

UP IN SMOKE

**Waste incineration with energy recovery
in the National Energy and Climate Plans
of Bulgaria, Hungary, Latvia, Poland and
Slovakia**

BRIEFING

Illustrative photo: Des Carrières garbage incinerator in Montreal, Canada. Currently decommissioned.

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SUMMARY

Bulgaria, Hungary, Latvia, Poland and Slovakia all plan to expand the use of waste incineration to generate energy (mostly heat) as part of their National Energy and Climate Plans (NECPs).¹

These plans will lead to much higher greenhouse gas emissions (GHG) than could be achieved if the countries focused on waste management methods higher up the waste hierarchy, such as waste prevention, reuse and recycling. The plans are also inconsistent with a number of EU rules and policies. If implemented, these plans will financially crowd out prevention, reuse and recycling projects, thus slowing progress towards the fulfillment of the EU's recycling targets, which none of the countries in this study are on track to meet. Finally, they will lock in carbon-intensive technologies.

While presented as a way to increase energy efficiency in heating systems and to cut down on landfilling, these plans are nonetheless **at odds with EU waste policies** that prioritise prevention, reuse and recycling of waste and prohibit supporting waste incineration where separate collection targets have not been met. They are also at odds with the recommendations regarding waste management by the Commission within the framework of the European Semester or the Early Warning procedure.

There are a number of reasons why waste incineration with energy recovery should not be part of the NECPs, especially for countries that struggle to keep up with European decarbonisation pathways. Firstly, **burning waste generates significant amounts of GHG emissions, and energy recovery from waste incineration has long been demonstrated to achieve considerably lower GHG savings than recycling** (see below). Secondly, historical trends and the plans laid down in the NECPs point to a **significant risk that waste-to-energy will crowd out recycling in terms of access to finance**, slowing down the countries' progress towards meeting their waste and circular economy objectives. Finally, despite technological improvements, waste **incineration installations still emit harmful pollution into the air**, endangering the health and wellbeing of local communities.

The NECPs prepared by Bulgaria, Hungary, Latvia, Poland and Slovakia all envisage

the construction of new facilities for waste incineration with energy recovery, whose capacity would correspond to a considerable percentage of the respective countries' waste generation volume. Those plans are presented as a way to improve the energy efficiency of district heating networks and to reduce landfilling rates (while the NECPs are typically short on credible measures to enhance prevention or recycling).

An analysis of current incineration project pipelines shows that if implemented, those plans could use up a significant share of available financial resources, crowding out other modes of waste management that sit higher up the waste hierarchy. For example, the planned incinerator in Sofia is set to use a quarter of Bulgaria's EU funds for waste management. The Hungarian companies dealing with incineration are already benefiting from public subsidies and preparing to request funding from the Modernisation Fund for more retrofits or conversions of incineration plants to combined heat and power (CHP). In Poland, the Gdansk incinerator's EU subsidy is worth as much as the support for all separate collection projects combined.

If implemented, these plans risk locking in technologies that may become entirely inadequate as soon as the European waste management landscape changes.

¹ These are the countries for which we have detailed information available but similar plans are mentioned in the NECPs of other countries as well, including Czechia, Romania and Lithuania.

Why should waste incineration with energy recovery not be part of climate plans?

It is incompatible with EU rules

The idea of feeding waste into industrial and energy combustion processes is in **contradiction with a number of European legislative acts and policies** including the Commission's communication on waste-to-energy in the circular economy, the revised Waste Framework Directive, the Circular Economy Package, the revised Renewable Energy Directive and the exclusion of residual waste treatment facilities from the scope of post-2020 Cohesion funding.

Burning waste for energy is among the least preferred options in the waste hierarchy laid out in the Waste Framework Directive, which requires Member States to implement separate collection of biodegradable waste by the end of 2023 and prohibits the incineration of separately collected bio-waste.² The communication stipulates that “the gradual diversion of waste from landfill should go hand-in-hand with the creation of greater recycling capacity”, which implies that more recycling, and not more incineration, is

the way to reduce landfilling rates.³ Article 3 of the new Renewable Energy Directive clearly states that Member States should not support renewable energy generation from waste incineration if they have not met their separate collection obligations,⁴ and the new Cohesion Policy rules (pending final agreement in the upcoming Trilogues) exclude EU support for residual waste treatment projects.⁵

The five countries in question are not on track to meeting their recycling targets and have received early warnings regarding waste management from the Commission, complete with recommendations for actions to rectify this situation.⁶ The Commission has also included advice on waste management measures in its European Semester country reports⁷ for Bulgaria, Hungary, Latvia, Poland and Slovakia. In both cases **the Commission's position is that the countries concerned should focus on shifting towards more prevention, reuse and recycling of waste**. Waste incineration with energy recovery is never mentioned in the recommendations.

... the countries concerned should focus on shifting towards more prevention, reuse and recycling of waste.

It is bad for the climate

Burning waste for energy generates GHG emissions, which are offset by energy recovery only marginally. According to the IPCC, typically between just 33 per cent and 50 per cent of incinerated waste is biogenic i.e. renewable, and the remainder consists of fossil-derived plastics and other non-renewable material, the burning of which produces climate-relevant emissions.⁸ Depending on the technology choice, the incineration installations recover only a portion of the energy.⁹ A wide array of studies have demonstrated that **waste incineration with energy recovery saves much less GHG emissions**

than waste prevention and recycling, and for some materials it offers little advantage relative even to landfilling.^{10, 11, 12, 13, 14, 15}

Incineration of refuse-derived fuel (RDF), waste and other ‘alternative’ fuels with energy recovery is also less resource-efficient than recycling. It destroys resources that need to be replaced, therefore creating demand for more extraction and manufacturing of new materials, while eliminating the far superior option to reuse and recycle.¹⁶ Even where Article 2 of the Renewable Energy Directive defines the biogenic fraction as renewable, it is often not sustainable, as it consists of discarded materials

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Art. 22 and Art. 10 Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste

3

European Commission's Communication on waste-to-energy in the circular economy

4

Art. 3(3) of the Directive (EU) 2018/2001 of the European Parliament and the Council of 11 December 2018 on the promotion of the use of energy from renewable sources.

5

European Parliament, Legislative resolution of 27 March 2019 on the proposal for a regulation of the European Parliament and of the Council on the European Regional Development Fund and on the Cohesion Fund

6

European Commission, Early warning for Member States at risk of missing the 2020 target of 50% preparation for re-use / recycling for municipal waste

7

European Commission, 2019 European Semester: Country Reports

8

IPCC, EMISSIONS FROM WASTE INCINERATION, Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, p. 459.

derived from finite resources, like biomass, wood and paper sourced from forests being cut at unsustainable rates. In any case, composting produces much better outcomes for the climate than incineration even for the biodegradable and renewable fraction of waste.¹⁷

It should also be noted that with the new European legal framework for waste in place, the volume and composition of municipal waste available to be processed into RDF and incinerated will change: there will be less and less biogenic content due to wider separate collection, and less high-calorie content as

As waste incineration facilities typically co-fire municipal waste or RDF with biomass, which is often scarce or unsustainable, or with fossil fuels such as gas or coal, expanding their capacity risks locking in dependence on non-renewable, unsustainable and fossil fuels.

Europe cuts down on plastic waste.

It slows down progress towards sustainable waste solutions

While recycling has been demonstrated to generate the deepest GHG savings among all waste management options save prevention, the five countries studied in the present briefing all lag behind on their recycling targets, with recycling rates between 23 and 35 per cent. All generate relatively low amounts of municipal waste per capita, below the EU average, which could put them in a good position to attain the European recycling targets. However, in most cases these NECPs contain few if any credible policies and measures to achieve higher recycling rates, focusing instead on reducing landfilling and/or using waste as an energy source.

9
IPCC, EMISSIONS FROM WASTE INCINERATION, Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, p. 467.

10
U.S. Environmental Protection Agency Office of Resource Conservation and Recovery, Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM), Exhibit 7-12 on p. 7-20.

11
United States Environmental Protection Agency, Solid Waste Management and Greenhouse Gases A Life-Cycle Assessment of Emissions and Sinks, Exhibit A-2, p. 126 and Exhibit B-2, p. 128.

12
Karl Hillman, Anders Damgaard, Ola Eriksson, Daniel Jonsson and Lena Fluck, Climate Benefits of Material Recycling. Inventory of Average Greenhouse Gas Emissions for Denmark, Norway and Sweden

13
Jeffrey Morris, Recycling versus incineration: An energy conservation analysis

14
Jeffrey Morris, Comparative LCAs for Curbside Recycling Versus Either Landfilling or Incineration with Energy Recovery

15
UKWIN, Evaluation of the climate change impacts of waste incineration in the United Kingdom, p. 18.

16
The commission notes that “production and the incineration of plastic waste give rise globally to approximately 400 million tonnes of CO₂ a year” and that “using more recycled plastics can reduce dependence on the extraction of fossil fuels for plastics production and curb CO₂ emissions” in its communication A European Strategy for Plastics in a Circular Economy, p. 3.

17
Composting and anaerobic digestion treat organic waste streams such as food, animal industry wastes, green waste, wood, and agricultural residues at a higher level of the waste hierarchy than combustion. The resulting organic soil amendment products replace artificial fertilisers and reduce the need for pesticides, thus avoiding associated GHG emissions. Moreover, the application of compost to soil increases its capacity to act as a carbon sink, while improving the soil structure, reducing erosion and the need for irrigation. While the quality of agricultural land is increasingly eroding, at the same time valuable nutrients and space in landfills are wasted by simply failing to compost food scraps and garden waste.

Incineration has historically played little or no role in waste management in the countries studied, with more substantial levels seen in Poland and Hungary only recently. Historical data for the two countries suggest that expanding incineration capacity correlates with slower progress on recycling (see Charts No 1-3), which is likely the result of misguided policies that put the emphasis on reducing landfilling, and not on promoting prevention, reuse and recycling. Restrictions on landfilling typically lead to higher incineration rates, and indeed, in the absence of strong policies to promote recycling, the landfilling fee in Hungary and the landfilling ban in Poland have resulted in a surplus of combustible waste and economic incentives that promote incineration.

The plans laid down in the NECPs to promote waste incineration, and the pipelines of fairly mature incineration projects in the countries studied, point to a clear risk that incineration with energy recovery might crowd out separate collection and recycling projects in terms of access to finance and organisational capacities of the project promoters. Unless credible prevention, reuse and recycling policies are included in the NECPs, the waste incineration with energy recovery plans currently laid down there may stand in the way of faster progress on the other, more sustainable modes of waste management by diverting national and EU funds away towards the (far more expensive) incineration projects. The Sofia incinerator, which uses up more than a quarter of Bulgaria's EU funds for waste management, and the waste incinerator in Gdańsk which accounts for around half of the total EU funds spending on waste management in Poland so far,¹⁸ are two examples of this risk.

The planned installations will, moreover, lock in waste management and energy generation technologies that may soon become obsolete as the European Union implements its waste and circular economy policies concerning areas like the separate collection of bio-waste or the reduction of volumes of single-use plastics and plastic packaging. The owners of incineration installations on which local heating systems depend for heat (and which, typically, are multi-fuel co-firing installations) may then be forced to revert to fossil fuels or increase the use of biomass.

It pollutes the air

Waste incineration is a known emitter of major air pollutants that cause adverse health impacts. According to the WHO, despite the technological progress which has resulted in lower pollutant emissions from new incinerators, even new-generation installations cause harmful emissions, putting people who live in their vicinity at a greater risk of cancer and other diseases.^{19, 20} Incineration also results in toxic filter residues and fly ash that still need disposal.

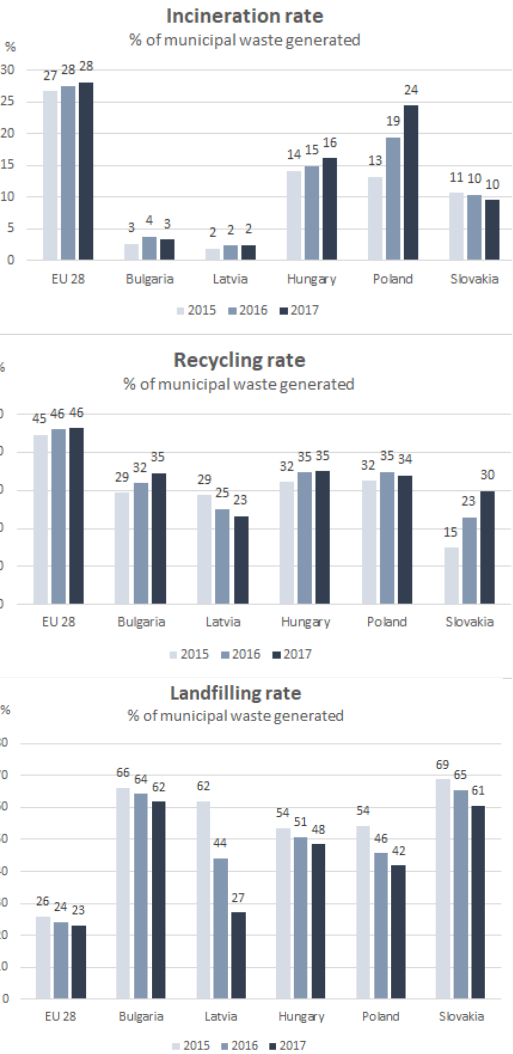


Fig. 1 Overview of waste management in the countries studied [Source: Eurostat]

18
Program Operacyjny
Infrastruktura i Środowisko

19
World Health Organisation,
Waste and human health:
Evidence and needs p. 16.

20
A British review of
epidemiological studies into
health effects of incinerators
found an increased incidence
of birth defects and childhood
cancers as well as lung cancer
and cardiovascular disease
around waste incinerators
(Jeremy Thompson & Honor
Anthony (Moderators) (2005)
The health effects of waste
incinerators, Journal of
Nutritional & Environmental
Medicine, 15:2-3, 115-156).
More epidemiological studies
are needed to fully understand
the health impacts of waste
incinerators, but available
evidence shows that - given
the absence of any obvious
advantages of incineration
over other waste management
options - the precautionary
principle should be followed.

BULGARIA

Lip service to the waste hierarchy and pushing ahead with waste incineration

The GHG emissions from the waste sector in Bulgaria dropped more than 50 per cent since 1988 - but mainly due to the shrinking population. Still until 2016 Bulgaria was in a steady decline of the household waste that however was inverted. Until 2013 the country lacked incineration capacity and almost 80 per cent of the waste was going for landfilling. Bulgaria still lags behind in providing effective infrastructure and incentives to bring reduction of waste and separate waste collection up to speed with the rest of the EU.

Those problems have been noticed by the Commission which issued an early warning to Bulgaria in 2018.²¹ In its report, the Commission suggested a set of measures that Bulgaria should implement, including extended producer responsibility (EPR) schemes, separate collection of biowaste, better public amenities for separate collection, economic incentives for better waste management and awareness-raising. Waste-to-energy measures are not mentioned. Similarly, in its Country Report on Bulgaria issued as part of the European Semester, the Commission advises Bulgaria to increase resource efficiency and promote the circular economy, including the development of alternatives to raw materials and the use of recycled materials as raw materials, and improve the knowledge base on the circular economy, waste monitoring and material streams.²²

The waste section of the Bulgarian draft NECP contains a reasonable, even if unspecific, review of the GHG reduction potential of the waste sector in principle speaks in favour of waste prevention, financial incentives to improve separate collection and recycling, and the capture of landfill methane, which is the main waste-related greenhouse gas in Bulgaria.²³ However, specific reduction measures do not consider any CO₂ reductions related to waste recycling or waste reduction and build expectation for CO₂ reduction on the biogas

capture in landfills, MTB facilities and sludge treatment. The NECPs also counts 'use of alternative fuels such as biodegradable waste' as one category of measures to improve energy efficiency and resource efficiency of the industry and heating sector, but does not count the GHG increase from future waste incineration planned in the country.²⁴

The document fails to discriminate between 'biodegradable waste', RDF and 'waste', using these terms interchangeably, while they clearly refer to different fractions of waste - which casts a shadow of doubt about whether such distinctions would be actually observed in practice if the use of waste as 'alternative fuel' were promoted for combustion facilities in Bulgaria.

The planned RDF incinerator in Sofia is a case in point: it will burn gas and RDF i.e. low-quality fuel made of shredded and dehydrated mixed municipal solid waste that has not been properly separated and therefore contains mostly plastics, paper, textiles and biomass. Designed as part of Sofia's heating system, the controversial plant²⁵ will have a capacity of 180 000 tonnes of waste per year (corresponding to around six per cent of Bulgaria's total waste generation of roughly three million tonnes). However, it will cost a staggering EUR 189 million, using up a quarter of Bulgaria's total EU funds for waste management.²⁶ Several other plants that currently burn coal are also planning to convert to co-firing of coal and waste.²⁷ Therefore, a major concern is that the growing waste incineration capacity, currently estimated to cover around 37.34 per cent from the generated household waste, will either prevent the country from meeting waste separate collection targets or eliminate waste reduction incentives envisaged in the circular economy package.

The waste sector accounts for 6.9 per cent of total GHG emissions in Bulgaria and the

21
Commission Staff Working
Document: The Early Warning
Report for Bulgaria

22
2019 European Semester:
Country Report - Bulgaria

23
DRAFT INTEGRATED ENERGY
AND CLIMATE PLAN OF THE
REPUBLIC OF BULGARIA p. 48.

24
DRAFT INTEGRATED ENERGY
AND CLIMATE PLAN OF THE
REPUBLIC OF BULGARIA p.
44, p. 66.

25
For the first time, the European
Commission faces a protest
in Sofia

26
Bankwatch, Sofia incinerator

27
Боклукут на Ковачки

Bulgarian NECP envisages that GHG emissions from the waste sector will decrease from 3990 Gg CO₂eq in 2020 to 3684 Gg CO₂eq in 2030 (by 8 per cent).²⁸

Moreover, it means that the **rate of GHG reductions from the waste sector will in fact slow down as a result of the implementation of the measures envisaged in the NECP**, compared to historical trends. Bulgaria's emissions from landfilling have been decreasing steadily since 1990 by well over 10 per cent every five years,

without relying on incineration, thanks mainly to gradual progress on recycling (this progress slowed down after 2010, which is when Bulgaria opened its first incinerators).^{29,30} GHG emissions projections in the draft NECP are not broken down into separate figures for CH₄ and CO₂, or for different management methods, but the trend seems to be consistent with what we know about the climate effects of different waste management methods: incineration of waste saves fewer emissions than recycling.

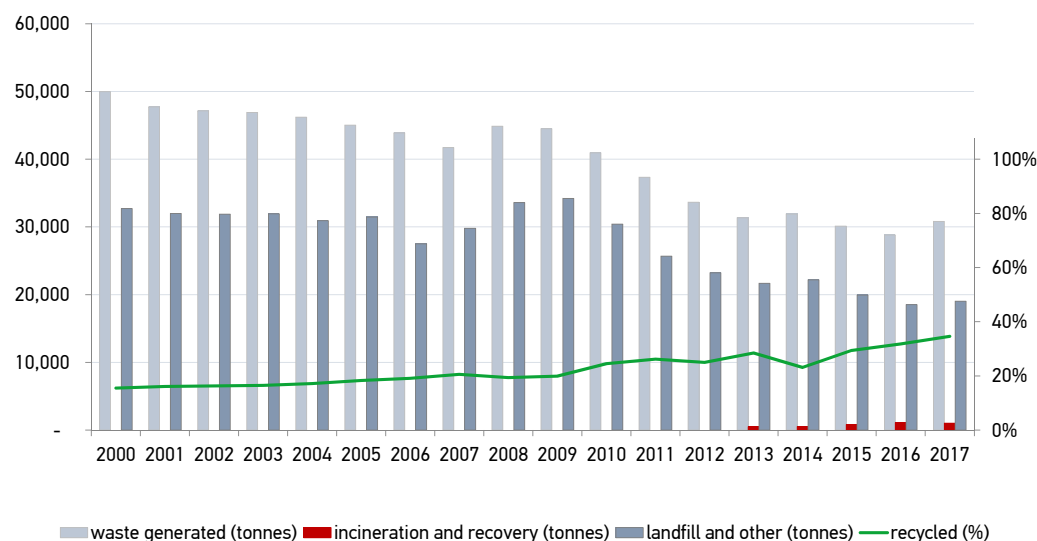


Chart 1. Waste management in Bulgaria [source: Eurostat]

28
Ibid., p. 120.

29
Bulgaria's National Inventory
Report 2018 – Submission
under UNFCCC

30
Eurostat, Municipal waste by
waste management operations



Planning new incinerators as progress on recycling stagnates

Latvia is a country with a high rate of waste disposal without pre-treatment (44 per cent of generated waste in 2016). Yet recent data show a rapid decrease in landfilling (494 kt in 2015; 354 kt in 2016; 231 kt in 2017).³¹ Thus, there has been a rather sharp reduction despite the absence of municipal waste incinerators and little progress in recycling. In 2017,³² increased waste exports could have been responsible for this trend (337 kt in 2015; 229 kt in 2016; 574 kt in 2017). Since 2010, industrial incineration takes place at a cement kiln ("Schwenk Latvija") but most of the solid recovered fuel (SRF) (~ 60 mt / year) is imported.

In 2016, waste sector was the source of 6.4 per cent of total GHG emissions (725.87 kt CO₂ equivalents), excluding land use, land-use change and forestry (LULUCF), representing an insignificant 3.4 per cent increase since 1990. GHG emissions in the waste sector fluctuate yearly, and numbers may change in response to different inventory methods.³³ The NECP estimates that the emissions will "gradually reduce from 618 (in 2016) to 326 kt of CO₂ eq. in 2030 and 245 kt of CO₂ eq. in 2040".³⁴ This change will predominantly result from increased composting and recycling followed by improved wastewater treatment.

Responding to a shortage of waste management facilities and increasing restrictions on landfilling in the years 2020-2035, **Latvia plans to build its first municipal waste incinerator in the early 2020s**. The NECP says that this first project in Ventspils will be partly funded from the Cohesion fund. The plan lists "waste-to-energy" among the measures being implemented for the renewable energy dimension, noting that 30-50 per cent of municipal waste is biodegradable.³⁵

The yearly capacity of the plant will be 15 300 tonnes of RDF, originating from the municipality and the nearest waste management regions. The CPH plant will produce 44 300 MWh of heat and

12 400 MWh electricity per year. 31 700 MWh of the heat will be used to replace an existing coal plant. The project will be accomplished in three years.³⁶

In addition to building the first municipal waste incinerator, the NECP also includes two projects for anaerobic digestion of biodegradable waste in landfills for producing biogas.

Landfill reduction is the main rationale for planning incineration plants, but transforming urban heating systems and advancing CHP capacity are other driving forces. Besides Ventspils, there are more projects discussed in other locations, put forward by municipal waste companies in the largest cities Riga and Daugavpils and a private CPH "Fortum Latvia" in Jelgava. "Fortum Latvia" operates a large biomass CHP and currently receives capacity-based payments from the mandatory procurement scheme (EUR 5.2 million in 2018).³⁷ Although this support mechanism is criticised as flawed for a sustainable electricity market, it has granted lower prices for district heating. Thus by adding waste incineration to its fuel mix, "Fortum Latvia" has claimed that municipal heating costs would increase less after the state-granted support ends in the 2020s.³⁸

The total capacity of the planned installations in three different regions could be about 60 000 tonnes a year, corresponding to around 7 per cent of Latvia's total waste generation in 2017 (851 kt). Another project whose capacity has not yet been specified is the largest municipal waste management facility, 'Getlini' in Riga. A similar project for Daugavpils was recently put on hold.³⁹

The projects are being put forward as Latvia's domestic recycling rate has not increased significantly, creating the risk that progress on recycling will remain slow and without proper investments.

31

There is a substantial difference in the data published by Eurostat and by Latvia's Central Statistics Bureau Statistics on municipal and hazardous waste

32

CSB Latvia Statistics on municipal and hazardous waste

33

Latvia's UNFCCC National Inventory Report 2019 informs that in 2017 waste sector amounted for 5 per cent of total GHG emissions (565.21 kt CO₂ equivalents)

34

Draft National Energy and Climate Plan of Latvia, p. 86.

35

Draft National Energy and Climate Plan of Latvia, p. 44.

36

Information on approved projects for EU funding

37

Ministry of Economics, Information on support scheme payments

38

News from the public hearing of the incineration project proposal in Jelgava

39

Diena newspaper article 23 May 2019

The waste statistics show that the amount of disposal in landfills is decreasing in Latvia, yet the recycling rate is much lower than optimal and not nearing the 50 per cent stipulated by Directive 2008/98/EC. According to the data reported to Eurostat: 29 per cent in 2015, 25 per cent in 2016 and 23 per cent in 2017.⁴⁰

Therefore the early warning report for Latvia⁴¹,

the Roadmap⁴², and the European Semester Country Report⁴³ do not indicate municipal waste incineration as an optimal solution towards more sustainable waste treatment. Rather, the documents stress waste prevention, reuse and recycling as priority investment needs, as well as suggesting improving economic incentives for waste sorting and extended producer responsibility schemes.

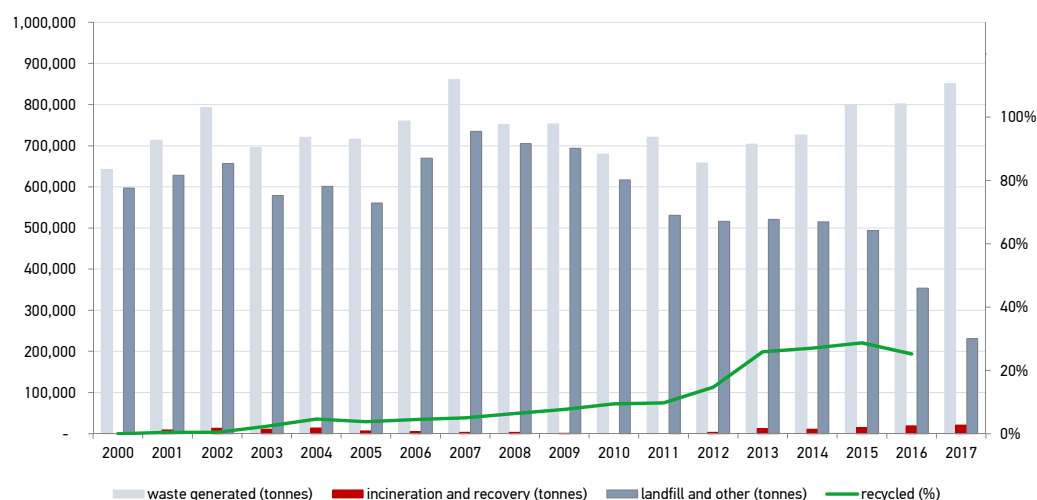


Chart 2. Waste management in Latvia [source: Eurostat]

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There is a significant difference in the data on recycling published by CSB Latvia. The category of “special landfills with anaerobic digestion” is not included in the Eurostat database. See Latvia’s Environmental Performance Review published by OECD.

41

European Commission, COMMISSION STAFF WORKING DOCUMENT The early warning report for Latvia

42

European Commission, Roadmap for Latvia (LV)

43

European Commission, 2019 European Semester: Country Reports

HUNGARY

Investing in incineration has slowed progress on recycling with no end in sight

Currently 67 per cent of all waste and between 55 and 60 per cent of household waste in Hungary goes to landfills, and only 17 per cent (20-25 per cent of household waste) is reused-recycled. The remaining 16 per cent is incinerated.

The waste sector accounts for 6 per cent of total emissions. The disposal of solid waste in landfill accounts for most of the emissions (85 per cent) followed by wastewater treatment (10 per cent), composting (4 per cent) and waste incineration without energy recovery (1 per cent). Emissions declined by 20 per cent between 2005 and 2016.

The draft Hungarian NECP⁴⁴ mentions a few general waste policy perspectives but **does not yet detail policy measures on how to cut back waste GHG emissions** or improve waste prevention or management. However, as numerous national legislative and policy updates on waste recently have been made, are ongoing or planned, which will need to be eventually reflected in the NECP, we can extrapolate and recommend waste-related improvements to the NECP.

The draft NECP **aims to facilitate the use of energy from non-recyclable waste for district heating generation**. Hungary is planning a 200 kt CO₂e emission reduction in the waste sector, aiming “to reduce GHG emissions to 2.97 million tCO₂e in waste management”, but no change in industrial processes and product use is envisaged. It is therefore questionable how those reductions will be achieved without just shifting the economic, social or environmental burden. Credible provisions on improving separate collection and recycling capacity are notably absent from the draft NECP.

Hungary **plans to decrease landfilling to meet the stricter landfilling EU target, but the waste would go instead to incinerators**: cement kilns, the Matra power plant and other smaller existing district heating plants to be retrofitted for co-incineration of RDF and SRF-relabelled as

RDF. As there is a landfilling fee, the government estimates that it would be more economical to process a larger share of waste into RDF and incinerate it instead of landfilling, as there is no fee for depositing the recement (i.e. ash) output from the waste incineration.

The problem with those plans it is that Hungary would favour the second-worst form of the waste hierarchy (incineration with energy recovery) instead of focusing on prevention, reuse and recycling. This directly aggravates Hungary's struggles to meet the waste recycling targets.

Mixed household waste contains around 50 per cent recyclable plastic, paper and glass, according to an estimate by the FKF Ltd. waste collection company. If the recyclable materials were taken out, the amount of RDF and consecutively SRF would be hardly sufficient for the Hungarian incinerators, and the energy value would be much lower, making the incineration plans economically even less viable. Because of those factors, expanding incineration capacity may create policy and economic disincentives for separate collection and recycling.

Indeed, there is an evident risk that the plans, if implemented, would divert public funds away from more sustainable waste management options. The draft NECP states that “multi-fuel firing power plants and waste incinerator power plants are eligible for subsidies only for electricity generated from renewable energy sources” under Hungary's renewable energy support scheme of January 2017. This can be

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National Energy and Climate Plan of Hungary (Draft)

problematic as the percentage of renewable material in the waste input is not constant and is hard to calculate, which may result in 'accidental' subsidies of non-renewable waste incineration. In this context it is also worrying that in the draft NECP, targets, plans and figures are stated collectively for biomass and the renewable part of waste. Moreover, new or newly converted multi-fuel firing power plants and waste incinerator power plants cannot be subsidised this way (according to the Energy and Environment State Aid Guidelines) unless it is a feed-in premium awarded via auction.

As ETS companies, some of these Hungarian plants and kilns are considering funds for waste incineration from the Modernisation Fund, possibly as retrofits or CHP investment.⁴⁵ There were five waste incineration project ideas worth totalling EUR 134 million. While the **HUHAI waste incinerator project in Budapest seems to have been de-prioritised (but not finally or fully abandoned yet) and no EU funding is being requested for it currently,**^{46, 47} **the government is now aiming for smaller, regional new or retrofitted plants for waste incineration.**

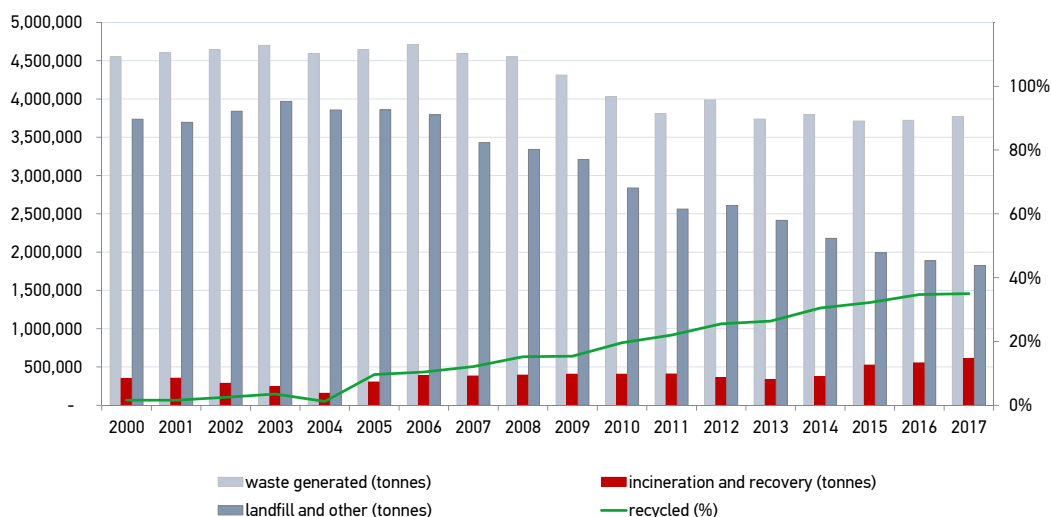


Chart 3. Waste management in Hungary [source: Eurostat]

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Those plans were presented during a dedicated Commission workshop in Budapest based on responses to a questionnaire about project ideas for the Modernisation Fund, distributed by the Ministry for Innovation and Technology towards Hungarian ETS companies, CLIMA-MF workshop on 21 January 2019

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Bankwatch, Budapest waste incinerator (HUHA2)

47

Bankwatch, Pyromaniacs in Budapest want to burn EU funds in new waste incinerator



Planning more incineration capacity than it needs, undermining its recycling targets

Poland's NECP identifies **'increasing the use of waste for energy purposes' (especially in CHP units) as a way to develop 'environment-friendly and efficient district heating systems'**.⁴⁸ Waste-derived heat from municipal waste is presented, alongside biomass, as an important, economically-efficient renewable energy source for the heating sector.⁴⁹ The draft NECP also states that the development of technologies for materials and energy recovery from waste would be one of the priorities for research and innovation activities,⁵⁰ for which Poland would seek EU funding.⁵¹ 'Increasing the use of RES and waste in district heating' is also identified as one of the priority areas for new infrastructure development.⁵²

The figures provided in the draft NECP are difficult to assess and compare because some of them refer to 'renewable' municipal waste, others to waste in general, which may include industrial waste, and others still, to waste and renewables treated jointly. In any case, **the consumption of 'renewable municipal waste' in the heating sector is expected to increase from 40 ktoe in 2015 to 745 ktoe in 2030 i.e. from 0.8 to 9.2 per cent of total renewable energy in heating**.⁵³ Overall CO₂ emissions from the incineration of waste are expected to triple from 0.6 million tonnes in 2017 (latest data available)⁵⁴ to 1.8 million tonnes in 2030, while CH₄ emissions from landfilling are set to remain relatively stable.⁵⁵

The draft NECP states that waste, alongside biomass, is expected to play an important role in replacing coal as an energy source for heating. Importantly, this concerns predominantly the incineration of municipal and industrial waste in new CHP plants or old heat plants converted to CHP.

The figures in Annex 2 of the draft NECP and already known plans for new waste-to-energy installations indicate that **a waste incineration boom is expected to happen within the next couple of years**. In recent months, Poland has seen **a massive, sustained lobby campaign** promoting the idea that burning municipal waste for heat simultaneously solves two problems:

1. by providing cheap and 'renewable'⁵⁶ fuel to municipal heat plants it uses up a surplus of calorific waste that did not get recycled and cannot be landfilled,⁵⁷ thus resolving a waste management issue, and 2. By helping out the economically-struggling municipal district heating networks by providing an 'ecological' and 'renewable' alternative to coal, thus potentially opening the way to EU funds that would not be available for simple upgrades of coal-fired units, all while providing an additional revenue stream from waste disposal fees.⁵⁸ As such, the waste-to-energy plans are enthusiastically welcomed by some mayors, despite fierce opposition from local residents worried about environmental impacts.⁵⁹

In addition to the 34 incinerators that are included in the regional waste management plans (WPGO, documents which Poland had to adopt as an ex ante condition for receiving EU funding for waste management), Poland has a pipeline of eleven waste-to-energy installations with a total capacity of 806 694 tonnes annually, all currently at various stages of the permitting process.⁶⁰ Some already have received environmental decisions, despite not being envisaged in the waste management plans and despite the fact that if they all become operational, their demand for waste will undermine Poland's ability to meet its recycling targets under EU rules. In total, the capacity of municipal waste incinerators and cement kilns may reach 4.59 million tonnes a year, which would correspond to 38 per cent of all municipal solid waste generated currently annually (12 million tonnes).⁶¹

The view taken by the Ministry of Energy is that Poland should fully utilise the 30 per cent limit set in the National Waste Management Plan (KPGO) for incineration of municipal waste. Because the installations currently listed in the KPGO do not have that much capacity, conversion to waste-fired CHP should be considered for all of the 250 local and medium-sized heating plants that currently need upgrading.⁶² This clearly indicates that the government will seek to modify the current KPGO and the regional waste management plans to allow for even

48-52: See the draft NECP, p. 23 and p. 97; p. 71-72; p. 49; p. 147; p. 76.

53: See Table 30 in Annex 2 to the draft NECP, p. 31.

54: KOBIZE, IOŚ-PIB, Poland's National Inventory Report, p. 247.

55: See Table 23 in Annex 2 to the draft NECP, p. 24 and Table 25 on p. 26. The threefold increase is in fact expected to happen around 2020, as between 2020 and 2030 CO₂ emissions from waste incineration remains stable at around 1.8 million tonnes.

56: Poland plans to co-fire different kinds of waste, mostly RDF, with biomass and in some cases also coal, and account for the biodegradable fraction as renewable. The NECP is vague about this, mentioning 'renewable municipal waste', but not specifying it would be co-fired with fossil fuels and fossil-derived waste. This will lock in fossil infrastructure and crowd out financing for truly clean heating and waste management.

57: Poland banned landfilling of burnable waste since 1st January 2016.

58: Recent events promoting the idea included the conference "Energy potential of municipal waste" organised by the National Fund for Environmental Protection in April 2019, Biomass and alternative fuels in heating conference on 11-12 March 2019, 9th Waste to Fuel Conference on 19-21 March 2019, the International Conference on Thermal Processing of Waste on 29-31 January 2019, PowerPol on 14-15 January 2019 and others.

59: See for example: Pachnie buntem w Żywcu, Inwestycja budzi sprzeciw mieszkańców. Prezydent Zamościa musi wydać decyzję, Trzebinia. Ludzie nie chcą spalarni w elektrowni Siersza.

60: In Gniezno, Gorlice, Nowy Dwór, Starachowice, Tarnów, Trzebinia, Wągrowiec, Zamość and Żywiec (three units).

more waste incineration, at a time when Poland is already not on track to meet its recycling targets.⁶³ Those plans will inevitably crowd out more sustainable waste management projects in terms of access to EU and national funding: waste incineration installations are much more expensive to build and operate than separate collection and recycling facilities,⁶⁴ and as an energy generation source, waste incineration facilities are more than twice as expensive as nuclear facilities according to the government's calculations.⁶⁵

While the draft NECP predicts that the share of

renewable energy in heating and cooling will increase faster than the share of renewables in the electricity generation,⁶⁶ this growth relies predominantly on biomass, which has its own sustainability issues, with waste incineration in the second position. Zero-emission sources of heat such as solar heat panels, heat pumps and photovoltaics, as well as biogas, are set to remain marginal: the NECP does not propose any credible policies or measures to promote their deployment and foresees that in 2030 those technologies combined will account for less than 12 per cent of total renewable energy in the heating and cooling sector.

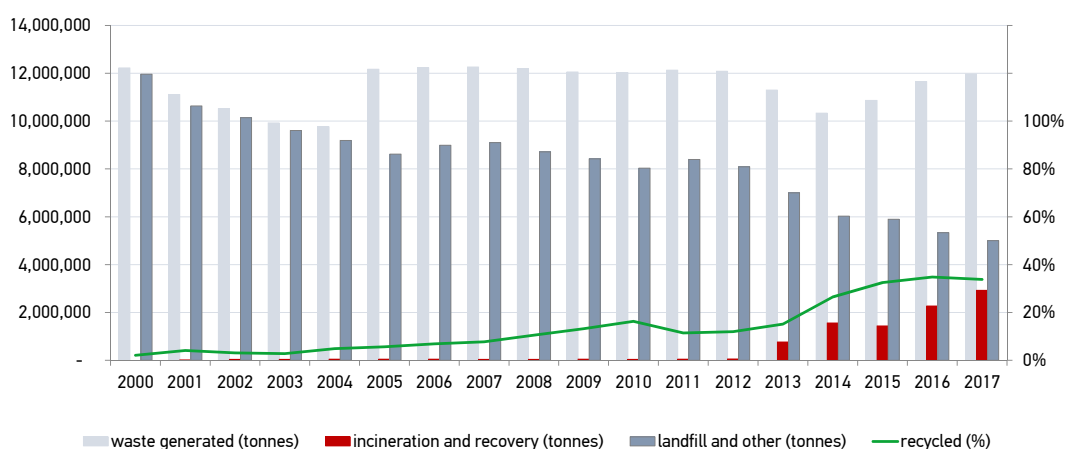


Chart 4. Waste management in Poland [source: Eurostat]

	Waste incinerator ⁶⁷	miniPSZOK separate waste collection system
Investment costs (PLN)	1 728 028 230	102 653 000
Operational costs (PLN, 15 years)*	1 261 946 355	726 851 834
Direct employment	55	1 579
Effect	40% post combustion waste requiring further treatment or landfilling (according to EIA); 1% of metal waste recovered	≤ 30% of waste requiring further treatment or landfilling; ≥ 70% of waste recovered for recycling

Table 2. Cost comparison between the planned Warsaw incinerator with a capacity of 305 200 tonnes annually and an alternative system of mini-points for separate waste collection (mini-PSZOK) handling the same volume of waste. [Source: Calculations by Society for Earth]

61: Based on the sixteen Regional Waste Management Plans (WPGO) and reports by the Regional Marshal Offices, the amount of municipal waste burnt by existing incinerators is currently around 1.18 million tonnes a year. Additionally, 9 cement kilns use between 880 000 and 1 200 000 tonnes a year of RDF originating from municipal solid waste. Hence, in total up to 2.38 million tonnes of municipal waste is already combusted every year. The Ministry of Environment has approved the construction of 34 municipal waste incinerators, which may increase the existing capacity by 2 206 850 tonnes a year. Additionally, approximately 1 million tonnes of hazardous, industrial, and sewage sludge is already burnt in Poland annually.

62: Ministry of Energy, written reply to a letter by Towarzystwo na rzecz Ziemi (Society for Earth).

63: In September 2018, the Commission issued an early warning to Poland, which is among the countries at risk of missing the 2020 target of 50% preparation for re-use / recycling, asking Poland to improve its Extended Producer Responsibility schemes, introduce financial incentives for regional enforcement of municipal targets, and provide technical assistance to municipalities.

64: Monitoring of planned waste incinerators carried by the Society for Earth.

65: Annex 2 to the draft NECP puts the investment cost per MW at EUR 4.5 million for nuclear and EUR 10 million for waste incineration. See table 17 on p. 18.

66: From 14.5% in 2015 to 25.2% in 2030, compared to the overall 2030 renewables target of 21%. See Annex 2 to the draft NECP, p. 29

67: The calculation is based on the most recent offer but does not include costs of repayment of the loan, depreciation and overhaul costs due to the lack of final financial investment details. Operational costs of the incinerator include expected revenues from the sale of heat and electricity but not a gate fee as it would be charged within the same system operated by the city. In both cases the costs of waste transportation are not included as they are equal.



SLOVAKIA

Vague in the NECP, waste incineration capacity set to increase considerably

Waste management is one of the three biggest challenges for Slovakia's environmental policy.⁶⁸

Slovakia still has a **high landfilling rates of municipal waste. At 60 per cent** (66 per cent in 2016), it is among the highest in the EU. **Recycling** (including composting) remains low (30 per cent versus the EU average of 46 per cent). The steep increase in the recycling rate in 2014-2017 was mainly due to adjustments in the statistical reporting methodology rather than by improved performance.

The Slovak Strategy for Environmental Policy sets targets for a 60 per cent recycling, including preparation for re-use, by 2030, and stipulates that the landfilling rate will be reduced to less than 25 per cent by 2035.⁶⁹ However, the country needs to make significant efforts to meet the 50 per cent municipal waste recycling **target by 2020**.⁷⁰ According to the Commission's 'early warning report' Slovakia is at risk of not meeting it.⁷¹

The Slovak draft NECP is significantly underdeveloped with many missing parts. It sets an unambitious target to reduce by 2030 GHG emissions by 12 per cent for sectors outside the EU ETS. The draft does not predict any quantified change in the volume of emissions from waste incineration (currently at 12,86 Gg ekv. CO₂) until 2040.

The draft NECP mentions waste to energy plans⁷² as it states: "There will be support for efficient district heating systems with RES heat, waste heat from industrial processes making economic cost-intensive use of RES, especially locally available biomass/biomethane and waste, including support for multi-fuel systems, will consider the option to create the conditions for the use of CHP plants for the supply of electricity in emergencies [...] It is necessary to use heating plant infrastructure in the construction of energy recovery facilities for municipal waste." It states that there are no plans to build new waste incinerators.

This is unclear but appears to mean that no incineration-only plants would be built, but that current district heating infrastructure would be used for plants running on different fuels like waste, biomass or perhaps being co-fired with fossil fuels.

A private company Ewia has announced plans for an investment of EUR 600 million into centres in five regions to process 650 000 tonnes of waste, of which half would be incinerated.^{73, 74, 75} There are also plans to co-fire 60 000 tonnes of municipal waste and coal in a 96 MW fluid boiler at the Novaky power plant.⁷⁶ Together those waste incineration projects would account for approx 20 per cent of municipal waste.⁷⁷

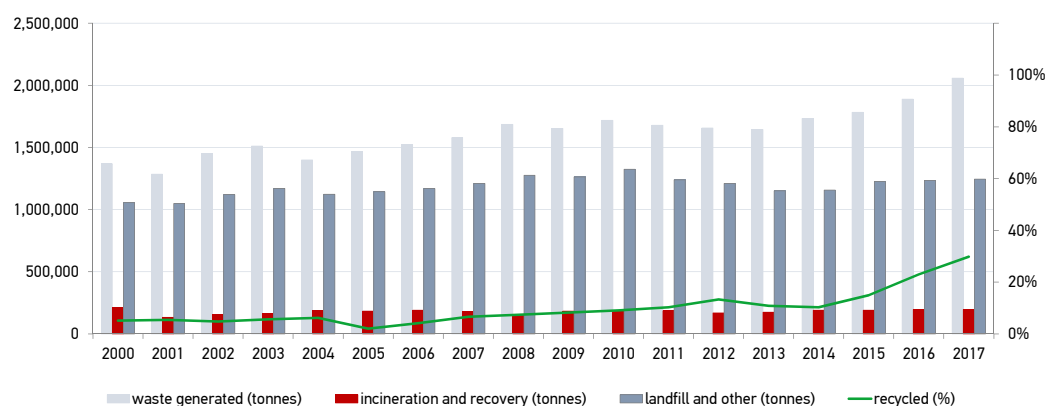


Chart 5. Waste management in Slovakia [source: Eurostat]

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Ministry of the Environment (2017): Tri výzvy životného prostredia na Slovensku

69

Ministry of Environment (2019), Strategy of the Environmental Policy of the Slovak Republic until 2030

70

European environmental agency (2018), The EU Environmental Implementation Review: Country Report – Slovakia.

71

SWD(2018)424 accompanying COM(2018) 656

72

Slovak Ministry of the Economy (2018): Proposal for an Integrated National Energy and Climate Plan p.54

73

Trend: O čo ide investorom, ktorí chcú vraziť 600 miliónov eur do odpadov

74

Elektrárne na odpad možno pribudnú aj na Slovensku. Firma ohlásila veľkú investíciu

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Spoločnosť ewia plánuje výstavbu centier na spracovanie odpadu

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Pôjde uhlie z Hornej Nitry do Vojan či nového fluidného kotla v Novákoch? (2017)

77

Own calculations based on Eurostat data

Conclusions

The countries whose NECPs are analysed in this briefing are all struggling to meet their recycling targets. They have been given clear guidance by the Commission as to what measures they should take to speed up progress towards meeting the waste policy objectives and comply with the waste hierarchy. The measures recommended by the Commission concern primarily prevention, reuse and better separate collection of waste while incineration is never mentioned as part of the solution.

However, the NECPs seem to be following a different direction, planning an expansion of waste incineration capacity with energy recovery, which is usually presented as a way to reduce landfilling rates and improve energy efficiency in district heating networks. The NECPs studied generally lack strong, specific and credible policies and measures aimed at improving recycling rates and fostering the circular economy. Neither do they adequately consider alternative ways that could deliver cleaner system heat. That is despite the changing European policy and legislation landscape, the revised waste and renewable energy directives, and the circular economy objectives.

This is a worrying trend. Burning waste for energy has been demonstrated to generate considerable amounts of climate-relevant greenhouse gas emissions and produce far worse climate effects than recycling, or in some cases even landfilling. It destroys useful materials that could be reused in the economy, creating additional demand for mining, logging, etc., increasing the demand for energy and the pressure on the environment. It also pollutes the air, and may exacerbate the already disastrously bad air quality in some of the countries studied. In view of the urgency of steep greenhouse gas emissions reductions, waste incineration with energy recovery is a weak half-measure at best, and entirely counterproductive at worst.

Among the five countries studied, Poland and Hungary have recently substantially expanded their waste incineration capacities. In both cases this resulted not so much in less

landfilling, but in slower progress on recycling. The examples of Poland and Bulgaria also show that expanding incineration means slower rates of GHG emissions reductions in the waste sector, compared to historical trends.

The waste incineration plans laid down in the NECPs and in existing project pipelines in the countries concerned risk crowding out more sustainable waste and heating solutions in terms of access to finance - of which the exuberantly expensive incinerator projects in Sofia, Bulgaria, and Gdansk, Poland, are two examples.

The plans are also dangerously out of step with the European Union's waste policies. Represented as a way to generate 'renewable' energy, they fail to take into account Member States' obligations concerning separate collection and composting of bio-waste, which, when implemented, will leave little renewable material in municipal waste available for incineration. They also fail to reflect Europe's strategy on plastics, which aims to cut down on single-use plastics and plastic waste i.e. the material that currently accounts for the most high-calorie component of municipal waste. Thus, these plans risk locking in incineration technologies that will have little place in Europe's future waste management landscape.

For this reason, and because of its questionable climate effects, expanding waste incineration with energy recovery should not be treated as a climate measure, nor enshrined in these NECPs and should not be supported financially from public funds. Member States should also be encouraged to plan truly sustainable policies and measures for cutting emissions from waste and improving the energy efficiency of heating in the final versions of the NECPs to get them on track to meet the EU's recycling targets and comply with the waste hierarchy, anticipated changes in waste streams as a result of new EU rules, and the Commission's recommendations.

Recommendations

Developing waste incineration with energy recovery should not be treated as a climate measure in the NECPs because its contribution to Europe's climate objectives is questionable: it saves few if any greenhouse gas emissions and, by crowding out recycling, slows down progress towards an energy- and resource-efficient circular economy.

As such, **it should not be supported with public finance** and the Commission should make sure that the provisions of Article 3 of the revised Renewable Energy Directive are complied with.

Member States which currently plan expansion of waste incineration with energy recovery should be **assisted in planning sustainable alternatives in the waste management and**

heating sectors, such as prevention and reuse of waste, better separate collection, recycling, composting and anaerobic digestion of biogenic waste, and clean heat solutions such as solar panels, heat pumps and heat storage.

Those **Member States should be encouraged to include such sustainable alternatives in the final versions of their NECPs**, with specific and credible provisions on how to meet the recycling targets and make their waste management systems compatible with circular economy objectives: i.e. capable of flexibly responding to changing composition and volume of waste streams, and free of the risk of technological lock-in and stranded assets.

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