. paper, cardboard, biodegradable packaging waste, green waste, garden waste, food waste, wood) or 170,82 kg/inh./year (data year 2007). The quantity of garden waste and food waste is estimated at no less than 103.229 tonnes per year or 86 kg/inh./year.

Centralised collection and treatment of household waste (including biodegradable waste) is handled by different subcontractors working at the territory of Sofia Municipality. To date, on the territory of Sofia Municipality, there are no systems for separate collection of this kind of waste. Kitchen waste is not collected separately and it is disposed of with the general waste, all of which is landfilled. Usually operators are collecting the generated household waste on a weekly basis, but sometimes twice a week depending on the rate of generation and in some districts they are collecting waste more frequently.

The separate collection of garden waste, biodegradable household waste and kitchen waste generated by restaurants, canteens, etc. is under discussion. Districts which are not covered by home composting could be involved in a separate collection of biodegradable household waste. As all districts are covered by a service for collection of waste, separate collection could give the possibility to divide the different waste streams in order to be treated at the centralized composting unit and to produce compost. It is expected that more than 120.000 tonnes/year could be collected and composted in a centralized composting unit.

Sofia Municipality (the public administration that manages almost all environmental and energy matters) is implementing **decentralized home or community composting**, which allows inhabitants who wish to do so to manage a fraction of their organic waste themselves in their garden. This practice is considered as waste prevention at the source of its generation. Promotion of home composting was implemented in 18 of 24 districts of Sofia Municipality, mostly in suburban districts because it is not applicable in all districts in the municipality.



Only inhabitants who live in houses with an outdoor space are engaged in home (family) composting. The population can compost kitchen waste, either by joining a community composting initiative or by composting in a closed container in their home (family composting). Sofia Municipality **offers financial incentives for the inhabitants** to purchase the composting equipment.

Compost needs to meet certain **quality standards to be used as fertilizer in a garden**. The standard is not established in the **Republic of Bulgaria**. It is possible to set such standard at the same time when the centralized composting unit will be constructed. This will stimulate not only home composting, but also will give a positive effect to the sale of compost from the centralized composting unit.

3. Strategy

Objectives

Promotion of centralised and decentralised composting in Sofia Municipality, including:

- Individual home composting of garden and kitchen waste
- Community composting
- Centralized composting will be introduced in the future

Still there are no targets for reducing the biodegradable waste at the territory of Sofia Municipality, as there are no national targets for treatment or reduction of household biodegradable waste. It is possible to introduce such targets when such legislative provisions exist at a national level.

Preconditions

- Assess the quantity of biodegradable waste fractions generated in different districts;
- Carry out the project (with a small number of participants) for home composting to measure the effectiveness and quantify the reduction potential;
- Identify priority action areas to maximise the impact (e.g. suburbs of Sofia Municipality first to give priority to household composting, then to community composting initiatives);
- Identify indicators to measure the progress of the project.

Procedure

Decentralised household composting is encouraged by the official staff working at the municipality. Inquiries are organized among the inhabitants of the municipality to assess the needs and possibilities of family composting in these households. Also information is placed on the official web site of Sofia Municipality. The public distribution of the composting bins is widely announced by the media working on the territory not only of Sofia Municipality, but also at a national level. Sofia Municipality has published a Guide with the aim to educate people on how to mix different biodegradable materials and substances in such a way to produce compost of good quality. All the steps are described and this information is distributed in a format of an informational composting wheel (see details in next section). Moreover, a compost master network of volunteers was set up to advise the population. In these ways the public is widely informed on how to make compost. Collection and centralised household composting is not yet implemented at Sofia Municipality.

Instruments

1) Information tools

For the implementation of this project for composting of household biodegradable waste many different **information tools** are used:



Public awareness campaigns - when the composting bins were distributed, the journalists from different media were invited to relay information about this activity to the inhabitants of Sofia. The information about home composting reaches the inhabitants at national level through the website of Sofia Municipality.

Practical guide for household composting in composting bins - a practical guide for composting of household biodegradable waste was elaborated, printed and distributed. This guide describes the process and conditions to prepare good compost, which once mature can be used as a natural fertilizer of soil.

Brochures - they describe the process of family composting of biodegradable waste and the importance of composting for the environment and reducing waste.

Composting wheel - this is an information material on composting in the form of a wheel; using this wheel stakeholders can find the quantity and proportions of biodegradable waste which should be mixed in a composting bin, to prepare mature compost useful as fertilizer in a garden. See the sample picture of composting wheel below.



2) Economic incentives

Composting plastic bins and mixing rods are provided by Sofia Municipality to the households for free, as well as the informational materials such as the guide and composting wheel.



3) Advisory services

A compost master network of volunteers was set up to advise the population.

4. Resources

Financial Resources

Staff costs:

90% of funding for the pilot project MOEW* (approx 28.121 EUR)

10% of funding for the pilot project SM* (approx 2.812 EUR)

100% of funding for project SM (approx 42.568 EUR)

100% of funding for project SM (approx 46.964 EUR)

*MOEW: Ministry of Environment and Water / SM: Sofia Municipality

The costs are for the successive years 2006 (funded by MOEW and SM), 2007 and 2009. Each year after 2009 the sum for home composting is 46.964 EUR per year.

External service costs: For the period from 2006 onwards for external services about 1.000 € was paid (communication materials, printing, distribution, etc.).

External resources:

Support provided by the Ministry of Environment and Water (about 28.121 EUR for the purchase of composting bins)

Human Resources

Internal paid:

20% of one full time equivalent in Sofia Municipality to supervise the delivery of composting bins, the preparation and drafting of information materials for the Guide about home composting, the composting wheel and their distribution to the inhabitants and to cover equipment needs of the compost master network.

External paid:

2,1 full time equivalents (for home composting bins delivered and paid by the Ministry of Environment and Water in 2006)

Unpaid volunteers: compost master network which consisted from 20 to 50 persons. For implementation of certain actions in Sofia Municipality volunteers from the NGO's were included. The maximum number of involved volunteers is not available.

Communication Tools

- Guide for home composting of biodegradable waste
- Inquiry for readiness and willingness (of households) to participate in home composting
- Informational wheel for home composting
- Information in the newspapers at national level
- Information on the official site of Sofia Municipality

Allocation of resources over time

Financial resources have been increased over time from 28.121 euro per year to 46.964 euro per year. These resources are examined each year and they are voted by the Sofia Municipal Council depending on the costs and on the planned activities.

5. Evaluation

Results

- Participation

Sofia Municipality prolongs the awareness raising activities for decentralised home composting in the second waste management program. Since 2006, approximately 250 composting bins have been distributed. Subsequent distributions reached 700 composting bins in 2009 and in 2010 additional 46 composting bins including for 24 kindergartens, 5 schools and 17 families. The inhabitants of the suburbs of Sofia Municipality are benefiting from this project, because all composting bins are distributed to them free of charge. The project was started in 2006 in 1 district and extended in 2010 to 18 of the 24 districts.

Public participation could be measured by counting the number of distributed Guides, brochures for the enquiry, information wheels for home composting, number of composting bins, etc.

Population participating in home composting (estimate): 0,08 % by 2006 and 2,5 % by 2010. The information campaign reached the whole population in Sofia Municipality and it could be estimated to 1,8 million inhabitants. The influence of the public awareness campaign is not assessed at a national level. An inquiry among the inhabitants was made before widely promoting household composting in suburban areas. Overall, at the territory of Sofia Municipality more than 80% of the population was informed about the practice of household composting.

- Avoided waste quantities

Current situation

Home composting of biodegradable waste (incl. garden and kitchen waste) is currently estimated at 18.000 kg/year (i.e. about 6 kg/inhabitant per year). Quantities of biodegradable waste generated by the inhabitants for 2010 are estimated at 180.000 tonnes (about 100 kg/inhabitant), based on data from the morphological analysis.

Encouraging decentralised composting diverts waste from preventable waste streams

- Landfilling of mixed household waste is estimated in 2006 at about 480.000 tonnes/year (i.e. 400 kg/inh).
- Family composting of household biodegradable waste is hard to assess, but the estimated reduced quantities are 18.000 kg /year (i.e. 6 kg/inh/y).



Further reduction target

It is possible to set targets for prevention of biodegradable waste after the potential for reduction of this kind of waste is assessed and when the changes in the national legislation on waste management are approved.

Impacts

- Avoided Costs

Household composting decreases the need for collection of this kind of waste, as well as biodegradable garden waste and kitchen waste.

Participating individuals avoid costs for collection of this type of waste and they can use mature compost instead of fertilizers. The overall sum of avoided costs is calculated as per year are composted 18.000 kg. The overall sum for avoided costs for waste activities is 558.000 Euro (31 euro for waste management activities per waste bin, excluding the price for transportation).

- Avoided CO₂ equivalents

CO₂ equivalents could be calculated by applying ratios to the avoided quantities of biodegradable waste. Depending on the waste treatment option replaced by decentralised composting (incineration, composting or others such as biomethanisation) and underlying assumptions the estimates of net impacts vary greatly from positive to negative (a series of calculations could be provided upon request).

Other environmental benefit: greater resource efficiency compared to the incineration, which is one of the options for Sofia Municipality future integral system for treatment of waste and landfilling.

Estimated quantity of avoided CO₂ equivalents is 22.500 m³ per year without calculations for transportation, because of lack of information.

Source used for calculation of CO₂ equivalents:

<http://www.greenteamsanjoaquin.com/calculator/calculator.html>

- Social Benefits

Household and community composting besides the environmental benefits, has financial, social (because it encourages neighbourly relations) and educational (notably on the issue of waste) advantages.

Continuation over time

Home composting is one of the successfully implemented practices on the territory of Sofia Municipality. This project will continue for a long period, because it is highly useful not only for the reduction of biodegradable household waste, but also as a benefit for the families which can use the mature compost as fertilizer in their gardens. This action uses financial resources which are increased over the years from 28.121 EUR in 2006 to 46.964 EUR and presently remain constant.

Difficulties encountered

It is difficult to convince people to participate in home composting. Also it is hard to convince inhabitants without a garden to compost their biodegradable waste. That is why a public awareness campaign was organized before implementation of home composting and only the suburb districts are involved into home composting.

Community compost units are needed. In the future, centralised composting will start when the composting facility is established and put into operation. But nowadays work with the generators of this type of waste is already started.

A national standard is needed to enable the sale of mature compost. When it is possible to sell the final product - mature compost - most of the people which produce big amounts of compost will participate actively in this process, because they can earn money from that activity. This

will be convenient also for the centralised composting unit. A standard for mature compost is undergoing the acceptance at national level - composition, structure, presence of heavy metals, etc.

This action requires substantial and sustained financial support from Sofia Municipality or from another financial instrument.

The promotion of suburban household composting could contradict other potential environmental priorities if there is an intention for centralized composting or another type of treatment of this kind of waste, for example Mechanical biological treatment (MBT), etc.

Monitoring System

It is very useful to have indicators in place to enable and justify the continuation of the project. The enquiry which made the assessment of the willingness of the stakeholders to participate in household composting was considered very useful. The results from the enquiry were presented on the official website of Sofia Municipality.

The majority of these data are based on surveys and are incomplete due to the lack of an exhaustive inventory (e.g. local activities of composting experts, number of community composting, etc.)

The number of households actually composting can be difficult to determine as some households may engage in home composting without using the bin offered by the municipality (in a pile or a home-made unit) and may thus not be counted. Other household who have the bin may abandon its use.

General issues with data (uncertainties, lack...): uncertainties based on the survey or on the quantities of waste, because biodegradable waste is reduced not only due to the home composting, but also other reasons such as financial and economic crisis, fluctuations in the amount of organic waste per inhabitant depending on the seasons, consumption of vegetables and fruits,...

6. Lessons learnt & recommendations

Opportunities & Challenges

It is necessary to provide inhabitants with information about composting techniques and benefits of such activity. It is very important to keep in mind the key role of stakeholders in home composting and to motivate them to participate in home composting. After the implementation of home composting, it is necessary to maintain it and keep organizing public awareness campaigns. There is a need to prepare an assessment of composting potential and to introduce targets for prevention of waste, as well as methods and applicable indicators for monitoring home composting activities. To improve the quantity and quality of composted biodegradable waste it is indispensable to work with the stakeholders involved.



It is possible that by the time the centralized composting facility will be constructed a national standard and criteria for mature compost will have been adopted. This would stimulate not only home composting, but also will give a positive effect to the sale of compost from centralized composting facility.

Key factors of success

Timing of the campaign: start composting activities in summer time (it will not work in wintertime).

Recommended improvements/adaptations

To reach households that do not have a garden, worm composting that takes less space and which can be carried out indoors or on a balcony could be promoted.

Recommended indicators and monitoring

- share of compostable waste in household waste (based on waste bin/morphological analysis)
- number of waste bins distributed
- number/share of households who participate actively
- number of 'compost masters' trained
- number of information materials distributed
- geographical analysis: where do the people live who participate (social and neighbour context)

7. Comparison with similar actions

In different location/context

Promotion of decentralised composting in Brussels (Pre-waste factsheet 21)

- Individual garden composting of garden and kitchen waste
- Individual vermicomposting (indoor composting of kitchen waste with worms)
- Community composting

The target of the 2010 Waste plan of Brussels is to reduce garden waste by 5 kg/inhab/year by 2013 and by 12kg/inhab/year (12.000 tonnes) by 2020 compared to 2005.

This involves maintaining a compost master network, providing information tools and supporting community composting projects.

Composting: Learn a Lesson from Besançon

A new experiment in six schools in the French city of Besançon is set to compost the considerable amount of bio-waste generated by their cafeterias: each week, Besançon's 61 school cafeterias produce 2 tonnes of compostable waste.

More info : www.prewaste.eu/news-and-events/item/325-composting-learn-a-lesson-from-besancon.html