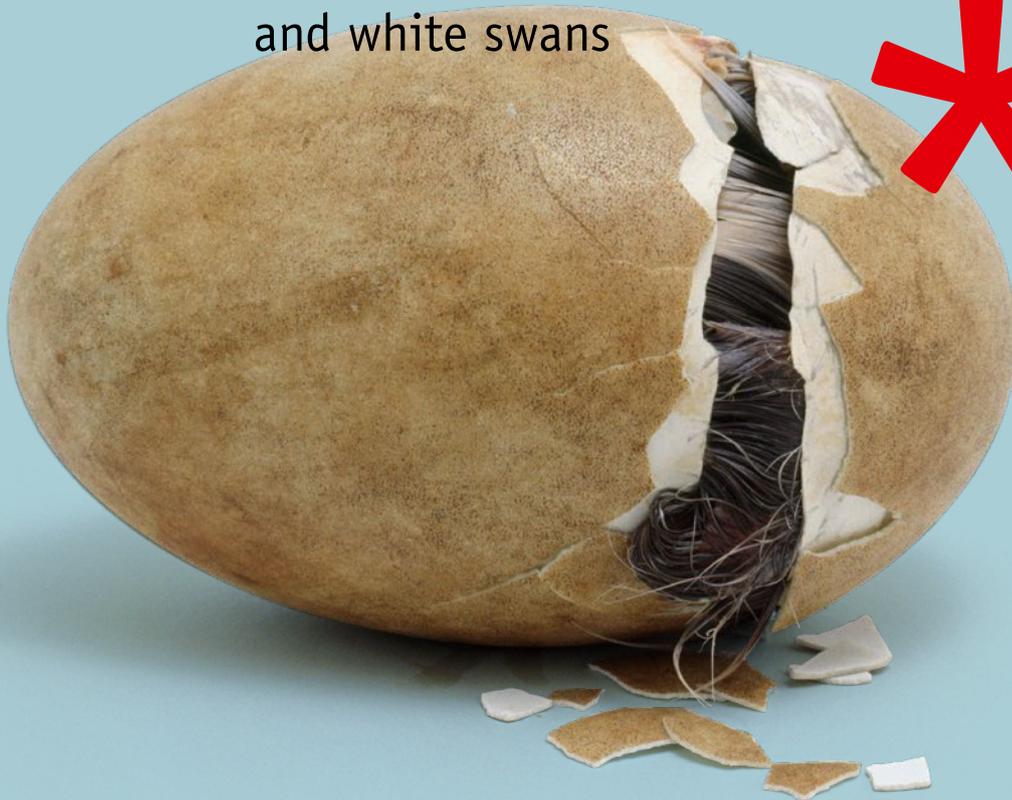


# *trendletter*

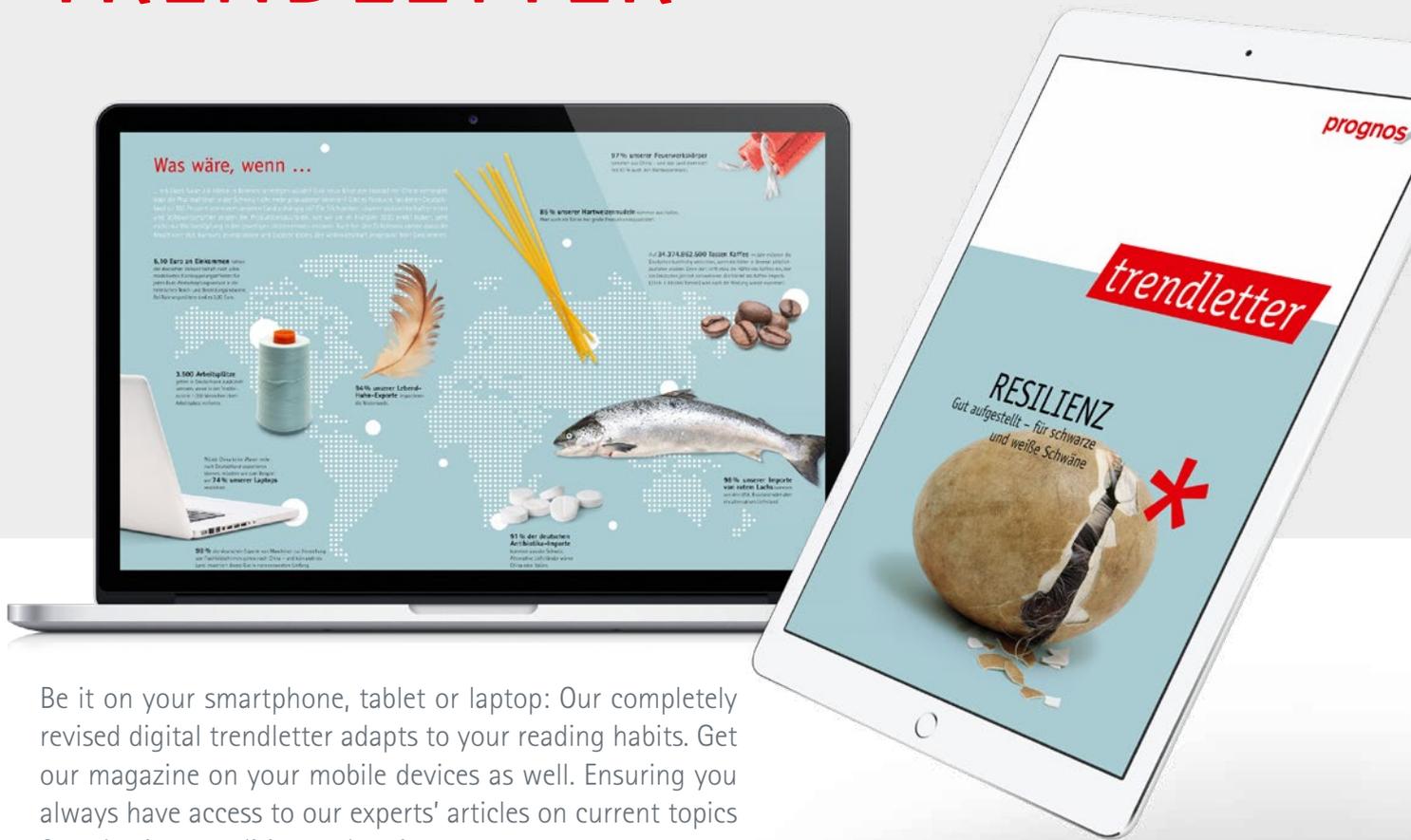
## RESILIENCE

Well prepared – for black  
and white swans



\* Black swan (Cygnus atratus)

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# What does not kill me ...



... makes me stronger, said Friedrich Nietzsche. Sounds good. But I have always been sceptical of this sentence. I have certainly never heard such words from people who let crises pearl off themselves in near Gore-Tex like manner. Instead, many people quickly ask themselves what needs to be done. Seeing times as a challenge and finding a good approach – this impresses me more than mere cheap wisdom.

This ability to react wisely when the going gets tough, or, as the experts call it, being resilient, is not miraculously innate. Resilience is no coincidence. We now know that those who are resilient are that way because they have become so.

Resilience, according to the dictionary, is derived from the Latin *resilire* = to jump back. In materials physics, this actually refers to the ability of elastic materials to return to their original shape after deformation. In recent years, the term has made a name for itself in psychology, sociology and economics. Today, the term "resilient" is not only used to describe people who survive crises largely unscathed, but also to describe organisations, systems or infrastructures that can cope with unusual events.

The corona crisis has taught us as a society a lot. It has revealed how vulnerable we are and how badly prepared we are for such situations. Does it make us stronger? Yes. But not if we simply somehow get through it and afterwards talk about post-traumatic growth and quote Nietzsche. We have to draw the necessary conclusions. Resilience is a result. It can be developed and trained.

This does not mean preventing all conceivable threatening scenarios. Rather, we must empower society, the economy and politics to better tackle unforeseen challenges in the future. We can only do this if we put ourselves in a position to take the right action at the right time before, during and after a crisis.

What does this require? Above all: opportunities. For example, if a company equips its employees with notebooks so that they are able to work on the move or at home, it is prepared for the situation where

some of its staff cannot work on site – regardless of whether this is due to a pandemic, a flood or a system failure.

It depends on our ability to look ahead, prepare and take preventive measures to be able to react quickly and flexibly to exceptional events. If an emergency occurs, we must protect ourselves and mitigate the consequences. Once it is over, we have to get things moving again. Then we must learn from the crisis and apply what we have learned. And then it starts all over again.

The next crisis is sure to come. It is time for a new kind of resilience. I wish you an exciting read and look forward to hearing from you.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Christian Böllhoff'.

Christian Böllhoff  
christian.boellhoff@prognos.com

A good idea

# Rethinking Business Model D

The international division of labour is on the retreat worldwide – and has been for ten years. There is no trace left of globalisation as we have known it for decades. How are German exporters, accustomed to success, reacting and what options are emerging for the future? What could the new "Business Model D" look like?

## Companies must develop specific approaches for three areas:

(1) Nigeria instead of just China: new geographical markets cannot replace the old growth drivers. But those who want to continue to grow in exports, must look more closely at Southeast Asia, Africa and South America. (2) Digital and green: Companies that at the very least add hybrid solutions to their product range will find it easier to grow. Moreover, at present, German companies are frequently global market leaders in environmental technology. This market will grow strongly worldwide; we have excellent prospects in this regard. (3) Home sweet home: the domestic market offers strong sales potential in many areas: construction and infrastructure are receiving a post-corona boost, the accelerated structural change is initiating a new investment cycle for many companies in the medium term, and consumer demand will be the driver of growth in Germany in the years ahead.

New opportunities for the old export world champion abound. So: rethink – act. \_

**The stagnation of globalisation and the need for new business models is the subject of a study conducted by Prognos AG in cooperation with BayernLB.**

<https://geschaeftsmodell-deutschland.prognos.com/>



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# CONTENTS

<b>A good idea</b> Rethink Business Model D.	2
<b>Foresighted resilience</b> How foresight processes and resilience can be shaped together.	4
<b>Cybersecurity is a matter of design</b> Interview with Manuel Atug from the Chaos Computer Club	6
<b>Sustainable energy systems</b> Autonomous and decentralised	8
<b>A good idea</b> Decisive: sustainable supply chains	10
<b>Pre-products on world tour</b> Near sourcing changes the logistics sector.	11
<b>just</b> What if...	12
<b>Made in Europe</b> The corona pandemic has the reinforced the call for a regional focus of our production networks.	14
<b>Regional resilience</b> Regions are hit differently by economic crises.	16
<b>Crisis resistance through continuing education</b> Those who want to improve their qualifications and competence are more mobile and usually less vulnerable.	17
<b>Crisis management reloaded</b> Climate crisis and pandemic.	18
<b>Lab report</b> Making smart decisions visible.	19
<b>Good planning is essential</b> Short-term personnel planning represents system-relevant industries on shaky ground.	20
<b>Short-time work: a remedy with side effects</b> Can instruments such as short-time work contribute long-term to economic resilience?	21
<b>Viewpoint</b> Market and State – resilience needs both!	22
<b>Selected projects</b>	23



# Foresighted resilience

Foresight processes are open-ended, use creative methods, cross boundaries and think far into the future. On the contrary, the idea of resilience, which often reacts and aims at strengthening the ability of structures to organise themselves in a changing environment, is quite different. Prognos Partner Michael Astor describes how foresight and resilience can be considered as one and the same.

**Resilience is the watchword of current policy-making.** A cursory review of the programme of the German EU Council Presidency with regard to the keyword "resilience" reveals that we ought to be making our energy, health, defence and economic systems more resilient and making regions, supply chains, and the information society crisis-proof. Managers of companies and value chains are also increasingly striving for organisational resilience. And the popularity of the

term does not exclude the individual level: The Austrian Ministry of Health, for example, offers a self-assessment and presents guidelines for resilience training, for identifying "persons at risk" and recommends taking resilience into account in schools and the workplace.

In its underlying physical context, the resilience of materials means that they can react flexibly to environmental influences, deform if necessary and then return to their original shape. They are therefore dynamic, resistant and adaptable, yet robust, and possess a recollection for the status quo.

In view of a **foresight perspective**, the question arises how a process-oriented, open-ended, creative, inter- and transdisciplinary form of policy-making – which is what foresight is – can be reconciled with the idea of resilience. Foresight dares to cross boundaries, to outline future worlds that are improbable from today's point of view but certainly conceivable, to transcend systematic boundaries and thereby opening up new spaces for thought. This allows for positive utopias



or visionary scenarios for the future, but also includes less desirable scenarios, which, nevertheless, achieve exactly what foresight wants to accomplish: to free itself from path dependencies and, where possible, integrate what is contradictory from today's perspective. This approach is intended to deliberately challenge common rationales for action and decision-making parameters.

**At first glance, the concept of resilience does not dare to do any of the above:** it remains rooted in current thinking and values, respects systemic boundaries, perceives the improbable only as a possible crisis event and consistently adopts a reactive mode. On the one hand, this mode can be oriented towards anticipating future crises in order to develop suitable (counter-) strategies and alternatives for action. On the other hand, this mode allows for changes, but without questioning the structures in society and the economy that are causing the crisis. Thereby, resilience orients itself towards the model of the self-organisation of systems.

Even though the term is currently experiencing an upswing, it is nevertheless sometimes vehemently criticised, as evidenced by the discussion at the aid and human rights organisation Medico International, which focuses on the following points:

- Disregarding a positive vision of the future – we are exclusively concerned with the handling of crises and disasters in a form of "resilience engineering", which in turn shapes the way we perceive the world. The intrusion of terror, disease, trade barriers or shortages into daily life forms the starting point of our thinking.
- The limited scope of our formative claim – we develop strategies to find answers to the possible consequences of climate change yet abandon the idea of (still) being able to influence it ourselves.
- Depoliticised subjects – we accept the framework conditions, organise ourselves and focus on compensating for the negative or undesirable consequences of external mechanisms of action. Here, foresight can create a variety of negative scenarios and disruptive events that form the starting point for resilient strategies, thus acting as a catalyst that can continuously feed reflections on vulnerability, crisis resistance and resilience with fresh ideas. What can concepts of resilience learn from foresight beyond the identification of disruptive events?

- First of all, to not simply accept structures and systemic boundaries as a narrowly defined framework for action, but to include the possibility of their modification and adaptation in one's considerations. It should be about more than merely making systems adaptable.

- Hereby, the focus should not only be on what is worth preserving in view of current or potential crisis events, but also on what is aspired.

- Last but not least, resilience needs an open-ended discourse that remains receptive to radical innovations. Do we strive to make the health insurance system resilient, or do we want to achieve optimal patient care in the health sector that is "robust" and "durable"? Consequently, the approaches can learn from each other in terms of focusing questions on influenceable separation. This involves both understanding the connections within systems as well as identifying that which can advance and shape us. With the concept of "multi-resilience", an approach has been developed that is geared towards the integration of the different levels of a system, thus taking into account the increasing complexity of the task at hand.

**One advantage of both approaches is that they provide space for the mobilisation of actors at various levels of action.** The pursuit of self-organisation opens paths to participation. This applies to grassroots movements as well as to supranational policies. The specific solution and implementation perspective that inevitably arises in the resiliency debate and has resulted in corresponding excesses in the advisory literature is manifested in the concept of resilience engineering.

Finally, the discussions involving foresight and resilience offer an important source for innovation. Consequently, we should combine the considerations about resilience with a foresight perspective. Solutions for the questions of the future will not be found in the current repertoire. For this, we not only need new technologies, but also modified social practices, new decision-making processes at different levels of governance and, last but not least, the willingness to redefine the boundaries of insight and responsibility. \_



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Michael Astor, Partner: "As a sociologist, social phenomena and new political concepts always spark my interest. In the context of our work for the Office for the Future within the BMBF Foresight Process, terms like 'resilience' invite critical discourse."

# Cybersecurity is a matter of design

For a long time, cybersecurity was only an unpopular cost item. But attacks on digital systems have long since become reality – from data theft to sabotage to cyber war. What can be done about it? We talked about this with Manuel Atug, cyber security expert at the Chaos Computer Club.

**Cyberattacks on utilities and companies are becoming more and more common. Digital systems are sabotaged; data is stolen – is it not time to fundamentally rethink our digital systems? We** have all the tools we need, we just need to use them and make our systems resilient. A complete redesign would be neither efficient nor sensible. It would be like throwing something away and just buying it again. What we really need is cyber-resilience, i.e. robustness against outages and attacks and a certain tolerance or responsiveness in dealing with such attacks. Especially against the infiltration of security, privacy and encryption by governments, secret services and the military. The infiltration has a technical dimension – redundancy of

systems, flexibility in networking – and a dimension relating to the organization and social handling of these issues. In addition, an educational policy is needed that addresses cyber security and creates a responsible awareness in dealing with digital media and platforms.

**What do you think a resilient system looks like?** When critical infrastructure fails, it only hurts if the failure is long-lasting or nation-wide. But if the system has a certain robustness, so that the outage is short, does not have a strong impact and does not spread widely, then there can be ten outages a day without a problem. We need security design principles to be considered during the development of the system. From the outset, security must be integrated both technically and in the operational process and not simply added in the aftermath.

**How can we ensure that security is already considered during the development phase?** Ideally, the customers themselves should take care of this: consumers should raise awareness if something does not suit them. For companies, a combination of liability and incentives would be a solution and, of course, standards that are independently verified. The framework must be created by legislation so that companies operate under the same conditions. Basically, resilience does not come from achieving a maximum degree of efficiency – though many companies do it this way – but from buffers and redundancies. In companies, this market-driven approach may work. But is it also realistic for municipalities or in public administration? Authorities, municipalities and the like could join forces and set up an open source repository – in other words, a place that is accessible to others where the core data for their software developments can be accessed. All essential information of a system can be stored there and supplemented by useful community management. In this way, developments can be shared and do not have to be reinvented again and again. Sharing is caring. If you also consider security and set up a community management system that addresses security issues, you already have a good foundation in place. However, community management needs to obtain feedback and to pursue ongoing communication with the people.

**" Security is not a project, but an ongoing process."**

**Nevertheless, there will probably always be weak points – especially if systems cannot be rebuilt.** Cybersecurity is predominantly a social issue and less a technical one. If you really integrate and embody security, then you can live with the weak points, take care of them, fix them and learn from feedback. What is relevant is whether I comply with the requirements for the processes. Security is not a project, but an ongoing process. It is not enough to organise training for employees once a year. The German government could, for example, start with education policy to teach the population basic security



### Manuel Atug

Manuel Atug, alias HonkHase, is a member of the Chaos Computer Club e. V. and Senior Manager at HiSolutions AG in Bonn. The computer scientist and engineer holds a Master of Science in Applied IT Security and has been working in information security for over 23 years. His main focus is on critical infrastructures, hack backs and ethical issues. He spoke with Prognos director Dr. Almut Kirchner as an expert of the Chaos Computer Club. Atug is the founder and spokesman of the independent Critical Infrastructure Working Group (AG KRITIS).



know-how and how to use the technology so that everyone understands what effects their actions might have or how they should deal with them. But we are still a long way away from achieving this.

**In Estonia, regarding health data, the system seems to be highly secure, where everything is digitalised, but access to the data is limited and every person who has access is tracked. This leads to a high level of trust.** This approach is very nice. There is obviously an IAM – Identity and Access Management – that controls who can and cannot access the data. And there is a traceable and complete logging of access. This makes highly sensitive data more secure not only against misuse, but also against attacks. But the first question should always be: do I have to introduce digitisation at all?

**... so we shouldn't digitise?** Germany has introduced a telematics infrastructure, i.e. a TI infrastructure (TI), in the healthcare sector. Until now, physicians in private practices or physiotherapists have entered all data offline into a software program and transferred it to the responsible authorities once a quarter. With the TI construct, they are now permanently online and the data flows all the time. This is digitalisation, but it is completely superfluous from the point of view of doctors and physiotherapists. It also makes no sense from a security perspective and brings no added value. There are many good things in this TI construct, but also many bad things. It almost invites data retrieval. It is just as important to protect health data as religious data and data on sexual orientation. They are the last crown jewels. According to the EU data protection regulation, they must be especially protected. If we go after them ...? What would be left?

**What would we have to do to solve these problems?** Less is more. Data that is not collected or kept permanently cannot be misused. And if it is collected, you have to have very strict access control and every access has to be tracked. In other words, data processing, yes.

Retaining data, no. Then the inclination to misuse the data cannot come up at all. As the German saying goes, where there is food, you will also find pigs.

**"** Where there is food, you will also find pigs."**"**

**Should the protection of data be anchored in the German constitution just like the general right of personality is?** According to the Federal Data Protection Act, the data is already subject to data protection because it is personal data and therefore individual-related. With this legal basis, Germany is already doing many things right – this is also being followed very closely and increasingly recognised by other countries. It is less crucial to discuss the data than to move on to understanding, communicating and fulfilling the responsibility one has. This is the point that has not yet been sufficiently addressed. Data protection must also be standardised at the EU level. If I have different benchmarks, someone will take the lowest one and try to bend it to their own advantage. Connectivity and globalisation demand that standards be synchronised, but the different interests and preferences often make the task complicated and difficult.

**In other words, completely analogous to social and environmental standards, which are different in different countries.** Right, absolutely! As you can see, I am very much focused on the "what you don't keep, you don't have to protect" principle, which is an important aspect. You have to sensibly implement what you have and strengthen the sense of responsibility of each individual in the overall system. Everyone should look at themselves and see if something can be improved. If everyone does a little, then we have a huge boost that does a lot more than if I appoint a few experts to suddenly provide security. That is where I would like to go. \_



# Sustainable energy systems – autonomous and decentralised

Modern societies are interconnected and particularly dependent on central infrastructures such as the energy system. New – especially digital – technologies increase the complexity and thus also the vulnerability of the system. The current energy transition shows possible solutions.

On a morning in December it is unusually dark in the city. The apartment is cold. There is no morning coffee – the coffee machines aren't working at home or in the cafes. In short: a power outage affecting everyday life and slowing down activities. Doing without morning coffee is bearable. However, if a power failure lasts for a long time and extends over large parts of a city or region, all areas of society could be directly affected: heating, drinking water and wastewater pumps fail in buildings, lifts come to a standstill, electrical appliances no longer function, communication and information transfer as well as traffic control systems collapse. Electronic payment and the purchasing of goods is also no longer possible. Ports and airports can only handle current operations, after which all air and sea traffic must be suspended. Fuel can no longer be pumped at filling stations, and supply chains are affected.

A disruption of the energy system – in particular the interruption of the power supply – can result in a cascade of cross-regional malfunctions

and disruptions in other infrastructures. Against this background, the vulnerability of (digitally) networked infrastructures is discussed. However, risk analysis has so far largely focused on the aspects of technical robustness or operational safety and intervention prevention as well as the security of infrastructures. The energy system is secured by redundant systems and appropriate control processes (redundancy principle).

With the redundancy principle applied so far, new challenges for the energy system are emerging: with the energy transition and the spread of new energy technologies, for example solar and wind or CHP plants, energy production is becoming more decentralised. In addition, there is sector coupling, in which a large number of new consumers in the heating and transport sector are integrated into the energy system. In short: the energy system is becoming more complex. The current connection, system structure and control of the energy system will be called into question if the redundancy principle is to be maintained and the energy supply maintained at the current security level. In order to cope with the growing complexity, the digitalisation of the energy system is being increasingly relied upon. Digitalisation provides a remedy – yet at the same time, due to its strong interconnectivity, creates new kinds of vulnerabilities.

The COVID-19 pandemic has also highlighted the extent to which the human factor can contribute to the vulnerability of energy systems, particularly at regional or local level, and how the operation of energy production and distribution can depend on the people who work there.



Concrete lessons can be learned from these challenges about the future design of resilient systems, especially after the "black swan" shock of the corona crisis. And although the energy transition has increased the complexity of the energy system, its approaches to making it more flexible, strengthening local networks and increasingly decentralised organisation set the stage for improved resilience of the energy system as a whole. In general, the development can be understood as a departure from the traditional approach to robustness, i.e. from the principle of fail safety ("fail safe") to the principle of dealing with the breakdown of a system component or its failure without damage ("safe to fail"). In this context, digitisation and the associated decentralised intelligence are important elements to manage the increased complexity. The energy system must be able to react to (unforeseen) disturbances in a way that is as self-controlling as possible and thus maintain or regain its functionality. Digitalisation thus becomes an integral part of the energy system, which becomes more resilient due to its modularity and autonomous control capability.

Technological and organisational diversity also strengthen the system. The modularity and flexibility of the decentralised system increases its resilience through its redundancies. However, this requires feedback mechanisms and possibilities for the flexible coupling of different

sectors. This means that decentralised networks ("microgrids") with decentralized control and load distribution by prosumers, such as photovoltaics for individual consumption and grid feed-in, are gaining in importance. An energy supply based on local contexts, such as neighbourhoods, has advantages over large-scale structures. In addition, the importance of buffers and storage facilities is increasing at different spatial and temporal scales – from the household via local grids to the regional level, such as cavern storage facilities.

A look at the classic organisational form of municipal utilities and their cross-sectoral approach can be helpful. The integration of electricity, gas, heat and water reduces dependencies through sector coupling and specific so-called power-to-x solutions, increases (local) flexibility and enables the (simple) integration of storage capacities. With intelligent control and coupling, new technological and economic potentials can be developed. It should be remembered that reducing consumption and increasing efficiency reduces dependencies and thus additionally increases the resilience of the energy system. An energy system that is "safe to fail" in this way also ensures morning coffee and a fresh start to the day. \_



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Dr. Stephan Heinrich is a Senior Project Manager for climate and energy policy. As an evaluation expert he has been dealing with security issues for more than 20 years. As co-author of the study "Vulnerability of Modern Societies", he provided a template for the literary implementation of the "Blackout".

A good idea

# Decisive: Sustainable Supply Chains

According to the Carbon Disclosure Project, 215 of the world's 500 largest companies estimate the financial risks of climate damage will be at one trillion US dollars by 2024. The World Economic Forum has also repeatedly identified climate change as the greatest risk to the global economy. Particularly where supply chains are interrupted by extreme weather events, companies can quickly be faced with costs amounting to millions. By making their supply chains sustainable, companies can increase their resilience to climate change and thus gain an important competitive advantage.

This requires in-depth supply chain analyses, the collection of detailed geographical information on suppliers' production sites, regular supplier surveys, for example on how to deal with potential climate risks, and big-data analyses for external communication. Such a multi-stage, dedicated approach is a key success factor for the early identification of climate-related risks. Only in this way can companies take the necessary adaptation measures, such as diversifying suppliers or increasing inventories, and design sustainable, future-proof supply chains. \_



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# Pre-products on world tour

The COVID 19 pandemic has made us all painfully aware of how vulnerable our modern, globally interconnected economies are. In automotive plants, production lines came to a standstill because global supply chains were no longer functioning. There were bottlenecks in protective clothing and pharmaceuticals because these are manufactured in the Far East and the normally well-functioning and sophisticated logistics could no longer guarantee just-in-time delivery. What consequences does this have for logistics?

Modern cars consist of up to 10,000 parts that are produced all over the world and delivered from across the globe. Large European logistics companies have set up hubs in the Far East and in the countries of the former Soviet Union to control transport chains. This ensures that every component – no matter where it comes from – is delivered in sequence to the assembly line.

This is possible because transport costs practically nothing, accounting for at most one to two percent of the product price. In other words, for a car costing 25,000 Euro, this is a maximum of 500 Euro. Some special equipment costs considerably more. That is why globalisation has led to globally networked transport chains that make the end-product cheaper, but also make the transport chains more susceptible to faults of all kinds.

The pandemic has called global transport chains into question. But is the obvious consequence, which is to produce in our own country again and bid farewell to the extended workbenches all over the world, the right strategy for the European industry and the logistics industry serving it?

Even before corona, many trading companies had brought production back closer to home. It is simply easier to control quality standards



in South-eastern Europe than in the Far East. For example, the textile industry is increasingly producing in South-eastern Europe and Turkey again, with the result that textiles are no longer coming to Europe in containers via the seaports but are transported overland by truck. This in turn means a complete reorganisation of the transport chains for logistic companies.

If preliminary products are again produced closer to (Western) European production sites, fluctuations in demand can be balanced out within a few days, for example if the required parts must be picked up in Slovenia instead of in Wuhan. The straight driving time between Wolfsburg and Ljubljana is around 14 hours. A container from Wuhan takes two weeks by rail and about six weeks by sea.

So, can all problems be solved by near sourcing? By no means! The EU, and in particular Germany, is an export economy. If China and other Asian countries were to come up with the idea of near sourcing as well, large sales markets would evaporate. Right now, there are first reports that the demand for German products in China is increasing again, and this will help German industry to get out of the corona crisis faster. But we also profit from world trade in imports. Many goods that we use in everyday life can be produced more cheaply elsewhere. This creates jobs at the production locations and cheap goods and preliminary products here in (Western) Europe. Despite such supposed win-win situations, the experience from the corona crisis should make us more cautious. There is a strategic oil reserve. Why is there not a strategic reserve for other products? However, we must be aware that near sourcing will make products more expensive due to higher wage levels in Europe and higher storage costs, but it will also make supply chains more secure. —



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Hans-Paul Kienzler, Head of Mobility & Transport, has been involved in freight traffic and logistics for more than 30 years.

# What if ...

... a black swan paralysed the ports of Bremen? Or a new crisis prevented trade with China or pharmaceutical companies were no longer able to produce in Switzerland? Are there products for which Germany is 100 percent dependent on another country? The samples of our economists show that in the event of production downtimes, such as the one we experienced in spring 2020, not only is value added lost in the respective companies, but the machines at the suppliers also come to a standstill. Consumption, investments, and exports suffer and the economy as a whole lacks income.

The German economy is down **5.10 euros in income** for every euro of value added loss in the domestic textile and clothing industry according to all the modelled feedback effects. For food the figure is 3.80 euros.

An additional **3,500 jobs** will be lost in Germany if 1,000 people in the textile industry lose their jobs.

If China were no longer able to export goods to Germany, for example, we would have to do without **74% of our laptops.**

**98%** of German exports of machines for the production of flat screens go to China, and no other country imports this technology on any significant scale.

**94 % of our exports of living chickens** are imported by the Netherlands.



**97% of our fireworks** come from China – and the country also dominates the world export market with 87%.



**85% of our durum wheat pasta** come from Italy but Turkey also has large production capacities.



Germans would have to do without **34,374,862,500 cups of coffee** a year at short notice if the ports in Bremen suddenly were out of action. This is because about half of the coffee consumed by Germans each year arrives there. A quarter of coffee imports (2019: 1,100,000 tons) are re-exported after roasting.<sup>1</sup>



**98% of our imports of red salmon** come from the USA. But Russia would be an alternative supplier country.

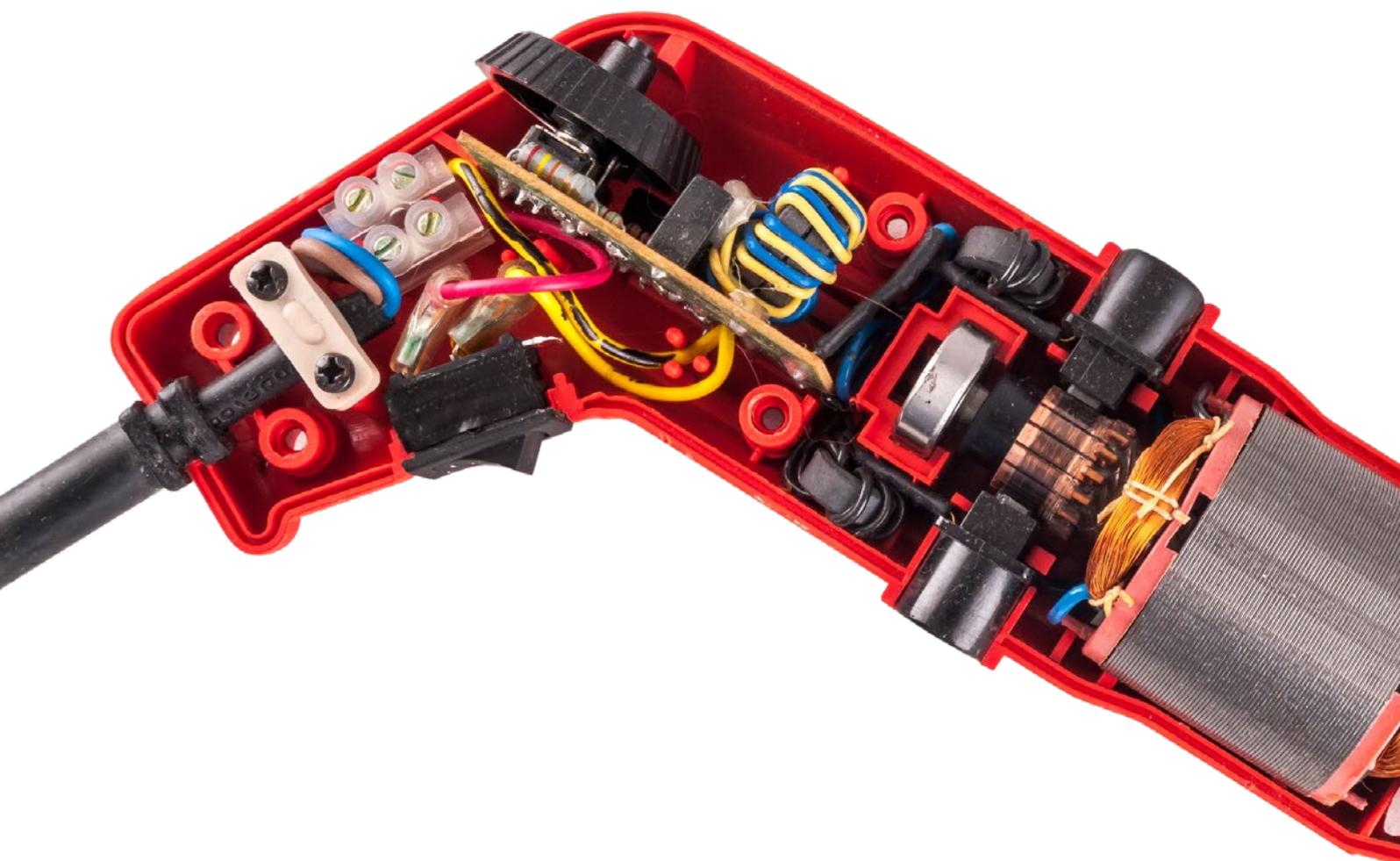
**91% of German antibiotics imports** come from Switzerland. Alternative supplier countries would be China or Italy.

Source: Prognos

<sup>1</sup> Deutscher Kaffeeverband, Wirtschaftsförderung Bremen GmbH

# Made in Europe

Many European nations are DIY-enthusiasts. Whether assembling furniture, renovating your own home or beautifying the garden – it is very often the first step to go to the DIY store to buy materials or tools. However, the production of a drill or other machines is today more dependent on supplies from abroad than some people might think. Although the drill itself is manufactured in Germany, some components are already widely travelled and dependent on suppliers.



The possibility of re-imports is characteristic of a global production network. In the production network of the drill, for example, it is possible that the housing is manufactured in Asia with the help of plastic granules from Germany. The value of the plastic granulate was thus exported to Asia, where it was further processed before being re-imported as a finished product.

Similar production networks to those for a drill can be traced for many products. The more complex the products, the more extensive and branched the networks are. Often the individual components are transported halfway around the globe. The international division of labour makes economic sense and is efficient, also because the

ecological costs of transport are not factored in. At every stage of production, a country has an advantage, either technologically, because machines and know-how are available, or cost-wise, for example because the labour factor is comparatively cheap.

However, the corona pandemic has highlighted the vulnerability of the system of the international division of labour, which is trimmed for efficiency. Since then, calls for a more regional focus, especially of systemically relevant production networks, have become louder. The resilience of such regional networks is strengthened by shorter supply routes, but also by a common cultural and economic background.

Whether and for which products this proposal will actually be pursued as a consequence of the Corona pandemic is not yet foreseeable. However, Prognos' calculations have already shown a stronger European orientation towards production networks of German companies in recent years – and at least in part higher resilience is an important goal. There are plenty of reasons for this:

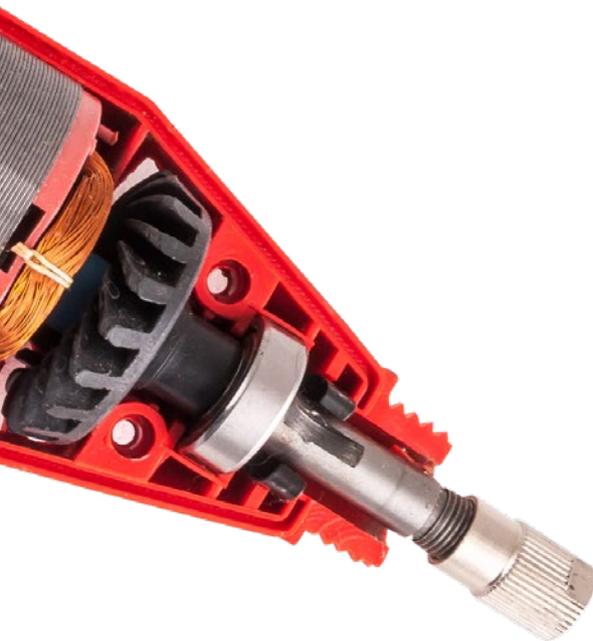
- Conflicts such as the trade dispute between the United States and China. If risks for global or regional conflicts increase, it will become increasingly unattractive to outsource certain important production processes for efficiency reasons to countries and regions where there is a risk that these production steps will fail.
- The time factor. Just-in-time production, as practiced in many industrial companies, depends on there being no delays in delivery. This is easier to prevent in a regional production network than in a global network.
- The increased use of digital technology such as the use of industrial robots. These are levelling out cost differences in production between regions; labour costs are becoming less and less important as workers in formerly labour-intensive processes are replaced by robots. Supply routes can thus be drastically reduced, and production stages can be combined.
- Pressure on companies to comply with social or ecological standards along the production chain. For example, the control of the textile industry by policy makers and consumers has increased in some cases in recent years. The ecological footprint of production is also increasingly coming into focus.

But regionalisation does not always make sense for a company or necessarily promote its resilience.

- A lack of diversification by focusing on European suppliers excludes suppliers from other regions. This can make production processes more expensive or bring them to a complete standstill if alternative suppliers from other regions are not known or are not available at short notice.
- A regionalised (Europeanised) production network can also mean that a company's network can be severely affected by an environmental disaster or regional conflict.
- In addition, labour-intensive production processes can only be relocated to Europe in some cases with significant price increases. This is not feasible for companies if competitors fail to carry out such relocations, as otherwise competitiveness suffers.
- Raw materials from Africa or South America cannot suddenly be mined in Europe. Regionalisation therefore has its natural limits.

How production networks of individual companies and industries will be structured in the future cannot yet be said with certainty. In particular, greater use of digital products and processes in production and the increasing relevance of ecological issues for consumers are likely to lead to a stronger European orientation of many networks and to a shift of some industrial production processes back to Europe. However, as shown above, this does not necessarily improve resilience per se.

Policy is also vital if more regional production networks are to represent an attractive alternative. This should create suitable industrial policy framework conditions to enable the relocation of value-creating processes back to Europe – if this appears sensible from the perspective of the individual company. This includes, for example, designing requirements for the collection and processing of individual mobility and health data in such a way that data-driven business models are possible without calling into question the applicable European data protection standards. Companies themselves should pay attention to a flexible production structure so that they can react quickly to changing global conditions. —



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# Regions: strong and flexible like bamboo in the wind

In times of crisis, some European regions behave like bamboo in the wind: they are steadfast, resistant – yet flexible and therefore better able to cope with stormy conditions than others. The economic crisis caused by COVID-19 has had different regional impacts as well. What can we learn from the recent crisis for the time after Corona and beyond?

Resilience describes the ability of complex systems to cope with crises caused by external shocks. The structural factors influencing regional economic resilience, i.e. the ability of EU regions to resist, regenerate and adapt, are the subject of a 2019 study (European Commission, 2019). Based on the assumption that European regions differ both in terms of their level of economic development and their geographical location, various factors were examined for the region types "core Europe" and "periphery". The following factors prove to be fundamental for regional economic resilience:

- **Education and training:** investment in education and training is an essential basis for resilient economic development in both regional groups. Human capital creates the conditions for technical progress and productivity gains. In addition, a highly qualified workforce is often more adaptable and flexible.
- **Quality of public institutions:** high quality public services and public welfare generally increase economic resilience. A current look at Germany shows that there is still room for improvement, particularly in the education sector and in the digitisation of public administration.

- **Technological maturity of private households:** access to and active use of broadband internet increases resilience, particularly in peripheral regions. However, it is not only a good digital infrastructure that is essential; competent users of digital technologies are also of central importance for economic development, as can currently be observed in the crisis-related surge in digital communications.
- **Regional specialisation in high value-added sectors:** specialisation makes an important direct contribution to growth in core European regions after the crisis. Conversely, negative indirect effects can be seen in peripheral regions, i.e. in more value-added-intensive industries, more specialised neighbouring regions attract investment and labour to the detriment of less specialised regions.

What lessons can we draw from this for the post-corona period and for future external shocks? Firstly, the need for differentiated regional support is evident, even with new instruments such as the EU Recovery Fund. However, the effective planning and implementation of such instruments requires appropriate institutional quality at all levels, and there is room for improvement in all Member States. This is underscored by the debates on old municipal debts and a more digital administration. Secondly, the closure of schools due to the pandemic and the reduction of vocational training run the risk of triggering a spiral of disadvantage and de-qualification. In those regions, investment in human capital must at least be maintained and ideally increased. Finally, regions should further develop their strengths in research and innovation. Regional strategies for smart specialisation should serve as innovation policy guidelines beyond Cohesion Policy to open up new resilient economic development paths. For in the long term, the motto is: after the crisis is before the crisis. \_

→  
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Prognos Project Manager Moritz Glettenberg advises clients on strategies for regional economic development, innovation, and start-ups. Every day, Moritz Glettenberg observes structural change and regional adaptation at close range in his hometown Dortmund. He likes to exchange ideas with his colleague from the Brussels office, Neysan Khabirpour, who was involved in the cited EU study.



# Crisis resistance through continuing education



Those who develop their qualifications and skills are more mobile in their careers – and thus less vulnerable in long-term and short-term transformations.

Even before the COVID 19 pandemic, we knew that our labour market was in a process of transformation, which also fundamentally changes the requirements for qualifications and competencies. A number of trends are contributing to this: the long-term shift away from manufacturing to services, the ecological transformation, the internationalisation and aging of society, and, last but not least, digital change.

The consequences of the pandemic have to some extent accelerated these processes, especially with respect to the digital transformation of the labour market. The inevitable digitisation of the workplace has made clear how decisively an individual's career opportunities depend on not only their hardware and software skills, but also on their digital competencies. Those who were able to transfer their own work into the virtual world were able to continue doing it – which applied to "desk jobs" in almost all industries. In manufacturing, the lockdown exacerbated pre-existing structural crises, for example in the automotive industry. Social distancing has also triggered unexpected job losses and high levels of uncertainty in tourism, gastronomy and retail – sectors in which job losses had not previously been expected.

Those who are not professionally mobile are particularly vulnerable in a crisis: firstly, these are people who have little chance of changing jobs due to low-level or not formally recognised qualifications. Secondly, they are people whose general employability is low due to inadequate digital, social or basic skills. The continuing development of their qualifications and skills is particularly important for these two groups. Cyclical measures such as short-time work benefits provide temporary protection against unemployment. However, many of the structural changes in labour demand triggered or enhanced by the crisis will not simply disappear after it is over. The economic policies

must therefore be supplemented by investments in further training so that after the crisis existing qualifications and skills match what is demanded.

Estimates by the European Centre for the Development of Vocational Training (as of 01/2020) assume that around 30 to 40 percent of the adult population in Germany have a need for continuing education and training and run the risk of no longer having the key qualifications or skills relevant for the future labour market. However, it is precisely those people in Germany with the greatest need for further training – the low-skilled and those in a financially weaker position – who take part in further training much less frequently. Increasing their participation therefore remains an essential task for the future. Preventive, not reactive.

On the political level, there are some new developments that should contribute to the establishment of a culture of continuing education. The Qualification Opportunities Act now supports continuing education if the previous occupation is foreseeably affected by structural change. Among other things, the National Strategy for Continuing Education is intended to better coordinate existing projects, such as advisory centers and continuing education platforms, and to create transparency. In order to make continuing education an equal part of the education system, there are ideas that go beyond this, such as a "basic education income" or "employment insurance". There is a debate about whether the right to financial security during periods of education should be generalised and whether the right to continuing education should be decoupled from companies' direct needs. Both are important levers that would not only strengthen individual development opportunities but would also strongly signal an increased valorisation of lifelong learning for adults. \_

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# Crisis management reloaded



The corona pandemic and the climate crisis have a lot in common. Both are global challenges; they affect vulnerable groups particularly severely and they are natural, non-linear shocks. Moreover, as long as one is not acutely affected, both crises are only abstract dangers, since „neither viruses nor CO<sub>2</sub> can be seen or felt“. Are there also any parallels in how they are addressed?

Crisis change economies and societies. The climate crisis and the corona pandemic show that similar countermeasures can be effective in most cases. Preventative measures are essential, especially for events which have a high probability of occurrence. This is the case with the climate crisis, for example, where the effects on the environment and society are understood and foreseeable. Should certain consequences be more severe than expected, a mitigating and adaptative strategy is necessary. Thus, in order to avoid major damage, crisis prevention and management are necessary. These not only need to be well planned and executed, but also well explained. In order to gain broad acceptance for measures and decisions that may be unpopular in the short term, a communication strategy that explains and engages the population is crucial. A particular challenge in this regard is the precautionary paradox, which makes precautionary measures appear less necessary when effective precautions are taken. This phenomenon can be observed in a pandemic as well as in the climate crisis.

Throughout the corona crisis, it has also become clear how important it is to take scientific principles into account when making political decisions. In climate policy, too, more attention must be paid to findings from research. For example, a binding CO<sub>2</sub> budget, as called for by the German Council of Environmental Advisors, could become the guideline for German and European climate policy.

Ideally, policies should help address several crises at the same time. One example is virtual meetings that limit contact (pandemic) and replace environmentally damaging business trips (climate crisis). Such measures reduce energy demand and CO<sub>2</sub> emissions and reduce local air pollutants suspected of promoting lung diseases – and thus COVID-19. But neither the corona virus nor the climate crisis will be eliminated any time soon. Therefore, suitable adaptive concepts are needed in both cases, such as resilient agriculture, heat-optimised cities or robust system-relevant domains.

All policies and investment projects must ensure that policies directed at one crisis do not undermine policies directed at the other. That this risk does in fact exist is evidenced by the financial aid that has been provided worldwide in the wake of the corona crisis and which all too often has been allocated to existing fossil-fuel infrastructure. At EU level, on the other hand, the corona aid will be used for climate protection and digitisation projects. Together with the previously planned Green Deal, around half a trillion euros is due to flow into climate protection measures over the next seven years. This is a valuable catalyst that serves as a foundation for further national and private investments. If parallel measures are taken to reduce the growth dependency of national economies, this will increase resilience. Efforts must therefore be made in many different areas at the same time but can – if coordinated effectively – lead to a much more resilient and sustainable future in the medium term. \_



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Dominik Rau, Prognos Project Manager in the field of energy efficiency and renewable energies, has spent a lot of time in the home office over the last few months. But despite the pandemic, climate protection has never lost its importance for him. With co-author Eva-Maria Klotz, he maintained rigorous dialogue on said topic during the lockdown.

Lab report

# Making smart decisions visible

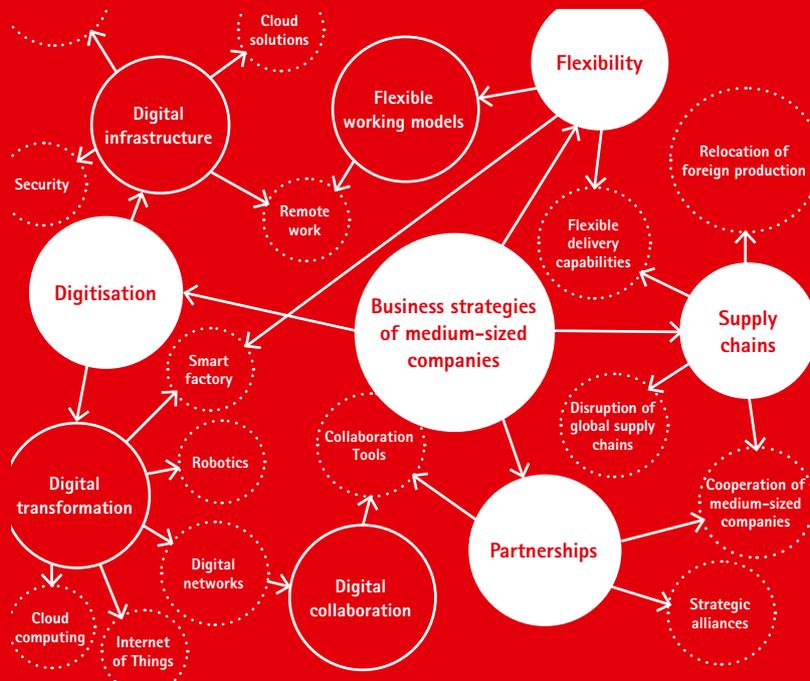
Even from the depths of crisis some companies will emerge as winners. These companies react flexibly to crisis situations and develop new strategies. The Prognos Intelligence Tool makes it possible to identify indications of smart and, in particular, resilience-promoting business decisions within this flood of information.

In the course of the corona crisis, the Prognos Intelligence Tool was used to analyse relevant websites of business magazines, blogs, associations and scientific institutions. The Latent Dirichlet Allocation algorithm (LDA), which automatically identifies topics from texts, plays a central role in this process. For this purpose, texts are generated based on different probability distributions and then compared with the original texts. Using the best probability model, the generated documents are clustered and grouped by topic. In this way, relevant topics can be extracted from a very large number of texts and examined more closely in a short period of time.

The results obtained from the analysis during the pandemic show that on the one hand, the crisis intensifies megatrends in medium-sized businesses. The digitisation of companies is significantly increased. Digital infrastructures such as remote work and cloud solutions as well as their security software promote digital transformation. Artificial intelligence, machine learning and digital networking are now also finding their way into medium-sized companies. More flexible work-time models, which were heavily debated even before the crisis, are also being advanced more quickly due to the widespread possibilities of remote work and home office. Through collaboration tools, intensive digital cooperation can also take place.

On the other hand, the desire for reliability and independence suddenly takes precedence over efficiency and profit maximisation. This is particularly evident in the discussion about the relocation of foreign production activities in specific sub-markets, such as medicine, triggered by the disruption of global supply chains during the pandemic. The results of the Prognos Intelligence Tool show a variety of strategies. Resilience has gained importance as a strategic dimension in companies. At the same time, major trends such as digitisation and increased flexibility continue to exist and have been reinforced.

The analytical method of the tool can be applied in many ways: examples include the identification of future topics or trends for specific industries. The tool also enables Prognos to provide political decision-makers with relevant and detailed information to help them identify priorities for future support. \_



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Johanna Thierstein works for Prognos in the Digital Development department. She develops digital tools and intelligent algorithms that can be used to identify trends, analyse correlations and provide automated answers to questions. Together with Jan Reichert, she conducted the analysis described above and drafted the text.

# Good planning is essential



It ensures the ability of our society to function and integrate – namely through public childcare. However, experience from the corona crisis has shown that pre-school and complementary childcare is both the backbone and the Achilles' heel for families and the economy.

Whether in hospitals, nursing homes, schools or kindergartens – when it comes to staff planning those responsible depend on factual and region-specific data. They ensure the basic social provision of communities and, designed for the long term, can help ensure that the systems are able to withstand crises. The recent example of childcare has shown that there is still room for improvement when it comes to targeted data analysis, particularly in the social sector. When childcare centres had to close in early summer because of the COVID-19 pandemic and parents were unable to go to work, the vulnerability of the social system became apparent. However, the reopening of childcare centres under new hygiene conditions now also brings with it new demands on the distribution of personnel. Small groups of children accompanied by largely older professionals who belong to the risk group and are therefore unable to work make it clear that early education can only be made resilient if there are sufficient professionals and sustainable long-term staff planning.

The need for childcare spots is usually determined annually by the municipalities or districts on the basis of demographic data. However, decision-makers at federal, state and municipal level need to identify labour market and functional policy challenges at an early stage. These include current and future graduation rates and transfer rates in vocational training, but also include such factors as increasing the attractiveness of becoming an educator.

Providers of childcare and care services for school children are reporting recruiting problems. Calculations by the OECD and Prognos show an increasing bottleneck in the labour market for educators. This bottleneck has occurred for two reasons: On the one hand, the need for childcare is increasing. More and more mothers are entering employment, and from 2025 onwards there are plans to establish a

legal entitlement to childcare. On the other hand, the high, age-induced replacement demand for educators is accentuated by a long-term shortage of newly trained educators, despite recent increases in the number of trainees.

This demonstrates the advantage of region-specific analyses such as those provided by Prognos. Statistical data and supplementary surveys of providers and institutions provide a reliable overview of the specific skilled labour situation and its development. This helps to ensure long-term decision-making and operative capacity and supports the target-oriented provision of basic social services in municipalities. For early education, for example, Prognos uses an analytical model to determine the demand for and supply of trained educators. This shows the extent to which the future demand for qualified staff can be met.

Analyses like these support the planning responsibility right down to the district level. Scenarios on the determinants of the supply of qualified personnel quantify the opportunities with which the demand can be met – this applies to childcare, but can, in principle, also be transferred to other areas of the social sector. Crises make it clear how important it is to keep pace with current developments. Stability in the system can only be maintained through foresight and long-term planning. \_



Read the study on this "Future scenarios – gaining and committing professionals in early education".  
[link.prognos.com/Fachkraefte\\_FrueheBildung](https://link.prognos.com/Fachkraefte_FrueheBildung)



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Dr. Dagmar Weßler-Poßberg leads the Social Policy Consulting Division. She deals intensively with the framework conditions for high-quality early education – in particular with the evolution of the demand for skilled workers and the prospects of the supply of skilled workers.

# Short-time work: a remedy with side effects

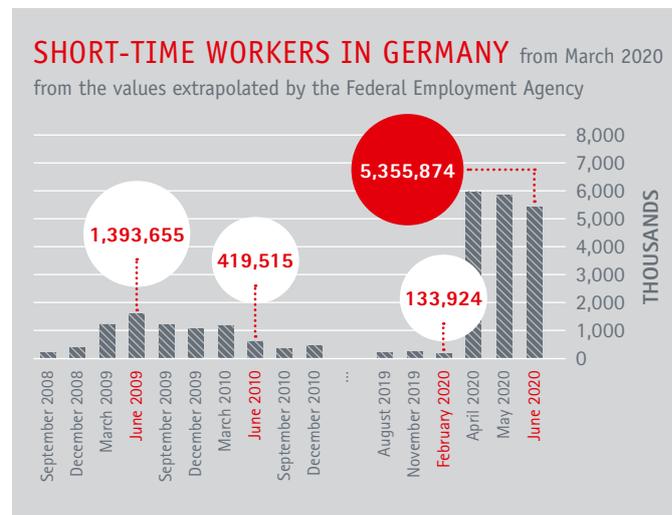
In times of crisis, policy instruments such as short-time work can help companies maintain the level of employees even in times of underutilisation – so that they can get back on track without delay in the next upswing. But can these instruments make a lasting contribution to economic resilience? Or might they even be harmful if used over a longer period? A stock-taking exercise in the midst of one of the biggest global crises of recent decades.

One of the most important labour market policy instruments in Germany is short-time work. Under certain conditions, it suspends, for a limited period of time, the business risk of having to pay the contractually agreed wage costs even when capacity utilisation is low. Companies affected receive a wage cost subsidy from the state, which is passed on to the employees and compensates part of their loss of income. An economic crisis like the one triggered this year by the COVID-19 pandemic can thus be bridged and layoffs avoided in many cases.

Analyses for Germany show that the historically unparalleled six million people who have received short-time work benefits since April 2020 has so far been able to curb the rise in unemployment. Employment and, to a lesser extent, wage income have thus been secured and additional negative repercussions, such as a significant drop in purchasing power, have been avoided. In an economic upswing, companies will thus not be impeded by a lack of workers and production can be rapidly ramped up again.

However, does this mean that short-time work really makes sense in the long term? The consequences of short-time work are higher unemployment insurance costs. Moreover, short-time work delays the restructuring of those companies whose reasons for underutilisation are structural rather than cyclical in nature. This cannot always be clearly distinguished in a given situation. As a result, companies that may not be competitive are kept in the market, and the necessary structural change and significant long-term technical advances are slowed down. In such cases, a smarter placement and/or improvement in the qualifications of employees makes more sense than artificially maintaining jobs that are anyway no longer sustainable – especially against the background of an impending shortage of skilled workers in Germany.

The future will show whether the positive effects of short-time work will outweigh the disadvantages. What is clear, however, is that the answer to this question will crucially depend on the duration of the economic crisis and the time limit on short-time work. Even if short-time work as a temporary crisis instrument has so far been able to contribute significantly to resilience, the negative aspects listed above will become increasingly important over time. In a pessimistic scenario, if economic recovery takes longer and is not very dynamic, other labour market policy measures must be given greater importance and/or short-time work must be linked to measures – such as the additional training of employees. Short-time work is therefore not a panacea without side effects. \_



Source: Statistics from the Federal Employment Agency

More on this at  
[link.prognos.com/Corona\\_Arbeit](https://link.prognos.com/Corona_Arbeit)



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As Project Manager at Prognos, Markus Hoch is responsible for the skilled-worker model and is primarily concerned with labour market analyses. How short-time work affects the labour market is currently a particularly interesting question.

## Viewpoint

# Market and state – resilience needs both!



Become more resilient, emerge stronger from an economic crisis, and be better prepared for – or even prevent – the next one. How is that possible?

Economic crises have very different causes: pandemics like the corona crisis, law evasion like the diesel scandal, short-term profit orientation like the collapse of the dotcom bubble in 2000, lack of regulation like the financial and economic crisis of 2008/2009. Some of these crises could have been avoided, others – from a national perspective – could not, but there are lessons to be learned from all of them; from personal experience and the experience of others.

In order to be better prepared for the next crisis or even possibly to avoid it, all players – companies, the government, every individual – need to reshape their approach towards greater sustainability, more risk provisioning, a greater sense of responsibility and a greater willingness to change.

For companies, this could, for instance, entail realigning supply chains and customer structures, examining business models, providing broad-based training for staff, rethinking incentive systems and, last but not least, complying with laws and regulations. Since the government does not know either which crisis might be next, it should provide incentives for behaviour geared towards long-term stability. Starting points for this are, for example, climate protection legislation, a sensible supply chain law or effective financial market regulation. However, crisis prevention also includes safeguarding important areas of basic services. Why is there a strategic oil reserve, but nothing similar for medicine or protective gear in the healthcare system? Not to be forgotten are the expansion and safeguarding of physical, digital, and social infrastructure. This applies to roads and airports, communication, and electricity networks as well as schools and day-care centres or hospitals and nursing homes. The government cannot and need not do all this on its own, but it must create incentives and establish rules to encourage companies and civil society to get involved. And if a crisis causes a massive economic slump, only the government can introduce the necessary economic stimulus packages.

At the individual level, a willingness to engage in lifelong learning, professional flexibility, and mobility, as well as voluntary service is required. The prerequisite for a more resilient society is strong social cohesion. Social security, education, participation, and income distribution are the key words here, and the government is particularly called upon in this regard. A resilient society is the healthy basis for a strong economy. And in our Western world this means: we need confidence in a strong and established democracy.

If we succeed in making the economy and society more resilient, the arguably inevitable climate crisis would also be easier to resolve, and its economic consequences could at least be mitigated through prevention and adaptability. But no one knows for certain what will cause the next crisis: a new pandemic, cyber-attacks on infrastructure, shortages of raw materials, military conflicts, or an entirely different cause? This makes it all the more important to be prepared for all eventualities with stable structures in place. \_



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To ensure democracy in the long term, our systems must become more resilient. Prognos Partner Dr. Michael Schlesinger is convinced of this. He has been advising clients from politics and business for many years and is responsible for quality assurance at Prognos AG.

# Selected projects

## Analyses for creative people

Prognos AG, along with the u-institut, is the sponsor of the federal competence centre for the cultural and creative industries and supports them in the area of analysis and scientific debate. With the corona pandemic, for example, short papers were produced on how the cultural and creative industries (NPP) were affected, an overview of the support measures of the federal states and discussion approaches for a corona economic stimulus program. Studies, expert reports and trend analyses, for example on cross-innovation, new business models and working methods or resilience strategies of NPPs, are to continue to provide the competence centre with a scientifically sound basis for decision-making in the future. With its location in Brussels, Prognos also brings a new EU perspective to the network.

On behalf of:



**KOMPETENZZENTRUM  
KULTUR- UND  
KREATIVWIRTSCHAFT  
DES BUNDES**

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## Renewables in Europe

The European Union is a pioneer of global energy system transformation and is striving for a worldwide leading role in renewable energies. The transition to renewable energies offers enormous opportunities. At the same time, however, competition is intensifying in the energy landscape, subsidies are decreasing and companies are facing new technological challenges. On behalf of the European Commission's Directorate-General for Energy (DG Energy), Prognos, together with COWI, CEPS and Capgemini invent, is analysing the global value chains, the socio-economic impacts and the markets for renewable energies. The policy instruments that are best suited to support European companies in terms of their competitiveness and socio-economic added value are also under scrutiny.

On behalf of:



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## Minimum wage hardly touches pension

How the minimum wage affects the relevant variables of pension development was investigated by Prognos on behalf of the minimum wage commission. The result: the quantitative effects on the pension adjustment are very small. The central result dimensions of pension finances – contribution rate and security level – remain almost unaffected by the minimum wage. The influence is also limited at the individual level. Even with long-term employment in the low-wage sector, avoiding pension poverty cannot be achieved. When interpreting the results, it is important to note that the household context was not taken into account. This is crucial, for example, to the question of the risk of poverty in old age.

On behalf of:

**MINDESTLOHN  
> KOMMISSION**

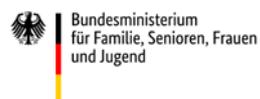
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## Mothers: Leap over the livelihood threshold

Can mothers support themselves financially by working? Prognos investigated this question on behalf of the Competence Office for Effective Family Policy of the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth. The results show that, in addition to the level of employment, it is above all the qualifications of mothers that determine whether their income amounts to a living wage. The study makes important recommendations for action to ensure that more mothers will be able to work earlier and more extensively in the future.

On behalf of:



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**Pension: worth more regionally**

The purchasing power of pensions in Germany varies regionally by up to 52 percent, according to a Prognos study commissioned by the German Insurance Association. For example, 1,000 euros for today's pensioners in Munich – the most expensive place to retire – have a purchasing power of 760 euros. In the Elbe-Elster district of Brandenburg – the most favourable place in Germany for pensioners to live – 1,000 Euro, on the other hand, generates a purchasing power of 1,160 Euro. The place of residence has a considerable influence on the cost of living and thus on prosperity in old age. More expensive areas would not necessarily be less attractive as places to retire, however, since wages and thus also pensions tend to be higher there than in more favourable regions. In addition, the cost of living there is usually higher even during gainful employment.

On behalf of:



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**More loading points for large cities**

When buying electric vehicles, the availability of charging infrastructure is a decisive criterion. This is especially true where purchasing power is high and private parking spaces are rare. On behalf of EnBW Energie Baden-Württemberg AG, together with the German Energy Agency, Prognos investigated the potential availability of private charging infrastructure for various types of space in Germany. The potential is eight to twelve million private charging points in buildings with one or two apartments. However, this results in a potential of only 0.45 to 1.8 million private charging points. The authors therefore recommend an intensified development of the publicly accessible charging infrastructure, especially in regions with strong purchasing power and many apartment buildings. Only in this way can the politically desired sales of electric vehicles be made possible.

On behalf of:



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**Quota in freight traffic**

The quota system of the European Conference of Ministers of Transport (ECMT), which is intended to facilitate international road freight transport with third countries outside the EU, is proving to be too rigid. For example, a significant proportion of ECMT permits are not used at all. In a report for the International Transport Forum of the OECD, Prognos makes suggestions as to how the quota system could be reformed with short and medium-term measures, including the harmonisation of competitive conditions, flexible quotas based on the trade volume of a region, or qualified majority voting. In the longer term, scenarios could facilitate the future development of road freight transport, and a trade and transport database could improve the data basis.

On behalf of:



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**Helping to help**

In most people's neighbourhoods there are people who need support in everyday life. Anyone who wants to provide neighbourhood assistance can turn to special service points in five German states. These were set up by the Kuratorium Deutsche Altershilfe on behalf of the Federal Ministry of Health. The service points bring together voluntary helpers and people seeking support and advise and accompany the neighbourhood tandems in their everyday lives. Prognos carried out the accompanying evaluation as part of the project. The most important result: With the help of the service points, the volunteer neighbourhood assistance program is well established and well known.

On behalf of:



Contact:

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### The current BuFI is here

How can research and innovation be used to address social challenges, strengthen Germany's future competencies or create a culture of innovation and entrepreneurship? These are just some of the questions discussed in the biennial Federal Report on Research and Innovation (BuFI). The BuFI provides comprehensive information on the research and innovation policies of the federal and state governments and presents the various elements of the German research and innovation system with facts and figures. As an administrative office, Prognos, together with the DLR Project Management Agency, has been supporting the Federal Ministry of Education and Research in the preparation of the BuFI for several years.

Published by BuFI:



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### Environmentally friendly on the last mile

The delivery of courier, express and parcel shipments on the last mile is the subject of several studies by the Prognos Mobility and Transport division headed by Sven Altenburg. Thus Prognos, together with ILS and KE Consult, compiled a total package of 24 measures for the city of Hamburg that could help courier express parcel service providers lower their CO<sub>2</sub>-emissions by 40 per cent and with which the conflict potentials of these transports could also be noticeably lowered. Prognos is also developing modern delivery concepts for the cities of Wiesbaden and Limburg.

More environmentally friendly vehicle drive systems for urban delivery traffic were the focus of a market analysis conducted by Prognos on behalf of the National Organization Hydrogen and Fuel Cell Technology (NOW GmbH). Commercial transport is currently still mainly provided by diesel vehicles and thus runs counter to the environmental protection efforts of local authorities. Prognos investigated the market for alternative vehicle drives from the first to the last mile for NOW GmbH.

On behalf of:



**Contact:**  
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### Studies for energy system transformation and climate protection

Dr. Almut Kirchner's team has prepared two trend-setting studies on the energy transition in Germany for the Federal Ministry of Economics. One study puts the German government's climate protection package to the test. The result: Germany will fail to meet its self-imposed climate target for 2030. The study examined the impact of the climate protection program in the transport, building, energy, industry, agriculture and waste sectors. If the target is still to be achieved, greenhouse gas emissions must be further reduced. While the shortfall in the energy and industry sectors is small, there is still (considerable) need for action in the transport, building and agriculture sectors. In the second study, Prognos examined the costs and transformation paths of electricity-based energy carriers such as hydrogen, gaseous or liquid hydrocarbons. These energy carriers can be produced climate-neutrally with renewable electricity and used in a variety of ways, but are more cost-intensive than fossil fuels.

On behalf of:

**Bundesministerium für  
Wirtschaft und Energie**

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### Resilient economy after corona

Corona, trade conflicts and Brexit, all show the vulnerability of supply and value chains. Prognos investigated for the vbw – Vereinigung der Bayerischen Wirtschaft e. V. which industries are already resilient or particularly susceptible to delivery-related production losses. A higher resilience of international supply chains and production networks is likely to become a high priority for many companies. Prognos shows options on how to make their international integration more resilient overall.

On behalf of:



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