

Living without plastics – but how?

Consume less plastics,
recycle more

Plastics in Europe Interview with Piotr Barczak

For a new culture of sorting



Jan Peter Schemmel
CEO, Oeko-Institut
j.schemmel@oeko.de

I pulled almost 30,000 tetrapacks out of the stream of waste – in a single shift. That was in the mid-1990s, when I spent a couple of days in a sorting plant where I sorted waste by hand. They were probably some of the most instructive days I have ever spent at work, providing insights into our throwaway culture, our sorting habits and the vast quantities of plastic packaging that we get through.

Plastics should not be condemned out of hand, because it is indisputable that they have many positive properties. But the way in which we consume and dispose of plastics, and the scale on which we do so, has long been a problem – in particular for the environment. It is unlikely that anyone will quickly forget the images of marine creature that have eaten so much plastics that they starve with a full stomach. Microplastic particles, too, pose a problem for our ecosystems.

Since my time in the sorting plant the proportion of plastics that is recycled has certainly increased, but the rapid growth has occurred mainly in the incineration of recovered plastics for energy generation. At the same time, the amount of packaging we use is increasing: in 2017 it reached a new peak of 18.7 million tonnes in Germany, with the plastic proportion in particular rising significantly.

Reducing our consumption of plastics is a challenge that involves the whole of society. We need an economy that attaches importance to using resources as sparingly as possible and to recyclability, a retail system that does all it can to reduce the accumulation of packaging, and policies that set out clear rules on issues such as the use of recycle and imposes outright bans on certain products, as the EU Single-Use Plastics Directive does. A lot is happening in this field right now, some of it under the EU's Circular Economy Action Plan, which forms part of the European Green Deal and is designed to reduce the amount of waste produced.

And of course we consumers must do our bit. Germans are increasingly failing to live up to their reputation as the world's best sorters of waste: according to a survey by the Forsa Institute, just 65 percent of 18- to 29-year-olds sort their waste meticulously, while 85 percent of the over-60 generation – who were around when waste sorting was introduced – still do so. But the sorting culture is not the only crucial factor – it is also important for everyone to resolve to use as little single-use plastics as possible. For example, my children never now get plastic straws in restaurants, and I buy fruit and vegetables loose whenever I can. Do you have any good tips for reducing plastics use? If you do, please let me know!

Yours,
Jan Peter Schemmel

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Address of editorial office: Borkumstraße 2, 13189 Berlin, Germany
Phone: +49 (0) 30/4050 85-0, Fax: +49 (0) 30/4050 85-388, redaktion@oeko.de, www.oeko.de

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“The European Commission’s Action Plan is pursuing a promising strategy”

The EU has taken various steps to restrict plastics consumption in Europe and boost recycling rates. Piotr Barczak, Senior Policy Officer for Waste at the European Environmental Bureau (EEB), a network of European environmental organisations, is an expert in reducing plastics consumption. In this interview he talks about the opportunities opened up by the EU’s Single-Use Plastics Directive, which – among other things – introduces minimum quotas for the use of recycled plastic and bans certain plastic products. Barczak also evaluates the Circular Economy Action Plan published by the European Commission in March 2020. This presents measures to prevent waste and maximise recycling.

Piotr Barczak, where do we stand in Europe with regard to plastics recycling?

In Europe, 42 percent of plastic packaging is currently recycled and the percentage is gradually increasing. However, worrying trends highlight that virgin plastic production is on the rise and so is the combustion of plastics for energy generation.

How do you view the EU’s Single-Use Plastics Directive?

We are very pleased with this directive, because among other things it lays down a fast procedure, has broad support, holds industry to account and specifies product design requirements. The Chinese ban on imports of plastics waste has of course speeded this up. At the same time, we consider that the directive should be extended to other single-use plastic products such as balloons and hygiene products.

Should there also be stricter rules on plastic carrier bags?

Yes. Many countries still struggle to implement correctly the 2016 directive tackling plastic bags. On product level this depends mainly on how the bags are used. A plastic carrier bag is not necessarily a bad thing if it is used repeatedly. A paper or cotton bag is also not sustainable if it is only used once.

How do you rate the Circular Economy Action Plan?

It is the most ambitious plan ever published by the EC, so of course we welcome it. Behind it there are promising measures that address a number of relevant points such as recyclability, ecodesign and waste prevention. It also highlights the importance of waste reduction for sectors producing textiles and electronics, which was not the case previously, and it involves players such as the automotive sector and information and communication technology.

How can greater recycling be facilitated?

We think a minimum quota of 25 percent recycled material by 2025 would be useful – not just for packaging but also for other plastic products. The aim is to create a pull measure, market demand. A quota of that sort would

provide a good incentive to stop combusting plastics waste on such a large scale. Boosting the separate collection of different types of household waste will also help.

What points are missing from the European Commission’s Action Plan?

We need an overall policy target for reducing resource use in order to decouple plastics consumption from that. In addition, we believe that the market value of plastics needs to be artificially enhanced, perhaps via a tax, to incentivise its circulation. However, it would be essential to ensure that this money flows back into waste management.

What other requirements do you think should be imposed on industry?

Manufacturing companies need to be completely transparent with regard to what materials they use. This is crucial if the whole supply chain is to become more sustainable. It is of help not only to consumers but also – and particularly importantly – to recycling businesses, who then know exactly what type of plastic they are dealing with, including whether it may contain toxic substances. This applies of course not only to Europe but also to businesses that import into the EU. There is a need here for better and more extensive market monitoring. Transparency will eventually benefit environmental protection by making sustainability a core criterion for conducting business.

Thank you for talking to eco@work.

The interviewer was Christiane Weihe.



*Interviewed by eco@work:
Piotr Barczak, Senior Policy Officer for Waste at
the European Environmental Bureau (EEB)*

A world



Consuming less plastics – how does that work?

full of plastics

Worldwide, more than 400 million tonnes of plastics are produced each year. Plastics are ubiquitous in our everyday lives – in the packaging of food and cosmetic products, in mixing bowls and cleaning buckets, in cars and bicycles, in clothing and furniture. This omnipresent material – “plastics” is actually an umbrella term for a variety of manmade polymers – is a relatively new arrival on the scene. Not until the second half of the 20th century did it become widely used in everyday life. Since then, though, consumption has increased rapidly. There are good reasons for this: plastics are efficient, practical and cheap. But the way in which we use them has a host of negative impacts, particularly on the environment. How these can be mitigated is an issue being explored by the Oeko-Institut in a number of projects.

“Plastics have many advantages,” says Dr Andreas Köhler of the Oeko-Institut. “They have favourable technical properties, are light and can be easily moulded and dyed. They are also safe to use, since they don’t splinter like glass. And by comparison with other materials, plastics definitely score in terms of eco-efficiency.” Dr Köhler, a senior researcher in the Sustainable Products & Material Flows Division, also highlights the time-saving benefits of plastic packaging. “It means, for example, that we can buy ready-to-eat food at the supermarket when we are in a hurry. Our lifestyle has become totally geared to eating our fill without having to put in a lot of time, instead of buying fresh foods from the farm.” Food packed in plastics is generally regarded as more hygienic and less perishable. Nevertheless, plastics encourage a quick and careless attitude

to food, says Köhler. “In Germany, the amount of food that ends up in waste averages 82 kilos per person per year, despite protective packaging. As a result of careless consumption, what are really the excellent advantages of plastics quickly turn into disadvantages.”



**BETWEEN 4.8 AND 12.7 MILLION
TONNES OF PLASTICS WASTE
GET INTO THE WORLD’S OCEANS
EACH YEAR.**

Careless disposal of plastics results in pollution on a vast scale. “Around 75 percent of the rubbish found in oceans and on beaches contains plastics – including plastic bags and bottles, single-use products and fishing nets,” says Köhler. It is estimated that between 4.8 and 12.7 million tonnes of plastics waste get into the world’s oceans each year and are never removed. Vast gyres of plastic particles drift in the oceans – garbage that has a very serious effect on marine fauna. “Birds, turtles and fish swallow our plastics waste, become entangled in it or are strangled by it,” explains Köhler. “In addition, all sorts of harmful substances such as softening agents and fire retardants get into the oceans with the plastics.” And we mustn’t forget that plastics are a material produced almost entirely from fossil resources.

LESS LITTERING

The Oeko-Institut, working with ZEUS GmbH, has explored the problem of littering – the deliberate or negligent leaving of waste in public places – in the project “Status quo, action potentials. Instruments and measures to reduce littering”. On behalf of the German Environment Agency (UBA) the project team conducted an online survey of organisations such as public-sector waste management agencies and nature conservation associations. This yielded interesting facts on the types and quantities of litter and on the disposal costs, as well as providing ideas for limiting this waste. “What measures are effective? This was one of the key questions that the project was asking,” explains Dr Georg Mehlhart of the Oeko-Institut. The Deputy Head of the Resources & Transport Division emphasises that many different instruments are needed at federal, state and municipal level. “Starting points can include things such as expansion of returnable packaging systems, bans on single-use products for which alternatives are readily available, getting take-

away providers to contribute to the costs that arise from the littering of their products, or deposits on a wider range of products,” he says. “Better waste logistics and improved product design can also help reduce litter.” Respondents rated accompanying education and awareness-raising measures as particularly effective. In addition, almost 80 percent of respondents believe there is a need for further measures – such as bigger fines and stricter monitoring. “Our analysis also recommended that those responsible for dealing with litter should network with each other and exchange information and ideas on successful approaches,” says Mehlhart.

LESS MICROPLASTICS

It is not only carelessly discarded plastic objects that pose a major problem for our ecosystems but also plastic microparticles, known as microplastics. These are less than five millimetres in diameter and come from articles such as cosmetic products. “Microplastics also arise from the slow decay of plastic products and from abrasion of products



GLOBAL PRODUCTION OF PLASTICS TOTALS MORE THAN 400 MILLION TONNES PER YEAR.

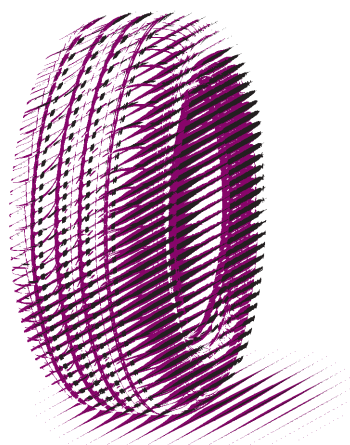
such as car tyres,” says senior researcher Dr Andreas Köhler. Microplastics are now being found in soils, rivers and oceans, causing irreversible pollution. Marine animals such as shellfish and fish ingest these plastic microparticles



and hence also the harmful substances that they contain. "At present we cannot even estimate how harmful microplastics are; as a precaution we must therefore reduce their release into the environment," says Köhler.

In the now-concluded donation-funded project "Living without plastics – but how?" the Oeko-Institut studied three product groups that release large quantities of plastic particles into the environment – vehicle tyres, man-made textiles and plastic food packaging – and considered how these quantities could be reduced. "Hardly anyone knows that tyre abrasion is the largest source of microplastics in the environment," explains Köhler. "In Germany, road traffic produces around 100,000 tonnes of plastic particles per year. That is about a third of the overall total." According to the project team, the only way in which drivers can reduce tyre abrasion is by using their cars less and by driving gently. Tighter legal rules on tyre characteristics and expansion of the EU tyre label could help tyre manufacturers and the automotive sector sell tyres that shed fewer microparticles.

Something of which the majority of consumers are unaware is that synthetic clothing is also a source of microplastics: when these garments are worn and washed, they shed polymer microfibres – about 77 grams per person per year in Germany. Discarded synthetic-fibre textiles can also become a source of microplastics – for example, if the second-hand goods are sent overseas and, once they have been used, end up on unsorted rubbish dumps there. "Do we really need new clothes all the time? Must we always have the latest fashion?" asks Andreas Köhler. "Furthermore, in our everyday lives we don't always need the functions of synthetic fibres – except perhaps for rainwear. But we must be careful: simply replacing man-made fibres with natural ones is not necessarily good for the environment, because vast quantities of water and pesticides are used in cotton production." Köhler believes that we should value our clothes more and repair them instead of throwing them away at the first sign of wear. "Here, too, policy-makers can intervene through regulation; for example, they could reduce value-added tax



IN GERMANY, TYRE ABRASION PRODUCES 100,000 TONNES OF PLASTIC PARTICLES PER YEAR.

on the repair and modification of used clothing." As another starting point, washing machine manufacturers could develop permanently installed micro-fibre filters for their appliances.

Food consumption is another major source of plastics waste. Between 80 and 90 percent of the food in our homes arrives in pre-processed form – ready-meals, packaged meat and cheese, yoghurt in disposable pots. This is convenient, but it doesn't have to be like this. "For example, supermarkets have already started to replace plastic carrier bags with reusable fabric bags. And the zero packaging shops that are springing up are showing that shopping doesn't need to involve lots of plastics," the senior researcher says. "We should also think about portion sizes when we go shopping. Taking one whole salami home with you is better than buying several 100-gram portions." He points out that it is also important to avoid food waste, because packaging is often thrown away with the unused food. "Retailers could also introduce a return and reuse system for food containers". This is clearly an issue for policy-makers. For example, the EU-wide ban on single-use plastic products such as plastic plates, cutlery and straws, which comes into force in 2021, could be extended (for more on the EU ban see the interview with Piotr Barczak on page 3). In the researchers' view, the prohibition could usefully

also cover disposable plastic bottles for fruit juices and soft drinks, since these are particularly hard to recycle.

WITHOUT PLASTICS?

The Oeko-Institut researchers regard living entirely without plastics as unrealistic as long as mass consumption remains a hallmark of our society. Simply replacing plastics with other materials is not necessarily advantageous in environmental terms either. But the serious impacts of plastics consumption on our ecosystems are incalculable; they require us to at least significantly reduce our consumption of this material and hence to change our consumption habits. "We are all part of the problem, but we can all change something every day," says Dr Andreas Köhler. "However," he continues, "living completely without plastics is not something we can impose on individuals. We need the right policy framework and a more radical transformation of society and the economy." The aim is a world perhaps not entirely without plastics, but in which this marvellous yet menacing material is used sensibly and sustainably.

Christiane Weihe



After studying ecology and environmental management at university, Dr Andreas Köhler went on to take a Master's degree in environmental management and policy. He wrote his doctoral thesis on the environmental risks of new technologies at Delft University of Technology. As a senior researcher at the Oeko-Institut he now works on various sustainability aspects of chemicals and technologies, focusing in particular on electrical and electronic products and digitalisation.

a.koehler@oeko.de

A large proportion of plastics waste in Europe is not recycled but instead incinerated for energy generation. Thirty-nine percent of plastics waste is recovered in this way. Another 31 percent goes to landfill, and just 30 percent is recycled. Even in Germany, where the recycling rate for plastics waste is significantly higher at 46 percent, 53 percent is incinerated for energy recovery. Packaging represents the largest

proportion of plastics waste in Germany, accounting for 30.5 percent. It is followed by the construction sector (24.5 percent) and the vehicle industry (11.2 percent). We are wasting a resource that could be reused in many ways. How can recycling rates be increased – over the entire life cycle of products – and material cycles closed? The Oeko-Institut is among those researching this issue.

A wasted resource

Recycling plastics better

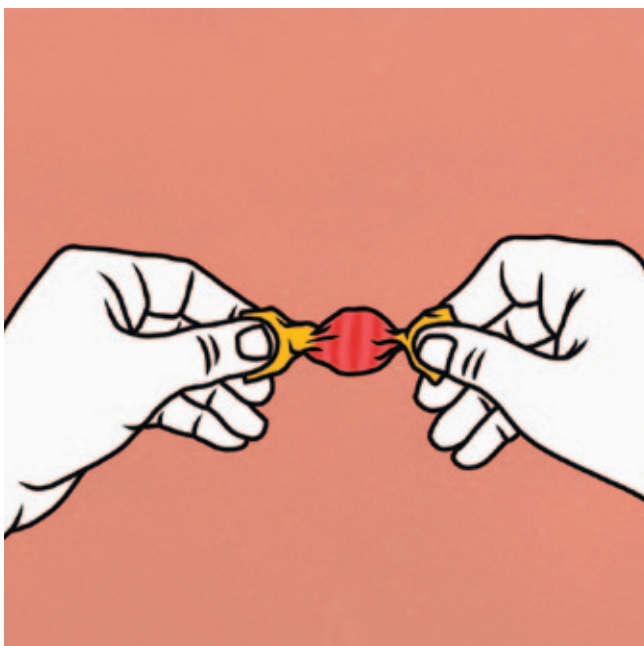
“We need a mix of all sorts of instruments to reduce plastics waste and boost recycling rates,” says Günter Dehoust of the Oeko-Institut. “The first step, of course, is to avoid the consumption of plastics wherever possible.” (For more information see “A world full of plastics” on page 5.) In addition, says Dehoust, policy-makers must ensure that the right framework is in place. The senior researcher calls the new German Packaging Act of 2019 “a minor milestone.” Its provisions include financial incentives for manufacturers who use recyclate and recyclable packaging,” says the waste management expert. “In addition, the prescribed recycling rates for plastic pack-

aging are increasing from the present figure of 36 percent to 63 percent by 2022.” The European Commission’s Circular Economy Action Plan, which forms part of the European Green Deal, is also intended to promote more sustainable resource management. “For example, there are to be rules that reduce packaging and increase the use of recyclate – that is an important step in the right direction,” says Dehoust.

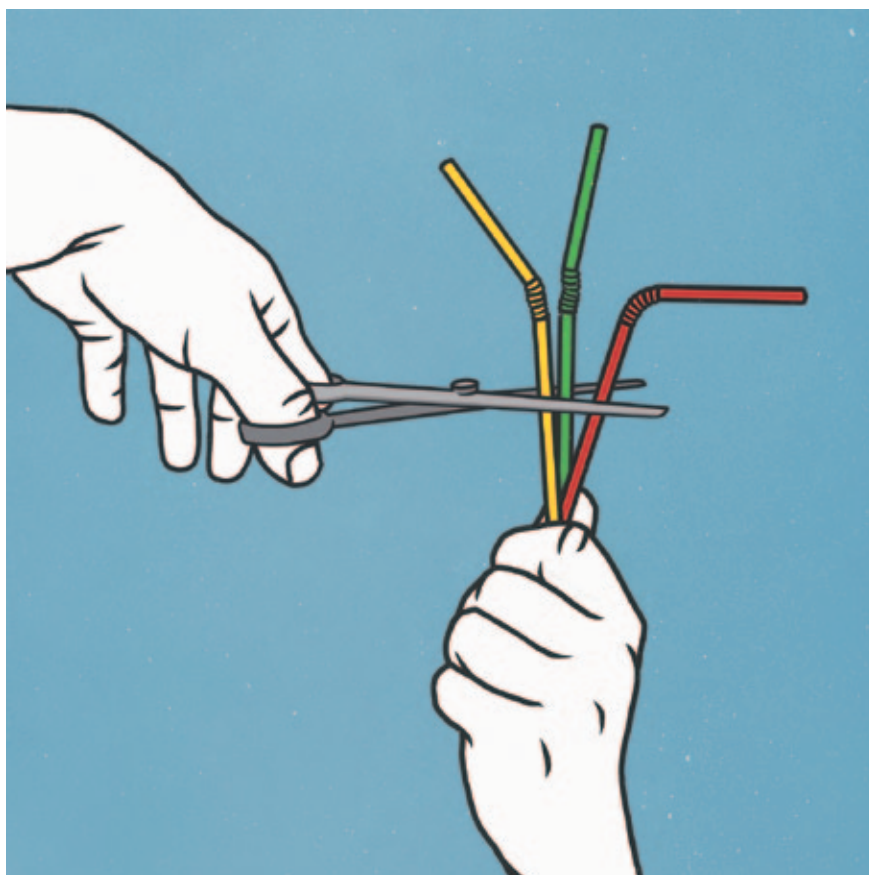
In addition, if the plastics that are produced are to be as widely recyclable as possible, recyclability must be considered right from the start. “The process starts at the product design stage. For example, if packaging is made from a lot of different layers of plastics that are welded together, it is no longer recyclable – or at least not in usable quality,” says Dr Georg Mehlhart of the Oeko-Institut. The Deputy Head of the Resources & Transport Division mentions a number of ways of making packaging easier to recycle: “Different sorts of plastics should be easy to separate from each other, and they should not be heavily dyed or bonded with other materials.” It is also important not to print directly on the plastics. This is why drinks bottles, for example, often incorporate thin films that can be removed easily.

SUSTAINABLE FROM THE START

In a project for Werner & Mertz, which manufactures cleaning products, the Oeko-Institut analysed the company’s recyclate initiative. Under this scheme, the company’s Frosch brand products are sold in packaging made of 100-percent recycled plastics, 20 percent of which comes from PET bottles collected in yellow recycling bags. In future the company aims to make greater use of non-PET packaging, such as opaque bottles that are considered hard to recycle. “We assessed the costs and benefits of this initiative and included a



30.5 PERCENT OF THE PLASTICS PROCESSED IN GERMANY COMES FROM PACKAGING.



POLLUTANTS IN PLASTICS

Plastics recycling also poses challenges that are not immediately visible – such as pollutants in plastics. “Many plastic items contain substances such as softening agents and fire retardants. These are found in products including cars and electronic devices. When the plastics are recycled, these substances are naturally still there in the recycle,” says Dr Georg Mehlhart. “Many environmental organisations are therefore calling for very strict pollutant limits for both new and recycled plastics.” What is the right way forward here? “We are faced with a dilemma: on the one hand we want to recycle as much as possible, but on the other we want the resulting products to be free of toxic substances.” In the long term, products must of course cease to contain pollutants, but in the meantime the Oeko-Institut researcher supports a gradual and application-related approach coupled with a sense of proportion. “Products must be considered individually. Then – and provided that there are no toxicological risks – it may also make sense to enable time-limited rules on the use of recycle in closed recycling loops.”

Christiane Weihe

comparison with other disposal routes and recycling concepts,” says Günter Dehoust. “Numerous factors play a part here – the costs of initial production and of recycling, the source from which the material comes, and the nature of alternative disposal methods.” In the analysis “Vergleich und Gegenüberstellung verschiedener Recyclingverfahren bezüglich ihrer Aufwendungen und ihrem Nutzen” [Comparison and contrasting of various recycling processes in terms of their costs and benefits] the Oeko-Institut researchers show that making plastics from recycle instead of from primary raw materials halves the amount of energy needed. “The main reason why using bottles from the Dual System reduces the energy requirement and greenhouse gas emissions is that these bottles were previously incinerated in waste incineration plants or cement works”, explains Dehoust. “The scheme thus has dual benefits: it saves 65 grams of CO₂ per bottle because less primary plastics are used, and another 35 grams of CO₂ per bottle because emissions from incineration are avoided.” In addition, sophisticated new recycling processes could help achieve the ambitious recycling rates

for plastics set out in the Packaging Act. “Ideally there would soon be lots of imitators and supporters who would help companies such as Werner & Merz improve recycling from mixed resources and for high-quality applications.” But improvements are needed not only at the start of the life cycle of plastic packaging but also at the end, states Georg Mehlhart. “Surveys have shown that the younger generation knows less about sorting waste than older people, and it is also young people who use more single-use plastics,” he says. We need more “rubbish training” – information campaigns for different age groups and people of different cultural backgrounds. It is also important to clarify how the waste is processed and used. “There is often a preconception that everything is probably tipped together and incinerated and that sorted collection is just not worthwhile. But such a sweeping judgement is inaccurate.” And of course it is also incumbent on the waste industry to continue improving its waste sorting and treatment processes. “Even more of the existing facilities must be brought right up to date in order to meet the new recycling targets.”



Dr Georg Mehlhart is Deputy Head of the Resources & Transport Division. He assists national and international institutions and enterprises in the implementation of sustainable water and waste management schemes. In his research, Günter Dehoust focuses on sustainable material flows and the circular economy. He advises policy-makers and businesses in these areas.
g.mehlhart@oeko.de
g.dehoust@oeko.de