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1 Introduction on bio-waste management in Austria

In Austria 1.25 Mio. tons organic waste, by products and industrial residues are treated in 402 compost plants and 642.300 tons organic waste is treated in 155 biogas plants. The bio-waste collection is developed and implemented on national scale. The national ordinance regarding the separate collection of bio-waste is since 1995 in force. Especially in urban areas impurities in the bio-waste pose an increasing problem. The prohibition of conventional plastic bags valid from 2020 may help to improve the situation.



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2 National concept/strategy on bio-waste management

2.1 Legal framework

Waste Management Law 2002

Defines the aims and the hierarchy (avoidance, preparation for reuse, recycling, other utilisation, disposal) of the waste management. Furthermore, it explains terms and regulates the principles of waste management.

Ordinance regarding the separate collection of organic waste 1992

Defines organic waste and determines the separate collection of those.

Compost ordinance 2001

The Austrian compost ordinance regulates quality requirements of compost from wastes. It lays down nationwide rules concerning the production, marketing and labelling of compost as a product (end of waste). It defines different quality classes of compost and includes detailed rules on the raw materials used.

The ordinance defines three different quality classes for compost based on the heavy metal content ('A+' top quality, 'A' high quality, 'B' minimum quality).

Suitable waste materials and its quality requirements, final product criteria for quality compost, compost, sludge compost are ruled by the Austrian Compost Ordinance.

It includes also requirements regarding:

- Compost designation and specification

- Waste materials (waste codes) with approved origin
- Type and frequency of quality measurements for certain input materials
- Type and schedule of records and documentation
- Receipt control.

The compost ordinance is currently under revision.

2.2 Waste management programs and strategies

Federal waste management plan

Is mandatory through the waste management law. It comprises an evaluation of the waste management situation and an estimation of the prospective developments of the waste fluxes.

Prohibition on plastic bags

From January 2020 on it is prohibited to put conventional plastic bags on the market. The only exception of the prohibition are plastic bags < 15 mikron that consist mainly of renewable raw materials and that are suitable for home composting. The second exception are reusable bags with sewed connections and sewed carrying handles.

2.3 National standards and technical guidelines (collection, treatment and use)

In Austria a series of standards and technical guidelines have been published which establish common requirements for an external quality assurance scheme. These are:

State of the art of composting 2005

This guideline describes the minimum requirements regarding the structural and technical features as well as the management of the composting plants for the generation of compost according to the compost ordinance. The guideline comprises the technical requirements for a low-emission process considering a high product quality.

ÖNORM S 2007 biological waste treatment

ÖNORM S 2020 bio filter materials

ÖNORM S 2201 organic waste for biological treatment - requirements

ÖNORM S 2202 principles for application of composts

ÖNORM S 2204 compost hygienic requirements

ÖNORM S2205 technical requirements for composting plants

ÖNORM S 2206-1: Requirements for a quality assurance scheme for the production of composts – Part 1: Principles for quality assurance of a company and of the internal technical processes

ÖNORM S 2206-1: Requirements for a quality assurance scheme for composts – Part 2: Determination of tasks and conditions for a quality assurance organisation

ÖNORM S 2209 odor and dust emissions of composting plants

ÖNORM S 2210 compost soil and substrates – quality requirements and investigation methods



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ÖNORM S 2023 investigation methods and quality monitoring of composts

ONR 192206 Technical Guideline: Implementation of quality assurance on composting plants Up to now two non-profit associations have adopted these standards for granting a compliance certification with the QAS.

ONR 192207 environmental management system for composting plants

2.4 Quality Assurance Scheme (QAS) and National Quality Assurance Organization (NQAO)

In addition to the legal obligations the KBVÖ provides a mandatory comprehensive quality management and quality assurance scheme for its members. It is based on the Austrian standards (ONS2206-1 und -2, and the technical guideline ONR192206).

The legal frame for compost is embodied by the compost ordinance 2001 as well as the Waste Management Law 2002. Moreover, there are different standards which address the composting, as the QA ÖNORM S2206-1 and -2, the ONR192206, but there are also regulations as the minimum standards for open windrow composting and the guideline state of the art of composting. The permitted input materials for composting can be found in the compost ordinance, also the frequency of the external quality monitoring depending on the amount in m³ of produced compost.

Each compost plant, which is a member of KBVÖ, is controlled on a regular basis depending on the yearly throughput. All plants are controlled with unannounced on-site visits (external audits). Within the external audits also the material fluxes are assessed for their plausibility. The on-site inspection is carried out by a contracted auditor who prepares the inspection report including recommendations for the quality committee (internal Audit) with respect to eventually necessary adaptations, sanctions or approval of the related plant. The quality committee decides on sanctions, awarding or withdrawal of the KBVÖ quality label.

The so-called external quality approval is the regular sampling and analysis of a compost batch by an acknowledged laboratory. A list of acknowledged laboratories, which must participate in compost ring tests on a regular basis, is published on the homepage of the KBVÖ.

Suitable waste materials and its quality requirements, final product criteria for quality compost, compost, sludge compost are ruled by national legislation (above all by the Austrian Compost Ordinance).

It includes also requirements regarding:

- Compost designation and specification
- Waste materials (waste codes) with approved origin
- Type and frequency of quality measurements for certain input materials
- Type and schedule of records and documentation
- Receipt control.

The quality requirements for input materials, the product declaration like “quality compost”, “compost” or “quality sludge compost” are defined and regulated by the compost ordinance. The participation in the QAS of KBVÖ helps to fulfil the legal requirements by voluntary audits and consulting in case of problems.

3 Source separated collection of bio-waste

Facts and figures

(All figures form 2017 according to the federal waste management plan)

- Bio waste from households and similar facilities, separate collected (bio bin and green waste) 1.002.300 t
- Bio waste from public green space (gardens, park waste, cemetery, roadside greenery) 498.900 t

- Kitchen and food waste 115.700 t
- Animal by-products: 367.300 t were treated in biogas plants (kitchen and food waste, dairy waste, slaughterhouse waste, manure, cooking oils and fats, fat separator materials), 17.300 t were treated in composting plants (food and semiluxury food residues and manure)
- Organic waste processed in AD 642.300 t, whereas 1.25 mio. t were treated in composting plants
- 382.300 t composts of different qualities were produced. 199.100 t residues emerged from composting and were lead to further treatment
- Approximately 1.5 mio. t organic materials were composted in single and community composting facilities
- Mixed municipal solid waste (residual waste) contained 17,81% organics which equals 256.410 t.

4 Bio-waste treatment (recycling, material/energy recovery)



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Composting 402 plants, processing capacity 1.6 mio. tons, in 2017 1.25 mio. tons organic waste was treated. Size of facilities varies between very small plants to plants with 20.000 to input material.

Anaerobic digestion 155 biogas plants, processing capacity 1.2 mio. tons, 2017 about 643.300 tons organic waste was treated.

Mechanical biological treatment 14 plants, processing capacity 655.700 t, in 2017 about 413.909 t waste was processed.

5 Application and market

5.1 Compost

The compost ordinance defines three different quality classes for compost based on the heavy metal content

- Class A+ (top quality; limit values taken from Council Regulation for Organic Farming)
- Class A (high quality; suitable for use in agriculture) for food production areas
- Class B (minimum quality; suitable for non-agricultural use) for non-food areas

Compost, produced by composting plants working according to the compost ordinance, is a product which is determined in the compost ordinance. The possible applications are:

- Hobby gardening (A+, A)
- Plantation (A+, A)
- Agriculture (A+, A), [for organic farming A+ because heavy metal limits are according to EU ordinance 834/2007, class A is possible if permitted through the control station]
- Landscape gardening and maintenance (A+, A, B)

- Reclamation layer on landfill (A+, B)

Basically compost must be labelled as "Compost". In order to mark composts processed from high quality source materials, the ordinance allows the following terms:

- "Quality Compost" class A+ suitable for use in organic farming
- "Quality Compost" class A produced from separately collected organic waste
- "Quality Sewage Sludge Compost" produced from high quality sewage sludge and separately collected organic waste)
- "Bark Compost" (produced exclusively from bark)
- "Municipal Solid Waste Compost" which is compost derived from MSW, non-hazardous household waste and similar commercial waste. It cannot be marketed freely.



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5.2 Digestate

According to the Fertilizer Regulation 2004, digestate from farm derived input material (manure, plants from primary agricultural production, expired animal feed and seeds, fruit and vegetable residues and by-products from food and animal feed production) can be placed on the national market as fertiliser type "biogas slurry". Placing a certain product on the market includes importing, transporting, holding in stock for sale, offering for sale, selling and any other transfer in the ordinary course of business. This also includes (free) distribution in cooperatives or other associations for their members. The use of digestate on owned or leased land does not constitute "placing on the market" within the scope of the Fertilizer Regulation.

According to the Waste Management Act 2002, digestate from organic waste (animal by-products of category 2 and 3, separately collected bio-waste, etc.) is considered as waste until proper recovery on the soil. The Advisory Council for Soil Fertility and Soil Protection has drawn up guidelines and quality requirements for the proper agricultural use of digestate. In addition, the requirements of Regulation (EU) 1069/2009 on animal by-products as well as the laws, ordinances and guidelines for fertilizers must comply. These include, for example, the Water Act 1959, the Nitrate Action Programme Directive and the soil protection laws of the Federal States. According to the Fertilizer Regulation, producers of fertilizers, can request the competent authority, the Federal Office for Food Safety (BAES), to issue an individual permit for digestate from biogenic waste to be used as fertilizer, if the following conditions are met:

1. Soil fertility or
2. the health of humans and pet animals or
3. the ecosystem balance are endangered
4. and fertilizers are appropriate to
 - a) adequately support plant growth or
 - b) to improve the quality of the fertilized plants or
 - c) to increase the yield of the fertilized plants.

When placed on the market, the digestate must be labelled according to the requirements of the Fertilizer Regulation 2004.

“Biogas slurry”, usually dewatered after liquid fermentation, can be used as input material for compost. In case of digestate the waste-input for the biogas plant have to be in the list of input materials for composting to fulfil the requirements as input-material for compost.

6 Expected trends and developments

It is expected that the prohibition of plastic bags will reduce the contaminants in the organic waste. Furthermore it might help to increase the amount of separate collected bio waste (reference to the projects Remscheid, Munich and Berlin). KBVOE has initiated the “Bio-Cycle-Bag” to convince all retailers that the exclusive use of biodegradable plastic-bags (according to EN 13432) helps to reduce the amount of impurities in compost and increase the amount of separate collected biowaste by double use of the bags. They have to be offered for the purchase of fruits, vegetables, etc. and can be used for the collection of biowaste. KBVOE’s recommendation is to put the content of the bags in the bio-bin and to put the bag to the MSW-bin. Biodegradable plastic has no positive effect on the compost quality, so it is not recommended as input material. Analyses of the Institute of Waste Management (ABF-BOKU) in Vienna show that biological degradation of “Bio-Cycle-Bags” really happens through proper composting (no micro-plastic is built) and that there are no negative effects for the compost quality. So there is no problem for the compost producers if people are not willing to empty the bags and throw the whole package to the bio-bin.

7 Contacts and sources of information

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Annexes (Please attach any regulation, directive on bio-waste, fertiliser etc. of your country)

[Guideline state of the art of composting](#)
[Federal waste management plan 2017](#)

[Video 6th International Practitioner Day Composting 2019](#)

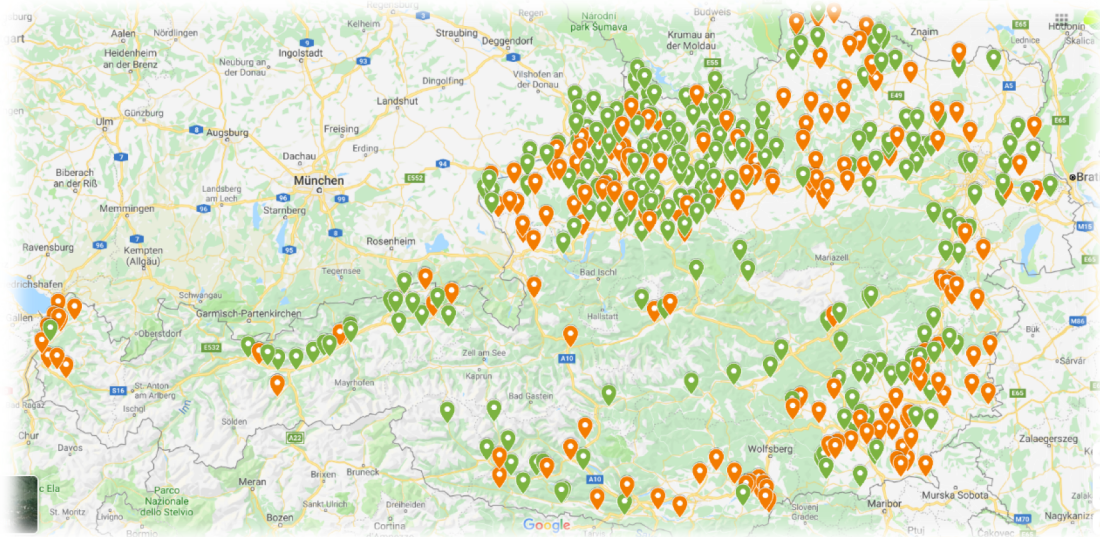
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About compost & biogas association Austria

The Austrian Compost & Biogas Association (KBVÖ) is the umbrella organisation of five organisations situated in the federal countries Tyrol, Styria, Upper Austria, Lower Austria and Carinthia, founded in the early 1990ies. From the very beginning, the scope of the country-organisations was to provide competent consulting and operational assistance to the composting business as well as intensive communication with authorities.



The map gives an overview of the members of KBVÖ (green compost, orange biogas).



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