



A roundabout, not a one-way street

Making sustainable waste management work

A better world tomorrow?



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617 kilos: that's the average amount of waste generated by every German every year. That means that at my age, I have produced more than 38 tonnes of waste in my lifetime – perhaps slightly less, assuming that we lived in a less wasteful society in the past. As children, we learned what could be thrown away and what was to be used for a long time. Not that I am harking back to the “good old days”: on the contrary, we can all remember the problems that affected waste disposal well into the 1980s. In those days, landfill was the default option for the disposal of all types of waste, with no thought given to recycling or reducing the volume of waste. And as mountains of hazardous waste built up at poorly secured landfill sites, toxins leached into groundwater and methane from landfill gas escaped into the atmosphere.

So what do we need from a sustainable circular economy today? In this issue of *eco@work*, we provide some answers. Less and cleaner: these two keywords describe at least part of the solution. We consider how we can produce less waste, how we can put it to good use as a source of energy and materials in a circular economy, and how we can ensure that problematical waste streams are treated and disposed of properly. We look at how Germany and Europe are tackling these challenges. And we revisit the facts in more detail: how much waste is being produced, and where? Which preconceptions exist in relation to waste and recycling, and how do we tackle them? Just how useful is waste separation in reality? And in our interview, Stéphane Ardit from the European Environmental Bureau tells us how the EU member states are trying – and succeeding – to move towards a circular economy.

I hope you enjoy this issue of *eco@work*.
Yours,

Michael Sailer

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“The zero waste society starts with production”

Political cooperation, consumer awareness and producer responsibility in the transition to a European circular economy – these are all part of Stéphane Ardit’s brief as Products and Waste Policy Manager at the European Environmental Bureau (EEB), a federation of European environmental organisations. Stéphane is responsible for monitoring the development of legislation and economic instruments to support a transition towards a zero waste society. In this interview with *eco@work*, he explains what action Germany needs to take in this context, and discusses the draft Circular Economy Strategy unveiled by the European Commission in December 2015.

Mr Ardit, what’s your take on the Commission’s draft Strategy?

In short, it should be more ambitious. The published targets for the share of municipal waste to be recycled by 2030 are weaker than in the previous draft and are now set at 65 instead of 70 per cent. The draft looks like a political compromise rather than offering the best possible scenario that the European Commission should be working towards. I also see problems with bio-waste and landfill.

Which problems?

According to the draft, as much as 10 per cent of municipal waste can continue to go to landfill until 2030, and recyclable or compostable waste is not excluded from this figure. There are no mandatory provisions on separate collection of bio-waste; the draft merely states that this should take place where technically, environmentally and economically practicable. This leaves an awful lot of loopholes.

What about ecodesign?

Ecological design is vital for waste prevention and resource efficiency. Unfortunately, the Commission has merely summarised existing initiatives. What we need is a completely new approach that creates genuine obligations for manufacturers and requires them to increase their product transparency. And not just on a voluntary basis – a sensible approach would be to set up a database with key information on every product, covering aspects such as their reparability and the inputs used in their manufacture. This is as important for consumers as it is for the companies responsible for end-of-life product recycling.

How far have we progressed towards a circular economy in Europe?

There is considerable variation between the Member States. Of course, many countries still have very poor recycling rates, so developing a common European vision is very important in addressing that particular issue. There are models of best practice that we need to share, such as producer responsibil-

ity in France and Germany’s recycling system and exemplary approach to waste separation. But I should add that even here, I still see major challenges.

What can Germany do better?

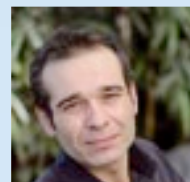
Germany simply produces far too much waste – around twice as much per capita as the Czech Republic and Poland, for example. The German Government should step up its commitment to introducing waste prevention targets, which already exist in other European countries. It should also restrict waste incineration.

You work for a zero waste society. Is zero waste really possible?

If we believe that it is impossible, it will always be out of our reach. I see the zero waste society not as a goal but as an ongoing process which requires serious strategic management. The circular economy starts when the product, service or business model is still an idea in someone’s head. Waste is built into our product cycles, and that’s something we need to change. For example, if we no longer want to use non-recyclable plastic, then we shouldn’t be setting up incineration capacity to dispose of it.

Thank you for talking to *eco@work*.

The interviewer was Christiane Weihe.



Talking to *eco@work*: Stéphane Ardit from the European Environmental Bureau (EEB)
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Waste: a prec



Towards a circular economy

Recycling and reuse have a long history in Germany. A nationwide system of bottle banks for waste glass collection has existed since 1974. The Green Dot scheme and Dual System Germany (DSD) marked their 25th anniversary in 2015. Paper recycling rates doubled from 40.2 per cent in 1990 to 81.6 per cent in 2014. Progress, certainly – but it's still not enough. When it comes to waste management, there are still plenty of challenges to solve, as the Oeko-Institut researchers know only too well: they are engaged in numerous projects on waste disposal, recycling and reuse. Their work focuses particularly on better use of the valuable resources found in waste and also, at present, on the new proposal for a Secondary Resources Act. A working draft of the law was unveiled by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMU) in October 2015.

ious resource



In 2013 alone, Germany produced more than 600 kilos of municipal waste per capita. It consisted of various waste streams: domestic waste and bulky refuse, bio- and green waste, electronic appliances, packaging and so on. In 2013, 63.8 per cent of Germany's municipal waste was recycled or composted. That was the total: the percentage being appropriately recycled differed considerably across the various waste streams. More than 50 per cent of bio-waste was recycled, and for glass and ferrous metals, the figure was around 90 per cent. Predictably, the rates were much lower for bulky refuse (53 per cent) and plastics (around 30 per cent). "A key prerequisite for high-quality recycling is separate collection of the recyclable waste fractions," ex-

plains Günter Dehoust, Deputy Head of the Infrastructure & Enterprises Division at the Oeko-Institut and an expert in waste management. "If recyclables end up in the domestic waste bin, as so often happens with plastics even now, they are likely to be a lost cause for resource conservation. The recycling rates, and especially the amounts being collected via the Dual System, can and must increase, and this applies particularly to plastics."

Better waste sorting and recycling can have a positive effect on the climate as well, according to a study by the Oeko-Institut on behalf of the Federation of the German Waste, Water and Raw Materials Management Industry (BDE). The study, entitled Contribution of recy-

cling management to the energy turnaround, shows that more waste should be recycled and less should be burned. "Plastics in particular are manufactured from oil, so when they are incinerated in inefficient base-load power plants, they produce high carbon emissions, which will not be offset by relevant benefits in future," says Günter Dehoust. "We need to recover more plastics through collection, sorting and processing: according to our scenarios, this has the potential to cut CO₂ emissions by more than a million tonnes." He is convinced that in future, waste incineration should be used solely for the disposal of toxic waste that is unsuitable for high-quality recycling.

NEW LEGISLATION

In the study, published in January 2014, the Oeko-Institut researchers propose the rapid introduction of a uniform bin for recyclables, with ambitious quotas – a model which now features in the draft of the new Secondary Resources Act. But the Oeko-Institut researchers were working on the issue of recyclables long before the draft legislation came into being. Back in 2011, for example, they collaborated with Team Ewen on a simulation to reform the Packaging Ordinance. On behalf of the German Federal Environment Agency, stakeholders from the German states, municipal authorities and the waste disposal industry came together with business representatives, manufacturers and environmental and consumer organisations to assess two models for a single system for the collection of recyclables, with a focus on feasibility, practicability and impacts. “One model looked at handing over all the responsibility to the private sector,” says Günter Dehoust. “The other was based on a division of labour between public sector waste disposal services, manufacturers and distributors.” Despite some concerns on both sides, the results of the simulation showed that both options are viable. “All the participants agreed that we need ambitious recovery of recyclables, with high-quality recycling systems for these materials. To achieve that, the loopholes in the Packaging Ordinance must be closed and all types of packaging should be integrated into the system.”

The BMU’s working draft of a new Secondary Resources Act is an important step in this direction. The yellow bin will become the recyclables bin and will also be used to collect non-packaging made from similar materials, such as plastic spoons and metal pans. “Many people are already using their yellow bins in this way,” says Günter Dehoust. “The new legislation turns this intelligent error into good practice.” He describes the proposed substantial increase in the plastics recycling quota – from the current 36 per cent to 72 per cent – as ambitious and welcome. “The baseline for the quota is the quantity of plastics licensed in the future system,”

he explains. “Product responsibility, which already exists for packaging, will be rolled out to cover a large number of metal and plastic items. The working draft of the new Act also successfully closes the licensing gap.” In order to fulfil the ambitious quota, all waste industry stakeholders will have to “optimise their systems across the board” – which includes setting up modern sorting and processing plants and developing new solutions for materials for which there is currently no recycling system in place, such as the PET containers increasingly being used for retail of sausage and cheese. As a support measure, says Günter Dehoust, the licence fees for types of packaging which cannot yet be recycled should be substantially increased. “Ultimately, what the general public needs is access to clear and comprehensible information, combined with a nationwide charging system based on the polluter pays principle, in order to reward people for separating their waste. This creates an important incentive for recycling,” he says. “It’s the only way to increase the volume of recyclables to the necessary extent.”

MORE BIO

But packaging is not the only area of waste disposal in need of improvement: progress is needed on bio-waste as well. “Its potential is certainly not being utilised to the full,” says Günter Dehoust. “According to Germany’s Closed Substance Cycle and Waste Management Act, there should now be a nationwide system in place for separate collection of bio-waste, starting in January 2015. We generate 10 million tonnes of bio-waste annually, but a good proportion of that is still not being recycled: the figure is closer to five million tonnes.” One problem is the existence of numerous optional exemptions. “For example, you can choose to compost bio-wastes in your garden, but that’s only a partial substitute for the bio-waste bin because many people don’t make full use of this nutrient source,” he says. How can recycling of bio-waste and green waste be improved? That question is answered in guidelines produced by the Oeko-Institut experts in conjunction with the Institute for Energy and Environmental Research (ifeu), IGLux

GmbH and Ressource Abfall GmbH for Baden-Württemberg’s Environment Ministry. “Key steps include nationwide collection based on bio-waste bins, an attractive system that takes account of users’ needs, and a network of collection centres where the public can hand in their woody garden waste,” says Günter Dehoust. As the first step, all bio-waste and non-woody green waste such as leaves and grass cuttings should be used to generate biogas.

INDUSTRIAL WASTE OFFERS POTENTIAL

Alongside private households, companies and producers have a key role to play. “In 2013, Germany generated around 57.1 million tonnes of industrial waste – that’s at least 10 million tonnes more than in 2003,” says Günter Dehoust. On behalf of the Federal Environment Agency and in conjunction with Oetjen-Dehne & Partner Umwelt- und Energie-Consult GmbH, the Oeko-Institut has studied the effects of more intensive recycling of industrial waste streams that are currently being disposed of in mixed waste. The project team looked at ways of easing the burden on the environment. “Mixed industrial/municipal waste contains valuable resources which are rarely recycled at present,” says Günter Dehoust. He is convinced that there is scope to boost the recovery of recyclables through mandatory pre-treatment. Direct incineration should be banned and sorting should be obligatory. “This would increase the yield of metals, plastics, cardboard and paper,” he says. The benefits can be enhanced through optimised recycling processes. The environmental balance sheet drawn up as part of the study shows that in combination with mandatory pre-treatment, these measures can have a very positive effect, especially on the climate. “There’s scope to increase the climate contribution at least fivefold,” says Günter Dehoust. Effective mechanisms, according to the researchers, include better in-company collection of recyclables, along with high-quality energy recovery from non-recyclable waste. It is also important to create sound investment conditions. “If we want waste management companies to invest in modern sorting plants,



we must guarantee that recyclables are not channelled towards cheap disposal plants, bypassing these facilities," says the Oeko-Institut expert.

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THE STORY GOES ON...

As the examples of packaging, bio-waste and industrial waste show, the story of recycling in Germany is far from over. Much more effort is needed – from politicians and the public, but also from

industry, particularly the waste management sector. "Our projects continually show that the conflict between private and public sector waste disposal must be resolved as a matter of urgency," says Günter Dehoust. "If our waste management system is to evolve into a well-functioning circular economy, every stakeholder must contribute to its optimisation." And as he emphasises, there may still be a happy end – but only if everyone works together.

Christiane Weihe



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Waste policy x 28

The circular economy in the EU

Waste policy is in good shape in Germany. It earns frequent and lavish praise from all sides: for its state-of-the-art waste separation, its nationwide bottle deposit scheme and its high recycling rates in many sectors. Compared to the rest of the EU, some might say that Germany has every right to sit back and let the others get on with it. But resting on one's laurels is the way to fall behind – by failing to implement new technologies and missing out on long-term trends. For example, here in Germany, the debate – initiated by the Oeko-Institut with a study published in 2014 – about the new role of waste incineration in the context of the climate goals has scarcely begun. The Federal Republic still has work to do to stay on track towards the EU's circular economy.

When it comes to well-functioning waste management, the European countries' performance varies, in some cases considerably. "There are the front-runners which are already well in the lead, with state-of-the-art facilities, a nationwide system for the collection and separation of various municipal waste streams, and above-average recycling and composting rates," says Dr Georg Mehlhart, a senior researcher at the Oeko-Institut. "And it's true that Germany is way ahead compared with other European countries." Germany already recycles or composts around 64 per cent of its waste, with Austria achieving 58 per cent and Belgium 55 per cent. In the European Union, only five countries have exceeded the 49 per cent mark, and in six countries, the recycling and composting rate in 2013 was below 20 per cent. The weighted average for all 28 EU member states was just under 42 per cent.

On behalf of the European Commission, Oeko-Institut experts have been studying the fine detail of Europe's waste policy since 2008 as part of a joint project with Argus GmbH and the Copenhagen Resource Institute (CRI). "The project aims to improve data in the waste sector, focusing, for example, on industrial and municipal waste but also on scrap cars and e-waste," says Georg Mehlhart. "There's a lot of talk nowadays about the difficulties of comparing data across Europe, and this is true for a certain number of countries. But in general, the quality and availability of data have

greatly improved." However, reporting on municipal waste is still voluntary at present, which means that there are few opportunities to enforce agreements on a mandatory basis. The European Commission's latest Circular Economy Package addresses this issue with its various proposals, which are currently being discussed by the Member States and the European Parliament. "We are also investigating to what extent the Member States are meeting the targets on waste treatment," says Georg Mehlhart. The researchers are further exploring how individual countries can improve their waste management by focusing on waste prevention, efficient recycling, low-impact disposal and reuse.

A NEW STRATEGY

The European Commission's Circular Economy Package is intended to improve waste management – but when it was unveiled in July 2014, it attracted considerable criticism, not least from Germany. "As a result, the proposal was withdrawn by the new Juncker Commission," says Georg Mehlhart. A new draft was submitted in December 2015 and is now being discussed by national government representatives in the Council and by the European Parliament. "Although some elements of the original draft have been dropped, such as targets for the avoidance of food waste, the draft is important for progress across the EU. The recycling

targets for domestic waste and packaging are quite realistic; indeed, for the north-west European countries, they lack ambition." Germany should not oppose more stringent application of the concept of recycling, as it did in 2014, says Georg Mehlhart: the quotas should now apply solely to substances which genuinely replace other raw materials. "An even better option is functional recycling in which the recovered secondary substance performs the same function as the original material," he says. "There is also enough information and studies that enable us to identify losses in the recycling process, from collection to new product." Although this would require changes in reporting, it is the only way to visualise and compare the real effects, he says.



A KEY ROLE FOR GERMANY

With its recycling system, Germany is undoubtedly a frontrunner when it comes to waste policy – but that doesn't mean that it has an unblemished record. Georg Mehlhart explains: "In my view, Germany is far too passive at the European level. You often get the impression that the Germans are saying: 'You know what, we have met almost all the targets so we don't need to get involved.' But that attitude isn't fair – Europe relies on the frontrunner countries to continue to generate momentum." Germany needs to take a stronger stance, for example, on minimum standards for manufacturer responsibility, a more progressive definition of recycling in all waste ordinances, and better reporting, to say nothing of the introduction of new targets on food waste avoidance and the reuse of packaging via deposit schemes. "Europe needs Germany's sensitive support," says Georg Mehlhart. "What's more, in light of the climate targets, it is essential to move the debate about the long-term future of waste incineration plants – which is only just beginning in Germany – into the European arena." This, he says, can prevent

overinvestment in inefficient incineration plants to 2030.

Of course, despite all the criticism, the environmental benefits of the German waste management system should not be ignored. "A major plus point is the landfill ban, for example," says Georg Mehlhart. "That's because landfill produces methane emissions, which have an extremely negative impact on the GHG balance sheet." So what are the benefits of a properly organised system for the collection, recovery and reuse of recyclables from waste? And what are the advantages of energy-efficient incineration of residual waste that cannot be used for other purposes? These issues were explored by Oeko-Institut researchers and the Heidelberg-based Institute for Energy and Environmental Research (IFEU) in a joint study of the climate protection potential of waste management for the OECD countries, the member states and, in three detailed analyses, for India, Egypt and the United States. The study, commissioned by the Federal Environment Agency, found that with better recycling rates and efficient waste incineration for energy generation, the OECD countries can reduce GHG emissions by 353 million tonnes per year, with a figure of 91

million for the EU-28. In the US, which sends more than half its urban waste to landfill, an increase in recycling rates and efficient waste incineration with energy recovery can reduce GHG emissions by as much as 160 million tonnes each year. And in the best scenario, there is scope to cut GHG emissions by 25 million tonnes per year in India and approximately 14 million tonnes per year in Egypt.

Yet another example, then, that Germany is well on track. And exporting innovative and sound environmental techniques to other countries would lead to even more progress on the circular economy. "It is important to support other countries and share our benefits with others," says Georg Mehlhart. "Ultimately, that can also generate substantial profits for German companies specialising in waste management."

Christiane Weihe



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