RE: VIEWS

2025

RE: BUILD

Wrecking balls are a thing of the past. More recycling is possible – and necessary

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Flag

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Dear Readers

Ludger Rethmann, REMONDIS Board Chairman

An ever greater number of people are choosing to live in cities. This is where, they believe, they will find a better choice of jobs, living space and entertainment. According to the latest estimates, 84.3% of Germany's population will be living in towns and cities by 2050; looking at the whole of the world, this figure is expected to be 68.4%. This growth in urbanisation will also result in a great deal of renovation, demolition and building work. And there are also more demands on local infrastructure wherever populations increase. Construction work is constantly needed, therefore, to improve living spaces and adapt them to the latest requirements.

For decades, using a wrecking ball was the easiest and, supposedly, the most cost-effective way to get rid of old buildings, dilapidated bridges and our building sins of the past. Knock them down, build something new and dump the construction waste at a landfill: maximum efficiency for a linear economy – and for a world that liked to ignore the fact that our planet's natural resources are finite.

Nowadays, we know that our cities and buildings are effectively a huge store of raw materials – raw materials that must be reused. Climate change mitigation measures and the energy transition will, in particular, drive forward the conversion of urban infrastructure over the coming years. It is essential that this demolition work is carried out in a selective and orderly manner to ensure it is as resource friendly as possible. This RE:VIEWS issue turns the spotlight on the different types of materials generated by demolition work. We have taken a deep dive into this subject and considered the role that the circular economy can take in this area. So much for now: there's plenty more that can be done! While demolition work is all about dismantling buildings into their individual parts so the materials can be sensibly recycled, preserving historical buildings is all about ensuring they last long into the future. At the end of the day, they are part of our cultural heritage that has shaped both our society and history. We have taken a look at two fascinating projects in this issue – both of which were carried out 'deep' in the west of Germany: extensive renovation work needed to be carried out at both the Deutsche Bergbau-Museum in Bochum and the Kokerei Zollverein in Essen. Both required bespoke logistics and spectacular system and working scaffolding.

Towns and regions, however, not only live from their historical buildings but also from events that bring their communities together, such as festivals and markets. This coming together of people, however, also generates large volumes of waste. And it is an undeniable fact that the drinks cups etc do not always end up in the litter bins provided. The City of Düsseldorf responded to this a while ago by deciding that all public events must use reusable packaging. We looked at how the city and its partners have implemented this and at the opportunities and risks it has created.

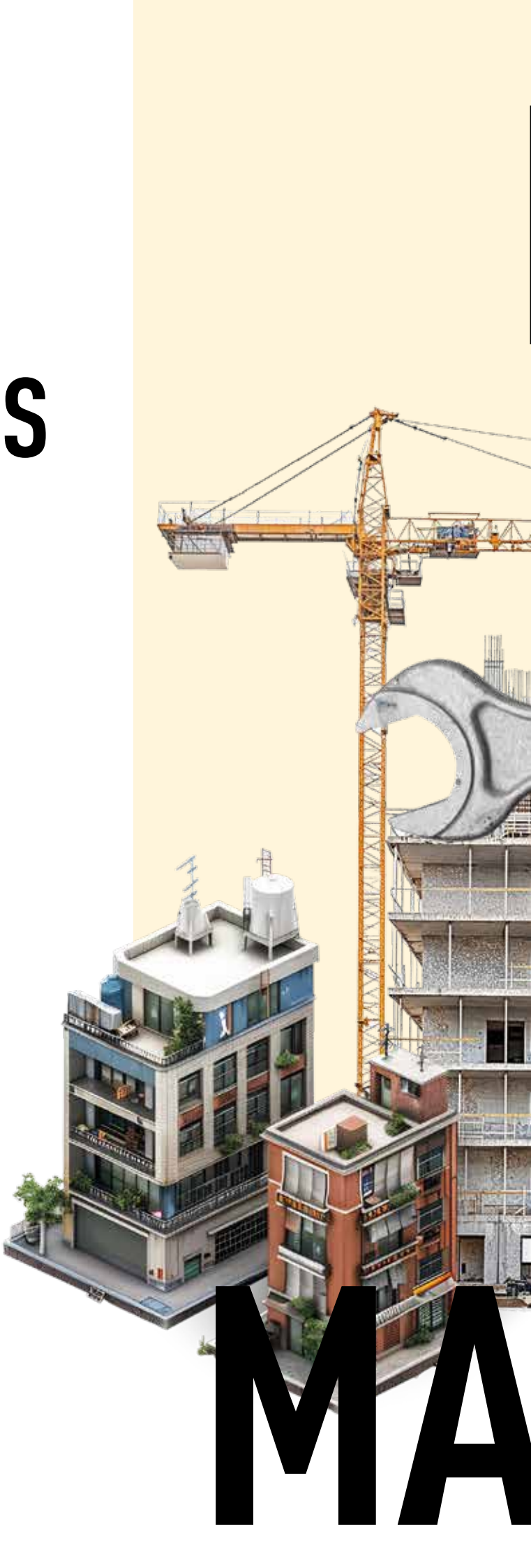
This is just a small selection of the many interesting topics found in this latest issue. As always, we also take a look beyond Germany's borders, for example to illustrate the innovative and pragmatic methods being used to drive forward the Dutch circular economy. And pragmatism is right at the top of the list at BEG as well, our public private partnership with the City of Bremerhaven. The town's picturesque setting is not the only thing that stands out – it also set the standards for its circular economy at a very early stage.

I very much hope you enjoy reading this latest issue.
Yours

Ludger Rethmann

MORE RECYCLING IS POSSIBLE – AND NECESSARY

Towns and urban centres are effectively a huge store of raw materials. The UBA [Federal Environment Agency] has estimated that Germany's infrastructure and buildings contain around 28 billion tonnes of raw materials. Urban infrastructure will have to be changed over the coming years, in particular due to climate change mitigation measures and the energy transition – and this will be felt by everyone. It is essential that the demolition work is carried out in a selective and orderly manner to ensure it is as resource friendly as possible.



RAW

TERIALS

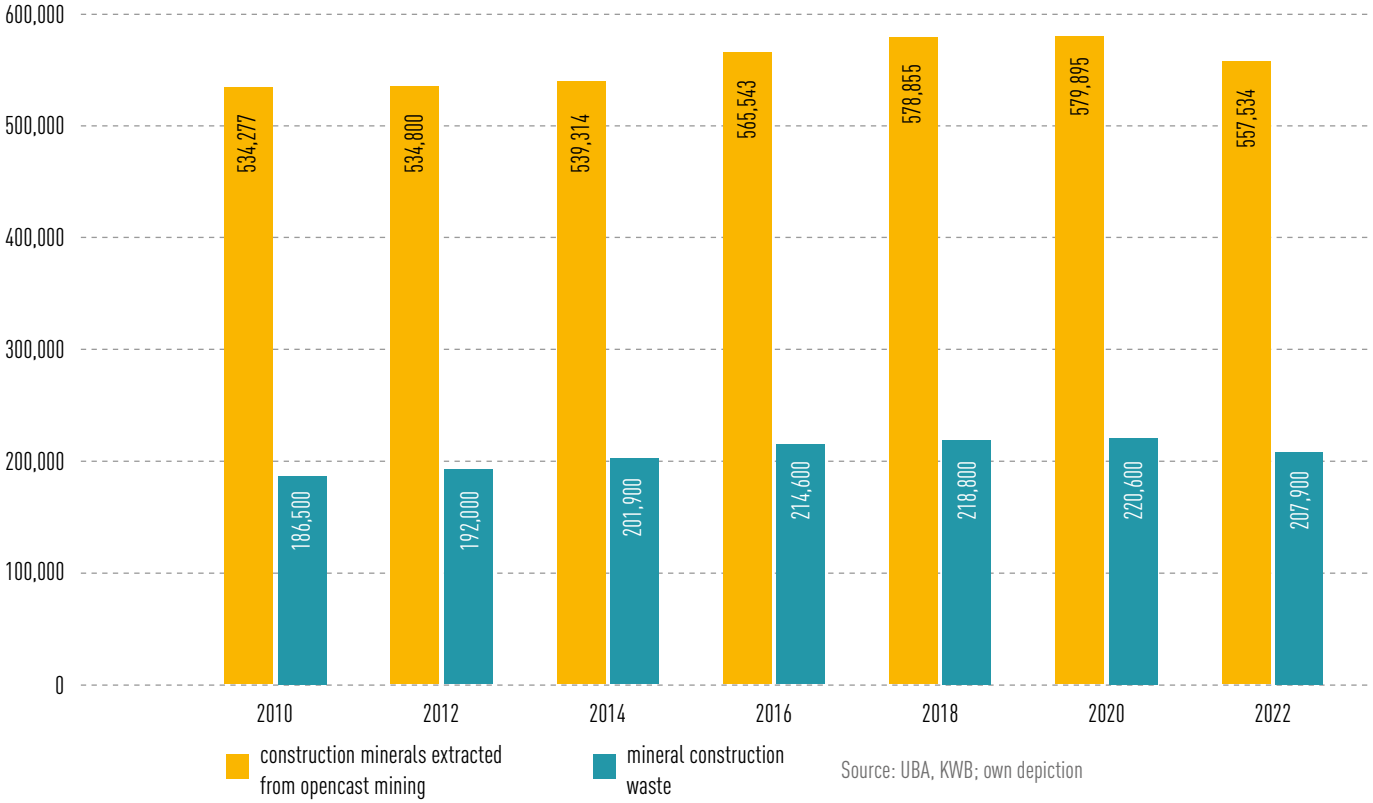
RECY-

The pear-shaped, solid steel ball slams into the concrete wall with full force. A deafening noise breaks the silence whenever the driver of the digger directs the heavy wrecking ball against the building. Windows break, plaster flies through the air, the dust makes it difficult to breathe.

For decades, using a wrecking ball was the easiest and, supposedly, the most cost-effective way to get rid of worn-out buildings, dilapidated bridges and our building sins of the past. Knock them down, build something new and dump the construction waste at the nearest possible landfill: maximum efficiency for a linear economy – and for a world that had closed both eyes to the fact that our planet's natural resources are finite. With climate change continuing to take hold, it will not be possible to simply carry on like this. Heavier rain events on the one hand and longer droughts on the other both highlight the downsides of prosperity – bought at the expense of the environment, throwing it out of balance. These weather events are testing urban infrastructure to the limit and forcing councils to adopt new measures, for example, intelligent rainwater management systems such as sponge cities. At the same time, the energy infrastructure of the fossil fuel age must be dismantled and rebuilt for renewable energies. Both effects will result in whole cities having to be redeveloped over the coming years to adapt to these new conditions.

CLING

VOLUMES OF VIRGIN RAW MATERIALS USED & MINERAL WASTE GENERATED IN THE CONSTRUCTION SECTOR (IN 1,000 TONNES)



Ever more materials are being used

The UBA estimated that Germany's infrastructure and buildings contained around 28 billion tonnes of raw materials in 2010. And more and more buildings are being added: according to the UBA, Germany mined around 557 million tonnes of virgin raw materials in 2022 to get the building materials it needed. Figures published by the KWB – a collaboration project of a number of associations in the construction sector and circular economy – show that around 208 million tonnes of construction waste were generated in the same year. The amount of material used to construct buildings in Germany, therefore, increased by a good 350 million tonnes in 2022 alone. If this figure is extrapolated and the estimated 28 billion tonnes from 2010 added to it, then the amount of materials contained in the country's buildings and infrastructure must be around 33 billion tonnes in 2025.

Just how much of these must be dismantled and redeveloped to make buildings, roads and towns fit for the future and fit for our grandchildren is not yet clear. But it will be a big mountain to climb. The circular economy can help here to make the required redevelopments more sustainable. There is plenty of room for improvement though: according to the KWB, 90% of the 208 million tonnes of construction waste generated in 2022 was recycled. However, this is still far away from a circular economy. Why? Because a mere 13.5% of the aggregate needed at present is covered by recycled aggregate.

The amount of material used to construct buildings in Germany increased by a good 350 million tonnes in 2022 alone.

> "We need to separate the different types of materials at building sites as cleanly as possible to increase the volumes of recyclable materials available."
>
> Berthold Heuser, Authorised Signatory at REMONDIS' subsidiary REMEX

Selective demolition a must for efficient resource management

"We need to separate the different types of materials at building sites as cleanly as possible to increase the volumes of recyclable materials available," commented Berthold Heuser from the REMONDIS Group company REMEX, which specialises in recycling construction waste. Wrecking balls are not able to generate such a homogeneous group of waste materials: according to data from the 'Information System Built Environment' (ISBE) run by the Leibniz Institute of Ecological Urban and Regional Development, around 90% of buildings are made up of mineral materials. Despite this large proportion, the remaining 10% are still enough to have all of the materials classified as non-recyclable or even hazardous. "Sorting them won't help here either. The landfill is the only option left," said Heuser.

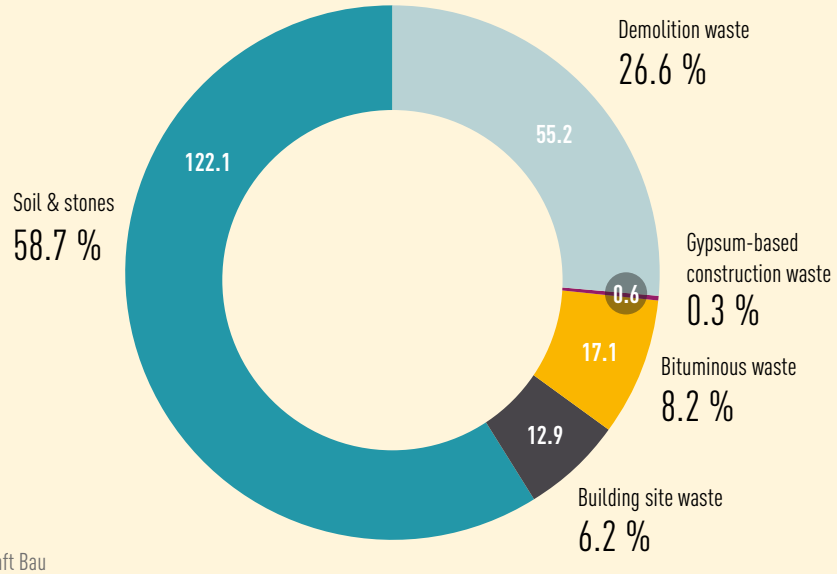
Furthermore, the German Commercial Waste Ordinance [GewAbfV] mandates selective demolition work and the segregated collection of the materials listed in the ordinance. These include, for example, glass, plastics, metal and timber. However, not all authorities enforce the German Commercial Waste Ordinance as strictly as they should: for years now, companies and associations operating in the circular economy have been criticising the fact that this ordinance is effectively not being enforced at all in many of the German states. "Unfortunately, it's no different with construction waste either," Heuser said. Some German states – such as Brandenburg – have published guidelines on selective demolition. But these are no more than a recommendation and are not legally binding.

Construction waste is an excellent base material for REMEXIT as it is primarily made up of materials like concrete, bricks, tiles, asphalt, gravel and sand.

One problem is that there are still no mandatory rules about how buildings must be demolished. According to information published by the DA [German Demolition Association], the statutory regulations primarily originate from general waste hierarchy rules and the sorting regulations set out in the German Circular Economy Law [KrWG].

STATISTICALLY RECORDED VOLUMES OF MINERAL CONSTRUCTION WASTE IN 2022 (IN MILLION TONNES)

TOTAL VOLUME: 207.9M TONNES



Source: Kreislaufwirtschaft Bau

REMEX's substitute product REMEXIT demonstrates what can already be done today with mineral materials generated from selective demolition work. The recycling plants operated by REMEX use the waste collected from building and road construction projects to produce REMEXIT. Every year, REMEX produces more than two million tonnes of recycled aggregate at its 20+ facilities.

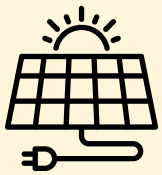
"Construction waste is an excellent base material for REMEXIT as it is primarily made up of materials like concrete, bricks, tiles, asphalt, gravel and sand," explained Heuser.

Modern screening and selection procedures are used during the recycling process to produce different particle sizes. These are then combined with specific amounts of the various types of REMEXIT aggregate, which are particularly suitable for road construction and earthwork projects thanks to their positive physical properties. REMEXIT is, for example, well suited for use in frost protection layers and gravel load-bearing courses in all categories of road – including motorways.

SOLA

Solar modules: high-quality raw materials require selective demolition

Even though minerals easily make up the biggest waste stream generated by the construction sector – both from point of view of weight and volume – this does not mean that the other materials play less of a role. Decommissioned solar PV systems are growing in importance because of their raw material contents (such as silicon, silver and copper). "The number of old solar modules being returned is not good," commented Tim Wilms, managing director of REMONDIS Electrorecycling GmbH, a TSR Group company, referring to the figures published by EAR (Stiftung Elektroaltgeräte Register). According to these numbers, companies manufacturing and selling PV systems installed over 800,000 tonnes of solar panels on the roofs of private households in 2023. However, a mere 2,000 tonnes of panels were returned for recycling via EAR's collection scheme in the same year. "The solar panel market is still ramping up, especially in the B2C sector. This means that there is bound to be a certain discrepancy between the input and output volumes," Tim Wilms explained. Having said this, the numbers being returned are so low that many experts are puzzling about their whereabouts – and are assuming that some PV modules are ending up in the skips containing mixed construction waste instead of on the segregated piles of materials.



Companies manufacturing and selling PV systems installed over 800,000 tonnes of solar panels on the roofs of private households in 2023.

"The problem here is that hardly anyone is prepared to build a recycling plant for these materials when the volumes are so low," Wilms continued.

The age-old problem of the chicken and the egg: no one will set up a recycling plant when the volumes are so low – and everyone questions why such panels should be collected separately if there are no recycling plants around to process them. REMONDIS Electrorecycling is now taking steps to break this vicious circle as so many natural resources are being wasted – and it is sticking very closely to the waste hierarchy here. "We opened up a plant in Lünen last September that carries out checks on old solar panels to see whether they can be reused," Tim Wilms explained. At the end of the day, PV modules with a residual capacity of over 150 watts can generally be used again. "Besides carrying out this performance test, we also do a so-called hipot test. This enables us to check whether the panels are still suitable for high voltages," Wilms continued. Furthermore, checks are also carried out to make sure none of the glass is damaged. "Once all the checks have been completed, the device is given an inspection number and can be sold on to a dealer."

At some stage or other, though, all solar panels will reach the end of their useful life. The only thing of value that these old panels still have is their raw material contents. Even if the volumes are low at the moment, experts expect there to be a flood of old solar panels in the future – panels that can no longer be reused and need to be recycled to secure raw materials for Europe's industry. The International Energy Agency, for example, has estimated that up to one million tonnes of old PV panels will be available for recycling in Germany alone in 2030. And this figure is expected to rise to 4.3 million tonnes in 2050.

REMONDIS Electrorecycling intends to use its own recycling capacities to make sure that the raw materials in the old panels undergo high-quality recycling so they can be returned to market for reuse. Which is why its Dutch subsidiary MIREC commissioned a recycling plant last November that is dedicated to recovering the material contents of defective panels and recycling them for reuse. "The facility removes the aluminium frames, the PV system's plug-in box and the glass parts so that the individual types of material are separated from each other. Thanks to this recycling solution, over 80% of the input weight can be sent for materials recycling," Wilms said. Plans are to further optimise the plant in the future to increase this recycling rate to 90%.

And yet Wilms remains worried about the low return rates. "We offer a variety of storage and transport options to increase the amount collected," the managing director of REMONDIS Electrorecycling said. Its sister companies within the REMONDIS Group can then use these to segregate the PV panels when a building is being demolished. "The transition towards using recycled rather than virgin raw materials will only be a success if everyone joins in," Wilms concluded.

"The transition towards using recycled rather than virgin raw materials will only be a success if everyone joins in."

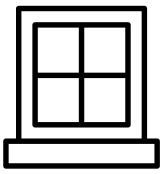
Tim Wilms, Managing Director of REMONDIS Electrorecycling GmbH

The glass that REMONDIS Electro-recycling recovers from the old solar panels is recycled within the REMONDIS Group.

Glass recycling: it's all about purity levels

The glass that REMONDIS Electrorecycling recovers from the old solar panels is recycled within the REMONDIS Group. "80% to 90% of a solar panel is made up of glass depending on the model," commented Christoph Bildstein, managing director of REMONDIS Recycling. If the solar panels are segregated cleanly from the other materials at the demolition site, then this glass is perfect for recycling.

It is considerably more difficult to recycle windowpanes that have been removed during a building demolition or renovation project if they have been contaminated with other residual materials – i.e. if they have not been cleanly segregated from the other substances, in particular minerals, at the building site. Even the smallest mineral particles can cause problems if they remain stuck to the glass despite careful processing. These deposits can lead to bubbles forming when the glass is melted down at temperatures of between 1,200°C and 1,300°C during the production process, which can affect the stability of the windowpane depending on its size. In any case, such bubbles certainly have an impact on the way the glass looks and makes it more difficult to see through.



A joint working group organised by the two circular economy associations, BDE and bvse, estimates that the volume of windowpanes that could potentially be recycled each year lies at around 100,000 tonnes.

"This is the reason why the flat glass industry has been holding back when it comes to requesting recycled glass," Bildstein continued. This all has to do with the standard production process used by the sector: flat glass is made using the float glass process that effectively creates an endless ribbon of glass that is then cut up at the end. If bubbles are in the glass then the loss is relatively great. Which is why recycled glass from the building sector is normally used in other production processes.

And yet the interest in recycled raw materials is growing in the flat glass industry as well. Tests are currently being carried out in the industry to increase the recycled content of flat glass. These efforts are being made by manufacturers in order to cut their carbon emissions and so improve their carbon footprint. However, it is not possible at present to provide the industry with figures to illustrate the market potential here. "There are simply no reliable figures available about the volumes of old glass generated by the building sector," Christoph Bildstein explained. Lax enforcement of the statutory regulations – in particular of the German Commercial Waste Ordinance – is playing a role here, too: as the authorities in many of the German states tend to turn a blind eye to what is going on in this area, large volumes of recyclable materials are ending up in the piles of mixed construction waste and being sent for incineration. "No one is recording the data because this data can't be recorded under such conditions," Bildstein concluded. A joint working group organised by the two circular economy associations, BDE and bvse, estimates that the volume of windowpanes that could potentially be recycled each year lies at around 100,000 tonnes. A mere 25,000 tonnes of this, however, actually reaches recyclers.

GLASS

Recycling PVC window frames: untapped potential

Wherever there are windowpanes, there are also window frames – normally made of aluminium, wood or plastic. Window frames made of polyvinyl chloride – a plastic better known as PVC – are a very good material for recycling. "The challenge here is the volumes available," commented Mario Husemann, one of the two managing directors at RE:CORE. The Rewindo network puts the gross potential volumes of old windows, blinds and doors across the country in 2023 at just under 67,000 tonnes.

RE:CORE is a joint venture set up by the REMONDIS Group and the building envelope specialist Schüco. The goal of this joint venture is to promote the recycling of old PVC building parts by creating numerous partnerships at a variety of levels. "The fact that RE:CORE is itself a joint venture is really useful here," Husemann said. "Why? Because this long-term partnership unites the core areas of expertise of both companies in the best possible way, enabling it to drive forward the creation of a circular construction sector that has a reliable supply of environmentally and climate-friendly raw materials in the future." According to Rewindo, every tonne of recycled PVC saves two tonnes of CO_2 and 16,400 kilowatt hours of electricity compared to the production of new products.

However, to be able to tap into this potential, it is essential that the old windows are segregated and stored separately from the other materials when the buildings are being demolished. Partnerships and collaborations are being set up at the building sites to make it easier to segregate the materials and generate high-quality mono-fractions. "REMONDIS has a waste management logistics network that covers the whole of Germany," Husemann explained. "We use this network to collect and transport old window profiles separately." By offering this service, RE:CORE wishes to make it as easy as possible for its partners to hand over their old PVC material so that it can get hold of large volumes and pass these on to the circular economy. What's more, RE:CORE is also able to accept small volumes of material from tradespeople, small construction companies and even private households when they carry out house demolition or renovation projects.

But all of this is not enough on its own. Which is why RE:CORE has also been listed as a partner at Rewindo since the middle of October. In addition to this, RE:CORE is looking to further expand its network of partners as well. "The more closely knit our partner network is, the more efficient our circular economy operations – i.e. the logistics, processing, recycling and use of recyclate – are," Husemann concluded.

PVC

ALUMI-NIUM

Aluminium window frames: recycling saves energy & improves carbon footprints

Building demolition work, however, not only generates window profiles made of PVC. Around a quarter of all window frames and facade parts installed in buildings in Germany are made of aluminium. For a long while, this metal was considered not to be a good option for windows, in particular because of heat loss. Compared to plastic and wood, aluminium has very high thermal conductivity and tended to transfer heat from the inner face of a frame to the external face, especially during the colder months of the year. "Modern aluminium window frames are equipped with thermal breaks, i.e. with an insulating barrier made of polyamide and polyurethane. These prevent heat being transferred from the inside to the outside of buildings," explained Marcus Kröger, project manager for aluminium recycling at Schüco International KG. Schüco offers holistic solutions for sustainable building envelopes. Thanks to the way aluminium is used in building parts, the potential for setting up a circular system here is huge as the metal can, for the most part, be recycled endlessly.

The carbon footprint of a window frame made from virgin aluminium is also significant as the process needed to produce this metal from bauxite ore is incredibly energy intensive. "Recycling has a clear advantage here," said Tim Holtmann from REMONDIS' TSR Group. "Using recycled raw materials not only conserves natural resources. It also reduces carbon emissions and cuts energy consumption compared to the production processes using virgin raw materials."

The carbon footprint of aluminium window profiles will play an ever more important role in the construction sector in the future. The EU's Energy Performance of Buildings Directive, which came into force in April last year, obliges building owners and construction companies to calculate and declare the life-cycle global warming potential of new buildings from 2030 onwards. This means that they must not only take the carbon emissions generated from operating the building into account but also the carbon footprint of the materials used to construct it. Window profiles made of virgin aluminium will clearly have a negative impact here.

“The potential for setting up a circular system for aluminium is huge.”

Marcus Kröger, Project Manager for Aluminium Recycling at Schüco International KG

Recycled raw materials could be used instead but they must be of the right quality. “Here at the TSR Group, we have a high-quality recycled raw material called TSR136 in our portfolio that meets the very high demands of numerous industrial applications. This enables manufacturers to considerably increase the recycled content of their products,” Holtmann explained. Kröger corroborated this statement and added: “Our suppliers can use TSR136 as a base material without having to process it beforehand.”

And it is precisely this recycled raw material that should help to further reduce the carbon footprint of aluminium window profiles in the future. To be able to offer the market this eco-friendly alternative, TSR and Schüco are working on a take-back scheme to tap into this source of raw materials from the building sector. Their goal is to recover old windows and facades made of aluminium from demolition and renovation projects and use this material to make TSR136. It was for this reason that RE:CORE metals GmbH was founded to enable the range of recycling services to be offered by just one company. TSR136 will then be used to produce new window profiles.

Schüco markets these window profiles, partly made using TSR136, as ‘ultra-low carbon’. “Our ultra-low carbon aluminium window profiles considerably reduce a building’s carbon footprint without compromising on the quality of the product at all!” Kröger explained. “Instead of the 7.11 kilograms of carbon produced per kilogram of aluminium profile, our ultra-low carbon products generate a mere 1.99 kilograms of carbon per kilogram of aluminium profile – which means that a building built with 40t of ULC profiles rather than standard profiles cuts carbon emissions by 200 tonnes!”

A closed loop that helps curb climate change – and that works best when the old materials are cleanly segregated and stored separately from the other materials at the building site. “We and our partners are, therefore, doing a lot of explaining here – telling window installers, demolition firms and construction companies about how important this is,” Holtmann continued. They wish to raise awareness about the importance of segregating the different materials. Tenders put out for large projects are more likely nowadays to address the issue of segregating window profiles and recycling the material so it can be returned to market. This helps to promote the separate collection of the input material.

OLD

Old wood – local, net-zero bioenergy

Old timber generated at building sites can also be put to good use and recycled – if it is segregated and stored separately from the other materials at the construction site. In general, the volumes of old wood are subject to economic cycles like so many other types of material. "Germany's current economic situation means that around eight million tonnes of waste timber are generated in the country each year," explained Annette Hansberg, plant manager at REMONDIS Holzaufbereitung GmbH, Rhein-Wupper. This company's tasks include managing timber recycling across large parts of the Rhineland. "When the economy is running well, then this figure can rise to 10 million tonnes or more," Hansberg continued. According to a study published by Münster University of Applied Sciences on behalf of the UBA, around 26% of waste timber comes from the construction sector. "What we don't know, though, is how much of this is from demolition work." There is a distinct lack of data here – just like with the other materials.

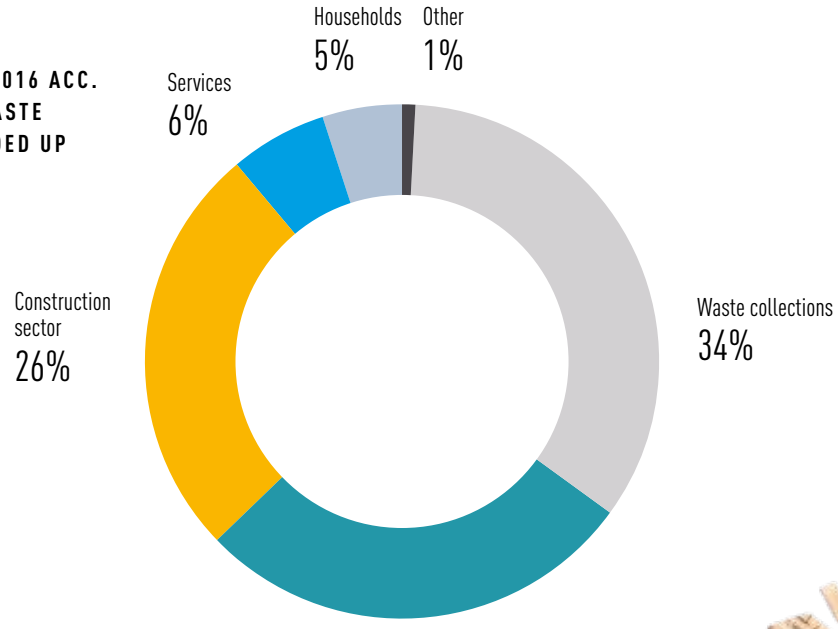
According to a study published by Münster University of Applied Sciences on behalf of the UBA, around 26% of waste timber comes from the construction sector.

Old wood generated from demolition projects is, for the most part, used to produce energy in biomass-fired power plants. This can be put down to the specific way that construction wood is treated. "Construction timber has often been treated with chemicals to protect it against fungal infections or make it less flammable," Hansberg explained. Such chemical treatment makes the wood more durable but also reduces the options available to recycle it. "One problem here is that it's not possible to see whether the wood has been treated or what is has been treated with simply by looking at it." Construction wood is, therefore, normally thermally treated in Germany as a precautionary health protection measure as well as to protect clean wood that has been earmarked for recycling.

Using old timber to generate energy in biomass-fired power plants is, however, no less sustainable. "Construction wood from demolition projects has often been in the buildings for 50 years or more. The wood that was once used has grown back during this period."

WASTE WOOD IN 2016 ACC. TO GERMANY'S WASTE STATISTICS, DIVIDED UP INTO SECTORS

Source: UBA



WOOD

> "Germany's current economic situation means that around 8 million tonnes of waste timber are generated in the country each year."
>
> Annette Hansberg, Plant Manager at REMONDIS Holzaufbereitung GmbH, Rhein-Wupper

The energy generated by this old timber helps local authorities, industry and energy providers to implement both the energy transition and heat transition. Old wood is a climate-neutral fuel that is available locally – and that is in high demand: the thermal recycling capacities available on the market have already exceeded the volumes of old wood available. On top of this, many new biomass-fired power plants are currently being planned or built. "The demand is most certainly there," Hansberg said. This is something that is also reflected in the price: "There is a noticeable difference in the cost charged per tonne for thermally treating mixed construction waste at a waste incineration plant and for thermally treating cleanly segregated old wood from selective demolition projects at a biomass-fired power plant," Hansberg continued. "We pass on this financial incentive to our own customers of course."

This means that it is certainly worth their while for construction companies to ensure the different waste streams are cleanly segregated and stored separately at their building sites. No matter whether it be old wood, minerals, e-waste (such as solar panels), windowpanes or aluminium and PVC window frames: it is much cheaper for firms to dispose of these materials if they have already been pre-segregated at the construction site. Selective demolition is good for the climate, conserves natural resources, increases resilience and saves costs. The segregation and separate storage of construction materials is the first – and most fundamental – step required to set up a well-functioning circular economy in the construction sector. The best place for the wrecking balls, therefore, is in a museum – or to send them away to be recycled.

A SECOND LIFE FOR DRESSES AND JUMPERS

Old textiles are becoming one of the biggest and most important material flows. Creating a circular economy for textiles is a complex process but a necessary one as well.

In ancient times, when Ötzi 'The Iceman' made his way over the Alps (i.e. around 5,300 years ago), clothes were primarily used to protect people from the elements. Leather, fur and plants kept humans warm during the icy winters. A 5,000-year-old, Ancient Egyptian dress – found near Cairo and thought to be the oldest surviving (almost complete) woven garment – clearly shows that people also wore clothes back then to express their individuality. Besides being used nowadays to represent individuality, personal style or conformity, both fashion and clothing have mostly become mass-produced, consumer items. While the art of haute couture found in major French cities, i.e. designing and making expensive, fashionable clothes, is aimed at a select group of people, fast fashion has established itself as a source of inexpensive clothing for the masses, with the bought items being worn for ever shorter periods of time. This is driving up greenhouse gas emissions and energy and raw materials consumption all around the world.

More than one million tonnes of textiles end up in clothes banks and collection points every year – an estimated 64% of the volume of clothes that could actually be collected.

On average, consumers in Germany buy 60 garments a year, twelve of which are hardly ever worn. More than one million tonnes of textiles end up in clothes banks and collection points every year – an estimated 64% of the volume of clothes that could actually be collected. The rest is thrown away into the general waste bin, remains hanging in our wardrobes or is passed on to friends and family. Old garments are one of the world's largest and most important material flows. The textile industry is well aware of the big challenges this is causing and has already begun working with the recycling sector to find solutions to make the garment industry more sustainable.

The used textile market across the EU has been subject to a new regulation since 01 January 2025: according to the EU directive, producers are now responsible for ensuring their old garments are collected separately. Making the recycling of used textiles a statutory obligation means that the market must react quickly and set up a well-functioning recycling infrastructure for old garments. We sat down with Dr Ansgar Fendel, CTO of REMONDIS, to discuss the importance and treatment of old textiles as well as the opportunities created by recycling this huge material flow.

"Both the volumes of garments and the impact they are having on the environment have led to textile recycling becoming one of the big subjects in the circular economy."

Dr Ansgar Fendel, CTO of REMONDIS

Why is it becoming ever more important to recycle textiles?

Dr Ansgar Fendel: Both the volumes of garments and the impact they are having on the environment have led to textile recycling becoming one of the big subjects in the circular economy. It's not a question here of WHETHER they should be recycled but HOW; it is essential that old textiles are reused in some form or other. The EU's goal is to bring about a green transition within the industry. Looking at the amount of old clothing generated, recycling these used textiles will be key to achieving this goal as well as to helping to make raw material supply chains more resilient.

This is clearly illustrated by taking a look at cotton: for the most part, the general public are unaware of the fact that cotton is one of the most important fibres used in the textile sector. Climate change and the impact this is having on the availability of water in the cotton growing regions will potentially change the size of the yields and the quality of the fibres. For this reason alone, it makes absolute sense to produce recycled cotton fibres – even if this is a really complex undertaking.

So what steps has REMONDIS taken to promote textile recycling?

Dr Ansgar Fendel: Our goal is to collect used garments, to sort them in the best possible way and then to return them to market for reuse either as good quality second-hand clothing or as a valuable raw material. We took a hands-on approach here and began setting up this business a few years back. The experience we gathered has proven to be very useful for further developing today's operations.

During this time, we decided that it would make sense to enter into a strategic, cross-sector partnership with a company operating in the textile industry as this would enable the upcoming tasks to be carried out quicker and better. And this was precisely the reason why Looper Textile Co., our Swedish joint venture with H&M, was founded. This collaboration work with our partner H&M – which is also a family-run firm – is proving to be complementary, successful and very constructive.

I also believe that it is important to create a close-knit, cross-sector network so that the recycling industry can work with the textile sector to solve the upcoming challenges involving this highly complex material flow and so that we can work together to drive forward sustainability in this particular area.

What makes processing textiles so complicated?

Dr Ansgar Fendel: The process of reusing these garments – something that ranges from selling them as second-hand clothing all the way through to recycling them to produce recycled fibres – is a technologically challenging undertaking. There are a number of reasons for this, including the sheer variety, the constant changes being made to the short, fashion-led product cycles and the soft, flexible properties of the textiles themselves.

When we recycle used garments we have to take a whole range of things into account, such as the many highly different types of fabric, the mix of materials in a fabric (from monofibres like cotton, to mixed fibres like polycotton with elastane, through to multi-layered fabrics), colours, chemical stabilisers and coatings, adhesives, appliqués, fasteners and buttons as well as the huge range of shapes and sizes.

So how do we deal with this complexity? After the clothes have been collected, we sort them by hand in our highly efficient plants, such as our facility in Polch, and separate them into two groups: second-hand goods and products for recycling. This is always an important step. It might sound easy but this does, in fact, require a high level of product know-how, as we produce and sell over 200 different types of customer-specific qualities for the second-hand market. This work still has to be done by hand at the moment. Between 40% and 50% of the input materials are sent on for recycling as they are not suitable for the second-hand market.

And what happens to the garments that are sent on for recycling?

Dr Ansgar Fendel: At the moment, the garments destined for recycling are sorted again by hand so they can be used for industrial applications, e.g. to make soundproofing materials for the automotive sector, cleaning cloths and fleece.

Between

40 and 50%

of the input materials are sent on for recycling as they are not suitable for the second-hand market.

We will soon be replacing this manual sorting work with an automated process. We are currently testing some AI-based sorting technology that we have developed. This system should automatically separate the garments headed for recycling into specific fabric qualities. The next step is then to produce recycled fibres from these materials that can be used by spinning factories to produce thread or for some other high-quality application.

An important but challenging material flow

The fact that fibre to fibre recycling – the ideal way to return recycled fibres to market – is still in the development stage cannot simply be put down to technological reasons. According to Dr Ansgar Fendel, spinning businesses all around the world are still reluctant to use this, for the most part, unknown recycled material.

The company RE-Textil is based in Polch, a town near Koblenz. Every day, it takes in and sorts 20 tonnes of used textiles. After they have been manually pre-sorted, the garments are then sorted again into different quality categories, packed up and exported to countries all around the globe.

The firm remains in close contact with REMONDIS' trading partners at all times to ensure they deliver the exact qualities needed.

Besides the technological challenges involved, Dr Ansgar Fendel explained that the most important aspect of textile recycling is recognising that this material flow is extremely important, that it will become more and more important in the future and that the conduct of every single person can help combat climate change. When we buy a dress or a jumper, we do not think enough about the impact that the production, logistics and recycling of the garment have on the environment. We all need to consider how we can pass on as many of our old clothes as possible so they can be reused. Furthermore, the decision to purchase a garment and the way we use it also have an impact on our world. At the end of the day, environmental protection also begins with our own conduct – our planet will certainly thank us!

HUP, HOLLAND, HUP

A pioneer in the circular economy as well

They love the colour orange and their royal family, are experts at making cheese and liquorice and are true masters when it comes to building dykes. And the Dutch football team has been one of the best in Europe for many years now. What apparently spurs the players on to achieve their best performance in the stadium effectively symbolises the attitude of the entire country. Determined and full of ideas, the Dutch are leading the way in a whole host of different areas – as can be seen by their efforts to set up a future-proof circular economy. Hup Holland Hup!

The Netherlands is leading the way in Europe in a whole range of areas with its innovative pilot projects. These include, for example, its nappy recycling facility in Weurt, its deposit return scheme for drinks packaging (where drinks bottles and cans remain the responsibility of the producers) and its carbon capture systems at waste-to-energy plants that enable the gas to be used as a fertiliser on farms. "The Netherlands is playing an active role in driving forward the transition towards a circular economy," said Dr Andreas Krawczik, managing director of REMONDIS Nederland B. V.

The Netherlands has included all sectors in this process: waste segregation and recycling schemes, sustainable product design, a green, sustainable industry, a circular economy in the construction and housing sectors, a circular agricultural sector, digital technologies to improve the traceability of materials, and new business models such as a 'sharing economy' and take-back programmes. Furthermore, there are a host of political and statutory measures on the agenda, such as subsidies, regulations and public awareness campaigns focusing on sustainable consumption. "As far as we are concerned, modern waste management means restructuring the traditional model of producing, using and disposing of products to make it more sustainable and resource friendly," Dr Andreas Krawczik stressed.

> "The use of virgin raw materials, such as sand, wood and metal, should be halved by 2030."
>
> Dr Andreas Krawczik, REMONDIS Nederland B.V.

Working together to grow sustainability

REMONDIS Nederland operates in the Netherlands alongside the other RETHMANN Group companies: Transdev, SARIA and Rhenus Logistics. A player on the mobility market, Transdev is parent company to various transport firms in the Netherlands – from public transport, to taxis and self-driving shuttle buses, through to ambulances. Last year, Transdev was awarded Level 5 certification of the CO_2 Performance Ladder, one of the Netherlands' sustainability instruments. 5 is the highest level that can be reached. More and more of Transdev's fleet is zero-emission and in Eindhoven it runs one of the world's cleanest bus networks. The town is the European competence centre for electromobility.

SARIA

is a service provider and manufacturer of high-quality products for the agricultural and energy sectors, the food processing and animal feed industries, and the restaurant and pharmaceutical sectors and carries out a wide range of activities in the Netherlands. It runs one of the company's largest sustainability projects at its head office in Nieuwerkerk aan den Ijssel, where it has installed 1,262 solar panels on the roofs there and is able to produce up to 500,000 kWh of green electricity.

Rhenus Logistics,

which has over 35 business locations in the Netherlands, specialises in national and international transport, multi-modal services and integrated logistics. Its logistics centre in Tilburg is one of the world's most sustainable logistics centres. Nominated for the Breeam Award in 2019, this centre's solar system, rainwater harvesting system for flushing toilets, and high-performance façade insulation all ensure it achieves top energy efficiency levels. Efficient charging stations have been installed at many of the company's sites so that EVs can be recharged. In 2022, Rhenus was awarded Gold Status by EcoVadis, a provider of business sustainability ratings. This puts Rhenus in the top 1% of all the service providers assessed within the logistics sector.

Good waste segregation, high recycling rates

A number of things are done differently in the Netherlands compared to other European countries. "We have the highest recycling rates in Europe," Dr Andreas Krawczik reported. Around 60% of household waste is recycled. The EU average for this particular waste stream lies at around 47%.

A NATIONWIDE PROGRAMME FOR THE CIRCULAR ECONOMY

The Netherlands has set itself some ambitious goals: material life cycles should be closed by 2050. "Moreover, the use of virgin raw materials, such as sand, wood and metal, should be halved by 2030," explained Dr Andreas Krawczik. The Dutch government is collaborating with companies and science institutes to drive forward innovations in the areas of circular production and circular consumption. These include, for example, the government-wide programme for a circular economy which was introduced in 2016 and given the title: 'A Circular Economy in the Netherlands by 2050'. The Dutch government was, therefore, one of the first in Europe to adopt the EU's 2015 European Circular Economy Action Plan (CEAP). This was then followed by the 'Transition Agenda Circular Construction Economy' in 2018, which stipulates that the construction sector must be made fully circular, in three steps, by 2050.

THE CIRCULAR ECONOMY IN THE HOUSING SECTOR

Covering a surface area of 37,391km^2, the Netherlands is one of the smaller countries in Europe. Having said that, it is one of the most densely populated regions (533 inhabitants per square kilometre) and has a strong economy. It has been estimated that the country will need to build a million new flats and renovate its existing housing stock over the next ten years – while at the same time aiming to reduce its carbon emissions.

As is the case in other European countries, the housing sector will play a key role as countries head towards becoming net zero. Compared with all the other industries, the construction sector in the Netherlands makes up 50% of its raw materials consumption, 40% of its energy consumption, 35% of its carbon emissions, 30% of its water consumption, and 50% of construction and demolition waste. During an interview with NAX (Network for Architecture Exchange), Torsten Schröder from Eindhoven University of Technology said that this all means that the transition towards a circular economy requires a radical change in the way houses are designed, built, used and demolished.

The 'Transition Agenda Circular Construction Economy' is, he said, a key initiative for many more measures and initiatives as the country transitions towards a circular construction sector. The 'Milieu Prestatie Gebouwen' (MPG) was introduced in 2018, which enables the environmental performance of new buildings to be calculated. This environmental impact assessment of a building is mandatory to receive building permission. The result of this assessment is the so-called shadow cost of constructing a building which is based on eleven environmental impact categories – including the mining of abiotic raw materials and fossil fuels, global warming, depletion of the ozone layer, human toxicity potential and aquatic impact. Torsten Schröder concluded that the introduction of this MPG score has promoted the use of bio-based construction materials and awakened interest in reusable building parts. Despite all this, however, there has not been a reduction in the use of raw materials. Binding agreements are needed to bring about this transition – to make the use of resources radically more efficient and for such efficient use to be more widespread. What's more, as it heads towards becoming a circular economy, the European construction sector must also focus on converting and renovating its current housing stock, as these buildings have a greater impact on the environment.

Source: https://nax.bak.de/2024/10/09/die-kreislaufwirtschaft-bekommt-aktuell-viel-aufmerksamkeit-aber-der-weg-ist-noch-weit/

"We are able to reach this figure by motivating local inhabitants to separate their waste carefully and reduce their volumes of waste." 24% of Dutch districts had a waste segregation rate of 75% in 2022, compared to just 7% in 2015. Between 2015 and 2022, the volumes of residual waste fell from 240 kilos to 163 kilos in over 26% of the districts in the Netherlands. On average, every Dutch resident produces 460 kilos of waste. The European average lies at 489 kilos per capita per year.

The Netherlands is also leading the way when it comes to handling construction and demolition waste. More than 90% of the country's construction and demolition waste is reused. "Dutch firms are spearheading the way with their innovative methods of reusing materials," Dr Andreas Krawczik continued. Businesses such as 'Waste2Wear' and 'Plastic Whale' make textiles and furniture from recycled plastic. Projects, such as 'Textile Links', promote the reuse of clothes and textiles on a grand scale. "Materials like concrete and asphalt are reused in new infrastructure projects." This also includes using them as aggregate to build new roads. It is both usual and possible for all asphalt plants in the Netherlands to include up to 50% recycled asphalt in their products.

A STRICT PACKAGING ORDINANCE & BAN ON SINGLE-USE PLASTIC

The Netherlands enacted a new packaging ordinance on 01 January 2023. This stipulates that responsibility now lies with the brand owner and no longer with the producer. Empty service packaging, such as chip trays and coffee cups, is no longer the responsibility of the company placing it on the market – e.g. fast-food restaurants – but of the producer of the empty service packaging. Plastic packaging must be registered and a financial contribution paid for them. An additional regulation was brought in for single-use plastic in January 2024. This affects diverse single-use plastic products that may no longer be used, for example, at take-away restaurants. Moreover, a further regulation came into force at the same time banning the use of microplastics in cosmetic products.

Prevention & recycling rather than landfill

"Waste management companies in the Netherlands operate in line with the waste hierarchy according to 'de ladder van Lansink'," explained Dr Andreas Krawczik. This means that priority is always given to waste prevention and reuse ahead of recycling and thermal treatment. Extended producer responsibility (EPR) applies in the Netherlands just like Germany. Producers are responsible for the entire life cycle of their products – from the production process through to ensuring they are returned and recycled. The EPR applies to manufacturers and importers of electrical and electronic equipment, batteries (single use and rechargeable) as well as plastic packaging, textiles, mattresses and car tyres.

Less than 1% of combustible municipal and commercial waste is still being sent to landfill in the Netherlands. "The country runs a strict anti-landfilling policy that is implemented by imposing high landfill levies and a ban on landfilling reusable and combustible materials," commented Dr Andreas Krawczik. Non-recyclable materials are processed at waste-to-energy (WtE) plants. REMONDIS Nederland owns a 49% share in the ARN B.V. WtE plant in Weurt near Nimwegen. The electricity and heat generated there are supplied to local households and businesses. The Netherlands is also leading the way here when it comes to cleaning flue gases and recycling incinerator bottom ash (IBA).

Carbon capture – a scenario for the future

The Dutch government is supporting carbon capture and storage (CCS) with subsidies such as its SDE++ scheme as part of its programme to reduce its carbon emissions and reach its climate goals. Various CCS systems have been planned across the industrial sector. Waste-to-energy plants are also eligible for funding. The recovered carbon dioxide is supplied, for example, to farmers as a fertiliser for their greenhouses. If the right dosage is used, then this carbon fertiliser can accelerate and strengthen tomato, cucumber and lettuce growth by up to 20%. "According to the latest reports, there will be a considerable increase in carbon capture in the Netherlands over the coming years. Plans are for huge volumes of CO_2 to be stored in the country's old gas storage tanks in the future. It has been estimated that CCS systems will capture over 22 megatonnes by 2030 and over 50 megatonnes by 2035. WtE plants will be contributing towards these volumes."

According to the latest reports, there will be a considerable increase in carbon capture in the Netherlands over the coming years.

VERPACT IMPLEMENTS EXTENDED PRODUCER RESPONSIBILITY

On 01 January 2024, the four companies Stichting Afvalfonds Verpakkingen, Kennisinstituut Duurzaam Verpakken (KIDV), Nedvang and Stichting Nederland Schoon merged to create the Verpact organisation. This organisation represents manufacturers and importers operating in the packaging industry and is dedicated to implementing extended producer responsibility (EPR). Verpact deals with the collection, sorting and marketing of the segregated wastes, including the management of the deposit return scheme. One of Verpact's tasks – as part of EPR – is to inform the Government once a year about its achievement of the recycling targets. Thanks to this collective initiative, the country has avoided there being a patchwork of individual different systems. The amount that companies must financially contribute towards their packed products depends on the complexity of the packaging. The levies on recyclable packaging are lower than those on non-recyclable ones. This should motivate producers and consumers to make circular decisions, promote reuse and reduce waste and microplastic. It is not possible to simply replicate this central system operated by Verpact – which has proven to be well worth its while in the Netherlands – in other European countries.

"Waste management companies in the Netherlands operate in line with the waste hierarchy according to 'de ladder van Lansink'." Dr Andreas Krawczik, REMONDIS Nederland B.V.

A comprehensive waste segregation system

Separating waste is hugely important in the Netherlands. There are segregated collection schemes for paper, glass, plastic packaging, drinks cartons and cans (PMD), textiles, and vegetable, fruit and garden waste (VFG) as well as small amounts of chemical waste, which residents can hand in to their local household waste recycling centres. As set out in the country's new and stricter packaging ordinance (which came into force at the beginning of 2023), different kinds of plastic packaging must be registered and a financial contribution paid for them. Since July 2023, Dutch customers, for example, must pay a fee for the single-use plastic containers they use for to-go products. An additional regulation was brought in for single-use plastic in January 2024. This has led to diverse single-use plastic products no longer being available in shops and being replaced with environmentally friendly, reusable alternatives. "The 'Plastic heroes' initiative also promotes the collection of plastic waste. Thanks to these collections of cleanly separated plastics, the volumes of plastic packaging being recycled have increased significantly."

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As part of the 'Inzamelhelden' initiative, REMONDIS collects recyclable materials from shops and offices located in the centre of Delft, Enschede and Zwolle using electric cargo bikes. "A number of Dutch towns have made their city centres zero-emission zones. By taking part in this initiative, we can show them that we are a good partner for these areas as well," Dr Andreas Krawczik concluded.

Shared responsibility

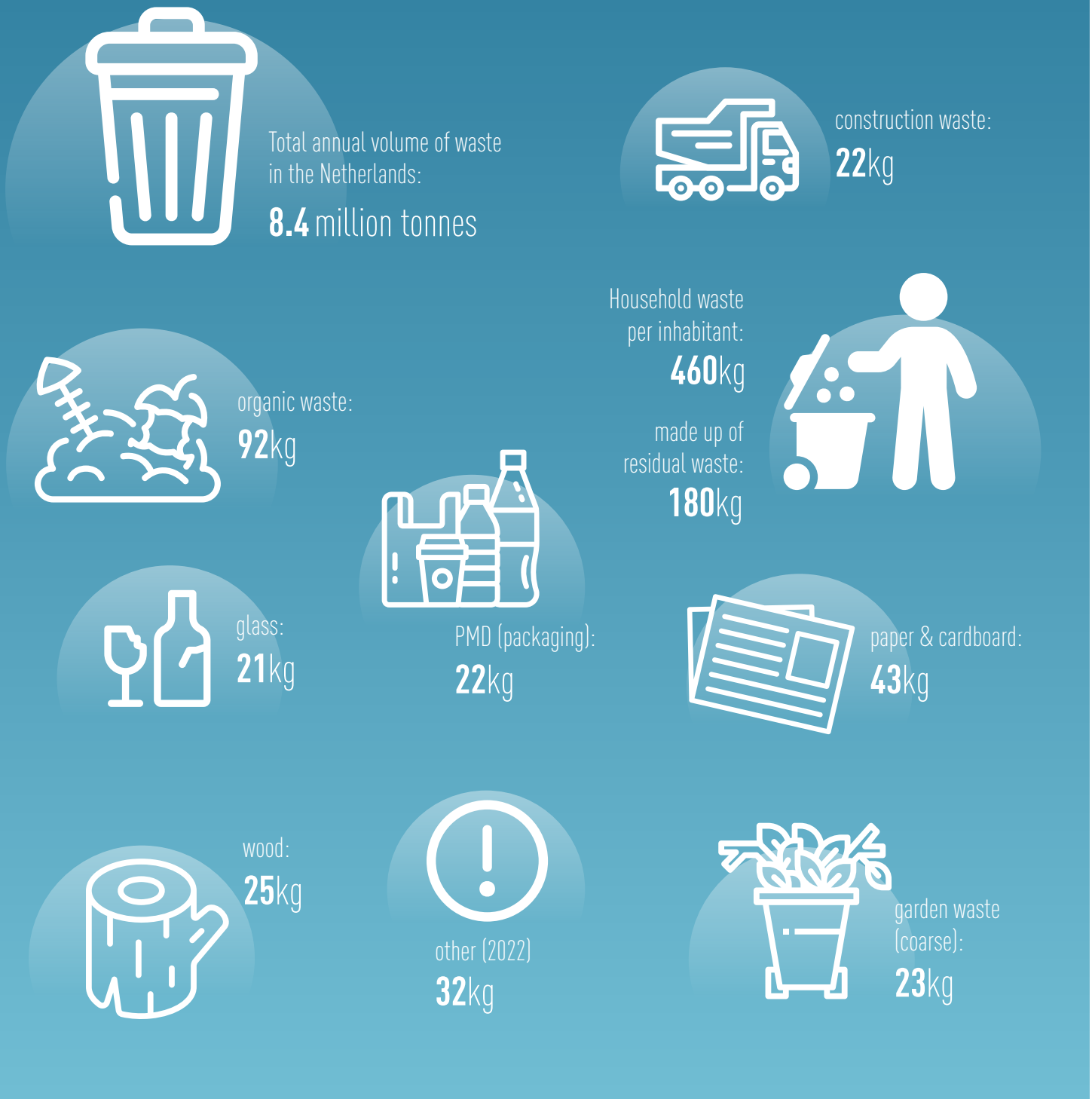
The Netherlands has a deposit return scheme for plastic and glass bottles. This is implemented by the Verpact organisation, created as the result of a merger between four firms on 01 January 2024. "What's unusual here is that the producer remains the owner. This means that the returned products may not be marketed by those taking them back," explained Dr Andreas Krawczik.

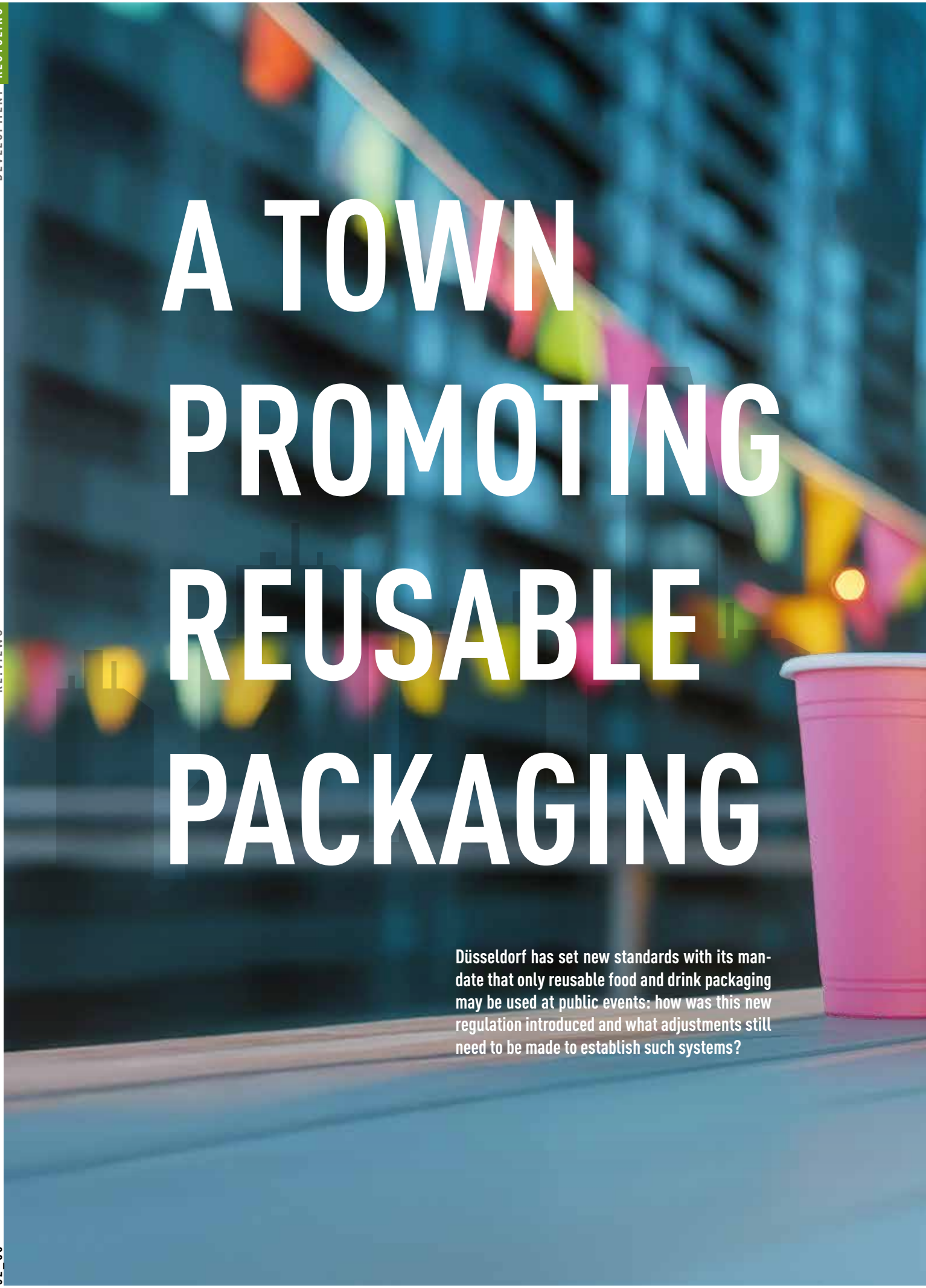
REMONDIS Nederland is a partner of Open Waste – a collaboration between 14 Dutch waste management companies that otherwise compete with each other. "It's all about cutting carbon emissions in town centres. The collection of waste from businesses is organised and managed centrally as part of the 'Green Deal Zero Emission Stadslogistiek' and carried out using neutral refuse collection vehicles. This reduces traffic, noise and emissions in town centres. These collection vehicles will be replaced with electric or hydrogen-run ones as soon as possible."

REMONDIS IN THE NETHERLANDS

REMONDIS Nederland B.V. has been operating in the Netherlands since 2006. Its 52 branches employ over 1,800 people. REMONDIS Nederland runs hazardous waste collection and transhipment centres (REMONDIS Gevaarlijk Afval) in Lichtenvoorde and Amersfoort. Moreover, it also has REMONDIS Smart Infra with RRS, and RETERRA for organic waste. The company owns a 49% share in the ARN B.V. WtE plant in Weurt near Nimwegen. Its nappy recycling facility is also located in Weurt. REMONDIS Nederland operates a timber processing plant and mixed construction waste sorting facility in Son that is able to separate recyclables into 21 individual categories. Furthermore, the company runs a paper processing plant in Wognum together with HVC.

All of the initiatives, collaborations and plans described here show that the Netherlands operates a robust waste management sector fit for the future and is well prepared for any challenging tasks it may have to face. "Thanks to our strong focus on innovation and sustainability, REMONDIS Nederland will continue to systematically drive forward developments, roll out digitisation, and work with our customers and partners to set up a circular economy for all types of waste," Dr Andreas Krawczik concluded.





A TOWN PROMOTING REUSABLE PACKAGING

Düsseldorf has set new standards with its mandate that only reusable food and drink packaging may be used at public events: how was this new regulation introduced and what adjustments still need to be made to establish such systems?

A medley of drums and horns rolls through Düsseldorf's old city centre like a wave. People are milling about in the streets wearing every possible kind of fancy dress costume. It is carnival time and the whole town has turned out!

Every year, Düsseldorf is taken over by carnival goers – aka the 'Jecken' – from 'Weiberfastnacht' (the Thursday before Lent when women traditionally go out and celebrate) through to Ash Wednesday. And large volumes of waste are generated wherever these clowns, princesses and cowboys get together. Sounds a bit of an exaggeration? Not really. In the past, drinks cups and food packaging were often carelessly thrown away – and not in the litter bins provided but on the ground in the streets and parks. This was not just bad for the environment; it also meant a lot of work for those having to clear up afterwards.

And so, the City of Düsseldorf reacted by deciding that all events held in its public areas must use reusable packaging. A decision that not only affects carnival but its Rhine Fair, Japan Day and Christmas market as well.

Heading towards a ban on single-use products

Even though the primary goal set out in the German Circular Economy Law [KrWG] is to prevent waste, the volumes of waste packaging continue to rise across the country. Germany produces 237 kilos of packaging waste per capita per year, putting it among the countries topping the list in the EU. People consuming more and more food and drink outside their homes is one of the factors driving this growth. According to Environmental Action Germany [DUH], 5.8 billion takeaway cups, 4.5 billion takeaway food boxes and 2.7 billion to-go plates are used just the once and then thrown away every single year – and these are just the figures for Germany.

According to Environmental Action Germany [DUH], 5.8 billion takeaway cups, 4.5 billion takeaway food boxes and 2.7 billion to-go plates are used just the once and then thrown away every single year in Germany alone.

Many rules and regulations have been brought in, both at national and EU level, over the last few years to tackle the problem of waste caused by discarded single-use products. Some of them have lived up to expectations, while others – such as the law mandating restaurants to offer alternative, reusable to-go packaging – have not yet had the desired effect. A number of local authorities have responded by focusing more on regional projects that have a fixed framework, namely public events. Why? Because it is easier to impose the rules here than it is in the takeaway market. Furthermore, festivals and markets are local showpieces that promote cohesion and strengthen tourism. Action needs to be taken if the one thing that remains in everyone's mind is not the fun they had but the image of overflowing bins and trampled plastic cups. What's more, in many cases the waste does not remain where the product was bought but ends up littering neighbouring areas, such as parks and riverbanks.

As a result, Düsseldorf has decided that food and drink must be handed out in reusable to-go packaging at public events. Single-use packaging may no longer be used. It based its decision on Section 5, Paragraph 2 of the City of Düsseldorf's waste management bylaw, which was passed in 2020 to promote reusable packaging.

However, this is not something that the city authorities can implement either overnight or by themselves. Leonhard Krause, Düsseldorf council's zero-waste manager since 2022, coordinated and led the introduction of this reusable packaging regulation. "Right from the start, we felt it was important that there was a level playing field for everyone involved. How can we succeed in doing this together? There's no point simply trying to ram things through." And so, he began discussing this with different people. First with the individual stand owners and then – because it was pretty small scale – with the event organisers.

> “We can offer a full package of services with our partner REMONDIS.”
>
> Giann-Luca Maßmann, AWISTA

Short routes work best

One piece of the puzzle was still missing however: “Talk to your local waste management firm. See whether they can help with this reusable packaging scheme,” Leonhard Krause recommended. Having a problem solver on hand is also useful for coordinating actions between the stand owners and the event organisers. These short routes are worth their weight in gold in Düsseldorf – especially as the waste management firm AWISTA is always present at such events. “Three of our employees coordinate waste collection and street cleaning at public events,” explained Giann-Luca Maßmann. Moreover, AWISTA is part of a strong group and can access further services: “We can offer a full package of services with our partner REMONDIS.” There is no problem about dividing up the tasks: AWISTA is responsible for contacting the event organisers and restaurant businesses, taking the orders and dealing with the invoicing. REMONDIS provides the reusable to-go packaging and is in charge of the logistics as well as cleaning the cups and plates.

During the actual event, the stand owners pick up the reusable to-go products from the distribution points and return them there afterwards. REMONDIS cleans the cups and plates etc either on site or at its washing facilities and, if required, hands them out again. Visitors can hand in their reusable to-go products at any of the stands at the event. Having a uniform reusable product scheme where everyone uses the same solution was the easiest system to implement: “This prevented the event turning into a patchwork of different schemes where everyone did their own thing,” Giann-Luca Maßmann continued.

The scheme was then gradually introduced, bit by bit, once all the partners were on board: part of this concept was implemented for the first time in 2022 when it became obligatory to offer reusable alternatives. One year later, it became mandatory for drinks to be handed out in reusable cups. The Rhine Fair has always been a pioneer in this area and had already introduced a comprehensive ban on single-use, to-go packaging back then. Since the beginning of 2024, both food and drinks may only be sold in reusable, to-go packaging and, by the summer of 2024, all large events had switched over completely to reusable products. The only exceptions that can still be found are serviettes, greaseproof paper and cone-shaped sweet bags. “If minimalist packaging is needed to implement this reusable packaging requirement across the board, then this is a concession we are happy to make,” Leonhard Krause concluded.

REUSABLE TO-GO PACKAGING – STILL SPOILED FOR CHOICE

Once the coffee has been drunk and the food eaten, then the cup and bowl should be left behind. On 01 January 2023, a law came into force across Germany to promote the use of reusable packaging and reduce the volumes of single-use, to-go packaging that are being carelessly thrown away. This regulation mandates that restaurant businesses selling takeaway, ready-to-eat food in single-use packaging and/or drinks in single-use cups must offer their customers alternative reusable packaging. This rule does not apply to businesses with five or fewer employees and a sales area of less than 80m². If requested, though, these businesses must use containers brought in by their customers for their takeaway food.

In most cases, customers must pay a deposit on the alternative reusable packaging and return it after they are finished with it. Most restaurants now offer such alternatives. However, they rarely market them to their customers so that many people continue to use the single-use option – perhaps because they feel it is more convenient or hygienic or simply because they do not realise there is a different kind of packaging available. And, as checks are not being carried out everywhere, there are still businesses that are not following the rules. As long as there is a choice, reusable packaging will always draw the short straw ...

Copycats welcome

Around four million people visit the 10-day Rhine Fair and 700,000 carnival goers turn up to watch the carnival procession on Rose Monday. By making it obligatory to use reusable, to-go packaging, the City of Düsseldorf has succeeded in making its events more sustainable and in further improving the city's overall appearance. A quick glance at a map of Germany shows that a number of both small and large councils wish to switch over to reusable packaging in the future and are adding reusable packaging to their waste management by-laws. Many, however, are just starting out on this journey. Mülheim's waste management firm MEG (Mülheimer Entsorgungsgesellschaft) has, therefore, decided to lead the way and has already developed its own reusable packaging scheme. REMONDIS is supporting MEG with the cleaning and logistics. The subject of reusable packaging has at least been written into Oberhausen and Essen's waste management by-laws. WBO Wirtschaftsbetriebe Oberhausen and EBE (Entsorgungsbetriebe Essen) – both waste management businesses – are there to help them implement such schemes if required.

"Düsseldorf is spearheading the way here in Germany. We hope that the way they hold their events will act as a role model and that other local authorities will decide to implement similar concepts," commented Roland Lenders, managing director of REMONDIS Resource Management GmbH. He and his colleague Johannes Hatting are in charge of developing schemes involving reusable, to-go packaging – for local authorities, restaurants, festivals and sports clubs. And he is always open to holding constructive discussions. At the end of the day, taking the reusable packaging route is a task that everyone must get involved in!

(left) Johannes Hatting (REMONDIS) and (right) Giann-Luca Maßmann (AWISTA)

A DISCUSSION WITH TWO EXPERTS

Roland Lenders and Johannes Hatting from REMONDIS Resource Management GmbH have already helped a number of partners to introduce reusable, to-go packaging schemes.

RE:VIEWS: You deal with the subject of reusable, to-go packaging every single day. What's the situation like at the moment?

Roland Lenders: Well, we see many interesting ways of approaching this subject and different target groups but there is still a long way ahead of us. So far, reusable, to-go packaging schemes have only worked on a grand scale in stadiums and at concerts and festivals as they have the right conditions in place. Many football stadiums have been using reusable cups for a long while now. It is also a matter of people getting used to using them.

RE:VIEWS: Have you got a concrete example of this?

Johannes Hatting: We entered into a collaboration with the football club Rot-Weiss Essen in 2024. Since then, the stadium has only handed out reusable cups, which we wash in our hygienic washing centre and prepare them for the next event. The fact that they hold regular matches makes it easier for us to plan ahead. Most of the food there, however, is still served using single-use packaging. We're currently discussing this with a number of partners and hope to be able to offer a full package of reusable cups and reusable food packaging in the stadium soon.

RE:VIEWS: What's the situation like in other areas?

Johannes Hatting: There's room to develop concepts in other areas as well. A new market will open up if restaurant chains move over to reusable to-go packaging for their burgers and chips. But there are other areas that offer exciting opportunities as well and where some progress has been made – for example, plant pots and cosmetics packaging.

Roland Lenders: Ultimately, it all has to do with how the market is regulated. Stricter rules mean more opportunities for reusable packaging. We can't wait to see the direction that this market will end up going in. Being a service provider, we already have a broad set-up and are, of course, interested in all areas and all target groups!

> **“ Ultimately, it all has to do with how the market is regulated. Stricter rules mean more opportunities for reusable packaging.”**
>
> Roland Lenders, REMONDIS Resource Management GmbH

MUNICIPAL PACKAGING LEVIES: TÜBINGEN SHOWS HOW TO DO IT, COLOGNE TO FOLLOW SUIT

A further lever for promoting reusable packaging is currently spreading across Germany: the municipal packaging levy. On 01 January 2022, the City of Tübingen imposed a levy of 50 cents on single-use packaging and disposable tableware as well as 20 cents on disposable cutlery. This levy must be paid by restaurants and shops that sell ready-to-eat food in single-use packaging. The city council has said that it makes no difference what material the disposable products are made of. Each business can decide whether they cover the cost themselves or pass it on to their customers.

A fast-food restaurant in Tübingen was not prepared to accept this levy. Its complaint, however, was rejected by the German Federal Constitutional Court at the end of January 2025 – creating a clear legal foundation for other towns. Following the court ruling, some local authorities have already started looking at the possibility of introducing such a levy. Others fear the administration expenses and general costs will be too high. A survey of local authorities and ministries carried out by the dpa revealed that the majority would like there to be a national regulation. One thing is clear: the packaging levy has prompted much discussion!

And there will soon be a ‘big’ copycat. What has worked well in the small town of Tübingen is now to be introduced in a major city: two political parties in Cologne (CDU and the Greens) put forward a white paper proposing the ‘introduction of a packaging levy in Cologne based on the Tübingen model’ – a proposal that was approved by the majority of the city council.

Preserving our industrial heritage

How protecting monuments is keeping the spirit of the region's mining history alive – and the complex logistics needed to carry out such renovation projects

Glück auf!

Where coal was once tirelessly brought up from the depths, where muffled hammering and the rhythmic clanking of the headframe wheel broke through the silence, where miners with coal-blackened faces and overalls carried out their work: this is where visitors now go for walks – around these industrial monuments that rise up into the sky like cathedrals made of steel. The smell of oil and soot has long gone and yet the traces of time past are still there to see: brick façades, solid pieces of machinery, railway tracks leading nowhere. The Ruhr region's industrial monuments are a part of its history as well as a symbol of the change that it has been going through.

" From its historical background, to its unusual shape, to its impressive dimensions – scaffolding structures like this one are simply spectacular. It is an honour to be able to carry out such projects."

Maurice Leese, Scaffolding Project Manager, XERVON Gerüstbau, Bottrop branch

Great importance is given to protecting these historical buildings and properties so that this cultural heritage is preserved for future generations.

So, let's take a look at two such projects in this region 'deep' in the west of Germany: extensive renovation work needed to be carried out at both the Deutsche Bergbau-Museum in Bochum and the Kokerei Zollverein in Essen. Both required bespoke logistics and spectacular system and working scaffolding.

A steel giant in 'Germania green'

Founded in 1930, the Bergbau-Museum in Bochum has dedicated itself to the region's fascinating mining heritage and is one of the world's largest museums of its kind. Its biggest exhibit is a 71-metre-high headframe. A steel giant painted in the traditional 'Germania green' colour that is well-known far beyond the city's boundaries. This headframe used to be part of the Zeche Germania mine in Dortmund. It was moved to Bochum in 1973 where it has become a familiar feature of the city's skyline and a popular photo spot.

An ambitious plan was put together to renovate this impressive steel structure last year: the work required to make the headframe fit for the coming years should take just twelve months. Three XERVON companies from the REMONDIS Maintenance & Services Group were responsible for carrying out the important tasks of scaffolding, surface technology and steelworks. All in all, seven REMONDIS Group companies were involved in renovating the headframe.

Scaffolding for the headframe

The team began erecting the scaffold in the spring of 2024 and, even at this stage, they had to take some special features into account. The headframe's four supports are located in two of the museum's inner courtyards and converge at the top – and the tower has a 16-metre-high building under it. This meant for the scaffolders that the individual scaffolds around the lower section of the supports had to be erected so that the two scaffold structures were perfectly aligned when they met above the building. Precision was required here right down to the last millimetre, especially as a steel grid made of HEB beams had to be set up in one of the inner courtyards to bear the loads.

Scaffolding for the Bergbau-Museum Bochum

The scaffold specialists had to follow a strict logistics roadmap to ensure the huge volumes of material reached the site without a problem. As the museum did not have the space to store all of the material needed, the approx. 750 tonnes of scaffolding material had to be delivered 'just in time'. The routes taken by the lorries were planned to cause as little disturbance as possible for the visitors to the museum and local residents. The team used a 160t crane and a 1,500kg elevator to lift the materials above the ground.

Every hour counted to ensure they kept to the schedule. As is the case with all projects, however, the team had to cope with some setbacks in Bochum as well. Strong winds, for example, meant that the scaffolders were unable to work for several days. Thanks to their dedication though, they were able to catch up and complete their task according to schedule.

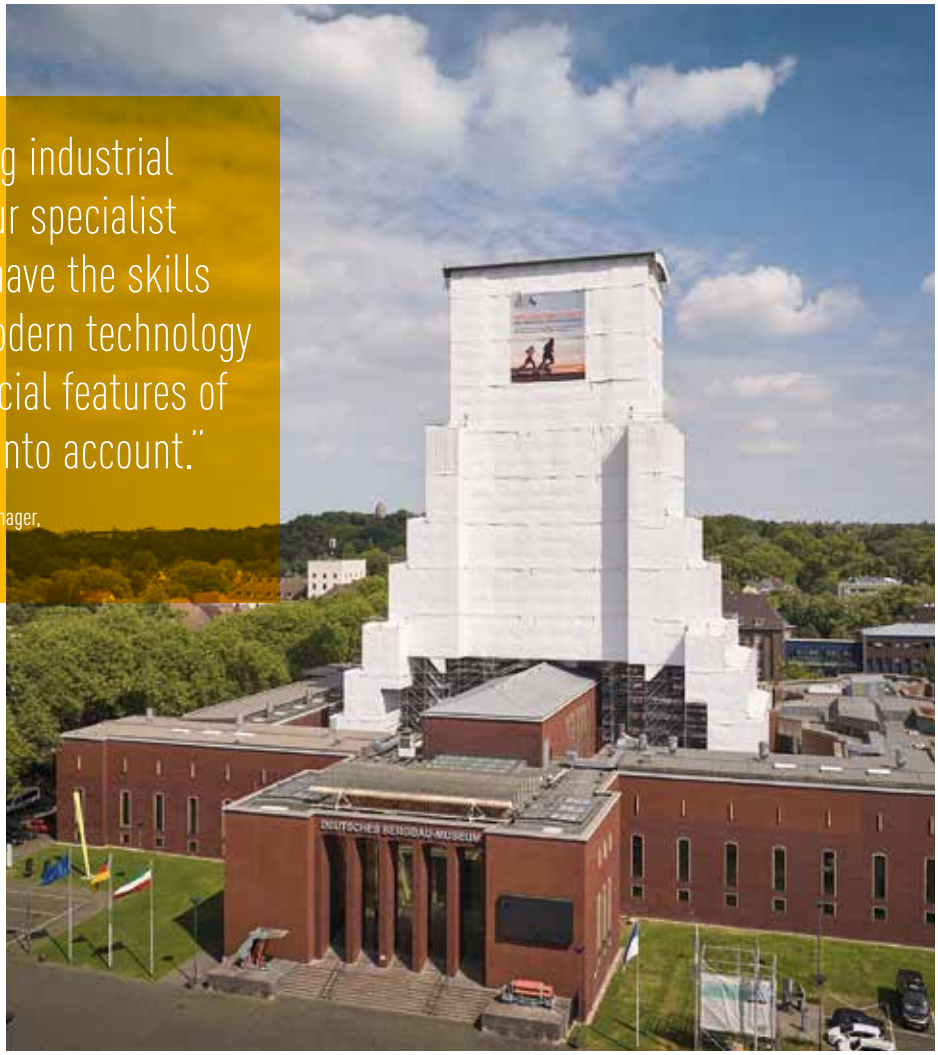
As the museum did not have the space to store all of the material needed, the approx. 750 tonnes of scaffolding material had to be delivered 'just in time'.

Erected using a total of 76,300 individual pieces, the scaffolding then had to be enclosed so that it was fully dustproof. They were able to hand over the 72-metre-high headframe, surrounded in enclosed scaffolding, to XERVON Oberflächentechnik's team of surface technology specialists on time, exactly as planned, in the middle of April.

Protected against corrosion for several decades

The stepped enclosure covered 34 floors of scaffolding – the workplace of XERVON's surface technology specialists. They spent the next few months, from April to early autumn, applying a high-performance corrosion protection layer to the headframe. Add together all the individual elements of the headframe, then they had to work on a surface area of around 10,000m². All in all, they used approx. 10 tonnes of coating material and sealant.

> "Renovating and restoring industrial monuments is one of our specialist areas of expertise. We have the skills to make the most of modern technology while taking all the special features of protecting monuments into account."
>
> Hendrik Stammler, Surface Technology Project Manager, XERVON Oberflächentechnik, Bottrop branch



The team's first task was to remove the old coating, including any corrosion and deposits, using compressed air blasting technology. Around 500 tonnes of solid blasting media were required to complete this work. The blasting media was effectively circulated to prevent there being too much weight at the actual workplace: compressors continuously transported the media up the scaffold where it was immediately vacuumed up during the blasting work and conveyed back down to the ground again. Once this had been completed the coating experts then applied a new, multi-layer coating to the steel structure using spraying equipment before adding a final coat of the well-known 'Germania green' paint. Heating and ventilation equipment were also installed in the various workplaces to ensure the environmental conditions were kept at the required levels throughout.

As there was limited space in the inside of the enclosed scaffold, most of the technical equipment had to be placed at the foot of the headframe. This meant that sandblasting tubes, control cables and other feed pipes and cables had to be installed over long distances when the building site was set up; some of them were over 600 metres long.

An expert team

As soon as this work had been completed, the scaffolding specialists moved back in to dismantle the 39,000m² of system and working scaffolding. Despite the tight schedule and the huge scale of this project, the renovation work went according to plan. A success that can be put down to the ideal way the services delivered by all the different specialists were dovetailed.

Whenever required, the scaffolding and surface technology experts turned to other REMONDIS Group firms for assistance. XERVON Instandhaltung's maintenance specialists, for example, replaced the sections of the headframe's steel structure that were badly corroded. BUCHEN UmweltService made sure the working areas were clean before the work was carried out on the steel surfaces. BUCHEN EnergyServices supplied the compressors for transporting the blasting media. Further REMONDIS companies provided additional help, such as REMEX which specialises in recycling mineral materials. It was responsible for collecting and processing the used blasting media.

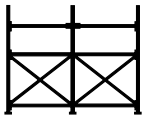
Scaffolding for the Zollverein's coking plant

Today, the Zollverein is a well-known architectural and industrial monument and enjoys special legal protection after being named a UNESCO World Heritage Site in 2001

A bespoke solution for a UNESCO World Heritage Site

"The Ruhr region's prettiest colliery", "A technological marvel", "An industrial cathedral" – practically every superlative around has been used to describe the Zollverein coal mine and coking plant in Essen. Following the closure of the coal mine in 1986 and the coking plant in 1993, this site was gradually renovated and redeveloped to give it a new lease of life. Today, the Zollverein is a well-known architectural and industrial monument and enjoys special legal protection after being named a UNESCO World Heritage Site in 2001.

This coking plant – once the biggest in Europe – used to transform coal into coke in its 300+ furnaces. At its centre is the quenching station – a building with railway tracks running through it and walls covered in a whole array of attachments and pipes. It is not possible to simply set up scaffolds against such walls. On the contrary, they have to be carefully modified so that they fit around any obstacles and additional fittings or extensions perfectly. XERVON Gerüstbau uses state-of-the-art technology to achieve just this: the geometry of the building was scanned with laser technology and the scan's results used to create a three-dimensional plan of the scaffold structures.



The ca. 200m-long, 22m-high and 3.5m-wide scaffold stretching through the inside of the listed coking plant was inch-perfect.

Scaffolding inside and out

In practical terms, this meant erecting a ca. 4,500m² façade scaffold around the outside of the building. One particular challenge here was an almost 80m-long, tiled coke chute that crossed part of the wall and was able to bear very little load. Unable to mount the scaffold on the chute, XERVON set up a bespoke hanging scaffold for this section of the façade instead. This was then anchored into place via an auxiliary scaffold erected inside the building.

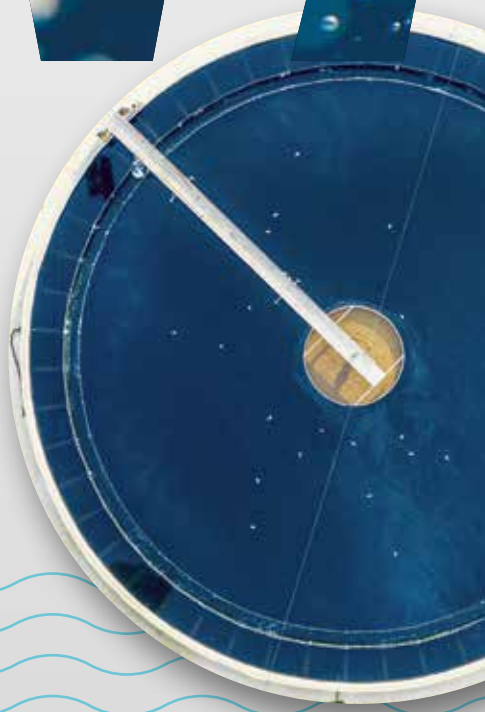
Three interior scaffolds – each around 8,000m² – were needed to enable the renovation work to be carried out inside the building. They were designed so that the work platforms spanned the former bench level. This is effectively a covered gallery that is about four metres above the ground and runs along the whole of the wall. At the same time, an area of ca. 3.5 x 4.5 metres had to be kept clear above the railway tracks running through the inside of the quenching station. Last but by no means least, the team also had to come up with a bespoke solution for the logistics because lorries were unable to access this long building. And so the experts built two wagons from pieces of scaffolding and used the old railways tracks to transport the material – a quick, efficient and ergonomic solution.

"The Ruhr region's prettiest colliery"

A region undergoing change

The region between the Rhine and Ruhr rivers is gradually being transformed. New working environments are replacing coal mines and steelworks and these well-preserved treasures of the past can still be visited in many of the region's towns. These renovation projects in Bochum and Essen will certainly not be the last – industrial monuments will always need to be cared for and maintained.

FIRE AND WA



BEG (Bremerhavener Entsorgungsgesellschaft mbH) is unusual in a number of ways. It cleverly combines waste recycling and wastewater treatment and began setting standards in the circular economy a long while ago. A public private partnership with REMONDIS as the majority shareholder, BEG demonstrates how the most can be made of synergies and how municipal infrastructure can be made fit for the future to the benefit of all local residents.

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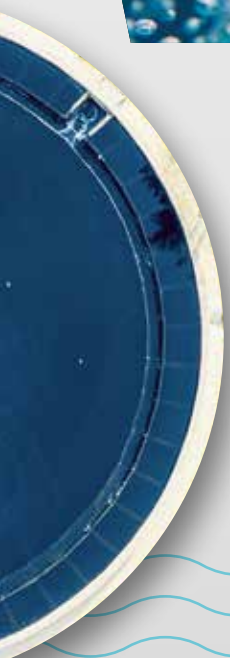


Bremerhaven, the beginning of the 70s. The landfills are full. The town, located in the 'Elbe-Weser triangle', is heading towards a waste management crisis. Home to just over 100,000 inhabitants, it does not have many options: there are no more suitable areas within its boundaries for setting up another landfill and no one in the regions surrounding Bremerhaven is prepared to take its waste. And so, the city's councillors made a virtue out of necessity and planned a waste-to-energy (WtE) plant that has been supplying energy to the town since 1976.

Bremerhaven's picturesque setting is not the only thing that stands out. The town set the standards for its circular economy at a very early stage – in a resourceful and pragmatic way

The far-sightedness of this decision, which was also made in the wake of the oil crisis, cannot be valued highly enough. And it also says quite a bit about the resourceful, quiet and pragmatic way Bremerhaven has been tackling the challenges of structural change for decades now. "Our WtE plant has always been a cogeneration plant, producing heat and power," commented Dr Addissou Lothar Makonnen, one of BEG's two managing directors. A plant with state-of-the-art technology at a time when most of the local authorities in Germany were still carelessly sending their waste to landfill. "The decision to build a WtE plant was a strategic step to establish sustainable recycling practices in Bremerhaven and to find a solution to our waste problems once and for all," Makonnen continued.

In the past, the tasks of recycling waste and treating wastewater were carried out by two separate companies: MBA (Gemeinnützige Müllbeseitigungsanlage Bremerhaven GmbH) was in charge of waste management and ZKA (Zentralkläranlage Bremerhaven GmbH) of wastewater treatment. "But why do we need to have two separate firms to do this? Synergies can be created when you have just one company," Makonnen said. Which was why Bremerhaven decided to merge the two firms to create BEG (Bremerhavener Entsorgungsgesellschaft) at the beginning of the 90s. This merger laid the groundwork for centrally organising waste and wastewater treatment in Bremerhaven – a system that could act as a role model across Germany.

Set up originally as a non-profit limited liability firm, this new company made it possible for the City of Bremerhaven to make the most of synergies and set up a more efficient infrastructure for managing its waste and wastewater. "MBA and ZKA were municipal companies that existed totally separately

from one another, side by side, and were fully owned by the City of Bremerhaven," recalled Stefan Ketteler, also a managing director at BEG. The merger helped BEG to use its resources more efficiently and to respond more quickly to changing conditions.

Bremerhaven shocked by the Vulkan crisis

In the middle of the 90s, Bremerhaven's economy was hit by a shockwave – the result of the 'Vulkan crisis', as it was referred to back then. This crisis was triggered when the Vulkan shipyard declared insolvency. This shipyard had a long history in the city and was a major employer and economic motor across the region. The collapse of this maritime giant not only meant the loss of thousands of jobs; it also had a considerable financial impact on the town's public purse.

Once again Bremerhaven reacted with a mixture of resourcefulness and pragmatism: the city council decided to privatise a part of BEG to stabilise its financial situation.

As part of this restructuring process, a consortium of the then utility company Stadtwerke Bremen (today: swb), the Bremen-based waste management firm Nehlsen and the then Rethmann AG sought to purchase a 74.9% share in BEG. However, this was not possible for competition reasons and so the now REMONDIS Group acquired the shares in 2003 and Nehlsen received a small 5% share of the privatised share of BEG via a holding company. This marked the beginning of the successful public private partnership that is well-known today for its efficient and sustainable waste recycling and wastewater treatment solutions in Bremerhaven.

Fire: the WtE plant – a bedrock of reliability

As part of this public private partnership, BEG turned the WtE plant into a bedrock of reliability that is able to treat waste and supply energy no matter how difficult the economic situation faced by the town may be. Today, the WtE plant has become a key component of Bremerhaven's energy supply: "Bremerhaven's district heat network is supplied almost exclusively by our WtE plant," remarked Makonnen. The benefits here are obvious: using this environmentally friendly waste heat from the thermal treatment process reduces the need for fossil fuels and decarbonises the town's district heat network. The non-recyclable waste must be incinerated anyway; making the most of the heat produced by this process conserves natural resources and is, therefore, a fundamental component of a responsible circular economy.

The legislator is of the same opinion nowadays. Germany's new 'Wärmeplanungsgesetz' (WPG/Heat Planning Act) puts waste heat generated by the thermal treatment of waste on a par with renewable energy. This law categorises this waste heat as 'unavoidable' and considers it to be effectively climate neutral, promoting its use in district heat networks. Bremerhaven has already been practising this new legal basis for many years now.

BEG not only supplies the town with district heat. It also performs another key public task, namely providing this coastal town with electricity. The WtE plant is the largest electricity producer in Bremerhaven. "If the worst comes to the worst, we play a key role in providing emergency supplies of electricity," Makonnen explained.

"The most important thing was – and still is – to expand the existing infrastructure and adapt it to the latest requirements."

Stefan Ketteler, Managing Director of BEG

The fact that BEG has been able to take on such an important local role can be put down to the regular investments that have been made in state-of-the-art technology and to the foresight of those making the decisions. Since the partial privatisation of BEG, top priority has been given to investing regularly in both the facilities and the infrastructure. "The most important thing was – and still is – to expand the existing infrastructure and adapt it to the latest requirements," Ketteler stressed.

Water: a top technological performance at the ZKA

The ZKA, the central sewage treatment plant, is also a prime example of this strategic foresight. Treating 55,000m³ of wastewater every day, it is the largest of its kind within the REMONDIS Group and delivers reliable wastewater treatment services to a total of 175,000 people. The ZKA not only treats the wastewater produced by Bremerhaven's approximately 115,000 local inhabitants but

Fire:
The WtE plant has been supplying the town with energy since 1976

Water:
The central sewage treatment plant guarantees wastewater treatment for a total of 175,000 people

also wastewater from the town of Langen, the district of Loxstedt, the fishing harbour and international port, and parts of the district of Schiffdorf.

One of the ZKA's key strengths is that it is energy self-sufficient. By recovering energy from sewage gas and using modern combined heat and power units, the plant has been producing all the heat and electricity it needs itself since 2015. In many cities, sewage treatment plants are the biggest municipal consumer of energy – not so in Bremerhaven.

The long-term plans are to expand the district heat supply network

"It has always been important to us to take both economic and environmental factors into consideration whenever decisions have to made," Ketteler stressed. This also applies to the 600km-long sewer network that BEG operates on behalf of the City of Bremerhaven. "Every year, we renovate six to seven kilometres of the sewer network," Ketteler continued. A task that costs BEG around 4.5 million euros each year.

Better together – a strong partnership

As BEG now works cost-efficiently – thanks also to this public private partnership – these expenses no longer have a negative impact on the town's public coffers. And the waste management fees also no longer need to be subsidised by some other part of the city council. Instead, the town receives profits from BEG's operations. And it provides 300 secure jobs in a town that continues to face the challenges caused by structural change.

The fact that the City of Bremerhaven and REMONDIS get on so well can be put down to the fair way the partners treat each other and the trust they have in one another. "REMONDIS and the City of Bremerhaven have always trusted each other – right from the very beginning," Ketteler said. The decisions made, for example, by the various committees are unanimous. The city council's issues are taken into account alongside the business requirements. This harmonious collaboration promotes BEG's performance capabilities and ensures that these key services are delivered quietly and reliably.

BEG also has some ambitious plans for the future. Its wastewater treatment division intends to continue renovating the sewer network pipes as well as to introduce a fourth treatment stage. "We are already discussing these plans with universities, research institutes and other sewage treatment plant operators," Ketteler explained.

BEG's waste management division is looking to further develop its WtE plant and expand the amount of district heat it provides to further decarbonise energy supply. "This is not just good for the climate. We must also become more independent so that we are less impacted by global economic and political developments – events that we are unable to influence," Makonnen concluded.

Foresight, resourcefulness and pragmatism will continue to guide the fortunes of BEG in the future as well – and the City of Bremerhaven need not worry about the investment costs thanks to this strong partnership.

"We must also become more independent so that we are less impacted by global economic and political developments – events that we are unable to influence."

Dr Addissou Lothar Makonnen, Managing Director of BEG

BEG: a few facts & figures

Group:

BEG, BEG logistics GmbH (BELG), Richard Bauer Rohstoff-Großhandel GmbH & Co. KG (BAUER)

Company structure:

Public private partnership (PPP)
Majority shareholder: REMONDIS (74.9%)
Public sector shareholder: City of Bremerhaven (25.1%)

Founded in
1991

Partly privatised in
2003

Workforce:
ca. 300

BEG Group turnover (EUR):
ca. 120m

WTE PLANT Bremerhaven

Incineration capacity p.a.:
401,500t

Commissioned in:
1976

Combustion lines:
4

Energy use, electrical p.a.:
100,000MWh

District heat supply, installed heat output:
100MW

Energy use, thermal p.a.:
250,000MWh

District heat network/ total length:
15km

Flue gas cleaning:
wet, multi-stage system

Central sewage treatment plant, fully biological treatment

Capacity / wastewater a day:
55,000m³

Inhabitants served:
ca. 175,000

Extension of N/P stage:
1995

CHP plant, thermal sewage sludge recycling

Electricity output p.a.:
ca. 9,900MWh

Heat output p.a.:
ca. 5,700MWh

Generators:
4

ELECTRICITY & GAS: THE NEW NORMAL

Erik Höhne, board spokesperson of the ENERVIE Group, talked to us about the energy transition and its financing, the new normal on the energy market, the group's plans and its shareholder REMONDIS.

60%

The expansion of renewable energies in Germany has reached 60%

RE:VIEWS: The energy transition is most certainly the biggest project that Germany is focusing on at the moment. If you look at the costs, the statements in some of the election manifestos and, indeed, the line being taken by the new EU Commission, you almost get the impression that the energy transition is more a thing of the past. How do you see all this?

We must be able to re-examine and discuss these topics. It's important to do this and I believe this is a good thing. The general direction of the Green Deal is not being called into question here in Europe. Subjects such as nuclear power and coal-fired power stations were being brought up during the election campaign – subjects that most people thought had already been sorted. People will continue to argue about the different ways and different timelines that can be taken in the future but the general direction will remain the same.

To actually question the fundamentals of these subjects would be really worrying as far as investments are concerned. When we talk about the energy transition project, we are not talking about the next five years but the next 20 years. We need certainty so we can plan well into the future.

RE:VIEWS: The traffic light coalition was responsible for energy policy over the last three years or so. Do you feel there were some points that were neglected during this time or that need to be readjusted?

What worked well was the expansion of renewable energies. We've now reached 60% here in Germany. Unfortunately, what was neglected during this period were the system services. When a high percentage of a country's energy production involves fluctuating renewable energies, then it needs to have a reliable system in place so that the lights don't go out. And this has to be financed. The country's reserve capabilities should have been expanded more quickly. The same is true for the expansion of the grid and the further development of regulations. As far as the expansion of the grid is concerned, we need to take another look at how incentives for providers can be used to speed things up.

"When we talk about the energy transition project, we are not talking about the next five years but the next 20 years. We need certainty so we can plan well into the future."

Erik Höhne, Board Spokesperson of the ENERVIE Group

RE:VIEWS: So how is the whole thing being financed?

It's important to be honest and tell customers – and I mean both private as well as industrial and business customers – that the energy transition costs money. At the end of the day, it is the customers that must bear the costs. And, if it's clear that it's too much for them, then the government must introduce measures to provide relief. Words such as electricity tax and network charges come to mind here.

RE:VIEWS: Do changes need to be made to the way the energy markets are regulated and designed?

We need suitable capacity mechanisms. An energy market controlled simply by the price charged for the amount of electricity consumed does not create incentives to make it more attractive to build up reserve capabilities. I think this is pretty much indisputable now. However, the proposals put forward by the old government regarding this matter came very late on in their term. The collapse of the traffic light coalition then stopped it in its tracks. It will be interesting to see how the new government deals with this subject over the next few months.

RE:VIEWS: Besides the mammoth task of the energy transition, the energy market has also been impacted by covid and the war in Ukraine. What things do you think have gone well?

Well, first, you have to say here that there was no blueprint for how to respond to such events. And so it really was a success just how fast we reacted. There were intensive and direct communications between the energy sector and the government – there had been nothing quite like it in the past.

One good example here is just how quickly the Government recognised how important it was to protect gas importers. This prevented there being a ripple effect along the whole of the supply chain and the unforeseeable impact this would have had on prices and availability. If they hadn't reacted, the market would probably have come to a standstill.

Another thing that was definitely good was the second step that was taken – namely to look at the customers and to ask what the population and the economy can afford without this leading to a problem in society.

RE:VIEWS: And what didn't go so well? What have you learned from all of this?

These were often technical matters, such as the gas procurement levy that was binned just two days before it was due to come into effect. Every energy provider in Germany had already spent a great deal of time and money preparing their systems for the introduction of this levy.

The price caps – which are, in principle, the correct instrument to use – also involved a huge amount of time and money. We stepped in for the state here. These were actually a form of state support and cannot be organised via energy providers. These are tasks that energy providers are not prepared for at all. It's important that such things are organised differently in the future.

RE:VIEWS: So, let's turn to the ENERVIE Group. As far as you are concerned, what were the specific challenges you had to face?

The risk management systems that we used in the past were designed to deal with price fluctuations of just a few euros within a month. Not with the several hundred euros that we experienced during the energy price crisis. This meant that we had to readjust our systems really quickly. We did this well – especially as the ENERVIE Group has always followed a risk-averse, long-term procurement strategy.

This meant that we had relatively low prices during the crisis and a relatively high average price for a while after the crisis was over when wholesale prices fell again. We felt the impact of the discount companies on customers during this time as they normally procure their energy on an extremely short-term basis.

RE:VIEWS: So not without a hitch then?

As far as the new normal is concerned: yes. The wholesale markets have still not returned to pre-crisis levels. And prices are still fluctuating far more than they used to. We've started to get used to this new normal. Neither the prices nor the fluctuation levels will return to what they were.

RE:VIEWS: Let's take a look at a subject that was the core business of many energy providers for a long time, namely production. The ENERVIE Group has significantly reduced its capacities. How do you see this developing in the future?

We actually stopped using coal quite a while before Germany officially ended the use of coal across the country. As far as the carbon issue's concerned, we've been focusing on other controllable forms of energy. One example here is the gas-fired power station that we operate with Statkraft in Herdecke. And then we have a pumped storage power plant in Finnentrop in the Sauerland region. This pumped storage power plant is an ideal component for the energy transition. Whenever there is a lack of renewable energy production and all gas-fired power stations are running to capacity, then we can produce electricity at attractive conditions.

"As far as the carbon issue's concerned, we've been focusing on other controllable forms of energy."

Erik Höhne, Board Spokesperson of the ENERVIE Group

RE:VIEWS: And in the future?

We can certainly imagine investing more in this field of controllable energy production. This is simply because we have both the know-how and the locations to do this. Existing production units could have the potential to facilitate synergies if the right incentives are in place to invest.

ERIK HÖHNE

Born in 1967, the board chair of the ENERVIE Group is responsible for finances, trade, production and sales. A mechanical engineer, he has been on the board since 2010 and board spokesperson since 2016. Erik Höhne held various positions at RWE Energie, RWE Power and the ENVIA M Group before joining the ENERVIE Group.

"Being a successful private-sector company, REMONDIS often sees things from a different angle. It illuminates topics from an additional perspective that is a useful addition to the public-sector point of view."

Erik Höhne, Board Spokesperson of the ENERVIE Group

RE:VIEWS: Do you also see yourselves as being a provider of reserve capabilities?

Yes, that's one of our tasks – but perhaps for other storage units as well. These would more likely be battery storage units.

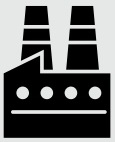
RE:VIEWS: Your home market – South Westphalia – is well known for its medium-sized industrial businesses. Medium-sized firms have been complaining about the high costs of energy and the high levels of red tape. Another topic they're unhappy about is the long period of time needed to hook up their solar power systems. You know their complaints.

Connecting the solar power systems isn't going as smoothly as it should – as is the case with other providers. This can simply be put down to the fact that we've been overwhelmed by the boom and that we now have to catch up with the work needed to adjust the capacities in our organisation. The number of applications have, more or less, increased twentyfold over the last five years.

RE:VIEWS: So, what specific services can you offer your medium-sized industrial customers to make their lives a little easier?

Well, first of all, it's important to remain in close contact with our customers. Procurement strategies have to be readjusted far more often during a crisis. Our other products are also there to support our customers in difficult situations to help boost their business success.

This includes, for example, energy efficiency or hydrogen as a decarbonisation tool. And we're not just talking about our standard product that we've been offering for years.



Around 1.2 trillion euros need to be invested in Germany's energy sector by 2035.

RE:VIEWS: So, let's move to our last topic of public private partnerships or PPPs. Besides the various local authorities, REMONDIS owns just under 20% of the ENERVIE Group. An important factor here are ENERVIE's water management activities. I can well imagine that you sometimes have to explain yourself to your colleagues at the municipal utility companies.

It should be said that it is somewhat unusual to see REMONDIS as a shareholder in an energy provider. For many local authorities, REMONDIS is a well-known and trusted partner for the recycling sector.

I can say that REMONDIS is good for us as a shareholder. Being a successful private-sector company, REMONDIS often sees things from a different angle. It illuminates topics from an additional perspective that is a useful addition to the public-sector point of view. And, on top of this, it is good for a company per se to have a professional and stable shareholder. This is all the more true when an industry, such as the energy sector, has to cope with massive investments.

RE:VIEWS: You've almost answered my next question. We've turned full circle now: it's all about how the energy transition is to be financed. This is a huge challenge, in particular for local authorities who are not exactly known for being flush with funds. Is more private-sector money not needed here?

Around 1.2 trillion euros need to be invested in Germany's energy sector by 2035, an unimaginably high sum. We will have to use retained profits to cover a certain amount of this money. Our shareholders must accept that not all our profits will be paid out to them. The rest of this sum must be covered with external capital and financing partners. In our case, REMONDIS' stability and professionalism will be really useful.

Here at the ENERVIE Group, we are set up in such a way that we can say, at the moment, that we want to cover the upcoming investments ourselves. We will be investing 570 million euros over the next five years. The majority of this will be going on expanding the network but we will also be working on production, heat and contracting. We want to do this with external capital and by strengthening our equity capital by retaining earnings.

RE:VIEWS: Are the shareholders okay with this?

We will, of course, always distribute some of our profits to them. It's all about finding the right balance. So far, we've always managed to do this amicably.

RE:VIEWS: Mr Höhne, many thanks for the interview.

ABOUT THE ENERVIE GROUP

The ENERVIE Group is a group of companies owned by Mark-E, the Stadtwerke Lüdenscheid (a utilities firm) and the network company ENERVIE Vernetzt as well as further subsidiaries. The Group's companies are responsible for supplying the town of Hagen and large parts of the Märkischer District – a total of around 450,000 local inhabitants – with water. Furthermore, the ENERVIE Group also supplies its customers in its catchment area with electricity, gas, heat and drinking water. In 2024, the Group had a workforce of more than 1,100 employees and a turnover of almost 1.5 billion euros. The main shareholders are the cities of Hagen (42.66%) and Lüdenscheid (24.12%), and REMONDIS with its 19.06% share. The remaining 14.16% is owned by further local authorities located in the catchment area.

Introducing Barbara Junker

A CIRCULAR ECONOMY PIONEER

Barbara Junker is, without doubt, one of the early protagonists of her sector. And an important one as well. As managing director of RETERRA Service GmbH – a leading German firm in the biomass management sector – she has been helping to shape the future of sustainable waste management from her offices in Erftstadt in Germany's Rhine region for three decades now. We met up with her to discuss a whole number of interesting topics, including the development of RETERRA's business, the challenges faced by the sector, and the route she took on her way to becoming head of this innovative company.

From composting to a circular economy business: the evolution of RETERRA

"Composting is a form of closed loop recycling that has been going on for centuries. In fact, it is the very first form of closed loop recycling that ever existed," explained Barbara Junker. Her passion for her job is obvious. With her and others at the helm over the years, RETERRA has succeeded in turning this ancient form of recycling into a highly modern industrial sector. In a world where resource efficiency and sustainability are becoming ever more important, it turns out that one solution can be found, quite literally, on our own doorsteps – in our food and garden waste bins.

Founded back in 1991, RETERRA has transformed itself from a regional composting business into a nationwide biomass management specialist. "We have made big strides, further developing both our products and the technology we use. And we are bigger as well," commented Junker, summing up.

"New areas of business have also been added to our portfolio, such as recycling sewage sludge, collecting and recycling food waste, and producing woodchips and fuel from old timber."

Junker's technical and scientific knowledge very much comes to the fore when she talks about the company's development. Having studied engineering (she specialised in environmental and hygiene technology), she has a deep understanding of the complex processes used at her company. "When I joined the business, the plants were still using open composting areas. In the 90s, people thought this technology would continue long into the future – everyone was building large plants that were meant to last for decades." But rapid progress was made in this field. Nowadays, the chain of systems used to process and recycle biomass is much longer and RETERRA operates a network of cutting-edge plants that can do far more than 'just' composting.

"Composting is a form of closed loop recycling that has been going on for centuries. In fact, it is the very first form of closed loop recycling that ever existed."

Barbara Junker, Managing Director of RETERRA Service GmbH

> "We not only recycle organic and garden waste so the materials can be reused. We are also increasingly making the most of the energy potential of these materials."
>
> Barbara Junker, Managing Director of RETERRA Service GmbH

From a waste product to a recyclable material

Just like its parent company REMONDIS, this firm's philosophy is based on the idea of recovering valuable resources from waste. "Our composting plants are increasingly turning into biomass plants," Junker explained. "We not only recycle organic and garden waste so the materials can be reused. We are also increasingly making the most of the energy potential of these materials."

One focus here is on the production of biogas. "The biowaste is placed in a digester where we produce biogas that is then transformed into electricity," she said, explaining the route that the majority of this type of waste takes. The company is planning to invest more in the production of biomethane, which can be fed into the gas network as a substitute for natural gas.

It is obvious just how committed Barbara Junker is to these topics. Her eyes light up when she starts talking about the advantages of compost: "We want to show that compost is an excellent fertiliser that stores both humus and water. This is particularly important – and especially for farmers – as we find ourselves experiencing ever longer periods of drought." Her enthusiasm is catching and it is clear that she is well aware of how important her work is and the positive impact it has on both the environment and climate.

Challenges & innovations

Her sector faces a whole raft of challenges. One of them, for example, is continuously safeguarding the quality of the processes. "The amended Ordinance on Biowastes [BioAbfV] came into effect in May 2025," Junker remarked. "This is the first time that binding numbers have been set for the amount of contaminants that may be present in biowaste. This has led to many processes having to be adjusted."

Working together with her team, therefore, she has been looking at using both innovations and digitisation to achieve this. "We've been thinking about how we can use cameras and AI-based systems to further improve quality control," Junker revealed. These can scan and analyse the incoming material to pick up contaminants at an early stage of the process.

A pragmatic person, she is not afraid of taking on technological challenges. She sees this as an opportunity to optimise the processes used by the company. This is also true for a further challenge that primarily affects the management side of the business: more and more local authorities and groups of local authorities are wanting to recycle their biomass.

The European context

Even though RETERRA primarily operates in Germany, the firm is also playing a growing role in other European countries. "We transport products to Belgium and to the Netherlands, too," Barbara Junker explained. "These cross-border collaborations also underline our importance in the European circular economy and demonstrate how important cooperation is in the EU."

The future of the biomass sector

As far as Barbara Junker is concerned, all of these are tasks, not problems. She is very optimistic about the sector's future. "Looking ahead, both biogas and biomethane production will play an even more important role," she predicted. What's more, she is also a pragmatist when it comes to the two biggest challenges of all: the regulatory framework conditions and ensuring these costly plants remain economically viable over the long term.

"There are signs that there will be more political support for biogas again." This was not the case for a while. She stressed how important it is to have practicable guidelines in place so that businesses can respond to unforeseen events and developments. "Considering how technology is progressing, having restricted and rigid 'guard rails' in place could end up leading everyone in the wrong direction." New regulations must be open – and remain open – to all things new.

A pioneer through and through

Barbara Junker's path to becoming managing director of RETERRA is closely interwoven with the development of the company itself. She began her career at the firm in 1995 when she wrote her master's dissertation and then continued working there following its commissioning of a composting plant in Erftstadt. Starting as a sales rep (the first for the field of waste and the first without a background in agricultural engineering), she gradually worked her way up the career ladder. She was appointed managing director after REMONDIS acquired the business in 2006.

Her university degree in environmental and hygiene technology gave her the foundations needed for her successful career in the environmental sector. Based in Erftstadt, she now leads a team of around 180 employees at RETERRA Service in the Rhineland alone; she also plays a key role in determining the company's strategy and operational business across the whole of Germany.

Based in Erftstadt, Barbara Junker leads a team of around 180 employees at RETERRA Service in the Rhineland alone

There is one thing that is particularly noticeable when talking to Barbara Junker: she has her feet firmly on the ground and is close to her staff – perhaps because, as she described it succinctly, "Titles mean absolutely nothing to me." She speaks highly of her team and stressed how important it is for them to all work together. "Our employees are our most valuable asset," she said. "We would not be where we are today without their commitment and expertise."

ABOUT BARBARA JUNKER:

Barbara Junker is not just a successful managing director. She is also a passionate sportswoman and a true child of the Rhineland, a so-called 'Rheinländerin'. Her love of sport runs through her life like a thread. She played water polo in her youth and then spent 10 years boxing – "not in competitions; just to stay fit". And she still makes sure that she remains fit today: she takes part in a challenging circuit training programme twice a week at a bootcamp in a park in Cologne. She did spill the beans, though, admitting that she turns into a couch potato on Sundays.

Despite her full diary – her daily commute is over two hours – Junker finds time for her hobbies. She and her husband like going on long bike rides with their electric bikes. And she likes spending time with her friends, at home and on holiday – and, of course, at the Rhineland carnival. This balance between her professional commitment and free time is probably the secret behind her energy, her great drive and her authenticity.

Junker's dedication to sustainability and innovative biomass management solutions are also reflected in the posts she shares on LinkedIn. She has written, for example, about the new beehives at the company in Erftstadt, the new products in her sector and the successful competitions the RETERRA team have taken part in, to name just a few. She also posted greetings from the company at the start of Germany's 'fifth season', the carnival season.

And so, Barbara Junker is full of the joy of life despite having a position of responsibility and a jam-packed diary. She laughed a lot during our meeting and talked enthusiastically about the progress that RETERRA has been making. It is obvious that her work is not just a job to her but a vocation. "I'm so lucky that my work is also a passion of mine," she said. "Arriving at work every day and knowing that what we do is having a positive impact on the environment is simply a great feeling."

Her positive attitude can also be seen in the way she talks about industry events and network meetings. "Talking with colleagues from my sector is something that is incredibly valuable," she explained. "You always learn something new and you make important contacts." Coming from the Rhineland, she finds small talk just as easy as negotiating and dealing with facts and figures.

ABOUT THE COMPANY:

Having enjoyed steady growth over the last 30+ years, RETERRA now has a network of businesses across Germany and is one of the leading companies in the biomass management sector. A specialist in recycling organic raw materials, RETERRA transforms organic waste into high-quality products such as compost, substrate, soil coverings and wood-based fuel. The company serves a wide range of customers – from the food processing industry through to the agricultural sector – and handles around 2.5 million tonnes of organic and residual raw materials every year.

With a workforce of over 500 employees at its various branches in Germany, RETERRA offers an extensive portfolio of products and services that covers all stages of the supply chain – from collection and recycling through to production. By focusing on sustainability and recycling, RETERRA plays a valuable role in protecting the environment and preserving natural resources. The company is a fully owned subsidiary of the REMONDIS Group.

Heading towards the future of the circular economy

Under the management of Barbara Junker and her fellow managing directors, RETERRA has become one of the pioneers of the circular economy. "We're heading in the right direction," she said, summing up the situation at the end of our meeting. "But there's still a great deal to do. The circular economy is not just vital for the environment; it is also a great business opportunity. I am proud that we are spearheading the way here."

> "The circular economy is not just vital for the environment; it is also a great business opportunity. I am proud that we are spearheading the way here."

Barbara Junker, Managing Director of RETERRA Service GmbH

The circular economy: a motor for growth

GERMANY'S PATH OUT OF THE CRISIS

Germany's economy is facing unparalleled challenges. The circular economy has the potential to not only bring about the green transition but also to pave the way towards more economic growth and employment. The key here: systematically implementing the National Circular Economy Strategy.

In 2024, the German economy stagnated for a second year in a row. The war in Ukraine and the high energy prices both meant that Germany was not able to kick-start its economy again after the covid pandemic – something that has had an impact on the economic recovery of the whole of the Eurozone. The prospects for the current year are developing dynamically: both structural change and economic stagnation could lead to Germany's economy coming to a stillstand for the foreseeable future unless targeted and effective action is taken to counteract it. To be able to take such action, Germany's government coalition, made up of CDU/CSU and SPD, brought about a change to the country's constitution in March with the help of the Green party to enable the government to invest the huge sum of €1 trillion. This massive investment sum has the potential to turn the crisis into an opportunity. It is essential that these planned investments in defence, education, infrastructure and climate action recognise the circular economy as a fundamental part of the green transition – as an essential lever for achieving both the country's climate goals and reducing industry's dependency on raw materials. The new German government must make a determined effort to drive forward this transition. Why? Because the circular economy can also make a considerable contribution towards reviving the German economy. Whether it be recycling waste plastic, transforming construction waste into high-quality recycled aggregate, recovering valuable metals and raw materials from complex industrial products (such as e-waste and batteries) or producing climate-neutral biogas and fuels from biogenic waste and residual materials: Germany's circular economy already has technological solutions that are in high demand all around the world.

The new German government must make a determined effort to drive forward the transition – irrespective of its political orientation.

Global demand for circular solutions will grow

This global demand will increase considerably over the coming years. Solutions that are both mindful and respectful of planetary boundaries will be needed to tackle the global environmental problems caused by plastic pollution, the progression of climate change and the hunger of the world's ever-growing population for natural resources. All of which means that more circular economy is not simply a project dreamed up by the urban avant-garde but a necessity derived from the laws of physics and the macroeconomic principle of scarcity.

However, neither Germany nor the EU are making the most of the potential that could be created by systematically implementing their circular economy: Mario Draghi, the former president of the European Central Bank (ECB), published a report entitled 'The future of European competitiveness' in 2024, in which he called for the path towards a circular economy to be pursued more systematically in order to grow the EU's global competitive position. In his report, Draghi cited scientists who have predicted that the EU could potentially meet more than half to three quarters of its metal requirements for clean technologies in 2050 through local recycling. Furthermore, according to the feasibility study 'Model Germany Circular Economy' carried out by these scientists on behalf of WWF Germany, a systematically implemented circular economy across the globe has the potential to reduce global greenhouse gas emissions by just under 40% and consumption of raw materials by just under 30%.

Better framework conditions for high-quality recyclate

Systematically implementing a coherent circular economy policy would have a particularly positive impact on Germany's competitive position: a study published by the consultancy firm Deloitte on behalf of the BDI [Federation of German Industries] reveals that a circular economy could increase German industry's gross value added (GVA) by 12 billion euros a year – something that would also have a positive net employment effect of around 180,000 additional jobs.

At the same time, dependency on imports of raw materials from countries like China would drop considerably. The study's authors estimate that the use of secondary raw materials in the steel sector could increase from the current 44% to 58% by 2030 and in the aluminium sector from the current 53% to 72%. This would, in particular, help the German automotive industry to free itself – to a certain extent – from its dependency on raw materials from its now competitor the People's Republic of China.

Targeted regulatory incentives are needed to grow the use of recyclates. Measures such as minimum recycled content mandates, financial incentives and making it obligatory for public institutions to, whenever possible, procure products made from recyclates are essential to stimulate demand for recycled materials. Having a recycling label would also be a sensible solution to make green procurement easier for the public sector and so make the most of the potential of public sector contracts, which add up to around 500 billion euros a year. Despite the current statutory rules and regulations, the complicated way public procurement is carried out often turns out to be a stumbling block. A simple and easy-to-understand recycling label could play a key role in speeding up the transition towards a circular economy.

What's more, a fund model for recycling-friendly packaging designs could create considerable financial incentives. The future government must further develop the current structures of the German Packaging Law to improve the competitive situation of businesses manufacturing recycling-friendly packaging and drive demand for eco-friendly materials.

More circular economy is not simply a project dreamed up by the urban avant-garde but a necessity derived from the laws of physics and the macroeconomic principle of scarcity.

To benefit as quickly as possible from positive market dynamics, German regulatory processes must become more flexible and less bureaucratic and the country's laws and ordinances must be implemented more systematically.

Systematically focusing on what's right

Focusing more on mechanical recycling rather than chemical recycling is key here. Studies have shown that mechanical recycling contributes greatly towards cutting greenhouse gas emissions and has less of an impact on the environment than its chemical counterparts. Stipulating in law that priority must be given to mechanical recycling would not only strengthen recycling capacities but also significantly reduce emissions.

Having said this, private sector recycling businesses must invest in new plants if capacities are to be increased. However, to benefit as quickly as possible from positive market dynamics, German regulatory processes must become more flexible and less bureaucratic and the country's laws and ordinances must be implemented more systematically. Having to wait years and years to get an approval to invest in Germany is unacceptable for a future market such as the circular economy – not only because of the unquestionable pressure that exists for everyone to act and help protect the environment but also because this excessive scepticism may result in Germany (once again) squandering economic opportunities. On the other hand, the fact that there are still regional councils in Germany that have not provided their households with food and garden waste bins even though this has been prescribed by the German Circular Economy Law [KrWG] since 2015 must not be allowed to continue without consequences. Consistently complying with the laws of the land must once again become one of Germany's guiding principles – both for private and public sector actors.

It is not enough to simply improve the framework conditions for recycling and recycled materials in Germany to drive forward the circular economy. The circular economy is not a national economic model and does not stop at Germany's borders. Which is why creating a 'Schengen area for waste' would be a further strategic step towards creating a well-functioning circular economy.

This would make waste imports and exports within the EU more flexible and create the necessary conditions to enable recycling goals to be reached more effectively. The current approval procedures that end up delaying the transport of waste must be revised to safeguard the competitiveness of the circular economy.

Dovetailing climate action & circular economy regulations

With climate change continuing to make itself felt, climate action has never been as urgent as it is today. Intelligent climate action policies promote – both directly and indirectly – the transition towards a circular economy as both recycling and the careful handling of our natural resources have a direct, positive impact on Germany's climate targets.

One of the key instruments of the EU's climate action policies is its European Emissions Trading System (ETS). Discussions are currently being held at EU level to decide whether waste incineration should be added to the ETS.

Just to be clear: it would be both right and important to include waste incineration in the European Emissions Trading System but this step is not enough on its own. The target here should not be on 'penalising' a certain type of treatment but on ensuring that the different categories of waste are systematically separated from each other. Only collected waste that has been cleanly separated from other waste types can be recycled to a sufficiently high quality so that the recycled raw materials produced meet the quality requirements of industry. Separate collections, therefore, should not be restricted to packaging; separating waste is more than the recycling bin. Organic waste, paper, e-waste and batteries must also become an integral part of a holistic circular economy policy that takes the raw material and added-value potential of all waste streams into account.

However, if incentives are to be created to reduce waste and promote the separate collection and high-quality recycling of waste then all types of mixed waste treatment – i.e. landfill, mechanical-biological waste treatment and incineration – must be added to the ETS. Otherwise, waste incineration would be unjustifiably disadvantaged compared to the other forms of waste treatment. What's more, there would be the danger that mixed waste would not be avoided by separating it better but simply by sending it for a different type of treatment – including those that have a more negative impact on the climate. That would be the complete opposite of climate action and would mean that the raw materials contained in these waste streams – such important supplies for European industry – would not be recovered.

Recycled raw materials: the future is circular, collaborative & digital

If the circular economy is to be further developed and Germany is to set itself up across the world as a forerunner with the best solutions, then the concept of circularity as demonstrated by the traditional recycling sector must become even more firmly anchored in industry. 'Circularity made in Germany' – as the National Circular Economy Strategy rightly puts it – can then become a global export success. The best way to do this is through partnerships such as those that the REMONDIS Group has entered into, for example with Mercedes-Benz in the area of metal recycling and with the fashion chain H&M in the area of textiles. These need to be followed by cross-sector collaborations to close the life cycles of complex material streams as well as to develop solutions for the global market – something for which Germany and its partnership-based economy are effectively predestined. It is right, therefore, to institutionalise stakeholder dialogue about the National Circular Economy Strategy on a Circular Economy Platform.

For Germany to take on a leading role in implementing the circular economy, then it is essential that the country's own circular economy uses digital solutions.

Artificial intelligence can already help today to keep our streets and towns clean without the need for more manpower. Digital product passports will become a game changer in the circular economy in the future – not only because they will make recycling easier but also because they will translate real material streams into digital data. These new datasets will take both the appreciation for circular product design and the opportunities to recover raw materials to a completely new level. However, the global Circular Valley of the 21st Century – and the prosperity for everyone that this will bring with it – can only come into being here in Germany, if it is able to develop and offer suitable digital solutions alongside the right plant technology and business and organisational know-how.

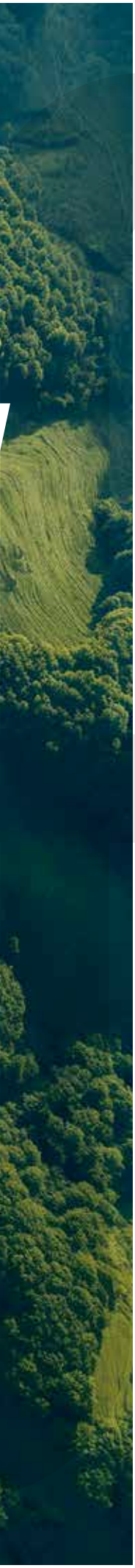
In order to drive forward such digital innovations, the new German government must define the framework conditions for creating a new entrepreneurial and start-up culture within the circular economy. The dynamics of this start-up scene can and must be promoted by enabling and supporting real laboratories so that innovative ideas can be tested in specific spaces and environments. At the end of the day, not every idea will pass the practical tests. Some, however, will – and they will have the wherewithal to not only make the world a little bit more resource-friendly, cleaner and better but also to help Germany achieve new growth.

It is time to act now. By systematically supporting the circular economy, Germany will be able not only to gain a range of environmental and economic benefits but also create global market leaders in this future growth market. This transition towards a circular economy is not a pipe dream but the technological, economic and political answer to the challenges of our time.

This transition towards a circular economy is not a pipe dream but the technological, economic and political answer to the challenges of our time.

THE GREAT TRANSITION

Oil refineries – these were and still are one of the most striking symbols of the fossil fuel age with their smoking chimneys, huge tanks, endless networks of pipes and steaming distillation plants. It is no wonder, therefore, that these industrial giants are undergoing a transformation as part of the energy transition – as is happening right now in the French town of Grandpuits at the refinery operated by TotalEnergies. SARIA, one of REMONDIS' sister companies, is also involved in this project. Thanks to their collaboration, this site will be producing up to 210,000 tonnes of sustainable aviation fuel (SAF) every year for the aviation industry once the plant – located in the heart of France – is up and running. TotalEnergies and SARIA will be providing the aviation sector with a key component that the industry urgently needs to enable it to reach its climate targets.



SARIA

SARIA is a German family-run business and a sister company to REMONDIS and Rhenus. Committed to the circular economy, its wide range of activities, products and services focus on collecting organic resources and transforming them into renewable energies and high-quality materials for use in the food, animal feed, pet food and pharma industries. The company is based in Selm in the region of Westphalia and employs around 13,000 people in 26 countries.

Find out more at:
www.saria.com

The new Grandpuits

Commissioned in 1966, the refinery in Grandpuits was a lighthouse project at the time – a symbol of France's modern and progressive mindset. And it will be doing the same again if it succeeds in achieving its goal of having net-zero emissions by 2050. The foundations for reaching this goal are already being laid. The site has been a zero-crude platform since 2024 after the old plants and tanks were converted.

Since this target was announced back in 2020, over 500 million euros have been invested in four production units that have fully replaced all former crude oil processing operations. The solar farm is already up and running and supplies electricity to the site's other facilities. Moreover, the company has also built a plastics recycling plant that is divided up into two parts: a conventional recycling plant and a pyrolysis facility.

TotalEnergies and SARIA will be providing the aviation sector with a key component that the industry urgently needs to enable it to reach its climate targets.

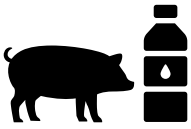
Furthermore, the Grandpuits site will be producing biogas using anaerobic digestion as well as green hydrogen with a carbon capture system. At the end of the day, this project is all about the production of biofuel. All four facilities – which TotalEnergies is setting up with different industrial partners – are connected to each other. And, as the plan is for them all to be able to supply each other, they must all be built within an ambitious schedule. All of the plants should be up and running at the site by 2027. According to Les Echos, this investment will also mean that around 250 of the approx. 400 employees currently working at the site will have a job at the new facilities in the future.

The building site

Having started last year, the construction work in Grandpuits is in full swing. Structures are being pulled down, disposed of, redesigned and rebuilt – and in many places across the site at the same time. However, what may look, at first glance, like the chaos on an ant hill is in fact following a precise plan. Between 800 and 900 people – and at peak periods over 1,200 – have been working on various different projects for months now.

The pre-treatment plant, the centrepiece of the new SAF biorefinery, has already been completed. This is where contaminants will be removed from the raw materials in the future. Sustainable biogenic materials are the feedstock that will be used to produce SAF. SARIA gets hold of these by collecting used cooking oil and fats from the food sector. At the same time, it also uses fats produced from animal by-products. These generally come from local businesses such as abattoirs, butchers and farms.

As the company recycles fats and cooking oils that are not fit for human consumption, the production of this biokerosene will not be competing with the food production industry at all. Producing SAF from this feedstock is an innovative way to recover valuable raw materials – materials that are considered to be waste in other industries – and enables them to be reused for other purposes.



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Perfect dovetailing

The bits of organic waste that are not suitable for producing SAF will be processed with agricultural residual materials collected from local farms so that they can also be fed into an anaerobic digestion plant. This plant is due to be commissioned in 2027 and is expected to produce around 80 GWh of biomethane per year. Some of the 80 tanks, that were previously used to store crude oil, will continue to be used to store the biomethane. This is what the transformation of Grandpuits is all about: everything that can still be used will continue to be used. The same is true for the desulphurisation plants that were used as part of the oil refinery process to remove sulphur from mineral oil products. These will now be deployed to treat the fats and oils. The technical process is the same. Large volumes of hydrogen will be needed to remove the sulphur. Which is precisely why the above-mentioned hydrogen production unit is being built at the site. This green hydrogen will be made from the biogas from

SAF

Sustainable aviation fuel (SAF) is a mixture of conventional fossil kerosene and synthetic components that have been produced from renewable raw materials. SAF is playing a key role in decarbonising the aviation industry. It provides the sector with an alternative to conventional kerosene that is not only practicable but can also be used straight away. SAF can be used in existing aircraft and has the potential to considerably cut carbon emissions – by around 80% compared to standard kerosene. SAF is, therefore, playing an important role, bridging the gap until other fuels are available on the market to the aviation sector, such as e-fuels, hydrogen and electricity.

A whole number of airlines have already committed voluntarily to use SAF. What's more, the EU has prescribed a blending mandate of 2% from this year onwards that should gradually increase to 70%. The amount of SAF currently being produced, however, covers only a fraction of global demand. Latest estimations put it at 0.5% of the overall demand for jet fuel. Projects, such as the one in Grandpuits, therefore, will guarantee the urgently needed increase in production so that the government-set climate targets can be achieved.

Find out more at

TotalEnergies and SARIA broke the ground for this ambitious project in Grandpuits on 30 August 2023

the anaerobic digestion plant by capturing, liquefying and recycling the biogenic CO_2. Thanks to this process, the carbon dioxide can be used as a base material for industrial applications.

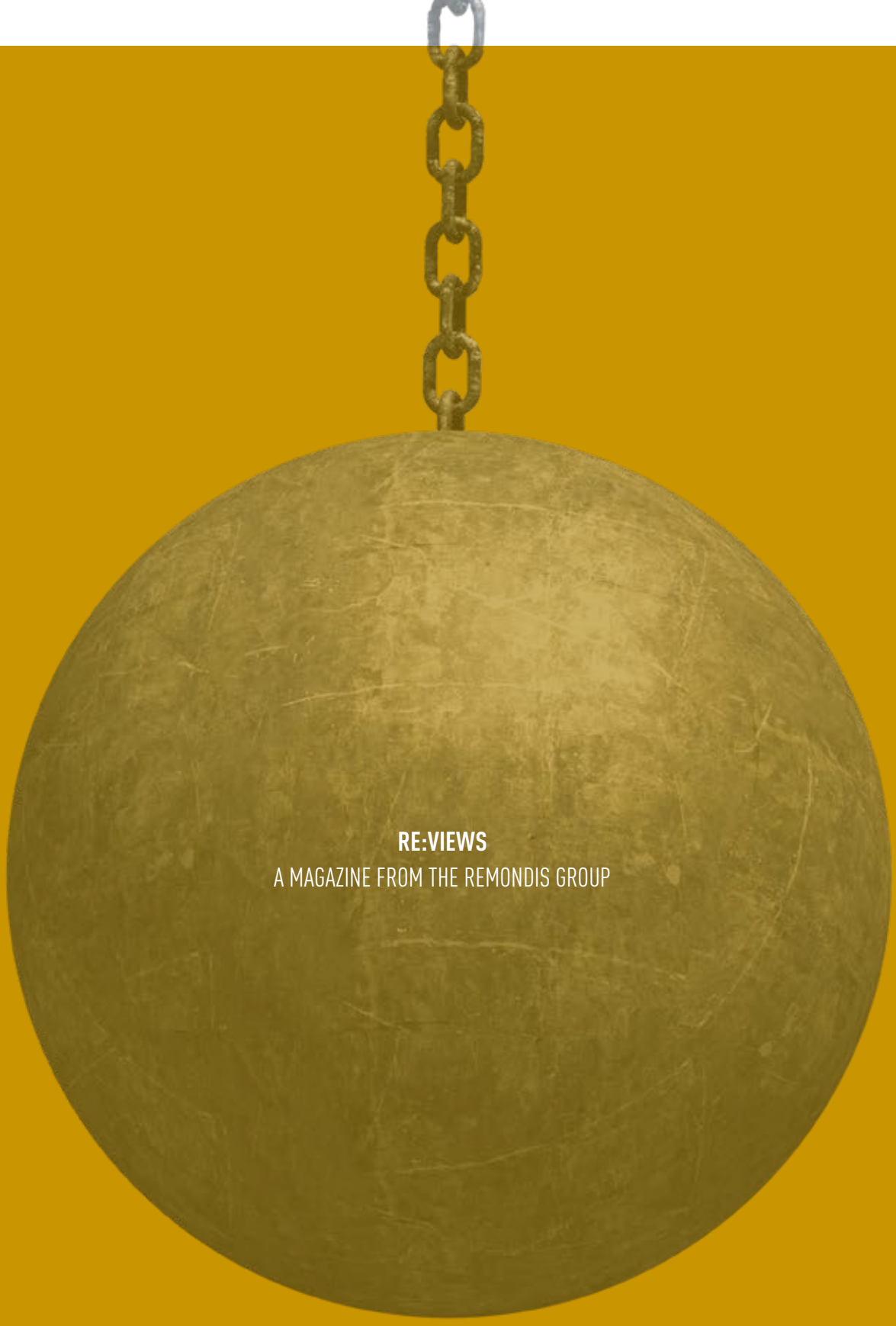
The final stage required to produce SAF involves a complex chemical process that produces kerosene in a number of different steps that include hydrogenation, isomerisation and suitable catalysts. This is a far more complicated process than producing biodiesel – some of the technological steps will effectively be unchartered territory.

The synthetic components needed to produce SAF will be made in Grandpuits and then sent to a tank farm in Gargenville northwest of Paris, where it will be mixed with fossil kerosene. To date, SAF must be mixed with conventional kerosene and is limited to a 50% blend. A future customer will be Air France – KLM.

All in all, the Grandpuits site will be producing 210,000 tonnes of biofuel for the aviation sector every year, 50,000 tonnes of biofuel for road transport and 70,000 tonnes of bionaphta, which is used to manufacture bioplastics.

The partners

Being a multi-energy business, TotalEnergies has both the market expertise to produce biofuels and renewable energies and the ideal conditions at Grandpuits to produce biokerosene. On the other side, SARIA, an expert in collecting and recycling organic residue, will be contributing its expertise in the area of feedstock supply for the SAF production. SARIA is the perfect partner for TotalEnergies thanks to its Europe-wide networks dedicated to collecting and recycling used cooking oil (UCO) and animal-based fats from the food, agricultural and meat industries – both of which can be used to make SAF.



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