



Lower Austria
**WASTE
MANAGEMENT
PLAN**

Planning period
2010 – 2015

Short version



Introduction Counsellor

The presented waste management plan is defining the targets and describing the measures for Lower Austrian waste management in the following five years. Special attention is paid to further development of waste management, resource management and the provision of a modern recycling economy.

“Sensible use” of raw materials and energy content of waste, “careful protection” of men and environment and “modern shape” of required structures and organizations are the main targets of the Lower Austrian waste management plan.



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Bureau of Lower Austrian Provincial Government
Group land use planning, environment and traffic
Department for environmental management and land use planning and promotion
Special department: waste management and resources protection

ABOUT US

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The presented follow-up of the waste management plan (Lower Austrian waste management plan, planning period 2010-2015, short version) was adopted in the session of the Lower Austrian Provincial Government of December 14, 2010.

Resources management as a part of services for the public

Based on the principles of provision, and sustainability the present Lower Austrian Provincial waste management plan defines precise targets and measures for the period until 2015. Discussions among stakeholders with the mission statement “Lower Austrian waste management 2015-resources management as part services for the public” and scientific studies concerning actual issues have served for the definition of targets and determination of concrete measures.

Effective waste avoidance has to start beyond waste management in production and consumption. Waste management shall take over tasks of providing feedback into the production chain and educating consumers. Making available secondary raw materials and the energetic use of waste are a contribution of waste management to the general economic sustainable resources management.

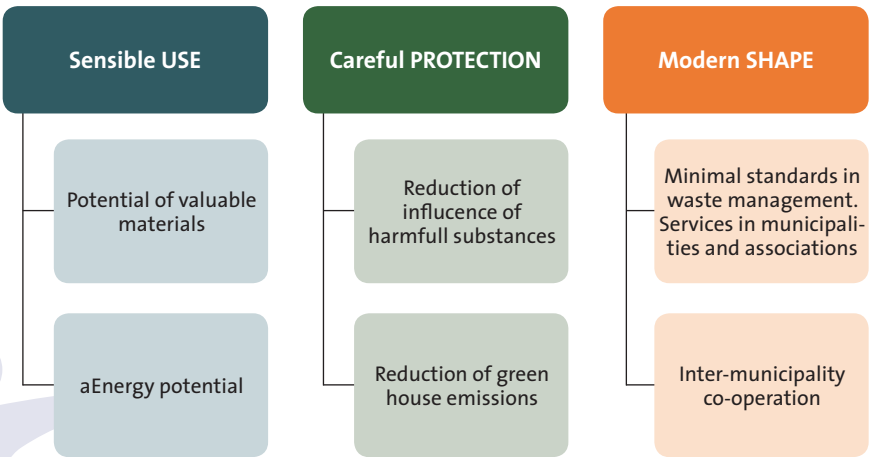
Waste avoidance and protection of resources

Waste management is a decisive control tool for closing certain material cycles and eliminating of harmful substances in “last landfills” (thermic waste management and landfills). Knowledge about product and material flow is a pre-condition in order to evaluate technically possible measures considering their general economic background and their efficiency.

Reduction of adverse effects

Organisation and performance of a separated waste collection covering the whole territory by associations and municipalities is the base for a target-oriented management of household waste. Service standards in the municipal waste management provide cost transparency for waste removal and utilisation on a high ecological and technical level.

Effective municipal waste management



Target categories of the Lower Austria Waste Management Plan 2010

Residual waste

Annually 135 kg/inhabitant



Approximately of residual waste are utilized in combustion units, the rest is transported to landfills after mechanic-biological treatment. The share of re-usable material is quite high with 40% and every year 5 kg/inhabitant of undamaged food in original packing can be found in residual waste. Sorting and material flow analysis (content of harmful substances and valuable materials) shall be the base for utilizing these valuable materials. The same amount of metals can be found in residual waste (4kg/inhabitant) as it is comprised in the separeated collection of metallic packing materials. The increased share of synthetic material in residual waste is a result of partial restructuring of collecting systems and should be discussed critically. Target-oriented education should contribute to a reduction of food in residual waste.

USE

- No food in waste
- Recuperation of metallic materials from combustion residues

PROTECT

- Reduction of harmful substances in residual waste

SHAPE

- Control of synthetic material collecting systems
- Public relation work covering the whole territory of Lower Austria
- Realise minimum standards for discharge volumina

Bulky waste

Annually 44 kg/inhabitant



Since the year 2004 an increase of collected amounts by 20% has been observed. Essential potentials of waste materials in bulky waste can be expected only for used wood and used metallic materials. A representative data base has to be still developed. The variety of collecting systems shall be evaluated considering costs and efficiency. Bulky waste is also playing an important role for re-utilisation concepts (together with used electrical appliances).

USE

- Gain wooden and metallice material from bulky waste

PROTECT

SHAPE

- Adapt collecting systems, apply minimum standards

Biogenic waste

Annually 88 kg/inhabitant from the biogenic waste pin and 72 kg garden waste/inhabitant

50% of all Lower Austrian households composte their own biological waste. The collected volumes are mainly treated in composting units. Biogenic waste can be used as humus via composting or energetically as biogas or by biomass combustion. In order to use existing potentials (nutrients and energy) in an optimum way the material flows of individual biogenic waste, existing collecting logistic and possible energetic use (production of biogas, biomass combustion) shall be evaluated.

USE	PROTECT	SHAPE
<ul style="list-style-type: none">• Using of nutrient content of biogenic waste• Energetic use of biogenic waste	<ul style="list-style-type: none">• Reduction of methane emission during treatment• Minimum content of harmful substances in composting and fermenting residues	<ul style="list-style-type: none">• Optimized collection systems and infrastructure• Management strategy of garden waste



Used metallic material

Annually 4,5 kg/inhabitant metallic packing material and 13kg/inhabitant other metallic materials

Used metallic material have important significance as raw material and provide enormous energy savings for the respective metall production. In municipal collecting systems the inclusion degree for metallic packings in all associations and municipalities should be increased up to 80% (could be so far achieved only for five waste associations) and for other used metallic materials user-friendly collecting system should be offered.

USE	PROTECT	SHAPE
<ul style="list-style-type: none">• Re-utilization of metallic materials in waste		<ul style="list-style-type: none">• Check collecting systems





Plastic waste

- Annually/inhabitant:
- 15 kg plastic packing material
 - 18 kg plastic waste in residual waste
 - 1,9 kg synthtic material in electrical appliances

In Lower Austria material was used mainly thermically, approximately 40% of all plastic waste is utitized respectively treated outside the borders of Lower Austria borders, whereas exact data are still missing. In the future collecting and treatment shall be closely linked with material aspects (type of polymer, content of additives). Enhanced research work shall be performed in order to achieve target-oriented measures in that direction. A significant increase of recycling would be important especially in Lower Austria, as there the production of synthetic materials is especially developed.

USE	PROTECT	SHAPE
<ul style="list-style-type: none"> Promote plastic recycling Use biological synthetic materials 	<ul style="list-style-type: none"> Reduce harmful substances in secondary plastic materials 	<ul style="list-style-type: none"> Develop collecting systems according to material criteria



Paper

- Annually 78 kg/inhabitant

Paper is collected up to 90%. Material volumes from separated collecting systems are completely utilized. Paper qualities and resulting proceeds in municipal collecting systems could be still improved. Material should be collected mainly ex-house all over the territory. The high degree of re-utilization of paper is a good example and should be emphasized by enforced use of paper with low content of harmful substances for administration purposes.

USE	PROTECT	SHAPE
	<ul style="list-style-type: none"> Reduction of harmful substances in recycled paper 	<ul style="list-style-type: none"> Model use of paper with low content of harmful substances for administration purposes Realization of minimum standards in collecting systems all over the territory

Electrical appliances

Annual collecting volume has been doubled since 2004 up to 8 kg/inhabitant

Metallic and plastic materials are recycled by targeted sorting and treatment and they are re-used in industry. A sensible prolongation of useful service life of individual products within a re-use and repair network offers the possibility of social and labour market aspects within waste avoiding measures. The development of a platform for co-operation of waste management associations, social economy and trade with old materials can be considered a future measure.

USE	PROTECT	SHAPE
<ul style="list-style-type: none">• Re-utilization of raw material (metallic and plastic materials)	<ul style="list-style-type: none">• Reduction of influence of harmful substances on the environment	<ul style="list-style-type: none">• Re-use and repair network



Glass, fat, oil and hazardous materials

Annually/inhabitant:
22 kg waste glass
0,7 kg waste fat and oil
3,2 kg hazardous material

Collecting and managing hazardous materials has been realized since 2004 on a high level. Improvements with glass can be achieved only by extending separated collecting systems in individual associations. Public relation and information work should support separated collecting of waste fat and oil up to 3 kg/inhabitant. An essential aspect is the burden relief for waste water treatment facilities besides energetical use.

USE	PROTECT	SHAPE
<ul style="list-style-type: none">• Energetic potential of waste fat	<ul style="list-style-type: none">• Reduction of influence of harmful substances on environment	<ul style="list-style-type: none">• Separated collecting systems all over the territory





Residual building material

Annually 1.000 kg/inhabitant

Collecting and treating of residual building material is not a principal competence of Lower Austria waste management law (AWG), in collecting centers for waste material they are, however, part of the service offer. At least half of all residual building material is used as recycled material. Materials which cannot be recycled are transported to building material landfills (36 in Lower Austria). Buildings are long-lasting storage facilities, which represent a challenge for future waste management. The amount of zinc in our buildings is as big as that of known primary reserves. With copper this value is around 50%. But also mass raw materials (sand, gravel) are expected to become rare due to competitive use in agriculture. Presently only 6% of all sand and gravel demand is covered by recycling products, the theoretical potential is approximately 13%. Beside a waste management decree incentives promoting sales and obligatory application quota for public building projects are the most important measures for equal use of recycling products on the building material market. Measures in Lower Austria are realised in close agreement with rules and initiatives on a federal level.

USE	PROTECT	SHAPE
<ul style="list-style-type: none"> Valuable potential of recycled building material Synergy effect during collecting and treatment 	<ul style="list-style-type: none"> Reduction of harmful substances in recycled building materials 	<ul style="list-style-type: none"> Framework conditions for application of recycled building materials Collecting infrastructure

Sewage sludge

50.000 t dry weight per year



85% of the municipal sewage sludge is undergoing material treatment, the rest is incinerated. Legal and contractual rules are more and more repressing agricultural utilization. The amount of phosphor in sewage sludge, however, corresponds to 1/5 of the phosphor demand of agriculture in Lower Austria! Globally decreasing reserves and increasing demand at the same time, as well as the fact, that Austria has to import 100% of its phosphor consumption, make sustainable management of municipal sewage sludge a very important waste management target.

USE	PROTECT	SHAPE
<ul style="list-style-type: none"> Content of phosphor in sewage sludge 		

Industrial waste

Present estimates assume, that in industrial enterprises of Lower Austria 940.000 tons of waste are developing every year. Partly this waste is removed and collected by the municipalities , the main part, however, is collected and treated by private waste management enterprises. Knowledge about industrial waste , which is presently insufficient, shall be significantly improved by realizing the waste balance decree. Consulting of enterprises shall be continued in order to enhance protection of resources. Evaluations of existing waste management concepts in enterprises and analysis of product and material flows shall show, that waste management targets and economical benefit do not have to be contradictions.



USE	PROTECT	SHAPE
<ul style="list-style-type: none">• Synergies in treatment• Promote energetical utilization of industrial waste		<ul style="list-style-type: none">• Improve information and data situation

Waste dumps

96% of methane emissions of Lower Austria waste management are developing in existing 31 landfills for residual and mass waste. Reductions of methane development requires a further extension of technological-biological or thermic treatment systems (methane oxidation, insitu stabilization). Concepts for target-oriented landfill mining shall be revised considering feasibility and cost-performance relation.



USE	PROTECT	SHAPE
<ul style="list-style-type: none">• Material potential of old landfills	<ul style="list-style-type: none">• Reduction of CH₄ emissions	



Waste collection and management and inter-municipal co-operation



97% of all municipalities in Lower Austria have organized themselves in 22 waste management associations and 3 city units (Krems, St. Pölten, Klosterneuburg), which are similar to associations. During the realization of a re-use concept and the introduction of common markets the waste management associations shall play an important role. Introducing minimum performance standards and a comparable cost accounting system based on standard cost planning shall create possibilities to learn from best practice examples on a voluntary base. At the same time this should also support transparency of services in a municipal waste management. After presenting the results of existing projects in order to improve collection logistics the potential for possible optimization should be analysed considering CO₂- and cost reductions for Lower Austria based on transportation systems.

USE	PROTECT	SHAPE
<ul style="list-style-type: none"> Avoiding of waste by re-use 	<ul style="list-style-type: none"> Reduction of CO₂ emissions during transportation 	<ul style="list-style-type: none"> Introduction of minimum standards for service and cost calculation Establish a collection, repair and sales network

Indices for successful mass flow control



A whole package of indices has been developed for the subjects of resource protection and reduction of harmful substances in order to provide revision of existing waste management targets from a material flow point of view. Presently the determination of target values is done with the assumption of realistic and optimum development scenarios. The annual reporting system (waste management reports) shall be linked closer with material flow aspects, which are not only oriented towards waste collected by municipalities. As a consequence individual indices with their topical values shall be included in the annual waste management reports.

USE	PROTECT	SHAPE
		<ul style="list-style-type: none"> Further development and use of waste management plan as a management tool Show development tendencies

Measurement overview

Residual waste	Residual waste analysis, mass flow analysis (MVA)
	Evaluation of various plastic material collecting systems in Lower Austria
	Promotion of realization of minimum standards
	Education and information concerning food in waste
Bulky waste	Determination of wood and metallic amounts in bulky waste
	System changing from individual transportation to dumps to pick-up systems at the households on demand
Biogenic waste	Evaluation of existing data concerning content of harmful substances
	Establish management strategies for green garden waste in Lower Austria
	Provision of effective utilization of phosphor content in fermentation and press water waste
	Introduction of topical quality management systems for composting units
Metallic waste	Evaluation of reasons for different collected volumes and adaptation of collecting systems
Plastic waste	Support of studies concerning content of harmful substances in plastic waste
Paper waste	Evaluation of data about content of harmful substances in waste paper
	Best practice: public enterprises: enforced use of recycled paper in public administration
EAG/used electric appliances	Develop concept for re-use and repair network
	Campaigne for re-use and waste avoidance
Glass, fat and oil	Illustrate comparable glass collecting system
	Strengthen information campaigns in Lower Austria
Building material waste	Support of R&D about recycled building materials and technical suitability: material flow analysis of building waste in Lower Austria (development, utilization, removal)
	Container exchange system among municipalities as an alternative for landfills for building materials and excavations
	Concept for application quota of recycled building materials for public projects in the province
	Equal application of recycled materials for public tenders
	Consideration of subsidies for recycled building materials
	Waste management concepts (landfill mining) for public demolition projects
	Publication of successful examples
Sewage sludge	Support of applied research projects
Industrial waste	Evaluation of annual waste development data
	Material flow analysis in public enterprises and selected branches
	Promotion of consultation and eco-management
	Competition for innovative protection of resources (for example eco-design)
Waste dumps/ landfill	Concept for landfill mining in Lower Austria
	Methane oxidation layers without paying ALSAG
	Development of concepts for realization and optimization together with landfill owners
Collection, treatment of waste and co-operation between municipalities	Promote introduction of minimum standards
	"Best practice" system, continuous improvement process
	Introduction of uniform accounting and cost calculation systems
Indices for material flow	Enlargement of data base and grant access
	Information about target values based on material flow
	Adaptation of annual reporting considering material flow aspects

