



NOT IN **MY BACKYARD?**

Thermal recycling is reliable, makes environmental sense and has no technical alternative – and yet it has an image problem. A number of examples in Europe show how new projects can nevertheless be implemented with great success.

By Piotr Dobrowolski





Incineration plant Amager Bakke, aka Copenhill, in the middle of the Danish capital: an artificial ski slope and recreational hiking area on top of a state-of-the-art waste-to-energy plant

The Queen of Denmark is amused. Every morning when Margrethe II looks out of the windows of Amalienborg Palace, she sees the chimney of Amager Bakke. This has now become a familiar and much-loved sight. Located in the centre of Copenhagen, with a ski slope on its roof, hiking trails, the world's highest artificial climbing wall and a mountain bike trail, the waste incineration plant – which was completed in 2017 and has an annual capacity of 400,000 tonnes – has very quickly become a new landmark in the city. And a tourist attraction. Special plastic mats enable visitors to ski here, at sea level, all year round. It doesn't feel much different to skiing on snow.

Around 900 km further south, in Vienna, stands another landmark: Spittelau waste incineration plant, designed by the versatile Austrian artist, architect and environmental pioneer Friedensreich Hundertwasser. The façade of the building is, in typical

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Johnny Stuen, Agency for Waste Management, Oslo

Hundertwasser style, decorated with countless irregular and colourful shapes and textures. The chimney is somewhat reminiscent of the tower of an Orthodox church. Inside, some 250,000 tonnes of waste a year are turned into electricity and district heating.

VIENNESE CHARM

Spittelau and Amager Bakke are two examples of how incineration can be successful, not just from a technical point of view, but also – and above all – in socio-political terms. Both plants have established themselves not just as real tourist magnets; more importantly, from the perspective of their operators, they are widely accepted by the public. “Vienna really is a city where the inhabitants support an integrated waste management concept. And there's consensus that this also includes thermal recycling as well as waste prevention and recycling,” says Martina Ableidinger, Head of Communications at the municipal department responsi-

COMMENT

EUROPE, YOU CAN DO BETTER!

Well-meaning intentions aren't good enough. Why the EU Commission should reconsider its position on waste incineration.

Piotr Dobrowolski



If the EU Commission has its way, thermal recycling will be prevented from using the label 'sustainable'. At least, this is set out in the current delegated act of the Taxonomy Regulation, a key element of the new Green Deal. Technologies that are not explicitly identified as green in the taxonomy will be in a weaker position when it comes to bank loans and also funding.

The idea behind this is simple, possibly too simple: if waste incineration can no longer be funded, the Commission imagines that countries and municipalities will have to find other ways of processing waste. In theory, this will lead to even more recycling, even more waste prevention, and to new and

improved methods of disposing of any remaining residual waste.

In practice – and it is no coincidence that this objection is being raised by practitioners – the regulation will create a disastrous lock-in effect as far as landfills are concerned, especially in countries that have not yet developed a waste incineration infrastructure. In the south of the EU – and not just there – there are plenty of these: in Greece, 78% of household waste is still sent to landfill; in Romania, 76%; in Cyprus, 67%; and as much as 92% in Malta.

Already being used successfully in Scandinavia, Germany and Austria, thermal recycling would be a way of achieving more waste separation, and thus automatically more material

recycling too, through the upstream collection systems. And a way of disposing of the remainder as safely as possible (while still recovering energy in the process). If building the associated infrastructure becomes financially impossible, however, poorer countries will be forced to continue landfilling on a large scale.

The EU doesn't want that to happen either, of course. It has therefore announced a target to reduce the proportion of waste sent to landfill to no more than 10% by 2035. But there's one thing that Brussels isn't saying: where countries without the option of thermal recycling should send their waste that is not suitable for material recycling. To illegal landfills in the forest?

ble for waste management in Vienna. Before municipalities can be in this kind of comfortable position, however, a lot of effort needs to go into convincing people. As well as long-term strategic thinking. Vienna, for instance, draws up a waste management and prevention plan every six years and tries to involve all important stakeholders in the process: politicians, experts and environmental groups. Outlining the experiences gained, Ableidinger says: "This has enabled us to reach agreement on important projects in Vienna during the planning stage and to prevent subsequent protests. One example is the construction of Vienna's third waste incineration plant, Pfaffenau, which was opened in 2008." Incidentally, the initial preparations for building the Pfaffenau plant began around ten years before construction started.

Kristel Moulaert can also confirm that it takes time to convince people. As Managing Director of the intermunicipal

"SUCCESSFUL OPERATORS ACTIVELY APPROACH OPINION LEADERS, WIN OVER LOCAL COMMUNITIES WITH FACTS AND INCENTIVES, AND REGULARLY SEEK DIALOGUE."



Ella Stengler, Confederation of European Waste-to-Energy Plants

waste management organisation ISVAG, formed by the Belgian municipalities of Antwerp, Mortsels, Boom, Puurs, Niel and Hemiksem, Moulaert is currently making sure all the arrangements are in place so that Antwerp's old waste incineration plant, which was planned in 1975, can be replaced by a new building by 2027.

A LONG HAUL

The six years she has will be just about enough time. Although actually, everything is already clear. Despite all the waste prevention and recycling efforts, the volume of household waste in Antwerp that cannot be recycled remains constant, at around 183,500 tonnes per year. The old plant has reached its limit and it would be virtually impossible to upgrade it. The new building, on the other hand, will not only facilitate state-of-the-art technology, but will also drive the expansion of the district heating network and thus contribute to achieving the climate

targets. Moreover, the new plant will even be prepared for developments that are currently still far from market maturity, such as carbon capture technology.

Technical facts alone will not create acceptance, however, no matter how impressive they may be – and nor will mere figures. “That’s why we try to work very hard with comparisons in our external communications,” explains Moulaert. “Usually only technicians can make sense of abstract emission values. But if we show that burning the waste of one million people in our plant generates as much particulate matter as heating 48 households with a wood or pellet fire in an annual comparison, then it becomes clear to ordinary people how clean our technology actually is.”

In addition, ISVAG has created an independent and international pool of experts to assess its plans. Their task was first to examine the existing plans for al-

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Kristel Moulaert, ISVAG, Antwerp

ternatives and, wherever feasible, to work out ways of implementing these. The idea behind this was to ensure that no one objecting to the project would be able to say there would have been an environmentally or economically better solution that the operators hadn’t considered.

ALL QUESTIONS ANSWERED

The pool of experts now provides local residents, politicians and environmental activists with reliable answers to even the most unusual questions. “We usually respond to inquiries within an hour. If we do not know the information, we write that we will answer the mail as soon as possible and contact our experts,” says Moulaert.

Independently of this, however, ISVAG also proactively approaches the public by holding events such as guided tours, open days and information sessions. The organisation also reaches out to politicians: “Very few politicians have a technical

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ENERGY THAT MAKES SENSE

Why thermal recycling deserves far more recognition. A numbers game.

Thermal recycling provides clean energy that would otherwise be irrevocably lost. Non-recyclable plastic that ends up in landfill is, in simplified terms, fossil energy that has been carelessly discarded.

If the plastic is recycled in a waste-to-energy plant, at least all its energy content can be recovered. Yet we seem to have become so used to having cheap energy permanently available that we don't even notice how much of it we consume in our everyday lives.

We would never be able to produce such large amounts with muscle power: humans are able to generate just 100 kWh per

year using their muscles. In the industrialised world, however, per capita energy consumption is 100 kWh per day. Of this, 85% is fossil energy and is mainly imported.

This leads us to the following conclusion: to maintain our current lifestyle using only energy generated by muscle power, each of us would need to have superpowers and be as strong as 365 people who would do nothing all day other than row or cycle in order to power a generator. An absurd thought experiment. But also a very powerful one, since it shows how valuable every single renewable kWh is that can be generated using waste-to-energy processes.

education," says Moulaert. "Nevertheless, when they meet with voters, they are always confronted with questions about the new construction of our plant. We want them to give good, well-founded answers. That not only helps us, but also them."

Actively approaching opinion leaders, winning over local communities with facts and incentives, and regularly seeking dialogue are important strategies according to Ella Stengler, Managing Director of CEWEP, the Confederation of European Waste-to-Energy Plants. Stengler maintains that as a rule, municipalities and operators that pursue these strategies ultimately succeed in creating a good climate for their projects.

That said, the objections against which they have to defend themselves are all too often irrational. These include the persistent conviction that incineration causes lock-in effects and hinders both material recycling and waste prevention. In reality, however, the effects are quite

"THERE NEEDS TO BE CONSENSUS THAT A WASTE STRATEGY ALSO INCLUDES THERMAL RECYCLING AS WELL AS WASTE PREVENTION AND RECYCLING."



Martina Ableidinger,
Vienna waste management

different, says Stengler. Wherever waste to energy is used, not only does the use of landfill decline, but more material recycling is carried out at the same time. "That's logical. Incineration requires a well-developed, reliable collection system up front. Where such a system exists, it's also easier to separate individual fractions and recycle them materially."

CRITICISM OF THE EU

The figures are revealing. With a high waste-to-energy rate of 42%, the Netherlands simultaneously has a very high recycling and composting rate of 57%. In Romania on the other hand, where only 5% of waste is thermally treated, the recycling and composting rate is also low at just 12%. What happens to a further 7% is unknown, and a huge 76% of waste ends up in landfill.

Stengler is therefore very critical of the fact that incineration has not been included in the EU's Green Deal





Acceptance thanks to artistic enhancement:
Spittelau waste incineration plant designed by Friedensreich Hundertwasser in Vienna, Austria

EIGHT STEPS TO INCREASE ACCEPTANCE

Global lessons on how waste-to-energy projects can become success stories

1. Create transparency and openness. Offer guided tours for local residents, schools and decision-makers.
2. Get as many stakeholders on board as possible.
3. Demonstrate transparency. Post your emission data online in real time, for example.
4. Show social commitment. In the Lithuanian city of Klaipėda, the waste-to-energy operator sponsors both a kindergarten and the local basketball team.
5. Talk to opinion leaders, including those in the digital world (aka influencers).
6. Show that incineration is part of a programme and that you are not competing with material recycling, composting and waste prevention, but complementing them.
7. Turn incineration plants into attractive destinations. In Copenhagen, visitors can even ski on the roof.
8. Create an impressive building with a unique design and architecture – examples from Kraków and Vienna show how it's done.

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taxonomy, which lists the technologies that are considered to be sustainable and which should therefore receive funding. In future, she says, this will make it particularly difficult for poorer EU countries to fund waste-to-energy projects and move away from large-scale landfilling.

This is a view shared by Christophe Cord'homme, Development Director at French equipment manufacturer CNIM. "On the one hand, how does the EU intend to reduce landfill to less than 10% if at the same time it makes it more difficult to finance waste-to-energy plants?" he asks.

Apart from that, he adds, many public discussions ignore the fact that there will never be a perfect circular economy linked to a utopia of zero waste and infinite recycling without needing any energy or decontamination. "There will

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Christophe Cord'homme
CNIM, Paris

always be the need to have waste to energy as a safe final sink for polluted waste that can no longer be recycled. Whoever denies this probably also believes in the myth of perpetual motion."

The energy aspect also needs to be emphasised much more in discussions about thermal recycling. After all, thermal recycling at least allows the energy contained in discarded products to be recovered, most of which is renewable energy. Instead of preventing thermal recycling, Cord'homme believes that Europe would be well advised to create a framework enabling countries that are less advanced in terms of waste management to make the transition from landfilling to obtaining energy from non-recyclable materials.

ACCEPTANCE THROUGH FISCAL PRESSURE

In Great Britain, for example, he explains, acceptance of thermal recycling has been achieved partly through fiscal pressure. When it came to getting local authorities and companies to recycle their residual waste thermally instead of sending it to landfill, an important but progressive increase in landfill prices (via taxation) was announced: an increase of 10% per year over ten years. Everyone could then calculate when landfilling would no longer pay off and switch over in time. The end result spoke for itself: the landfill share in the UK has fallen from 70% to 17% since 2000 and has been replaced by a mix of resource-from-waste facilities, which recover both material and energy.

And another point needs to be communicated even more strongly to policy-makers, consumers and citizens: the fact that thermal recycling nowadays has nothing to do with the dioxin scandals or open burning on the street experienced in the past, which is occasionally still seen in the odd place today. Quite the opposite, in fact: there are few sectors that have to meet stricter emission requirements than the waste industry.

This is also underlined by Johnny Stuen, Production Director at the Agency for Waste Management in the Norwegian capital of Oslo. "From a technical point

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of view,” he says, “energy recovery of residual waste is at a very high level, and the so-called advanced thermal treatment technologies will probably not lead to either lower emissions or a better energy yield. So I don’t think we’ll see much change here in the next 20 to 30 years.” With even better filters and with carbon capture systems, he says, the emissions balance could be improved even further, but basically there is only room for small optimisation steps.

“If material recycling is not possible and we don’t have clean monostreams, but mixed material, incineration is the best solution,” emphasises Stuen, and then adds self-critically: “I sometimes think this very essential point is lost in discussions about incineration. We should communicate it much more forcefully.” —

WUPPERTAL:

With hydrogen through the valley

The magic formula in Germany’s Ruhr valley goes by the name of sector coupling. At Wuppertal incineration plant, this is put into practice in a particularly clever way. The energy generated by the plant is used to produce hydrogen, which is utilised instead of diesel to power ten buses in the city’s public transport network. More buses are set to join the fleet soon. In future, hydrogen – which is produced using energy from incineration plants – could also be used to fuel refuse collection vehicles. One of the reasons why this idea is so exciting is that refuse collection vehicles are generally fairly noisy when they are in operation. If they were powered by hydrogen, they could become not just greener but also quieter.



Green public transport thanks to waste incineration: a bus powered by hydrogen from the incineration plant on the road in the German city of Wuppertal



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