

Integrated waste management strategies

In a nutshell

Summary overview							
<p>It is BEMP to develop and implement an integrated waste management strategy that considers:</p> <ul style="list-style-type: none">• the current and future expected trends of waste streams;• the waste hierarchy[1], prioritising measures according to the hierarchy (firstly waste prevention, secondly preparation for reuse, etc.);• the availability and capacity of nearby waste sorting/treatment facilities;• the current environmental attitudes and perceptions of residents;• any other specific condition affecting waste management (e.g. the significant presence of tourists/commuters, specific economic activities, climate). <p>The development of a waste management strategy requires knowledge of the quantity and quality of each major waste stream through an appropriate data monitoring approach and a sound evaluation of waste management options. This may require, in some cases, the use of a life-cycle assessment (LCA) to identify options associated with the best environmental performance (see BEMP 3.3.2), which may sometimes depart from the waste hierarchy.</p>							
Waste management area							
Cross-cutting	MSW - strategy	MSW - prevention	MSW - collection	MSW - EPR	MSW - treatment	CDW	HCW
Applicability							
<p>This BEMP is primarily targeted to waste authorities with control, or at least significant influence over, waste management strategy at the local or regional level – primarily local authorities. The waste authority may need to outsource aspects of strategic planning where particular specialist expertise, such as analytical data skills and knowledge of waste treatment processing, are required.</p>							
Specific environmental performance indicators							
<ul style="list-style-type: none">• Overall targets for the improvement of the waste management system (e.g. based on the indicators defined in this report) are in place (y/n).• Specific targets for waste prevention and reuse are in place (y/n).							
Benchmark of excellence							

- An integrated waste management strategy that includes long-term (i.e. 10–20 years) and short-term (i.e. 1–5 years) overall targets for the improvement of the performance of the waste management system is in place and regularly reviewed (at least every 3 years).

[1] The waste hierarchy consists of the following steps: waste prevention, preparation for reuse, recycling, recovery and disposal

Description

Waste management deals with a considerable number of different waste streams, including MSW, but also various hazardous wastes, construction and demolition waste and healthcare waste, and a multitude of processes.

For the development of an integrated local waste management strategy, the local authority and waste management company need to carry out a detailed assessment of the current situation of waste generation and collection in the territory, evaluate which options for the collection and treatment of waste are available, what is the current environmental level of education and perception of residents and identify the specificities (e.g. presence of tourists, prevalence of specific economic activities) which influence the local waste management system.

A key starting point for the development of a waste management strategy for MSW (the approach would also be the same for CDW and healthcare waste) is to monitor the current situation of the waste management system and to calculate, for the total municipal solid waste and for its different fractions available, the common environmental performance indicators and the spatial density of the waste generation (e.g. tonne/km²) in the territory. By doing so, a detailed picture of the current waste generation, the capacity of the system to capture (any) specific recyclable streams and the quality of the streams collected separately can be evaluated.

Based on the assessment of the existing waste stream quantities and qualities, the waste strategy can define:

- the targets for waste prevention/reuse/recycling/recovery for the different waste streams;
- the most environmentally friendly disposal route for residual waste;
- the mix of techniques/instruments/approaches to achieve the targets.

During the development of the integrated waste management strategy, technical and economic instruments as well as psychological aspects of citizens' behaviour, such as environmental awareness, have to be taken into consideration. The integrated waste management strategy has to follow the waste hierarchy (Figure 1), prioritising prevention, minimisation and reuse as the most sustainable options for waste management, followed by recycling, with energy recovery and disposal as the least sustainable options. Based on this, a key decision when establishing a waste management strategy is the identification of the trade-offs between high recycling rates (normally leading to low-quality recycling) and lower recycling rates but with high-quality recycling. This choice is based on local conditions, namely current recycling levels, urban or rural environment, environmental consciousness of citizens, availability and capacity of nearby recycling plants and incinerators, market value of recyclables and incineration and landfill gate fees. In general, life-cycle thinking can support choices, selecting the most environmentally friendly and sustainable options for waste recycling and mixed waste treatment. In some cases, a detailed evaluation of alternatives through a life-cycle assessment (LCA) may be required to identify options with the best environmental profile (see BEMP on LCA of waste management options). LCA can lead to choices which may depart from the waste hierarchy, since local conditions can improve or worsen the environmental performance of the different stages of the waste hierarchy (e.g. long transport distances to civic amenity sites which leads to higher GHG emissions compared to a close-by recycling plant).



Figure 1. Waste hierarchy according to the Waste Framework Directive (2008/98/EC)

The development of the waste management strategy for municipal solid waste can rely on a number of instruments and approaches, such as the [analysis of the estimated costs and revenues for the waste management](#), the [economic tools suitable for charging residents](#), [performance-based contracts](#) and [awareness-raising campaigns](#).

At local level, the possibilities to implement waste prevention measures are limited; however best practices for [local waste prevention programmes](#) and [reuse schemes](#) were identified, and these can support shaping the strategy for the waste prevention and minimisation steps.

In the same way, the [best practice on waste collection strategy](#) provides an in-depth overview of the different options for the collection systems that can be adopted in the waste management strategy, presenting also their advantages and disadvantages. Once the strategy has defined the types and quantities of materials suitable for collection and recycling the system for their collection needs to be defined.

Finally, [Link to other relevant reference documents for best practices](#) provides guidance for the development and implementation of a waste management strategy, also for the waste management phases with lower priority in the waste hierarchy pyramid (i.e. waste treatment and disposal facilities, recycling and recovery operations).

When establishing a waste management strategy, long-term planning is required, as the implementation of the strategy can only be achieved step by step, i.e. waste stream by waste stream. Therefore, prioritisation is needed and the starting point should target the most relevant waste streams, where the relevance takes into account quantity and hazard. Short-term and long-term targets are a useful tool to monitor progress and they can be calculated using the indicators employed for the systematic monitoring of the waste management system.

Environmental benefits

The implementation of an integrated waste management strategy is normally associated with environmental benefits, specifically with the reduction of mixed waste and a significant increase in the percentage of waste reduction, reuse and recycling.

Side effects

There are no relevant environmental cross-media effects when developing a waste management strategy.

Applicability

This BEMP is primarily targeted to waste authorities with control, or at least significant influence over, waste management strategy at the local or regional level – primarily local authorities. The waste authority may need to outsource aspects of strategic planning where particular specialist expertise, such as analytical data skills and knowledge of waste treatment processing, are required. Once the strategy has been developed, the waste management company needs to fully engage its staff in order to ensure its effectiveness.

Economics

When developing a systematic waste management strategy for the first time, it may be appropriate to ask for external assistance from experts. At least larger municipalities and cities, and certainly counties and regions, usually have their own in-house experts.

There is no information available concerning the costs for the drafting of a waste management strategy for the first time and its continuous development. The initial costs may be recovered by revenues from recyclables or from optimising the different activities and operations.

Driving forces for implementation

The drawing up and further development of waste management strategies is usually driven by the need to move towards a more sustainable society. Currently, a lot of attention at national and European level has been focused on circular economy, and a waste management strategy which promotes prevention, reuse and recycling is well aligned with this circular view of the economy and society.

Reference organisations

The county of Aschaffenburg (Germany) is an excellent example, including with respect to the annually published waste management report (Aschaffenburg, 2014). The Val di Non (Italy) is another good example of waste management strategy and reporting of data (Comunità Val di Non, 2017). The counties of Rems-Murr (Germany) and Breisgau-Hochschwarzwald (Germany) and the cities of Besançon (France), Vienna (City of Vienna, 2012) and Munich (Schmidt, 2013) are good references too.

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