



# In conversation with Prof. Günther Bachmann

Climate protection is more important than ever. What contribution can be made by the circular economy? And how can we make it more pervasive? These topics are discussed here by sustainability expert Prof. Günther Bachmann and Markus Müller-Drexel, Managing Director of INTERSEROH Dienstleistungs GmbH.

## Forword

**Climate change is the biggest global challenge of our time. In recent years, the topic has also been attracting greater attention from the general public. Everyone is aware that change and solutions for change are necessary. And not in some far-off future, but here and now.**

My name is Frederike Kouker and I've been working in sustainability for many years. Today, I'm out and about on behalf of Interseroh. Interseroh is a provider of environmental services and solutions for the circular economy. And that's exactly what we'll be talking about today. Together with my two guests, we'll be looking at the question of the contribution that the circular economy can make to action on climate. My first guest is Markus Müller-Drexel, a circular economy expert and Managing Director of Interseroh Dienstleistungs GmbH. Also with us today is Professor Günther Bachmann. As General Secretary of the Council for Sustainable Development, Professor Bachmann spent nearly 20 years advising the German Government on sustainability policy.

**Mr Müller-Drexel, at Interseroh you deal with the circular economy on a daily basis. So how would you describe it, in a nutshell? What is it, exactly? What is meant by a 'circular' economy?**

**Müller-Drexel:** Essentially, the circular or closed-loop economy is the opposite of the throwaway economy we know from the past—where we used resources only once and then simply got rid of them. The circular economy is different: instead, we think about which materials we can manage in a loop, and so make them useful for the economy a second time and a third time, and so on and so forth.

**On the topic of climate change and the action we need to take: how could the circular economy be useful to us here?**

**Müller-Drexel:** In terms of climate change, the circular economy is almost the simplest strategy available to contribute to avoiding greenhouse gas emissions. Managing raw materials in closed loops is only about half as CO<sub>2</sub>-intensive as making things from primary materials. Before we can start using these raw materials in a loop, however, we must of course get them back. And that's why it's called a circular economy: because it's not just a question of having raw materials, but also of collecting and managing them. To do this, I need to have businesses on my side and I also need support from consumers.

**Professor Bachmann, you expressed the view that "Germany has no circular economy" in a presentation you gave in 2016. Would you say the same today—or have things changed since then?**

**Professor Bachmann:** Unfortunately, my opinion hasn't changed.

**What makes you say so?**

**Professor Bachmann:** The circular economy in Germany got off to a start with a lot of fanfare in the 1980s and 1990s but not a lot has happened since then—except that we now all think that we're world champions in recycling. While widely believed by the general public, it unfortunately isn't true, because many of the materials collected do not actually end up being recycled. And because we have to get a lot better before we can call ourselves circular economy world champions. This reality check is what I mean. And I'm not attacking the manufacturing sector, which is doing great things: instead, it's an appeal against the prevailing opinion that it's enough to throw away paper and buy recycled paper. It simply isn't. We need to think much bigger than this. I thought so then and I think so now.

**What would be your response, Mr Müller-Drexel, as Managing Director of Interseroh? Do you agree?**

**Müller-Drexel:** I do think Professor Bachmann is right when he says that we still have much to do. That's certainly true. In other respects, I have a very different opinion and have also experienced things differently. Compared with our achievements in the 1980s and 1990s—around four decades ago—we are now doing a lot more because we have developed entirely new technologies. It's also a great pity that the general public is frequently told that there's a huge amount that we're not managing in the loop. We're actually managing a lot more than is commonly believed. Obviously, not every system is running optimally as yet. But why is that? Because the manufacturing sector has very demanding requirements for certain raw materials and how these are used. And a significant

proportion of these materials is simply badly manufactured, to be honest. So if I start off wrongly, I'm going to find it very difficult to recycle something properly at the other end and therefore get it back into the loop. So I'd sum up by saying quite clearly that we have made much more progress than is commonly believed, even though there's still plenty of room for improvement.

**This seems to imply that there are lot of adjustments to be made before the circular economy can really get going. What do you see as the biggest drivers here, Professor Bachmann? What needs to change?**

**Professor Bachmann:** We have to be specific here, because the situation differs between the various material groups. And to follow up on what's just been said: with aluminum and copper, we're pretty much at the maximum return and closed-loop rates conceivable. But let's pretend we're sitting in a room whose ceilings are made from FGD gypsum. But if this building is demolished, the FGD gypsum would not be stripped out and disposed of separately, according to current building standards. Even though, and I have it on good authority here, it is now technically possible for us to make fresh gypsum from FGD gypsum—i.e. to recycle old gypsum into new—without this costing an exorbitant amount of money.

But can the industry dispose of materials separately during demolition work? Sure, rebar is taken out of reinforced concrete and the various aggregates are sorted. But it would certainly be better if we could do this for FGD gypsum as well.

Let's take another example. A maker of athletic footwear comes to us—he was sitting at this very table, in fact—and says: "We would like to manage our footwear in the loop. But we can't get it back. We even offer our customers cash if they return their old footwear..." But they aren't the kind of consumers who comes into the shop with their worn-out shoes. Instead, shoes are more of an impulse buy—and you don't take your second-hand stuff with you when shopping. So manufacturers simply can't get the volume needed to manage their synthetic shoes (plastic, in this case) in the loop. They'd be happy to—and it would work, design-wise. But consumers don't play along and the system just isn't there.

So, as said, we need to be clear on the subject. With plastics, things are indeed very much as you have described them: we collect more than we recycle. It's probably unavoidable, to be honest. Ultimately, we'll always have to incinerate some of it. While my ecologically-minded friends don't like me saying it—that some of it always goes up in flames—I really do believe that that's how it is. So we need to look at things critically. And if I had to make a conclusion on that basis, I'd say: we're taking it easy. We could do a lot more. We don't have to become world champions at this. But we need to push ourselves to the limits of what we are capable. As a manufacturing powerhouse, Germany is still in low gear.

**Müller-Drexel:** We're very much in agreement there, Professor Bachmann. Which is exactly why I said at the outset that, when we look at the topic of reusing raw materials, we really do 'have the technology'. But how do I get hold of my materials, so that I

can actually manage them in the loop?

In both cases, the obstacles are both of a purely economic nature. Why should the demolition company be bothered about extracting the FGD gypsum so that it can be managed as a recycled material? Which is of course technically perfectly possible, since gypsum is infinitely recyclable. And why should the consumer go into the store with his old shoes and say: "Right, time to buy a new pair!" As a society that doesn't just consume but idolises consumption, we don't think like this. As you say, Professor: our shopper buys new footwear on impulse, because he feels like it, and does not have the old ones to trade in with him. So we need to create the motivation to return the valuable materials we have purchased in our products.

Sad to say, the very opposite is true at the moment. Market forces are no longer a force for good. Let's take textiles, for example. The obsession with fast fashion means global markets are absolutely saturated with clothing. Which means that there is virtually no economic incentive to return any particular item of clothing. I think this is exactly where we need to take action. We need to motivate consumers to return the raw materials that are 'built into' their products, so that these can form part of a closed resource loop.

**Professor Bachmann:** Economic incentives—well, OK: if they're available and feasible, they'll work alright. So far so good. But take the Middle Ages, for example, which wasn't driven by economic incentives but by what people considered to be normal, namely the untrammled exploitation of resources. And, since you've brought fashion into the conversation, fashion is one consumer segment that is practically invincible to the wiles of economic incentives. Consumers respond to fashion for fashion's sake: to identity and self-image.

**Müller-Drexel:** Nevertheless, I have to give the consumer a reason for giving me back my raw materials. Because I can't do this as a waste management company. As a waste management or recycling company, I can only say: "If you hand that over, then I can use it to manufacture a new raw material." But I have to give the person who possesses this raw material some kind of motivation to do this.

I can illustrate this with a very simple example, which was also the subject of contentious debate in Germany, although it has developed slowly but surely into a model now deployed around the world. Namely the German deposit system, where every man and his dog moans about how awful it is that you have to take everything back. But because we have this system, the PET we have as a raw input material for new products is so pure that we hardly need to manufacture and market any new PET at all. And that's because we harvest high-quality PET from bottles sold on the market. Because consumers want their 25 euro cents back. The economic incentive, either for the consumers themselves or for someone who finds a PET bottle at the side of the road, is so high no one gives it a second thought. Instead of worrying about questions like "Should I do the right thing and take it back?", people just want to get rid of it.

Let's take another example. Today, we own very expensive electronic devices that we carry around with us all day long. These have lithium-ion batteries inside. This is not only an extremely

expensive raw material but also a dangerous one: it catches fire quickly if you handle it wrongly. We've talked about putting a deposit on these batteries for at least the last three years or so, to ensure we get this expensive material back again.

To be honest, a deposit of this kind is long overdue. We need to get these kinds of resources back because it's a tragedy to think that this valuable material could end up in a waste incineration plant or worse, instead of being reused. So what I'm saying is that consumers, at least in our experience, are prepared to do things. But there's plenty that they're just not aware of, so it's much easier to motivate them with economic incentives to give me back my materials.

**I think this discussion really does highlight the various stakeholders in this process and its complexity. Consumers, first and foremost, who need to be made properly aware of the process and perhaps given more responsibility for it. But also politicians, who need to create the general framework, and naturally the manufacturing sector as well. How important do you think it is that everybody is on the same page here, Mr Müller-Drexel?**

**Müller-Drexel:** On the subject of politicians, by which I specifically mean policymakers, Germany would not be where it is today—and yes, I'd argue that we are indeed world champions in recycling—if Klaus Töpfer had not prepared the way by pushing for certain kinds of initial 'product responsibility' laws during the 1980s. Had he not, we'd have had a throwaway society until the present day. So this is why I brought the point up earlier. One key characteristic of the circular economy is how laws are used to guide active stakeholders in specific, new directions. So legislators are the prime mover here, so to speak. We need these legislators and we need our politicians to define and promote a level playing field for these stakeholders, and in doing so, to say: 'These are the general conditions, that is: the minimum but also the maximum requirements you now need to meet.'

**What would be your response, Professor Bachmann, especially in light of the fact that you spent many years advising the German Government on these very topics?**

**Professor Bachmann:** All of these stakeholders can bring something to the table. In reality, however, they spend a lot of time literally sitting around tables. And we need to give them a reason to get up from their chairs and say: "Enough talk: we need action." I don't see this right now. I think all of them are prepared to give the circular economy a chance and imagine this brave new world. And I'd very much like to see municipal waste management units adopting the same approach as private firms in this context. I don't see a particularly problematic conflict of interests here. The problem needs solving and it is a political problem. So I don't need everybody to bring something to the table: I just need those who actually have a role to play.

**Müller-Drexel:** I entirely concur. This was exactly the controversy carried much too far in recent discussions about recyclable material legislation, as it initially started out and what has ultimately become the German Packaging Act. All the stakeholders – both municipal and private recycling firms – were unanimous: "OK, we've got to do this. We've got to ensure that

our collections from private households – one of the biggest sources of recyclables – are effective and smart. And we've got to explain to consumers how to sort things into the various bins, so we can use these as resources to produce new raw materials." In the end, however, this turned into a dispute lasting nearly five years: "So, who does the kerbside pickups?" Although really only a logistics issue, it's also one that naturally raises the question of "Who has the best system?", triggering a competitive dispute for private enterprises. Even though your average consumer would say: "Well, it should be the company that does it cheapest of all. If it's just a logistics service, make sure that the company that runs it is the one that charges the least, since we private consumers are always the ones who end up paying for these things." In Germany, however, we turned this into the question of who should be 'allowed' to run the service. Although the simplest answer here is a call for tenders that awards the contract to the company able to run the most effective service. Especially because it's really only about collecting the material before it is sent for recycling. So that's why I concur entirely with Professor Bachmann on this point: we need to get back to focusing on the goal rather than the individual steps to achieve it.

**Professor Bachmann:** Once you've seen legislation about recyclable materials mutate into a packaging law that doesn't solve the original problem, you have to ask: "Who are the actors in this process, who have the power to speak out and change the script, so to speak?" I'd even go out on a limb here and say that there's still probably a manufacturing segment producing products today that sells them on the market and then says: "That's it for me." And in the future, perhaps, they don't then say "That's it for me" but "That's a good I want back. My product is simply too valuable to sell and give away. Instead, I want to have this product returned after a period of time: three years, five years—maybe just a few days. In this vision of mine, Volkswagen would build a second tower next to the famous one where people pick up their new cars: a tower for bringing their old vehicles back. And it's with the greatest respect that I say that we do need to talk to Volkswagen and Mercedes and the rest—the movers and shakers—and not Interseroh.

**Müller-Drexel:** That's OK, I don't see a contradiction when you say you'd be better off talking to Volkswagen than talking to us. After all, it's Volkswagen who have built all of the raw materials into their products, and it's Volkswagen who then comes to us and says: "Look, I have these products with tonnes of raw materials in them that I need to have processed so that I can then reuse these materials."

Let's take the VW Golf as an example. This vehicle has many thousands of parts made from a wide variety of materials. At the dismantling stage, when materials must be taken out of the product and properly sorted, so they can be made available to manufacturing again, that's when the recycling industry gets a call. But I'd agree with your analysis here: as raw materials become increasingly scarce in the future and increasingly expensive – at least where market forces are in play – we expect to see an entirely new kind of circular economy take shape, where companies sell the use of their products and not the product itself.

**Professor Bachmann:** Well, I would certainly hope that you would talk to them and vice versa. But how about a wind turbine blade: could you recycle that?

**Müller-Drexel:** This is one of the most fundamental points of all and it's bound to come up again and again. Before we start manufacturing products, we need to start thinking about whether these products can be separated into their raw materials at end of life. Why am I making this point? Because whoever invented the fantastically useful material carbon fibre unfortunately spent very little time thinking about how it can be recycled afterwards. If you've ever tried to chop up a wind turbine blade in your shredding plant, then you'll have given up after precisely half a second. And even if you do get it shredded, because it's carbon fibre composite, it's highly conductive and so it wrecks all kinds of electronics. For all of these reasons, we still don't have the kind of industrial-scale solution that's needed to turn carbon fibre into its constituent materials, even today. While we can do this in the lab, we simply can't scale the solution up. So this would be our appeal to manufacturers: if you're making new things and launching them on the market, you have to consider the question of what happens to your new thing when it's an old thing. And this is why the automotive industry is going back to the drawing board in some cases. Carbon fibre could certainly be dubbed the industry's greatest invention for lightweight manufacturing. But compared with its predecessor aluminum, which has a very different recycling system, the older model is actually the smarter one, since it has an effective recycling strategy. For carbon fibre, there are simply no options yet available at an industrial scale. While small amounts are unproblematic, large volumes present us with a real headache.

**Professor Bachmann:** Our renewable energy capacities in Germany will need to be much, much larger. Of course, renewable energy handles consumption differently to traditional systems and we have many more consumers, including the mobility sector and so on. A lot is going to happen here. So we're going to need a lot of wind turbines. And we shouldn't forget what we set out in 1972 as we codified environmental protection. Namely: the polluter pays principle, the precautionary principle and the partnership principle. That was 50 years ago. At the time, we'd had enough of people irresponsibly littering the world with their products. And so we said: "You're the polluter, you pay." But now we have the same problem with our wind power plants. We take these down after 20 years and then we find out that, yes, you can smash them into pieces but that's about it. This is a policy gap in the industry. And we simply don't see the bigger picture—although it's as big as climate protection or biodiversity. But we still give it no priority. Because we're used to reducing the whole topic of the circular economy to a single question: "Who's coming to collect my rubbish?"

**So we can see that the circular economy still has a long way to go. While there have been notable successes, there's still a lot to do. Let's take a look into the future. Mr Müller-Drexel, what would your vision of the year 2030 be regarding sustainable development and specifically in terms of the circular economy?**

**Müller-Drexel:** I can use a concrete example and one that Professor Bachmann has just cited. With sustainable electricity generation from wind power, we've got the energy sector moving in the right direction. But the only thing we've overlooked while doing so is that we have no waste management strategy for the turbines that we make. When I think about 2030, I hope that we have created an environment where we stop for a second before designing and making a wind turbine. And we say: "This turbine will be scrap in 20 years. At that point in time, we'll need a way to dismantle and reuse this turbine, which we need to think up now." Incidentally, that's also the best kind of recycling industry: one that reuses things rather than recycling them. So how could this wind turbine get a second life somewhere? While we might not have a use for it, perhaps someone else does, and so it could be taken apart and used in this way in the future. And so we should take a look at the technicalities of all products that we place on the market and make sure that we have the technology to manage them properly in the loop when they reach end-of-life.

**Professor Bachmann, how does 2030 look for you?**

**Professor Bachmann:** I'd like to see us throwing away only half of the food that we throw away today. And it's not a niche topic: it's a major concern and one of global relevance. Because Germany and Europe today find themselves in a world in which the other large blocs have other values. These values, in general (or specifically: China), are quite unlike ours.

Our values promote the structuring of a socially intact society within an ecologically intact environment. That's what Europe stands for. And we have to show why this is important. Both Europe and the wider world signed up to the 2015 Sustainable Development Goals as a matter of some urgency. A progress review is due in 2030. There are lots of these goals. One of these is so crystal-clear that anyone, from Guatemala to Germany, can understand it: we need to reduce the amount of things we throw away even though they could still be used or eaten. Even if we only cut this wastage by half. Today, we throw about 40 percent away, much of which consists of meat, which—in terms of climate policy—is effectively suicide. We need to cut this by half. And we need to organise this, and that's why we need the waste management industry. And we also need our retail partners, our consumers and the manufacturing sector, which can create other options for consumption in terms of packaging. This is a technical problem, one for consumers and also one requiring political will, because the general framework must also be a legal one—especially if targets are to be met by 2030. Perhaps even earlier. This would do wonders for Germany's image as a developed country with the courage to enter the post-nuclear and post-coal era while doing the right thing for recycling: it would be hugely beneficial. For us—and for the world, too.

**We've heard a range of opinions aired about the topic of the circular economy and taken a long look behind the scenes. To sum up, then: what insights have you gained from this conversation? Professor Bachmann, what have you learned from what Mr Müller-Drexel has said?**

**Professor Bachmann:** That technical skills and expertise in technological processes have to be combined with social engagement in order for us to really break new ground.

**And Mr Müller-Drexel, what have you learned from Professor Bachmann?**

**Müller-Drexel:** It's not something I have learned today but something I have come to understand from the Professor's former role as General Secretary and something I have also personally observed for a long while: a Council of this kind and Professor Bachmann as one of its advisors both need to think in visions. To get ahead, we need to think ahead. I also thought the example with food was a good one: we think so little about it because it all seems so normal. And these topics—how much CO<sub>2</sub> we waste, how we don't merely throw food away but also don't take it seriously enough, these are topics of the future that we need to solve in the here and now. A lot is at stake and not merely the technologies that we can or cannot make available. We also need to think about how to get consumers to engage in these topics. So I'm not just grateful that you have been advising us for the last 20 years, Professor Bachmann, but also that something like the Sustainability Council exists—because these things are so very important.

**Thank you very much for your perspectives and the interesting conversation.**

We've gained many illuminating insights into our subject today. About the circular economy as it is now and the change needed in the future. The circular economy offers us many options for countering climate change and resource scarcity. To use them, we need to coordinate our efforts.

Turning now to our listeners, if you would like to learn more about current trends in the circular economy, please do take a look at Interseroh's latest Sustainability Magazine. Mr Müller-Drexel and Professor Bachmann, I'd like to wish you continued success in all of your efforts on our behalf. Thank you for your expert opinions and the engaging discussion.