

trendletter



CIRCULAR,
NOT LINEAR

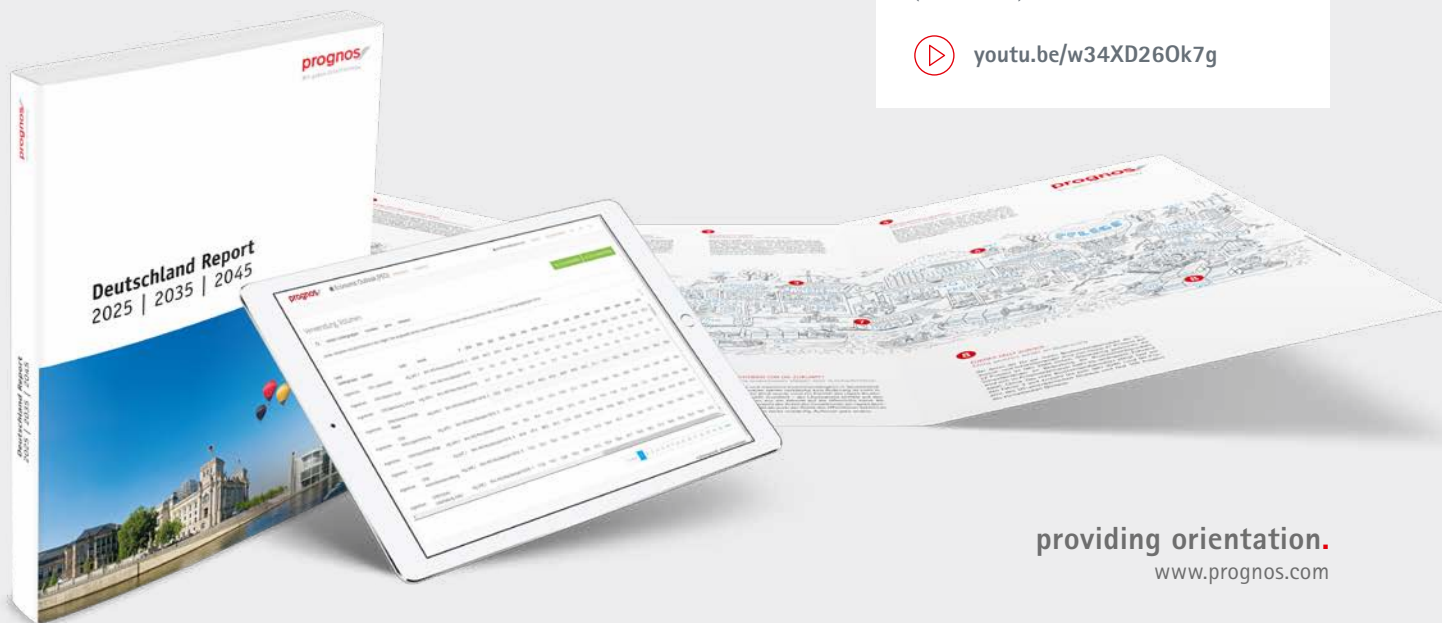
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– **Concept and realisation:**

STÜRMER & DRÄNGER – Visuelle Kommunikation

– **Picture credits:**

Platum/Annegien van Doorn (Cover), Foto Koroll (1, 2, 5, 9-13, 17, 19, 20-22), Fotolia/Uwe (2), MIREIA GONZALEZ EIB (7-8), Zoonar/Arcadi Bulva/Alamy Stock Photos (10), Moldovan Manuel/Alamy Stock Foto (10), shutterstock pictive (10), shutterstock/photka (10), shutterstock/mega Pixel (10), luckyraccoon/Alamy Stock Foto (10), luckyraccoon/Alamy Stock Foto (10) shutterstock/Lucky Team Studio (11), Fotolia/bugarskipavle3 (12), Fotolia/Mark (14-15), Adobe Stock/H-J-Walther (16), De Kringwinkel (17), Prognos/Hanne Hagedorn (19), Fotolia/Africa Studio (20), Zöhre Kurc und Thomé-Kozmiensky Verlag GmbH (25), Stefan Obermeier/vbw (25), Deutsche Energie-Agentur (25), vbw (25), Prognos (25)

– **Print & distribution**

Druckzone GmbH & Co.KG

– **Circulation**

Print: 9,000 copies, Digital: 9,500 subscribers

Take, make, use, ...



...dispose. These are the principles of our linear economic model: companies process raw materials and turn them into products that we buy, use, and ultimately throw away. It is a model, which is being increasingly questioned.

It is obvious that this linear economic model has a problem. If we continue to use resources at the current rate, we will soon need a second earth. The implications of centuries of "take, make, use, dispose" are becoming ever more noticeable. Environmental problems are intensifying. Distribution conflicts are increasing. And we are faced with the very specific question of whether this system, in which resource consumption and economic growth are coupled, is not also profoundly uneconomical, because it destroys the very premises upon which it is built.

So, how about a model that recognises the value, but also the finite nature of resources? A model that aspires to use raw materials for as long and as often as possible? There is already a promising concept for this. In this issue of the *trendletter*, we want to provide orientation, inspiration, and answers: welcome to the world of the Circular Economy.

Circular Economy, however, is not a new buzzword. And it cannot be reduced to that of a recycling economy, one which essentially refers to waste management. The simple addition of recycling to the produce-use-throw-away-chain, does not in itself make everything run smoothly. A Circular Economy is far more than a linear economy simply starting to spin in circles. A transition to a circular economic model entails a fundamental system change: growth is decoupled from the consumption of finite resources.

The Circular Economy, like all profound changes, divides opinion into believers and doubters. Both are prone to exaggerate. And exaggera-

tions constantly remind us of the supposed ingenious approaches of previous times or of approaches that seemed to implement radical change, but not necessarily for the better.

Let's not let things get that far! Let us examine the Circular Economy with pragmatic optimism. Sober. Reality-oriented. Evidence-based. Calm, but rooted in action. Modest yet persistent. Always leaning slightly towards the positive. This has always been the best recipe for handling a changing world.

The Circular Economy is not yet a uniformly defined economic model. It is a collection of opportunities we should take advantage of – for the environment, for the economy, and for us, and future generations. The motto is: Redesign. Reduce. Reuse. Recycle.

I wish you now an exciting read, and I am looking forward to hearing from you.

Yours sincerely,

A handwritten signature in blue ink, which appears to read "Christian Böllhoff". The signature is fluid and cursive.

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A good idea

Smart usage of urban raw material reserves

The modern industrial and digital society is based on the use of finite raw materials and rare earths whose recycling rates, however, are often below one percent. Although buildings, roads and railway are significant reserves of such raw materials, there is little information about which raw materials are indeed used and in which capacities and quantities. Targeted recycling is therefore difficult.

To address this problem, *bonnorange*, a municipal waste disposal company, has conducted an inventory of the utilised critical metals used in the infrastructure and buildings of the city of Bonn and is investigating how these can be recycled in a more efficient and targeted manner. For future building projects information about material usage could be documented during construction. Municipalities could play a key role here: in addition to documenting their construction and demolition activities, the sale of municipal property could be tied to documentation obligations. The digital "Building Information Modelling" (BIM) method for planning, construction and building management furthermore allows detailed documentation by the property developer during the construction. This not only facilitates post-demolition recycling, but it also improves ongoing maintenance management, thus extending the lifecycle of buildings and infrastructure. _



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Circular Economy – more than the sum of its parts

Society, the economy, and the environment are currently undergoing important changes – will the Circular Economy become a common agenda for different demands and developments?

Linear thinking has become outdated. The world is starting to think in cycles. Circular Economy is the name of a not-so-new form of economic activity, which is gaining in importance, especially at the European level. Circular Economy changes societal values and consumer demands, thus challenging everyone: scientists, product designers, industry, waste management and not least the consumer.

The term Circular Economy, as used by the EU Commission, is however in no way to be equated confused with the commonly used translation "Kreislaufwirtschaft" (literally: recycling economy). According to German understanding, "Kreislaufwirtschaft" already contains important elements of a Circular Economy, but it is merely a subsection of the Circular Economy. The translation "Zirkuläre Wertschöpfung" (circular value), from our perspective also focuses on the value of a product and the increase in added value over the entire production and recycling cycles. The commonly used term "Zirkuläre Wirtschaft" (Circular Economy) also includes – according to our understanding – the change in societal values and consumer demands. These, in turn, are critical to changing demand for products and services from the circular added-value sector.

“ The Circular Economy will change societal values and consumer demands.”

In recent years, various studies have been published on the impacts that changes in lifestyle, ways of doing business, and production methods have on the economy, the society, the environment and consumption. A study on behalf of the Ellen MacArthur Foundation states an economic benefit of approximately 1.8 trillion euros for Europe by 2030 – around 900 billion euros more than if the linear development path was maintained. Furthermore, current calculations by Prognos show: in Europe, around 7 million people are already currently employed in the relevant sectors today.

“ If in Germany we used washing machines collectively to the same extent as they are used in Switzerland, we would have approximately 11.8 million less washing machines – that equals 825,000 tons less of steel, copper, plastics and other resources.”

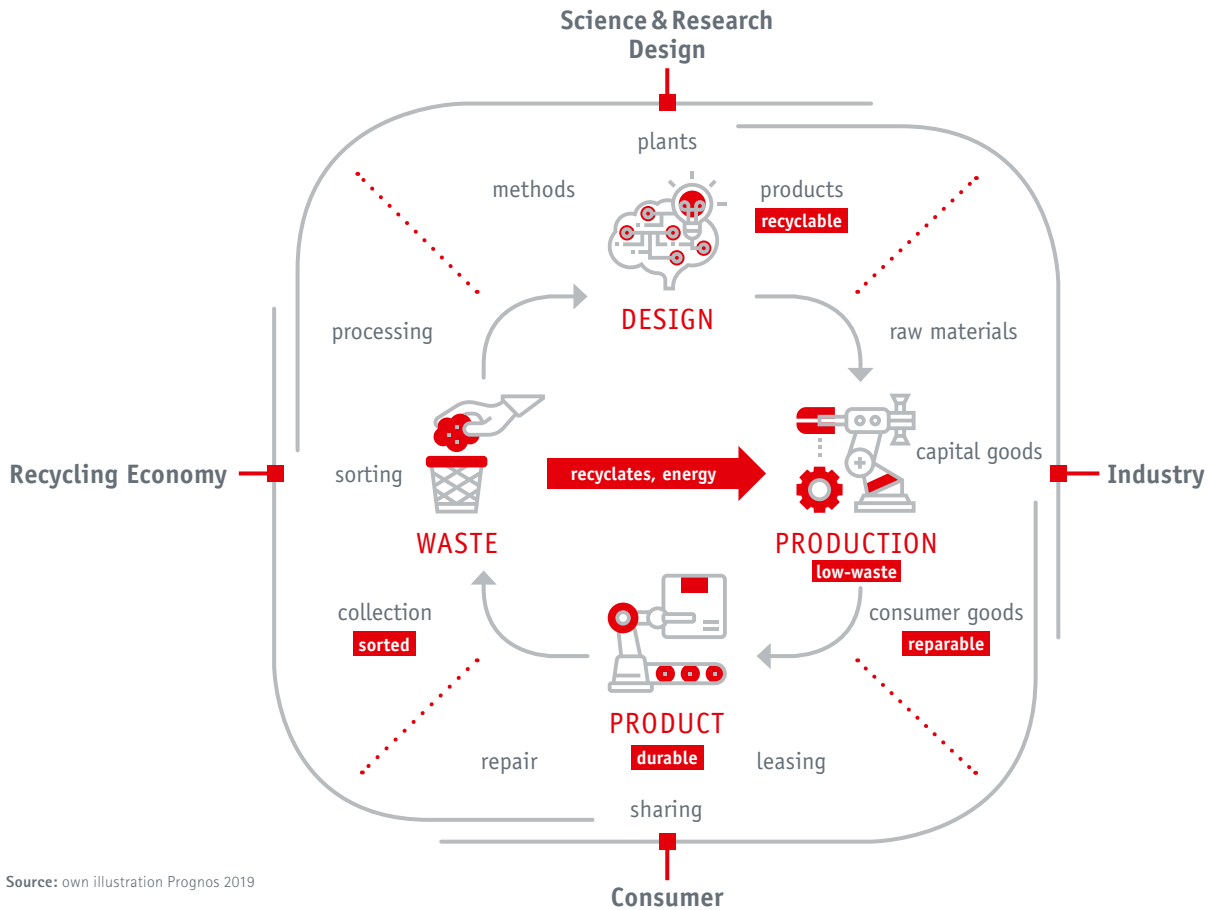
What is clear: the strategy of the Circular Economy is gaining in significance, particularly at the European level. The Circular Economy Package by the EU includes a plan of actions with measures for the entire product life cycle: from design, material procurement, production and consumption to waste disposal and recycled raw material markets. The Circular Economy operates on the assumption of closed raw material cycles. The recycling of reusable materials, however, has its economic, energetic, and ecological limits, meaning the economic cycle continues to depend on the supply of primary raw materials. Nevertheless, the national dependency on raw material imports can be significantly reduced, particularly for strategically important metals.

Main features of the Circular Economy

- At the beginning of the product or raw material cycle, there is a sustainable product design (Design for Recycling). This means products are made entirely or predominantly out of recycled raw materials, contain no harmful substances and are easily recyclable after use. In this way, packaging made from only one material, for example, is considered more recyclable than packaging containing various components.
- The production is low-waste or waste free. Production waste and production errors are recycled or returned to the raw material production immediately. New technologies, such as 3D printers, are used. Due to take-back systems and leasing concepts, the manufacturer remains owner of their products or the raw materials contained therein.
- Products are primarily manufactured using recycled raw materials. They are durable, repairable, modular and in the best-case, parts are reusable. In Spain and Belgium, a well-known household appliance manufacturer is currently in the process of setting up a return system for household appliances in which exchanged devices are retrieved by distributors and subsequently inspected for their reparability. The repaired devices are then sold in social department stores.

- Consumers will have to rethink. It starts with the acceptance of products made from recycled raw materials (cream white instead of bright white) and ends with packaging that is reduced to its basic function and, where possible, recycled.

The Circular Economy is not a strategy of renunciation or limitation but provides common understanding and orientation for diverse developments that are currently taking place: consumers, designers, industry, service providers, trade, disposal companies, start-ups and



Source: own illustration Prognos 2019

- Sharing and renting instead of owning. People forego private ownership in favour of collective purchases. Lending systems for construction machinery and tools are becoming increasingly popular. Rented or leased machines and devices last longer because the lessors have a strong interest in fewer repairs and low maintenance. The Sharing Economy creates an entirely new economic sector with a multitude of jobs. The internet enables the exchange of goods, rescuing food from being wasted and finding new owners for used clothing.
- At the end of their life cycle, products are sent to a waste management facility, which through separate collection with subsequent sorting, forms the basis for high-quality recycling of materials and thus, creates a functioning raw material cycle. The recycling economy becomes an inseparable part of the raw material economy.

a variety of other actors are currently in the process of reconciling the demand for a sustainable lifestyle with suitable products and services.

Given the increasing awareness of the economic and environmental consequences of our consumer habits, there is a high probability that the Circular Economy, with its positive dynamics, will ultimately be a self-reinforcing process. Information about the extent of ocean pollution alone has made it clear that we as consumers and producers must now redefine the balance limit of our (product) responsibility. This ultimately defines the significance of the Circular Economy for the future of our industrial society. _

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The Circular Economy as a new challenge for the recycling economy – for Prognos Partner Dr. Jochen Hoffmeister, a significant question for the future viability of the industry he has been advising for more than 25 years.

The linear approach does not work any more

The European Investment Bank (EIB) supports Circular Economy Projects with a wide range of financing and advisory services. EIB President Dr. Werner Hoyer explains why the future must be circular.

The European Investment Bank, which you have now chaired as president for many years, is one of the key partners of the Circular Economy. In recent years, the EIB has stepped up its initiatives around the Circular Economy. Why is the EIB so attached to a Circular Economy? The Circular Economy is the only way to achieve prosperity on a planet with a growing population consuming more and more products made out of scarce and partly finite resources. The current linear "take, make, dispose" model is unsustainable, polluting, and costly. We have learned to be mindful of our carbon footprint, but we also need to pay attention to our material footprint, the quantity of material extraction that is required to meet the consumption of a country. The EU Commission has already identified 27 raw materials as critical because of their supply shortage risk and the higher impact they have on the economy compared with other materials.

The effects of our wasteful consumption of plastics is also becoming more visible, for example with the plastic pollution of the oceans, a problem the EIB wants to help tackle thanks to the Clean Oceans Initiative, that we have set up together with our partners, the promotional institutions Agence française de développement in France and Kreditanstalt für Wiederaufbau in Germany.

The Circular Economy also makes economic sense: for the European Union, it could generate an estimated one to four percent economic growth over a ten-year period (ING 2015) and create up to an estimated two million new jobs by 2030 (European Commission 2014).

In sum, the Circular Economy is a win for the environment and the economy and this is why the EIB has provided more than two billion euros for Circular Economy projects in the last five years and wishes to do more in this area.

"The Circular Economy is a win for the environment and the economy."

Europe is a pioneer of the Circular Economy. How can Europe maintain and expand this position? First, the EU has the regulatory power and is already shaping sustainability across all sectors by regulating the transition from a linear to a Circular Economy. Secondly, the biggest asset is the single market and it can be deepened and further developed through EU actions on Circular Economy. The European Commission has adopted strategies and directives that set out

ambitious targets for a European Circular Economy. For example by 2035 a minimum of 65 percent by weight of all municipal waste shall be recycled and no more than 10 percent of municipal waste shall be landfilled. These targets will require further investments and advice to promoters and this is where the EIB can step in.

These strategies will also have to be supported by new regulatory frameworks at the European and national levels and create the right investment incentives for the private sector to embark on the circular transition. Supporting markets and demand for secondary materials is one importance aspect, not least with regard to plastics, where the recent Chinese import ban have created large stocks of poorer quality plastics for which recycling capacity and market demand needs to be created in the EU.

The Circular Economy can give Europe a decisive competitive advantage. Which economic, political, and social factors need to be further changed so that Europe can hold this position? The Circular Economy is a systemic change, which should be underpinned by a new mindset, one that seeks to design waste out of our economic system. To achieve this, all actors of our society are needed: governments to put in place the right regulation and incentives, businesses to develop new processes, business models and re-design products and finally consumers who do their share by adopting new behaviours from rethinking their consumption to avoiding waste generation.

Innovations can stimulate the necessary change towards a Circular Economy. However, global players are often too sluggish, smaller companies lack the necessary capital or market access – how can the EIB support this? I would not completely exclude the global players because several big corporations are actually stepping up to the plate and exploring innovative ways of doing business. Under the leadership of the Ellen Mac Arthur foundation, 290 organisations including many of the world's largest packaging producers, brands, retailers and recyclers, have made a commitment to support the development of a new plastics economy, starting with packaging and aiming at eliminating plastic waste and pollution at source. The EIB has endorsed this commitment.

But indeed, companies, especially smaller ones, face a number of challenges. Circular Economy projects are often comparably small, with risk profiles that may not be acceptable to commercial banks. Considering this, the EIB is developing new financial products specifically targeting Circular Economy projects. One example is the new Circular Bio-economy Investment Platform that we have launched together with the European Commission. Circular Economy projects can also receive financing through our risk sharing instruments benefitting from EU guarantees, such as the European Fund for Strategic Investments (EFSI) and InnovFin.



Innovative Circular Economy projects are often complex, and feature unproven technologies or uncertainty regarding the supply or demand of recovered/recycled products and materials. This is why, beyond finance, the EIB also provides advisory services. We have also produced a number of guiding documents, including an EIB Circular Economy Guide, that can be found on our dedicated Circular Economy webpage (www.eib.org/circular-economy).

What hampers the transformation to the Circular Economy – which financing models or funding programs are backward-looking and, in your opinion, better off abandoned? One of the key challenges is that the new circular products or services are being launched into a linear world, where valuation through “linear” due diligence and credit risk assessment tools do not properly take into account circular value creation. For example, the full societal costs of our use of the environment and resources are not fully reflected in product prices. A proper consideration of environmental externalities and societal value creation is important to create an equal level playing field between linear and circular products and business models.

Moreover, linear risks, that include the reliance on finite or unreliable sources, are also often overlooked by the financial sector in their project due diligence. The access to resources is taken for granted. This is not realistic, especially considering the longer investment cycles. The EIB will continue working towards building and disseminating knowledge on how this can best be addressed. Taking into account

both circular value creation and linear risks should realign the capital costs more in favour of circular business models and projects.

The EIB has a special role for cities. Why? Cities can act both as cradles and catalysts for a circular transition. Today, cities consume 70 percent of global resources and generate 50 percent of all waste. Cities also have a huge potential to become circular thanks to their scale and the concentration of people, businesses and resource flows that allow for the efficient sharing of resources and goods. Municipalities can also influence the development of a Circular Economy by leading by example, e. g. by offering or procuring circular products, buildings or services.

Cities can, for example, promote modular buildings that can be disassembled instead of demolished, shared transport, urban farms that recover organic waste and connected companies that share materials. We have published a guide called “15 Circular Steps for Cities” which offers guidance on how cities can achieve a more circular city in the future.

Which project is missing? Where would you personally like to start? EIB is the largest multilateral provider of climate finance worldwide. Therefore I would favour the circular projects that also have a tangible climate impact, which fortunately most circular projects do. The fact that by targeting the right circular solutions, we can both address the urgent need to tackle climate change, and steer our production and consumption on a more sustainable and circular track, offers a win-win opportunity that we should not miss.



“ By targeting the right circular solutions, we can both address the urgent need to tackle climate change, and steer our production and consumption on a more sustainable and circular track, offers a win-win opportunity that we should not miss. **”**

As an example of the potential, the Ellen MacArthur Foundation and McKinsey have estimated that a circular transition in mobility, food and built environment could reduce emissions by 48 percent by 2030 and 83 percent by 2050 compared to 2012 levels, so thinking circular will be an important way to reaching the emission reductions under the Paris agreement on climate change.

As I mentioned earlier, through the Clean Oceans Initiative, we are also working on reducing the discharge of plastics to the oceans. Taking a more circular approach to plastics, e. g. by limiting single use plastics and increasing reuse and recycling would not only conserve resources and reduce CO₂ emissions, but also contribute to reducing the discharge and accumulation of plastics in our oceans. This is a win-win opportunity that has our full attention, and warrants further focus from other stakeholders.

Dr. Werner Hoyer, EIB-Präsident

Economist Dr. Werner Hoyer was a member of the German Bundestag for 33 years, during which he held various political offices. Werner Hoyer was Minister of State at the Federal Foreign Office on two separate occasions, as well as Whip and FDP Security Policy Spokesman, Deputy Chairman of the German-American Parliamentary Friendship Group, FDP Secretary-General and President of the ELDR. In 2012 Werner Hoyer was appointed EIB President. He commenced his second term in January 2018.

We would like to ask you one or two personal questions. If you were an entrepreneur – for which project would you like to apply for EIB financing? The EIB is unique in the sense that we are more than a bank. Take for example our Projects Directorate and Advisory Services department. More than 600 economists and engineers appraise projects to ensure they comply with high technical, environmental and social standards. At the same time, this combined expertise is put to best use to help projects get off the ground. For example, through our advisory services we offer financial advice helping promoters prepare and develop bankable projects and business cases for investment by the EIB and other investors. I would therefore approach EIB looking for help, first, in designing my investment project, and secondly, in obtaining funding through one of EIB's many financing products but also from other external sources. Experience shows that once EIB has given its stamp of approval, this crowds in more investment from the private sector.

When you think of today's children, what economic system do you want for the younger generation? A circular and sharing economy, where the value of products, materials, and resources is maintained in the economy for as long as possible, and the consumption of resources and generation of waste is minimised. This will not only preserve the planet and its resources and environment for future generations, but also create new jobs and strengthen our economy.

Which project, which funding application has particularly pleased you in the past and why? Imagine that when you are tired of your side table, you pop it in your car and go to the 3D-printing merchant at your local shopping centre, who promptly throws it into a hopper to grind it down into new raw material. Then you select the new table design you want from the merchant's terminal, and press "Print". When you come back from your grocery shopping, your brand new table is ready and waiting for you. To most of us that still sounds like a future high-tech development.

But in fact, this is the Circular Economy we are already working on. In 2016, the EIB supported Dutch producer of 3D printers, Ultimaker, with a 15 million euro loan. This will be used to further strengthen the research and development activities of Ultimaker and rolling out new products. _

For a circular Union – learning from Europe!

The Circular Economy has arrived in Europe – at least in certain areas. In Belgium and the Netherlands, in Slovenia, Spain, and Germany – municipalities, businesses and public institutions all over are developing circular business ideas.

Europe is still a long way from a comprehensive transition of the economic system towards a Circular Economy (CE). Nevertheless, in a study on Circular Economy, Prognos experts together with partners have identified remarkable and successful examples of promoting a Circular Economy (see p. 21). Three examples from Europe show that the Circular Economy is already being implemented at very different levels of governance.

- **Scotland's Circular Economy strategy, "Making Things Last"** (2015), sets the country's priorities for a transition to a Circular Economy. In addition to overarching objectives, it also brings together agreements from the "Zero Waste Plan" (2010) and the „Resource Efficient Scotland" (2013). Key elements are an improved approach to increased producer responsibility and a reduction of food waste by 33 percent by 2025. What is special about this: Scotland's strategy relies on incentives for actions along entire value chains, focusing on the food industry and the bioeconomy, the construction industry and the energy industry. Equally remarkable: in Scotland, targeted measures along the value chain are developed by means of the "Waste Carbon Metric". This will enable the closing of circular economic cycles and minimise emissions.
- With the **"Circular Economy Initiative", the Basque Country** in Spain is pushing for a significant reduction in the consumption of raw materials. It is aiming to save six percent in terms of raw materials and costs amounting to two billion euros. To this end, the Basque authorities are combining intelligent measures on the demand side, such as public and private environmental protection, with measures aimed at the supply side. The latter includes subsidies (e. g. for demonstration projects, eco-design and eco-innovation projects or R&D programmes combining Industry 4.0 with

a CE), loans for equipment and infrastructure and tax deductions for companies investing in CE-projects. And it is already paying off: around 60 percent of Basque companies view eco-design as a decisive factor in international market competition, and the nearly 90 companies that have thus far participated in the "Circular Economy demonstration project" are expecting an increase in turnover of nearly 40 million euros due to new technological solutions.

- An example from Brussels shows that Circular Economy initiatives are also effective on municipal level. With the **"Plan Régional d'Économie Circulaire 2016–2020"**, Europe's capital is pursuing an ambitious mission. The plan defines 111 measures and encompasses a comprehensive and transversal approach that monitors and organises the participation of three ministries, four administrations and several additional partner organisations. A key factor to the strategy's success lies within the introduction of innovative governance. Based on the lessons learned from the previous strategy, the Alliance Emploi-Environnement (Job and Environmental Alliance), a powerful coordination structure, was implemented to avoid compartmentalised policy and to ensure early political buy-in.

These examples show: politics play an essential role in the establishment and dissemination of a Circular Economy. The Circular Investment Fund in Scotland, subsidies for cooperation projects between research players and practitioners in Brussels and the Circular Economy demonstration projects in the Basque country help bring innovation to the market. In a similar way, the Scottish authorities place particular emphasis on building skills and setting up training courses for a Circular Economy.

Overall, it is clear: The implementation of a Circular Economy requires an integrated and long-term systemic change. A wide range of approaches is necessary to change the way in which we produce and consume and the nature of public-private cooperation to support the transition. If it is to be successful, politics must assume an important role steering the transition to a Circular Economy – in Germany as well as the rest of the European Union. —



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Waste as raw materials

400 million tons of waste is fed into the recycling economy in Germany every year. In around 10,800 private and municipal companies around 275,000 employees at around 15,800 sorting and processing plants ensure that waste is sorted, processed or disposed of. The goal: to maximise material recovery from waste.

Modern waste management is an essential element of the Circular Economy. It saves resources, protects the climate and, ensures – not least through the export of know-how and goods – important innovation and an increasing internationalisation of mechanical engineering and plant engineering. What cannot be fed back into the production chain as raw materials can be used as secondary fuels replacing valuable and finite primary energy sources, such as crude oil and natural gas.

The nature of the reuse in the material cycle varies between raw materials. So, the recycling economy distinguishes between those raw materials which can be reused almost infinitely (e. g. steel scrap) and raw materials which can be recycled only a limited number of times. An example of the latter is waste paper, the fibres of which can be used six times before they become too short to be reused in the paper production. There is still much to do when it comes to plastics. In Germany, of the approximately 5.2 million tons of post-consumer

waste – accounting for 85 percent of the total plastic waste – in 2017, only 39 percent were recycled and a mere 17 percent (0.9 million tons) eventually went on to replace materials used to produce new goods (conversio, Stoffstrombild Kunststoffe in Deutschland 2017 (Kurzfassung), September 2018). The reasons for this are process losses and export. The consumer, however, is also implicated: every aluminium lid left on an empty yoghurt cup renders both materials useless for recycling purposes. The remaining plastic waste is converted into energy, or it ends up in the currently much-discussed export (15 percent).

However, even good recycling rates do not necessarily lead to closed cycles; although the new and higher “recycling quotas” of adopted in spring 2018 will lead to more recycled raw materials, the corresponding demand is currently not secured in the market. But, largely closed raw material cycles are a basic prerequisite of the Circular Economy, and it is thus necessary to increase the demand for recycled raw materials through new means.

On the one hand, this includes a binding substitution rate differentiated into substances. Such a quota indicates the ration of the used recycled raw materials in relation to the primary raw materials used to produce a product. On the other hand, the demand for products containing recycled raw materials could be significantly increased with consistent Green Procurement by the public sector (with an annual procurement volume exceeding 350 billion euros). _

Quantities of packaging waste (♻️ in million t) and the amounts fed into recycling (♻️ in %)



Source: Federal Environmental Agency, Schwerpunkt 1-2018: Recycling



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Repairing instead of throwing away – a matter dear to the heart of hobby craftswoman Dr. Bärbel Birnstengel, Head of the Waste Management & Secondary Raw Materials expert team at Prognos AG.

What is left of cars

German industry loses out on raw materials worth 2.5 billion euros every year. The fact is; a large proportion of the materials used to build Germany's cars are not recovered. High time to reorganise the recycling of end-of-life vehicles!

Cars; they could be the prime example of the Circular Economy. The EU does, after all, envision an 85 percent recycling rate for new vehicles. This means that for every 100 kilogrammes of material used in a car at least 85 kilogrammes are returned to the economic cycle. That is the theory. The reality looks very different. The bodywork, tires, and windscreens of discarded cars are not – as a layperson might assume – fully disassembled and reused. From a purely mathematical point of view, merely 13 percent of the components of vehicles deregistered in Germany find their way back into industrial production. The reasons for this are diverse:

- The vast majority of vehicles are sold abroad before the end of their life. On average, only every fourth car registered in Germany will also be decommissioned here.
- Not all recycling is equal. Plastics and textiles, for example, also meet the recycling rate if they are burnt (thermal utilisation). In a modern car, this amounts to approximately 30 percent of the total material.
- Approximately every tenth car registered in Germany does not even end up at a professional disposal site; instead, it might, for example, be gutted and used for spares.

The problem of recycling old cars has two dimensions; firstly, vehicles do not even reach the recycler. Secondly, materials - notably plastics and textiles - can be thermally processed, but not recycled. This problem will only intensify in the future. The proportion of plastics in vehicles being retired in the year 2030 will have increased by 80 percent compared to the year 2000. Simultaneously, the steel proportion will have decreased by 25 percent. Since the industry continues to specifically reject recycled plastics because of quality concerns, the only remaining option is thermal utilisation. Therefore, the proportion of effectively regained materials declines even further.



A solution needs to be found to increase the effective recycling rate and one which takes into account both the industry and the consumer. Other countries are setting an example: Norway achieves a return rate of almost 100 percent by charging a deposit on vehicles purchase that is then reimbursed to the last owner. However, Switzerland, with a research foundation financed by the automotive importers, and Japan with its disposal fees differentiated by vehicle size – with return rates of 40 percent (Switzerland) and 75 percent (Japan) – both achieve better results than Germany (20 percent).

It is, therefore, time to set up a "Central Organisation Point for Vehicle Recycling" in Germany. This should involve both automotive manufacturers and disposal companies alike and could be financed either through contributions from new vehicles sold or using a deposit system. The objective of such an organisation point should be to initiate and organise recycling research, professional disposal, and the collection of Certificates of Destruction. In this way, manufacturers and disposal companies can work together to increase the recycling rate of Germany's cars and thus move one step closer to the objective of a true recycling economy – from car to raw material and back to car. —



Scan the QR code or see also the study on the recovery of end-of-life vehicles at: www.prognos.com/altautoverwertung

In German only.



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Ecology meets technology

The world's population is growing, our food demands are becoming more complex, and natural resources are being stretched. Circular Agriculture applies the principles of the Circular Economy to the food industry to feed our growing population and while conserving natural resources.

It is a balancing act which can only be managed with difficulty; a growing world population needs to be fed whilst modern agriculture should remain economically attractive, socially just, and ecologically sustainable. What characterises a future agriculture and food industry system of the future, that can ensure sustainable and healthy nutrition within the planetary boundaries, i. e. the earth's own ecological limits?

Help could be provided by a concept which applies the principles of the Circular Economy to the production of agricultural goods: a Circular Agriculture. This concept is not only about a single food product – rather, with its subgoals, it takes into account the entire value chain of a product.

1. Agricultural products are produced by using minimal amounts of environmentally harmful substances; the reduction of packaging waste is included in this.
2. Nutrient cycles are closed, and adverse environmental effects are reduced.
3. Agricultural by-products and food waste are revalued and reused.

Circular Agriculture combines ecological principles with technical solutions. In practice, this means that, for example, crop rotations are planned in such a manner that fertilisers and pesticides are hardly used, or not used at all. When fertilisers are indispensable, they are



organic and used only when necessary, according to precision farming principles.

The subgoals must be tracked throughout the entire life cycle of a product. Otherwise, the risk is too great that the environmental impact of a single, optimised production step might be positive, but that the overall environmental impact of the final product is still negative. To prevent negative rebound-effects, all objectives need to be systematically considered as a unit across the agrifood value chain, in conjunction with other industries. For example, by means of:

- Strong networking of all stakeholders that goes beyond the agricultural value chain.
- A space for interdisciplinary research, education and innovation acting as a catalyst for rethinking value chains.
- Legal frameworks to enable circularity in agriculture and adjacent industries.
- Including Circular Agriculture in the training of young farmers.

Moreover, a look beyond the national borders shows: Circular Agriculture creates new business models. One Italian start-up processes agricultural and food production waste into versatile biodyes. In turn, a Dutch company uses a beverage producer's orange peel to make oils, chemicals and pulp, which are then used as secondary raw materials in the production of detergents, cosmetics, and food products. This shows: the concept of Circular Agriculture is still in its infancy. But in these early stages there is also a great potential for rethinking agriculture. _



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Katharina Schüle is a geographer and ecological economist. She is consultant at Prognos AG Düsseldorf office, with a focus on the Circular Economy and agriculture. She has a personal interest in sustainable dairy farming, having grown up in an agricultural region.

Organising the transformation – from patchwork to strategy

The Circular Economy is a challenge for the economy and businesses: material flows and supply chains have to be rethought, new partners have to be found and integrated into the cycle, and innovations will have to be implemented. Governmental structures can support the transformation – but currently resemble a patchwork rather than a coherent strategy.

Supporting and encouraging these processes is a challenge for the state: the state's finely divided, differentiated, and politically balanced network of responsibilities and competencies follows the structure of classical industries and policy areas. Regulations, funding programmes, and counselling services are aligned to this organisational structure. Usually this makes perfect sense and allows for an efficient and competent support of established industries, it becomes a problem, however, if support has to be organised across industries and policy areas.

A nationwide analysis of responsibilities for central Circular Economy topics such as the recycling economy, energy, material and resource efficiency, conducted within the scope of an ongoing Prognos AG consulting project, shows a patchwork of responsibilities: both the departments of environment and economy are in charge. Within these departments, respectively, numerous directorates and units exist with (partial) responsibilities and a fragmentation of topics. But why is state efficiency key to the success of the Circular Economy? In the transformation to a Circular Economy the state is a vital catalyst and pacesetter: it can promote innovative projects and approaches and connect them across industries and value chains. It can advise companies on specific projects and ultimately, only the state can shape the legal framework.

Successfully supporting the transformation of the economy requires both a strategic and an organisational answer: the strategy must transcend existing organisational boundaries, formulate a binding vision, and bring existing state instruments in line with the principles of the Circular Economy. Next, supporting structures need to be created to support businesses and implement the strategy on the ground. A comprehensive strategy does not necessarily require centralised institutions, but it does require a strong advocate with political leverage to advance the strategy's goals.

With this in mind, the Dutch government has already presented and formulated its vision of a fully implemented Circular Economy by the year 2050. The transition to a Circular Economy is perceived as an opportunity for the Netherlands and forms a central principle of government work. Looking at the implementation work on the ground, there are already exciting approaches in place in Germany as well. In the related cross-sectional issue of resource efficiency, agencies in Baden-Württemberg and North Rhine-Westphalia have proven their worth by establishing connections between state actors and companies. Since 2011, the State Agency for Environmental Technology and Resource Efficiency in Baden-Württemberg has been advising and connecting companies on questions of resource efficiency. According to this example, agencies at the state level could advise on questions of how to implement the Circular Economy.

The transition from the linear economy to a circular one is a strategic task. If the state creates clear structures while at the same time advising and standing alongside companies, this task can be accomplished! _



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The strategic design of organisations and processes in the public sector is the focus of Jan Tiessen's work, a senior project manager in the Management Consultancy team at Prognos. His work is twice as much fun when he can combine it with sustainability, a topic dear to his heart.

German technologies – global opportunities

Demand for the kinds of technologies that enable a Circular Economy – so-called enabler technologies – is increasing. In the global race, Germany comes a close second behind China in the export of these technologies.

Prognos consultants Johann Weiß and Janis Lambert show where in the world there is a particular demand. A glimpse into the cargo hold shows: the demand for recycling plants, efficiency technologies, and technologies for renewable energies is rising, and many **German companies are already at the forefront**; in the field of bio-based materials they top the table. A look at foreign trade proves: Circular Economy is an opportunity for the domestic economy and secures growth and jobs. The diagram shows the ten largest sales markets for CE-technologies. Not to be overlooked; emerging countries, in particular, offer great potential.


EAST ASIA

East Asia is among the largest buyers of Circular Economy technology goods. Especially in Korea the demand is growing at a dynamic rate.

In a few years the Chinese import market will surpass the US-American import market to take the top spot. The demand for biobased materials is increasing particularly strongly.

 Japan →
6 bn USD


 South Korea →
5 bn USD

 China →
14 bn USD



INDIA

The Indian market is often overshadowed by China – however, it is growing significantly faster. India's import volume has more than tripled since 2005.

 India →
4 bn USD

EUROPE

Europe is growing comparatively slowly. Nevertheless, these traditional German sales markets remain among the most important markets worldwide.


 United Kingdom →
6 bn USD

 France →
6 bn USD

 Italy →
5 bn USD

NORTH AMERICA

North America is a vast, dynamically growing market. The fields of renewable energies along with waste and recycling technology are particularly promising.

 United States →
22 bn USD

 Canada →
4 bn USD

MEXICO

Surprise Mexico: The country is the third largest importer of Circular Economy goods. With the exception of India, no market is growing faster.

 Mexico →
7 bn USD



bio-based materials



RFID chips



Circular Society: collective repairs and sharing

The Circular Economy requires the three Rs: reduce, reuse, recycle. Waste should be reduced, goods shared, reused, or recycled. Proponents see both its ecological and economic potential. The Circular Economy is, however, also changing our society.

Where can a broken smartphone be repaired in Germany? In most cases it can't – it is simply replaced with a new one. The product cycles of household and electrical appliances in particular are becoming increasingly short. The throwaway society has long since become a reality.

However, something resembling a countermovement is slowly establishing itself. Consumers are once again resorting to wrenches and soldering irons again. They want to decide for themselves when the next new purchase is due. Consumption, yes – but it should be sustainable and conscious. And based on independent decisions.

In some areas of life, it is no longer the ownership of a product that is decisive, but rather having access to a service. Particularly young people less frequently need a private car if instead, they are able to rent one at the touch of a button.

Especially in major cities many view collective repairs and sharing as a way out of urban anonymity as well as an opportunity for more social interaction. Much of this is not new, but rather a rediscovery – and it is being adopted into the living environment of young city dwellers: instead of throwing food away, they engage in food sharing. At swap

parties clothes change hands but money doesn't. And the motto "Do it yourself" exists now just as it did fifty years ago, except that the action takes place in "Repair Cafés" and "Maker Labs".

Seen this way, the path from swap parties to public meetings is short. It is there that, parallel to the trend of sharing or repairing products, new forms of collaborative decision-making are establishing themselves.

Digitalisation also acts as a driving force: what is already known on the web as collaborative commons continues into the analogue world: The line between consumer and producer is becoming blurred. Much of what we consume is user-generated: the YouTube videos or the Wikipedia articles, for example – and increasingly also the smartphone repaired by the consumer.

This transformation yields not only a more conscious use of resources, but also growth and jobs. With the Sharing Economy, a whole industrial sector makes use of the principle of sharing – and generates billions in revenues every year.

Social enterprises predicated on the reprocessing of furniture and electrical appliances benefit likewise. One example is the Belgian enterprise "De Kringwinkel". Due to a common umbrella brand and a modern image, the Flemish reuse stores have increased their annual turnover from 20 to 50 million euros and have thereby created close to thousands of jobs – particularly for people with difficulties finding a job.

In Germany, too, there are already promising approaches in terms of a Circular Economy. Nevertheless, there is still enormous potential for development. For it to evolve fully, in addition measures offering economic support societal change is also needed.

This requires a targeted communication: simple information campaigns dissipate without any real effect. They should, therefore, be combined with specific consultation and educational offers: municipalities or economic development agencies can outline the path to a Circular Economy. Schools should expand their range within the Education for Sustainable Development (ESD), add recycling and waste prevention to their curricula and intensify the exchange with research institutes and DIY-workshops.

Not least, raising consumer awareness is also considered to be part of the necessary communication. The purchase of used products does, after all, require increased consumer trust. Ways of gaining this include:





In the Belgian De Kringwinkel department stores old is offered anew.

- A warranty on second-hand goods (fairly common when purchasing a used car)
- A seal of quality for repaired products that meet certain quality standards, as currently being developed within the WIRD (Wiederverwendungs- und Reparaturzentren in Deutschland) project.
- A label, as proposed by a number of parties, similar to the nutrition labelling of food products, which provides information on the life cycle of a product.

This would make it easier for consumers who want to make sustainable consumption decisions. Equally it would create an additional incentive for the manufacturers, to produce products with longer service lives and to advertise it.

Furthermore, better network need to be created between relevant stakeholders. Only with a comprehensive dialogue process, which institutionalises the exchange of experience and knowledge, can justice can be done to the Circular Economy as a cross-sectoral industry. An analogue or digital platform could help which in addition to offering networking opportunities, could also provides information offers, event information, funding, and legal consultation or financing tips. Concepts for this already exist: apart from the WIRD project the German Academy of Science and Engineering acatech and the think tank Systemiq are working on the "Circular Economy Initiative Deutschland", which together with representatives from politics, science, industry and society is to promote the transformation towards a Circular Econ-

omy. On a local level, for example, the Munich-based "anstiftung" fosters cooperation of open workshop projects and organises exchange, training, and subsidies.

A special role is awarded to cities and regions. They can publicly commit themselves to the Circular Economy and thus send an important message to local actors. They are predestined to implement low-threshold advisory services or to bring together consumers and businesses.

However, the industry must also be brought on board. In doing so, the linear economy representatives' wealth of experience in optimised production processes and use of resources is merged with the ingenuity of the Circular Economy pioneers.

Where this is put into practice, innovative business models emerge. Another look at Flanders: In Ghent, the local Kringwinkel has launched a joint upcycling programme with IKEA, in which formerly unemployed people produce aprons and pillowcases from textile surpluses. In Germany, mail-order companies and electronics retailers now also rent household appliances instead of just selling them. And long-established car manufacturers are expanding their product portfolios to include sharing apps – in order to reach new target groups and markets.

With targeted consumer communication and stakeholder networking these as yet isolated approaches can evolve over time into a society-changing project. And thus, the Circular Economy takes its (circular) course ... _



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Lukas Haberland knows his way around societal changes. The political scientist is particularly interested in how citizens can be involved in the process. His focus: participatory processes using the energy transition as an example. He created the text in collaboration with Prognos colleague Hannah Milena Seichter.

Lab report

Close the loop – a model for the Circular Economy



By 2035 we might be constructing energy self-sufficient buildings and using recycled concrete. Cars might be shared rather than owned. What might such a circular world look like and what might it imply for today's economy and its industries, and what in 20 years? These questions concern politics, the economy, and society.

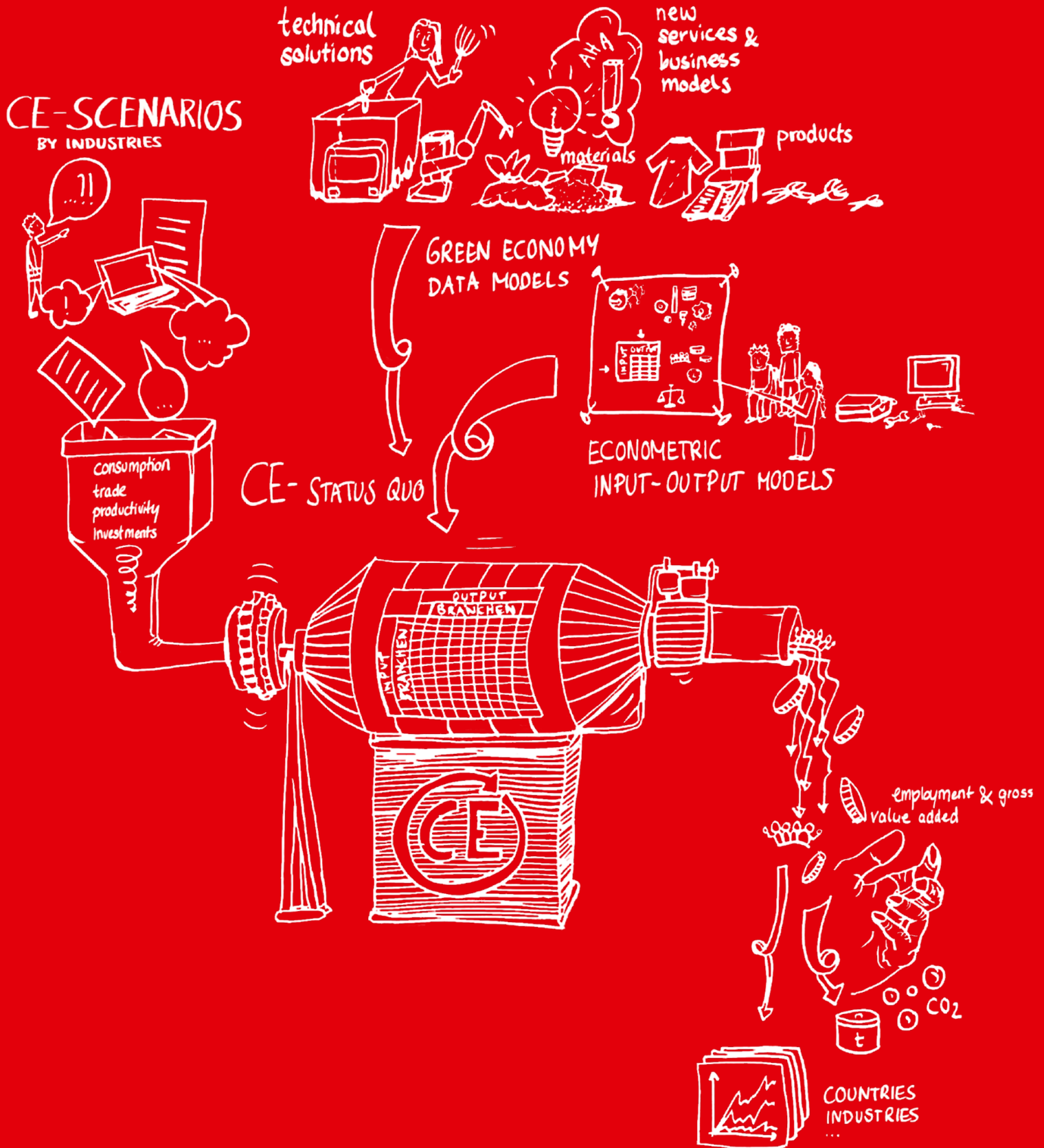
To find answers to these complex questions, Prognos experts are currently developing a Circular Economy Model to describe the economic future of a Circular Economy. Towards this aim, Prognos' green economy data models are combined with econometric long-term models. Long-term models depict the added value of the overall economy. The new Circular Economy Model will be a dynamic model. It will not only provide the status quo of the Circular Economy, but will also describe in detail how the economy will change, as circularity is implemented more or less ambitiously.

The model experts at Prognos have the common objective to present the complex systems and changes resulting from a linear to a mostly Circular Economy transition. Taking a look into the lab reveals the necessary steps:

1. The data models (i. a. the Prognos "envigos" model and Prognos Web Intelligence tool) can already detail the circularity shares within the four categories: providers of materials, providers of technology solutions, providers of products, and providers of new services and business models – as shown with a recently conducted study on behalf of ESPON within the CIRCTER project.
2. These circularity shares of the overall economy are, however, not yet matched to fit the econometric input-output models. Such input-output tables describe, broadly speaking, how investments, productivity, trade and consumption flow from one industry to another i. e. how the various industries are connected (i. a. the Prognos Economic Outlook, VIEW).

3. The integration of the models at industry level enables the Prognos experts to identify the macroeconomic effects of circular processes and to generate analysis of dynamic developments.
4. On this basis various developments are modelled dynamically to form industry scenarios, such as in the construction and automotive industries as mentioned above. The different scenarios are based on sound methodologies, data analysis and expert interviews.
5. The usual results and output indicators of economic models, such as change in gross value-added and employment, can, in further steps, be attributed to different sections of the economy (such as countries and industries), as well as converted to quantities and environmental impacts (CO₂).

The Circular Economy Model will allow showing the effects of political specifications or economic innovations within the context of a Circular Economy. The ability to assess the economic impacts from achieving the „close the loop“ – undoubtedly with winners and losers – is driving this internal innovation process at Prognos AG. _



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Oliver Lühr heads the division Green Economy & Climate Change. He is an expert in the fields greentech, climate change adaptation and sustainability. Among these, the industry and political-economic mega topic Circular Economy is growing in importance.



A good idea

Wanted: repair bonus for Germany

1.96 million tons of electronic appliances and devices were newly purchased in 2016. Only 44.9 percent of old devices were taken back and only 1.34 percent were prepared for reuse – figures we cannot be proud of. Especially the product cycles of electronics are becoming increasingly short, and consumers reach for new products instead of having old ones repaired. It is indeed often cheaper to purchase a new product instead of repairing an existing one.

The City of Graz and the Federal State of Upper Austria have now launched promotion programmes for repairing household and electronic appliances. The repair of defective devices by service providers registered with the funding agency is supported with non-repayable grants. A maximum of 50 percent or 100 euros of the repair costs are covered. This allows consumers to extend the product cycle of their old devices without being financially worse off – an idea calling for imitation. German municipalities and federal states should also consider the introduction of such funding programmes. By increasing the appeal of repair services, the Circular Economy in Germany could take a big step forward. _



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Yannick Vogel is consultant in the Management Consulting team at Prognos. He has previously worked in the field of economic promotion consulting. Today he accompanies organisational reviews and advises public organisations on strategic processes, including sustainability and the Circular Economy.

The economic footprint of the Circular Economy in Europe

Already today the Circular Economy employs around 7 million people in the EU, generating a turnover of approximately 1.2 trillion euros – these are the latest figures by Prognos AG on behalf of ESPON, the EU's think tank for territorial development. Germany contributes to these figures with 1.2 million employees and a turnover of approximately 260 billion euros.

The Circular Economy must be viewed from a multi-sectoral perspective. To trace the economic activities of the Circular Economy, we distinguished three categories – suppliers of sustainable resources, suppliers of necessary technologies and providers of goods and services based on novel business models.

The harvesters of renewable energy, sustainable agriculture and forestry, together with waste and material recovery services are referred to as material providers. The technology supply needed for material providers to operate and for key economic activities to be more material-efficient are combined to form the technology providers. The circular business models cover other novel forms of providing goods and services focusing on, for example, long-life design and longevity strategies, product-service systems and digital sharing platforms.

The largest sector is sustainable agriculture and forestry with around 1.7 million employees. This underscores the importance of the rural bioeconomy. Material and energy efficiency technologies – located particularly close to industrial regions – form the second largest sector with 1.4 million employees. This is the largest sector in Germany, clearly reflecting its technological and more industrial footing.

In other words, the development potential of different regions varies. Our findings show that particularly economies of scale allow the recovery of significant material amounts from waste streams. Cities

are better in attracting companies developing innovative technologies and designs, and providing the necessary access to resources, knowledge, collaborations and a viable demand for circular products and services. These are essential factors for circular business models. Industrial regions might find opportunities to flourish by connecting their diverse industrial ecosystem to form an industrial symbiosis, by using their proximity to manufacturing for remanufacture or when in decline by providing old industrial spaces and facilities for the emerging secondary raw material markets. Opportunities to revive economies of rural areas arise from both the production of organic food and the provision of sustainable construction materials and energy – this, for instance, enables the replacement of fossil-based products with biobased alternatives.

Regions have already developed comprehensive strategies and are driving initiatives forward. New links among and between recovery operators and companies have been found. New indicators have been developed. Specialised businesses have emerged. Companies are analysing their flows for greater material and cost efficiency and participating in new innovation clusters.

Policy has a vital role in providing the right framework conditions – it must, for example, set targets, connect innovation centres with remanufacturers, establish bodies to facilitate exchange, and get the public on board. These are important dimensions for a deeper vertical and horizontal integration of material flows in regional economies. In this manner, the growth of the Circular Economy will certainly continue to increase even more dynamically in the years to come, while simultaneously ensuring the competitiveness of regions and protecting the environment. —



See also the study on behalf of EPSON at:
www.epson.eu/circular-economy
or scan the QR code.



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Richard Simpson works on topics related to the Circular and Green Economy at Prognos AG. He focuses on quantitative data analysis. With his work, he aims to demonstrate the overlap of economic and ecological objectives.

Circular Economy: a future strategy for industrial policy in Europe



The paradigm shift by the Circular Economy offers enormous future potential for Germany and Europe. Provided that we make it the foundation of our future strategy for industrial policy.

Around 62 percent of the approximately 3,000 Circular Economy initiatives are, according to the Circular Economy Club, based in Europe. North America falls short considerably with only 12 percent, followed by Latin America (11 percent), Asia (10 percent) and Africa (6 percent). The potential for Europe is, therefore, immense – however, it is exploited to an insufficient extent. Especially Germany is not utilising the arising opportunities. German companies and regions place far too much emphasis on adhering to threshold values and managing energy efficiency. The Circular Economy and its underlying drivers must not be ignored (any longer) by the German and European economies – even though, as our analyses show, global technology leadership has been gained in some market segments. The transition from a product to a service-oriented economy requires, in part, entirely new business models, especially in the important automotive, electronics and chemical industries.

A successful Circular Economy must be considered comprehensively. The industry and a modern industrial policy are cast into a key role, which they must fill to a greater extent than they have thus far. The following three areas of action should be given **priority**:

1. European and national policy must significantly strengthen interdisciplinary research approaches on **systemic innovation**, which takes into consideration economic and social aspects.
2. **Innovative, multi-digital, circular business models** predicated on closed cycles and resource efficiency must be promoted. They have an immediate and sustainable impact on the economic system and accelerate the adjustment of necessary frameworks.
3. Products are generally created for international markets. Especially European policy is thus demanded to set incentives and regulatory frameworks for a smarter and more **circularity-oriented product design**. Ultimately, recycling can only be as successful as is allowed by a product's design, chosen materials and production method.

Incentives are additionally provided by innovation platforms, where key actors can communicate and harness synergies, with pilot and demonstration plants for – current status – non-economically recyclable material flows or by R&D-programmes for material and product development. In the long run, only a policy mix like this can create the necessary frameworks for a successful Circular Economy.

The Circular Economy Package, adopted by the European Commission in 2015, is already supporting the development of a Circular Economy in Europe – and it shines light on other new technologies; the internet of things, intelligent chemicals, inter-linked driving, next-generation energy technologies and environmental services are benefitting from the new trend. Moreover, the inclusion of the Circular Economy in the funding catalogue of the European Structural and Investment Funds for the programme period 2021-2027 creates further new opportunities for European regions. The window of opportunity is still open for Europe, but the global competition is already in full progress. _



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Dr. Jan-Philipp Kramer, as Head of Prognos' Brussels office, always has the future of Europe in sight. He sees the Circular Economy as a strategic course for the EU in the global competition.

Selected projects

Achieving climate protection goals for transport: a show of strength

If Germany wants to achieve its climate protection goals in the transport sector a huge effort will be necessary in terms of politics, society, and the economy. The Federal Government had set itself the goal of reducing greenhouse gas emissions by 80–85 percent by 2050 as compared with levels in 1990. This objective was made more concrete and verifiable through the use of sectoral and temporal intermediate goals. For the transport sector this translates as: minus 40 percent by the year 2030. The analysis, "Klimapfade Verkehr 2030", conducted by Prognos and BCG on behalf of the BDI emphasises: it will take all technical know-how at maximum capacity, in order to reach the target for the transport sector on time. Compared to a business-as-usual development, this means an additional investment of between 243 and 256 billion euros.

On behalf of:



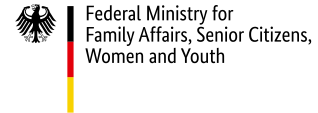
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Early-years educator shortage

By the year 2025, the early-years educators shortage across Germany will have increased to around 191,000. But the skilled labour gap in early childhood education can be closed. This is what a Prognos study for the Federal Ministry of Family Affairs has shown. The combination of three different strategic approaches, in particular, could help: there is particularly high potential in offering payment during the training period, better working conditions, and the recognition of professional specialization within the occupational field through higher pay groups.

On behalf of:



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Worthwhile: rail link from Freiburg to Colmar

Since the Rhine bridge between the French Neuf Brisach and Breisach was destroyed in 1945 so was the rail link between Colmar and Freiburg. However, a reconstruction could be worthwhile: between 3,500 and 5,900 passengers daily could travel on a re-installed rail link between Colmar and Freiburg. As a consequence, road traffic could be relieved of 11,000 to 16,000 vehicle kilometres per day. This is demonstrated by a Prognos and Setec feasibility study conducted on behalf of the Direction Régionale de l'Environnement, de l'Aménagement et du Logement Grand Est and the State of Baden-Wuerttemberg, as part of the Interreg programme.

On behalf of:

DREAL Grand Est
Land Baden-Württemberg
A study under the Interreg Programm

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The might of superstars

The growing corporate concentration, i.e. the market power of highly productive superstar companies, leads to lower wages. This at least applies to the salary development of employees in the service industry. Overall, between 2008 and 2016 employees missed out on possible wage increases amounting to 11 billion euros. A major reason: many superstar companies produce goods and services using digital technologies and with comparatively few employees. They grow rapidly, while the wage share decreases. This correlation can be statistically proven for the service industries, but not for the industrial sector.

On behalf of:

BertelsmannStiftung

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The workplace of the future: Digital transition in the European Chemical Sector

The digital transition in the chemical industry is not only a technological one but is also a cultural and social transformation. This is made clear by the recent study "Digital transformation in the workplace of the European Chemicals Sector", that was carried out in the context of a social partnership project of the employers' association ECEG and trade union federation industriAll European Trade Union. The Europe-wide online questionnaire, conducted in six languages, shows how the technological transformation changes the work environment and what is required of employees. Advanced digital skills and complex transversal skills such as critical, innovative thinking or process knowledge are becoming increasingly important for employment in this industry. Large companies overcome these hurdles far more successfully than SMEs, who suffer from a corresponding lack in training and development opportunities. Involving and supporting employees is probably the greatest challenge caused by digital transformation in the chemical industry.

On behalf of:



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The country needs professionally qualified people

In the year 2025, throughout Germany, there could be a shortage up to 2.9 million employed persons with a vocational qualification – even though most industries will employ fewer people than today. This has been revealed by the results of the Prognos study "Arbeitslandschaft 2025" (Work landscape 2025) conducted on behalf of the vbw – Vereinigung der Bayerischen Wirtschaft. The number of people between the age of 15 and 47 will decrease to 47 million in 2045. If the aspirations of young Germans do not change, the supply of workers with a higher education degree will continue to increase, while in the future fewer and fewer professionally qualified people will be available to the job market.

On behalf of:



Die bayerische
Wirtschaft

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New in summer 2019

The Prognos Zukunftsatlas

Demography, labour market, competition and innovation, prosperity and the social situation – these are the fundamental factors used to regularly evaluate the ranking of Germany's 402 districts and independent cities in the Prognos Zukunftsatlas. A total of 29 macro- and socio-economic indicators are used by Prognos experts for the highly-regarded ranking. In **2019 the Zukunftsatlas** continues to provide valuable indications for cities and districts, business promoters, chambers of industry and commerce, investors and various regional actors about where risks are to be taken and where actions are needed.

More at: www.prognos.com/zukunftsatlas/

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Presentation of the 7th Monitoring of the Energy Transition for the vbw München



Intercultural exchange: Korean experts from economy and politics visiting the Prognos AG office in Berlin



Input and discussion: Prognos as a guest at the Berlin waste management conference



Prognos presents the BDI study "Klimapfade für Deutschland" (climate paths for Germany) at the "Expertise bündeln, Politik gestalten – Energiewende jetzt!" event.



Presentation of the "Arbeitslandschaft 2025" (Work Landscape 2025) study for the vbw München



Presentation of the Germany Report at the Prognos Lunch Debate in Brussels.



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