



Picture credits: top left: wastewater treatment, © Ivan Bandura, Unsplash; top right: sludge use in agriculture, © Myriam-Fotos, Pixabay; bottom: Crossness mono-incineration plant in London, UK, by courtesy of Doosan Lentjes GmbH.

Market Study Sewage Sludge Disposal in Europe

Technologies, status, and future of sewage sludge disposal in
Europe

Extract

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ecoprogram GmbH

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The European sewage sludge disposal market is in transition. 40 years ago, sludge was dumped in water bodies or landfills. Today, sludge is mostly used in agriculture, but increasing amounts are incinerated. Sludge mono-incineration is on the rise because it safely eliminates pollutants while still allowing for recovery of valuable phosphorous.

Various countries in Europe have already tightened legislation around sludge use in agriculture, some have even banned the practice altogether. The EU itself is considering changes as well. Increasingly stringent legislation causes the mono-incineration market to boom, with new projects being announced continuously.

For this market study, ecoprogram has identified more than 200 mono-incineration plants and projects across Europe. Based on our in-depth research, we highlight possible future paths for sewage sludge disposal in Europe.

The Market Study Sewage Sludge Disposal in Europe includes:

- A description of technologies in wastewater treatment, sludge treatment, and sludge disposal. Strengths and weaknesses of sludge disposal alternatives are discussed.
- An analysis of key factors that drive the European sewage sludge disposal market. This includes important legislation on EU and national level.
- An analysis of past, present, and future trends for Europe as a whole, and for each of the 30 countries.
- An account of more than 200 mono-incineration plants and projects in Europe on country-level including their capacities, technologies, and operators (as far as known).
- An outlook in terms of market development and an analysis of key competitors in the sludge disposal market.

The study is [available](#) starting from 3,900.– €*. **Please see the end of this extract for detailed price and product information.**

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Content

- Preface.....12
- Management summary.....14
- 1 Distinction.....18
- 2 Technology.....20
 - 2.1 Wastewater treatment20
 - 2.1.1 History of wastewater treatment20
 - 2.1.2 Wastewater inflow21
 - 2.1.3 Mechanical treatment.....22
 - 2.1.4 Biological treatment.....22
 - 2.1.5 Additional treatment23
 - 2.2 Sludge treatment.....24
 - 2.2.1 Stabilization.....25
 - 2.2.2 Dewatering.....26
 - 2.2.3 Drying26
 - 2.3 Sludge use and disposal27
 - 2.3.1 Landfilling.....27
 - 2.3.2 Soil applications29
 - 2.3.3 Thermal treatment.....31
 - 2.3.4 Other options and data uncertainties.....35
- 3 Market drivers36
 - 3.1 Demography..... 37
 - 3.2 Sludge amount..... 38
 - 3.3 Regulation of agricultural use .. 41
 - 3.3.1 Pollutants 41
 - 3.3.2 Overfertilisation 42
 - 3.4 Regulation of incineration 42
 - 3.11 Others 47
 - 3.5 Waste hierarchy42
 - 3.6 Landfill phase-out43
 - 3.7 Mandatory P recovery44
 - 3.8 Investment and disposal costs .44
 - 3.9 Incineration infrastructure.....45
 - 3.10 Public debate47
- 4 Summary, highlights and trends48
- 5 Country sections.....66

5.1	Austria.....	66	5.16	Latvia	174
5.2	Belgium	72	5.17	Lithuania	178
5.3	Bulgaria.....	76	5.18	Luxembourg.....	182
5.4	Croatia	82	5.19	Malta.....	186
5.5	Cyprus.....	87	5.20	Netherlands	191
5.6	Czech Republic.....	91	5.21	Norway	196
5.7	Denmark	95	5.22	Poland	200
5.8	Estonia	99	5.23	Portugal	207
5.9	Finland	103	5.24	Romania	211
5.10	France.....	107	5.25	Slovakia	215
5.11	Germany	114	5.26	Slovenia.....	219
5.12	Greece	156	5.27	Spain	224
5.13	Hungary	160	5.28	Sweden.....	228
5.14	Ireland.....	164	5.29	Switzerland	233
5.15	Italy	168	5.30	United Kingdom	240
6	Methodology.....	246			

Figures

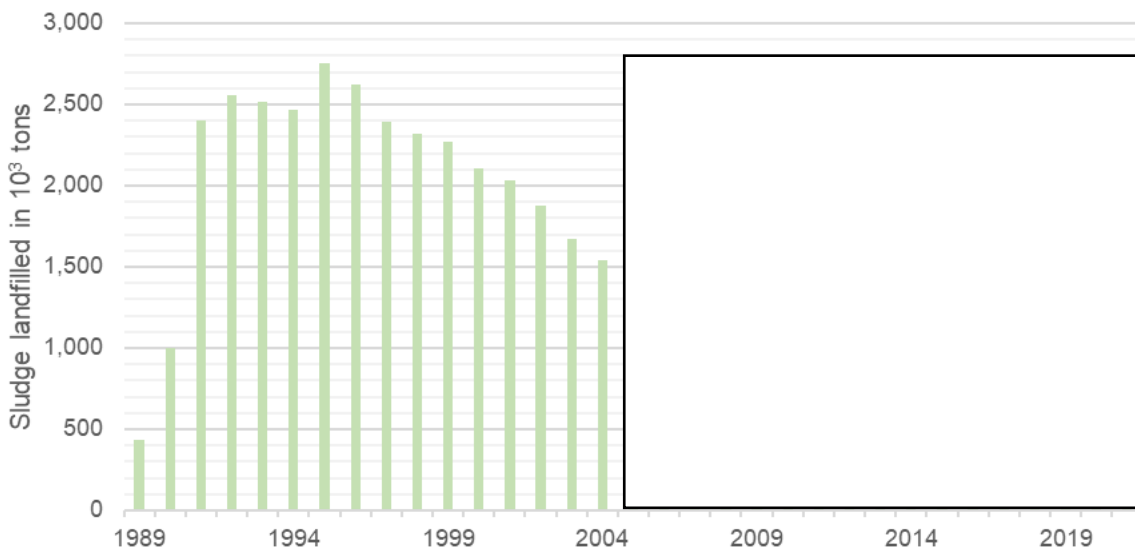
Figure 1: Sewage sludge disposal methods in Europe.....	14
Figure 2: Prognosis of the growing mono-incineration market in Europe.	15
Figure 3: European countries analysed in this study (white).	19
Figure 4: Example of a municipal wastewater treatment plant.....	21
Figure 5: Sludge activation tanks. Aeration systems cause bubbles in the water.....	23
Figure 6: Anaerobic digestion towers at wastewater treatment plant Bottrop, Germany.	25
Figure 7: EU waste hierarchy as outlined in the Waste Framework Directive.	28
Figure 8: Sewage sludge composting. Sludge is regularly turned using heavy machinery.....	30
Figure 9: Sludge mono-incineration plant.	32
Figure 10: Population density across the EU.....	38
Figure 11: Development of EU population over time.	39
Figure 12: Development of sludge amounts in Europe.....	40
Figure 13: Development of sludge landfilling in the EU.	43
Figure 14: Price of sludge disposal methods and their ability to recycle P and control pollution.	45
Figure 15: Coal power plant Mellach in Austria.	46
Figure 16: Size distribution and treatment capacity of European wastewater treatment plants.....	48
Figure 17: Overview of Europe's wastewater treatment infrastructure.	49
Figure 18: Sewage grid connection and UWWTD compliance rates across European countries.....	51
Figure 19: Production of sewage sludge per capita in Europe.....	53
Figure 20: Development of sewage sludge disposal in Europe.	54
[...]	
Figure 148: Size distribution and treatment capacity of Swedish wastewater treatment plants.....	228
Figure 149: Wastewater treatment and mono-incineration infrastructure across Sweden, according to size.	229
Figure 150: Development of sewage sludge disposal in Sweden.....	230
Figure 151: Sewage sludge disposal in Sweden.	231
Figure 152: Prognosis of the Swedish mono-incineration market.....	232
Figure 153: Distribution of UWWTPS across Switzerland, according to size classes.....	233
Figure 154: Size distribution and treatment capacity of Swiss wastewater treatment plants.	234
Figure 155: Development of sewage sludge disposal in Switzerland.	234
Figure 156: Sewage sludge disposal in Switzerland.....	235
Figure 157: Prognosis of the Swiss mono-incineration market.	236
Figure 158: Size distribution and treatment capacity of British wastewater treatment plants.	240
Figure 159: Wastewater treatment and mono-incineration infrastructure across the UK, according to size.	241
Figure 160: Development of sewage sludge disposal in the UK.....	242
Figure 161: Sewage sludge disposal in England (left), Scotland (right), and the entire UK (bottom).....	243

[...]

3.6 Landfill phase-out

The Landfill Directive (1999/31/EC) generally regulates all types of waste landfilling. Sewage sludge is non-hazardous but biodegradable municipal waste. The Directive sets reduction targets for landfilling biodegradable waste. With its 2018 amendment, it further restricts landfilling municipal waste and waste that may be recycled or recovered. Although not explicitly banning the practice, the Landfill Directive has greatly reduced sludge landfilling, and will continue to do so until it is practically phased out. [...]

Figure 13: Development of sludge landfilling in the EU. Note that the data set contained significant gaps. Data gaps between 2 known values were interpolated linearly, data gaps at the end of a time series were extended until 2021 by the last known value.



Some countries have already phased out landfilling by adopting more stringent legislation (e.g. Austria, France, Germany, Hungary). The sludge landfill phase-out has a general positive effect on the sludge mono-incineration market, because mono-incineration offers one of a few alternative solutions. Broadly, removing landfilling leaves only two major outlets for sludge: agriculture and thermal treatment.

[...]

5 Country sections

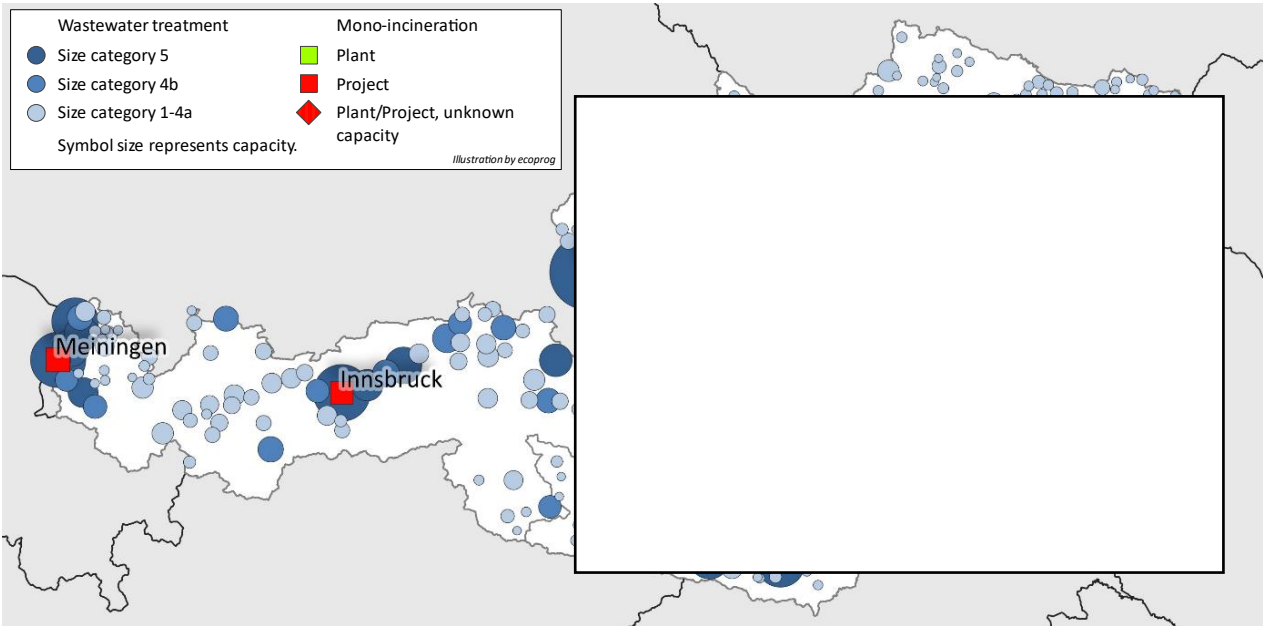
5.1 Austria

Background

Population [million]	9.1	Number of UWWTPs	635
Sewage connection rate	96%	Capacity of UWWTPs [million PE]	21.8
Compliance with UWWTD	100%	Sludge amount [thousand tons]	193.6

Austria has especially high quality of wastewater purification, with almost the entire population connected to the UWWT grid, and all wastewater treated in compliance with the UWWTD. Many small UWWTPs are spread across the country, but few large plants treat the vast majority of existing wastewater. [...]

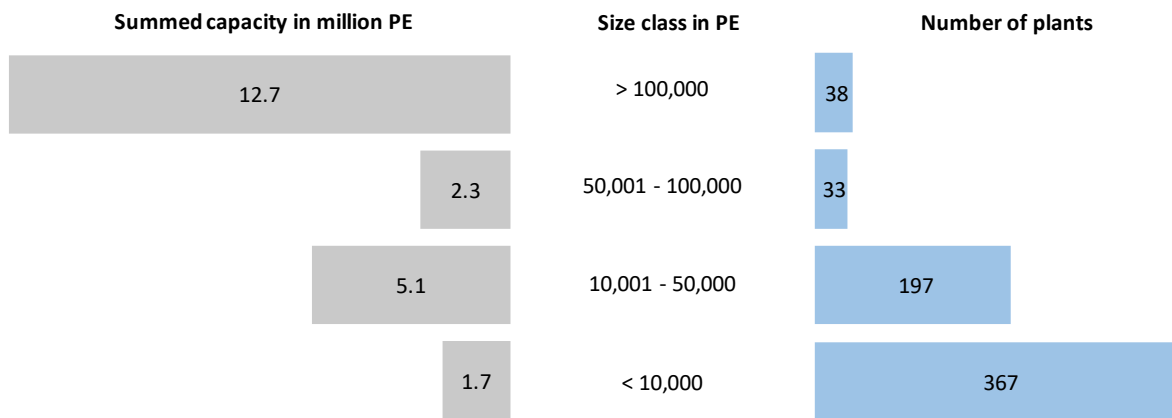
Figure 28: Wastewater treatment and mono-incineration infrastructure across Austria, according to size.



With almost 2 million inhabitants, Vienna is by far the biggest city in Austria and its main UWWTP makes up more than 18% of Austria’s entire treatment capacity. [...]

Extract chapter 5 – Country sections

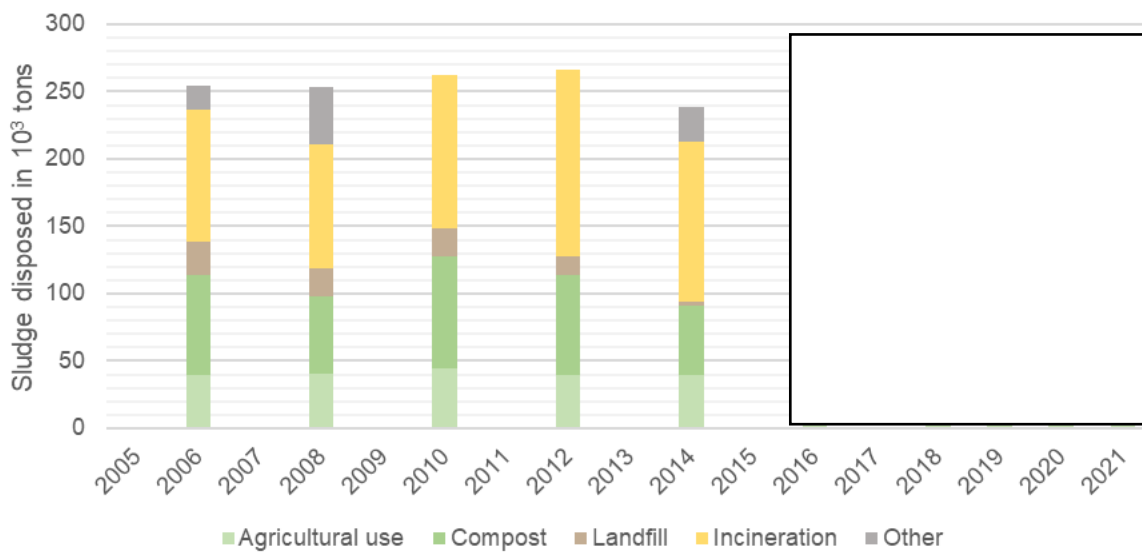
Figure 29: Size distribution and treatment capacity of Austrian wastewater treatment plants.



Market drivers

Historically, there has been a relatively stable mixture of incineration, and composting and agricultural use of sewage sludge in Austria. Landfilling was practically phased out by banning it for wastes with total organic carbon above 5%. [...]

Figure 30: Development of sewage sludge disposal in Austria.



Until 2020, coal-fired FHKW Mellach co-incinerated about X tpy of sewage sludge but [...]. Since then, sludge disposal prices have [...]

Extract chapter 5 – Country sections

Figure 31: Sewage sludge disposal in Austria. Data [...] is not equivalent to the data used for the previous figure.



Different national laws regulate the treatment and disposal of sewage sludge in Austria. However, the main legislative power lies with the individual governments of the regions/provinces inside Austria. [...]

However, the national government intends [...]

Infrastructure

City/Municipality	State/Region	Capacity [tpy]
Vienna	Vienna	60,000
[...]	[...]	[...]

To date, there are **X** active mono-incineration plants in Austria. However, the plant in **X** was never entirely operable. An additional plant is located [...]

Outlook

City/Municipality	State/Region	Status	Capacity [tpy]	Estimated commissioning
Innsbruck	Tyrol	discussed	7,500	2029
Meiningen	Vorarlberg	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]

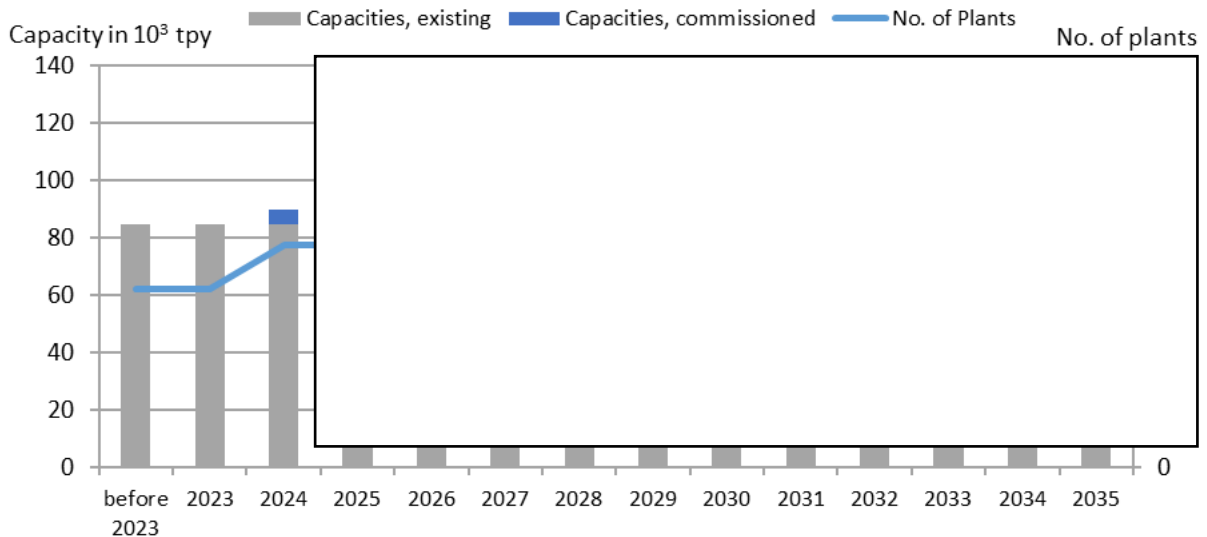
Because of the legislative changes, construction of new large mono-incineration plants in Austria is widely discussed. [...]

Extract chapter 5 – Country sections

X other sites are discussed for constructing new mono-incineration plants. Although discussion is in an early stage for **X**, implementation seems likely since the city has the second biggest UWWTP and sludge amount in Austria and [...]

The sites would also ensure short transport distances, with mono-incineration plants distributed across the country. However, it is important to keep in mind [...]

Figure 32: Prognosis of the Austrian mono-incineration market.



Competition

Austria's mono-incineration plants are operated by both public and private companies. The largest plant in **X** is operated by public-sector company [...]

Other large Austrian players [...]

Extract chapter 5 – Country sections

Plants & Projects

Austria

Innsbruck

Status: discussed
Start of operation: 2029
Capacity, tpy dewatered: 30,000
Capacity, tpy ds: 7,500

Remarks: Early discussions of multiple sewage associations [...]

[...]

Croatia

Zagreb

Status: planned
Operator: **X**
Capacity, tpy dewatered: **X**
Capacity, tpy ds: **X**
Treatment technology: fluidized bed

[...]

Germany

Berlin Waßmannsdorf

Status: under construction
Operator: Berliner Wasserbetriebe
Start of operation: 2025
Capacity, tpy ds: 64,000
Treatment technology: fluidized bed
Manufacturer: WTE EVN Group

Remarks: Berliner Wasserbetriebe is planning the construction of an additional incineration plant with three incineration lines at the Waßmannsdorf wastewater treatment plant. The company Convis has been commissioned with the general planning of the plant. The project is part of the expansion of the Waßmannsdorf site. Measures in the wastewater sector, such as the modernization of sludge treatment, were already partially completed at the

[...]

Vienna

Status: active
Operator: Wien Energie
Capacity, tpy ds: 60,000

Remarks: [...]

Split

Status: discussed
Start of operation: 2028

beginning of 2020. The construction of the plant is primarily intended to [...]

Berlin-Ruhleben

Status: active
Operator: Berliner Wasserbetriebe
Start of operation: 1985
Capacity, tpy ds: 84,100
Treatment technology: stationary fluidized bed
Manufacturer: Uhde

Remarks: As was announced in October 2021, Berliner Wasserbetriebe (BWB) is planning to expand its sewage sludge incineration plant. In future, this plant will be able to incinerate up to 240,000 tons of dewatered sludge per year.

Price and product information

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