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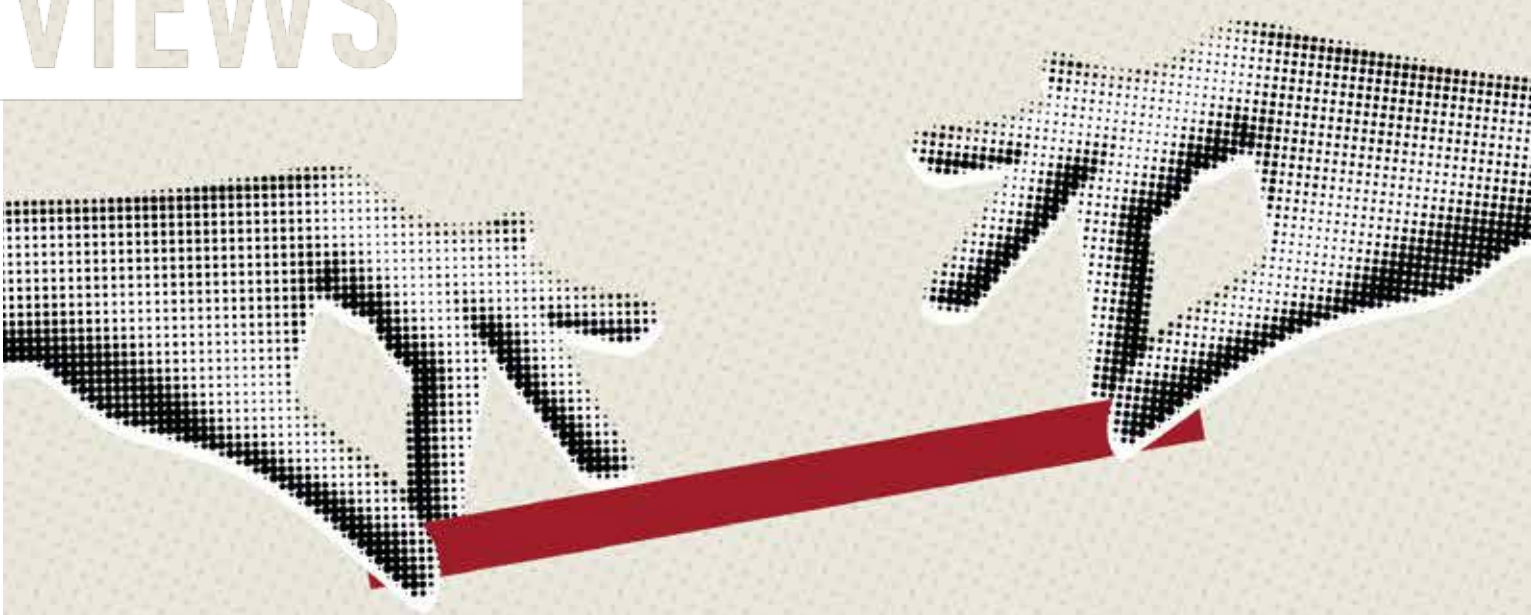

RE:CONNECT

Collaborating with local authorities: delivering key services together

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Flag

Editor: REMONDIS SE & Co. KG // Brunnenstr. 138 // 44536 Lünen // Germany
T +49 2306 106-0 // F +49 2306 106-530 // remondis.com // info@remondis.com
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Dear Readers!

Thomas Conzendorf, REMONDIS Board Member

Growing costs, ever more stringent regulatory requirements and the skills shortage are all putting Germany's local authorities under tremendous pressure. And then, on top of this, they need to invest billions of euros – primarily in infrastructure, energy and digitisation. In 2024, the KfW Municipal Panel put the local authority investment backlog at 215.7 billion euros – 16% higher than the previous year.

All of which means that many local authorities find themselves facing a dilemma: on the one hand, they are obliged by law to deliver key services that are not only reliable but also fit for the future. On the other, they lack the financial, personnel and technological resources to achieve this. But why should they try and do this on their own when they can collaborate with competent partners?

A recent study published by KOWID (Centre of Excellence for the Public Sector, Infrastructure and Public Services) shows how the collaboration work carried out in public private partnerships (PPPs) can have a positive impact on municipal infrastructure projects. PPP models enable local authorities to benefit from both the innovative strength and efficiency of private sector firms and their ability to invest funds without giving up their public control. This has nothing to do with privatisation. PPPs are a collaboration between equal partners – with clearly defined roles, transparency and shared goals.

We decided to look at this subject in more detail in this latest RE:VIEWS issue. And so we spoke to one of the authors, Dr Oliver Rottmann, about this KOWID study and discussed how he sees public private cooperation work developing in the future. We also examined the practical side of such work, for example how councils are keeping their towns clean. Getting littering and fly-tipping under control with laws, fines and awareness campaigns has not achieved the desired results. Many local authorities have decided to tackle this problem in a different way by turning to the private sector for support. The examples given demonstrate how the smart use of data, digital solutions and human know-how can help improve levels of cleanliness in cities.

Water is essential for life – and it is a resource that is also coming increasingly under pressure. Climate change is altering precipitation patterns, strengthening extreme weather events and forcing local authorities to take action. Collaboration work creates benefits and strengthens resilience in this sector too. Many local authorities have been working with private sector partners for decades now to tackle climate change and the municipal water infrastructure demands together.

And this issue contains other interesting topics as well. We examine the circular economy in Denmark, explore the current state of the textile recycling sector and take a look outside the box: Transdev, one of the world's leading privately owned mobility firms and one of REMONDIS' sister companies, is playing a key role in driving forward the green transition in its industry. And the same is true here: mobility can only work if it is seen as a shared task – between the client and the operator, between the local authority and the company.

I very much hope you enjoy reading this latest issue!

Yours

TOGETHER FOR A BETTER FUTURE

The latest KOWID study reveals how public private partnerships can help clear up the current backlog of investments in key public services

When the dilapidated Rahmedetal Bridge near Lüdenscheid was closed to traffic from one day to the next in 2023 so it could be demolished, the A45 motorway – one of the most important motorway connections between the Ruhr region and the south of Germany – effectively came to a standstill. Long lines of noisy lorries were forced to take the detour, polluting the air as they travelled through Lüdenscheid and the neighbouring towns and villages. Rahmedetal became an embarrassing symbol for the criminal neglect of Germany's infrastructure. But it is not just the country's motorways, roads, railways and bridges that have been impacted by these years of neglect. Key services that local authorities must deliver have also increasingly been coming under strain over the years.

Local and district authorities are under huge financial pressure when it comes to both providing key services and tackling often long overdue infrastructure projects. The combination of demographic change and this investment backlog caused by strained finances has created a perfect storm for towns, districts and local businesses. And the challenges here are massive – whether it be digitisation, energy transition requirements and house-building projects or repairing transport infrastructure. No matter where you look, there is a lack of funds and, increasingly, a lack of qualified personnel as well.

The KfW Municipal Panel put the local authority investment backlog in 2024 at 215.7 billion euros – up 16% from the previous year. The main reason for this: the local authorities do not have the financial resources needed. While local authorities must provide 70% of public capital expenditure, they are directly entitled to around just 15% of taxes and similar levies.

Without the funds allocated to them from central government and the German states, local authorities would simply not be able to afford to carry out their duties. Their financial situation is now a permanently precarious one. Looking at the whole of Germany, the financial bottom line (i.e. revenue minus expenses) of local authorities currently shows a staggering deficit of 24.3 billion euros.

The KfW Municipal Panel put the local authority investment backlog in 2024 at

215.7 billion euros

STUDY

The study 'Zusammenarbeit der öffentlichen Hand mit privaten Unternehmen durch ÖPP in der kommunalen Praxis' (Collaboration between the public sector and private companies using PPPs as practised in municipalities) can be downloaded from KOWID's website (German only):

The private sector could help relieve and remedy this situation. Public private partnerships (PPPs) provide an opportunity to bring private sector capital and know-how into joint ventures to clear up the backlog of investments as well as to stabilise fees and charges over the long term.

Against this backdrop, KOWID (Centre of Excellence for the Public Sector, Infrastructure and Public Services) carried out a survey which saw it reaching out to all German towns and districts with more than 20,000 local inhabitants as well as to a fixed number of local authorities with between 10,000 and 20,000 local inhabitants in a selection of German states. They were asked about their current financial situation, investment requirements and attitude towards PPPs. The results clearly showed that the decision a local authority takes as to how it intends to maintain, modernise or extend its municipal infrastructure primarily depends on its financial situation. This, in turn, is directly impacted and dependent on the structure of the population and local businesses in the different areas.

An ageing population combined with a lower number of companies having to pay local business tax are already causing problems for many local authorities. New concepts are needed to ensure that the wide variety of tasks can continue to be delivered, in the same high quality, in the future as well.

The KOWID study has shown that public private partnerships are, in many cases, an option that local authorities could use to procure and implement their needs, to help share the burden of delivering the required infrastructure and to provide the right quantity and quality of services. PPPs can fundamentally help to ease the burden on local authorities and, in the best case, increase levels of efficiency for a range of public tasks. These include providing public infrastructure (e.g. in administration and transport), technical infrastructure and classic key public services (including waste and water management) as well as education and training.

INTERVIEW

Dr Oliver Rottmann is an executive board member of KOWID (Centre of Excellence for the Public Sector, Infrastructure and Public Services) at the University of Leipzig and co-author of the KOWID study. During his interview with RE:VIEWS, he talked about the study's findings and gave his assessment of the future prospects for public private collaborations.

Dr Rottmann, many local authorities are currently facing a massive investment backlog and financial constraints, caused for example by social costs, personnel costs and a need to renovate their schools, roads and networks. What role can a study, such as the KOWID Institute's study 'Collaboration between the public sector and private companies using PPPs as practised in municipalities', play here in highlighting these challenges?

Dr Oliver Rottmann: The state of affairs in local authority budgets is dramatic right across the board. And the investments that local authorities need to make are massive at the moment. According to the KfW Municipal Panel, these requirements are growing every year and currently lie at around 215 billion euros. This can be put down to them having to handle a longer list of tasks, such as the green transition, housing policies, social payments, immigration etc. Local authority revenue is also lagging way behind this development. The current local authority deficit of over 30 billion euros reflects this problem. Having a more fitting distribution of the funds between the different federal levels would be appropriate but finding a suitable political solution here is unlikely to happen quickly. The metaphor of the 'federal blanket' – that the former Federal Finance Minister Peer Steinbrück occasionally used – describes this dilemma perfectly: one level either ends up with cold feet or with a cold face. And so, pressure on the finances and key services continues to grow. Procedural avenues can help in the short term to ensure key services are guaranteed and provided effectively and efficiently, especially when it comes to technical infrastructure, i.e. energy and water supply, and waste management and recycling.

The investments that need to be made are massive at the moment – according to the KfW Municipal Panel, they are growing every year and currently lie at around 215 billion euros. This can be put down to the longer list of tasks, e.g. the green transition, housing policies, social payments, immigration etc.

The study wishes to help shed light on the 'provision of municipal services' as well as on all the different ways of doing this. And, by carrying out a survey of local authorities, it aims to reflect on the practical needs and experiences, not least with regard to collaborative models such as PPPs.

What was the main reason for carrying out the KOWID study and what were the principal questions?

Dr Oliver Rottmann: Looking at these times of tight budgets and the 'Special Fund' – which has not made its way "into the roads" yet – we wanted to use this study to point out the possibilities of also using private sector know-how. The financial restraints that local authorities are facing mean that PPPs could represent a way to implement infrastructure projects more rapidly and more cost-efficiently. At the same time, the local authority remains the owner of the infrastructure. Nothing is privatised. The main questions we asked were what infrastructure challenges they faced and whether they used PPPs. If the answer to this question was yes, we then asked which PPP models were used and what the results were. 92 German local authorities with more than 10,000 local inhabitants took part in the study.

So what experiences did the local authorities have that use PPPs, especially compared to the classic model of delivering the services in-house?

Dr Oliver Rottmann: Due to the tight constraints on local authorities, they named subsidy programmes, loan subsidies and municipal loans as being particularly useful financing tools in this study.

Furthermore, municipal guarantees, project financing and financing via joint collaboration companies are also seen as being useful. As far as the PPP projects are concerned, the majority of the local authorities surveyed consider this approach to be 'very useful' or 'somewhat useful'. In other words, the more experience they have of PPP projects, the more benefits they see. The areas where they fundamentally see a high potential for PPPs as a means of providing key services include construction as well as technical infrastructure such as energy supply, water and waste management. Of course, the pressure to act and the way projects are implemented differ from local authority to local authority. And, in many cases, the local authorities have their own utility companies that play a key role in delivering public services. But here too, PPPs and private sector service providers can help out by having partnership models that reflect the exact requirements. PPP models, therefore, often have the utility company as a shareholder and not just the local authority so that the model is a combination of the local authority, the utility company plus a private sector firm.

Your study findings highlight the fact that PPP projects can help make these services more efficient and more market-oriented. What effect does this have on a local authority's day-to-day business and how does this benefit local residents?

Dr Oliver Rottmann: The success of a long-term collaboration, such as a PPP, primarily depends on two things: firstly, the goals of the partners must be made compatible so that they are congruent. This means that the focus of the local authority on public welfare must not be allowed to clash with the profit orientation of the private sector partner. One of the reasons why this often works is because innovative, private sector firms operate more cost-efficiently and this leads to the local residents receiving a high quality of service.

To what extent can the levels of scepticism and reservation be put down to a lack of experience rather than a categorical rejection?

Dr Oliver Rottmann: Punctual deliveries, life cycle approaches, use of the private sector know-how and innovation potential, transferring risks to the private sector partner, being able to plan budgets well into the future. These are all the theoretical opportunities created by PPPs. It became clear during our study that local authorities with experience of PPPs considered the exchange of know-how and experience, the quality of the services, cost efficiency and innovations to be particularly important. Innovations and new technologies as well as the provision of staff by the private sector partner, however, also appeared to play a significant role here. Experience shows, therefore, that local authorities certainly recognise the benefits and opportunities of PPPs when they use such models.

Why do people often tend to consider public private partnerships and privatisation to be the same thing?

Dr Oliver Rottmann: PPPs and privatisation are often seen as the same thing due to a lack of knowledge or ideological motivation because private sector companies are involved in both cases. The key difference lies in who has the responsibility, control and ownership. The local authority has all three in a PPP; the private sector partner delivers the service – regulated in a contract for a specific length of time, which may also be a long period. What's more, the majority of PPP models used by local authorities tend to be ownership models, where the local authority remains the owner of the infrastructure, for example in the area of construction. Most of the PPPs are purely cooperation and supply models when it comes to technical infrastructure, like energy supply, water and waste management. All in all, privatisation means that the state hands over its tasks, property and control. In contrast, the state keeps its responsibilities in a PPP and can make the most of its private sector partner and their know-how to provide the services.

What role does the experience of the public sector partner play in promoting trust in and acceptance of such models among policymakers and administrators?

Dr Oliver Rottmann: A key role. As the public sector can theoretically not become insolvent, one frequent argument against PPPs is that private sector firms can go bankrupt and so it would be better to keep the provision of the services in-house. Experienced, innovative companies that have been operating on the market for many years and have extensive know-how of how to provide their services can dispel these fears. Our study also shows that local authorities with experience of PPP projects appreciate this. Having said that, a PPP is always an individual decision that requires an a priori assessment as to which form of delivery can be expected to be the most sensible for each individual case.

"In an ideal situation, PPPs can help make municipal services more efficient and more effective – especially at local authority level."

Dr Oliver Rottmann,
Executive Board Member of KOWID e.V.

You recommend in your study that local authorities should have both the statutory and organisational powers to decide for themselves about PPP instruments. What political or statutory framework conditions do you believe to be critical here?

Dr Oliver Rottmann: Alternative ways for organising and delivering infrastructure and public service tasks could be developed specifically for local and district authorities – especially in regions where it is no longer possible for public or entrusted municipal or private sector players to deliver the service across the region on their own. This could also include the question of whether the regulators – i.e. central government and the German states – can make the standards for public services more flexible in certain areas and can add 'experimental clauses' regarding how the services are delivered.

In your opinion, what would a pragmatic approach – one that is free of ideology – look like so that every infrastructure task is examined to see what is the best way to implement it?

Dr Oliver Rottmann: It is important to realise that a PPP is not a replacement financing arrangement but an organisational structure. Each case must be examined individually. A pragmatic approach free of ideology means: a PPP is neither a saviour nor the devil's work. It is one of several options that must be examined case by case. In an ideal situation, PPPs can help make municipal services more efficient and more effective – especially at local authority level. The things that need to be taken into account and assessed beforehand are the complexity of the cooperation project, the quality of the services, the transfer of risk as regards liability, real competition and the innovative strength of the private sector partner. If all these points are met then there is much to be said for using a PPP.

What role could public private partnerships play in the future in helping to master the challenges that local authorities face when delivering key public services?

Dr Oliver Rottmann: Local authorities are in a difficult fiscal position and, in most cases, do not have sufficient numbers of staff. And they don't always have the know-how per se to provide specific services. Well-established, private sector infrastructure companies can provide them with support here. They can pool together the tasks and develop innovative set-ups, bring in their project expertise and carry out the tasks faster and in a more targeted manner. As a result, they can also take resilience and reliability into account, balance out the local authority's staff shortages and have a financial impact if the local authority manages to save money by taking this step. In the area of construction, the general contractors can bring life cycle ideas into the projects so that infrastructure can be developed efficiently by a single company without having to award separate individual contracts.

DELIVERING KEY PUBLIC SERVICES IS A JOINT TASK!

And the PPP study was a collaborative effort as well, having been carried out by the KOWID Institute in cooperation with numerous partners including the REMONDIS Group.

REMONDIS has been providing local authorities with its reliable support for many years, helping them to provide key services in the areas of recycling, public services and water. Our 70+ municipal partnerships deliver economic stability and long-lasting success and open up new avenues for a sustainable future. Further information about these collaborative business models and numerous reference projects can be found at (German only):

remondis-kommunen.de

A final question: what central message would you like to give as advice to the municipal decision-makers and politicians that have been fairly sceptical about public private partnerships to date?

Dr Oliver Rottmann: PPPs are always decisions that must be taken on a case-by-case basis. In light of the major investment challenges that local authorities find themselves facing, the call for the private sector to get more involved has got louder more recently and rightly so. The experiences with PPPs have definitely been positive. Which is why this supply option should also be considered in the individual cases being reviewed. The control, objectives and standards remain in the hands of the local authority – competent, private sector partners carry out the operations and deliver the services. They make it possible to have innovations, new technologies and approaches, digital and sustainable solutions and targeted operating models. What's more, they can help local authorities to realise projects despite the lack of public sector personnel and know-how. Dismissing this procurement and supply option for purely ideological reasons is, therefore, not productive, especially considering the enormous infrastructure challenges faced by local authorities.

Dr Rottmann, many thanks for the interview.

CLEAN TOWNS STRENGTHEN TRUST IN THE STATE

How local authorities are tackling the problem of litter with a smart use of data, digital solutions and human know-how

Towns and cities do not have it easy: in most cases, they have too little housing, too many cars, new challenges caused by climate change – and the constant demand to keep streets, parks and pedestrianised areas clean at all times as well as before, during and after small and large events. "Unfortunately, many people no longer feel it is their responsibility to keep public spaces clean. As a result, the volumes and frequency of litter being left carelessly in towns and districts have continued to rise over the last few years," the authors of the 'VKU Information 100' wrote in 2020. This report focused on the subject of littering and the measures being taken by councils to keep their towns clean.

Most litter tends to be to-go packaging, cigarette ends and plastic bottles.

Litter – be it discarded deliberately or just carelessly – is a subject that all towns and districts are having to cope with.

Dwindling confidence in politicians & authorities

There are more than 2,000 towns and over 8,500 districts in Germany. Many people have noticed that a lack of cleanliness in town districts and local neighbourhoods can lead to local inhabitants losing their confidence and trust in local politicians and authorities and in their ability to deliver key services and find suitable solutions. The Broken Windows Theory – which is not without its critics among social and urban researchers – states that the first signs of anti-social behaviour in a neighbourhood, such as littering, can encourage further negative behaviour. Each town would, therefore, be well advised to take the subject of keeping their towns clean seriously and to take proactive action to prevent litter being left in their public spaces.

Besides the well-being factor and the dwindling confidence in local authorities to be able to deliver services, this is also, quite simply, a question of protecting the environment. Litter left in parks and squares, ponds and lakes, recreational areas and city centres harms the local flora and fauna and has a – potentially long-term – negative impact on local habitats. Most litter tends to be to-go packaging, cigarette ends and plastic bottles. Many of these materials need decades or centuries to degrade and certain polymer compounds even need up to 2,000 years – polluting the environment throughout this incredibly long period of time.

For cleaner cities: the advances made in digitisation have created products that work together hand in hand and provide tangible support for local authorities, helping them to carry out their everyday tasks

"The harmful substances that are added to products, such as plasticisers, can be released into the environment as the product degrades and the rubbish can also end up in our lakes and rivers and, ultimately, in our seas and oceans," the UBA [Federal Environment Agency] wrote in its final report 'Status Quo, Potential Actions, Instruments and Measures to Reduce Littering' in 2020.

Getting the problem of litter under control with laws, fines and awareness campaigns has not had the desired effect for years now. At the same time, local authorities and public sector waste management companies are despairing at the huge financial and personnel costs involved in having to keep their towns clean.

Fortunately, though, there is light on the horizon. The advances made in digitisation have created digital solutions and products that work together hand in hand and provide tangible support for local authorities, helping them to carry out their everyday tasks – and without making their staff obsolete. Quite the opposite in fact. These solutions include REMONDIS Digital's AI-based application DATAFLEET, a combination of hardware and software, and its comprehensive NEOS digital tool. The DATAFLEET hardware comprises a camera and an edge device, a small computing unit that processes and analyses the data using AI. This high-performance module has been specifically trained with more than four million image data so that it can, for example, identify fly-tipping and litter – certainly not a straightforward task.

NEOS (a German acronym for 'sustainable, efficient and optimised town cleanliness') is an all-in-one solution that pools together all the digital functions, such as order management, smart route planning and other external and internal data on town cleanliness. This digital offering completes the AI-based CORTEXIA system, which documents the cleanliness levels of roads, paths and public areas in real time and depicts these in a so-called 'clean city index'. It records cigarette ends, paper litter and discarded packaging. The findings help those responsible to precisely plan and efficiently manage the individual clean-up jobs.

Using digital solutions, therefore, helps to save resources, increase transparency and make planning processes more efficient. Towns like Potsdam, Hamburg, Mülheim an der Ruhr, Hagen and Duisburg are using REMONDIS Digital's solutions in very different ways, having adapted them to meet their local requirements and conditions.

MEG uses automated data recording systems to locate litter in the town's public spaces.

Mülheim: doing one thing without giving up the other

"As far as we are concerned, the digital solutions we deploy are primarily there to supplement the measures that we already actively use to keep Mülheim clean," explained Jennifer Ebbers, press spokesperson at Mülheimer Entsorgungsgesellschaft mbH (MEG). MEG has been using the NEOS platform and automated data recording system DATAFLEET for a while now to locate litter in the town's public spaces. "The first time we used it was quite spectacular – seven collection vehicles were equipped with cameras and sent out to cover the whole of the town," reported Janina Müller, the person in charge of MHSB, a mobile unit responsible for keeping the town clean and providing advice to local residents. "Of course," she stressed, "we comply with data protection regulations and do not take pictures of people. Vehicle number plates are also pixelated. We only record the litter."

MHSB works at MEG on behalf of Mülheim town council to ensure the town remains clean. Working in shifts, the teams – which consist of an MEG employee and an external security guard – act as a kind of 'special task force' for tackling fly-tipping and littering. Their goal is to deter litterbugs and grow awareness about the importance of keeping the town clean. To achieve this, they make the most of their observation skills, determine who has been fly-tipping and/or littering and, of course, inform and advise. "If this doesn't work, then the town's public order office also issues fixed penalty notices," Janina Müller continued. The average fine is around 160 euros per offence but this can occasionally rise to 10,000 euros in extreme cases of environmental pollution.

The levels of cleanliness around the town have improved although there are still a few hotspots that stand out. At the end of the day, keeping towns clean is a never-ending task. And so the technical support has come at just the right time. Thanks to DATAFLEET's eyes and NEOS's data, the MHSB teams can work in an even more targeted way – promoting a clean and attractive Mülheim, this town on the Ruhr river.

"As far as we are concerned, the digital solutions we deploy are primarily there to supplement the measures that we already actively use to keep Mülheim clean."

Jennifer Ebbers, Press Spokesperson at Mülheimer Entsorgungsgesellschaft mbH (MEG)

Happy with the digital support in Hagen (from left to right): Operations Manager Jens Steinbach, Project Manager Nicole Flocco, Managing Director Sven Lindemann

Hagen: measurable improvements thanks to rapid responses

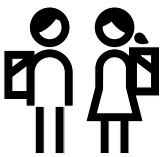
Speed and precision are the words that come to mind when Hagener Entsorgungsbetrieb (HEB) thinks about this digital technology. "We've been using DATAFLEET and NEOS since October 2024," reported Nicole Flocco, who works at HEB's administrative office in charge of corporate strategy and development, project management and IT. To begin with, the town had cameras on three of its collection vehicles while the technology was being piloted but all of their 13 collection vehicles are now using them. Furthermore, like Mülheim an der Ruhr, Hagen also deploys the CORTEXIA system, which is primarily needed to objectify information about the town's cleanliness as well as to monitor and manage the measures implemented.

The town has its own dedicated hotline, which local residents can use to inform the authorities about problems in their areas, such as fly-tipping. Even though this works well, it is no longer enough on its own to solve this problem. "It's not always clear exactly where the fly-tips are located and so we have to spend a lot of time to find out where the rubbish has been dumped," Nicole Flocco explained. DATAFLEET's AI-based cameras now deliver precise and usable information, pinpointing exactly where the litter is and, above all, enabling the team to react quickly. What's more, this system has also located fly-tips that have not been reported on by local residents.

To begin with, the town had cameras on three of its collection vehicles while the technology was being piloted but all of their 13 collection vehicles are now using them.

This technology is also an additional aid for the team of waste watchers, who have been tracking down litterbugs in Hagen since 2019. There are currently 23 waste watchers working for HEB and the town council; just under 1,400 warnings and fines were issued in 2024 alone. "Using this digital technology also means fewer patrols for our waste watchers, which helps take the pressure off them," Nicole Flocco was pleased to report. Information about fly-tips and litter is sent straight to the waste watchers' mobiles via the NEOS software so that they can take immediate action as well as provide digital feedback. DATAFLEET and NEOS help increase their local presence across the town.

Jens Steinbach, head of the waste watcher operations, believes that speed is of the essence here. Illegal waste dumps must be spotted and removed as quickly as possible: "Rubbish attracts more rubbish," commented this experienced operations manager, "which is why we must be faster than our local residents." Jens Steinbach is happy to be able to use these digital solutions: "My colleagues are also pleased that they have this digital support," he continued. The fact that using this technology has also driven forward the digitisation process within the company is an added bonus as far as he is concerned. This means, he said, that sustainable digital processes can be set up, the green transition achieved and cleanliness levels in Hagen – the gateway to Germany's Sauerland region – further optimised.



Besides deploying data-based applications, towns will also need to carry out other measures in the future, whether they be awareness campaigns, community-building events (such as litter-picking days) or environmental education campaigns that begin with the youngest members of society.

Duisburg: it all began with road signs

Town cleanliness is a topic that all towns and cities must deal with, as is the issue of digitising their processes. Switching traditional analogue procedures over to digital ones is, however, a major challenge. "We initially used DATAFLEET and NEOS to locate dirty and/or damaged road signs so that we could take targeted action," explained Jessica Richter from the traffic control department at Wirtschaftsbetriebe Duisburg (WBD). Artificial intelligence enables such signs to be identified as the refuse collection vehicles drive past them. "That gives us an advantage as we don't have to wait until someone reports them. We can be proactive," Jessica Richter continued. The first action, therefore, was to start a sign-cleaning campaign.

Six vehicles operated by WBD's subsidiary Kreislaufwirtschaft Duisburg GmbH have been equipped with the camera-based, AI-system DATAFLEET since the middle of 2024. As they travel through Marxloh, Meiderich and Mündelheim, they automatically record the traffic signs on the side of the roads – a mammoth task as there are 1,389 kilometres of roads in these three districts as well as squares and paths, 155 bridges and six tunnels. Duisburg's immense road network has an incredible 70,000 road signs, all of which need to be checked. What better way to do this than with the municipal collection vehicles that regularly travel up and down the roads? Once the signs have been recorded by the DATAFLEET cameras, the data is analysed using AI and then sent to the NEOS platform.

This project in Duisburg helps to keep the town clean, to improve road safety – and, almost incidentally, to enable processes to be managed more efficiently. Jessica Richter summed up the situation saying: "This has been a good start – also as a means to digitise other processes." Something that will also help further improve Duisburg's overall appearance as well of course!

CONCLUSION

No two towns are the same; smart digitisation, however, can almost always add value to municipal operations and be a key component helping municipal waste management firms to carry out their tasks. Besides deploying data-based applications, such as DATAFLEET, NEOS and CORTEXIA, towns will also need to carry out other measures in the future, whether they be awareness campaigns, community-building events (such as litter-picking days) or environmental education campaigns that begin with the youngest members of society. At the end of the day, towns will only succeed in remaining clean long term if as many people in their local community as possible join in, now and in the future. And then people's confidence in local politicians and authorities will also improve!

"This has been a good start – also as a means to digitise other processes."

Jessica Richter, Head of the Traffic Control Department at Wirtschaftsbetriebe Duisburg (WBD).

IFAT Munich

The future of the trade fair business, the exhibition venue Munich and IFAT 2026

An interview with STEFAN **RUMMEL**

Being a key venue for trade fairs, Munich is home to world-leading exhibitions such as the IFAT – the industry meeting place for environmental technologies. The Munich Exhibition Centre is, therefore, where all the latest environmental, business and technological developments are to be found. We sat down with Stefan Rummel, CEO of Messe München, ahead of the IFAT 2026 to discuss a number of topics – from the future of trade fairs, to the role Munich plays on the international stage, through to the importance of IFAT 2026 as a driver of innovation and the green transition.

STEFAN RUMMEL
CEO Messe München

Mr Rummel, Munich is one of the world's leading venues for trade fairs. What is it about the city and the region that makes it so attractive for the exhibitors and visitors? What role do factors such as the infrastructure, internationality and diverse industrial environment play towards the venue's success?

Stefan Rummel: There are a number of reasons why Munich stands out, all of which are closely connected. These include its excellent international ties, its efficient infrastructure and its high quality of life. Many visitors deliberately choose to extend their visit when they come to an exhibition here so they can spend some time in the town and region. And then on top of this, Munich has a strong economic structure with numerous leading international firms and distinct business clusters based here, for example in the technology and industry sectors. Our exhibition centre is one of the most modern and most sustainable worldwide and has the world's largest outdoor exhibition area.

Live events and trade fairs have come back strongly since the pandemic ended. What are the advantages of in-person meetings from a business point of view?

Stefan Rummel: You can't beat meeting someone in person. Trust is essential for creating long-term business relationships and, as a general rule, trust can only be built up by talking to someone face to face. And it's not possible to explain complex products and solutions on a video call either. I've been able to observe again and again how the trade fair environment has helped to create a sense of community and spirit of optimism – both of which are essential, especially when markets are going through a challenging period.

IFAT Munich

"Exhibitions are a people's business."

Stefan Rummel CEO of Messe München

How is the role of trade fairs changing today, in particular when it comes to digitisation, hybrid formats and visitor expectations?

Stefan Rummel: It's clear what trade fairs are expected to deliver nowadays: they have to be the leading platform in their industry. And they have to be international and offer concrete answers to the most pressing issues facing the relevant sector's future. The expectations of both the exhibitors and visitors are increasing all the time. They must know that it is worth their while to go there – and the trade fair must provide some obvious business benefits. Data and AI will help grow these in the future. Offering them an experience will play a key role here as well. Digital and hybrid elements can help augment their trade fair experience in some areas but the in-person meetings will continue to be a trade fair's main feature. Exhibitions are a 'people's business'.

The subject of sustainability also plays a key role. And this is all the more true at a trade fair for environmental technologies. What concrete measures have you taken as far as sustainability is concerned?

Stefan Rummel: Sustainability is at the very core of our corporate strategy. It is our goal to be net zero across the whole of our business by 2050. This means that we will capture the same amount of greenhouse gases as we emit. To achieve this, we are systematically using renewable energy, operate one of the world's largest rooftop solar panel systems and are driving forward waste prevention and the development of green areas.

IFAT Munich is the world's leading trade fair for water, recycling and circularity solutions. How has this exhibition changed over the years, regarding its size and its content?

Stefan Rummel: Both the size of IFAT Munich and its content have undergone some big changes over the years. It has a history stretching back over 60 years and has transformed itself from being a specialist exhibition for municipal wastewater technology to the world's leading platform for environmental technologies.

Its focus nowadays is not only on water and wastewater but also on the circular economy, resource management, climate action and climate adaptation. At the same time, the IFAT has also physically grown: we are expecting over 3,200 exhibitors and more than 142,000 visitors from more than 170 countries this year. They will be occupying all 18 exhibition halls as well as our outdoor exhibition area – a total of around 300,000 square meters. In terms of surface area used, the IFAT is Munich's second-largest trade fair after the bauma.

IFAT 2026

Exhibitors
3,200

Expected visitors
ca. 142,000

Countries
170

What can we look forward to in 2026? Are there any new formats, key topics or digital services?

Stefan Rummel: IFAT Munich 2026 will further cement its role as the world's leading trade fair for environmental technologies – from a professional, economic and political point of view – and as an integral part of the growing IFAT network across the globe. The large stages will be there again – i.e. our Blue, Orange and Green Stages – where top-class guests will be holding panel discussions. And then there'll be a number of 'Spotlight Areas' dedicated to subjects such as textile recycling and 'the water-conscious city of the future'. The complete programme can be viewed online. I can also warmly recommend our IFAT app.

Having exhibited at the trade fair for many years now, the REMONDIS Group has its stand in Hall A6, where the majority of the exhibitors are recycling firms. The IFAT, however, covers a much wider range of topics than just recycling. Have you got a good tip for someone who's visiting the IFAT for the first time or who's looking for some new ideas?

Stefan Rummel: Over the last few years, it has become increasingly obvious just how important the link is between the water management and recycling sectors for promoting circularity. And so my tip would be – once you've taken a look at recycling – to visit the water and wastewater halls as well as the digital and automated solutions. And it's also well worth visiting the Orange Stage and the live demonstrations in the outdoor area as the people there will not only be presenting and discussing their solutions but also showing how they are used.

To what extent does the IFAT see itself as being a driver of innovative environmental technologies?

Stefan Rummel: IFAT Munich is a key platform for innovations. Why? Because new technologies are not only presented here. Their practical use and their suitability for international markets are also discussed and assessed here. Indeed, having developers, users and decision-makers so close to one another enables innovations to be brought to market more quickly. This can be seen most clearly in the Spotlight Areas, where our partners provide valuable and interesting insights into current topics such as battery recycling, plastics recycling, digitisation in the water management sector, and hydrogen.

At the same time, we like to use IFAT Munich to encourage discussions between established businesses, start-ups and scientific institutes. Networking plays a key role in ensuring that innovations get to be used more quickly.

The IFAT is also a reflection of the challenges facing us today: the circular economy, the scarcity of resources, climate adaptation. What are the stand-out topics on the 2026 agenda?

Stefan Rummel: The leitmotif for IFAT Munich 2026 is 'Circularity is a must'. This motto was also one of the reasons why we entered into a collaboration with the 'Süddeutsche Zeitung' newspaper as we both wish to grow awareness of the importance of circularity. For the first time, the editorial team will be planning parts of our stage programme at IFAT Munich. These sessions will be used to underline the fact that systematically implementing the circular economy is the central lever to mastering the scarcity of natural resources, the growing environmental requirements and the necessary restructuring of industrial processes.

Environmental challenges are global challenges. You've now established IFAT trade fairs all around the globe. Where can these trade fairs be found and what's the strategy behind having a worldwide network?

Stefan Rummel: The global environmental challenges can only be solved at international level – and this is the approach of the global IFAT network. By holding our events, we help to promote the responsible handling of water and the development of well-functioning material life cycles. The network currently comprises twelve events on several different continents. We held our first trade fair for environmental technologies in the Middle East this January when we put on IFAT Saudi Arabia in Riyadh.

MESSE MÜNCHEN

Being one of the world's largest trade fair companies with 14 world-leading exhibitions and a total of around 90 exhibitions for investment goods, consumer goods and new technologies, Messe München is setting the benchmark for innovation, flexibility and networking. Its world-leading exhibitions – i.e. the world's largest meeting point for the individual industries – also includes the IFAT.

What is it about managing one of the world's leading trade fair companies that motivates you personally?

Stefan Rummel: One of the main motivations for me is the combination of the global impact and the very tangible customer benefits. Trade fairs are places where ideas are turned into business, where people, sectors and technologies meet and find solutions.

What's your vision for Messe München in 2030?

Stefan Rummel: I see Messe München as being an even bigger global platform for driving growth in our core sectors in 2030. With strong world-leading trade fairs in Munich and a scalable portfolio in key markets abroad.

We will systematically think about our trade fairs from our customers' perspective: transactions, leads, ROI and genuine business moments. At the same time, Munich will remain our anchor. International growth will strengthen our venue, attract new exhibitors and customers to Munich and make our company more resilient.

IFAT Munich

NEW WAYS TO RECYCLE TEXTILES

More low-quality old textiles, ever more demanding second-hand markets, costly recycling processes: it is a challenge to recycle discarded garments nowadays. Working closely with the Swedish fashion company H&M, REMONDIS is now heading down new paths to close textile life cycles. Change, however, can only be truly brought about by systematically implementing extended producer responsibility.

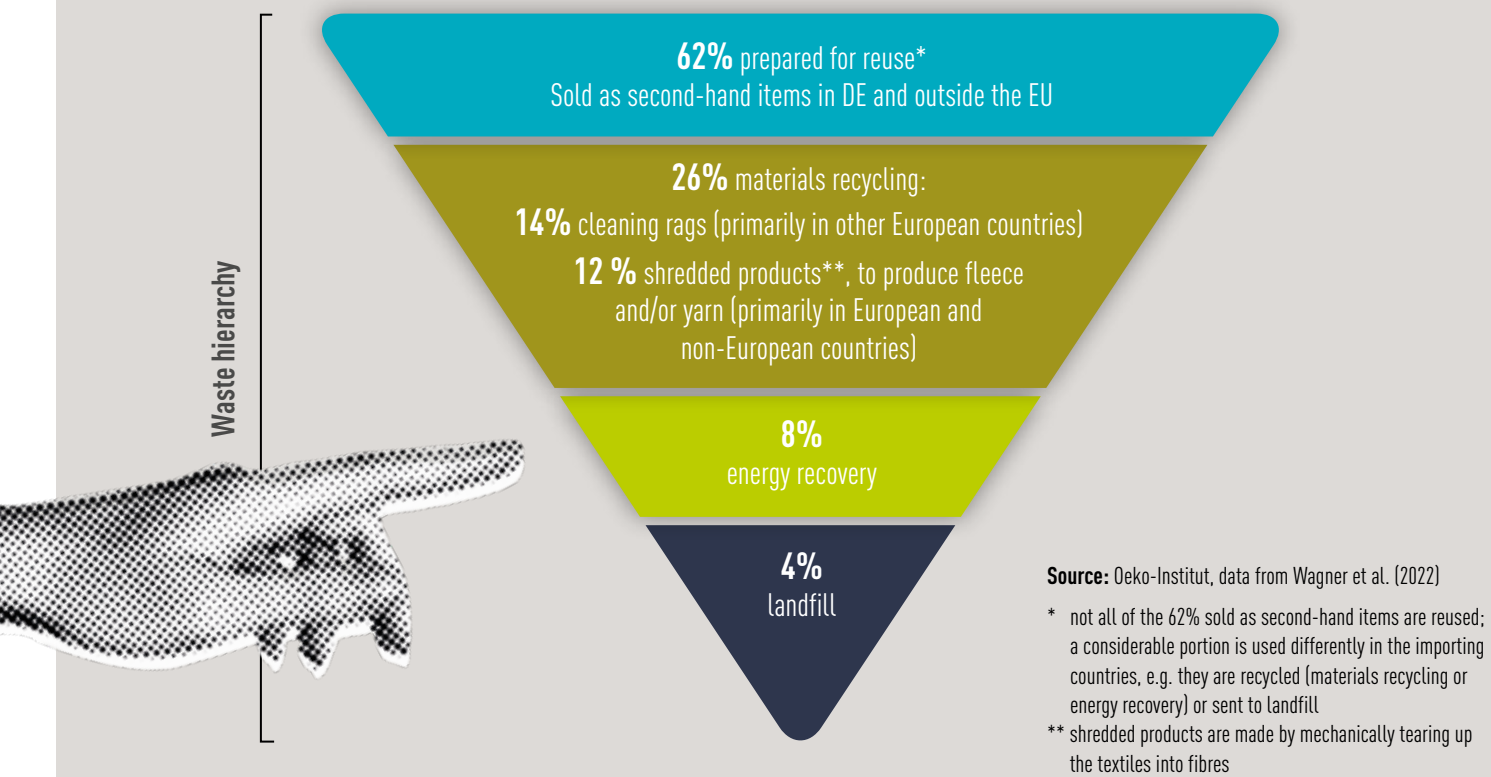
The swallows and robins are singing, the crocuses and daffodils are flowering, the first warm rays of the sun are on our faces. Spring is in the air – prompting many of us to begin one of our annual rituals: to clear out our wardrobes. Do those trousers still fit? Is this T-shirt still okay? This is the time when mountains of old garments are exchanged for millions of new clothes.

Over the last few decades, people living in Germany did not need to worry about how to get rid of their old clothes. For many years, unwanted garments were collected quietly and efficiently. Municipal, private sector and charitable organisations collected discarded textiles across the country via the thousands of clothes banks located close to people's homes. These old clothes then ended up on the second-hand market or were exported for reuse.

Anything that was unable to be reused was recycled into cleaning rags or insulation material – or incinerated to produce energy.

And, for the most part, the old clothes market continues to operate like this. The war in Ukraine and cheap fast fashion have, however, greatly changed the framework conditions. New clothes are so cheap that the second-hand business has collapsed in many of the importing countries. Over the last few months, this has led to many commercial and charitable organisations stopping their collections altogether as the business model used in the old textiles market continues to be based on the premise of being able to sell reusable clothes.

The different ways Germany's old garments are processed



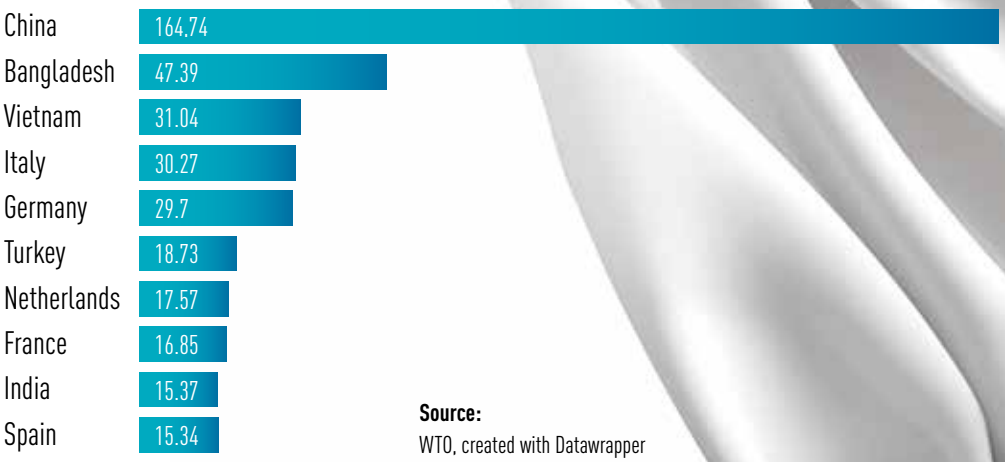
Source: Oeko-Institut, data from Wagner et al. (2022)

* not all of the 62% sold as second-hand items are reused; a considerable portion is used differently in the importing countries, e.g. they are recycled (materials recycling or energy recovery) or sent to landfill

** shredded products are made by mechanically tearing up the textiles into fibres

The Top 10 exporters of garments worldwide

acc. to export value in 2023 (in billion dollars)



Source:
WTO, created with Datawrapper

This has been exacerbated by the fact that the volume of garments being discarded has also grown considerably. According to the European Environment Agency (EEA), Europeans consumed, on average, 19 kilograms of textiles in 2022 – this figure lay at 17 kilograms in 2019. With Europe home to 450 million people, a two-kilogram increase means that the volumes of old textiles grew by around one million tonnes across Europe.

A circular economy for textiles

The first signs of this development were already noticeable a few years ago. REMONDIS and the Swedish fashion company H&M responded to these by founding the joint venture Looper back in 2023 to ensure that old garments continue to be reused and recycled responsibly in the future as well. Being one of the biggest fashion brands, H&M is also one of the biggest distributors of fashion items in Europe. Back in 2013, it began taking back old clothes in its shops and has so far collected around 172,000 tonnes of garments via this programme.

Looper's goal is to take over responsibility for textiles and to become a key hub in this circular system. As a result, H&M and REMONDIS wish to help ensure that far more old garments are collected separately than before. At the end of the day, one of the big problems of recycling old textiles is the low collection rate. At present, around just 40% of the fashion items distributed across the European market are collected separately – 60% end up in the general waste bin, which means they are either incinerated or sent to landfill. "While the volumes of old garments continue to grow, far too many of them are still being incinerated or landfilled. The need for robust collection systems and high-quality sorting processes is bigger than ever. Here at Looper, we are building up the infrastructure that is needed to create a well-functioning circular economy in the textile sector as well," explained Erik Lagerblad, CEO of Looper Textile Co.

Looper is breaking new ground

H&M and REMONDIS are heading down new paths with Looper to close this gap. "People can take their old clothes to any H&M store," commented Marc Schubert, managing director of Looper in Germany. "It makes no difference what the brand is. The garments just need to be clean."

Each item that is handed in is checked and sorted by Looper to determine the quality, condition and resale potential. "65% of the clothes we collect can be reused," Schubert said, speaking from experience. Looper's facilities then sort these clothes into more than 200 categories. "This increases the likelihood that a customer will find a suitable second-hand item." A good sorting process is key to achieving a high reuse rate.

"65% of the clothes we collect can be reused."

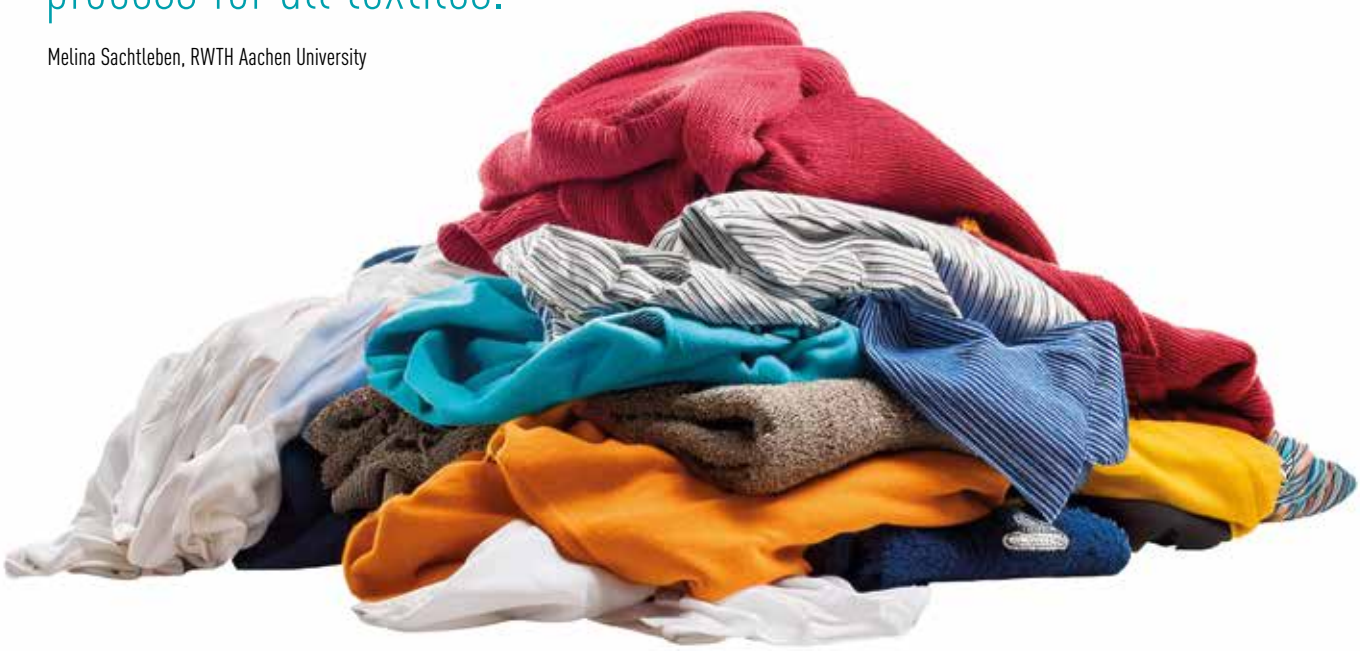
Marc Schubert, Managing Director of Looper

The great potential of fibre-to-fibre recycling

According to Schubert, 23% of the clothes collected by Looper are recycled. "We generally use them to make new products such as cleaning rags or insulation material," the managing director of Looper in Germany remarked. The proportion of items sent for high-quality fibre-to-fibre recycling is low at Looper as well. Fibre-to-fibre recycling describes the process that sees new fibres being produced from old textiles so that they can be used to produce new garments instead of virgin raw materials. At the moment, however, this highest form of recycling is only used for just two percent of the clothes collected by Looper. "We believe there is a great potential here to grow this share in the future," said Schubert.

"It makes neither technical nor economic sense to have one recycling process for all textiles."

Melina Sachtleben, RWTH Aachen University



The framework conditions must, however, be right for this because fibre-to-fibre recycling is expensive. A general rule of thumb here is: the cheaper the input material, the more expensive the recycling. One of the reasons why fast fashion manufacturers can offer such inexpensive clothes is because they can save on materials. “For the most part, fast fashion is made of cheap mixed fibres, for example 60% polyester and 40% cotton,” explained Melina Sachtleben from RWTH Aachen University during an interview with RE:VIEWS. A scientist by trade, she works at the Institute for Textile Engineering and knows all about this subject. Polyester is – the clue is in the name – a synthetic fibre that is particularly inexpensive to produce. Other materials such as polyamide and elastane are also added to fast-fashion items to further lower production costs as well as to make the products more elastic and durable.

The technology is there to recycle these mixed fibres, with the most promising recycling process being chemical recycling. Chemical recycling systems can break down these popular polyester-cotton mixtures into their individual constituent parts. The cotton is then processed into cellulose pulp – which can be used to produce rayon – while the polyester is recycled into a new material.

New collection and sorting schemes for old garments

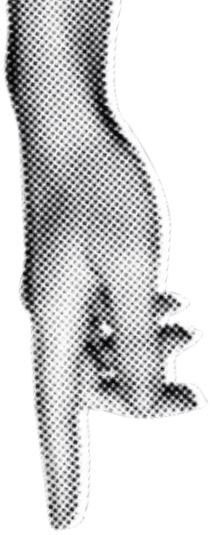
Having said this, chemical recycling is both energy-intensive and costly and should, therefore, only be used for textiles that cannot be recycled with mechanical processes. “It makes neither technical nor economic sense to have one recycling process for all textiles,” Melina Sachtleben said. This is where the collection and sorting systems come into play: “The organisations collecting and sorting the materials must adapt their schemes to the new recycling methods,” she continued.

Weil die Materialien komplexer

MELINA SACHTLEBEN

Melina Sachtleben MSc is a scientist working at RWTH Aachen University’s Institute for Textile Engineering. Her research work focuses on bioeconomies and textile recycling to develop sustainable solutions for the textile industry. Moreover, she has qualifications in the areas of management and clothing technology and is a certified tailor.

Having worked in the textile producing nations Bangladesh, Indonesia and Tunisia, she has gained in-depth insights into the business – all of which have shaped the way she wishes to promote sustainable textile circularity. Melina Sachtleben has worked in a variety of industrial projects and publicly funded initiatives to develop innovative strategies to make the development, production and use of garments more environmentally friendly.



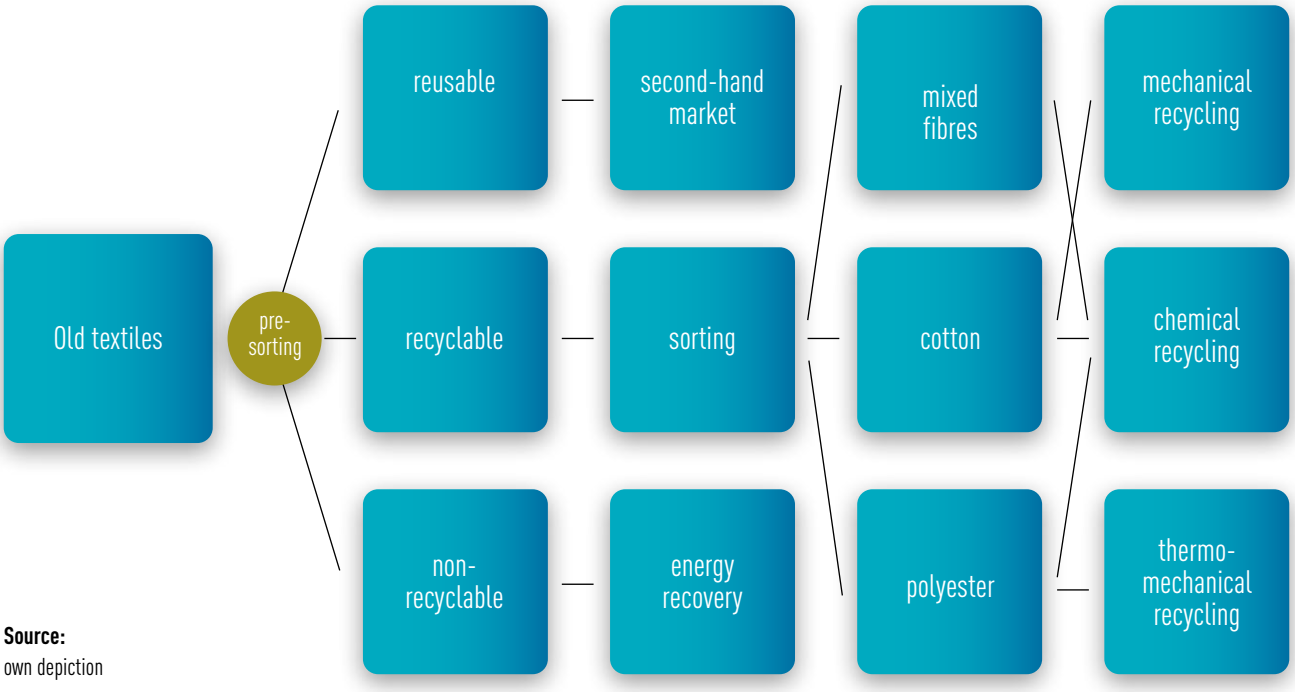
With fabrics becoming more complex and second-hand markets more complicated, the collection and sorting of discarded clothes must be adjusted to meet these new conditions so that the material life cycles really can be closed in the future. One option could be to separate old garments into two different categories at source. "Old clothes could have separate collections. One for reusable and one for recyclable old textiles," commented Sachtleben. She referred to the trials currently being carried out in Denmark that have had a positive impact in this area.

The best case scenario would be for future garments discarded in Germany to be sorted as Looper is already doing today. This would see the reusable items being sold on the second-hand market and the non-recyclable garments (e.g. soiled functional wear like ski trousers, swimwear and sailing clothes) being sent straight to a waste-to-energy plant. The recyclable garments would then be sorted according to material to ensure they are recycled in the best possible way. The illustration below provides a simplified material flow management chart for old textiles, with the recyclable materials being sorted into mixed fibres, cotton and polyester.

Extended producer responsibility: the costs for collecting, sorting and recycling or disposing of the old garments must be covered by the companies producing and distributing the products.

Such a sorting process is, however, expensive. The country currently does not have the right infrastructure to do this for the approx. one million tonnes of old garments discarded every year. Which means it has to be set up first. The recycling industry is not able to cover the costs of doing this as this would not be financially viable under the current market conditions. The costs for collecting, sorting and recycling or disposing of the old garments must be covered by the companies producing and distributing these products to push the market towards selling more durable and more recyclable clothing. The EU has already taken corrective measures here and introduced extended producer responsibility into the textile sector in its amended Waste Framework Directive.

Possible old textile recycling processes with extended producer responsibility



Source:
own depiction

THE DIFFERENT RECYCLING PROCESSES

1 Mechanical recycling

The mechanical process has the benefits of being less energy-intensive and more cost-efficient and it can also be used to recycle material mixtures. On the other hand, the recycled fibres are often of a lower quality than before, leading to a downcycling of the products as they are turned into, for example, insulation material or painter fleece. In principle, though, fibre-to-fibre recycling can be mechanical.

2 Thermomechanical recycling

The thermomechanical process is a suitable method for recycling pure polyester fibres as it is a relatively simple and less energy-intensive process. The main restriction here is that the material must contain more than 90% polyester, making it unsuitable for recycling mixed fibres.

3 Chemical recycling

The main benefit of chemical recycling is its ability to separate mixed fibres, making it possible to produce high-quality recycled raw materials. This method is, however, complex and energy-intensive – and, therefore, costly. Furthermore, the sorting and purity requirements of the input materials are very high. This most expensive type of recycling is, therefore, most suitable for recycling cheaply produced fast-fashion items. The discrepancy between the price of a new garment and the costs of recycling it could hardly be bigger and explains the low levels of fibre-to-fibre recycling in the textile recycling sector.

When put into practice, extended producer responsibility (EPR) is implemented by system operators who act as a kind of 'belt drive' between manufacturers and recyclers. Manufacturers pay the system operators a licence fee which they then use to make sure that the waste materials – in this case old garments – are processed in line with all statutory regulations and that all recycling rates are achieved. The EPR system should ensure that the manufacturers cover the costs of collecting, sorting and recycling their textiles, especially in times of fluctuating raw material prices.

> "Companies that act sustainably must benefit financially."
>
> Herwart Wilms, REMONDIS Managing Director and FEAD President

On top of this, though, it is also possible to add bonus payments into the EPR levy scheme. "Licence fees can be used like government levies to steer the sector in a specific direction. The EPR licence fees must be lower for easily recyclable products than those for items that are difficult or impossible to recycle," commented Herwart Wilms, managing director of REMONDIS Service International GmbH, President of FEAD (European Waste Management Association) and chair of Looper's supervisory board. Experts call this eco-modulation. "Companies that act sustainably must benefit financially," Wilms continued.

Designing the system in such a way could encourage the textile sector to become more sustainable. At the end of the day, companies need such a reliably financed system if they are to invest in the innovative collection, sorting, processing and recycling capacities that are urgently needed to create a well-functioning circular economy.

When, in a few years' time, the swallows, robins and storks return home from their wintering grounds, the daffodils and crocuses begin flowering and the sun's first rays herald the coming of spring, no one in Europe should need worry about what they should do with their old clothes. A well-functioning EPR system will be financing the collection and sorting of their old garments, sending these items to be recycled in the best possible way – and, in the best case, ensuring that the trousers and T-shirts can be worn for a further season.

WHAT IS EXTENDED PRODUCER RESPONSIBILITY?

An extended producer responsibility (EPR) scheme for textiles effectively sets up a system that makes it obligatory for textile manufacturers to take over responsibility for the whole life cycle of their products – from the collection, reuse and/or recycling of their garments through to the disposal of the non-recyclable leftover materials. Based on the EU's revised Waste Framework Directive (WFD) – which must be transposed into national law by 17 June 2027 – this measure is looking to achieve a major transition within the sector and drive it towards becoming a circular economy. This EPR scheme must have been implemented by 17 April 2028.

The key objective here is to significantly grow the reuse and recycling of textiles to reduce the sector's impact on the environment and climate. As a result, manufacturers must enter their business's details on national registers and contribute financially towards the costs for waste management, information campaigns and research and development. Producer Responsibility Organisations (PROs) take over the responsibility of implementing the manufacturers' obligations.

Around

85%

of the environmental impacts caused by the textiles sold in the EU in 2022 affected countries outside the EU, in particular in Asia.

144,000

km² of land

were needed to make the textile products sold in the EU in 2022 – or 323m² per capita.

234

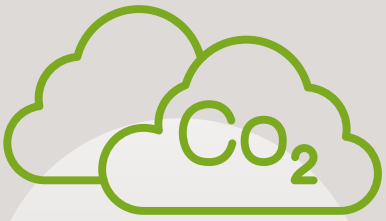
million tonnes of raw materials

were used to produce the clothing, footwear and household textiles sold on the EU market in 2022 – or 523kg per capita.

5,300

million m³ of 'blue' water

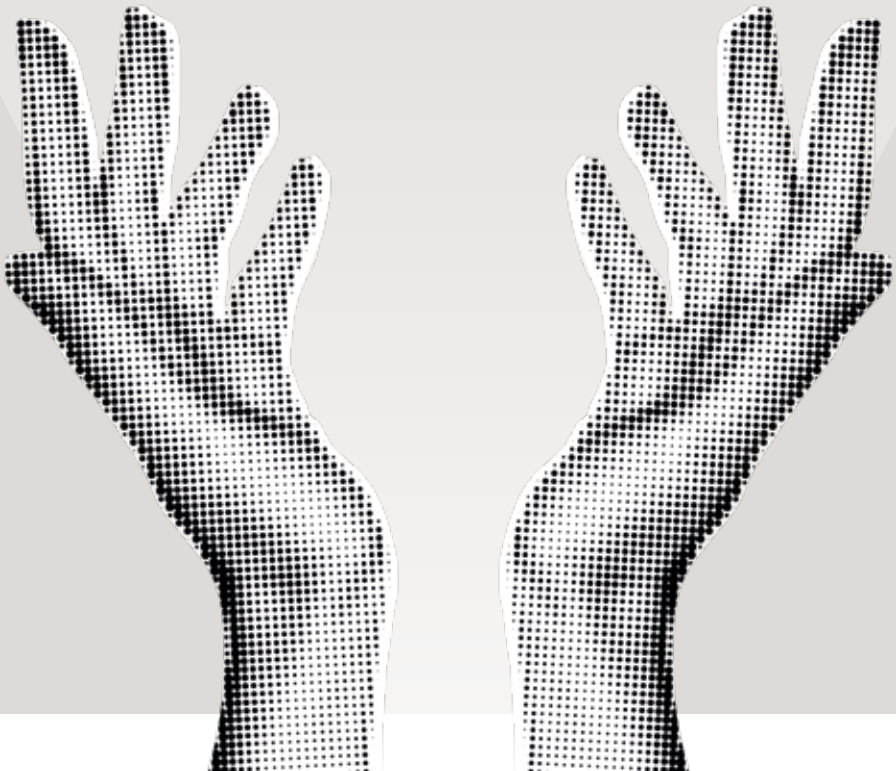
were required to manufacture the textile products sold in the EU in 2022 – or 12m³ per capita.



The whole of the supply chain responsible for the textiles sold in the EU in 2022 produced

159

million tonnes of CO_2 equivalent – or 355kg CO2e per capita.



Source:
European Environment Agency (EEA)

Nordic sustainability

The circular economy in Denmark – recycling instead of incineration

Denmark can be found among the world's leading countries in a whole range of different areas – from per capita economic output all the way through to quality of life. And this is also true for its environmental, energy and climate policies. Just one example: the country was top of the World Economic Forum's Environmental Performance Index some years ago and was still in 10th place in 2024. It is also ahead of all the others when it comes to green energy production, which lay at over 80% in 2024. And the same might be thought of its recycling rates with Danish households collecting ten different types of materials in up to five separate bins. This is, however, not the case.

There is one specific challenge that Denmark must master as it looks to grow its recycling rates – a challenge caused by an undisputed success story: waste incineration. Denmark is one of the pioneers when it comes to using this technology.

Compared to the rest of Europe, the country's recycling rates for many of the materials it collects are pretty much in the middle at the moment. Its municipal waste recycling rates lie at around 55% – the EU's target – and there is still room for improvement as far as its packaging and, in particular, its organic waste are concerned. The quality levels of some collections, such as batteries, have even declined recently. And its volumes of residual waste remain unchanged. Having said this, Danish inhabitants now have access to separate waste collections, many of which have been introduced only just recently, and these reflect the country's great ambition: namely, to lead the way and set the standards in the circular economy as well. Private sector companies, like REMONDIS Danmark, will be playing a key role in this endeavour.

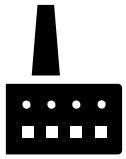
A pioneer in waste incineration

There is one specific challenge that Denmark must master as it looks to grow its recycling rates – a challenge caused by an undisputed success story: waste incineration. Denmark is one of the pioneers when it comes to using this technology. It built its first waste incineration plant in Copenhagen all the way back in 1903. This was one of the very first waste-to-energy (WtE) plants in Europe and was used to treat household waste, generate energy and generally reduce volumes of waste. And the country has stuck to this method ever since, investing money over the years to increase the number of its plants and modernise the technology used. For the most part, this concept has enabled the country to avoid landfills and the environmental problems they cause. It currently has a network of 21 WtE plants, with all of them owned by municipal associations, i.e. by regional authorities. In addition, a large cement factory uses the RDF – refuse-derived fuel – produced by these plants.

WtE plants also supply volumes of district heat that cannot be easily replaced. And while the production of electricity is of less significance considering the trend towards renewable energy, it does make sense for these plants to generate power from a business point of view. Despite this, the Danish parliament made the decision in 2020 to reduce the country's incineration capacities by 30% by 2030. And it liberalised the market at the same time: local authorities may no longer simply incinerate their household waste in their own plants but must put these volumes out to tender. During the first round of tenders, most of this waste went to their 'own' incineration plants. It is questionable, however, whether the same will happen during future tenders if competition in the waste management sector continues to grow.

The WtE plant operators have two main worries: firstly, that their plants will no longer be profitable and secondly that politicians are pushing for the plants to be closed down even though the investments have not yet been paid off. As a result, the plant operators are now looking to secure their feedstock from abroad, leading to the country becoming a major importer of high-calorific, combustible residual material. It is certainly true that waste tourism helps a plant to make the most of its capacity levels and potentially reduces the amount of waste taken to landfill in other EU countries. It is, however, not only counterproductive looking at the Danish government's climate strategy and climate targets, it is also pushing up the Danish plants' carbon emissions.

The main problem here is that while Danish politicians have made the decision to reduce their country's incineration capacity, they have left it up to the market to decide which plants must close. The theory here should be that the WtE plants in the weakest business position would shut down. With imports of waste continuing to rise, this has not been the case – just two small plants have actually turned off their furnaces. And so, with things moving in an unexpected direction, people have begun talking about Denmark's 'waste dilemma'.



Denmark built its first waste incineration plant in Copenhagen back in 1903. This was one of the first waste-to-energy plants in Europe and was used to treat household waste, generate energy and generally reduce volumes of waste.

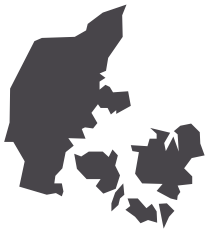
The role of private sector recycling firms

The various tasks in Denmark's circular economy have been clearly divided up and it is the responsibility of the local authorities to collect their waste materials. They may, however, contract this work out via tenders if they wish – something that they often do. Private sector service providers are being awarded fewer contracts than was the case a decade ago. At present, they are responsible for around 75% of the volumes collected. Looking at the uncertain future of the WtE plants and at the impact this may have on the companies and jobs involved, Danish local authorities are now more interested in carrying out the collections themselves. This would enable them to secure more feedstock for their WtE plants and compensate for the recycling activities that they had lost, as these are now being carried out exclusively by private sector recycling firms.

Kerbside collections are used to pick up household waste. Most households have two to three bins for separating their waste (into residual waste, food waste, paper, cardboard, metals, glass and mixed plastics) as well as two additional bins for garden waste and hazardous waste. Old textiles are placed in plastic bags for roadside collections. Local authorities also operate household waste recycling centres where their local residents can hand over their e-waste, building waste and hazardous waste.

The collections are financed through fees. Extended producer responsibility (EPR) schemes make it obligatory for the companies placing the products onto the market to pay for their material streams. Denmark introduced an EPR scheme for packaging on 01 October 2025. Packaging companies must now reimburse households and other companies for collecting and recycling their packaging. Local authorities handle the reimbursement on behalf of households. Private sector recycling firms, such as REMONDIS, carry out the work on behalf of the companies placing the products on the market. Some of the country's segregated collection schemes are still very new (such as those for tobacco products with filters and fishing gear) and there is still quite a bit of uncertainty as to how much these schemes will actually cost – both regarding the financial contribution that these systems must make towards collecting the materials and the revenue they can generate from recycling their materials.

The private sector waste management industry is responsible for actually recycling the materials and it handles the materials from both the municipal collections and the separate EPR collections. There are a number of hurdles that must be overcome here though. Firstly, it is not always clear when collections end and recycling begins. This can be clearly seen with packaging that has been compacted into bales.



The private sector waste management industry is responsible for actually recycling the materials and it handles the materials from both the municipal collections and the separate EPR collections.

Reducing the volume of the packaging makes it easier to collect and transport the material as it means fewer trips and lower truck tolls – something that is good for the collection firms. Compacting the material to such an extent, however, makes it almost impossible for the recycling companies to sort and process it. Secondly, accurate records must be drawn up to document the complexity of the material streams – on the one hand, to make it clear where the different materials end up and, on the other, to be able to accurately ascribe both the costs and materials.

Denmark's path towards creating a circular economy and achieving greater sustainability is a prime example of how past successes can initially hinder progress. Key decisions have now been made and only time will tell whether these will deliver the desired results. While change can certainly be implemented more quickly in a small country, any new approaches must first prove their worth before the necessary adjustments can be made. Being patient is a must here. No one doubts, though, that Denmark will reach its goal of being one of the world's leading countries in the areas of waste management and recycling as well.

REMONDIS DANMARK

REMONDIS A/S is one of the leading companies in Denmark's recycling industry. With around 250 employees, nine locations and an annual turnover of approx. DKK 350 million, it is among the top 10 players in the country's recycling sector. It operates across the country and is one of the three key recycling businesses in the greater Copenhagen area. Acting as a partner to local authorities, REMONDIS provides household collection services for more than 500,000 Danes. It is also steadily increasing the amount of commercial waste it collects, which presently lies at around 50,000 tonnes of recyclables every year. Since taking over its predecessor company in 2018, REMONDIS has focused, in particular, on expanding its commercial and recycling activities.

Four questions for Søren Eriksen

Managing Director of REMONDIS A/S

Sören Eriksen
Sören Eriksen (60) has been managing REMONDIS A/S since 2019. He has many years' experience of working in Denmark's recycling sector and held managerial positions in other recycling companies before joining REMONDIS.

Is it really necessary for ten different categories of waste to be collected separately from households?

As far as recycling is concerned, this meticulous sorting of materials in households is of a limited benefit to us. It's become overly complicated and has led to more materials being put in the wrong bins. We have to re-sort the materials anyway. This system is due to be reviewed in 2027 and the people doing this should take another look at this pre-sorting scheme in order to reduce the collection costs and grow consumer acceptance. I'm guessing that we will end up with fewer categories of waste being collected from households.

What do you think about the current split between collection and recycling?

Well, there is still a grey area here – when exactly does a collection stop and recycling start? This also concerns the separation between the public and private sectors. Optimising the way materials are transported, such as baling, is an example of this. Some local authorities do this as do some private contractors. I think it's best to let the private sector contractors do this as we know best how the materials can most effectively be recycled.

What do you think about the recent moves taken to drive forward the circular economy?

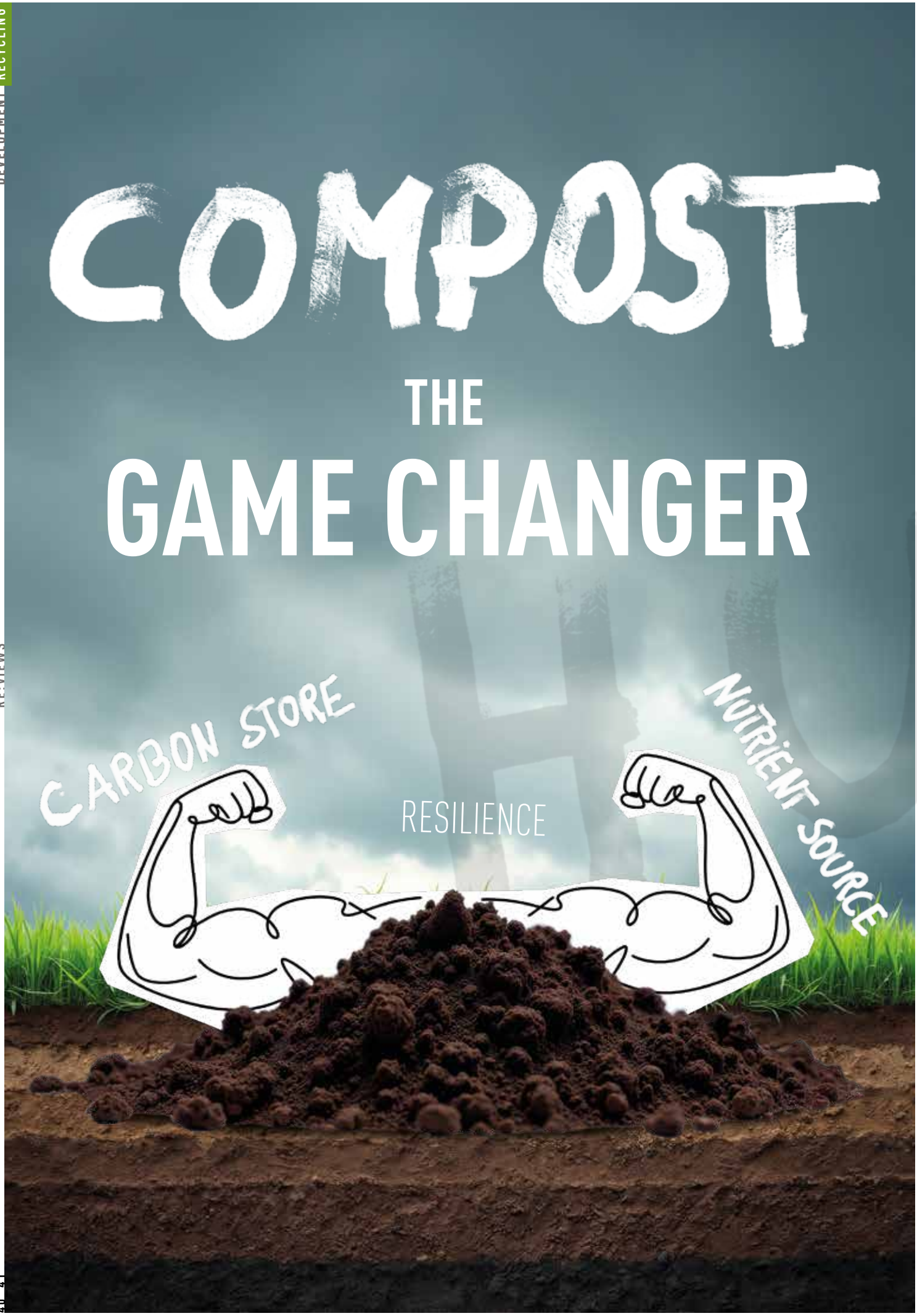
Denmark is a small country, so – on paper – many things would appear to be simpler and faster to implement than elsewhere. We are very dependent on the prices and capacities in other countries, though, when it comes to recycling because our home market is so small. We certainly have a competitive edge being part of the REMONDIS Group as we have access to our sister companies.

What are you planning to do next?

One of the things we are focusing on is electrifying our fleet. This will also give us a competitive edge as local authorities are increasingly making this a requirement in their tenders and large cities are limiting the areas that can be accessed by vehicles run on conventional fuels. The advances made in battery technology will also make it possible for electric trucks to be used over longer distances as well and not just locally.

COMPOST

THE GAME CHANGER



Healthy soil is the cornerstone of our food supply, an important carbon store and is able to retain water. Humus plays a key role here.

Stefan Leichenauer drives his spreader up and down one of the crop fields on his farm row by row. His 90 hectares of cultivated land are fertilised with compost. His Lauterbach-Hof farm is situated in Tengen in the German state of Baden-Württemberg and he has been using RETERRA's organic compost for 16 years now. He is, therefore, one of the farmers in Germany that has opted to use RAL quality-assured compost on his farm. This humus-rich compost is a sustainable source of nutrients and improves soil health in a variety of ways. All in all, compost both ensures that humus remains in the soil and increases the soil's organic matter content. This makes the soil more resilient and more able to cope with weather events, such as heavy rainfall, heat and drought – weather phenomena that are becoming more severe and more unpredictable as climate change kicks in.

Soil protection is climate action

The latest research findings show that woods, meadows and pastures in Europe currently act as carbon sinks, while cultivated fields are weak sources of carbon. It is essential to prevent soils from releasing their carbon to mitigate climate change. Healthy soil is the cornerstone of our food supply, an important carbon store and is able to retain water. Humus plays a key role here. And yet humus is being steadily depleted as a result of farming when the organic matter is removed as crops and grass. The valuable top layer of soil can be carried away by wind erosion, soil compaction and heavy rain. Around 100 years are needed to create a one-centimetre layer of humus in a temperate climate such as here in Europe.

Soils are disappearing

More fertile soils are being lost around the world than are being created. Indeed, soil has become one of the Earth's ecosystems that is most at risk. Erosion, compaction, salinisation, pollution and the loss of humus have pushed many soils to their limits. Nutrient cycles are grinding to a halt, soil life is being lost and yields are falling. Soils are losing their ability to retain water and store carbon – something that is having a direct impact on climate resilience. Deserts are created if such soil degradation processes worsen. And it is not just the southern hemisphere that is being affected. More and more areas in Europe are suffering, too. Regions in southern Spain, Italy and Greece are already showing clear signs of desertification and desiccation.

Stefan Leichenauer has been using RETERRA products for 16 years now; the humus-rich compost ensures that the soil is more resilient and more able to cope with weather events.

The impact of compost fertiliser:
The soil contains more humus and has a looser structure so that the plants can take root more easily, absorb more nutrients and grow better.

Healthy soil – a carbon store

Germany is also showing such signs: at least one-fifth of the country's arable land is considered to be at high risk of erosion. The regions that are particularly susceptible are those where the soil is often exposed or worked intensively, weakening its structure. Intensive farming is seen as being the main driver of soil degradation. Intensive use of fertiliser, chemical pesticides, heavy machinery and monocropping are having a negative impact on both soil structure and soil life. If soils are kept fertile, they can store large volumes of carbon. In contrast, degraded soils emit carbon. And, as these soils are less able to retain water, the number of floods and droughts increase and plants are more susceptible to stress. A farm can sustainably counteract this development by practising circular agriculture. Stopping or reducing the use of pesticides protects soil organisms. Improving soil quality with compost, mulch and a targeted use of fertiliser promotes carbon stores and soil health.

The world of humus

Humus is effectively all of the decomposed organic matter found in soils. It is a complex mixture of plant, animal and microbial organic matter and is permanently being degraded, altered and restructured. Humus comprises around 60% carbon, which the dead plants had removed from the CO_2 in the air. Other components include nitrogen, phosphorus and sulphur. A soil's humus reserves have different levels of stability and lifespans. Arable land contains between 1% and 2% humus, grassland soils approx. 10% and peatland soils between 10% and 20%. Experts differentiate between nutrient humus and permanent humus. Nutrient humus is made up of plant residue and other living creatures that have been crushed. This organic matter is, for the most part, biochemically unstable and easily broken down, resulting in it releasing nutrients and energy. Permanent humus consists of a more stable organic molecular structure with carbon chains that act as nutrient and water stores and as a habitat for a particularly large number of microorganisms.

Humus provides habitat

Humus supports a wide range of the soil's biological and ecological functions and contributes greatly towards the development of soil structure. Furthermore, humus provides a habitat for soil organisms and plays a key role in the carbon cycle as it stores carbon. Humus acts as a store and buffer for water, nutrients and pollutants and has a major impact on a soil's capacity to retain nutrients and contaminants. In most cases, there is more humus in topsoil than in subsoil. This means, therefore, that topsoil is particularly sensitive to changes caused by soil use and climate change.

Top-quality organic waste recycling operations

IN 2024, COMPOSTING & BIOGAS PLANTS WITH QUALITY-ASSURED PRODUCTS PROCESSED A TOTAL **14.35m** tonnes INPUT

OF WHICH AROUND **8.33m** tonnes

WERE USED TO PRODUCE COMPOST &

6.02m tonnes

TO PRODUCE DIGESTATE PRODUCTS.

Source: BGK (Federal Compost Quality Association)

The soil ecosystem: a competent team

Most people know as little about the soil under their feet as they do about distant galaxies. One quadrillion bacteria – a truly competent team – live and work in just one square metre of fertile topsoil. A single leaf is eaten and excreted many times before it is fully transformed into humus. The soil's inhabitants work side by side here: woodlice, springtails and millipedes take care of the heavy lifting. Then the threadworms and single-celled organisms take over, breaking the material down even further. Bacteria and fungi colonise the material. Earthworms, mice and moles dig their tunnels, mixing up and aerating the layers of soil. This process, known as humification, produces humus matter and enriches the layers of topsoil. It is this material that gives soil its typical dark colour.

Earthworms, mice and moles dig their tunnels, mixing up and aerating the layers of soil. This process, known as humification, produces humus matter and enriches the layers of topsoil.

The minerals and nutrients that are essential for plant growth are bound to this humus matter. Microorganisms must break these nutrients down into CO_2 and H_2O so that the plants can absorb them. This mineralisation process effectively releases the nutrients that had originally been in the dead organic matter so that they can be taken up by the roots.

Composting at RETERRA

REMONDIS' subsidiary RETERRA operates over 100 composting plants and anaerobic digesters worldwide to recycle organic waste from household food waste bins as well as plant and tree cuttings. This network of facilities processes more than 2.5 million tonnes of organic residue every year. The material is recycled using a number of certified processes to make quality-assured composts, soils and substrates as well as, in some cases, to produce electricity and heat. Moreover, it also makes mulch products, fall protection for playgrounds, digestate fertiliser, wood-based fuels and technical substrates.

Pirmin Eibofner is a sales manager at RETERRA Hegau-Bodensee. The company supplies the region with compost. Stefan Leichenauer and his Lauterbach-Hof farm are one of the firm's long-standing customers.

From organic residue to compost

Each of RETERRA's composting plants operates slightly differently. A number of processes are needed to transform organic material into compost – its Ahrensfelde plant, for example, uses the following steps: to begin with the refuse collection vehicles empty their organic material into the plant's reception area. After the material has been inspected and its quality checked, it is transported via conveyor belts to be homogenised and cut up. Magnets pick up any ferrous metal pieces. A series of screening equipment removes large contaminants, such as plastic and stones. In many of the plants, the final screening process to remove any remaining bigger pieces of outthrow is carried out by hand by the RETERRA employees as they visually check the material. The larger pieces of organic material are placed into the so-called logistics tunnel and the fine materials into the feed bunker. New material is regularly fed into the anaerobic digester – the centrepiece of this plant – via this feed tunnel. By creating the perfect conditions and removing all oxygen (hence the word anaerobic), the billions of microorganisms in the digester transform the organic substances into biogas. The biogas is extracted from the digester. The viscous digestate is removed using vacuum technology after approx. 20 days and mixed with the larger pieces of organic material in the logistics tunnel. Finally, this material is placed into large concrete garages – the composting tunnels – where it decomposes for around 14 days under perfect temperature and humidity conditions and with strictly controlled ventilation before being further processed. The compost is then removed before undergoing further intensive processing steps to extract any remaining contaminants. The material is screened into different sized particles. A multi-stage air separator is used at the end of the screening phase to blow out any tiny pieces of plastic.

The better soil improver

"The compost contains all the nutrients that plants need," explained Jan Dübbelde, head of REMONDIS' bioenergy and biomass division. "Thanks to the RETERRA composts, far fewer phosphorus, potassium, calcium and magnesium mineral fertilisers must be used. What's more, the alkaline components in the compost means, for the most part, that there is no need to lime the soil. And we mustn't forget the more minor components – i.e. the sulphur and trace elements copper and zinc – which also play an important role." Composts are, therefore, ideal soil improvers and a wonderful base for plants. "The high proportion of organic material builds up the humus content, helping to improve the structure of the soil, activate soil life and prevent erosion," Jan Dübbelde continued. "At the same time, our compost is instrumental in regulating water supply and maintaining a stable microclimate."

"Thanks to the RETERRA composts, far fewer phosphorus, potassium, calcium and magnesium mineral fertilisers must be used."

Jan Dübbelde, Head of REMONDIS' Bioenergy and Biomass Division

FURTHER INTERESTING FACTS ABOUT HUMUS CAN BE FOUND AT:
WWW.HUMUS.DE (GERMAN ONLY)

Humus on farms

Almost 58% of the composts are used on farms (BGK/Federal Compost Quality Association, 2020). Organic farms, in particular, like to spread humus-rich material on their fields but conventional and hybrid farms are also increasingly using these products. "We are, in fact, always sold out nowadays," reported Pirmin Eibofner, a sales manager at RETERRA. The company supplies its compost to farms in the region as well as to gardening businesses and hobby gardeners. Stefan Leichenauer also gets his compost for his Lauterbach-Hof farm from here. "Much of our work involves educating and informing people about our products," Pirmin Eibofner explained.

Educating people about compost

RETERRA travels to trade fairs and regional events to inform people about compost. "We primarily present our compost and our liquid digestate and explain how they are used, what their contents are and how they benefit soils," Pirmin Eibofner said. "We do this to try and counteract the typical prejudices that people have against compost." These include worries about heavy metal contents and other contaminants as well as potential problems caused by unpleasant odours and dust. "We invite farmers to visit our facility and we work with farming associations and organic associations to clarify how our compost is produced." Pirmin Eibofner has noticed a growing interest in soil protection, especially among younger farmers. "It's all about stopping soil depletion and making soils more resilient for the future." RETERRA also has its own specific goals: "We want to further grow the quality of our composts," remarked Pirmin Eibofner. This includes, he said, further reducing the number of contaminants, increasing the degree of composting, fine-tuning the screening processes and continuously improving customer services. "We're currently in the process of rolling out a software that makes it easier for farmers to plan and implement the spreading of compost on their fields."

58%

Almost 58% of the composts are used on farms and around 22% to produce soils and substrates. The rest is sold to commercial gardening businesses and hobby gardeners (BGK/Federal Compost Quality Association, 2020)

An interview with farmer Stefan Leichenauer

"EARTHWORMS ARE MY BEST EMPLOYEES"

Stefan Leichenauer, a farmer with a degree in agriculture, is the third generation in his family to run the Lauterbach-Hof farm in Tengen in the German state of Baden-Württemberg. The farm has 140 hectares of land (90 hectares of farmed land, 50 hectares of pastureland) and 50 beef cattle. Stefan Leichenauer took over the farm from his father in 2008. He completely reorganised the way the business was run after suffering a burnout in 2016. He has been using RETERRA compost on his fields for 16 years now, actively encourages regional marketing efforts, helps other farmers with mental health issues, promotes compost and soil protection and speaks out in the media. RE:VIEWS sat down with Stefan Leichenauer to talk about his experiences with compost – and whether it really makes financial sense to use it.

"Humus is my farm's capital. The top 17 centimetres of my soil – they are my capital."

Stefan Leichenauer, famer & agricultural specialist

What role does humus play on your farm?

Stefan Leichenauer: Humus is my farm's capital. The top 17 centimetres of my soil – they are my capital.

What do you do to keep the humus in your soils and promote the creation of humus?

Stefan Leichenauer: After my burnout in 2016, I sat down and read my father's old books. Up to then, the business had been primed to deliver the highest yields and to maximise profits. This included using mineral fertilisers and pesticides. That was expensive but it was convenient and pretty much guaranteed a good harvest. Back then, though, I asked myself whether farming could also function in a more future-oriented way, more in tune with nature and, above all, having the soil acting as a partner. On top of this, the yields being produced by our fields – which are not naturally high-yield locations – were beginning to fall.

And what has come of your thoughts and ideas?

Stefan Leichenauer: In 2010, we began spreading compost on our fields as well. We spread it on the land in the summer after the crops have been harvested. Every field gets compost fertiliser every three years and we use mineral fertiliser in the years in-between.

This principle of hybrid farming, therefore, combines aspects of conventional and organic farming. What's more, we've extended our crop rotation and coordinated the different crops even more closely so that there are fewer weeds in the fields. And we use more cover crops that promote humus, like clover grass, which act like a treatment for the soil.

What changes have you noticed to your soils since you began using compost fertiliser?

Stefan Leichenauer: The soils have become darker. The humus content of my fields has increased from the initial 2.5% to between 3.5% and 4.5%. We have also noticed that we are the last to harvest our crops. Our soils stay healthier for longer, which means we can leave our cereal crops in the ground so they have more time to mature. The soils also have a different structure and are easier to work with so I need less diesel. We are a pilot business here in the state of Baden-Württemberg. The compost is the key to all these developments.

Does it really make financial sense to use compost and promote soil fertility?

Stefan Leichenauer: To be honest, it probably cost us more money to do this during the first five years than it brought in. Compost is certainly a cost factor. But I see it as being a kind of piggy bank. You'll get the money that you put into it back at a later date. In 2023, for example, we had a really dry year here in our region. Our yields were still good. And then there was another year with prolonged periods of rain. Many of my fellow farmers had to battle with rotting and lower quality crops while we were able to sell all of our wheat as high-quality wheat for baking bread.

To what extent are your fellow farmers interested in soil resilience, climate change and soil protection?

Stefan Leichenauer: Some can be derisive and some simply think I don't have the guts to become fully organic. But I do have fellow farmers who think about soil protection in the same way as we do. We have got together with both conventional and organic farmers running arable farms, grassland farms, fruit farms and market gardens in Germany, Austria and Switzerland and created soil working groups led by the Lake Constance Foundation. We have relaxed chats about maintaining and improving soil fertility and soil health. And we have learned so much from one another. Things that we would never have learned in a seminar. The farms differ greatly from each other – both in size and experience. My conclusion from these working groups and from my experience over the last few years is that it is a strength to have diversity in farming. We need regional concepts that are adapted to the individual locations and soils. Farming is a diverse business.

GROWING RESILIENCE WITH COLLABORATIONS

How collaborative work can help mitigate climate change and master the challenges facing municipal water infrastructure

Water is one of society's key sources of life – and it is a resource that is coming increasingly under pressure. Climate change is altering precipitation pattens, strengthening extreme weather events and creating ever bigger challenges for local authorities and their infrastructure. It is, therefore, not possible to underestimate just how important it is to handle water not only sustainably but also with the future in mind: humans can survive for only a few days without water.

Water can be found in every cell in our body. Between 50% and 80% of the human body is water depending on the person's age. No other substance is as vital to our survival as this chemical compound of hydrogen and oxygen. And process water is also indispensable to industry. Water is collected, processed, transported and fed through various closed loops as wastewater as part of our existential infrastructure. This infrastructure is facing some serious challenges today: climate change is already putting the function-

ality and performance of our supply systems to the test. On top of this, our water and wastewater systems must meet new security requirements to ward off threats, safeguard these core services and ensure that we can continue to live comfortably and safely – as always – each and every day.

Water management & climate change

For decades now, it has been an undeniable fact that Germany's water is one of the best monitored and best controlled foodstuffs in the country. A whole raft of laws, guidelines and ordinances ensure that the highest quality of water flows out of the nation's taps. It is one of the tasks of Michael Figge, managing director of EURAWASSER Betriebsführungsgesellschaft mbH Goslar, and his team to make sure this remains the case. EURAWASSER is part of the REMONDIS Group and specialises in, among other things, the services needed by local authorities to supply drinking water and treat wastewater.

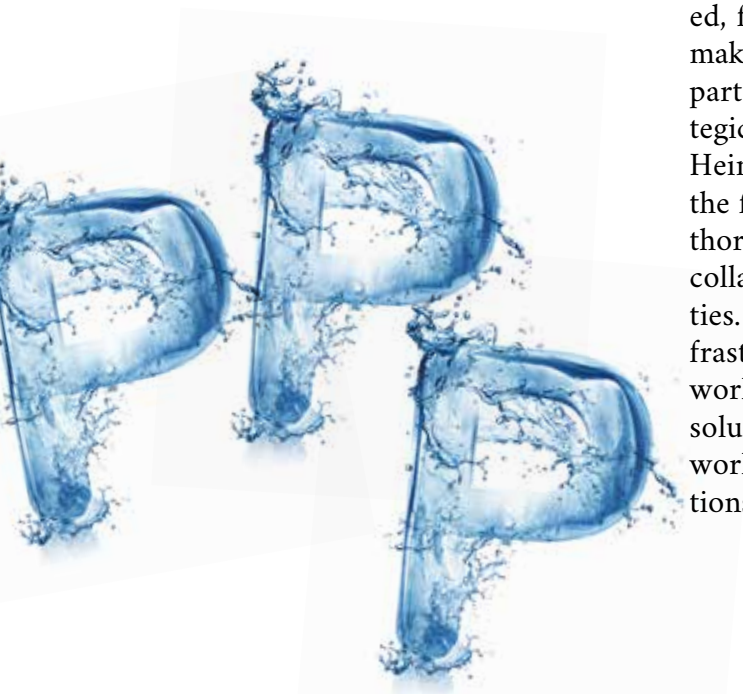
Acting as a partner to local authorities, EURAWASSER reliably carries out all the tasks required to supply drinking water, transport and treat wastewater and manage surface water. It does this in a variety of places including Goslar, a town with very close links to water. Famous for its important status in the Middle Ages thanks to the highly productive silver mining operations of its Rammelsberg mines and for being the place where the Knappschaft, the world's oldest social security organisation, was founded, this town has great experience of managing water. The highly successful Upper Harz Water Management System – which began storing and diverting water back in the 16th century to drive the waterwheels that provided the mines with energy – is a UNESCO World Cultural Heritage Site together with the historic town of Goslar and the Rammelsberg mines. The people living in the Harz region have, therefore, known how to manage water for centuries now.

A walk through Goslar's sewage treatment plant clearly shows that the owners are making the most of their expertise and know-how to invest in the future. A combined heat and power plant supplies electricity generated from biogas. Innovative technologies are being deployed to treat the wastewater and make sure that this valuable resource is returned to the natural water cycle so it can be reused. There are also obvious signs of the close cooperation work with Clausthal University of Technology: a scientific station has been set up on the grounds to look into, for example, how the sewage treatment plant can become more energy self-sufficient as well as to research new methods of wastewater treatment.

"Looking at the impact of climate change, it can be assumed that the rising temperatures and changing precipitation patterns will result in Germany also having more periods of drought, sinking soil moisture and groundwater levels over the long term and fewer water resources." These words (translated from the German) were written in 2024 in the Federal Environment Ministry's final report: 'The impact of climate change on water resources – adapting to dry conditions and drought in Germany (WADKlim)'. Experts, like Michael Figge, are well aware that global climate change is not only having an effect on a country's average rainfall but is also driving extreme weather events, such as heavy rainfall.

In order to be as best prepared as possible for future extreme weather events, EURAWASSER took part in the collaborative EXDIMUM project ('Extreme weather management with digital multiscale methods') to carry out research work into and develop digital methods and tools for managing extreme water events. This research project was sponsored by the Federal Ministry of Research, Technology and Space (BMFTR) and ran from February 2022 to July 2025. Its systematic, interdisciplinary approach went beyond previously known methods. "At its core, this was also about using innovative sensors to provide databases with much more information," Michael Figge explained. People can only adapt to future extreme weather events, he continued, if they have all the facts and figures on hand.

Climate change is, however, just one of the major challenges facing the water management sector, this water expert remarked. There are numerous challenges that the company must master together with its municipal partners. These include the obligation to further reduce trace substances in drinking water (as stipulated in the amended Drinking Water Ordinance / TrinkwV); how microplastics must be handled in drinking water and wastewater; the obligation to recover phosphorus from sewage sludge from 2029 onwards; and the upcoming wastewater treatment obligations set out in the Urban Wastewater Treatment Directive (UWWTD) – think 'fourth treatment stage' here.



"The corporate values and philosophy of future-oriented, family-run companies like REMONDIS make them particularly suitable collaborative partners for local authorities."

Heike Heim, Managing Director of REMONDIS Energy & Services GmbH & Co. KG

PPPs: pooling strengths to be fit for the future

For decades now, REMONDIS has been a trusted partner to local authorities, working successfully with them in the area of water management. These long-standing collaborations are carried out by several different companies in Germany, in towns such as Goslar, Schwerin and Cottbus to name just a few. The local authorities select the collaboration model that suits their exact requirements. Public private partnerships (PPPs) can be designed in a whole variety of ways – and they are always adapted to meet the municipal partners' needs and challenges.

Public private partnerships unite the best of both worlds: the local authorities ensure their key services are delivered to their local residents over a long period of time and the private sector firm brings its speed, flexibility and technical and business strengths to the table. Heike Heim, managing director of REMONDIS Energy & Services GmbH & Co. KG, can certainly confirm this. "The corporate values and philosophy of future-oriented, family-run companies like REMONDIS make them particularly suitable collaborative partners for local authorities. We act strategically as a reliable and fair partner," Heike Heim explained. This is also underlined by the fact that, for the most part, the local authorities are the majority shareholder in such collaborations and keep their responsibilities. By having REMONDIS as a strong infrastructure partner at their side, they can work together as equal partners to find the solutions that make the most of both their worlds, this expert for municipal collaborations continued.

Heike Heim believes that it is particularly important to pool together strengths in uncertain and difficult economic times. With such huge challenges having to be overcome, PPP models provide both a solid base for securing everyday core services as well as an opportunity to invest in the future. "Many of the municipal firms that deliver key public services find themselves facing high costs without them having any other obvious sources of revenue," commented Heike Heim. With REMONDIS collaborating as a strategic investor, it is able to provide additional support and make the most of its extensive know-how of delivering core public services to work with the local authorities to safeguard their infrastructure in the best possible way as well as to open up new opportunities. And, if key services are delivered well, this helps to grow local residents' trust in local – and also in some cases national – government expertise and competence: "Ultimately, well-functioning public services always help to both stabilise and strengthen democracy as well," Heike Heim concluded.

The ENERVIE Group provides around 400,000 customers and energy trading partners with a reliable supply of electricity, gas, heat and drinking water.

Protecting the environment & critical infrastructure

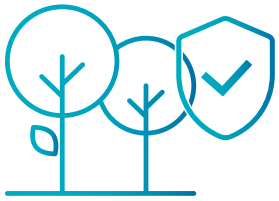
Erik Höhne, board spokesperson of ENERVIE Südwestfalen Energie und Wasser AG, also values this combination of public and private sector commitment. The main shareholders of this group of companies are the City of Hagen (42.66%), the City of Lüdenscheid (24.12%) and REMONDIS (19.06%). The ENERVIE Group provides around 400,000 customers and energy trading partners with a reliable supply of electricity, gas, heat and drinking water.

"It is, in principle, much more than a classic cooperation model," Erik Höhne explained, "There is a deep sense of trust between the local authorities and REMONDIS and lively discussions as well – both of which are really important, especially in difficult times such as these." This experienced manager with a degree in mechanical engineering is responsible for the production, finance, trade and sales activities at the ENERVIE Group. He particularly values the "unique spirit of REMONDIS' founding family"; a spirit that has had a very positive impact on the collaboration and, consequently, on stabilising core public services.

Nowadays, the latter is more important than ever, Erik Höhne believes. This was made very clear by the recent arson attack in Berlin when cables on a bridge were set on fire, leading to tens of thousands of homes suffering from a blackout for several days. "Whether it be the Covid crisis, the war in Ukraine or the current geopolitical situation – the last few years have clearly shown us that there are new challenges and stressful scenarios that we must master to uphold our way of life." He continued: "Having had such a long period of peace in Europe, we must now deal with issues that we did not wish to discuss before."

Those in positions of responsibility have been well aware of this for a long while, especially as – unfortunately – some challenges have become the norm nowadays, such as cyberattacks which have been happening practically every day for years now. What needs to be done here is not just to understand and evaluate the changing political situation but also to ensure that companies and society are prepared. "For us, this means beginning with a seemingly simple question: just how well am I protecting my critical infrastructure, what is really practicable and, ultimately of course, financially viable." For a while now, ENERVIE has been looking at how physical protection can be organised and holding discussions with policymakers on, for example, transparency and disclosure requirements. Erik Höhne also pointed out that having resilient infrastructure costs money – a truth that cannot be ignored.

Looking at the threats around them, the people living in Germany are certainly worried about the country's infrastructure. Wolfgang Ischinger, Chairman of the Munich Security Conference, believes: "The resilience of critical, sustainable infrastructure – including its protection against sabotage and cyberattacks – belongs right in the centre of a national security strategy, especially when it comes to green defence."

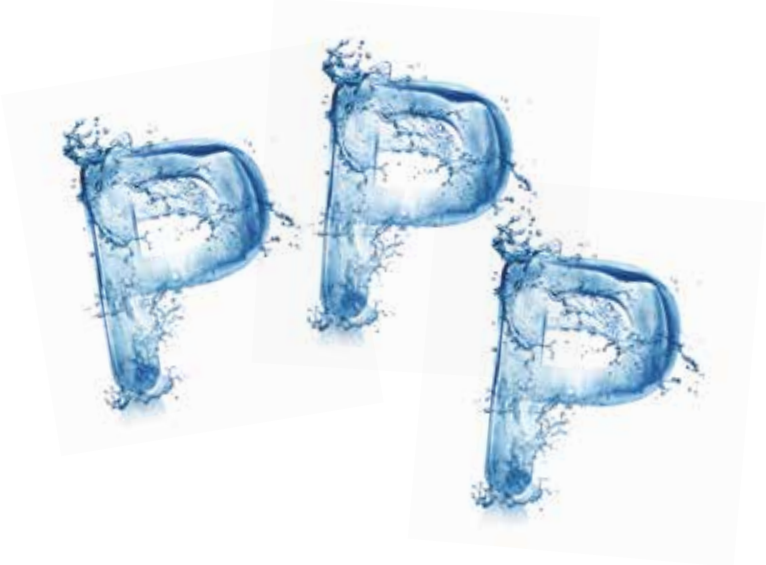


"Whether it be the Covid crisis, the war in Ukraine or the current geopolitical situation – the last few years have clearly shown us that there are new challenges and stressful scenarios that we must master to uphold our way of life."

Erik Höhne, Board Spokesperson of ENERVIE Südwestfalen Energie und Wasser AG

Support is coming from Berlin: on 06 March 2026, the Bundesrat, Germany's upper house, passed the 'umbrella act for critical infrastructure protection', the so-called 'KRITIS-Dachgesetz'. This bill makes it obligatory for companies in ten key strategic sectors, such as energy and water, to improve the way their plants and facilities are physically protected. The BMI (Federal Ministry of the Interior) intends to draw up a regulation identifying specific criteria. Risk analyses and resilience plans are to be prepared, if this has not already been done.

Public private partnerships provide the right conditions for tackling and mastering these challenges as well. "We benefit from each other's expertise and our discussions are very useful – particularly when it comes to the issue of resilience," Erik Höhne concluded.



CLOSING THE WATER LOOP – TIME FOR A RETHINK

Turning wastewater into a resource: amid the regulatory framework conditions, technological capabilities and societal acceptance, the idea of reusing water is becoming one of the key topics for developing sustainable water infrastructure.

AGRICULTURAL
IRRIGATION

With temperatures rising, clean drinking water is also becoming scarcer in countries that have, in the past, been able to draw from unlimited resources. This is true for Germany as well as for other central and northern European nations. It is of little surprise, therefore, that the idea of creating closed water loops so that treated water can be reused runs like a common thread through the National Water Strategy that was passed by the German government in 2023. Reusing water takes the pressure off groundwater and other bodies of water. The parties currently governing Germany specifically wrote into their coalition agreement that they intend to continue to pursue this policy. The European Union has also addressed the subject of water reuse, although they have approached it from a different angle. In 2020, it set out its minimum requirements for the safe reuse of treated water in agricultural irrigation. This has been in force in all EU member states since 2023 and defines four different quality categories.

> "Here in Germany, we also have regions that do not have sufficient supplies of drinking water, such as Berlin and Brandenburg. Water providers in these areas must respond and draw up more detailed plans on how their scarce resources should be used."
>
> Prof. Peter Hartwig, a water management and environmental technology expert for the REMONDIS Group

This topic is, therefore, on the agenda. Numerous challenges, however, must still be overcome if substantial progress is to be made in this area and treated water is to be reused: these include the attitude of the general public towards this subject (think 'fear of pollution' here), the legal framework, the 'polluter pays' issue, the carbon footprint and the costs. But let's look at them one by one.

Tried & tested technologies

First things first: the technology required to enable water from wastewater treatment plants to be recovered for industrial and agricultural use has been tried and tested and effectively deployed for many years now. Many countries in the Mediterranean region and other water-poor parts of the world – such as the USA, India and the Gulf states – have implemented these systems successfully. REMONDIS Aqua, a partner to industry and local authorities for all matters involving water management, is one of the most committed players in this field.

SUSTAINABLE WATER MANAGEMENT IN INDIA

REMONDIS Aqua operates one of its flagship projects for the chemicals company Evonik in India. It was here that it drew up a concept for, financed and built a wastewater/ZLD facility at Evonik's production plant in Dombivli, Maharashtra. The facility was successfully commissioned in 2022 and REMONDIS Aqua is in charge of operating and maintaining it.

The wastewater – which contains large volumes of dissolved solids – first undergoes chemical treatment before going through a variety of filtration stages. The concentrated brine is then fed into a multiple effect evaporator, which recovers the remaining water and ensures that not a single drop of water is released into the environment. Highly pure sodium sulphate is also recovered as a by-product in special drying facilities and automatically filled into bags so it can be returned to industry for reuse.

Up to now, most sewage treatment plants have introduced a fourth treatment stage into their operations because of statutory regulations, i.e. to prevent micropollutants, such as pharmaceutical residues and household chemicals being released into bodies of water and the food chain. So far, little attention has been paid to how this water could be effectively reused. Things are beginning to change, however, as Prof. Peter Hartwig explained: "Here in Germany, we also have regions that do not have sufficient supplies of drinking water, such as Berlin and Brandenburg. Water providers in these areas must respond to this situation and draw up more detailed plans on how their scarce resources should be used. This includes making targeted use of treated water wherever it can substitute freshwater from deep reservoirs and rivers." Hartwig is an expert specialising in water management and environmental technology for the REMONDIS Group.

Areas of use

Treated water can be used in different ways depending on the specific wastewater treatment requirements. Agricultural irrigation is the most common use worldwide. One of the reasons why this is so widespread is because the water often still contains nutrients that can be used as fertiliser. This means that these substances need not be removed from the wastewater during the treatment process.

A look inside the ZLD facility at Evonik's production plant in India

The second area is industrial use, for example as cooling or process water. Arid regions around the world, such as the Gulf states and India, have further developed this process into zero-liquid discharge (ZLD) systems. As the name suggests, plants and industrial estates are run with the aim of closing all water loops – ideally without a single drop of water being lost. REMONDIS Aqua and its Indian subsidiary operate several such projects for both international customers, such as Evonik, and local industrial businesses.

Similar to agricultural irrigation, urban treated water is used to water parks, clean streets and flush toilets. Finally, there are two ways to use treated water as a substitute for drinking water or to support drinking water supply. It can be used indirectly, i.e. where the treated water is released into the reservoirs or groundwater and then processed back into drinking water at a later date. Or it can be used directly: the water is treated in line with the highest technical standards and fed straight back into the drinking water network. While this method is not permitted here in Germany, it has been used for many decades in, for example, Singapore and Namibia.

Legal framework

Strict regulations are in place about how municipal wastewater may be reused as it can impact on both the environment and public health. Many countries have specific rules on water quality and instructions about risk management and these vary in strictness depending on the intended area of use. Legislation is currently being drawn up in Germany that aims to harmonise its national law with the EU directive mentioned earlier as well as to regulate other areas. Specifically, this will involve putting regulations into place for use in urban areas and for agricultural irrigation.

There are no plans to use it to recharge groundwater even though experts believe this step is needed. Prof. Jörg E. Drewes, chair professor of urban water systems engineering at the Technical University of Munich, is in favour of indirect water reuse: "The impact of climate change has resulted in regions in Germany also being affected by water scarcity. Groundwater levels drop considerably from season to season and this is having a major impact on the environment and agriculture. Treated water could be used to specifically recharge groundwater and support local water supply during these phases. Risk management requirements have already been laid out in the planned legislation and the technology is already there to do this." This option should be taken into account in the investments currently being made in wastewater treatment plants and not in a few years' time as this would mean additional investments having to be made.

Whatever the case, water reuse makes water supply more resilient as treated water is a resource unaffected by drought

Costs & the 'polluter pays' principle

Even if the legal framework offers sufficient flexibility, the systems used to process and supply the treated water must be economically viable. Depending on the quality requirements, it has been estimated that the additional costs for one cubic meter of treated water destined for agricultural use will lie between one and three euros. And then there is also the distribution network that needs to be set up. The additional costs have been put at up to ten euros if all the water is treated in a ZLD facility – even if a direct comparison with agricultural use is more difficult here. What will be key, therefore, is the price that must be paid for freshwater, in particular by agricultural and industrial customers.

THE DIFFERENT STAGES OF WASTEWATER TREATMENT

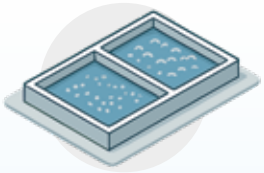
Mechanical treatment

Large objects (e.g. sand, paper and fat) are removed using screens, sieves and sedimentation tanks.

If the aim is to increase the amount of treated water consumed then the pricing of freshwater must reward this. Whatever the case, water reuse makes water supply more resilient as treated water is a resource unaffected by drought.

At the end of the day, implementing water reuse projects requires large initial investments, long-term financing concepts, an ability to plan ahead and collaboration between local authorities, industry and the agricultural sector. Hartwig is, however, convinced that such systems can be economically viable over the long term, especially in water-poor regions.

When it comes to the costs, calls can be heard again and again that the polluter, i.e. industry, should pay. Hartwig, however, warns against spending time drawing up a 'fair' cost-sharing arrangement: "We shouldn't get bogged down by the effort of trying to work out such issues. This process could take years to resolve as it is so complex – years in which we won't know how to finance future projects. Many may find this an unsatisfactory situation but pragmatically it is the right thing to do."



Biological treatment

Microorganisms are used to degrade organic matter. Some carbon compounds and nitrogen are removed during this process.

Chemical treatment

Chemical precipitation is used to remove substances – primarily phosphorus – to protect bodies of water from eutrophication.

Advanced treatment systems

The treated water undergoes further treatment depending on what it is to be used for:

- filtration (sand or membrane filters)
- activated carbon filters
- disinfection using UV light, ozone or chlorine
- reverse osmosis

Carbon footprint

The issue surrounding the carbon footprint of recycled water is just as complex as the question of whether the polluters should pay. It is clear that not only more energy is required but also that the production of the activated carbon needed to produce the highest quality of water has a negative impact on its carbon footprint. The biggest impact, however, comes from the biological processes used in conventional wastewater treatment systems as they release methane and nitrous oxide. Studies have also shown that recycling water can, in fact, improve the carbon footprint. Ultimately, treated water replaces other ways of sourcing water – ways that themselves cause carbon emissions, whether it be from building and operating long-distance pipes or treating sea water. Consequently, experts like Hartwig believe the key to this issue is to deploy recycling systems with the lowest carbon emissions – for example by using green electricity – as well as to reduce methane emissions by adapting the processes.

Emotional barriers

As we are talking about water here – something humans see as being the source of life – this whole process cannot succeed unless society as a whole is on board. Many people are emotionally against the idea of using treated water. This attitude is not based on facts if the water is recycled in line with best practices. It will be essential, therefore, to ensure the public is well informed, to explain the technology in a transparent way, to present the different uses in a comprehensible manner and to make sure that there is trust in those operating the systems.

Conclusion

Reusing treated water will be a central component of sustainable water management systems in the future. The technology required to do this is already well-advanced today and can supply high-quality water. The importance of reusing water will grow as the impact of climate change kicks in and supplies of water grow ever scarcer. By having technical innovations, transparent communications and responsible regulations, such systems can have a major impact on strengthening water security.


MADE
IN
EUROPE

A new quality seal for sustainability & resilience

RECYCLATE ‘MADE IN EUROPE’

The EU wishes to be the global leader in the circular economy by 2030 and has set out this goal in its Clean Industrial Deal. For this to succeed, however, the EU must grow its efforts to promote recycled materials that have been ‘made in Europe’.

The lump of metal feels very cold when it is picked up. Just looking at it, it is not possible to see that this piece of aluminium was once waste: the recycled product TSR136 is so pure that it can be used immediately to make industrial products – further processing steps are not necessary.

Peter Flormann is proud of what has been achieved. He heads the Quality, Health, Safety and Environmental Protection department at the TSR Group, a REMONDIS Group company specialising in metal recycling. "TSR136 can be used as a raw material in high-quality applications, for example to make bodywork parts for the aerospace industry," Flormann explained.

Using recyclate in high-tech applications – this is something that is still inconceivable in many sectors. TSR, however, has been pursuing a clear strategy for several years now, namely to produce the highest quality of recycled product possible from its scrap metal. To do this, this REMONDIS subsidiary is looking to create close collaborations with industrial partners to close material life cycles in high-quality applications as well. TSR has already developed its recycled product TSR40 together with thyssenkrupp Steel. "When it comes to TSR40, we can guarantee that the quality parameters defined by our industrial partners will always be met. Using special measuring, detection and separation technologies, we can identify and remove pollutants during the production process as well as precisely define tramp elements, such as copper, nickel and chromium," Flormann continued.

TSR40 is, therefore, a relevant alternative for making green steel using the direct reduction process. In the best case scenario, this manufacturing process – one that Salzgitter AG for example is looking to set up – will produce low-carbon steel using green hydrogen. It is still unclear today, however, exactly where the green hydrogen that industry needs should come from and who should pay for this costly source of energy. "TSR40 is an alternative means of decarbonising steel production and it is available here and now," said Flormann.

"TSR40 is an alternative means of decarbonising steel production and it is available here and now."

Peter Flormann, Head of QHSE – Quality, Health, Safety & Environmental Protection – at the TSR Group

Clean INDUSTRIAL DEAL

Europe's Clean Industrial Deal:
A world leader in the circular economy?

Decarbonise industry to drive forward climate action and make European business fit for the challenges of the 21st century. This was and still is the aspiration behind the European Green Deal – that key industrial policy project set up by the EU Commission, which left practically no stone unturned during the last legislative term. This was then followed by the so-called Clean Industrial Deal (CID) last year, which does not question the goals of the Green Deal but does reinterpret them to reflect today's greatly changed geopolitical situation.

Today more than ever, Brussels sees the transition towards a circular economy as being a cornerstone for driving innovation, employment and resilience. In its official papers, the Commission states a number of forecasts that the CID measures are expected to bring by 2030, including the creation of 500,000 new jobs and the value of the European remanufacturing market increasing to €100 billion. Growing the circular economy can make industrial production more resilient and more sustainable, speed up decarbonisation and secure supplies of raw materials.

As a result, the Commission is looking for its CID to make it a world leader in the circular economy by 2030. One key instrument to achieving this goal is the legislative act that it intends to pass this year: its Circular Economy Act. This should facilitate the free movement of circular products, recycled raw materials, and waste within the EU and simultaneously strengthen the demand for recycled materials.

Cutting dependence by limiting exports?

Closing more material life cycles – as TSR has done in its projects – is absolutely in line with the goals of the CID. Furthermore, the Commission wishes recycled raw materials, such as the products supplied by TSR, to reduce the dependency of European industries on the global market: i.e. material life cycles should, wherever possible, be closed within the EU – especially critical raw materials that are important for industrial policy.

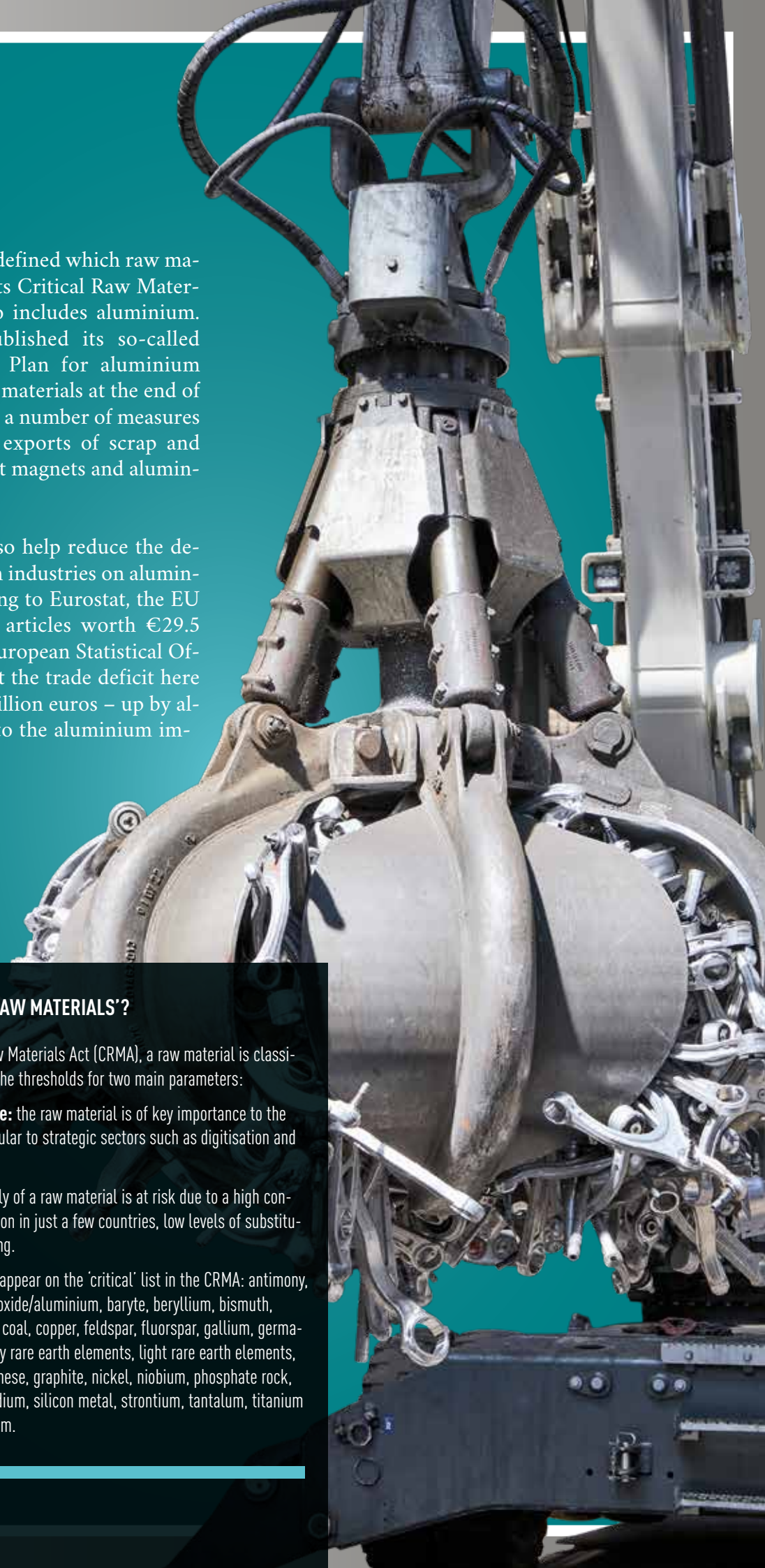
100 billion euros

According to forecasts, the value of the European remanufacturing market could increase to €100 billion and 500,000 new jobs be created by 2030

500,000
new jobs

The Commission has defined which raw materials are critical in its Critical Raw Materials Act. This list also includes aluminium. The Commission published its so-called RESourceEU Action Plan for aluminium and other critical raw materials at the end of 2025. This plan names a number of measures including restricting exports of scrap and waste from permanent magnets and aluminium.

These steps should also help reduce the dependence of European industries on aluminium imports. According to Eurostat, the EU imported aluminium articles worth €29.5 billion in 2024. The European Statistical Office has, therefore, put the trade deficit here at more than eleven billion euros – up by almost 30% compared to the aluminium imports in 2019.



WHAT ARE 'CRITICAL RAW MATERIALS'?

According to the Critical Raw Materials Act (CRMA), a raw material is classified as critical if it reaches the thresholds for two main parameters:

High economic importance: the raw material is of key importance to the European economy, in particular to strategic sectors such as digitisation and the energy transition.

High supply risk: the supply of a raw material is at risk due to a high concentration of global production in just a few countries, low levels of substitution and low rates of recycling.

The following raw materials appear on the 'critical' list in the CRMA: antimony, arsenic, bauxite/aluminium oxide/aluminium, baryte, beryllium, bismuth, boron/borate, cobalt, coking coal, copper, feldspar, fluorspar, gallium, germanium, hafnium, helium, heavy rare earth elements, light rare earth elements, lithium, magnesium, manganese, graphite, nickel, niobium, phosphate rock, phosphorus, platinum, scandium, silicon metal, strontium, tantalum, titanium metal, tungsten and vanadium.

During his discussion with RE:VIEWS, Peter Flormann said that he understood why the Commission had chosen to take this geostrategic policy. He also, however, stressed just how important it is to manage and control the material streams appropriately. "Aluminium is not simply aluminium and aluminium scrap is not simply aluminium scrap," the metal expert explained. "Cast aluminium alloys are typically used to produce, for example, engine blocks and gearboxes," Flormann continued. In all probability, however, the transition of the automotive sector towards e-mobility will lead to a drop in the demand for cast aluminium in Europe. "EVs don't have engine blocks," Flormann commented. As a result, European industry will need less cast aluminium. In contrast, car bodywork and window frames are made using wrought aluminium alloys that must satisfy more stringent technical requirements. "Our recycled products TSR130 and TSR136 meet these requirements and so they are in high demand as a raw material for industrial processes," Flormann said.

"If the EU decides to restrict exports of certain materials, then these restrictions must be based on the grades traded on the market."

Peter Flormann, Head of QHSE – Quality, Health, Safety & Environmental Protection – at the TSR Group

It is not possible, however, to recycle cast aluminium materials into a wrought alloy. "A large number of cars with internal combustion engines will have to be recycled in the coming years. The sector will find it difficult to sell their cast aluminium materials if they are not allowed to export them."

Recycled raw materials for a resilient industry

Steel also has different qualities or grades just like aluminium. Here, too, there are grades that are perfect for being used as construction steel but are absolutely unsuitable for higher-quality applications. "If the EU decides to restrict exports of certain materials, then these restrictions must be based on the grades traded on the market," Flormann explained. And he continued: "These export restrictions must be accompanied by minimum recycled content mandates for recycled raw materials that have been 'made in Europe' to ensure the prices of the high-quality grades remain stable."

At the end of the day, recycled raw materials that have been 'made in Europe' – like the TSR products – not only help curb climate change and conserve natural resources. They also minimise the risks of external shocks caused by a dependency on raw material imports and they increase supply security for local industry. According to scientists at the University of Applied Sciences Jena, the demand for recycled raw materials from the metal-processing industry will continue to grow over the coming years. They carried out a study last year that focused on Germany's steel industry. Their findings showed that the volumes of scrap steel needed by the steelworks in Germany lay, on average, at 17.2 million tonnes between 2015 and 2023. The scientists have predicted that this demand will have increased to 27.6 million tonnes by 2045. In their summary, they write that the biggest expected growth in demand will be for high-quality scrap.

Better enforcement for more raw materials

However, if this growing demand is to be covered by 'made in Europe' recycled raw materials, then some fundamental changes need to be made to the way waste laws are enforced. "This is especially true for end-of-life vehicle – or ELV – recycling. For many years now, we have been seeing a big discrepancy between the number of vehicles that are deregistered and the number that are recycled," said Flormann. Policymakers are well aware of this situation as well: on its website, the BMU [Federal Ministry for the Environment] writes that there are around 50 million cars registered in Germany at the moment. Approx. three million of these vehicles are deregistered for good every year – but between only 300,000 and 500,000 ELVs end up at recycling businesses. The remaining vehicles are exported as 'used cars'. "Around 2.5 million vehicles disappear from the market every year and we're not sure where they go," commented Flormann, summing up the situation.

From a statutory point of view, there is a fine line between an ELV and a used vehicle but it is a significant one. Legally, a used car is classified as a product and covered by the free movement of goods rule, if it is roadworthy or has just a few small defects that can easily be repaired. In contrast, an ELV is classified by law as being a waste product. Which means it is subject to the strict rules set out in waste laws, such as the End-of-Life Vehicles Regulation and the Regulation on Shipments of Waste, which stipulate, among other things, how such products may be exported and recycled. It is, of course, not always clear cut when a used car becomes an ELV. The regulations are to be tightened when the EU's new End-of-Life Vehicles Directive comes into force, probably at the beginning of 2027. From this point onwards, people selling used cars must be able to prove that the cars they are selling are not ELVs. This proof must confirm that the cars are roadworthy – something that will also include having to present a certificate confirming this from an independent motor vehicle expert.

While Peter Flormann welcomes the tightening of the rules, he also stressed that these should be better enforced by the authorities. "Waste laws are not being sufficiently enforced here in Germany. The certificates are of little value if no one checks them," the TSR expert said. "We will only be able to produce more high-quality recycled raw materials for our local industry here in Europe if the waste remains in the country."

The difficult situation facing plastic recycling

However, ensuring Europe has a secure supply of materials does not just depend on metals and having access to critical raw materials. One of the world's most important materials is plastic thanks to its excellent properties. Future markets – such as e-mobility, renewable energies, electronic devices and AI data centres – all need high-quality plastics. Without plastic, there can be no decarbonisation.

And yet plastics themselves have a big carbon footprint – at least they do when they are produced from virgin materials and then incinerated after they have been used just the once. New plastics are made from naphtha (produced from crude oil) and this is an energy-intensive process. "Using recycled plastic reduces energy consumption and is good for the climate as well," explained Monica Harting Pfeifer, who works on developing plastic recycling at REMONDIS.

Energy will not be getting any cheaper and the dependency of the industries in the west on the arbitrariness of OPEC has often created challenges for local economies over the last decades. Using more plastic recyclate should, therefore, be of strategic interest to both European governments and the companies that process plastic in Europe. The European Commission has also recognised this challenge in its Green Deal and set blanket minimum recycled content mandates for plastic recyclate in, for example, its new Packaging and Packaging Waste Regulation (PPWR).

E-WASTE: AN URBAN SOURCE OF RAW MATERIALS

Many critical raw materials can be found in waste electrical and electronic equipment (WEEE), commonly referred to as e-waste. This category of waste is an important source of raw materials available in urban areas. The findings of the European research project 'FutuRaM' (short for 'Future Availability of Secondary Raw Materials') show that up to 29 different critical raw materials can be found in e-waste, weighing a total ca. one million tonnes.

Although these materials are extremely important for industrial production processes, they have yet to be sufficiently recovered from the e-waste. According to FutuRaM, approximately 0.4 million tonnes of critical raw materials were recovered from WEEE in the EU27, Iceland, Norway, Switzerland and the UK in 2022. The largest volumes recovered included aluminium and copper, while just small amounts of rare earth elements (such as neodymium and dysprosium), palladium and tungsten were extracted for reuse. The Commission believes, therefore, that recovering more critical raw materials from WEEE for its local industry is a key lever to increase supply security and reduce dependency on raw material imports.

The so-called 'black mass' generated from recycling batteries is also a waste product that contains many critical raw materials. It is, however, often exported to third countries for recycling – even though it is of strategic significance to the European battery recycling industry.

All of which should be creating a positive environment for the plastics recycling market in Europe – explaining why the industry has been moving forward with gusto and invested around five billion euros over the last few years to meet the requirements set out in the PPWR. REMONDIS has also further developed its processes to ensure it can match the increasing quality specifications for, for example, cosmetics packaging. And yet the market has found itself under pressure for months now. "For a while now, the ongoing pressure on prices has not only come from cheaper new products but also from recyclate imports from low-wage nations, and from 'fake recyclate'," Harting Pfeifer continued. Fake recyclate is what the recycling sector calls new products that are incorrectly sold as recycled material.

"It's more expensive to produce plastic recyclate than it is to produce plastic from virgin materials – and this is especially true for high-quality plastic recyclate," explained Harting Pfeifer. The reason for this is the higher costs, starting with the labour-intensive refuse collections and ending with the energy-intensive sorting and recycling processes. "On the other hand, recyclates reduce the costs externalised by the production of virgin raw materials," Harting Pfeifer continued, i.e. the cost to the environment and the climate of extracting virgin raw materials; a cost that we must all pay. Germany's Dual System scheme should actually ensure that it is economically viable to reuse this raw material but the pressure on brands and distributors is enormous. As global commodity markets make it difficult to balance out this disparity, the EU decided to secure the demand for recyclate by introducing minimum recycled content mandates in, for example, the PPWR.

Despite this, fake recyclate and imports of recyclate that has been produced in line with far laxer human rights and environmental regulations are jeopardising this attempt to secure demand and pulling the rug from under the whole of the plastics recycling market in Europe. Some large market players have already shut down their plastics recycling operations in Europe over the last few months; many medium-sized and small businesses are fighting for their survival. Studies are already predicting that there will be a one million tonne shortage of high-quality plastic recyclate on the European market by 2030. The current crisis is more likely to increase this figure – and, as a result, put a well-functioning circular economy for plastics in Europe at risk.

This, however, is at odds with the goals set out by the European Commission. "Only recyclate that has been made in Europe can have a 'sustainability guarantee' and help reduce the dependency of European industries on raw material imports," Harting Pfeifer stressed. Looking at the scheme that has been built up over the last four decades to solve the problem of the huge volumes of packaging waste, it is clear that the missing piece of the puzzle is having a steady demand for recycled products. "We have pointed this problem out to the EU and have also been calling on the policymakers in Berlin to take the necessary measures to ensure the statutory regulations strengthen the local circular economy," Harting Pfeifer explained confidently. The EU wishes to mandate the use of plastic recyclate in other sectors, just as it has with packaging. The EU's new End-of-Life Vehicles Directive, for example, stipulates that new cars must contain at least 15% recycled plastic from 2032 onwards and 25% from 2036.

Studies are already predicting that there will be a one million tonne shortage of high-quality plastic recyclate on the European market by 2030.

In the best case scenario, these recycled plastics should come from European ELVs that have been locally recycled. Back at TSR's branch in Duisburg harbour, Peter Flormann picks up a piece of TSR40 that has been made from recycling an old car. This cold and heavy lump of metal is used, for example, by thyssenkrupp Steel – just a few kilometres down the road – to make high-quality steel sheets that are then used by the automotive industry. A sustainable closed loop using recycled raw materials 'made in Europe' – an example that should find its way into the plastics sector as well.

THE PPWR RATES

THE FOLLOWING RATES ARE SET OUT IN THE EU'S PACKAGING AND PACKAGING WASTE REGULATION (PPWR) AND APPLY TO THE RECYCLING OF PLASTICS AND RECYCLED PLASTIC CONTENT:

RECYCLING RATES:

From 2025: 50%

From 2030: 55%

From 2040: 65%

MINIMUM RECYCLED CONTENT MANDATES

From 2030:

- 30% for contact-sensitive PET packaging (except single-use drinks bottles)
- 10% for contact-sensitive packaging made from other plastics (except single-use drinks bottles)
- 30% for single-use plastic drinks bottles
- 35% for other types of plastic packaging

From 2040:

- 50% for contact-sensitive PET packaging (except single-use drinks bottles)
- 25% for contact-sensitive packaging made from other plastics (except single-use drinks bottles)
- 65% for single-use plastic drinks bottles
- 65% for other types of plastic packaging

An interview with Herwart Wilms, REMONDIS Managing Director and FEAD President

"WE MUST STRENGTHEN DEMAND"

The green transition is one of the key challenges facing European industry. The climate targets cannot be achieved without the circular economy. And yet the recycling sector – one of the main players in the circular economy – is finding itself having to deal with some major issues. We sat down with REMONDIS managing director and FEAD President Herwart Wilms to discuss the current state of the industry, the course that policymakers need to set and why European law should promote recyclate 'made in Europe'.

Mr Wilms, you have been President of FEAD, the association of recycling trade associations and companies in Europe, since 01 January. Concerns are currently growing here in Europe about the competitiveness of local industry. What role does the circular economy still play in Europe and, indeed, for the EU Commission?

Herwart Wilms: Well, I would like to start by saying how positive it is that Europe wishes to continue to position itself as an industrial base and is looking to strengthen its industry. Measures have been taken – such as the Omnibus package – to reduce red tape. I see this as a positive move and hope that Europe will continue down this route – also when it comes to its new trade agreements like the one with Mercosur.

Herwart Wilms,
REMONDIS Managing Director
and FEAD President

And I believe things are crystal clear as far as the Green Deal is concerned: none of the goals has been abandoned, in particular not the 2050 net zero target. This goal will only be able to be achieved if the circular economy is greatly expanded. The circular economy is one of the key cornerstones for reaching net zero. And then there are the geopolitical tensions. The circular economy can help here as well by making industry more independent and more resilient. The Draghi report has made it very clear where our weaknesses lie and where we need to do things better.

That all sounds optimistic. But, to have a well-functioning circular economy, we need to have a strong recycling industry. Things are not looking so good at the moment with some of the material streams – for example, plastics and metals. How does all this fit in with the Green Deal's ambitious goals?

Herwart Wilms: That's a fair question. The situation differs greatly across Europe. Plastics recyclers in Italy, for example, face major problems because there are no real markets there for selling their recyclate. This has led to large cities stopping their household collections of recyclable materials, which has had a catastrophic impact on recycling targets and city hygiene. In contrast, France rewards companies that use locally produced plastic recyclate by giving them a financial bonus and this strengthens the sales markets. A number of the large players here in Germany have closed their plants. The situation facing plastic recycling really is very serious at the moment.

What can politicians do to help here?

Herwart Wilms: There are a whole host of possibilities available to them. Let's just take a look at the plastics tax: Germany pays around 1.4 billion euros to the EU every year because the system we have is not sensible enough to prevent the non-recycling of plastics. We have the knowledge needed to tackle this problem but the political will is not there at present.

How could the plastics tax be implemented then so that it really has the desired impact?

Herwart Wilms: Rather than sending taxpayers' money to Brussels to pay for it – something that is not going to effect change whatsoever – the plastics tax could be passed on to producers. The 1.4 billion euros of taxpayers' money could certainly be put to better use, for example as a bonus for using recyclate or recyclable designs. It's all about motivating industry to produce more sustainably and, at the same time, ensuring it is implemented in an efficient and controllable way.

And then industry has been buying fake recyclate from Asia...

Herwart Wilms: The flood of new products currently being sold erroneously as recyclate in Europe is indeed a big problem. We need to get this situation under control. The EU Commission published its Winter Package before Christmas, in which it announced, among other things, that it intends to introduce a single market for recycled raw materials and customs codes for plastic recyclate. We believe, however, that a great deal more needs to be done to stabilise the plastics recycling market. There must be stable framework conditions in place for investments to be worth their while.

So what do you still need?

Herwart Wilms: Recycled plastic that is used to meet the EU goals should come from post-consumer waste that has been collected and recycled here in Europe. We need a clear 'Made in Europe' clause to maintain the recycling capacities in the EU.

"We need a clear 'Made in Europe' clause to maintain the recycling capacities in the EU."

Herwart Wilms, REMONDIS Managing Director and FEAD President

Would such a 'Made in Europe' clause be in keeping with commercial law?

Herwart Wilms: We believe so. FEAD is calling for a number of things including increasing the circular material use rate to at least 25% by 2035. A clear regulation prescribing the use of recyclate from the EU could help to stabilise the market and promote the circular economy. What's important is that this recyclate comes from household collections and has been put through a sorting process. Mirror clauses must also be added for imports to make sure that imported recyclate meets the same standards as locally produced materials and a bonus can be introduced for using locally produced recyclate – like they do in France – to grow demand.

What possibilities are there, in your opinion, to stimulate demand for recycled products?

Herwart Wilms: Industry is a key customer for recycled raw materials. Another is the public sector. According to the official procurement statistics published by the Federal Ministry for Economic Affairs, almost 190,000 public contracts worth approximately 132 billion euros in total were awarded in 2022 alone. Central government, the German states and district authorities are by far the most important clients when it comes to civil engineering projects. It must be possible to use this lever to preserve natural resources and strengthen the circular economy.

Why hasn't this already happened? Is public procurement law hindering this in some way?

Herwart Wilms: A lot is already possible today with the current public procurement law. But the legal situation is too complicated for many of the people working in the councils and authorities. They are generally not experts in public procurement law. When in doubt, therefore, they choose the option that they believe is absolutely in keeping with the law.

And this would be awarding contracts with price being the only award criterion?

Herwart Wilms: Precisely. Which is why we need to make it as easy as possible to award public procurement contracts correctly and sustainably.

You're alluding to the recycling label here ...

Herwart Wilms: Having a uniform recycling label would be ideal. It could set clear standards that would apply to all products. Such a label would help public sector buyers to recognise which products are sustainable so they can make a conscious decision to purchase them. This would trigger a strong demand for recyclate and incentivise industry to invest in sustainable production.

So, if we were to look ahead positively: what would your ideal framework conditions for the circular economy look like in 2030?

Herwart Wilms: We must strengthen demand, for example by having bonus systems that reward sustainable production methods. At the same time, we have to make sure that the laws we do have are actually implemented and enforced.

According to the official procurement statistics published by the Federal Ministry for Economic Affairs, almost

190,000 public contracts worth approximately **132** billion euros in total were awarded in 2022 alone.

Extended producer responsibility is also a key point here. Producers must finance systems that also function well in times of fluctuating raw material prices. What's more, they must also be held more accountable for designing their products so that they are recyclable. The EU is heading down the right path here, for example in the area of textiles.

What must an EPR system actually do then in the textile sector?

Herwart Wilms: It must, above all, ensure that producers are responsible for their products along the whole of the life cycle. This means that they must not only pay for the production of their textiles but also for collecting and recycling them. Put in concrete terms, this means that such a system must have the financing required to set up collection and sorting structures that enable textiles to be collected from households and sorted – and also when there are greatly fluctuating raw material prices and when demand for recycled materials may be low.

Another important point here is 'Design for Recycling'. As the name implies, producers must design their products so that it is as easy as possible to recycle them once they reach the end of their useful life.

Can you give an example of this in the area of textiles?

Herwart Wilms: There are production methods, for example, that can be used to make elastic textiles without elastane. This system is more expensive but elastane makes it more difficult to recycle the product. An EPR system must create clear incentives to promote both sustainable production methods and the use of recycled materials.

The circular economy should also provide local industry with a secure supply of raw materials so that firms are less dependent on suppliers from, for example, China. Where do you stand on the current discussion about restricting exports of metals, such as aluminium?

Herwart Wilms: Export restrictions are a major market intervention and so this must be thought through very carefully. Let's take aluminium as an example here. Policymakers must differentiate between cast and wrought alloys. If the current value chains are to be maintained then it is vital that exports of cast alloys can continue because the electrification of vehicles will result in a huge drop in European demand for cast aluminium parts. If this doesn't happen then the actual demand for this material will not be high enough for this scrap to be recycled in Europe. Possible export restrictions, therefore, should – at most – apply only to wrought alloys as there is demand for this material in Europe.

What could a solution look like that reduces the dependency of local industry on critical raw materials from abroad without putting the recycling sector at risk?

Herwart Wilms: We must create a situation where the demand for recycled materials is so high that it makes the price of recycling cost-effective and provides an incentive to invest in advanced recycling technologies. Any possible export restrictions must, for example, also include minimum recycled content mandates for products.

Mr Wilms, many thanks for the interview.

WITH FORESIGHT AND RESPECT

Promoting a unifying leadership culture: Michaela Schröder, the managing director of GMVA Niederrhein (a waste-to-energy plant), has led her team confidently and pragmatically over the last decade. She always approaches her staff openly, with respect and on an equal footing, motivating them to play an active role in the company and encouraging them to drive the business forward. And this has had an impact: many employees have remained loyal to the company for decades. We asked Michaela Schröder a number of questions as we put together this piece: How did she come to join GMVA? What have the Netherlands got to do with her CV? How important is it to her to promote young talent? And what interests does she have outside her work?

MICHAELA SCHRÖDER
Managing Director
of GMVA Niederrhein

Michaela Schröder is a pragmatist with a penchant for numbers, structures and processes. An internship at the waste management firm Trienekens in Viersen during her time at university played a big role in deciding her future career. It did not take long back then for her to realise just how important the recycling sector was. When she returned to the region to take up her position as managing director of the largest waste-to-energy (WtE) plant, she had already gathered many years of international managerial experience alongside her degree in economics. Today, GMVA in Oberhausen is one of the most important producers of electricity and district heat. Created in 1972 following the conversion of Concordia Bergbau's colliery power plant, GMVA really is a business steeped in tradition. "Which explains why we have such close ties to the region and the people living here," commented Michaela Schröder. Nowadays, GMVA is a public private partnership (PPP) between the City of Oberhausen, the City of Duisburg and REMONDIS. "Our company employs 200 people, many of whom have highly specialised qualifications. They are all committed to ensuring that the business runs smoothly and sustainably. Up to 700,000 tonnes of waste are thermally treated here every year.

State-of-the-art flue gas cleaning systems ensure that the chimney primarily releases steam into the atmosphere. "And our emissions here are well below the statutory ceiling values," Michaela Schröder was pleased to report.

For ten years now, she has been in charge of the plant's power supply and waste management operations as well as the strategic further development of the company in her role as managing director. It is a well-known fact that such work is not a walk in the park. "The sector is about to undergo some major changes. The development of our business is being shaped by issues such as carbon capture, emissions trading, optimising energy production, local authorities' district heat plans, digitisation and automation as well as the use of artificial intelligence. All these different areas require both large investments and ongoing further training courses for our staff."

Michaela Schröder is tackling these changes with confidence. She is well-known for being fearless and pragmatic. Her strength lies in her ability to plan ahead with foresight.

Just one example: a large number of long-standing employees – the so-called baby boomers – will be reaching retirement age over the next few years and leaving the company. The business is ready for these changes. Four years ago, Michaela Schröder set the course for this generational change by introducing a cultural change process across the company. The mission statement of this corporate cultural development project pronounces: "We are responsible for the environment, the people in our company and the people in our neighbourhood. Which is why we are never satisfied with the status quo but are always looking to advance the business. Our leadership style and our technology are always state-of-the-art. And we wish to be both the motor and the driving force when it comes to protecting the environment."

"We are responsible for the environment, the people in our company and the people in our neighbourhood."

Mission statement of the corporate cultural development project at GMVA

"Water is my element."

Michaela Schröder, Managing Director of GMVA Niederrhein

The managers involved have played an active role in these changes. The business does not, however, have a top-down philosophy. "People are truly motivated when everyone is included in the decision-making processes and in implementing the changes," Michaela Schröder explained. Getting rid of hierarchies has even led to the managers setting stricter standards for their own areas of responsibility without them being pressurised to do so. Michaela Schröder is satisfied: "We are heading down the right path."

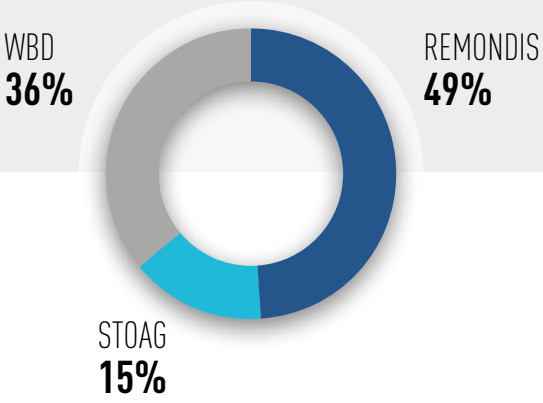
Everyone working on an equal footing – this is what defines Michaela Schröder's leadership style and is something she truly believes in. She spent many years in the Netherlands and this time had a big impact on her. She studied economics there and held managerial positions at a variety of companies, first in the Netherlands and later in Belgium. Indeed, Michaela Schröder could really be called half Dutch – both because she speaks the language fluently and because she still remains in close contact with her business acquaintances and friends living there. And she has adopted many Dutch practices into her work as managing director of GMVA.

"No one holds back with their opinion in the Netherlands. The people there are confident, sit around the table as equal partners, put forward their ideas and openly speak about what is important to them. I think that's a good thing," she remarked. She appreciates a leadership culture that values its staff and encourages them to become actively involved in the business. This is definitely one of the reasons why the working environment is so good at the company: a large number of the employees has remained loyal to the company for decades and many of their children now work at GMVA.

Talking about employee satisfaction: GMVA introduced a future leadership programme two years ago under the direction of Michaela Schröder. The idea here is to offer employees the opportunity to gain further qualifications within the company, i.e. the chance to move up the career ladder at GMVA. This programme has not only been warmly welcomed by those taking part. Managers have also presented this future leadership programme – the only one of its kind in its sector – at a trade fair in Berlin and various articles have been published about it in the media.

THREE SHAREHOLDERS DELIVERING SAFE & EFFICIENT OPERATIONS

Originally a fully publicly owned company, GMVA has been operated as a public private partnership since 2001. It is owned by the City of Oberhausen, via the shareholder STOAG Stadtwerke Oberhausen GmbH, and the City of Duisburg, via the shareholder Wirtschaftsbetriebe Duisburg – AöR (WBD). REMONDIS, a private sector circular economy company, is the third partner in this collaboration – contributing towards the business's success with its waste management expertise.



Sailing & classic car trips

So what does Michaela Schröder like doing in her free time? She does not hesitate when asked about her hobbies. She loves sailing on the Ijsselmeer. Preferably with her husband and her friends. Michaela Schröder was encouraged to go sailing for the first time by colleagues soon after she joined GMVA. They asked her if she would like to go sailing with them. Right from the very first trip out in the boat, she knew that this was the right sport for her. "Water is my element," she said. Besides sailing, Michaela Schröder also loves classic cars.

She and her husband are proud owners of a 60-year-old Mercedes W 110, a car known for its tail fins. Unlike her ambitions at GMVA, where she believes it is key to have cutting-edge technology, she loves the car's "old, tried and tested technology". She leaves any repair work to her husband. What she loves to do is to take part in classic car road trips in the summer, travelling through the countryside with her husband at her side. "That is simply great – and perfect for clearing my head," Michaela Schröder said.

Up to **700,000** tonnes of waste are thermally treated by GMVA Niederrhein every year.

JUST HOT AIR?
NOT AT ALL! CLEAN ENERGY, TOO

Besides generating electricity, GMVA also produces district heat. This is fed into the local network and supplied to a large number of businesses and private households – reducing the demand for heating oil by between 15 and 25 million litres a year (depending on the heating requirements).

An interview with Michaela Schröder, managing director of GMVA Niederrhein

"Innovation is important but not at any price."

What strategy are you pursuing to ensure GMVA enjoys long-term success?

Michaela Schröder: For me, a good strategy means showing the direction of travel well in advance and preparing robust, workable decisions. Such a strategy unites technical feasibility, prudent business choices, and all regulatory requirements – and it must stand up to the demands of our everyday operations.

A strategy can only be effective if all of our employees and decision-making committees are fully behind it and prepared to help further develop it. Showing appreciation, getting managers and specialists involved and having transparent decision-making processes are all integral parts of our corporate culture.

Against the current backdrop of volatile markets, growing uncertainties and major changes facing the business – and I don't just mean the regulatory changes here – it is important to have a forward-looking strategy and a well-structured organisation. This includes having experienced and well-trained staff as well as the necessary flexibility to be able to adapt to changing framework conditions.

What do you believe an outstanding WtE plant needs to have?

Michaela Schröder: An outstanding WtE plant does not just have spectacular technology. It also has stable processes, high levels of plant availability, safe operations and permanently low emissions. What is key here is that the technology works reliably and is soundly operated each and every day. What's more, a modern, reference WtE plant has a future-proof set-up across all areas of its business – personnel, technology, organisation, culture and economic sustainability. In other words, it runs a business that is efficient, resilient and attractive to its employees, shareholders, the region and local authorities and not just now but long into the future as well.

What role does innovation play in your strategy?

Michaela Schröder: Innovation is important but not at any price. We deliberately deploy sound technical solutions that have proven their worth. For us, further development means, above all, continuously optimising our systems, making the most of our operational experience and making targeted investments to create clear benefits in the areas of safety, the environment and economic efficiency.

At the same time, it is important to us that all of our departments remain up to date with the latest developments in their field. We always keep a close eye on any promising technological and organisational advances that are being made. And we regularly meet our partners as well as trade associations and specialist groups and have a good network. This ensures that we can spot and evaluate relevant developments at an early stage.

Furthermore, we carry out systematic checks on our work processes to see where automation and digitisation could potentially grow efficiency levels as well as to examine where artificial intelligence can be used sensibly and responsibly.

How do you handle new technological developments?

Michaela Schröder: We systematically evaluate all the different aspects of new technologies – from their technology readiness, operational safety and economic efficiency to whether they reflect regulatory standards. They can't be implemented in our business until all these criteria have been met. This approach creates reliability and reduces risks.

What are the challenges currently facing the industry?

Michaela Schröder: It is the task of our industry to run future-proof operations as well as to systematically further develop them within the tricky environment of increasing regulatory requirements, volatile markets and growing societal expectations. At the same time, we need to make sure that we reconcile cost efficiency, a strong environmental performance and supply security. Alongside this, the costs involved to meet regulatory requirements are growing all the time. This means that we must guarantee stability and reliability on the one hand and sensibly prioritise different aspects of our business and carefully target the use of our resources on the other. On top of this is the challenge to set up the business so it is fit for the future – be it personnel, technology, organisation, culture or economic sustainability – so that it remains resilient and delivers a strong performance long into the future and meets the expectations of the shareholders, local authorities and the general public.

> "It is the task of our industry to run future-proof operations as well as to systematically further develop them within the tricky environment of increasing regulatory requirements, volatile markets and growing societal expectations."
>
> Michaela Schröder, Managing Director of GMVA Niederrhein

How important are the workforce for a WtE plant's success?

Michaela Schröder: It's not possible to run a safe and efficient WtE plant without highly qualified and experienced employees. Operational experience, a strong sense of responsibility and a clear leadership are all key factors behind a WtE plant's success. The staff cannot be replaced with technology. What's more, employees play a decisive role in further developing the organisation of a WtE plant as well as in driving forward its innovative strength, corporate culture and sustainability. We began early on to steer our corporate culture in this direction and to ensure our managers were and are trained accordingly – this is an ongoing process that must be continuously carried forward.

What things do you personally feel are important in your leadership role?

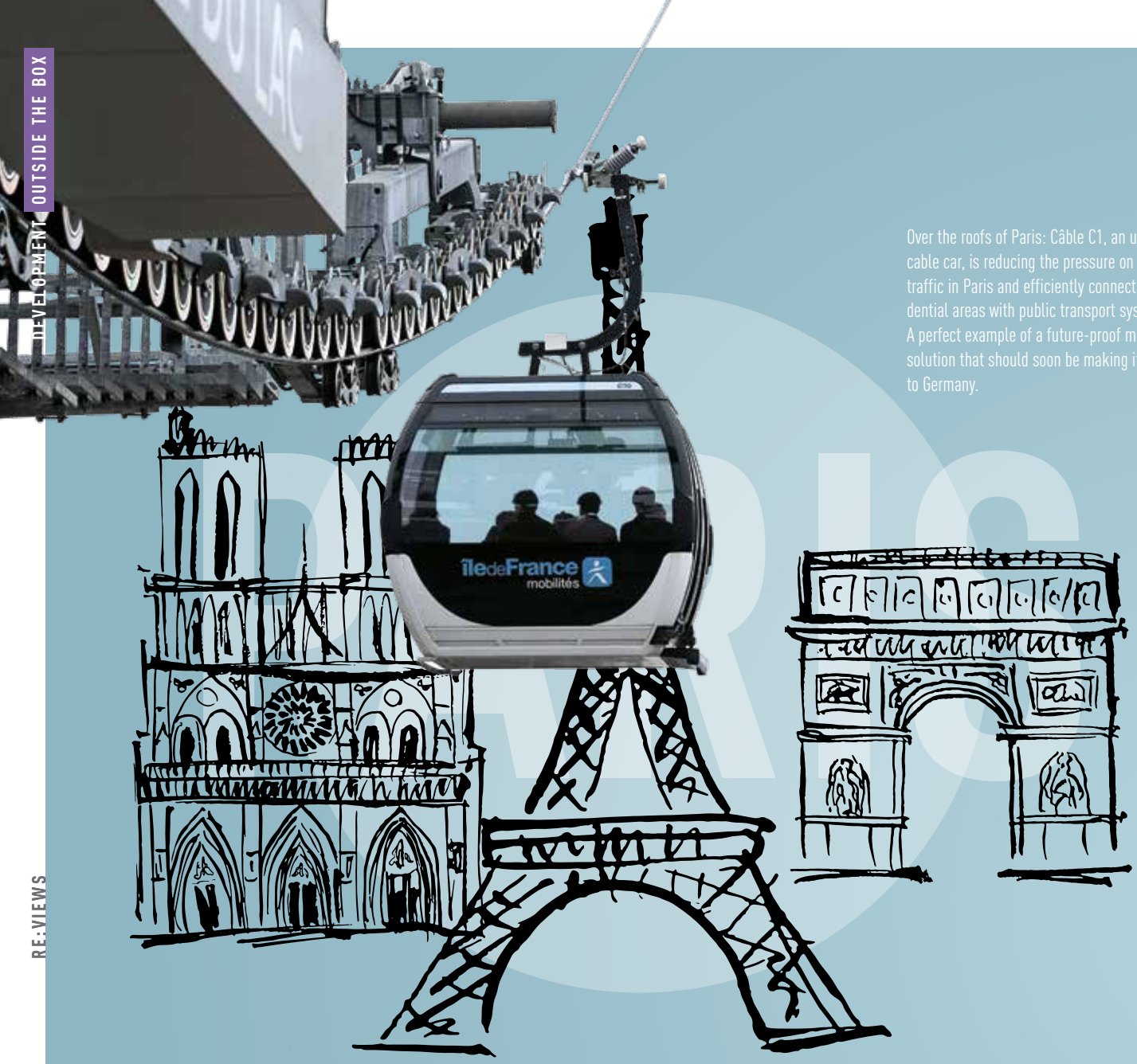
Michaela Schröder: It is important to me that things are made clear, that everyone understands the decisions that are made and that responsibilities are handed to those with the right levels of expertise. For me, good leadership means creating a framework that enables the work to be carried out professionally. What's more, I believe it is important to further develop the employees' skills, to encourage them to see the big picture and to promote an open culture, one that is based on trust.

Networking within the organisation, a good collegial atmosphere, professional input from outside the business and the opportunity to put forward ideas to further improve operations are all just as important to me as continuously advancing the organisation. As far as I am concerned, leadership is a sustainable process that offers a sense of direction and simultaneously provides the space for employees to work independently.

How do you see the company developing over the long term?

Michaela Schröder: Our focus is on ensuring the company has the right set-up for it to operate safely, efficiently and cost-effectively long into the future. This includes having a robust technological base, clear strategic priorities and an organisation that can handle changes in an objective and structured manner.

I also feel that it is important to further strengthen the company's roots in the region and to make the most of our infrastructure, operational features and areas of expertise to develop new areas of business so that our set-up is even more future-oriented and innovative.



Over the roofs of Paris: Câble C1, an urban cable car, is reducing the pressure on the traffic in Paris and efficiently connects residential areas with public transport systems. A perfect example of a future-proof mobility solution that should soon be making its way to Germany.

Railway tracks, roads & new paths

Paris & Herne – taking a different look at mobility

So what do Paris and Herne have in common? More than many may assume – especially if they cast their eyes upwards. At the end of 2025, an urban cable car – the Câble C1 – was added to the French capital's public transport network. Operated on behalf of the regional transport authorities 'Île-de-France Mobilités', it travels above the busy streets and connects several densely built-up districts.

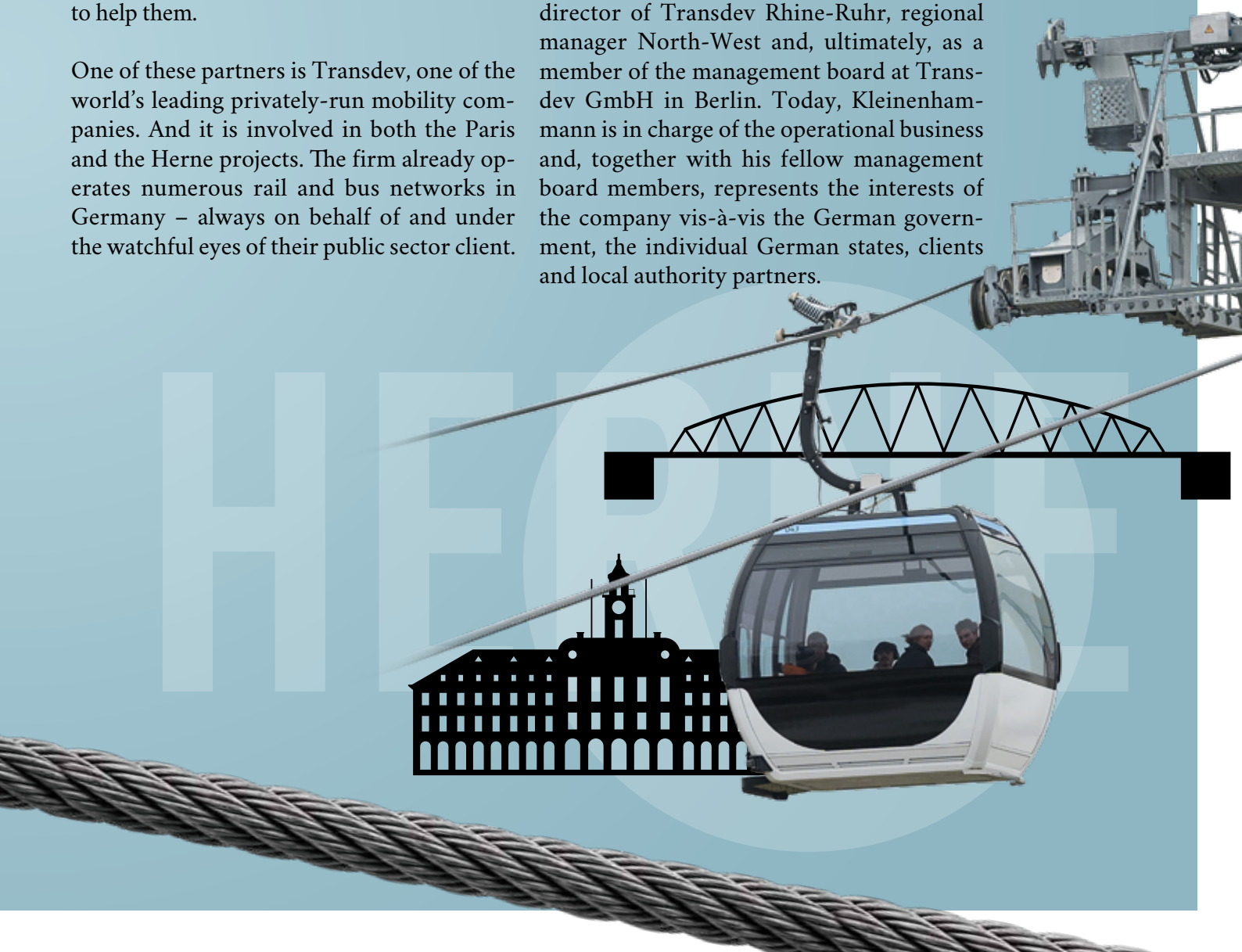
And, at the end of January 2026, a cable car company was founded in Herne (a town situated in Germany's Ruhr area) to look at the possibility of connecting the Blumenthal development area with the Wanne-Eickel train station. Both plans reflect a similar goal: local authorities wish to offer sustainable, innovative and affordable mobility solutions – and are looking for partners with the right operational, technological and organisational skills to help them.

One of these partners is Transdev, one of the world's leading privately-run mobility companies. And it is involved in both the Paris and the Herne projects. The firm already operates numerous rail and bus networks in Germany – always on behalf of and under the watchful eyes of their public sector client.

From controller to municipal partner

Christian Kleinenhammann works for Transdev Deutschland, where he is spokesperson for the management board, chief operating officer (COO) and work director. His career reflects the close ties between public sector infrastructure and entrepreneurial thinking. After graduating from university, he took up the post of controller at Niederrheinische Verkehrsbetriebe AG (NIAG), a transport firm steeped in tradition and an associate company of the RETHMANN Group. It became clear to him even back then that mobility is much more than just the sum of the routes and vehicles: it is always a collaborative project as well – one involving the local authorities, the local residents and the operators.

This outlook has also shaped the way he has approached his other jobs – as managing director of Transdev Rhine-Ruhr, regional manager North-West and, ultimately, as a member of the management board at Transdev GmbH in Berlin. Today, Kleinenhammann is in charge of the operational business and, together with his fellow management board members, represents the interests of the company vis-à-vis the German government, the individual German states, clients and local authority partners.



The power of partnerships

Transdev is one of the largest private sector providers operating in Germany's public transport networks. The company does not see itself as being a competitor here but as a partner to the public sector. Public private partnerships (PPPs) – a collaborative system that both the RETHMANN Group and local authorities are very familiar with – can often be found behind many of these networks.

The principle behind such partnerships is clear: the local or regional authority is the client and the body in charge of making the strategic decisions. It determines the timetables, fares, environmental goals and quality standards. Transdev is the operator and ensures these decisions are implemented: with its staff, workshops, vehicles and digital infrastructure.

Examples of such partnerships include the long-standing collaborations with NIAG in the Lower Rhine region, Regionalbus Oberlausitz in Saxony and Taeter Tours in Dresden. And then there are Rheinbus, Habus, Westbus and the new RE Mobility in the District of Unna to name just a few. These models take the pressure off the public purse, secure local jobs and allow individual towns to make the most of know-how they would find hard to access on their own.

"PPPs have nothing to do with privatisation. They are a responsible division of labour."

Christian Kleinenhammann, Spokesperson for the Management Board, Chief Operating Officer (COO) and Work Director at Transdev Deutschland

"PPPs have nothing to do with privatisation," Christian Kleinenhammann stressed. "They are a responsible division of labour. The local authorities set the direction and we put it into practice."

THE BENEFITS FOR LOCAL AUTHORITIES:

- They can plan ahead thanks to the long-term contracts & clear responsibilities.
- They have access to modern operations & fleet management systems.
- They can offer innovative mobility systems, e.g. on-demand transport & fleets run on alternative fuels.
- They remain in charge of their public sector task of setting the scheduled services, fares & quality.

TRANSDEV – THE COMPANY

Transdev operates in 19 countries across six continents – from Sweden to Australia, from Columbia to Morocco. Being one of the world's leading providers of mobility services, the group and its workforce of around 107,000 employees convey approx. 14 million passengers every day. Its annual turnover lies at around ten billion euros.

The company employs approx. 9,000 people in Germany, where it conveys around 200 million passengers a year. Its transport services range from regional and suburban trains, to bus networks, all the way through to on-demand services. The RETHMANN Group has owned a 66% share in the company since 2025, with the French Caisse des Dépôts remaining its strategic partner with its 34% share.

Mobility's green transition – on behalf of public sector clients as well

The Transdev Group has a global workforce of around 107,000 employees who convey approx. 14 million passengers every day. An ever-bigger proportion of the company's fleet is free of emissions being either electric or hydrogen-run. Transdev is increasingly deploying vehicles run on alternative fuels for its public sector clients as well to help them achieve their regional climate goals. Just one example: the company operates the largest fleet of electric buses in Europe.

In addition to this, the company develops on-demand transport systems for rural areas, digital sales platforms, barrier-free ticketing systems and multimodal hubs with connections to other transport services.

"The people using Transdev's trains and buses have been able to observe how new technologies are gradually becoming part of the everyday service in many areas of the country," Kleinenhammann explained. "Passengers often won't see our logo. But the systems they use to book and pay for their tickets and to travel to their destinations are often from our company."

CHRISTIAN KLEINENHAMMANN
SPOKESPERSON FOR THE MANAGEMENT BOARD, CHIEF OPERATING OFFICER (COO) & WORK DIRECTOR AT TRANSDEV DEUTSCHLAND.

After starting his career as a controller at Niederrheinische Verkehrsbetriebe AG (NIAG), an associate company of the RETHMANN Group, he took on various managerial and regional roles within the company. He joined the executive management team at Transdev GmbH in Berlin in 2023. In 2025, he took on the additional roles of spokesperson for the management board and work director. Together with his team of colleagues, he is responsible for implementing the company's operational strategy and collaborating with the public sector clients.

His passion for numbers has remained with him throughout his career, both up to and including his current post as COO of Transdev. At the end of the day, mobility must be both cost-effective and reliable. "But the numbers are just the foundations. People looking to shape mobility nowadays must think outside the box and go beyond simply achieving efficiency. It's all about quality of life in the towns and rural areas. And it's about how we can use public spaces more intelligently: cable cars are a wonderful example of a solution that is good for business and good for the environment," Kleinenhammann concluded.

Christian Kleinenhammann
Spokesperson for the management board, chief operating officer (COO) and work director at Transdev Deutschland

Cable cars – a part of transport's green transition

The Paris example shows how well such partnerships work. Câble C1, the first urban cable car in the greater Paris area, opened to the public at the end of 2025. It is being operated by Transdev Coteaux de la Marne on behalf of Île-de-France Mobilités. 4.5 kilometers in length, it connects five stops, is fully accessible and is part of the region's fare system. Around 11,000 passengers can now travel more quickly from the outer suburbs to the city's main hubs every day using this quiet, emission-free and space-saving mode of transport.

Several towns in Germany are looking at the possibility of developing similar systems. In Herne, for example, HCR (Straßenbahn Herne – Castrop-Rauxel GmbH) and Transdev GmbH recently founded a joint venture that aims to operate a cable car system in Herne in the future and to develop the grounds of a former coal mine there. This plan shows that innovative transport systems, such as cable cars, could be used in places where other systems are less practical.

4.5 kilometers in length, Câble C1 connects five stops, is fully accessible and is part of the region's fare system.

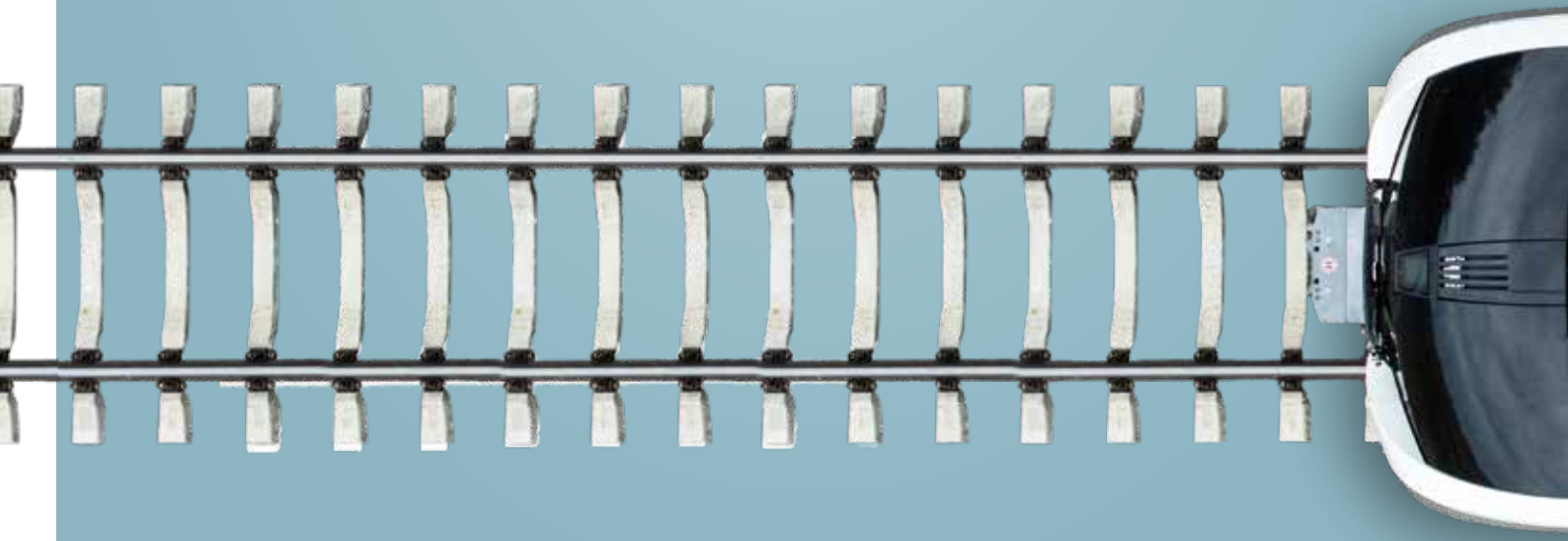
"Mobility can only work if it's seen as a shared task," Christian Kleinenhammann believes. "Between the client and the operator, between the local authority and the company. This is what is at the very heart of our work and our success."

Cultural change under the umbrella of a strong family-run group

Transdev is part of the family-run RETHMANN Group, which operates in the recycling, logistics, water management and mobility sectors all around the world with a number of different companies including REMONDIS, Rhenus, SARIA and Transdev. This cooperation work creates cross-sector synergies – from sustainable logistics solutions through to efficient transport models.

"Mobility can only work if it's seen as a shared task."

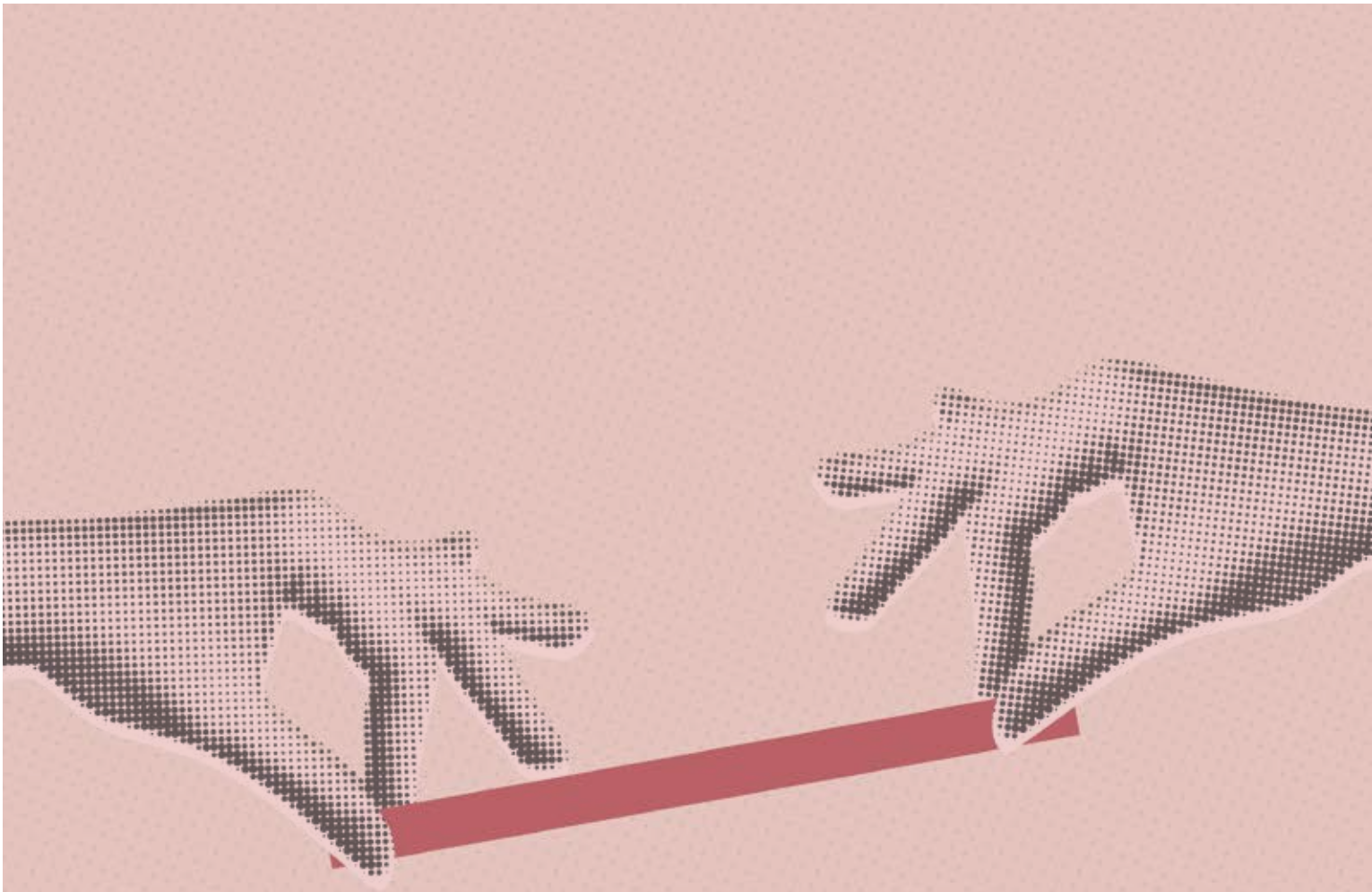
Christian Kleinenhammann, spokesperson for the management board, chief operating officer (COO) and work director at Transdev Deutschland



Such synergies often lead to a change in the way work tasks and collaborations are structured – both at the public sector clients and the companies. Transdev is actively driving this transition in the mobility sector and is working on making changes within its own company as well: one of its goals is to have made its large German team, which is managed from Berlin, more diverse and more modern by 2028. More women should be working in managerial positions; the number of young managers should increase as well; and there should be greater career opportunities for those providing the transport services. "This transition is teamwork," said Kleinenhammann describing how they wish to move forward. "We want to show that mobility is a profession for everyone, no matter what their sex, origin or age."

The Transdev team know, however, that there is one thing that must always be kept in mind to ensure large networks remain on an even keel: namely, being interested in the needs of the local inhabitants. So much more connects Paris and Herne than just a cable.

Future fuels: an ever-bigger proportion of Transdev's fleet is free of emissions being either electric or hydrogen-run. It is increasingly deploying vehicles run on alternative fuels to help its public sector clients achieve their regional climate goals.



RE:VIEWS

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