



Waste Management in Vienna



City of  Vienna
Vienna is special.



Green facade of the MA 48 head office

Full-cycle environmentally friendly & sustainable recycling and disposal

Vienna's municipal waste management system meets its tasks in compliance with superlative environmental and quality standards. A smoothly functioning waste management scheme needs long-term planning, waste avoidance strategies, an attractive collection system, eco-friendly waste treatment, but also environmental awareness training for children and adults. All these measures serve the goal of maintaining Vienna's outstanding quality of life.

Legal basis

Within the European Union, the objectives and principles of waste management reflect the following hierarchy:

1. Waste avoidance
2. Processing of waste for recycling
3. Recycling
4. Other forms of waste utilisation, e.g. for power generation
5. Waste disposal via landfilling

The Federal Waste Management Act provides the legal framework for waste management in Austria. It regulates all matters pertaining to hazardous waste as well as all issues requiring uniform federal provisions. The Waste Management Act is complemented and fleshed out by ordinances and decrees.

As a consequence of the division of competencies between the Federal Republic and the nine federal provinces, the latter formulated their own waste management laws dealing with non-hazardous waste management at the provincial level.

Thus the Waste Management Act for Vienna stipulates the compulsory collection of residual waste and recyclables for the entire municipal territory. Moreover, the Act defines the calculation basis for waste collection and disposal fees, the prerequisites for the construction of waste treatment and utilisation facilities as well as the preconditions for the formulation of Waste Management Plans and Waste Avoidance Programmes for Vienna. The development of waste management concepts for construction sites and events is likewise organised, with an emphasis on waste avoidance.

Waste Management Plan and Waste Avoidance Programme for Vienna

Whenever needed and at least every six years, Municipal Department 48 (MA 48) develops a Waste Management Plan on behalf of the Provincial Government of Vienna. This strategic plan inter alia comprises the following issues:

- Status quo of waste management, in particular regarding the type and quantity of waste produced in Vienna

- Waste management forecasts and related necessary measures
- Demand, status quo and operation of treatment plants and landfills
- Number of persons or facilities required for waste consultancy services

This concept also determines planning horizons, which must not contradict those of the Federal Waste Management Plan.

Whenever needed and at least every six years, MA 48 also drafts a Waste Avoidance Programme on behalf of the Provincial Government of Vienna. This programme inter alia addresses the following aspects:

- Objectives of waste avoidance measures
- Description of existing waste avoidance measures
- Evaluation of usefulness of the measures taken
- Evaluation standards for supervising the measures taken

Strategic environmental impact assessment

Since 1999 (seven years before environmental assessments were embodied in law), Vienna's Waste Management Plans and Waste Avoidance Programmes are successfully developed with the help of strategic environmental impact assessment. Since 2006, Vienna's Waste Management Plans must be subjected to such an assessment if



Waste logistics centre



Old but still good – collection of used articles for the bazaar

significant consequences may be expected from planned waste management measures. This procedure makes it possible to evaluate and take account of any related potential environmental impact already at an early stage of planning. Other characteristics of environmental impact assessment are the mandatory involvement of the general public and the obligatory consideration of the findings of such consultations. The results of the environmental impact assessment are presented and published in an environmental report. During the term of a Waste Management Plan (six years at most), any significant effects on the environment resulting from the implementation of the plan must be regularly monitored; where needed, suitable countermeasures need to be taken as well.

Waste avoidance

Waste avoidance and sparing resource use are given top priority in Vienna. With its numerous projects under the initiative “Naturally Less Waste”, the City of Vienna is setting a signal to encourage the Viennese population to use products in an ecologically responsible manner. These projects take account of the entire life cycle from production and consumption to disposal. Projects for eco-compatible event organisation or for the prioritisation of repair services over simple discarding are implemented to support these holistic principles. Moreover, MA 48 recovers attractive discarded items from

its waste collection centres and sells these at the MA 48 bazaar. Awareness creation and sensitisation, too, are key focuses of the activities pursued by the Vienna City Administration. The City of Vienna's very own "ÖkoKauf Wien" (Eco-Buy Vienna) project is a good example of this approach, as all public procurement measures reflect eco-friendly criteria. In November 2012, the Waste Avoidance Programme for the 2013-2018 period was adopted by the Vienna City Government.

Collection of waste and recyclables

Every year, the Austrian capital produces roughly one million tonnes of waste; more than 350,000 tonnes of this volume are collected separately. In fact, Vienna introduced separate waste collection already in the early 1980s. By 1991, this system covered all of Vienna. Over the years, collection methods were constantly optimised and adapted to the ever-changing frame conditions. Thus Vienna's population today may rely on over 200,000 containers for the separate collection of recyclables. In addition, 19 waste collection centres and 112 mobile and stationary collection points for hazardous waste are likewise available.

Every year, the Viennese collect around 600,000 tonnes of residual and bulky waste as well as over 350,000 tonnes of recyclables and biogenic waste. If this annual volume is extra-

polated per inhabitant, this results in a specific volume of approx. 600 kilograms per capita and year. Of this quantity, 300 kilograms are residual and bulky waste, while 200 kilograms are recyclables and hazardous waste. Another 100 kilograms per capita and year arise in the form of domestic-type hospital waste, street sweepings or construction waste. It is the objective of separate recyclable collection to return this fraction to the production cycle as secondary raw material. Residual and bulky waste is collected for use in energy generation. In addition to the demands by the waste recycling and utilisation industry, measures for

waste avoidance, too, influence the collection system applied: thus waste collection centres also accept functioning used appliances and similar, which are then sold at nominal prices at the MA 48 bazaar. Vienna's toy collection campaign with its own specially designed containers, which was introduced in 2006, is another example of a collection scheme developed to prolong the useful life of products.

Waste treatment

The City of Vienna is responsible for the entire chain of waste management from collection to treatment and, finally, disposal. By operating



Waste treatment plant



MVA Pfaffenau and Biogas Wien



Rautenweg landfill

its own waste treatment plants, the City of Vienna complies with the principles of short distances and autonomous disposal, hence making a valuable contribution to environmental protection.

Biogenic waste is fully treated on Vienna's municipal territory; the Viennese population benefits from all results of waste processing. Thus around 100,000 tonnes of garden trimmings and similar waste are annually taken to the Lobau composting plant, where this material is transformed into high-grade compost.

Approx. 22,000 tonnes of kitchen scraps are converted into biogas at the "Biogas Wien" plant and then fed as energy into the city's district-heating system. Roughly 600,000 tonnes of residual and bulky waste – i.e. about 60% of all waste annually produced in Vienna – are subjected to thermal treatment at one of four waste incineration plants (MVA), which co-generate energy for district heating or cooling and electricity.

To bridge seasonal fluctuations in waste production and potential capacity bottlenecks of waste incineration plants, the Pfaffenau waste logistics centre for the pre-treatment and interim storage of residual waste in bales took up operation in 2013. Thus reliable waste disposal is guaranteed for the metropolis

even in case of downtimes due to repairs or technical glitches at incineration plants.

Every year, approx. 250,000 tonnes of waste are delivered to the “Rinter Tent” waste treatment plant operated by MA 48. In addition to dealing with recyclables, electrical appliances and hazardous waste, the facility’s treatment unit for incineration residues compacts approx. 200,000 tonnes of slag and ash from Vienna’s waste incineration plants into slag-ash concrete. The stabilised incineration residues are then disposed of at the Rautenweg landfill, which is equally operated by the City of Vienna. Even methane-containing landfill gas (from pre-2009 landfilling) is extracted and supplies electricity to around 2,200 Viennese households.

Financing

The financing of the collection and treatment of all municipal waste is based on the residual waste fraction in order to create an incentive for separate waste collection. Thus property owners are charged a quarterly waste management fee calculated from the volume of the residual waste containers installed on their properties and the frequency of bin emptying. This residual waste management fee finances the collection and treatment of all waste in Vienna (with the exception of packaging material, used electrical appliances and batteries).

The more material is collected separately, the smaller the container volume that needs to be installed, and the lower the cost.

The minimum container capacity for residual waste is 120 litres; for hygienic reasons, every residual waste container must be emptied at least once a week. The collection and treatment of packaging material, used electrical appliances and batteries are financed via manufacturers and importers according to the principle of manufacturer’s responsibility.

Environmental awareness

Even if a comparison with other metropolises shows that Vienna is already in an international top position regarding separate collection, there is still some need to stimulate greater awareness for waste avoidance among the population and to enhance civic participation in separate collection in order to increase the recycling quota and attain a higher volume of separately collected hazardous waste.

This calls for massive efforts in the field of municipal services and communication with all age groups. The PR work of MA 48 regularly targets different groups through a great variety of measures in order to sustainably nurture and further encourage eco-conscious behaviour for the benefit of waste management and to meet the needs of the population.

Waste consultancy comprises both traditional and modern means of communication, e.g. direct contact via the waste hotline, information stands at various events, the joint Spring Cleaning push, “waste championships” (a competition for primary schools), lessons and workshops at schools, a special programme for kindergartens or the dissemination of information via campaigns, folders, websites, Facebook and a special waste disposal app.

Relevance of Vienna’s municipal waste management system for the climate

Climate protection is another issue of great importance for municipal waste management. In recent years, numerous waste-related measures implemented in Vienna have been contributing to a reduction of climate-relevant emissions. The thematic study “Klimarelevanz der kommunalen Wiener Abfallwirtschaft” (2011/12, compiled on behalf of the City of Vienna) documents the multifaceted nature and great success of Vienna’s climate protection measures.

Vienna’s waste management system generates 130,000 tonnes of CO₂ credits

While waste treatment in 2010 triggered the generation of 420,000 tonnes of CO₂ equivalents, the emission volume avoided totalled 550,000 tonnes. This was made possible by the generation of district heat from residual waste

incineration, the fermentation of kitchen scraps at Vienna's biogas plant, waste separation and recycling activities as well as the use of compost in organic farming. This resulted in net savings to the amount of 130,000 tonnes of CO₂ equivalents in 2010. This volume corresponds to the emissions of roughly 60,000 private cars travelling 15,000 kilometres per year.

In 2020, further efficiency increases in municipal waste management due to planned

measures and improvements will even lead to savings of 270,000 tonnes of CO₂ equivalents or thereabouts. This means that the future CO₂ production thus avoided will be by 270,000 tonnes higher than the actual CO₂ release into the environment.

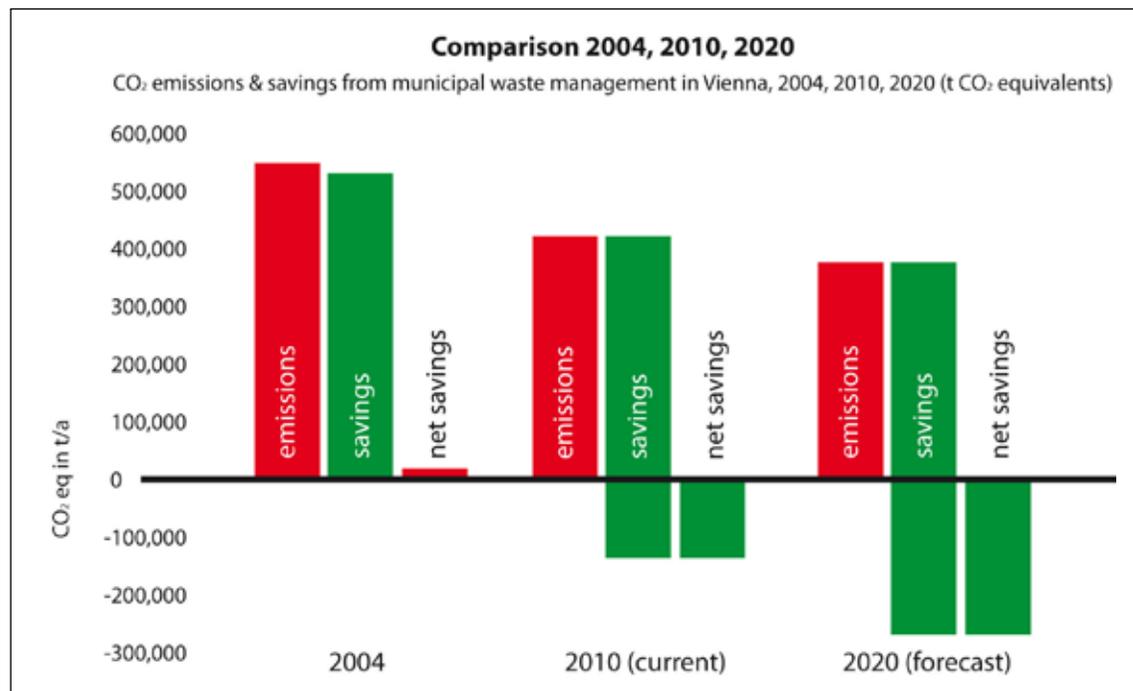
Separate waste collection cuts down on 75,000 tonnes of CO₂ equivalents

Every year, Vienna's citizens collect more than 350,000 tonnes of recyclables – a good

turnout for a metropolis. However, this volume could be evidently increased since there are still quantities of plastic bottles, cans or glass bottles to be found in residual waste. On the one hand, this means a loss of valuable secondary raw materials for the recycling industry; on the other hand, the energy input for the manufacturing of products from primary raw materials is increased several times over. Separate collection makes it possible to reuse valuable raw materials by substituting them for primary resources. In 2010, this drop in resource and energy consumption entailed a reduction by approx. 75,000 tonnes of CO₂ equivalents.

Composting for climate protection

In the field of climate protection, the City of Vienna also benefits from its closed biowaste management system (organic waste collection, composting, use of compost in organic farming) due to the creation of "carbon sinks" (carbon fixation in the soil), short transport distances and the substitution of chemical fertilisers. Moreover, the release of methane in degradation processes under controlled rotting conditions (e.g. at the Lobau composting plant) is clearly below that of smaller self-composting plants. The use of compost by private households (gardens, flower boxes) is likewise characterised by lower peat consumption, which again entails advantages for the climate.





Compost turning at the Lobau composting plant

The compost – and hence also the potting soil “Guter Grund” produced by a private company in Vienna – originates from more than 100,000 tonnes of biogenic waste collected by MA 48 from over 80,000 “green bins” for organic waste installed in the Green Belt around Vienna.

At the Lobau composting plant of MA 48, this raw material is transformed into an annual volume of 40,000 to 50,000 tonnes of top-grade compost suitable for organic farming. The input material is composted on an area of 52,000 square metres, with all machinery running on eco-friendly biodiesel. This biodiesel is produced from approx. 320,000 kilograms of used cooking oils and fats annually delivered by the Viennese population to MA 48 collection points. The soil is mixed at a privately owned soil-producing plant in Vienna. As a result, the entire biological cycle from collection in the green bins to soil processing and reuse by local gardeners and farmers takes place in Vienna, which ensures minimal transport distances.

Clean electricity and heat from waste incineration

Every year, MA 48 collects approx. 500,000 tonnes of residual waste and since autumn 2008 has been incinerating this material in its entirety at Vienna’s waste incineration plants. While complying with the very highest envi-

ronmental standards, clean energy for heating, cooling and electricity is the outcome. The city’s municipal waste management system boasts markedly lower CO₂ emissions due to credits resulting from its state-of-the-art plants for thermal waste treatment.

These plants transform the energy content of waste into district heating and cooling as well as electricity. This means that less heat and electricity need to be produced from fossil energy sources elsewhere, which has positive effects on climate protection. Vienna’s incineration plants generate in excess of 1.2 million megawatt hours of heat, approx. 81,000 megawatt hours of electricity and 38,000 megawatt hours of district cooling. With a length of more than 1,100 kilometres, Vienna’s district-heating network is one of the biggest in Europe. Wien Energie’s district heating division supplies more than 318,000 dwellings – roughly one third of all households in Vienna – as well as over 6,200 edifices of major customers with space and water heating. About one third of the heat originates from thermal waste treatment and energy generation from renewable resources, i.e. the wood-fired biomass power plant and the Simmering biogas facility. Moreover, Wien Energie has also been supplying major customers with district cooling for eco-friendly air-conditioning since 2009.

Even greater scope for climate protection in Vienna

According to forecasts, the positive trend of 2010 will continue. Due to ongoing technical improvements at the incineration plants (e.g. substituting the turbine of the Spittelau waste incineration plant, stepping up district cooling technologies, etc.) and biogas plant as well as better composting techniques (combination of the mechanical treatment of biogenic waste with the composting process at the Lobau composting plant), more CO₂ credits can be attained.

In addition, the emissions at the Rautenweg landfill are constantly decreasing over the years, since no organic waste that might entail the formation of landfill gas has been deposited at this site since autumn 2008. While the positive balance already equalled a remarkable 130,000 tonnes of CO₂ equivalents in 2010, this figure will rise to approx. 270,000 tonnes of CO₂ equivalents in 2020, forecasts maintain. Thus 375,000 tonnes of CO₂ equivalents of emissions from waste collection and treatment will be more than offset by approx. 650,000 tonnes of CO₂ equivalents of emissions avoided. For the City of Vienna and all municipal actors concerned with waste management, active climate protection will certainly remain a central task.



MVA Spittelau



Disposal of stabilised combustion residues at Rautenweg landfill

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