Emerging stronger from the coronavirus crisis – five areas of action for a sustainable transformation

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Motivation

Despite the fact that incidence rates are rising again, the vaccination programme and the risk-based relaxation of the containment measures offer hope that Germany will get on top of the coronavirus pandemic in the foreseeable future. Accordingly, questions about what happens next are coming more to the fore. In addition, the pandemic – as with every crisis – is laying bare the weaknesses in our economy and the economic framework. At the same time, we are able to better assess the size of the challenge involved in transforming to a resilient, digital and climate-neutral economy. The need to change course is becoming ever more urgent if we are to make Germany future-proof. We see the greatest need in five key areas of action: Crisis resilience, climate neutrality, digitalisation, globalisation and Europe.

The coronavirus crisis has made the need for progress on transformation both more urgent and more difficult. The hefty economic impacts of the coronavirus crisis, such as higher levels of debt in the private and public sectors, make it more important to develop new fields of growth, which are most likely to emerge through digitalisation and the transformation to climate neutrality. The recent flood disaster has painfully underscored the urgent need to address the climate challenge in Germany. But the coronavirus pandemic has made economic transformation more difficult. As a result of higher debt levels, businesses and government are increasingly facing a conflict of objectives between financial resilience on the one hand and future-oriented investment on the other.

A targeted approach is necessary in order to harness the crisis-management momentum for the change of course towards sustainable recovery. The aim of this paper is to highlight specific intervention points for solutions within the areas of action already identified in order to make such a change of course possible and drive the transformation towards a resilient, digital and climate-neutral economy.

1. The coronavirus crisis as catalyst for sustainable transformation

At the beginning of 2020, the coronavirus crisis hit Germany and the World unexpectedly and hard; swift and decisive government action cushioned the impacts. Containing the pandemic was always a matter of protecting health on the one hand and taking account of economic and social concerns on the other. Measures such as the short-time allowance and business support in the form of grants and loans preserved important production capacity, paving the way for a dynamic recovery in summer 2020 following the successful containment of the first wave of the pandemic. As an average for 2020 as a whole, gross domestic product (GDP) ultimately declined by "only" 4.6%, giving Germany the edge over most of the other G7 economies.

Progress with the vaccination campaign brings hope of beating the economic downturn over the long term. The openings in many service segments and reductions in accumulated savings are injecting momentum. However, the impetus from industry resulting from the global recovery in demand is subdued due to bottlenecks in the supply of raw materials and inputs. This situation will ease to some extent in the coming months and into next year. German GDP is expected to grow by 3% in 2021 as a whole and therefore overtake the pre-crisis level before the end of the year. Risks remain however: the now sluggish tempo of vaccinations in Germany, the Delta variant and above all the ability of the coronavirus to constantly mutate – the pandemic will be with us for a long time, especially in developing countries and emerging economies. A top priority for the international community must therefore be to increase global production capacities for the most effective vaccines.

The task now is to manage the transition from crisis assistance to support for the transformation towards a resilient, digital and climate-neutral economy. Due to continuing high levels of uncertainty about the progress of the pandemic, in particular the role of virus variants, there are arguments in favour a selective continuation of targeted assistance followed by a gradual rollback. The crisis has however highlighted existing structural weaknesses and triggered or given impetus to a change process in many companies. It is important to build on this in order to proceed with the necessary transformation towards a resilient, digital and climate-neutral economy, as well as to support this transformation with appropriate measures, regulatory frameworks and incentives. In this way we can remain competitive and ensure that Germany as a business location is fit for the future. This is crucial for long-term employment prospects and at the same time depends on the availability of experts with the appropriate skills. The structural change means changes for employees too. The acquisition of the necessary skills and life-long learning are essential in this regard.

2. Five areas of action for sustainable transformation

In order to emerge stronger from the crisis and to use it as a catalyst for sustainable transformation, KfW Research identified five key areas of action in June 2020:
1. Strengthen crisis resilience, 2. Promote climate-neutrality in industry, 3. Translate inventiveness and digitalisation momentum into increases in productivity, 4. Continue to leverage the advantages of international integration and avoid the nationalisation of value chains, 5. Strengthen Europe.

The relevant levers still lie in these five areas of action. However, new insights have been gained in recent months about what has to happen in order to achieve a sustainable recovery. It appears that more effort than was expected in June 2020 will be required to make progress in some areas of action. For example, current study results from KfW Research show that coronavirus-induced momentum for digitalisation is less powerful than hoped and extra effort will be required in order to put this on a solid footing. According to the current IPCC report, global temperature levels are forecast to rise faster than previously expected and this underscores again the urgency of climate-policy countermeasures. Furthermore, shifts in content are taking shape: While the nationalisation of value chains now appears less likely, greater diversification in the areas of suppliers and sales markets is becoming a key focus for companies. In the following, we outline the newly gained insights and specify intervention points in the areas of action that are necessary in order to drive and shape sustainable recovery.

2.1 Strengthening crisis resilience

Since the beginning of the coronavirus crisis, it has become evident that the corporate sector, government and the banking sector are crucial for crisis resilience in the German economy. Here, the corporate sector is centre stage and also the motor for the required transformation. For this to succeed, it needs a reliable framework conducive to the achievement of objectives. This is the job of government, which is also responsible for other tasks in the context of crisis resilience, e.g. health care. Sound public financing is key to ensuring that government is able to act – both now and in future crises. And a well-functioning financial system can cushion shocks. Due to the predominantly bank-based financing system in Germany and Europe, banks play a central role.

2.1.1 Putting a weakened corporate sector back on track

The coronavirus crisis hit the corporate sector across the board – but it had a solid starting position. In mid-May 2021, around 64% of small and medium-sized enterprises in Germany were still battling with the consequences of the crisis. But the numerous government support measures and the adaptability of the companies helped stabilise the situation in the wake of the severe economic downturn in spring 2020. This was made possible by the solid position of the businesses at the outset. The average equity ratio among SMEs was 32% in 2019. For this reason, we expect only a limited rise in the number of insolvencies.

The financial consequences of the crisis can curb investment activity and hinder the upturn. The crisis has depleted companies' financial reserves. Around 24% of SMEs currently have a lower equity ratio than at the beginning of the pandemic. This can put a damper on corporate investment activity – due to the need in the first instance to prioritise financial resilience or because access to third-party financing has become more difficult as a result of creditworthiness issues. As small enterprises, and above all service companies, were especially hard hit by the pandemic containment measures, the danger of investment deferral is particularly marked in these segments. As a result, these companies could be "left behind" and there may be negative impacts for Germany as a business location.

It is important to counter this reluctance to invest, especially in view of the necessary transformation towards a digital and climate-neutral economy. There are various ways in which economic policymakers can ensure this happens. They can attempt to reduce uncertainty among funding providers or lower the costs of financing for the companies. With regard to promotional loans, the appropriate levers are liability exemptions and reduced interest rates. In particular enterprise segments, e.g. young, innovative enterprises, it is important to continue promoting or to consider promoting alternative financing instruments that "protect" debt levels (e.g. leasing or mezzanine capital) as well as needs-appropriate participation models.

Fewer business start-ups – but these are vital for crisis resilience and competitiveness. Particularly hard hit by the coronavirus crisis are the young self-employed who are new to the market. Corona-related strains on the self-employed exacerbated the reduction in start-up activity in Germany in 2020. Many potential entrepreneurs did not even commence their start-up planning given the extremely uncertain economic environment; some discarded their plans and many put their self-employment on hold. It is essential to counter the overall decline in start-ups, as corporate diversity means more competition and thus more pressure to work efficiently as well as greater risk diversification and a correspondingly higher level of crisis resilience. More effort is needed in providing targeted support for start-ups, e.g. improved communication on the support available, consideration of solo start-ups in the support on offer and the dismantling of bureaucratic procedures that hinder start-ups. This can be done for example by introducing more streamlined processes through central contact offices for the self-employed and anyone else who wants to start a new business.

An essential factor for future crisis resilience in the corporate sector will be the availability of experts; this can be supported through changes in policy and targeted measures. Once economic output has returned to its pre-crisis level, a central issue that was overshadowed by the acute sales and liquidity problems during the crisis will once again come to the fore, namely the shortage of well-qualified experts. Indeed, the shortage of skilled workers increased once more in the first and second quarters of 2020. A further increase in labour force participation will help ensure the supply of qualified professionals. Support for working parents can be provided above all through the major education-policy projects, for example by expanding day-care centres and providing all-day schooling and affordable home-care facilities. Employment rates among the over 60s could be increased by offering more incentives during the pre-retirement phase or raising the retirement age. A further buffer against the shortage of qualified professionals is to promote the immigration of skilled workers, especially from outside the EU. One answer to the crisis-induced collapse in employment mobility would be to intensify language training and to (further) simplify the recognition of professional qualifications acquired abroad. Another key area of action is (further) vocational training, which can help increase participation in the workforce and productivity.

2.1.2 Designing crisis-proof regulatory frameworks in the government and banking sectors

Overall, the German state has demonstrated its performance capability throughout the crisis and is now called on to simultaneously secure the sustainability of public-sector finances and power the transformation. In spring 2020, comprehensive packages of measures were put together and further developed in record time as the pandemic unfolded in order to preserve companies' productive potentials and get the recovery up and running. As a result, gross public-sector debt will climb to around 75% of GDP in 2021. Even if this is significantly lower than was the case after the financial crisis in 2008/2009 and only half the average level of the other G7 countries, setting a course for gradual consolidation is crucial. While the need for the short-time allowance will automatically decline as the economy grows, it is important to find the right rate of withdrawal from crisis-related grants and loans once the insolvency moratorium has expired. This step is necessary for the transition from crisis management towards more structural change. In addition, we need a sustainable path towards reducing the national debt, and this must be prepared and implemented in combination with a solid economic upturn. This is a prerequisite for a crisis-proof national budget in the long term and it provides a buffer for the next crisis, which is certain to come. The German debt brake (*Schuldenbremse*) and the EU's Stability and Growth Pact support this and by including restrictions on new debt provide an incentive for managing expenditures efficiently. The top priority now is to press ahead with the design of the instruments that will enable transformative investments to be made in climate-change mitigation and digitalisation together with the necessary consolidation measures.

In order to proceed with the targeted and evidence-based design of the instruments, some knowledge gaps most be closed as quickly as possible. The formulation of a vision of a resilient, digital and green economy, including its projected role in the international context, is the basis for assessing the investment requirements for the transformation. The role of the state and the market must be clearly delineated here. On this basis, we can assess the public-sector investment requirements. Moreover, it is necessary to assess the room for manoeuvre with regard to larger investments within the debt brake, for example through efficiency gains in previous expenditures or by re-prioritising. For this, there is an urgent need for more readily available data on government expenditures beyond the federal system.

More resilience in the context of our federal system requires a clearer division of labour between different government levels and better coordination of the respective instruments. Government proved less capable of containing the pandemic than of providing economic assistance. Here, federal practices to some extent stood in the way of effective crisis management. Federalism is built on the principle of subsidiarity. In order to optimally leverage its advantages, government competencies must be tailored such that tasks, expenditures and their financing, and the sphere of influence of government measures match as well as possible territorially and that political responsibilities are clearly allocated. In the wake of the pandemic, it will be necessary to examine whether the allocation between administrative levels is still in line with today’s economic framework.

One clear lesson has been learned with regard to the specific tasks in the fight against the pandemic: a pandemic per se has impacts that go far beyond district and regional boundaries and this calls for a centrally designed and coordinated response. The federal debt brake adopted in April can therefore serve as a good blueprint for similar challenges in future: with clearly designed minimum standards at national level that are adapted to the regional and local conditions at federal state (*Land)* and local level. It is also necessary to provide impetus for digitalisation, as this can ensure the efficient flow of information and create broad access to essential skilled labour, especially at local level.

The German banks and savings banks have proven resilient in the crisis to date and were therefore able to make a decisive contribution to stabilising economic development.
In the first months of the pandemic, companies were very quickly provided with urgently needed liquidity via existing credit lines or new bank loans. Thanks to the comprehensive government assistance measures, the consequences of the economic collapse have made little impression on bank balance sheets to date and the recent, surprisingly good results posted by the larger financial institutions in the first half of 2021 are encouraging. However, once the suspension of the obligation to file for insolvency is lifted and government assistance ceases – with an attendant increase in credit defaults – the banks are likely to some degree to face a backlog of insolvencies this year and next year.

In the newly emerging upswing, tensions are therefore arising between the long-term stability of the banking sector and the still open financing channels, in particular for investment projects with higher revenue risks. In an environment in which interest rates are initially still low, pressure on German banks’ profitability – which is in any case structurally weak – is predicted to grow and the financial institutions will have less appetite for taking on new risks. For the sustainable economic recovery and the long-term security of our prosperity, this is critical, as uncertainty is a characteristic of key future themes: uncertainty about technological developments affects digitalisation projects and uncertainty about policy-steering puts a dampener on climate-change mitigation projects. Moreover, network effects are a feature of digital technologies and the innovative business ideas based on these technologies. Due to the winner-takes-all effect, it is virtually impossible to estimate their chances of success. On top of this, digitalisation projects (in contrast to “traditional” investments) seldom hold out the prospect of collaterisable assets. The barriers for traditional bank financing are generally very high in these cases.

In order to secure access to financing for future investments, three groups of measures must be considered. Firstly, swift, reliable and robust government (regulatory) frameworks are essential on the path towards climate neutrality in order to reduce paralysing uncertainty. Secondly, by taking on risk, government and promotional banks can further reduce the burden on the banks and thus secure the provision of investment finance. Thirdly, it is also important to strengthen alternative financing channels for non-bankable projects with growth potential. At the top of the list is the further development of the German market for venture capital and debt. The newly launched future fund makes an important contribution in this regard.

2.2 Driving climate neutrality now

The coronavirus crisis struck Germany and the international community at a time of upheaval. At the latest with the adoption of the 2015 Paris Agreement, in which nearly all states agreed to limit global warming to well below 2°C and preferably to 1.5°C, pressure has grown on countries to take action to avoid greenhouse gas (GHG) emissions. Following the sharp downturn in economic output and in the demand for transport caused by the coronavirus crisis, Germany fulfilled its GHG reduction target for 2020. However, this will be only temporary: as we come out of the pandemic and the economy gains momentum, emissions will rise once more.

Moreover, the climate targets were recently toughened up. On the one hand, the European Parliament and the Commission agreed more ambitious targets in April 2021, and Germany must now reduce its emissions by around 65% (as opposed to 55%) by 2030 compared to 1990 levels. On the other, the German Federal Constitutional Court has made clear that, in the interests of generational equality, the burden of reducing CO_2 levels must not be one-sidedly shifted onto the backs of younger generations. As a result, an amended Climate Change Act was passed in June, taking account of the stricter EU regulations and stipulating that the goal of net GHG neutrality be achieved by 2045 (instead of 2050).

In order to achieve this goal, even greater efforts will be required. At least it is now clear that the path to climate neutrality is technically feasible. The required technologies are available. These must now be further developed and applied on a broad scale:

- **The industrial sector faces severe upheavals** that will involve fundamental changes in production processes, especially in primary industries such as steel and chemicals. Important technologies are the use of green hydrogen, electrification based on renewables, energy efficiency, carbon sequestration and CO_2 use as well as the development of the circular economy.
- **The pressure to act remains high in the energy sector too, where – we should point out – almost every second kilowatt hour of electricity consumed in 2020 was generated from renewable energy sources**. In order to reach the climate-change mitigation targets it will be necessary to bring forward the phase out of coal and to develop generating capacity for renewable energies and power grids considerably more quickly, especially in view of the rising demand for power resulting from increasing electrification in the heating and transport sectors. Supplementary storage solutions will improve the efficiency of the system.
- **Electromobility is a fundamental component of the transport sector**, supplemented by synthetic fuels for freight, marine and air transport. It is also important to pay greater attention to energy efficiency, as energy consumption in the transport sector (and only there) is today significantly higher than in 1990. Intelligent concepts for a modal shift and avoidance are therefore required, for example by strengthening the environmental alliance (local public transport services, journeys on foot and by bike).
- **In buildings, we must raise the rate and scope of energy refurbishment** and promote the integration of renewable energies e.g. by expanding renewable local and district heating supplies.

This transformation process calls for large-scale investment and offers growth opportunities for German industry. The Federation of German Industries (BDI) estimates that the additional investment requirements for a 95% reduction scenario will amount to EUR 2.3 trillion by 2050. Achieving the GHG-neutrality target by 2045 is likely to push that figure higher. It is important to remember that a transformation of this nature is not only about climate-change mitigation but also about the future viability of the economy. It secures opportunities for future growth and employment, especially as Germany – the second largest exporter of climate-protection goods in the world – is starting from a good position. In view of the growing number of industrialised countries that are committed to climate neutrality, there is now little doubt that the age of fossil fuels is on the way out.

With respect to the coronavirus crisis, Germany is starting from a position that offers potential for positive development but at the same time presents challenges on three levels:

- **Climate-friendly innovations (development of green technologies):** In the field of environmental and climate technology, Germany is basically well-positioned and counts as one of the largest actors with a global market share of 14%. Only China has exported more climate-change mitigation goods in the recent past. There is also potential for other future technologies in the climate context, for example in the automotive sector. In order to leverage this potential, we have to ensure that decreases in turnover resulting from the coronavirus crisis do not curb innovation activity over the long term.

- **Climate-friendly business management (use of green technologies in industry)**: Overall, German SMEs present a positive picture, with rising equity ratios and investment levels in the years prior to the crisis. But everything is not rosy: investments at certain enterprises have been declining recently, for instance in manufacturing, where large-scale, climate-friendly transformations will often have to be undertaken. In addition, the coronavirus crisis puts pressure on companies that often have to decide between bolstering financial resilience and strengthening future competitiveness.
- **Climate-friendly households (acceptance and use of green technologies in the home)**: According to the KfW's Energy Transition Barometer, approval ratings for the energy transition remain very high, despite the coronavirus. However, we can see that lower-income households are especially hard hit by the consequences of the pandemic. The uptake of energy transition technologies – from solar panels and wood-pellet heating through to electric cars – is lowest in this group. A considerable rise in demand is expected, however. The path to climate neutrality can only succeed if all sections of society are on board and levels of support remain high.

The following success factors are put forward with a view to meeting the investment challenges:

Planning certainty: many key technologies for decarbonising industry are today significantly more expensive than traditional technologies. A policy framework and financial incentives are needed for market penetration. In addition to continuing support for innovation and investment, a key success factor is a reliable and rising carbon pricing signal. Supplementary instruments, such as Carbon Contracts for Difference, can mitigate uncertainty about carbon price development.

International competitiveness: As long as levels of ambition with regard to climate-change mitigation diverge at international level, effective carbon leakage protection is essential for energy-intensive enterprises that compete internationally. As recently as July, the European Commission put forward a concrete proposal for introducing a Carbon Border Adjustment Mechanism (CBAM) that would at least apply to selected sectors. This is to be understood and welcomed as a first step towards a carbon pricing system that is, as far as possible, global. One route to this goal involves establishing a climate club with important trading partners who also want to make progress on climate action and climate neutrality. The formation of such a club has top priority and must be actively supported as long as the likelihood of the majority constellation in the USA accepting such an agreement remains high. A core element could be to set a uniform minimum carbon price and establish a border adjustment mechanism with third countries. Such a joint undertaking would obviate the need for bureaucratically complex border adjustments in the trade between club members and would protect the common economic area against carbon leakage. Moreover, it would lend more weight to international climate-mitigation negotiations.

Use windows of opportunity – avoid lock-in effects: policymakers must ensure that upcoming new investments that lock in capital for longer periods are compatible with the goal of GHG neutrality, in order to avoid stranded investments. The high levels of reinvestment required in the primary sector could be a window of opportunity. By 2030, more than half of the energy-intensive plants in the steel industry (blast furnaces) and the chemicals industry (steam crackers) will have to be replaced – targeted incentives would be very effective here.

Expanding renewable energies and establishing hydrogen infrastructure: in future, much greater quantities of green power and climate-neutral hydrogen will be needed. In view of the limited space for expansion in Germany and the more favourable conditions in other countries, most analyses indicate that a large proportion of the green hydrogen we need will be imported in future. The global supply chains have yet to be set up.

Acceptance among the population and compensation for negative impacts at regional level: we are already seeing local citizens protest against wind parks, power lines and CCS. The transformation will give rise to different regional dynamics. In some regions, more jobs will be lost and in others more created, for example in the automotive sector in combination with specialised suppliers. It will be important to cushion the social effects, for example through targeted support for companies whose business models are largely based on the use of fossil fuels.

2.3 Supporting innovation and digitalisation

The coronavirus crisis has heightened the need for action in the areas of innovation and digitalisation; however, it has also made innovation and the fundamental transformation to digitalisation more difficult. Implementing and maintaining hygiene concepts, supply chain problems, the disappearance of traditional sales channels and shifts in demand – all these make clear just how important not only creativity and innovation are but also digital communication, digital work practices and digital sales and marketing channels. The beginning of the coronavirus crisis saw a push towards innovation and digitalisation. Above all those companies that are significantly – but not existentially – affected by the crisis or expecting the crisis to persist are stepping up their digitalisation activities. However, in the course of the coronavirus crisis, the level of innovation activity in particular has declined among SMEs. In addition, 33% of SMEs are still not engaged in any digitalisation activity at all. And where they are, it often involves measures with short-term impact designed to cope with the acute fallout of the crisis. Long-term, strategic digitalisation projects are more likely to have been put on the back burner.

Looking beyond the narrower focus on crisis management, digitalisation is crucially important for Germany's future competitiveness. As a general-purpose technology, IT plays an important role, not only in the IT sector but also in other fields of technology and business sectors, such as motor vehicles, mechanical/plant engineering and chemicals. The development of IT and its applications often forms the basis for corporate innovation activity. This trend is set to become even more pronounced in the years ahead.

The divide between large and small medium-sized enterprises, which existed prior to coronavirus, threatens to become deeper. On balance, small enterprises are expanding their future investments in innovation and digitalisation markedly less frequently than large SMEs. And small SMEs – which often find themselves on the losing side – make up the great majority of enterprises in Germany. They also provide a large proportion of the jobs in Germany.

Shortage of know-how is a key inhibiting factor for digitalisation and innovation. In order to press ahead with digitalisation and improve innovation capacity, economic policymakers must address the key inhibiting factors, in particular skills deficits among the workforce and the shortage of qualified professionals on the labour market. Lack of skills is now the most frequent constraint on innovation in companies. There is also a severe shortage in the area of digitalisation: around one-third of SMEs were unable to meet their digital skills requirements even before the coronavirus crisis struck and requirements have continued to grow during the crisis.

The following points of intervention can be used to enhance digitalisation and innovation:

As the coronavirus crisis has had a negative impact on training, additional incentives are necessary here. In 2020, the dual vocational education system experienced a sharp downturn – one in four SMEs that offer apprenticeships took on fewer new trainees than planned. And in-company vocational training also suffered a severe setback. Effective educational incentives must now be put in place to give an urgently needed boost to training activity after the crisis, e.g. through promotional loans and direct cost reimbursements. Tax breaks for corporate training expenses are also conceivable – treating investments in human capital like investments in fixed assets and allowing write-offs. In any case, it is important to continuously integrate new digital educational content into training schemes and curricula. In addition, companies need education services that are as flexible as possible, modular and easily accessible.

A further point of intervention: support the private sector with the transformation through various financing instruments. For many years, financing difficulties have been one of the major inhibiting factors for innovation from the corporate perspective and in the past 15 years or so the situation has deteriorated. In the area of digitalisation we can also see that accessing external financing is not without difficulties. For this reason, economic-policy support makes sense. For established companies, this can take the form of promotional loans that make funding available at near-market conditions through interest-rate subsidies and liability exemptions. In this context, it is also important to examine the use of equity-friendly financing instruments, such as leasing and mezzanine capital. With regard to start-ups, further expansion of the venture capital market is necessary, especially in the growth phase, as is planned with the future fund. It is also important to strengthen the VC ecosystem overall. The relevant points of intervention are, for example, strengthening the absorption capacity of the stock market or improved opportunities for employee equity participation. In order to drive the implementation of specific research and development projects, grants and tax breaks are the right instruments.

In order to bridge the gap between small and large enterprises, it is important to support innovation and digitalisation across the corporate sector as a whole. We therefore need to support not only companies at the cutting edge of technical progress but also the broad mass of enterprises that contribute to the spread of new technologies in the economy. As well as strengthening training in the context of the dual vocational education system or supporting its newly qualified trainees, promotional approaches must target in-company innovation skills. Corresponding points of intervention in this context are simplifying access to external know-how, for example by establishing regional networks, supporting organisational innovations, disseminating management practices that improve corporate learning processes and offering innovation incentives for employees.

Improvements in infrastructure and public administration are indispensable for speeding up the rate of digitalisation. Improving the availability of rapid internet connectivity via broadband and mobile networks is the key infrastructure challenge. In recent years, the coverage of rapid internet connections has improved markedly in Germany. However, remaining gaps have to be closed and services adapted to changing requirements, for example as a result of the extended use by companies or increased home office activity. In municipalities, under-investment is especially marked in local authority IT services as well as in schools and municipal buildings, which may in part also be due to inadequate IT facilities.

Quick-start projects designed to make markets that are still in their infancy "contestable" for German and European companies are also an important pillar for the expansion of digitalisation. Here, think of projects like GAIA-X. A European component also points to the frequently mentioned problem of data security and data protection. In addition to improving the corresponding corporate competencies, standard regulations are also needed in Europe in order to counter market fragmentation and to make it easier for companies to operate throughout Europe and thus achieve critical mass. Last but not least, the range of digital services offered by authorities also assumes an important role. In addition to the expected efficiency gains, more digitalisation in government authorities also benefits digitalisation in the private sector.

2.4 Making intelligent use of international networks

The coronavirus crisis lead to a collapse in foreign trade and highlighted the costs of an international division of labour too heavily focused on efficiency. In the past, Germany profited greatly from globalisation, i.e. the complex interrelationships of foreign trade. However, since the global financial and economic crisis in 2008/2009 the pace of globalisation has slowed. After the trade conflicts that centred on the USA under President Trump put additional strains on the foreign trade environment from 2017 onwards, the coronavirus crisis caused serious disruptions in global value chains in spring 2020 and international trade nosedived. German exports were around 30% lower in May 2020 than in the same month the previous year. In contrast to normal recessions, the pandemic also caused a marked contraction in supply in addition to a massive fall in demand. This spread through the web of international relations and affected companies worldwide. In the recovery from the crisis and in the course of the to some extent unexpectedly rapid revival in demand, the disruptions in the international value chains led to bottlenecks in raw materials, inputs and transport capacities.

The lessons learned during the crisis and expectations of continuing weakness in the globalisation dynamic are causing enterprises to reexamine existing value-chain constellations. Germany's industrial production and foreign trade have indeed recovered comparatively quickly from the lows in April 2020. Nevertheless, the experience of the crisis is likely to cause many companies to review and possibly adjust their value-chain relationships in Germany and abroad. As the economic recovery advances, more attention will be paid once more to the fundamental development of foreign markets. The prospect of even moderate growth in foreign trade could cause many export-oriented companies and their suppliers to rethink their previous growth strategies and to re-configure, at least in part, their operations abroad.

A withdrawal from global value chains can weaken resilience – and means foregoing cost advantages, which few companies are prepared to do. Companies that concentrate solely on the domestic market have precious few alternatives when exposed to regional shocks, such as natural disasters and geopolitical crises. Economic shocks spread through global value chains across country borders. On the other hand, value chains also help businesses and countries recover more quickly from such crises. Moreover, the willingness of SMEs to forego cost advantages in order to bolster the resilience of their own value chains is limited. Above all larger enterprises tend to show more reluctance here.

Against this background, SMEs are also expected to remain integrated in international value chains. In the grip of the coronavirus shock last summer, one in three SMEs said they expected many companies to withdraw from global value chains. However, many SMEs do not see this as an option for their own company. Even if three out of ten SMEs want to focus more intensively on domestic suppliers in the next five years, only around 6% intend to withdrawal from global value chains.

The advantages of the international division of labour persist despite the coronavirus crisis. Leveraging these advantages is important for maintaining companies' international competitiveness and therefore for growth and prosperity in Germany as well. Nevertheless, we need to reflect on how to make global value chains efficient, crisis-proof and, above all, sustainable. Here, it is important to consider the social and environmental consequences of the international division of labour as well as the economic impacts. Multinationals assume a pioneering role here. However, corresponding frameworks and incentives have to be created for medium-sized suppliers too – at national, European and international level.

With regard to international value chains, there are basically two courses of action available:

Market opportunities are open to innovative exporters through the increasing importance of climate change mitigation and digitalisation worldwide; export markets in emerging economies and developing countries continue to offer growth potential. For German exporters it is important to identify and develop promising market segments and target countries. Dynamic growth is expected above all in the area of climate and environmental protection technology. Furthermore, in view of increasing digitalisation, growing demand for traditional industrial products in combination with digital services is also expected in Germany and abroad. SMEs continue to see promising export destinations in Europe – with the exception of the United Kingdom. But growth opportunities are also likely in emerging economies and developing countries – especially for experienced exporters. The development of and participation in these markets is however bound up with diverse challenges – such as legal, administrative, language and cultural barriers – and possibly high levels of political and economic risk as well.

The basis for the international competitiveness of German enterprises and their success in foreign trade is the country's strength as a business location and a reliable framework for global trade. Which products and services will be developed, produced, exported and imported in the domestic market in future will depend, among other things, on whether and in what areas Germany succeeds in being a leader in technology. Here, the capacities and skills of the workforce and the know-how and adaptability of the companies play a central role. This, in turn, calls for a vibrant research and education landscape conducive to translating ideas into marketable products. At the same time, an accessible domestic European market is also required together with business certainty for internationally active enterprises underpinned by international agreements. If this is secured, the success of internationally active enterprises will continue to translate into attractive jobs in Germany.

2.5 Strengthening Europe

Economic stabilisation during the acute phase of the coronavirus crisis demanded considerable fiscal effort on the part of the Member States of the European Union. European and national budget regulations were temporarily suspended by invoking exception clauses. This year and last year, the average overall budget deficit for the EU as a whole was around 7% of GDP. Financing this to date has not given rise to audible comment, one reason being the strongly expansionary money policy that has created the necessary trust in the financial markets.

It is imperative that EU countries credibly renew their common commitment to sustainable public finances as soon as economic activity returns to its pre-crisis level. The downside of comprehensive government financial assistance for companies and budgets is the jump in gross public debt, which now stands at over 90% of gross domestic product in the EU. This presages a narrowing of the room for fiscal action and increasing vulnerability should interest rates start to rise. This applies in particular to Member States that already had high debt ratios before the pandemic. This presents additional challenges for the ECB in rolling back its support measures.

Making Europe even stronger and promoting European integration calls above all for progress and measures in three areas:

If efficiently implemented, NextGenerationEU – the temporary instrument designed to boost the recovery – will provide urgently needed impulses for growth. Through joint loan financing at European level, the programme creates the financial flexibility needed to support a sustainable rebound from the crisis, above all with public investments. For this, a total of EUR 750 billion – or 5.4% of the EU's GDP – will be available to Member States until 2026 at the latest, EUR 390 billion of which in the form of grants. With the focus on climate neutrality and digitalisation, the priority areas are correctly set. In combination with the requested complementary reform programmes, the transformation processes Europe needs can be expedited and productivity and potential growth stepped up. Countries that were hard hit by the crisis, such as Spain and Italy, will be given preference in the distribution of funds. This gives them a chance to catch-up economically and to reduce debt burdens through growth. It now comes down to implementation and the quality of steering by the European institutions. The preliminary balance of the recovery plans submitted so far is mixed. The targets lack ambition to some extent. When the measures are implemented, it will also be important to establish transparent monitoring procedures for expenditure and its efficiency, as well as to publish results on regular basis.

A further key element is the further development of the European capital-market and banking union. Firstly, integrated financial markets in Europe could strengthen the financial stability of the currency union by loosening close national ties between banks and the state and secondly, they could have a positive impact on economic growth by expanding the breadth and depth of the financial products on offer. And calling to mind the key success story of the EU – the single market – could also be worthwhile. There are still barriers to the cross-border trade in services. Apart from improving workforce mobility, the priority objective must be to establish a rapid, uniform framework for digital services and solutions, so that Europe keeps pace with developments in this future theme. With regard to achieving climate neutrality, continued and close European coordination and cooperation is indispensable. Important questions concerning the EU taxonomy and appropriate carbon pricing must be urgently pursued and then taken up in the next step at international level.

And thirdly, permanent and closer fiscal integration in the EU calls for the successful consolidation of public finances and then a deeper common understanding of the fundamental regulatory framework for fiscal policy. Credible consolidation efforts and a responsible fiscal policy pursued by Member States are the basis for the long-term success of monetary policy in a currency union. This requires an institutional convergence process that includes effective budgetary regulations but which also goes well beyond this. Transparency, comparability and the documented efficiency of public expenditures in the European Member States are important steps for establishing an evidence-based platform for discussion and for addressing existing misgivings about more far-reaching European solutions.

3. Conclusions

In order to achieve a sustainable recovery and make Germany future-proof, we urgently need to address the five areas of action identified: crisis resilience, climate neutrality, digitalisation, globalisation and Europe. This paper presents and discusses points of intervention for solutions in these areas of action. The measures are complementary and, with a view to the transformation, must in principle be implemented in parallel, not least because there are areas in which some catching up is required, such as digitalisation, or because it is important to secure a first-mover advantage, for example in the case of future technologies for climate neutrality. The combination of ideas presented can also be understood as a starting point for the further specification of solutions and for reprioritisation, should this be required. However, owing to the urgent need for rapid and broad-scale action, the concerted action of all stakeholders, both in setting the framework and in its implementation, holds out the greatest prospect of success. All actors at national and European level are called on: the federal government, regional governments (*Länder*) and local authorities, as well as the EU, enterprises, employees and consumers. This also requires good communication and coordination in order to be able to efficiently manage responsibilities and interfaces.

Appendix: Further reading

For the ongoing effects of the crisis and the identification of the five fields of action, see:

- Köhler-Geib, F. et al. (2020), The crisis as a catalyst for more sustainable economic management, Position paper, KfW Research.
- Köhler-Geib F. et al. (2020), Where to from here? The crucial next steps in the coronavirus crisis, Position paper, KfW Research.
- Scheuermeyer, P. (2021), Vorkrisenniveau in Sichtweite, doch die Bäume wachsen nicht in den Himmel (in German only), KfW Business Cycle Compass August 2021, KfW Research.
- Scheuermeyer, P. (2021), Positive business situation but renewed concern about the pandemic among SMEs, KfW-ifo SME Barometer July 2021, KfW Research.
- Müller, M. (2021), Coronavirus and structural change threaten jobs – further training more important than ever, Economics in Brief No. 208, KfW Research.
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- Orthey, M. (2020), Uncertainty and economic activity in Germany, Focus on Economics No. 300, KfW Research.
- Müller, M. (2020): Corona-Krise und Fachkräftemangel bremsen das Wachstum (in German only), Fokus Volkswirtschaft Nr. 293, KfW Research.

For the analysis of field of action 1 – Strengthen crisis resistance! – see:

- Gerstenberger, J. (2021), Licht am Ende des Tunnels – die Lage im Mittelstand entspannt sich (in German only), Focus on Economics No. 333, KfW Research.
- Gerstenberger, J. (2021), Zwar belastet die Corona-Krise den Mittelstand auch zu Jahresbeginn, allerdings bleibt die Lage trotz Lockdowns stabil (in German only), Focus on Economics No. 315, KfW Research.
- Gerstenberger, J. (2020), Corona pandemic has dampened expectations for 2020 – SMEs entered the crisis from a strong position, KfW SME Panel 2020, KfW Research.
- Metzger, G. (2021), Start-up activity 2020 with light and shade: Coronavirus crisis brings new low in full-time business starters but also holds opportunities, KfW Entrepreneurship Monitor 2021, KfW Research.
- Leifels, A. (2021), Jedes vierte Ausbildungsunternehmen stellt in Corona-Krise weniger Azubis ein (in German only), Economics in Brief No. 211, KfW Research.
- Müller, M. (2021), Skills shortage is growing despite lockdown – further shortages are imminent, KfW-ifo Skilled Labour Barometer June 2021, KfW Research.
- Schoenwald, S. (2021), Sharp drop in lending – base effect overstates weakness, KfW Credit Market Outlook June 2021, KfW Research.
- Herold, J. G. (2021), SMEs can access credit more easily again – large enterprises, particularly construction firms, face problems, KfW-ifo Credit Constraint Indicator July 2021, KfW Research.
- Schwartz, M. et.al. (2020), SMEs between financial resilience and a digital and green investment surge – a trade-off that should not be, Focus on Economics No. 306, KfW Research.

For the analysis of field of action 2 – Promote climate neutrality now! – see:

- Römer, D., Schwarz, M. und E. Liem (in German only, forthcoming), Europäischer CO_2-Grenzausgleich – Handelsbarriere oder Chance für den globalen Klimaschutz? Focus on Economics, KfW Research.
- Brüggemann, A. (2021), Digitalisierung und Klimaschutz im Spannungsfeld: Warum eine nachhaltige Ausrichtung der Digitalisierung wichtig ist (in German only), Focus on Economics No. 341, KfW Research.
- Brüggemann, A. (2021): Transitioning to climate neutrality by 2050: a major challenge for German industry, Focus on Economics No. 322, KfW Research.
- Durth, R. und D. Römer (2020): Climate neutrality: Energy efficiency of buildings remains crucial! Economics in Brief No. 200, KfW Research.
- Römer, D. und J. Steinbrecher (2021): Hohe Zustimmung zur Energiewende trotz Corona – Energieeffizienzwünsche treffen allerdings auf finanzielle Hindernisse (in German only), Focus on Economics No. 334, KfW Research.
- Römer, D. und J. Steinbrecher (2021): Shift to electric vehicles is gathering pace – but who is climbing into the driver's seat, Focus on Economics No. 331, KfW Research.
- Römer, D. (2020): Der lange Weg zu nachhaltiger Mobilität – Rückenwind durch den Corona-Lockdown? (in German only), Focus on Economics No. 290, KfW Research.

For the analysis of field of action 3 – Strengthening innovative strength and digitisation! – see:

- Zimmermann, V. (2021), Innovation and digitalisation in enterprises mutually reinforce each other, Focus on Economics No. 338, KfW Research.
- Zimmermann, V. (2021), Coronavirus crisis is slowing down innovation among SMEs, KfW SME Innovation Report 2020, KfW Research.
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- Leifels, A. (2021), Continuing education has dropped in the crisis – need for digital skills is growing, Focus on Economics No. 329, KfW Research.
- Brand, S. Raffer, C. und J. Steinbrecher (in German only, forthcoming), Digitalisierung der Schulen – vielfältige Herausforderungen für die Kommunen, Fokus Volkswirtschaft, KfW Research.
- Brand, S., Raffer, C., Scheller, H. und J. Steinbrecher (2021): Coronavirus update on municipal finance: 2021 will be another nail biter, Focus on Economics No. 316, KfW Research.
- Raffer, C. und H. Scheller (2021): Too soon to sound the all-clear – coronavirus may yet hit municipal finances where it hurts, KfW Municipal Panel 2021 – Summary, Hrsg. KfW Research.
- Brand, S., Steinbrecher, J. und E. Krone (2020): Digitalisierung in Kommunen: Große Erwartungen treffen auf viele offene Fragen (in German only), Focus on Economics No. 298, KfW Research.

For the analysis of field of action 4 – Continue to use international networking! – see:

- Abel-Koch, J. und K. Ullrich (in German only, forthcoming), Wie geht es weiter mit dem deutschen Wachstumsmodell? Szenarien für die Globalisierung, Focus on Economics, KfW Research.
- Abel-Koch, J. und K. Ullrich (in German only, forthcoming), Geringe Globalisierungsdynamik erfordert Anpassung der Wachstumsstrategien deutscher Unternehmen, Focus on Economics, KfW Research.
- Köhler-Geib, F., Scheuermeyer, P. und K. Ullrich (2021), The coronavirus and foreign trade – the crisis accentuates long-term trends, Focus on Economics No. 323, KfW Research.
- Abel-Koch, J. und K. Ullrich (2020), Short-term shock with lasting effects: The coronavirus crisis and international value chains, Focus on Economics No. 309, KfW Research.
- Abel-Koch, J. (2021), Coronavirus crisis sends SMEs' international business tumbling, KfW Internationalisation Report 2021, KfW Research.

For the analysis of field of action 5 – Strengthen Europe! – see

- Scheuermeyer, P. (2021) Debt sustainability after the coronavirus crisis – interest rates and growth are pivotal, Focus on Economics No. 327, KfW Research.
- Herold, J. G. (2021), Drohen höhere Zinsen und Inflation? Ein langfristiger Blickwinkel über die Pandemie hinaus (in German only), Focus on Economics No. 336, KfW Research.