



Federal Ministry
for Economic Affairs
and Climate Action

ANNUAL ECONOMIC REPORT

*Towards an ecological social
market economy – innovation
in transformation*

[bmwk.de](https://www.bmwk.de)

Imprint**Publisher**

Federal Ministry for Economic Affairs and Climate Action (BMWK)
Public Relations
11019 Berlin
www.bmwk.de

Current as at

January 2022

This publication is available for download only.

Design

PRpetuum GmbH, D-80801 Munich

Image credit

BMWK / Susanne Eriksson / p. 4

**Central ordering service for publications of the
Federal Government**

Email: publikationen@bundesregierung.de

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Preface



Germany is facing the challenge of the century: we intend to live climate-neutral lives in less than 25 years' time. By 2030, renewable energy is to cover 80% of total electricity needs. We need to meet these targets so that we can continue to live our lives in liberty and prosperity. If we fail to protect our natural environment and ignore the limits of what our planet can cope with, we will ultimately deprive ourselves of the basis of our economic and social life. In other words, the costs of the investments we are making now will be recouped in the long term. They are less than the costs of "just carrying on".

Moving to an ecological social market economy

In its ruling last year, the Federal Constitutional Court highlighted the value of effective climate action for future generations. As a strong industrial nation which is fully integrated in the world's supply chains, our country bears an outstanding responsibility for protecting the environment. Germany will play its part in adhering to the Paris climate targets and effectively restricting global warming.

If we are to give greater weight to this sustainable approach, we will need to evolve our Social Market Economy into an ecological social market economy. Our economic system will have to take more systematic account of the interests of future generations and the protection of global environmental assets, and must do so far more reliably than it has in the past.

This means changes to the ways we use energy, and also to many other consumption and production processes. Many companies have already embarked on this path in recent years, and large

sections of the economy are well prepared for the journey. In the Federal Government, we believe our role consists of accelerating and supporting the transformation to more climate neutrality via greater funding for alternatives, e.g. hydrogen technologies, electric mobility, low-carbon buildings and heating technologies, and the expansion of railway transport.

The world is still thirsting for fossil energy, and this is driving up prices, hitting consumers and businesses, and exacerbating Germany's dependence. A shift to renewable energy also signifies the availability of a cheap and reliable electricity supply and greater independence – going forward, renewables will guarantee security of supply. In order to help the citizens and small and medium-sized enterprises during the transitional phase, we are entirely removing the EEG surcharge (a surcharge to fund renewables) from their electricity bills.

It is vital to have a secure basis on which all the stakeholders can plan, and to significantly speed up the planning and approval procedures for the necessary investments. An instrument called “carbon contracts for difference” will ensure that climate-friendly processes do not suffer disadvantages during the transitional phase as they compete with more emission-intensive processes which use fossil fuels.

The transformation towards more climate neutrality will further accelerate the pace of what is already rapid structural change in the economy. New areas, new jobs, new fields of business will emerge, while others will suffer, and this will also affect traditions, the heritage people identify with and are proud of. This also creates a responsibility. We need to maintain people's

self-esteem, give them a sense of security during the transition, and facilitate fresh prospects for them.

It is important that the pan-German funding system for regional and structural policy contributes to equivalent standards of living across the whole country and supports the coal-mining regions during the transformation. We need to make use of the economic opportunities open to the regions affected by structural change. At the same time, we need to engage in a debate with society about the cultural identity of areas undergoing change.

Economic recovery and a decade of investment in the future

As we begin the year 2022, we are still in the midst of the pandemic, and this is continuing to result in restrictions in some parts of the economy and demanding enormous sacrifices from the people of our country. Throughout this difficult phase of economic recovery, we are continuing the assistance programmes for the companies and the arrangements for the short-time work allowance. As the vaccination numbers pick up, it should soon be possible to curb the rates of infection and to scale back the crisis-related assistance. The economic recovery will then visibly gain traction. The Federal Government is expecting a growth rate of 3.6% for our gross domestic product in real terms this year.

The pent-up investment creates great opportunities for a decade of forward-looking investment in the comprehensive transformation of our economy. Also, the potential for digitalisation offers substantial prospects for growth in many areas. Digital solutions can also contribute

to effective climate action. The data and platform economy offers – if it is smartly regulated – massive possibilities to simplify processes, to conserve resources and to develop new, innovative services and markets.

The Federal Government therefore aims to raise the macroeconomic investment rate well above the EU average. This will particularly require private-sector investment, which we intend to leverage via a favourable policy environment and additional incentives for the transformation.

We are also looking to the strengths of the German economy, firmly anchored in the European Single Market. Germany's economy is characterised by its healthy, broad-based structure of highly innovative large, medium-sized and small firms, and also by outstandingly well-trained workers. In order to build on these strengths, we wish to work with the business community to boost the spending on research and development to 3.5% of GDP and to trigger a new wave of startups. Here, the Future Fund for Venture Capital will also play a part.

At the same time, we will be addressing one of the most pressing challenges facing our companies: the shortage of human resources on the labour market and, particularly, in the skilled craft sector. In order to mitigate this, we will be launching a training campaign and making it easier for skilled workers to come here from abroad.

A debate about our prosperity

In the ecological social market economy, it is also important to take a differentiated view of growth and the consumption of resources. This is necessary quite simply because the factors of production are scarce and resources invested in climate action are not also available for expanding the availability of consumer goods. In particular, we need to focus more on and do more to tackle the negative consequences of economic activity. We must stop funding economic activity which contributes to the consumption of fossil fuel, to the destruction of the environment, and to social inequity. Rather, the challenge is to break the link between growth, the consumption of resources and greenhouse gas emissions. Despite the scale of the challenges, the Annual Economic Report and its data nevertheless give cause for optimism that this is feasible.

Further to this, we want to engage in an open debate about what ultimately is really meant by prosperity and quality of life, about the ways sustainability and growth can complement each other, and about where we need to weigh up conflicting interests.

We are initiating this debate in this Annual Economic Report. For the first time, a broad set of welfare and sustainability indicators are considered which reach “beyond GDP” – ranging from social indicators to environmental protection and climate action, education and research, demographics, public finances and equivalent standards of living.

Outlook

The battle against global warming is a task which extends far beyond the timeframe of a single legislative term. However, we believe that we now have the responsibility to map out a reliable route to achieving the goal of climate neutrality in 2045.

Here, we are relying on the openness, the creativity and the capabilities of each and every individual to keep finding fresh solutions and to master the transformation together. And we are relying on the innovative forces of competition which, over time, repeatedly result in cheaper and better processes and enormous productivity gains. Building on the foundations of an evolved ecological social market economy, we can successfully tackle the task which lies ahead of us.

Dr Robert Habeck
Federal Minister for Economic Affairs and
Climate Action

The 2022 Annual Economic Report of the German Federal Government

In accordance with Section 2 of the Act to Promote Economic Stability and Growth, the Federal Government hereby submits its 2022 Annual Economic Report to the German Bundestag and the Bundesrat. It also provides benchmark data for the overall orientation of the economy in 2022, in accordance with Section 3 of the Act.

In Part I of the Report, the Federal Government presents central priority fields of economic and fiscal policy. As stipulated by the Act to Promote Economic Stability and Growth, Part II of the Report discusses the Government's projection of overall economic trends in the current year.

The Federal Government would like to thank the German Council of Economic Experts (GCEE) for its detailed and comprehensive analysis of economic developments last year and the outlook for 2022, as well as for its discussion in its 2021/22

Annual Report of the guiding principles of economic policy. In the Annual Economic Report, the Federal Government comments on the GCEE's 2021/22 Annual Report. In order to assist the decision-making within the Federal Government, a workshop was held in Berlin on 17 November 2021 with representatives of the ministries and the academic staff of the GCEE.

In preparing the Annual Economic Report, the Federal Government discussed its economic and fiscal strategy with the *Länder* and municipalities within the framework of the Konjunkturrat für die öffentliche Hand (a government economic advisory council). This strategy was also discussed with union representatives as well as with the Gemeinschaftsausschuss der Deutschen Gewerblichen Wirtschaft (a joint committee that serves as a co-ordinating body for German business associations).

I. The Federal Government's economic and fiscal policy



A. Towards an ecological social market economy

1. The German economy is facing enormous challenges. The COVID-19 pandemic is continuing to dominate everyday life in Germany. Government assistance has been able to protect the economy from major structural upheaval, and jobs have been retained. But it is obvious that the economic repercussions will be felt for longer than the immediate health crisis. The Federal Government will therefore continue and adjust its policies in the interest of stabilisation and ongoing recovery.

2. That the current situation is made more difficult by the pandemic does not alter the fact that long-term challenges, such as the necessary transition to a climate-neutral and, in overall terms, sustainable economy and society, digitisation and the likelihood of growing shortages of skilled workers, must be tackled with greater urgency. On top of this, there is a sharply changing geopolitical environment which is posing challenges not only to the tried-and-trusted multilateral approach, but also to technology and industry in Germany and Europe.

Germany needs an economic policy which enables companies to remain innovative and forward-looking, and to build on their strengths. A successful transformation will present not only challenges, but also opportunities for the German economy. If the correct, well-considered economic policies are put in place, German firms will be able to achieve technological leadership on carbon-neutral production processes and climate-friendly products. This will not only benefit global action on climate change, but also enable Germany to become “the world’s supplier” in the coming decades and thus safeguard its position as one of the world’s leading economies. Germany’s central role in the European Single Market and the many value chains within Europe mean that the European Union as a whole can also benefit.

3. The success of the forthcoming transformation will however require a substantial further development of the existing regulatory framework. There is a need for a clear and reliable framework which offers companies a reliable basis for their planning in this process of transition.

4. The aim is to develop the “Social Market Economy” into an ecological social market economy and thus to continue its success story within the limits imposed by the planet.

The achievements of the Social Market Economy

5. The model of the Social Market Economy has served as a constant point of orientation for German economic and fiscal policy for decades. A large degree of consensus continues to exist in society and politics about the added value of this economic policy concept, since it combines social security for the citizens with the potential of free economic development and competition. It is difficult to overstate the value of this broadly anchored social consensus, as it offers a common point of reference – particularly in times of upheaval and fresh challenges – which makes compromises and policy decisions possible.

The concept is centred around the principle that price-setting and allocative mechanisms of the market should be allowed to act as far as is possible – without concomitant negative effects – but that the policy framework should be designed to ensure that the market processes themselves result in socially balanced growth so that there is very little need for subsequent correction of the market outcome through the welfare system. For this reason, the system of free collective bargaining, the system of co-determination as anchored in law, and also state intervention in the field of essential services form constitutive elements of the model of the Social Market Economy.

6. The Social Market Economy starts from the fundamental commitment to the freedom of citizens to engage in economic activity. Further to this, the Federal Government bases its economic policy on a competitive regulatory framework for market processes which permits efficient coordination of economic activity, counteracts the emergence of excessive market power and prevents abusive behaviour, sets incentives for innovation and progress, and avoids or internalises undesirable side-effects of economic activity (negative externalities). Market structures affected by market power or asymmetries of information need to be reviewed. The central aim is the broadest possible participation of citizens in economic prosperity. Should, despite careful policy-making, the market process lead to societally undesirable outcomes, it may also be necessary to adapt the market structures. Should citizens themselves be unable to benefit sufficiently from market outcomes, these citizens are assisted and given state support. The Federal Government will further strengthen the social aspect of the Social Market Economy. Further to this, the Federal Government attaches high priority to the central principles of its competition rules: free price formation, private property, freedom of contract, openness of markets and ensuring that responsibility, liability and profits belong together with a view to efficient allocation outcomes. Not least, the Federal Government believes that an economic and fiscal policy characterised by continuity and reliability is very important.

7. Beyond the principles and institutions anchored in the Constitution, such as in particular the fundamental rights of freedom of action, equality before the law, freedom of movement, freedom to choose one's occupation, and private property which is endowed with the full right to dispose over it but also with the obligation to serve the common good, the concept of the Social Market Economy in Germany has never been a straitjacket for economic policy. Rather, Germany has bene-

fited from an economic and fiscal policy that has kept adapting the regulatory framework of the Social Market Economy to the needs of the age. These developments in the economic system and the changes to the rules have brought economic and social progress. The Act to Promote Economic Stability and Growth of 1967 added a feature to the regulatory framework, defining the "magic square" of the key goals for an economic and fiscal policy oriented to growth and economic stability. The specific macroeconomic challenges of the present day are very different from those of the late 1960s. No significant role was played in those days by environmental sustainability, fiscal stability or pandemic-readiness. The crucial point, though, is that the framework within which the state takes action allows it to respond convincingly to crises and to the repeated emergence of unexpected economic challenges. This includes a rapid, powerful and appropriately dimensioned and structured crisis response policy, as displayed by the government in the times of the financial crisis and the COVID-19 pandemic. In particular, the aim is to stabilise the economy and jobs in the short term and then to emerge from the crisis with stronger structures.

Whilst decisions, e.g. in the fields of cyclical policy, but also in industrial and transformation policy, have always been the subject of contentious debate throughout the history of the Social Market Economy, changing circumstances have repeatedly demanded a policy response from the state. For example, recent developments in globalisation and digitalisation have also influenced European approaches to innovation policy and industrial policy: not least, increased network effects, high investment costs with a lack of clarity as to their outcome, disruptive developments and coordination problems have arisen – all of this requires a reorientation of the actions taken by the state. Dispensing with all forms of an activating and shaping economic policy can entail lasting losses of technological and industrial competitiveness in

the global context. A major role here is played by the need for an evidence-based and scientifically grounded approach to economic and fiscal policy. Over the decades, important contributions towards this have derived from, for example, the institutionalised dialogue with the GCEE, as well as other forms of policy advice.

8. In addition to the constructive evolution of the Social Market Economy in many areas thanks to practical economic policies, there are however also long-term undesirable developments, some of which have resulted in a problematic discrepancy between the principles of the Social Market Economy and practical economic policies. It is therefore necessary to take stock and draw the right conclusions in order to uphold the basic consensus and correct the policies. Some developments suggest that it makes sense to return more closely to the original regulatory principles of the Social Market Economy. In many areas, for example, state regulation has attained a depth and granularity that tangibly hampers dynamic economic development and rapid progress. Despite the considerable size of the welfare state, it has not proved possible to deliver fully on the promise that the population will enjoy broad and equal participation in the opportunities of economic progress. The COVID-19 pandemic in particular has revealed deficiencies in terms of equal opportunities – e.g. in the field of education (cf. GCEE Annual Report pp. 239 ff.). Further to this, the Federal Government believes that the dynamism of the economic model is also weakened by the structural rise in the influence of individual interests in Germany and the EU. It is therefore aiming at a stronger orientation to the common good and a critical consideration of specific subsidies and (tax) exemptions.

9. The overall track record of the Social Market Economy is clearly positive: the economic model, in the various forms it has taken around the world,

has made a major contribution towards the high quality of life of large proportions of the population in Germany and also in other western-style democracies. Despite the undesirable developments cited above, the current economic system – precisely because of the changes made to it over recent decades – provides a reliable framework which permits policy responses to many of the current and forthcoming challenges and creates scope for further progress.

Insufficient protection for global environmental assets

10. Taking the global view, too, market economy systems have made major contributions to the progress on development in recent decades. The related improvements in quality of life in particular would be hard to imagine without a strong orientation to the market economy. It has resulted in reductions in global poverty in particular – since 1990, more than a billion people have escaped poverty.

11. Since at least the millennium, however, it has become increasingly clear that welfare gains in large areas of the world are based on an unsustainable production system and, in combination with the clear growth of the world's population, pose a massive risk to vital environmental assets. Furthermore, many of the repercussions for the climate and the environment are highly unequally distributed, and particularly affect many poorer countries. The – initially predictable and subsequently actual – crossing of those thresholds which permit sustainable economic activity within the boundaries imposed by the planet forms the downside – which has since been confirmed by many scientific studies – of the massive economic successes, and also raises fundamental questions about the right economic system for the planet.

12. Whilst it has proved possible to address local environmental issues since the 1960s in the interest of the common good in many areas (environmental law), no solution has as yet been found for the global protection of the climate and biodiversity and the reduction of global pollution in an economy which is globally networked and based on a high level of division of labour. Even though economic science has long since undertaken analyses of the over-exploitation of public assets and developed ways to internalise external effects, and even though the problems posed by the greenhouse effect and the general over-exploitation of environmental assets are obvious, the market systems have so far failed to take adequate account of the boundaries imposed by the planet. The failure over decades to address the consumption of fossil energy and the loss or the degradation of ecosystems due to intensive land use are now having very specific consequences for Germany as well. Even if individual disasters cannot be blamed solely on climate change, the likelihood of such events taking place has increased considerably as the climate has changed. The economic consequences of not acting are becoming tangible and apparent to the individual. In addition to the losses of human life and the health risks posed by increasing forces of nature like heavy rains, heatwaves and droughts, a continuation of the present method of economic activity would result in the medium and long term in structural economic damage, even taking into consideration the measures taken so far to tackle global warming. Current estimates suggest that these could amount to double-digit percentage losses of GDP as a result of climate change.

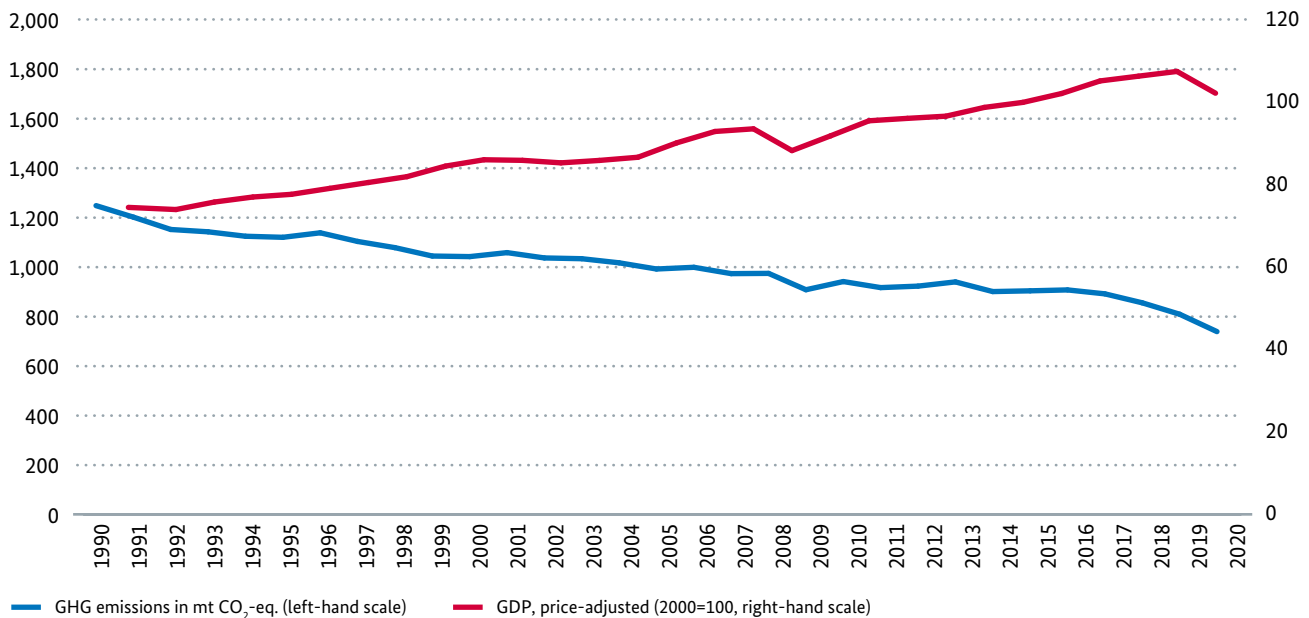
13. In contrast to the protection afforded to local environmental assets, such as water quality, the large territorial and time-related discrepancy between activities that harm the climate and the environment on the one hand and the materialisation of the negative external effects deriving from these on the other create a barrier to an effective

protection of global environmental assets which is difficult to overcome. In many cases, the stakeholders in government and commerce tend to offer policy priorities and strategies which result in short-term local improvements. Without a functioning global regulatory framework which restricts the use of fossil energy, it is inevitable that the boundaries imposed by the planet will continue to be exceeded. The world is in the Anthropocene era and is moving increasingly towards the danger zone of irreversible changes to the ecosystem.

The time is ripe for an ecological Social Market economy

14. Unlike in post-War Germany, the primary focus of economic policy is no longer on overcoming a scarcity of material goods. Not least since the adoption of the United Nations' Agenda 2030, the Federal Government's economic and fiscal policy has for some years now aimed to establish more sustainability in many areas. The last three decades have certainly seen worthwhile steps towards an ecological evolution of the regulatory framework. Back in 1988, a Study Commission of the Bundestag met to discuss how to handle global warming, and Germany went on to join the Kyoto Protocol in 1997, one of the first attempts at international coordination. The ecological tax reform of 1999, the subsidies for the expansion of renewable energy and introduction of EU emissions trading in 2006 all aimed to break the link between greenhouse gas emissions and economic development (cf. Diagram 1). As time is now short in view of the advancing climate change, however, the previous policies to tackle global warming can nevertheless be described as far too hesitant. In view of the worsening of the climate crisis and the loss of biodiversity, there is a need to adapt the principles in order to arrive at a sustainable economic model.

Diagram 1 Development of Germany's absolute GHG emissions and real GDP



Source: Federal Environment Agency, Federal Statistical Office.

15. In view of the fact that Germany needs to double its annual emissions reduction compared with the rate in the period from 1990 to 2020 in order to attain the goal of climate neutrality by 2045 and to deliver the German contribution towards achieving the Paris climate targets, it will not be enough merely to repair individual aspects of the undesirable developments on the markets. In fact, the rate of emissions reductions must now more than double in the coming years and then nearly triple in the run-up to 2030 if the goals set out in the Climate Action Act are to be attained. The average annual reduction in emissions over the last decade stood at 15 million tonnes, but will have to rise to more than 40 million tonnes a year in the second half of this decade. This historic transformation will require not just corresponding technological developments but also a fundamental further development of the current economic model to make it an ecological social market economy.

16. Such a development will require the following three elements in particular:

- (1) The economic system must give systematic and reliable consideration to the interests of future generations. In fiscal terms – with a view to the long-term viability of public finances – this is ensured by the deficit rules in the Constitution, which have proved sufficiently flexible to maintain the Federal Government's ability to act in the face of crises. With regard to the ecological dimension, too little attention has been given so far to the long-term consequences of economic activity. Following the introduction of the Federal Climate Change Act and the decision by the Federal Constitutional Court in 2021, the Federal Government will now launch and complete an Immediate Climate Action Programme with all the necessary laws, ordinances and measures by the end of 2022. In

addition to the Paris Agreement, the biodiversity targets in the Convention on Biological Diversity and at EU level also form an important framework for a sustainable economy. In order to realise these goals, the Federal Government will continue the development of its National Biodiversity Strategy with a view to anchoring it during this legislative term.

- (2) In addition to a binding ecological regulatory framework, there is also a need for a rebalancing of economic policy priorities. In this regard, it is necessary to take up the long-lasting debate on ways to broaden the measurement of welfare and to add additional welfare and sustainability indicators to the traditional benchmarks of economic policy like gross domestic product. This improves the platform for an open and fact-based debate in society about the relative significance of the respective dimensions of welfare. This Annual Economic Report takes a first major step towards mapping the status of parts of overall societal welfare on the basis of available data (cf. Section G). The aim here is to use suitable indicators of welfare to provide a more precise and up-to-date framework of orientation for our economic growth in order to safeguard sustainability and social cohesion in the political process, and at the same time to reliably limit the consumption of the natural environment and to break the link between this consumption and economic growth. This is merely a first step towards a generally more integrated understanding of welfare aspects in economic policy.
- (3) Not least, a further development into an ecological social market economy implies that the relevant fiscal and economic policy tools must be reviewed in terms of their compatibility with sustainability goals, and in case of doubt must be adapted. This necessitates an evidence-based economic policy which makes it possible to weigh up alternatives on a broad

basis of data and experience and to bring about transparent decisions. In some cases, the appropriate survey and evaluation methods have yet to be developed.

17. In view of its modest share of global greenhouse gas (GHG) emissions, Germany has relatively little direct influence on the future course of climate change. For this reason, the question is regularly asked as to the extent to which Germany really needs to press ahead with a particularly high level of ambition, especially when it proves impossible to exclude displacement effects relating to GHG emissions. The Federal Government offers four answers to this:

- (1) Firstly, the Federal Government points out that, in addition to the commitment made under international law in the Paris Agreement, European and – not least due to the decision by the Federal Constitutional Court – far-reaching national obligations exist which require a comprehensive and swift transformation of the economy.
- (2) Irrespective of the binding legal framework, the Federal Government also believes that Germany bears a global responsibility in the battle against climate change. In 2020, per-capita carbon emissions in Germany stood at 7.7 tonnes, which is still well above both the EU-27 average (5.9 tonnes) and the average for the Earth's population (less than 5 tonnes) (cf. Diagram 2). As a strong exporter, Germany is now called on to show that an economy oriented to environmental sustainability can also be a globally competitive economy.
- (3) In view of the historic task of transformation and the related costs, the Federal Government attaches great importance to the point that German climate policy – firmly embedded in European climate policy – ultimately takes

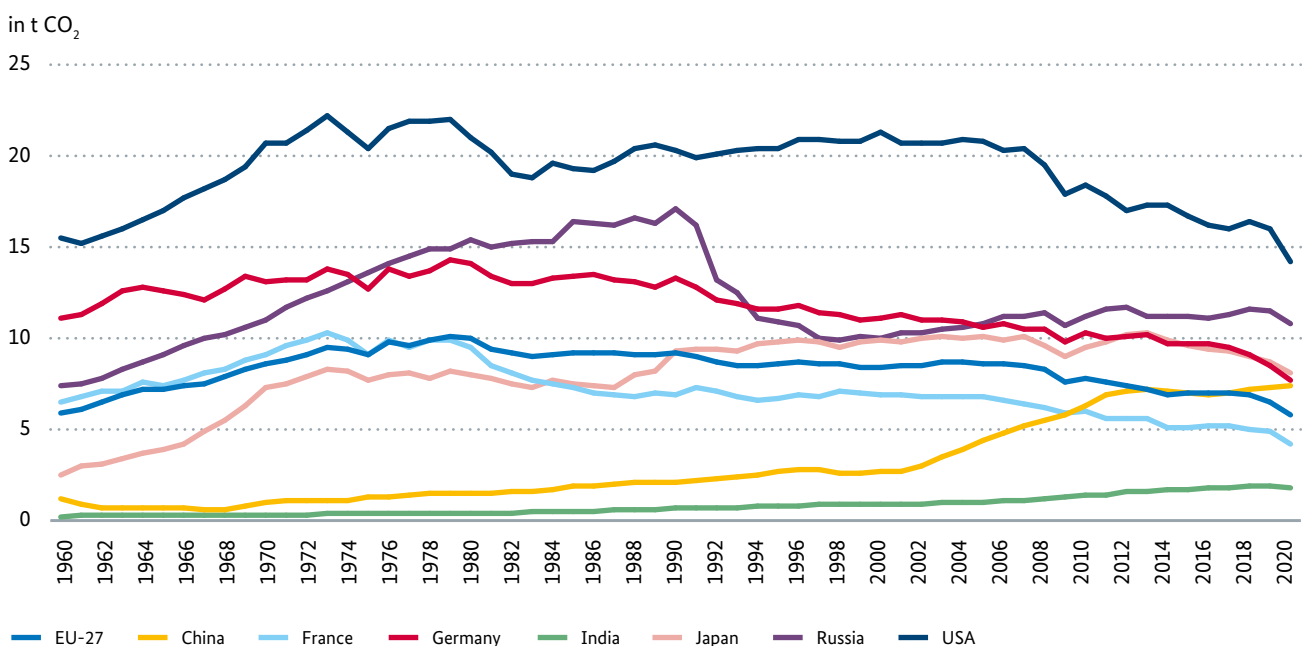
place in the context of globally effective climate action. For this reason, the Federal Government will be prioritising its external climate policy. For example, it will use approaches like the initiative for an open climate club to press for international (minimum) carbon pricing. Quite apart from this, the Federal Government is convinced that Germany's move to become a GHG-neutral economy will generate technical and non-technical innovations within the space of a few years which will have a major influence on the possibilities around the world to live and engage in economic activity in a climate-neutral and sustainable manner.

tre of high technology with outstanding research and a modern industrial base, Germany in particular offers the best preconditions to serve as a pioneer in the field of climate policy in which the companies can develop and conquer significant new markets, for example in the field of energy and climate technologies (cf. e.g. the hydrogen strategy, electric mobility), in lightweighting, in the sustainable bioeconomy and in other key enabling technologies which will dominate the coming decades. Not least, innovative resource conservation opens up the possibility to reduce dependency on imports of raw materials.

(4) Building on the previous argument, the Federal Government believes that the climate-policy transformation will create major medium- and long-term opportunities for new economic and competitive dynamism and thus for the competitiveness of the German economy. As a cen-

Conscious of these findings, the Federal Government will orient its policy to the upholding and strengthening of competitiveness, innovative capabilities and growth, in order to safeguard prosperity and at the same time to attain overall sustainable development.

Diagram 2: Per-capita emissions (in tonnes of CO₂)



Source: Global Carbon Project (2021)

Transformation, prosperity and competitiveness

18. The move to become a climate-neutral economy which is sustainable in overall terms will require a deep-reaching change in the economic structures. The success of this transformation will form the focus of economic and fiscal policy in the coming years. The outcome of this transition policy depends not least on whether the climate targets are met within the envisaged period. The success also depends on whether Germany can maintain its prosperity and competitiveness as it takes this path. Only if it achieves this will it be possible to stick to the ambitious path at all levels and inspire other nations to move in the same direction.

19. The ambitious path to climate neutrality will initially require substantial investment in additional capacities of renewable energy, network infrastructure, new industrial process technologies, sustainable land use, zero-emission housing and zero-emission mobility. This will result in an additional need for work, which will create numerous new job prospects, e.g. in industry, in the skilled craft sector, in the construction sector, in the services sector and in agriculture. The Federal Government believes that it has an obligation to grant broad assistance to the employees of those sectors and regions in which jobs will be lost so that they can benefit from comparable or enhanced career options. Greater investment in vocational training will be indispensable as people seek to reorient themselves. In view of the demographic development, Germany will continue to be reliant on more skilled and other labour from abroad.

20. The medium-term and long-term prospects are certainly positive: a successful cross-cutting transformation in the 2020s will not only build the platform from which to achieve the 2030 climate targets, but will also lay the foundations for new and sustainable prosperity: if the newbuild of renew-

able energy takes place as planned, energy will become cheaper in the medium to long term. Climate-neutral manufacturing processes will be tested, and cost-saving economies of scale will be achieved by the new technologies. Above all, however, Germany will generate new expertise, new key enabling technologies and new products which will lead to new competitiveness.

21. In view of the time-line and the scale of the task, there is a need for a fundamental consensus between government, commerce and society about the transformative path to be taken. In the interest of a stable and reliable policy framework for the transformation, the Federal Government will set up an Alliance for Transformation in a dialogue with commerce, trade unions and associations early this year.

Carbon pricing as a central element of the future regulatory framework

22. In order to trigger the restructuring into a sustainable economy, the Federal Government is building on the tradition of the Social Market Economy and relying primarily on a decentralised approach and the price mechanism, i.e. market-based instruments. In this way, precisely by moving back more closely to the principles of the Social Market Economy, efficient and substantive progress can be made towards an ecological social market economy.

23. Against this background, the Federal Government commits to the pricing of GHG emissions as a central instrument to progress an efficient transformation, but regards it as part of a comprehensive policy mix which also embraces changes to the regulatory framework and other measures. The European Union Emissions Trading System (EU ETS) for the field of electricity generation, energy-intensive industry and inner-European air traffic, and the national emissions trading launched

last year for the heating and transport sectors, are two key market-based instruments which can bring about an effective and efficient reduction in current emissions (cf. also GCEE 2019).

However, the desired steering of the carbon price is impeded at present both by non-climate-friendly subsidies and tax rules and also by the high burden imposed on electricity via charges and surcharges. The coming years therefore need to see a strengthening of carbon pricing as a steering instrument, not least via the removal of subsidies that harm the environment and the climate. In this process, attention will be paid to undesirable redistributive effects and burdens, and they will be offset where necessary.

If a rising carbon price is to be able to steer behaviour, it is essential for the regulatory framework of those markets which are particularly affected to be adapted to allow households and companies to substitute fossil fuels. If companies and households are to be able to respond to the price signals, the necessary public and private infrastructure must be in place.

This relates to the availability of green hydrogen and green electricity for the industrial sector, to the availability of alternative transport technologies, and to the question of incentives in the buildings sector. Until such arrangements are in place, a steep curve in the carbon price would cause many companies to shift their emissions abroad and would result in real income losses for households. For this reason, the Federal Government believes that the targeted use of funding programmes will continue to be appropriate and necessary in the coming years in order to bring about rapid and cost-efficient reductions in emissions. At the same time, there is a need to rigorously counter free-rider effects and to ensure that funds are used efficiently.

24. The transformation of the industrial sector and of the manufacturing sector in particular will require the deployment of further funding and regulatory instruments. For example, in a period of accelerated emission reductions it is particularly important to ensure that the climate targets are not attained by shifting energy-intensive value creation abroad (carbon leakage). In view of long reinvestment cycles and the short time available until 2045, the policy environment for all long-term investments must be shaped in such a way that technical solutions can already be selected today that will not jeopardise the goal of GHG neutrality. In order to create the certainty that companies need for their planning, the Federal Government will be making use in this context of instruments like carbon contracts for difference (CCfDs) and other targeted support from the Energy and Climate Fund, which itself will be transformed into a Climate and Transformation Fund. At the same time, it is necessary to maintain protection against carbon leakage in the light of increased ambition on the part of EU climate policy. This will require an appropriate combination of measures, in which the European project of a carbon border adjustment mechanism can play an important role in future. An open and cooperative climate club can also help in the medium to long term to reduce the risks of carbon leakage faced by industry in the EU.

25. Comprehensive private and public investment will be needed in order to bring our prosperity into line with the boundaries set by the planet. Fiscal and economic policy will have to contribute to a macroeconomic environment that is as stable as possible. The rapid and efficient implementation of investment projects will however only succeed if the necessary planning, administrative and approval procedures are significantly accelerated. For this reason, the Federal Government will action and prioritise projects to swiftly improve the planning culture. The aim is to at least halve the duration of procedures. The financial markets

need rigorous regulation which prevents financial crises, distributes the costs of crisis prevention and management appropriately whilst taking account of the liability principle, and promotes investments by the real economy. Appropriate regulation and the related strengthening of financial stability also make a contribution towards boosting Germany's competitiveness as a financial centre.

26. In addition to the numerous incentive and funding instruments, the Federal Government also commits to further (regulatory and) statutory measures to ensure both fair competition and equal opportunities. In the case of technologies and investments with low carbon avoidance costs, or in the case of incomplete information for households, such an approach can boost the effectiveness of the entire combination of measures. These can include ambitious standards, thresholds and best practices. For long-term investment assets in particular, early and forward-looking decisions on such measures will be essential to provide a reliable framework of orientation for investors.

27. The pricing of GHG emissions, in conjunction with supporting instruments which also aim to bring about a cost-efficient reduction in emissions, lays the platform for a successful process of transformation.

A large proportion of the value creation will inevitably entail some GHG emissions for the foreseeable future. But, going forward, it will be necessary to avoid a situation in which state subsidies are provided to support forms of value creation that harm the climate. It is therefore important to review and if necessary adapt the existing regulatory framework, including numerous economic policy instruments, in order to bring them into line with the task of transforming the economy. This applies to competition policy as much as to procurement law, and to regional policy as much as to policies on innovation and SMEs.

Making full use of the opportunities of digitisation and modernising the state

28. Alongside climate change, the digital transformation is probably the greatest task of our age for policy-making. It has the potential to substantially raise macroeconomic welfare and the standard of living of each and every individual by opening up new fields of growth and employment whilst facilitating and accelerating the shift to sustainable, environmentally friendly and climate-friendly economic activity. The aim of a responsible, inclusive and sustainable digital policy must be to actively shape the changes, to support necessary structural adjustments and to ensure that the potential for innovation can be used in all areas of the economy and society. In recent years, digitalisation has often been mentioned as a challenge alongside climate change and an ageing society. In fact, however, digitalisation primarily offers great opportunities for innovation and for higher productivity in companies and state institutions. Germany has failed to make sufficient use of these opportunities over the last decade. We now need to work on the necessary digital advances without ignoring the risks and side-effects of digital technologies. This is particularly true of the competition system itself, which on the one hand is strengthened by digitalisation as a result of greater price and market transparency, and on the other is exposed to risks in the field of the platform economy.

29. There is no denying the need for a root-and-branch modernisation of the state. In the coming years it will be necessary to make an effective leap forward to more efficient and agile state structures. Citizens and companies must be able to see the state as a supporter and enabler. This requires changes in institutions and authorities, as well as further progress on cutting red tape.

30. One important aspect in the modernisation of the state in the age of digitalisation is the (poten-

tial) availability of data and evidence. Authorities are holding a growing reservoir of data and have access to more and more empirical knowledge. With a view to more efficient action by the state, the Federal Government is committed to a more evidence-based economic and fiscal policy.

Respect and social security as preconditions for a successful transformation

31. The success of the post-War Social Market Economy was based not least on the credible promise that hard work and fresh ideas would result in material prosperity. Today, average purchasing power is many times higher than it was then. In view of the forthcoming challenges, many people are wondering whether they will be able at least to maintain their current level of prosperity. A far-reaching transformation agenda will particularly meet with support if it is designed to be socially just and creates new opportunities for the population at large. Societies can tackle common challenges successfully if social cohesion and equivalent standards of living are assured.

32. A central factor for the quality of life of people in Germany and for the public acceptance of the challenges posed by the transformation is the promise of social security and respect for all those who work towards the continued success of the commonweal and contribute to macroeconomic development. Against this background, the Federal Government is advocating a welfare state which helps the citizens to grasp new opportunities in life. The value attached to all forms of work, in dependent employment or in self-employment, for remuneration, on an honorary basis or in the context of private care provision, is crucial, not least in view of the forthcoming demographic change.

B. Current economic situation, fiscal policy framework and challenges due to the COVID-19 pandemic

33. 2021 was another turbulent year for the German economy. From the outset and into the spring, the economic development was dominated by the pandemic and measures to tackle it. From the summer, the successful vaccination campaign made it possible for almost all parts of the economy to recover. Later in the year, however, supply-side shortages and scarcities of materials, which particularly affected the industrial sector, became increasingly prominent. The autumn of 2021 saw another rise in infection rates, as a consequence of which the economic recovery experienced a significant setback in the final quarter. All of this means that price-adjusted gross domestic product expanded at a rate of 2.7% in 2021.

34. The Federal Government's 2022 annual projection assumes that there will be a 3.6% expansion in the price-adjusted gross domestic product. The start to this year remains slow in the services sector in particular as a consequence of the pandemic. Going forward through the year, the cyclical recovery is likely to pick up a fair amount of speed again following the expected drop in the rate of infections and the related removal of restrictions. The industrial sector is likely to be able to substantially expand its output as soon as the supply-side problems gradually disappear over the course of the year.

35. The labour market in 2021 was characterised by a robust underlying dynamism despite the pandemic. Gainful employment increased sharply over the year. However, the statistical underhang from the previous year meant that this did not find expression in an increased annualised figure. Unemployment and short-time work also fell significantly last year. The level of use of short-time work allowance did initially rise again in spring

2021 when parts of the services sector were affected by closures, but as things opened up again, the number of people on short-time work fell clearly again, although because of persistent supply issues the numbers in the manufacturing sector did not fall to zero. As the year came to a close, a renewed wave of infections resulted in a slight rise. This year is set to see a further fall in registered unemployment. The rise in employment should continue, and short-time work will probably largely disappear.

36. The rate of inflation in Germany rose appreciably last year to an annualised figure of 3.1%, whilst it had only amounted to 0.5% in the preceding year. This means that the rate was well below the European Central Bank's target for the entire eurozone in 2020, and well above it in 2021. A number of special factors were responsible for this development, such as the temporary cut in VAT rates in the second half of 2020 and the sharp rises in energy and raw materials prices last year following collapses in the prices in 2020 due to the pandemic. The special factors are playing a much diminished role this year. In the case of raw materials and of crude oil in particular, the futures prices are indicative of a gradual softening. The fall in the EEG surcharge is slowing the rate of inflation this year. However, the supply bottlenecks affecting intermediate goods like semiconductors in particular continue to be a central factor driving up prices. The situation is not expected to gradually improve until later in 2022. All in all, it is expected that the rise in the consumer price level will be significant again this year, at an annualised figure of 3.3%. The core inflation rate expected for 2022, which ignores the highly volatile prices for food and energy, stands at 2.4%. The Federal Government is keeping an eye on the development in the inflation rate and the main factors driving prices, particularly on the

energy markets and resulting from the supply chain disruption.

37. The latest figures reflect a slow world economy. This is partly due to the measures to curb the pandemic. It is also due to the supply shortages affecting key intermediate goods and raw materials, which are hitting the economy, global industrial output and global trade. The world economy is expected to pick up speed again as infection rates fall and the shortages are gradually tackled over the year. The Federal Government expects this year to see global GDP growth of 4.5%¹, following an estimated rise of 5.9% last year. German foreign trade will also benefit from the global economic environment. Exports are likely to rise substantially this year, by 5.5%, following a sharp expansion of 9.4% last year. Imports are also expected to grow strongly, by around 6.3% (2021: +8.6%). The surplus in the current account will thus remain unchanged in year-on-year terms, at 6.5%.

38. At the beginning of the current year, the Federal Government's fiscal policy continues to be driven by the need to tackle the pandemic. The Federal Government's priority goal continues to be to protect the health of the public, to support jobs and companies, and to uphold social cohesion. The Federal Government's fiscal policy is firmly underpinning these efforts. Numerous measures, such as the relaxed rules on short-time work and the COVID-related economic assistance which were introduced at the outset of the pandemic and have since been extended several times, have helped and are continuing to help cushion the financial and social repercussions of the pandemic on those who are most affected. Support measures such as immediate aid and bridging aid for companies, and tax relief and tax-based liquidity aid (cf. Overview 2) have proved able to largely prevent undesirable

1 GDP of the global economy calculated on the basis of purchasing power parities.

Overview 1: Selected key indicators of overall economic development in the Federal Republic of Germany¹

	2020	2021	Annual Projection 2022
Change as compared to preceding year in %, unless indicated otherwise.			
FORMATION of gross domestic product (GDP)			
GDP (adjusted for price)	-4.6	2.7	3.6
Gainfully active (domestically)	-0.8	0.0	0.9
<i>Unemployment rate in % (as classified by Federal Employment Agency)²</i>	5.9	5.7	5.1
USE of GDP in price-adjusted terms (real)			
Consumer spending and priv. non-profit organisations	-5.9	0.0	6.0
Machinery and equipment	-11.2	3.2	4.1
Buildings	2.5	0.5	1.0
Domestic demand	-4.0	1.9	3.9
Exports	-9.3	9.4	5.5
Imports	-8.6	8.6	6.3
<i>External component (momentum)³</i>	-0.8	0.9	0.0
Gross wages and salaries per employee	-0.1	3.2	3.7

Sources: Federal Statistical Office; The Federal Government's 2022 Annual Projection.

1 Until 2021, preliminary calculations by the Federal Statistical Office, as of January 2022.

2 Among all gainfully active persons.

3 Total changes in stocks kept/foreign contribution in % of GDP of the preceding year (= contribution to GDP growth).

structural upheaval in the economy so far and to safeguard jobs. Together, these measures support the macroeconomic base during the crisis and thus uphold social cohesion.

39. The repeated waves of infection, in combination with new virus variants, represent a great risk to future economic development. The Federal Government will continue to play its part in alleviating the social and economic effects of the pandemic. Here, it is clear that the economic consequences will last longer than the immediate health crisis and that further significant tax-based and fiscal assistance will be needed.

Overview 2: Central crisis mitigation measures to help companies, the self-employed and employees

The Federal Government has provided more than €170 billion in support for companies, the self-employed and employees since the outbreak of the pandemic. Assistance totalling around €60 billion was paid out, and loans of close to €55 billion granted; the spending on short-time work allowance amounts to around €24.6 billion in short-time allowance and around €17.6 billion in the reimbursement of social insurance contributions to employers (in total: around €42.1 billion). Companies can draw on recapitalisation and guarantees from the Economic Stabilisation Fund as well as other guarantees. In addition to this, the economy is being bolstered by various tax breaks. The German *Länder* also developed their own assistance programmes to complement those of the Federation. The system of assistance measures is flexible and can be quickly adjusted in line with what the situation demands.

The Bridging Assistance programme, in particular, is a flexible, cross-sectoral instrument. In addition to reimbursement for their fixed costs, companies are also provided with equity grants to protect their substance.

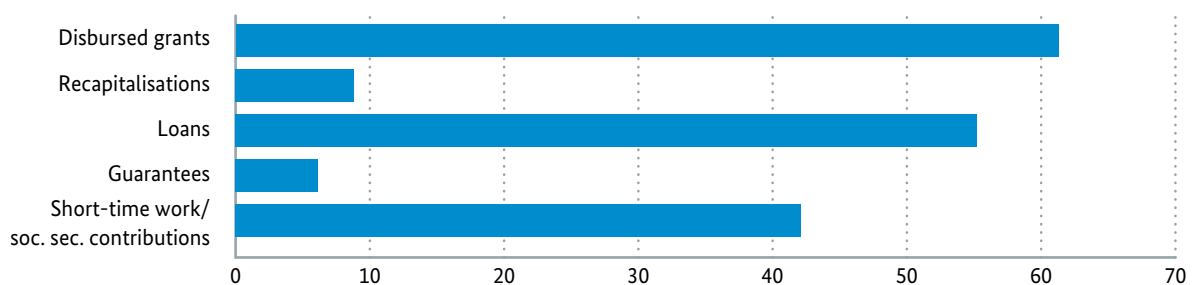
Own-account workers who do not have high levels of fixed costs benefit from New Start Assistance.

As the programmes are implemented, the Federal Government takes care to ensure that the aid reaches the companies and self-employed workers that really need it. Preventative measures against abuse and fraud are in place. The economic assistance is disbursed by the *Länder*.

Digital application procedures and good cooperation between the federal level and the *Länder* level have made it possible to grant 4 million applications since the beginning of the pandemic. Some 156,000 approvals have been granted under the KfW Special Programme.

A total of €4.5 billion in aid for culture and the media is available under the New Start for Culture programme and the Special Federal Fund for Cultural Events.

Support for companies, the self-employed and employees (in € billion)



Source: In-house calculation based on German Dashboard (downloaded on 10 January 2022) and Federal Employment Agency.

SUMMARY OF UTILISATION OF CURRENT BRIDGING ASSISTANCE

	Funding period	Applications submitted	Applications approved	Funding applied for	Funding disbursed
		Number	Number (share of applications submitted in %)	€ billion	€ billion (share of funding applied for in %)
Bridging Assistance III	November 2020 to June 2021	534,685	464,120 (87 %)	33.77	25.67 (76 %)
Bridging Assistance III Plus	July to December 2021	49,777	26,425 (53 %)	2.45	1.26 (51 %)
New Start Assistance	January to June 2021	264,579	254,936 (96 %)	1.638	1.591 (97 %)
New Start Assistance Plus July to September 2021	July to September 2021	84,330	73,667 (87 %)	0.3	0.261 (87 %)
New Start Assistance Plus October to December 2021	October to December 2021	52,722	41,712 (79 %)	0.186	0.145 (78 %)

Status: 29 December 2021

Bridging Assistance IV and New Start Assistance 2022 are available for companies in the January-March 2022 funding period

This comprehensive aid has had the desired effect of stabilising the economy and the labour market. This has been possible thanks to a large toolbox of measures. The Bridging Assistance and New Start Assistance programmes and the rules on simplified access to short-time work allowance have just been extended by three months, until 31 March 2022. The higher loan limits offered under the KfW Special Programme and the KfW Instant Loan will continue to apply until 30 April 2022. Applications for the 'KfW Investment loan for municipal and social enterprises' will be accepted until 30 June 2022. All other programmes will also remain available until spring, as can be seen from the overview.

SOME OF THE MOST IMPORTANT SUPPORT MEASURES FOR BUSINESSES PROVIDED BY THE FEDERAL GOVERNMENT

(RE-)CAPITALISATION		LOANS	GUARANTEES	SHORT-TIME WORK ALLOWANCE	TAX-BASED MEASURES	GRANTS	BASIC SOCIAL SECURITY BENEFITS AND NEW START ASSISTANCE	
<p>MEASURES AIMED AT STARTUPS AND SMALL SMES</p> <p>KfW provides the promotional institutes of the Länder with global loans, which are exempted from liability. This is done by way of co-financing their existing and new promotional programmes (a max. of €2.3 million of public money per company group (previously €1.8 million).</p> <p>—</p> <p>Extended until 30 June 2022</p> <p>www.kfw.de</p> <p>Additionally, the equity services provided by SME venture capital companies have been improved (counter-guarantees from the federation and the Länder).</p> <p>Applications can be submitted up until 30 April 2022</p> <p>www.vdb.ermoeglicher.de</p>	<p>ECONOMIC STABILISATION FUND</p> <ul style="list-style-type: none"> Aimed at companies of the real economy that meet at least 2 of the 3 criteria for size (balance sheet total >€43 million, sales revenue >€50 million, an annual average of >249 employees). Startups can be eligible for support if the company value is at least €50 million. Two stabilisation instruments: guarantees to hedge loans and capital market products, recapitalisation to directly strengthen the company's equity base. <p>Limited until 30 June 2022 (applications until 30 April 2022)</p> <p>www.bmwk.de</p>	<p>KfW Instant Loan AND KfW SPECIAL PROGRAMME</p> <p>KfW Instant Loan</p> <ul style="list-style-type: none"> Loan volume of up to €2.3 million (up from €1.8 million) 100% release from liability A uniform interest rate applies (currently 3%) guided by overall developments on the loan market and set on the day of the loan approval. <p>—</p> <p>Extended until 30 April 2022</p> <p>www.kfw.de</p> <p>KfW Special Programme</p> <p>Expanded special conditions, e.g. lower interest rates, simplified vetting for risks, higher rates of release from liability (up to 90%).</p> <p>—</p> <p>Extended until 30 April 2022</p> <p>www.kfw.de</p>	<p>EXPORT CREDIT GUARANTEES</p> <p>Export credit guarantees</p> <p>Offering short-term payment terms (up to 24 months) for state export guarantees, the federation is hedging exports, including within the European Union and some OECD countries.</p> <p>—</p> <p>Extended until 31 March 2022</p> <p>www.bmwk.de</p> <p>Guarantees covering up to 90% of the loan risk; a minimum of 10% of the risk must be borne by the highstreet bank. For large-scale guarantees (more than €20 million or €50 million respectively), the risk is shared by the federation and the Land.</p> <p>For large-scale guarantees for up to €2.5 million, the risk is shared between the federation, the Land and the guarantee bank.</p> <p>—</p> <p>Applications can be submitted up until 30 April 2022</p> <p>www.vdb-info.de</p> <p>www.foerderdatenbank.de</p>	<p>Special provisions on the length of the period of entitlement, simplified access, access for temporary agency workers.</p> <p>Increase in benefit rates in the case of longer-lasting claims to up to 80% of the net wage, or 87% of the net wage if a child is living in the household.</p> <p>—</p> <p>Extended until 31 March 2022</p> <p>Full reimbursement for social security contributions limited until 31 December 2021, after that: 50% reimbursement until 31 March 2022</p> <p>www.arbeitsagentur.de</p>	<ul style="list-style-type: none"> Reimbursement of advance tax payments Adjustments of the rules on advance payments of taxes: extended until 30 June 2022 Tax deferral extended until 31 March 2022 (for taxes due before or by 31 January 2022 and only if applied for before that deadline); simplified procedures for tax deferrals beyond that deadline, combined with instalment payment agreements possible up until 30 June 2022 Payments to top up short-time work allowance exempted from tax Enforcement measures have been suspended until 31 March 2022 (for tax due by before or by 31 January 2022) For 2020 and 2021, up to €10 million/€20 million in losses can be carried back for tax purposes (joint assessment) There are plans to extend this possibility to 2022. <p>www.bundesfinanzministerium.de</p>	<p>BRIDGING ASSISTANCE III PLUS/IV</p> <p>Bridging Assistance III Plus/IV</p> <p>Companies whose monthly turnover is down by at least 30% can receive grants towards their fixed costs for specific months:</p> <ul style="list-style-type: none"> for July to December 2021, under Bridging Assistance III Plus and for January to March 2022 under Bridging Assistance IV <p>—</p> <p>Applications for Bridging Assistance III Plus can be made until 31 March 2022/for Bridging Assistance IV until 30 April 2022</p> <p>www.ueberbrueckungenhilfe-unternehmen.de</p> <p>Länder Assistance in Cases of Hardship</p> <p>(financed half-and-half by the federation and the Länder), for cases for which no other instrument is available. Approved case-by-case by the Länder following individual scrutiny.</p> <p>www.haerterfallhilfen.de</p> <p>Funding period: until 31 March 2022</p>	<p>NEW START FOR CULTURE, SPECIAL FUND, PROFESSIONAL SPORTS</p> <p>New Start for Culture</p> <ul style="list-style-type: none"> Investments related to the pandemic Enabling cultural activities in all branches: cultural production and expression Additional budgetary needs of cultural events <p>—</p> <p>Funding period: until 31 December 2022</p> <p>www.kulturstaatsministerium.de</p> <p>Special Federal Fund for Cultural Events</p> <p>Additional safety net for cultural event organisers</p> <ul style="list-style-type: none"> Assistance to make small-scale events economically viable (and provide an integrated safety net against cancellations) Cancellation safety net for large events (minimum of 2,000 persons) <p>Funding period: for now until 31 March 2022 and 31 December 2022 respectively; to be extended</p> <p>www.sonderfonds-kulturveranstaltungen.de</p> <p>Special Fund for Trade Fairs and Exhibitions</p> <p>Cancellation safety net</p> <p>www.sonderfonds-messe.de</p> <p>COVID-19 Bridging Assistance for professional sports</p> <p>For professional sports clubs and companies that are members of the upper three leagues (except men's 1st Bundesliga football) that have suffered losses of income from tickets</p> <p>—</p> <p>Funding period: until 31 December 2021, to be extended</p> <p>www.bva.bund.de</p>	<p>Anyone who is working as a small-scale entrepreneur or is otherwise self-employed and has too little or no income to sustain themselves financially may be entitled to simplified access to basic social security benefits for the unemployed.</p> <p>—</p> <p>Extended until 31 March 2022</p> <p>www.bmas.de</p> <p>New Start Assistance Plus/New Start Assistance 2022</p> <p>For own-account workers, small incorporated firms and cooperatives having suffered COVID-related losses in turnover between July and December 2021 (New Start Assistance Plus) or January and March (New Start Assistance 2022).</p> <p>—</p> <p>Applications for New Start Assistance Plus can be made until 31 March 2022/New Start Assistance 2022: from mid-January until 30 April 2022</p> <p>www.ueberbrueckungenhilfe-unternehmen.de</p>

40. At the same time, Germany is facing the huge task of transforming itself into a climate-neutral and digital economy. The foundation stone for sustainable growth following the pandemic was laid early in the form of additional measures such as the Climate Action Package in 2019 and the Future Package of the stimulus programme of June 2020. The Federal Government's fiscal policy aims to set further stimuli in forward-looking areas to bring about a successful transformation, to maintain economic competitiveness, and to make growth more sustainable. Reliable funding from the state and support for private-sector spending on key forward-looking and transformational tasks, particularly in the fields of climate action and digitalisation, are essential prerequisites for overcoming the crisis swiftly.

41. In view of the restrictions due to the pandemic and uncertainties at national and global level, tax and fiscal policy must also respond to a substantial need for action and to pent-up investment activity. This is because, not least due to uncertain economic prospects during the pandemic, companies did not invest, or did not invest as much as planned. This is another reason why there is a need for a further rise in public investment and support for private-sector investment in forward-looking and transformational tasks; in this way, private-sector investment can be activated in a targeted manner in forward-looking areas and the process of catching up on investment can take place. In addition to this, it is necessary to speed up planning, administrative and approval procedures with a view to at last halving their duration.

42. Against this background, the Federal Government is providing €60 billion in the second sup-

plementary budget of 2021 for the Energy and Climate Fund, which is to be developed into a Climate and Transformation Fund, in order to tackle the effects of the pandemic (cf. Item (108)).

43. The safeguarding of future prosperity is rooted in a sustainable budgetary and fiscal policy. For this reason, the regular borrowing ceiling of the deficit rules will be complied with again from 2023. In order to create further scope for forward-looking investment, all spending must be scrutinised and a strict re-prioritisation must be undertaken in line with the goals set out in the coalition agreement. This ensures that the urgent changes in the forward-looking areas described above can take place on a viable long-term basis. This will be necessary in order to remain equipped to cope with future needs for change which cannot yet be predicted. Superfluous and ineffective subsidies which harm the environment and the climate must be removed.

44. Not least, the COVID-19 pandemic shows very clearly that there are many facets to prosperity, including health and the maintenance of our natural environment. It is therefore necessary to focus even more than has been the case on the quality of our economic development, and not just the quantity measured in terms of gross domestic product. In the following sections, the Federal Government presents key priorities of economic and fiscal policy which can create sustainable growth and climate-friendly prosperity in this overarching sense and safeguard it for future generations.² Throughout the following sections, the Federal Government also responds to the 2021/2022 Annual Report of the German Council of Economic Experts.³

² The funding of new measures and programmes takes place within the existing departmental budget estimates. The citing of measures in the report does not prejudice either current or future budget negotiations.

³ For ease of reading, those parts of the text which address the German Council of Economic Experts' Annual Report are highlighted in colour.

C. Anchoring the climate transformation in all policy fields and making use of economic opportunities

45. It is crucial to attain the central goal of the Paris Agreement in order to avert serious consequences of anthropogenic climate change. The rise in the average temperature of the Earth's atmosphere must be kept well below 2C above the pre-industrial level, and efforts must be made to restrict the rise in temperature to 1.5C. Germany will contribute to the attainment of these targets by embarking on a path in line with the Paris Agreement and becoming GHG-neutral by 2045 at the latest. Also, German companies and stakeholders engaged in research will develop innovative climate-neutral products, processes and technologies which can contribute to the attainment of the target around the world and can create climate-neutral prosperity. At the same time, the Federal Government will devote more of its foreign policy toolbox to serving the aims of global climate action.

46. This is a path that offers tremendous potential for the German economy: as Germany takes up a pioneering role in the field of climate action, its companies and engineers have a chance to develop technologies, installations and processes that will later be needed by third countries as well as they decarbonise; German firms will therefore be able to enhance their international competitiveness. Parallel to this, massive investments in climate-neutral forward-looking technologies will boost economic growth in Germany and the European Union.

However, this approach also creates pressures on the companies and regions to adapt. Some business models will no longer be viable, and new ones will have to be developed. The economy's international competitiveness must be maintained in the process of transformation. Only commercially successful companies will be able to play their part in

meeting the huge need for investment. Also, the pricing of emissions that damage the climate must be done in a way that is socially acceptable for the citizens and take account of differing regional effects in order to foster and retain public acceptance of the process of transformation.

47. The necessary climate action will fundamentally change the way in which people will live and do business in Germany in future. The energy transition requires more than a change in the way we generate power. The other sectors – transport, buildings, industry, agriculture and waste management – must also make a contribution towards an investment and modernisation campaign and reduce their emissions on the path to GHG neutrality. It is also necessary to succeed in establishing a circular economy which conserves resources. For this reason, the Federal Government will be meeting with the business community, trade unions and associations to discuss a stable and reliable policy framework for the transformation in the first half of 2022 in an Alliance for Transformation.

Making global progress on the climate transformation and implementing it rigorously at national level

48. The Federal Government shares the view of the GCEE that climate action is a global challenge in which global cooperation is imperative (cf. GCEE Annual Report Items 504 ff.). The Federal Government is therefore striving for a global emissions trading system that leads, in the medium term, to a standard carbon price.

49. In order to make progress on international climate action, the Federal Government will conduct a coherent foreign policy on climate action which aims at a clear increase in the global level of ambition on climate action. To this end, it will make use of instruments which

the GCEE also deems useful with a view to international climate cooperation.

It will be necessary to make use of the European Union and international bodies together with European partners with a view to an initiative to set up an international cooperative climate club which is open to all countries, using a uniform minimum carbon price and a common carbon border adjustment mechanism (cf. GCEE Annual Report Items 613 ff.). The Federal Government will progress these and other initiatives, not least in order to establish climate partnerships, in the context of this year's German G7 Presidency (cf. GCEE Annual Report Items 583 ff.).

50. The Federal Government is also advocating a strengthening and development of the work of the World Trade Organization with a view to climate aspects (cf. GCEE Annual Report Items 578 ff.). Further to this, financing instruments in the field of foreign trade and investment can make a proactive contribution to international climate action by mobilising more private capital for

renewable energy projects and gradually giving less support to GHG-intensive exports.

51. The climate policy of the European Union provides the immediate framework for national policy on climate action. In 2021, the European Commission proposed a package of legislation to attain the GHG reduction target of 55% from the 1990 level by 2030 (Fit for 55 package). The Federal Government firmly supports the reduction targets and in this spirit will play a constructive part in the negotiations on the statutory instruments (cf. Box 1).

52. The price in the European Union Emissions Trading System (EU ETS) is currently well above €60 per tonne. It is unlikely that it will see a structural fall below this level: a rise is more likely. If this proves not to be the case in the next few years, and if the European Union has not agreed on an EU ETS minimum price, the Federal Government will decide on corresponding national measures in order to ensure that the carbon price does not fall below €60 per tonne in the long term.

Box 1: Overview of the content of the Fit for 55 package

The European Commission has presented a package of legislation containing a total of 17 legislative proposals (directives and regulations).

The aim is to lower GHG emissions in the EU by at least -55% by 2030 (compared to the levels recorded in 1990), and to make the EU GHG-neutral by 2050. At the same time, business' competitiveness is to be retained and strengthened, including in energy-intensive industries.

The proposals include emissions trading for the buildings and road transport sectors at EU level, a social climate fund for lower-income households, micro-enterprises and transport users, an adaptation of the existing EU ETS to the more stringent climate targets, e.g. by including maritime transport, extending pricing in air traffic within Europe, and implementing the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA), making more use of renewable energy, higher energy efficiency, higher CO₂ emissions standards for new cars and new light commercial vehicles, the expansion of the fuelling and charging infrastructure and the ramp-up of climate-neutral fuels, orienting energy taxation more to the aims of the Green Deal, a carbon border adjustment mechanism to avoid carbon leakage, instruments to maintain and increase the natural carbon sinks, and measures to further improve the energy efficiency of buildings, to decarbonise the internal gas market and to reduce methane emissions in the energy sector.

53. At national level, the Federal Climate Change Act provides the central legal framework for policy on climate action in Germany. Its revision in the summer of 2021 takes account particularly of the decision by the Federal Constitutional Court of 24 March 2021 and also serves as a start on meeting the European Union's new 2030 climate target. The revised Climate Change Act prescribes a reduction target of at least -65% from 1990 (previously at least -55%), a new interim target of at least -88% for 2040 and the goal of GHG neutrality by 2045 (previously: 2050); after 2050, negative emissions are to be achieved on a cross-sectoral basis. In addition, the revised Act sets targets for the expansion of natural sinks in the land-use sector (LULUCF) (cf. Box 2). Also, the sectors' permitted annual emission volumes up to 2030 have been tightened up.

54. In 2020, Germany had cut its emissions by 41.1% from the 1990 level, at 729 million tonnes of CO₂ equivalents (eq.). This means that the reduction target of 40% it had set itself was achieved. This was partly due to structural progress, e.g. on the expansion of renewable energy and reforms of the EU ETS. It was also due to special factors, and particularly to the COVID-19 pandemic, which resulted in restrictions to economic and social life. For 2021 it can be expected that these special factors will not have been repeated, or only to a lesser extent, so that GHG emissions will have bounced back from the 2020 level. Overall, the necessary swift transformation of the economy will represent a great challenge over the coming years.

55. The Federal Government will continue to press ahead with the evolution of the Federal Climate Change Act and will initiate all the necessary acts, ordinances and measures for this in an Immediate Climate Action Programme. Compliance with the climate targets is to be verified via an overall cross-sectoral account – analogous to the Paris Agreement. This is to be based on the annual monitoring under the Federal Climate Change Act (cf. Box 2).

56. The Federal Government regards climate action as a cross-cutting task. The lead ministries will assess the climate impact of their draft legislation and its compatibility with the national climate targets, and will furnish their bills with a corresponding explanatory memorandum (climate check).

57. The Federal Government is convinced that, in addition to natural negative emissions (sinks and storage in natural ecosystems), technical negative emissions will also be needed to achieve climate neutrality. This will require an intensification of research and development and the creation of the regulatory and technical preconditions in the coming years. Here, it is necessary to avoid negative repercussions on people and nature. Further to this, the Federal Government will draw up a long-term strategy on how to handle the five per cent or so of residual emissions that cannot be avoided.

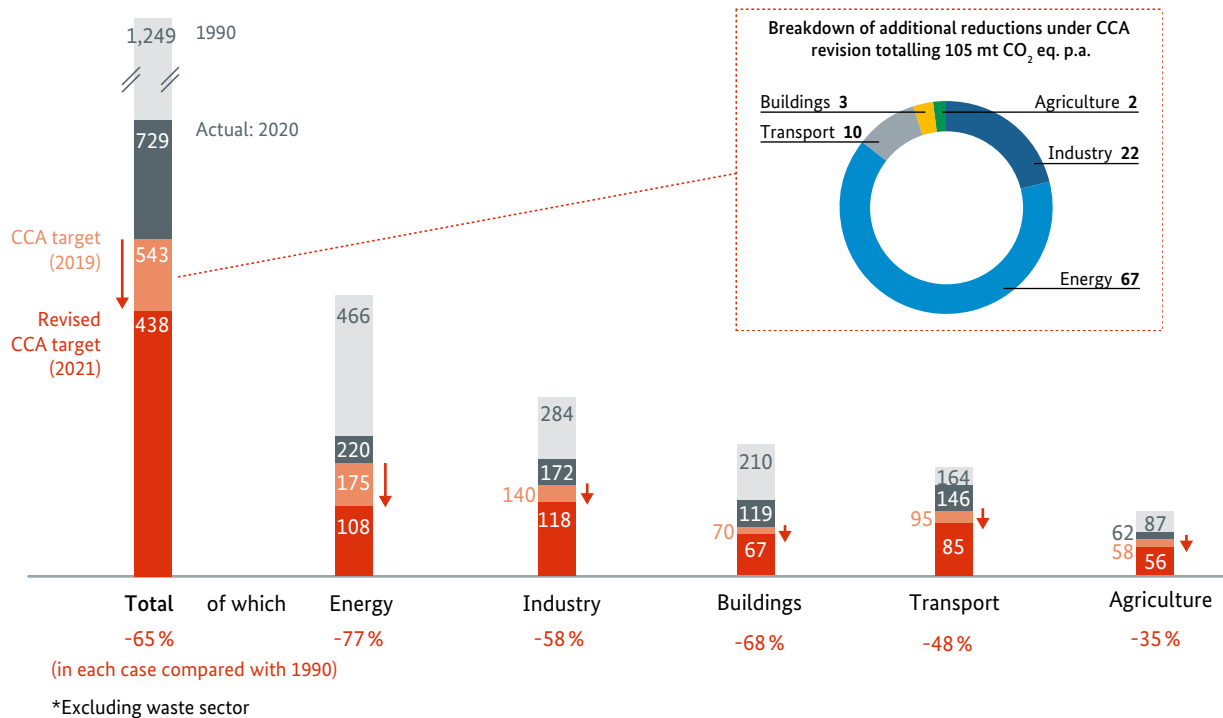
Box 2: Architecture of the climate targets of relevance to Germany

At **international level**, Germany has committed to implementing the Paris Agreement, under which the average global rise in temperature is to be kept well below 2C and if possible, in light of the substantially reduced damage to the climate, to 1.5C from the pre-industrial level. All contracting parties must present Nationally Determined Contributions (NDCs) every five years and keep stepping them up. At COP 26, the international climate conference in Glasgow in November 2021, a programme of work was adopted which, in view of the current gap between commitments and the 1.5C target, the parties are called on to present long-term strategies by the end of 2022 which lead to net zero emissions by the middle of the century, and to present NDCs in harmony with the 1.5C target. The EU participates as a single group in the negotiations, presenting a joint NDC and implementing it together. Germany does not formally submit an NDC of its own. The completion of the set of rules for the Paris Agreement at COP 26 means that NDCs can now be reported and compared on the basis of uniform criteria. This is an important precondition for the first global stocktake of the national climate targets and their impact on the Paris targets scheduled for 2023. Also, climate action can be implemented on a collaborative basis between international stakeholders, and these emissions reductions can be used to fulfil NDCs. The developments of the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) must also make their substantive contribution to achieving the Paris climate targets.

At **EU level**, the European Climate Law adopted in 2021 provides for an increased reduction in GHG emissions up to 2030 of at least -55% from 1990 (previously: -40%); also, the EU is to be GHG-neutral by 2050. Roughly half of GHG emissions in the EU are subject to the rules of the ETS (energy, large industrial operations and air traffic within the EU) and must be reduced across the EU. The remaining GHG emissions, and particularly those from the sectors of transport, buildings and agriculture, have so far been subject to the rules of the Effort Sharing Regulation and the Regulation on Land Use, Land-Use Change and Forestry (LULUCF). These emissions must be reduced at the level of the respective Member State. The European Commission monitors this and can impose sanctions if the targets are missed. The EU target architecture is currently being reformed in the context of the European Green Deal (cf. Item 51).

At **national level**, the Federal Climate Change Act, following its revision in 2021, provides for a reduction target of at least -65% from 1990 by 2030 (previously: at least -55%); also, alongside a new interim target of at least -88% by 2040, GHG neutrality is to be reached in Germany by 2045 (previously: by 2050). In addition to these national climate targets, the act also stipulates permissible annual emission volumes for the sectors. Further to this, with regard to the LULUCF sector, the act states that the footprint must be improved to at least -25m tonnes of CO₂ eq. by 2030, at least -35 million tonnes of CO₂ eq. by 2040, and at least -40 million tonnes of CO₂ eq. by 2045. The monitoring of the annual emission volumes is undertaken annually by the Federal Environment Agency, which publishes the GHG emission figures for the preceding year by 15 March of each year. The Expert Council for Climate Issues then has a month to review the statistics. If a sector's annual emission volumes are higher than permitted, the lead federal ministry responsible for the sector is obliged under section 8 (1) of the Federal Climate Change Act to present an immediate action programme for the sector within three months following the Expert Council's assessment which ensures that the sector will comply with its annual emission volumes in the subsequent years. In accordance with section 8 (2) of the act, the Federal Government then discusses the measures to be taken in the relevant sector or in other sectors or cross-sectoral measures, and adopts them as quickly as possible. Before the decision is taken, the assumptions regarding GHG reductions on which the measures are based under section 8 (2) of the act are reviewed by the Expert Council for Climate Issues.

GHG reduction targets in the Climate Change Act for 2030 (by sector* in mt CO₂ eq. p.a.)



Sources: In-house on the basis of Federal Environment Agency (2022) and Federal Climate Change Act.

Completing the coal and nuclear phase-out, massively expanding renewable energy

58. The energy sector will continue to have to deliver the largest emissions reduction. According to the Federal Climate Change Act, emissions are to be more than halved by 2030 compared to the current level of 220 million tonnes of CO₂ down to 108 million tonnes of CO₂ (or by 77% from 1990). If this is to happen, it is crucial that, going forward, the provision of energy from fossil sources is fully converted to renewable energy sources. In 2021, the proportion of gross electricity generation from fossil fuels was slightly higher, at 43.8%, than the share covered by renewable energy (40.5%) (cf. Sec-

tion G regarding the share of renewable energy in total primary energy requirements).

59. The share of renewable energy will have to continue to grow substantially, and to do so more quickly than has been the case. This is because, firstly, the last nuclear power plants in Germany will be taken off the grid in 2022, and, secondly, all the lignite-fired and hard coal-fired power plants will gradually be closed down in the context of the phase-out of coal. The phase-out of coal should ideally be completed in Germany by 2030. To help achieve this, the review provided for in the Coal Phase-out Act as to whether the timing of the closures of power stations envisaged from 2030 can

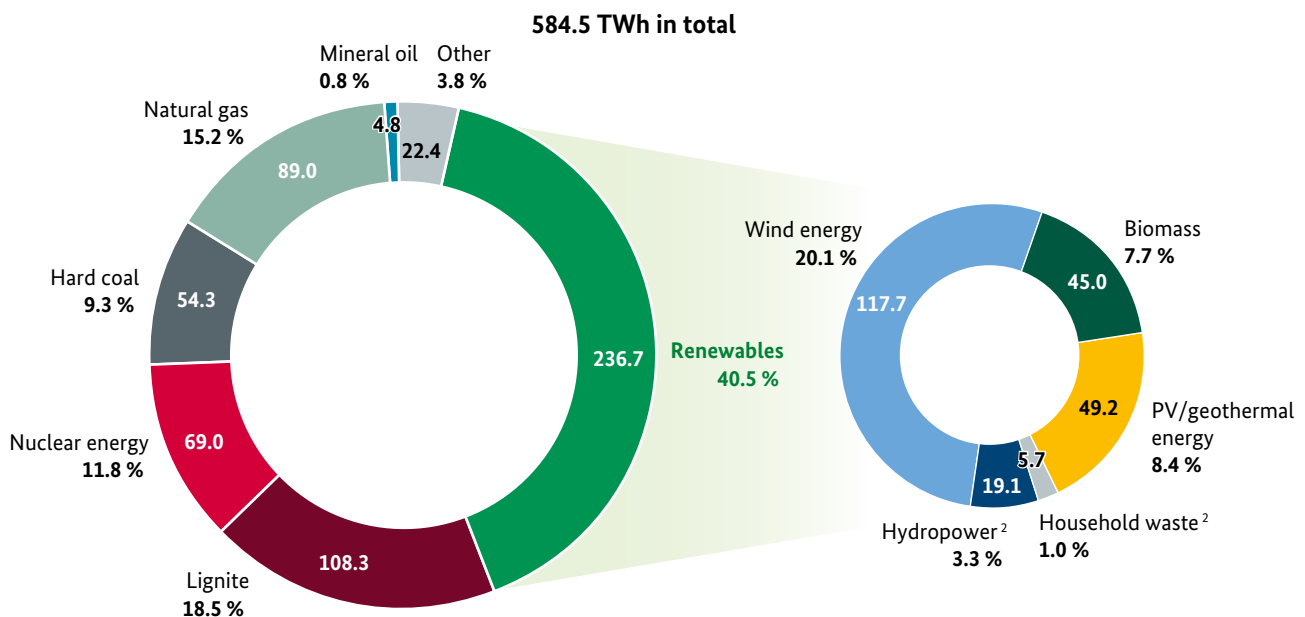
be brought forward is itself to be brought forward from 2026 to 2022. The Structural Strengthening Act for Mining Regions continues to provide support to the structural change in the regions affected by the phase-out of coal, and aims to generate growth and jobs. The people and regions affected can continue to count on solidarity and support (cf. Item 124).

60. The Federal Government is assuming that gross electricity demand will amount to 680-750 terawatt-hours (TWh) in 2030. 80% of this is to be generated from renewable energy. In order to attain this target, the rate of expansion must be much higher than that of recent years, and the new volumes to come on stream under the Renewable Energy Sources Act must be dynamically revised. All existing barriers and impediments are to be removed, planning and approval procedures are to be massively accelerated, and the necessary sites

are to be made available. However, the energy transition is to be stepped up without reducing standards of ecological protection. In order to boost legal certainty, uniform nation-wide statutory solutions are to be found. The expansion of renewable energy is in the public interest and serves the security of our supply. For this reason, when different interests are weighed up, this should be viewed as a priority interest until climate neutrality is attained.

61. Two per cent of Germany's territory is to be designated for onshore wind energy. This will require backing from the *Länder*. The Federation-*Länder* Cooperation Committee is in agreement that the current designations of land for wind energy in the *Länder* (0.75 - 0.85%) are not enough to achieve the expansion targets set out in the 2021 Renewable Energy Sources Act. This is even more true given the plans for a necessary

Diagram 3: Gross electricity generation in Germany in 2021 in terawatt-hours (TWh)¹



1 Preliminary figures
 2 Renewable share
 Geothermal energy included in photovoltaics (PV) due to very small amount

increase in the level of ambition from the targets which existed in 2021 so that the climate targets can be met.

62. Repowering of wind turbines, i.e. the replacement of old turbines with newer, more efficient and higher-capacity installations, will play an important role in the expansion and will ultimately reduce the need for sites via concentration on fewer, more suitable sites. A change to the Federal Immission Control Act in 2021 made it easier to obtain approvals for onshore repowering. At present, Federation-*Länder* working parties on immissions protection and on nature conservation, landscape management and rehabilitation are working on implementing recommendations in order to facilitate and accelerate the implementation and thus the approvals for repowering. Where wind farms exist already, it must be possible to replace old wind turbines with new ones without an elaborate approval process. The target for offshore wind energy was raised in the last revision of the Offshore Wind Energy Act. The Federal Government is planning a further substantial increase in the capacities for offshore wind energy. To this end, new sites in the Exclusive Economic Zone are to be secured in order to permit expansion of 70 GW up to 2045 (with interim targets of at least 30 GW in 2030 and 40 GW in 2035).

63. The expansion of photovoltaic installations is to be accelerated considerably. Approximately 200 GW of installed capacity is to be in place by 2030. To this end, all suitable roof areas are to be used for solar energy in future. This will be mandatory for new commercial buildings, and will become the norm for new private buildings. To help bring this about, grid connections and certification are to be accelerated, remuneration rates adapted and further aspects of the policy framework improved. Landlord-to-tenant electricity and neighbourhood concepts are to be simplified and strengthened. Innovative solar energy solutions, such as agrivol-

taic systems and floating solar photovoltaics, are to be strengthened, and co-use facilitated.

64. In order to boost public acceptance of the expansion of renewable energy, municipalities are to be able to derive an appropriate financial profit from wind turbines and larger ground-mounted solar installations on their territory, also, citizens' energy is to be strengthened. This also aims to appropriately reward the substantially increased contribution made by rural areas to Germany's energy supply.

65. The expansion of the electricity grids is crucial so that the rising demand for electricity resulting from sector coupling (especially industry, electric vehicles and heat pumps) can be met via the transport of the renewable electricity needed for it across long distances from the places of generation to the centres of consumption. It is therefore important not only to update the current planning of necessary grid but also to speed up planning and approval procedures so that the expansion targets can be reached without reducing the overall level of security. Here, again, it is necessary to ensure that there is public acceptance of the expansion in the municipalities.

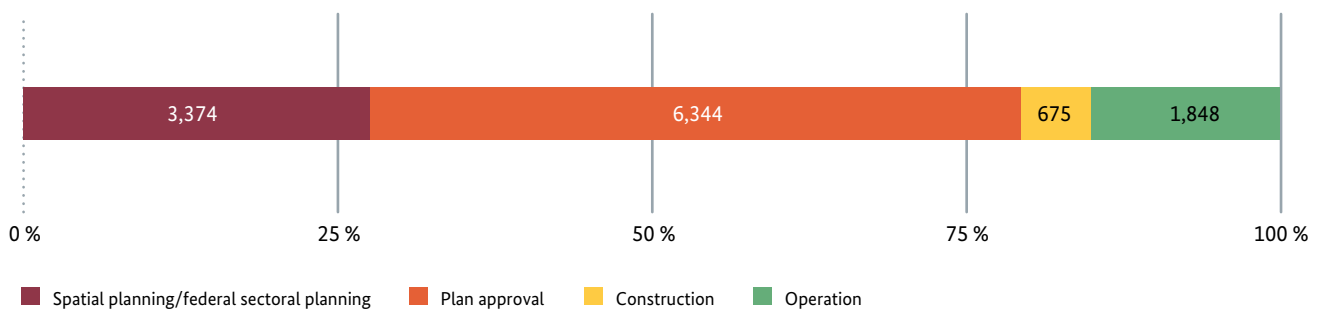
As of the third quarter of 2021, of the priority grid expansion projects under the Federal Requirements Plan Act and the Power Grid Expansion Act, 9,718 km of grid is nearing or has entered the approval procedure, 675 km is under construction, and 1,848 km is in operation (cf. Diagram 4).

66. Looking beyond the current grid development planning, a climate neutrality grid is to be calculated so that, not least on this basis, the Federal Requirements Plan can be updated accordingly.

Diagram 4: Progress of grid expansion projects (transmission grid)

Breakdown of kilometres by procedural stage

in kilometres



Source: Bundesnetzagentur; status: Q1/2021.

67. At distribution grid level, the aim is to have forward-looking and efficient planning of future needs, taking account of energy efficiency and demand-side response measures. This will require the modernisation and digitisation of the distribution grids. Also, the framework for integrated and forward-looking grid planning was put in place in 2021 via the new section 14d of the Energy Industry Act. The provision requires the relevant grid operators to engage in greater coordination and cooperation when they draw up their grid expansion plans.

68. It is of top priority for the Federal Government that security of supply is maintained at its present high level during and following the phase-out of nuclear energy and coal-fired electricity generation. For this reason, a major focus will be placed on ensuring secure grid and system operation, e.g. in the System Stability Roadmap. Also, the expansion of renewable energy is to be progressed, energy efficiency and flexibility of demand improved, and modern gas-fired power stations built. The latter need to be “H2 ready”: capable of conversion to climate-neutral gases. The Federal Government will seek solutions to how operating permits can be issued in a legally secure way that ensures long-

term GHG-neutral operation without triggering a halt to investment, misallocations of investment and claims for compensation.

69. With a view to the future high share of renewable energy, the Federal Government will also draw up a new electricity market design in order to ensure security of supply. In this process, existing instruments will be evaluated and competitive, technology-neutral capacity mechanisms and forms of flexibility will be examined.

70. Germany is also benefiting from its integration into the European internal market in electricity which, thanks to balancing effects between supply and demand, can ensure a more secure electricity supply more cheaply than a purely national market. For this reason, the upgrading of the connections to neighbouring countries is becoming more and more important. Since 2021, NordLink has connected the Norwegian and German electricity markets via a submarine cable.

71. In order to view the sub-aspects of security of supply, i.e. both the aspects of the electricity market and the questions of grid and system stability, in an integrated manner in future, the responsibil-

ity for monitoring security of supply was transferred to the Bundesnetzagentur (Federal Network Agency) in 2021. The Federal Government will further develop the monitoring of security of supply in relation to electricity and heat.

Making use of renewable heat, improving the energy performance of buildings, and rigorously saving energy

72. Not least at times when energy prices are high and Germany is dependent on imports, it is very important to cut overall energy consumption and to make full use of potential for energy efficiency. Also, if energy demand falls, it will be possible to attain a high proportion of renewable energy more quickly, and the integration of that energy into the system will be easier. Furthermore, the ambitious climate targets cannot be achieved without a clear boost to energy efficiency. For this reason, Germany will continue to push forward with and consolidate its energy efficiency policy (cf. also the final energy productivity indicators in Section G) and set further incentives, e.g. in the form of a fair distribution of CO₂ costs between tenants and landlords.

73. The entire supply of heat is to be GHG-neutral by 2045. The Federal Government is advocating for nation-wide municipal heat planning and the expansion of heating networks, and aims at a very high proportion of renewable energy in the generation of heat by 2030, with 50% of heat being climate-neutral by then. In this process, consideration must be given to the different local settlement, building and ownership structures. When it assesses the impact on the climate of the various forms of heat generation, the Federal Government will also give consideration to the impacts on the footprints of the sector of land use, land-use change and forestry, and make arrangements to ensure that the deployment of biomass does not exceed the sustainably available potential.

74. Roughly two-thirds of the energy demand in the heating sector is accounted for by buildings. The federal funding for efficient buildings scheme (BEG) restructured the funding programmes for improving the energy performance of buildings for the period from 2021. The funding for new buildings under the BEG scheme is now being revised. In this process, the Federal Government will consider a funding programme for new residential buildings which centres on construction using sustainable building materials and the life-cycle GHG emissions per m² of dwelling space.

75. Also, the Buildings Energy Act is to be revised: as of 1 January 2025, every newly installed heating system is to be operated on the basis of at least 65% renewable energy; as of 1 January 2024, the standards for major upgrading, rebuilding and extensions of existing buildings in the Buildings Energy Act are to be adapted so that the new components meet the EH 70 (efficiency house 70) standard; the standards for new buildings are to be aligned with the EH 40 standard from 1 January 2025. The efficiency house standard is based on an indicator which describes the energy requirements of a building and the quality of the building envelope. The lower the indicator, the more energy efficient the heating can be. Also, the aim is to introduce the broad and systematic use of individual retrofitting roadmaps.

Further to this, the “Federal funding for efficient heating networks” scheme (BEW) is to be launched in the near future; this will play a key role in the expansion and decarbonisation of existing heating networks and the construction of new heating networks. Renewable energy and unavoidable waste heat play crucial roles in the GHG-neutral transformation and the rebuilding of the heating networks.

76. Roughly one-third of the energy demand in the heating sector is accounted for by the generation

of process heat in the sectors of crafts, trade and services, and industry. The programme entitled “Federal funding for energy and resource efficiency in commerce” (EEW) will provide grants to facilitate investment in energy efficiency and the expansion of renewable process heat and the use of waste heat in industry and commerce. The revision of the EEW programme in November 2021 brought clear improvements in the funding terms and included resource efficiency as a new target for the funding.

Giving a lasting boost to industry as a driving force for innovation

77. The industrial sector is a key player in the efforts to attain the climate targets and to develop innovative climate action solutions which can be deployed around the world. According to the Federal Climate Change Act, the industrial sector is to reduce its annual emissions to 118 mt CO₂ (at present: 172 mt CO₂). This will require emissions to be cut by around 31% from today's level. Firstly, it will be necessary to put the technical preconditions in place in the production plant, opening up the prospect of carbon-neutral or even carbon-free production of, for example, steel, chemicals and cement. Secondly, the policy framework needs to be shaped in a way that companies can profitably deploy low-GHG or, going forward, even GHG-neutral processes.

78. German industry faces a massive need to invest. It is necessary to set incentives for efficient investments in low-GHG or, going forward, GHG-neutral processes and to avoid lock-ins of investment as this takes place. Of relevance here are both initial investments in facilities which to be newly built or retrofitted, and also subsequent operating costs.

In principle, the more expensive it is to emit CO₂, the more the investments will pay off. In the case of industry, the crucial role here is played by the

price set by the European Union Emissions Trading System. The higher the likely price in future, the less economically viable it will be to invest in carbon-emitting processes. However, not least in view of the ongoing uncertainty about how the price will develop in future, it is temporarily necessary to provide comprehensive funding towards investments by the industrial sector in more climate-friendly processes, e.g. via carbon contracts for difference and investment promotion programmes, and to put appropriate measures in place to incentivise green lead markets.

79. The Federal Government will develop a funding programme for carbon contracts for difference in the basic materials sectors via a mitigation of market risks and operating cost differentials between conventional and low-carbon or zero-carbon processes. This will make it possible for the steel industry, for example, and other sectors to achieve substantial GHG savings from as early as 2030 and to embark on the transformation needed for the long term without suffering economic disadvantages. Carbon contracts for difference can also make an important contribution to the market ramp-up of hydrogen technologies in the energy-intensive industrial sector (cf. Item 86).

80. In addition, the Federal Government will continue to provide funding towards flagship projects for decarbonisation in industry (e.g. in the basic materials industry and via lightweighting), set up a transformation fund at the KfW, and establish incentives for lead markets and climate-neutral products (e.g. via the introduction of minimum quotas of climate-neutral products in public procurement (cf. Item 147).

81. To ensure that ambitious climate action within the EU does not result in an increase in global carbon emissions, and to maintain competitiveness during the process of climate-related transformation, the Federal Government is advocating effec-

tive protection against carbon leakage to countries outside the EU. It is in favour of a carbon border adjustment mechanism in force across the EU or of similarly effective instruments. The crucial point is that a carbon border adjustment measure must be WTO-compliant, that it does not place exporters at a disadvantage, that it prevents greenwashing and that it can be implemented without much red tape within the existing EU Emissions Trading System.

Building up the hydrogen industry and maintaining an international lead

82. Hydrogen plays a central role in the energy transition because it makes it possible to use renewable energy to significantly cut carbon emissions, particularly in industry and transport. In 2020, the National Hydrogen Strategy established a framework for action for the future production, transportation, exploitation and utilisation of hydrogen and therefore for relevant innovations and investments. The Federal Government will update the Hydrogen Strategy in 2022 with a view to a swifter market ramp-up. The aim is to double the planned electrolysis capacity in 2030 from 5 to around 10 gigawatts. This is to be ensured not least via the newbuild of additional offshore wind energy and via European energy partnerships. The Federal Government is funding the production of green hydrogen in Germany. The Federal Government will take a technology-neutral approach to hydrogen regulation until an inexpensive supply of green hydrogen, i.e. hydrogen produced without carbon emissions, is available. In the interest of a rapid market ramp-up, forward-looking technologies will continue to be funded until the availability of green hydrogen is assured.

83. Innovation and investment in hydrogen is of crucial strategic importance. The establishment of a hydrogen economy will create more than an important platform for the energy transition in Germany: technologies and expertise developed here will play a key role in maintaining and expand-

ing the leading position of German industrial and services companies in the field of modern energy technologies.

84. The Important Projects of Common European Interest (IPCEIs) in the field of hydrogen technologies and systems are an important step forward. More than €8 billion in federal and *Länder* funding is available for the 62 German projects selected by the Federal Government. These cover the entire value chain, including hydrogen generation, transport and industrial applications, as well as mobility.

85. Also, international cooperation like the energy partnerships and dialogues and other initiatives play a key role in ensuring long-term availability of sufficient hydrogen imports. The Federal Government is also working proactively with various funding programmes for green hydrogen and green power-to-X (electrical energy generated from renewables which is converted into alternative fuels) in order to stimulate output in the EU and third countries and to make a contribution to the global ramp-up and corresponding economies of scale, whilst also opening up new market opportunities for German firms. This will also involve current exporters of fossil fuels.

86. The implementation of the H2Global funding model represents an important step in the international market ramp-up of green hydrogen and realises a further element of the National Hydrogen Strategy. This instrument buys green hydrogen or hydrogen derivatives abroad on the basis of long-term contracts, and re-sells these products at annual auctions in the European internal market. The Federal Government provides financial support to the instrument in order to offset the difference between the purchasing price and the selling price for a certain period and to set an incentive both for the market ramp-up and for the investment in infrastructure and applications. The Federal Government wants to further develop

H2Global in the European framework and ensure it has suitable financial resources. At the same time, the establishment of a global green hydrogen economy also offers fresh opportunities for economic development, new jobs and participation in international trade and investment for numerous countries outside Europe which offer great potential for the generation of renewable energy.

87. In addition, the framework of energy legislation is also an important aspect affecting the establishment of a hydrogen industry. For example, the revised version of the Energy Industry Act, which entered into force in 2021, in combination with the related Hydrogen Network Fee Ordinance forms a basis for a rapid and legally secure start on the building of network infrastructure for the transport of pure hydrogen by introducing rules for initial regulation of pure hydrogen networks.

Speeding up the work on climate-friendly mobility

88. In the comparison of all the sectors, the transport sector has achieved the smallest absolute GHG reduction in Germany since 1990 – from 164 mt CO₂ in 1990 to 146 mt CO₂ in 2020. However, the Federal Climate Change Act provides for a clear reduction down to 85 mt CO₂ by 2030. This requires a reduction of more than 40% from 2020. The Federal Government will take measures necessary for a mobility policy in accord with the climate targets and will significantly speed up their implementation in practice.

Here, the various mobility structures and requirements in urban and rural areas and the social compatibility of the necessary adjustment and conversion will be taken into account, since mobility is part of general public services and is a precondition for equivalent standards of living in urban and rural areas and for the competitiveness of the regional economic centres.

89. The CO₂ reductions in the transport sector are to be attained by means of a package of measures including a modal shift, funding and incentives in conjunction with carbon pricing. The focus will be on the strengthening of local public transport and rail transport, a far-reaching decarbonisation of the fuels and drives, new technologies and the reduction in subsidies that harm the climate.

90. In the interest of the modal shift, the Federal Government will invest far more in railways than roads – primarily in projects which can successfully implement the synchronised timetable for all of Germany's passenger rail transport. Decommissioned track will also be reactivated. Better rail connections to airport hubs will aim to reduce the number of short-haul feeder flights. The Federal Government will strengthen cross-border railway transport and build up night train services with the EU and its Member States. By 2030, the capacity for rail passenger transport is to be doubled, and the market share of rail freight transport is to rise to 25%.

91. In the field of road freight transport, the Federal Government will introduce regulations for a greater differentiation of the truck toll in line with carbon emissions and the inclusion of trucks of 3.5 tonnes and more in the truck toll from 2023. Also, a CO₂ surcharge is to be introduced to the extent that a double burden from the carbon pricing in the Fuel Emission Allowance Trading Act can be avoided.

92. Germany is to become a lead market for electric mobility. At least 15 million fully electric cars are to be driving on Germany's roads by 2030. The environmental bonus (purchase premium for vehicles with alternative drives) will be paid out until the end of 2025; the additional innovation premium (doubling of the state's share of the funding) will continue to apply until the end of 2022. From 2023, the Federal Government will only be funding

electric vehicles which demonstrably have a positive effect in terms of climate action.

93. The Federal Government will support the transition process in the German automotive industry via a corresponding policy framework and funding measures, e.g. via targeted funding for clusters, particularly with a view to small and medium-sized enterprises. To this end, it intends to set up an “Automotive economy transformation” strategy platform together with the mobility industry, environmental and transport associations, social partners, academia, the Bundestag, the *Länder* and main municipal associations in order to ensure that the goals of climate neutrality, value creation and jobs and training places are met.

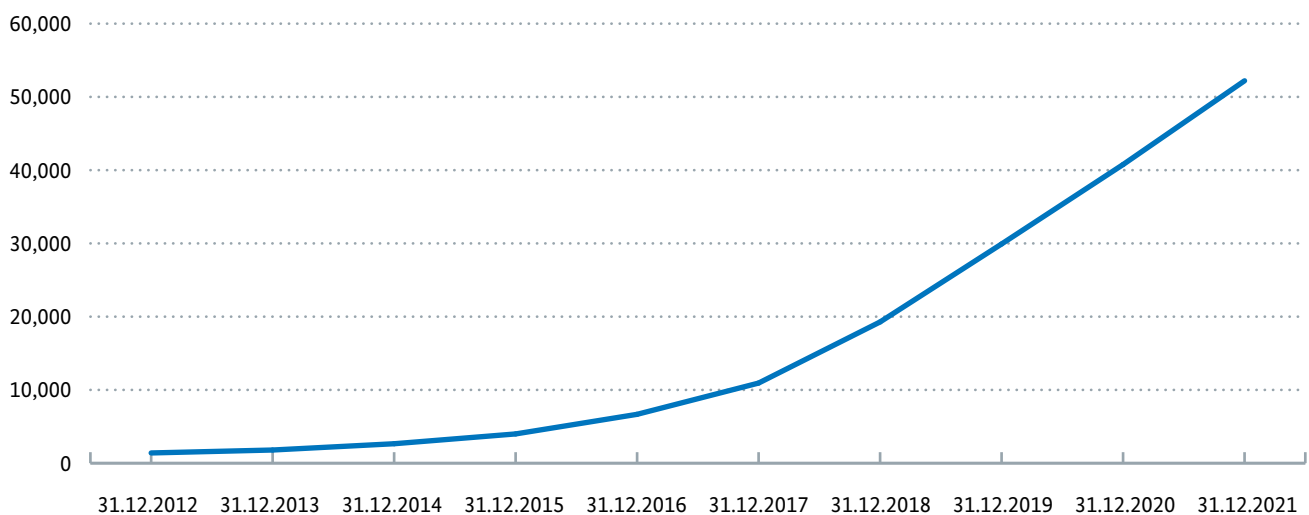
94. In line with the European Commission’s proposals under its Fit for 55 package of legislation (cf. Box 1), by 2035 only carbon-neutral new cars and new light commercial vehicles are to be newly registered in Europe – and this will impact Germany at a correspondingly earlier stage. Beyond the

existing system of fleet emission limits, the Federal Government is advocating that only vehicles which can demonstrably use e-fuels should be newly registered.

95. The accelerated expansion of a nation-wide and needs-oriented charging infrastructure for electric vehicles is a crucial precondition for a successful switch to climate-friendly electric mobility. The Federal Government will revise the Charging Infrastructure Master Plan in 2022, pool together measures from the fields of construction, energy and transport, and place a priority on a municipal networking of the solutions. The aim is to provide a million charging points which are publicly accessible on a non-discriminatory basis by 2030, with a focus on fast-charging infrastructure. At European level, the Federal Government will call for ambitious expansion targets for the development of the infrastructure for alternative fuels (AFIR).

Diagram 5: Development of the charging infrastructure in Germany

Number of electric charging stations in Germany



Source: Bundesnetzagentur.

96. The second revision of the Charging Station Ordinance in 2021 introduced a uniform payment system for spontaneous charging at publicly accessible charging points for electric vehicles. All users will in future be able to make contactless payments for the electricity using common credit and debit cards. This user-friendly rule applies to all charging points which come on stream from 1 July 2023.

97. Two IPCEIs have created the nucleus for a competitive and sustainable battery value chain in Germany and Europe. The Federal Government is deploying additional funding measures to ensure that the battery ecosystem is continuously expanded via projects, not least for improved environmental friendliness. Additional cell manufacturing sites (including recycling and the “green battery”) are to be developed. The Federal Government will also be promoting renewable fuels and alternative drives in the railway sector.

Keeping energy affordable and avoiding social hardship

98. The climate transition should not exacerbate social inequality and must therefore be designed to be socially just. The carbon pricing is revenue-neutral, i.e. the state does not earn anything from it. The revenues are returned via measures which will reach all citizens and companies, e.g. via the reduction of the EEG surcharge or support measures which create incentives for low fossil energy consumption. People in specific situations will be helped, e.g. via the increase in housing allowance and the commuter tax allowance for long-distance commuters. The Federal Government will be relying on a rising carbon price as an important instrument of climate action, coupled with a strong social balance, and will give particular assistance to households with less financial resources or lower incomes.

99. In order to continue to be able to ensure the affordability of electricity and to create incentives for a climate-neutral economy and industry, the Federal Government will thoroughly reform the state-induced price components in the energy sector. It will terminate the financing of the EEG surcharge via the electricity price from 2023 at the latest and will instead use funding from the Energy and Climate Fund for this purpose. This Fund is fed from the revenues from the emissions trading system (Fuel Emission Allowance Trading Act and EU ETS) and a grant from the federal budget. At the beginning of 2022, the EEG surcharge had already dropped to around 3.7 cents/kWh, or by 43% year-on-year. This means it is at its lowest level for ten years. The increasing reduction of the burden on the electricity price is also intended to incentivise the departure from fossil fuels and a switch to electricity which is increasingly generated from renewable sources.

100. The reduction of the EEG surcharge counteracts the price push deriving from the currently high world market prices for gas, oil and coal. A major driver of the rise in the wholesale gas price is higher spot market prices for gas due to increased global demand. This is rooted in the economic recovery and a growing significance of gas in electricity generation, not least as a result of the efforts of many countries to phase out coal-fired electricity generation. This is going hand in hand with a reduced supply of gas due to a number of special factors. The ongoing expansion of renewable energy in Germany will reduce dependency on imports of energy and make the market less susceptible to price volatility.

101. There are to be no changes to the CO₂ price path for social reasons in the national emissions trading under the Fuel Emission Allowance Trading Act (cf. 2021 Annual Economic Report, Box 12), given the currently high energy prices. The Federal Government will lay out how the post-2026 mar-

ket phase is to be designed in the Fuel Emission Allowance Trading Act in a proposal. To compensate for a future price rise and ensure acceptance of the market system, the Federal Government will develop a social compensation mechanism (climate allowance) that goes beyond the abolition of the EEG surcharge.

Developing the economy into a circular economy, effective climate action and conservation of resources

102. A circular economy makes a key contribution to effective climate action and the conservation of resources. It is much more than waste management and recycling, and starts from the raw materials, influences consumption and resource efficiency, and also embraces aspects like the bioeconomy, mobility and research and innovation. The Federal Government aims to establish and close material cycles and in this way to cut the consumption of primary raw materials and harmful emissions as far as possible.

103. With a view to the necessary ongoing transformation of the economy into a circular economy, the Federal Government will pool together the existing strategies in an overarching “National Circular Economy Strategy” and will stipulate specific targets on the basis of evidence-based indicators. On this basis, the Federal Government – in a dialogue with the manufacturers – will work at European level, e.g. to arrive at uniform standards and product requirements as well as minimum quotas for the use of secondary raw materials.

104. However, the transformation to a circular economy is not just a technical, but is in particular also a social and economic challenge, both nationally and internationally. This is because the shaping of an economic policy framework, e.g. with regard to economic incentives, the promotion of innovation and startups, internationalisation of

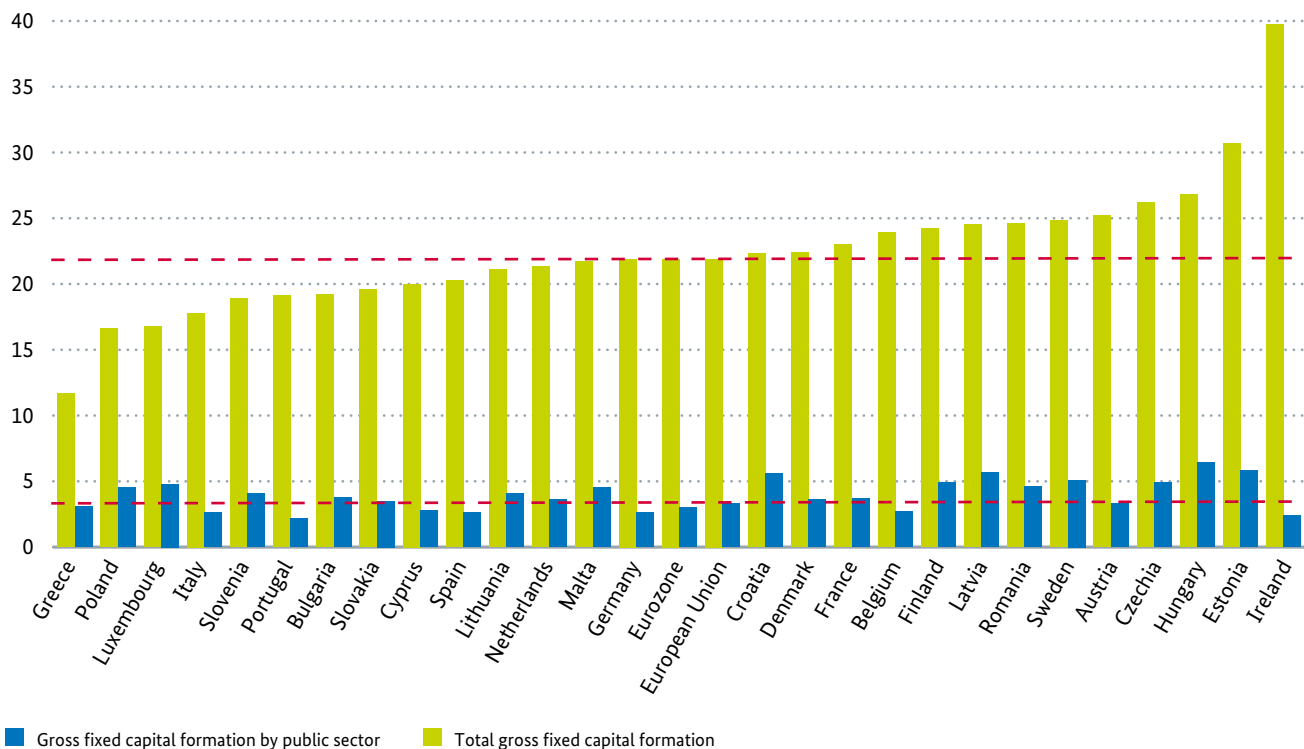
German greentech concepts, the sharing economy and potential cooperation between companies, plays a key role in the implementation of the circular economy. The circular economy is therefore a horizontal task that is relevant for a wide range of policy areas. In view of this, the planned Circular Economy Strategy will also embrace a large number of policy areas.

Accelerating investment in the future and in the climate, developing scope for action

105. The 2020s are to become a decade of investment in the future. This involves not only climate action, but also in particular digitalisation, education and research, and the establishment of the infrastructure needed for these areas. The Federal Government will put the preconditions in place for investment to be able to take place swiftly and thoroughly. This will particularly require an appropriate policy framework for businesses, which will be responsible for the bulk of the investment across the economy. The aim is to create unbureaucratic and SME-friendly incentives for investment in the future by small and medium-sized enterprises. Further to this, public investment will have to be boosted. Overall, it is now important to set the course for more sustainable economic dynamism, also in Europe: that is the only way for Germany to be able to maintain and improve on its impressive level of prosperity.

106. The Federal Government will also stimulate the transformation via a supportive and sustainable fiscal policy in the coming years. Public-sector gross fixed capital formation remains below the European average (cf. Diagram 6). It has been picking up speed for several years now, but will need to be expanded further if Germany is to retain its role as an innovative economy and to contribute to the upturn in Europe. In macroeconomic terms, Germany is aiming at an investment rate well above the EU average.

Diagram 6: Gross fixed capital formation in the European comparison, 2020



Source: Eurostat. Gross fixed capital formation as a percentage of GDP.

107. The Federation will significantly increase its investments. In 2022, the spending on investment will stand at €51.8 billion according to the draft 2022 budget adopted in the summer of 2021. In the years from 2023 to 2025, it will grow higher than the €48 billion of the previous financial plan, which covered the period up to 2024, to an annual amount of around €51 billion. There will also be comprehensive investment funding from the special funds. The funding is going not least towards the road, rail and waterway modes of transport, and towards education and research, digital infrastructure and the climate-friendly restructuring of the economy.

108. The Federal Government adopted the draft of a second supplementary budget for 2021 on 13 December 2021. It assigns to the Energy and Climate Fund €60 billion from previously allocated but unutilised authorisations to take out loans,

money which can now be used to cope with the consequences of the pandemic. The funding is hypothecated for the promotion of investment in the buildings sector, in carbon-neutral mobility, in new production facilities in sectors of industry with emission-intensive processes, in the expansion of an infrastructure for carbon-neutral energy supply, and to boost demand by abolishing the EEG surcharge. Many investments did not take place because of the restrictions relating to the pandemic. Furthermore, there are other uncertainties due to the current renewed rise in the rate of infections and the Omicron variant. The additional financial backing for forward-looking investment and the related certainty for planning puts in place an activating policy framework and generates in a targeted manner the macroeconomic stimulus needed to tackle the pandemic. In future, the Energy and Climate Fund will be transformed into a Cli-

mate and Transformation Fund. Key incentives for investment are also being set by the Federation via other special funds, such as the special funds for “Digital infrastructure”, “Expansion of child care” and “Expansion of all-day education and care services for children of primary school age”.

109. The Future Package of June 2020, which forms part of the stimulus programme, provides for investment totalling some €50 billion during the period covered by the financial plan up to 2025, and in some cases beyond this. It sets priorities particularly in the fields of climate action, the energy transition, more climate-friendly and environmentally friendly mobility, digitalisation and related key enabling technologies – areas where the major challenges of the coming years will be found. Here, the Federal Government is also giving targeted support to private-sector investment.

110. The Next Generation EU rebuilding programme is the EU's overall response to the economic and social crisis caused by the pandemic. The core element of this is the Recovery and Resilience Facility, which consists of €723.8 billion (in current prices) to support reforms and investments by the EU Member States. The German Recovery and Resilience Plan comprises nearly €28 billion for the 2020-2026 period and contains 40 measures, 42% of which support the ecological transition, and 52% of which are dedicated to the digital transition, and which are assigned to the following priority fields: climate policy and the energy transition (€11.3 billion), digitalisation of the economy and infrastructure (€5.9 billion), digitalisation of education (€1.4 billion), strengthening of social participation (€1.3 billion), strengthening of a pandemic-resilient healthcare system (€4.6 billion) and modern administration and the reduction of barriers to investment (€3.5 billion). It also funds parts of the Future Package. The EU structural funds also play a key role in the rebuilding of the economy, the green and digital transition and

socio-economic and social inclusion. The 2021-2027 Multiannual Financial Framework provides roughly one-third (€372.6 billion) of the total future amount for EU cohesion policy. Germany is receiving nearly €23.3 billion in structural funding, most of which will be implemented by the *Länder*. The European Regional Development Fund has a stronger focus on research and innovation, competitiveness of SMEs and a carbon-neutral economy. The European Social Fund Plus promotes employment, social integration of disadvantaged groups, and upskilling. In order to implement the European Green Deal, the Just Transition Fund is supporting structural change in the four coal-mining regions.

111. The federal budget situation facing the new government is extremely challenging. A large amount of debt has been taken on since 2020 due to the pandemic. The Maastricht debt-to-GDP ratio probably rose further in 2021 to an expected 70¼% of GDP (cf. Item 274). The experience with the financial crisis of 2008 and 2009 shows that it is possible to successfully scale back a high level of debt. From 2022, the debt-to-GDP ratio will probably decline, and current assumptions suggest it could drop back below the 60% threshold in 2028. It will again be necessary to respond to repercussions of the pandemic in 2022, and these continue to justify an unusual emergency situation within the meaning of the German debt brake.

112. The Federal Government shares the view held by some members of the GCEE that all spending by the state needs to be reviewed in terms of how forward-looking it is (cf. GCEE Annual Report Items 216 ff.). The aim of the Federal Government is to make more use of spending reviews to continually scrutinise state tasks with a view to tangible improvements in the effectiveness and efficiency of the funding deployed. This year, the spending review is to focus on the sustainability of the budget spend-

ing. Spending reviews increase the transparency of the deployed funding, improve the direction of the impact, and serve the reprioritisation of spending and the creation of scope for new measures, both on the revenue and on the expenditure side.

113. In order to activate more private capital by providing public-sector backing, the Federal Government will examine what contributions can be made by public-sector promotional banks like the KfW and the European Investment Bank to hedge against risks in a capital-market-oriented way. The funding which can be provided by existing state companies is also to be improved by authorisations to take out loans and a strengthening of the equity base and, as called for in the Annual Report of the GCEE (cf. GCEE Annual Report Item 221), parliamentary, public and executive controls are to be strengthened. Further to this, the Federal Government intends to present its investment commitments in long-term investment planning so that there can be more certainty for the planning of the transformation of the German economy and in order to help increase capacities in the construction sector and municipal administrations. Further to this, the Federal Government aims to introduce a survey of the assets of the Federation in order to be able to undertake better investment and maintenance planning.

114. In line with the statutory mandate of the debt brake, the Federal Government will evaluate the cyclical adjustment procedure, not least on the basis of the findings from systemic crises, and adapt the arising needs accordingly without altering the debt brake, which is anchored in the Constitution. The redemption plans which are drawn up in response to the exceeding of the regular ceiling for net borrowing in 2020-2022 will be pooled together in an overall redemption plan to be adopted by the Bundestag in order to ensure

coherent debt repayments which will remain viable in the long term. In this process, the repayment periods will be aligned with those of the EU COVID-19 assistance from the Next Generation EU programme.

115. The Federal Government shares the GCEE's view (cf. GCEE Annual Report Items 99 ff.) that the risks to public-sector finances in Europe have increased due to the pandemic and that high debt-to-GDP ratios must be scaled back again in a growth-friendly way following the crisis. In this process, a consolidation to the detriment of public investment, as has happened in the wake of previous crises, must be avoided. The Federal Government believes this is possible under the European fiscal rules. The Stability and Growth Pact has demonstrated its flexibility particularly well during the latest crisis. It provides a platform on which growth is to be ensured, debt sustainability is to be maintained, and sustainable and climate-friendly investment is to take place. The further development of the fiscal policy rules should be oriented to these targets in order to increase the effectiveness of the rules in the face of current challenges. The Stability and Growth Pact should become simpler and more transparent, not least in order to strengthen its enforcement.

Supporting investment by *Länder* and municipalities

116. The Federation is giving support to the *Länder* and municipalities in many areas. The climate-neutral and digital transition is being progressed thanks to the support given towards the rollout of gigabit and mobile communications networks, regional structural assistance and the pan-German funding system, as well as in the regions affected by the phase-out of coal mining. In the transport sector, the financial assistance under the Municipal Transport Funding Act and the regionalisation

funding has been increased and index-linked in order to assist the *Länder* and municipalities with the mobility transition. Here, again, the new Federal Government is planning to further expand the relief already being provided. It is envisaged that the pandemic-related revenue losses suffered by local public transport will again be offset in 2022. Investment in municipalities in a weak financial position will continue to be bolstered by the Municipal Investment Funding Act, the funding periods of which have been extended (MIF Act I until 2023 and MIF Act II until 2025). Further to this, the Federal Government intends to work with the relevant *Länder* to relieve the burden on those municipalities particularly affected by high levels of long-standing debt. They lack the financial scope for urgently needed investments.

117. In the field of welfare, the Federation will continue to fully cover the net expenditure of basic security benefits for old people and for those with reduced earning capacity under the 4th Chapter of Social Code XII and will continue to provide up to 74% towards the costs of accommodation and heating under Social Code II. Furthermore, since 2021 the Federation has been covering a higher share (50% rather than 40%) of the reimbursement of spending on supplementary pension schemes under the Claim and Entitlement Transfer Act. This assists the budgets of the eastern German *Länder*. The relief for the *Länder* and municipalities resulting from these three schemes amounts to a total of more than €20 billion according to the first draft of the 2022 federal budget. In the field of education and families, the Federation is continuing to help the *Länder* and municipalities to expand and improve the quality of care for children under 6 and also to expand all-day care in order to realise the legal entitlement of elementary school children, and is also supporting the Digital Pact for Schools.

118. Also, the municipal funding programmes in general are to be freed up from red tape and, where possible and appropriate, packaged together and given practicable deadlines, and simplified access is to be given to the *Länder* and municipalities for use of the public sector's in-house consultancy capacities.

119. The Federation is also supporting the *Länder* and municipalities in the special crisis situations relating to the COVID-19 pandemic and the disastrous flooding of summer 2021. The Federation bears the main fiscal burden in the tackling of the pandemic. Overall, the Federation provided funding of €393 billion in 2020 and 2021 for pandemic-related measures (solely for immediate and other direct assistance, the Economic Stabilisation Fund and the stimulus programme); the *Länder* and municipalities provided roughly €132 billion (solely core budgets, report by the central data office of the *Länder* finance ministers, as of 25 February 2021). The Federation is providing half of the immediate assistance programmes of the affected *Länder* to cope with the consequences of the disastrous flooding, and is providing up to €16 billion towards a joint Federation and *Länder* rebuilding assistance fund of up to €30 billion.

120. The comprehensive support for the *Länder* and municipalities from the Federation in recent years is also reflected clearly in the distribution of VAT revenues between the territorial authorities. Numerous instances of relief for the *Länder* and municipalities are granted via VAT distribution so that the federal share of VAT revenues has consistently downwards in recent years, whilst that of the *Länder* and municipalities has risen.

121. The distribution of the overall tax revenues has also shifted away from the Federation. Whilst the Federation still received 42% of the tax revenues in the long-term average of the years before

the pandemic (2010-2019), the trend was pointing downwards, and the share in 2020, the first year of the pandemic, dropped significantly to just 38.3%; according to the estimate of tax receipts made in November 2021, it reached a low-point last year at 37.6%. The estimate of tax receipts suggests that the proportion will only bounce back to around 39.0% by 2026.

Reorienting regional structural policy, bringing forward the phase-out of coal

122. Germany's regions have experienced differing economic trends in recent years. The upshot is a patchwork of regions with strong structures adjacent to regions with weak structures. Urban areas with structural problems relating to old industries contrast with prosperous towns surrounding large cities. Germany has rural areas with a strong base of small and medium-sized enterprises and full employment, but also peripheral regions whose populations are shrinking as people move away.

123. The Federal Government works to achieve equivalent standards of living in all regions. To this end, it will further develop the Federal Funding System for Structural Development Regions and coordinate the programmes packaged under this umbrella more comprehensively, ensuring that the funding mainly goes to places which are lagging furthest behind. The Joint Federal/*Länder* Task for the Improvement of Regional Economic Structures continues to form the centrepiece of the nationwide funding system. The Federal Government will orient the Joint Task even more clearly to the tackling of structural challenges. The plan is to top up the Joint Task funding in order to set new priorities in particular in the fields of innovation promotion, digitalisation, productivity, sustainability and decarbonisation. Further to this, the Federal Government will examine whether the Joint Task can be supplemented to include aspects of regional

public services. Also, the "rural development" special framework plan of the Joint Task "Improving the Agricultural Structure and Coastal Protection" is to be topped up and expanded.

124. Ideally, the phase-out of coal-fired power generation is to be brought forward to 2030. That means that the structural change must be progressed in the affected regions. The Federal Government is supporting the coal-mining regions by bringing forward and accelerating measures of the Structural Strengthening Act for Mining Regions. This act provides that the Federation will pump up to €40 billion until 2038 into the structural change in the coal-mining regions. Of this, €14 billion takes the form of financial assistance for particularly significant investment by the *Länder* and municipalities, and €26 billion will go towards federal measures. The Federal Government will utilise all the scope offered by the Structural Strengthening Act for Mining Regions in order to attract new companies and to foster the growth of existing businesses. In particular, local industrial value creation is to be maintained and expanded. At the same time, new innovations are to be encouraged, not least via the establishment of research institutions. At the same time, the act is making use of innovative approaches like regulatory sandboxes.

Realising and financing sustainable investment

125. The Federal Government shares the GCEE's view that private-sector investment plays an important role in financing the social-ecological transformation (cf. GCEE Annual Report Items 206–209). For this reason, the German Sustainable Finance Strategy was adopted in May 2021 with a total of 26 specific measures, in order to provide a regulatory framework for ecological and social sustainability in the financial sector. The planned location of the International Sus-

tainability Standards Board (ISSB) in Frankfurt am Main will intensify international cooperation in this field. The ISSB is part of the International Financial Reporting Standards Foundation and is tasked with drawing up minimum global standards for corporate sustainability reporting. Additional planned locations in Montreal and the Asia-Pacific area will encourage broad stakeholder participation and strengthen the Board's networking capacities.

126. Environmental and climate aspects are also playing an enhanced role in the management of public finances. Following its successful move into the green segment of the bond market in 2020, the Federation issued its first 30-year green federal bond in May 2021. Following another issue (10-year term) in the autumn, the total volume of green federal bonds last year amounted to €12.5 billion. The Federal Government will expand the issuing of green federal securities on the basis of the eligible federal green expenditures of each preceding year. The issuing of further green federal securities maturing over various terms is intended to extend the green benchmark yield curve. This will not only consolidate Germany's position as a leading centre of sustainable finance, but, thanks to the accompanying reporting, will also create transparency about federal spending on climate action, environmental protection and nature conservation and the impact of that spending.

127. The Federal Government welcomes the revised Sustainable Finance Strategy presented by the European Commission in July 2021 which, not least, generates a fresh stimulus for greater involvement of small investors in the sustainable capital market segment, provides greater support for the real economy as it seeks finance for its efforts to go green, and gives better consideration to transition technologies. The Federal Government supports the examination of an extension of the EU taxon-

omy to include additional sustainability goals, including social goals.

With a view to the proposed legislation tabled by the European Commission to revise the Corporate Sustainability Reporting Directive, the Federal Government will argue in particular for coherence with other legal instruments of the EU.

In the proposed legislation on an EU Green Bond Standard, the Federal Government is continuing to call for rules which are ambitious and credible but also practicable (cf. 2021 Annual Economic Report, Item 251). The Federal Government rejects a categorisation of nuclear power as "sustainable".

128. At the end of 2021, the European Commission approved its new Guidelines on State aid for Climate, Energy and Environmental Aid (CEEAG), which are to be applied from 1 January 2022. The new guidelines will have a major impact on the policy design of government funding for the Green Deal and the shift to carbon neutrality and on how the competitiveness of our industry can be maintained and improved. Not least, they stipulate the preconditions under which energy-intensive companies can be exempted from the charges imposed to fund renewable energy. The Federal Government has successfully argued that the relief that has so far been available in relation to electricity costs should not be inappropriately restricted.

D. Developing the regulatory framework for a sustainable transformation

129. The forthcoming transformation of the German economy must primarily be driven by private-sector investment. In view of the ambitious climate targets and the rapid advances in technology, the policy framework for private-sector investment must be improved in a targeted manner and developed further in response to the needs of digitalisation and sustainability.

To this end, the Federal Government will speed up administrative, planning and approval procedures as well as procedures before the administrative courts, prune superfluous red tape, and provide targeted tax-based stimuli. Competition law will be brought further into line with the needs of the data and platform economy. The public procurement rules will be optimised and modernised in the interest of the sustainability targets. The Federal Government is pursuing a rules- and values-based foreign trade policy on the basis of multilateralism in order to strengthen economic resilience and with a view to a sustainable global development.

Significantly simplifying and accelerating processes and procedures

130. In order to rapidly modernise Germany, there is a definite need for swift administrative, planning and approval procedures. To this end, the Federal Government will set up an interministerial steering group involving the *Länder*. Improvements are planned in areas including the following:

- **Simplification and improvement of administrative procedures:** All the possibilities to accelerate administrative procedures are being examined and all the necessary administrative procedures will be simplified and improved in such a way that wherever possible disputes will not end

up in court. Barriers to digitisation will be removed. In order to speed up administrative procedures, the Federal Government is also aiming to ensure the earliest possible intensive public participation and to make progress on digitisation.

- **Improvement of human resources:** The Federal Government will optimise the amount of human resources available to authorities and courts. Flexibly deployable teams of experts and project managers, for example, are to give support to authorities. A reliable and sustainable pact for faster planning, authorisation and implementation with the *Länder* is desirable, in order to recruit staff, give further training, and progress digitisation at all levels.
- **Digitalisation of planning and approval processes:** The authorities will be equipped with the necessary technology, and IT interfaces between the Federation and the *Länder* will be standardised. The exchange of data between the Federation and the *Länder* will take place via the core network. Planning and approval procedures are to be digitised, and in particular the digital possibilities offered by the Planning Safeguarding Act are to be consolidated in the light of the evaluation, and this is to leverage potential for acceleration.
- **Reduction in the time and effort devoted to examinations under species protection legislation:** In the field of legislation on the protection of endangered species, legal certainty is to be improved via the introduction of nation-wide statutory standards (including significance thresholds) – without reducing the overall level of protection. For certain projects (renewable energy installations, infrastructure for grid-based energy forms, electrified railway routes) and in certain circumstances, there will be a general assumption that the preconditions for

an exemption from the Federal Nature Conservation Act exist. Also, the digital portal for environmental data is to be expanded into a publicly accessible central archive of mapping and species data.

- **Acceleration of administrative court procedures:** Administrative court procedures are to be accelerated via an “early first appointment” and more efficient interim injunctions in which appropriate consideration is given to remedial action and attention is paid to the reversibility of measures.

Addressing bureaucracy reduction as a cross-cutting task

131. Despite numerous attempts to restrict and reduce the scope of bureaucratic burdens, wide-ranging and in some cases highly detailed regulation of many areas continues to represent an impediment to a dynamic economic development. However, the forthcoming major transformative processes in particular need rules that are flexible and as unbureaucratic as possible.

132. The impact of the pandemic on legislative activities has so far been ambivalent. On the one hand, numerous bureaucratic burdens have been removed, at least on a temporary basis. This creates the opportunity to retain simplifications that work well. On the other hand, new legislation has been put in place during the pandemic which, at least temporarily, has imposed new costs on business in particular.

133. The Federal Government aims to address the reduction of bureaucracy as a cross-cutting task. To this end, a new Bureaucracy Reduction Act is to be initiated. A reduction in bureaucracy is envisaged in the field of tax law and also in the area of welfare benefits, in the healthcare sector, tourism and the use of funding programmes (e.g. via a uniform

digital funding portal). The public administration is to be comprehensively digitised. The tax administration is also to become more digital, and the service for the public is to be further expanded. All the interactions between tax-payers and the tax administration are to be possible online, with pre-completed tax returns (“easy tax”) to become more prevalent. To this end, the Federal Government will press ahead with the digitisation and reduction in bureaucracy of the taxation authorities and ensure that tax rules can in principle be implemented digitally. Finally, a systematic procedure to review the costs of compliance will be developed with a view to improving the quality and practicability of legislation. In the context of modernisation of registers, the introduction of a basic register of core company data will represent a major step forward: core company data are to be held centrally, thus avoiding the need for multiple entries in different registers. The basic register will be implemented swiftly, and the financing for it will be put in place.

Setting tax incentives for investment, fighting tax avoidance

134. Growth-friendly, internationally competitive and fair tax rules make a major contribution towards economic development. These help to stabilise the economy, boost investment and productivity, and to support the necessary process of transformation into a digital, climate-neutral and sustainable economy. Other priorities in the field of tax policy are the ongoing efforts in the field of tax simplification, the modernisation of the tax collection system, the fight against tax avoidance, and the strengthening of fair taxation in the national and international context.

135. Most recently, the focus has been on tackling the COVID-19 pandemic. The Third Coronavirus Tax Relief Act for 2021 helped both citizens and companies. Amongst other things, it resulted

in the disbursement of another child bonus of €150 for each child entitled to child benefit in 2021. On top of this, the reduced VAT rate of 7% for the catering sector was extended until 31 December 2022 and the carry-back of losses for tax purposes for 2020 and 2021 was extended to a maximum of €10 million in the case of individual assessment and €20 million in the case of joint assessment. The Federal Government intends to extend these rules on the carry-back of losses until the end of 2023 and, as proposed by the GCEE (cf. GCEE Annual Report Item 425), expand the carry-back of losses to the two preceding assessment periods. This can generate liquidity for investments. The tax-exempt amount of interest earned by savers is to be raised to €1,000 from 2023, or €2,000 in the case of joint assessment. The social care bonus planned by the Federal Government, for which funding of €1 billion has been allocated in the federal budget, will be exempted from income tax up to a level of €3,000.

136. Looking beyond the pandemic, tax policy will continue to play its part in helping us cope with the major problems of the future. For this reason, the Federal Government intends to provide further incentives for investment in climate action, the protection of natural resources and digital assets, by giving tax-payers the possibility in 2022 and 2023 to deduct part of the purchase and manufacturing costs from taxable profits, or to use them to reduce the tax debt.

137. In order to make employee shareholding a more attractive option, the Fund Domicile Act has raised the maximum tax-exempt amount for asset participation from €360 to €1,440 a year. Also, a provision has been included in the Income Tax Act for startups in particular according to which the income from the transfer of asset participations in the employer's company is not initially taxed. Further to this, the Federal Government intends to

make more improvements in rules governing employee shareholdings, making them more attractive. For this reason, the Federal Government will, for example, raise the maximum tax-free amount.

138. The Act Updating Corporate Tax Law gives commercial partnerships and partnership companies the possibility to be treated like a corporation in terms of taxes on earnings. This option represents a key step to strengthen the competitiveness of small and medium-sized unincorporated firms in particular. The Federal Government will evaluate the option model and the taxation of retained profits and consider the extent to which further practicable adjustments are necessary.

139. The Capital Income Tax Relief Modernisation Act digitises and simplifies the relief procedure for capital gains tax. It counteracts related abuse and tax evasion. The Act Implementing the Anti-Tax Avoidance Directive addresses tax avoidance and makes the taxation of controlled foreign companies (CFCs) modern and legally secure in the interest of a stronger German economy. The Defence against Tax Havens Act permits tax-based sanctions in the case of business relations with uncooperative states. Further measures are to contribute to tax fairness: the existing requirement to report cross-border tax arrangements to the tax authorities will be extended to national tax arrangements of companies with a turnover of more than €10 million, an interest capping rule will be introduced, VAT fraud will be combatted, and abusive dividend arbitrage trading schemes will be halted. Further to this, the Federal Government will consider the extension of rights to withhold tax at source.

140. Digitalisation is creating major challenges to the existing system of tax law in a globalised economy. In the long term, the best way to tackle these challenges is via an internationally

coordinated and uniform approach by all states, and this is also favoured by the GCEE (cf. GCEE Annual Report Item 446 in conjunction with Box 26 of the Report). The Federal Government will therefore continue to proactively advocate the introduction of global minimum taxation.

141. Not least, the reduction of superfluous and ineffective subsidies, and of subsidies which harm the environment and the climate, is of relevance to tax and budget policy. In the context of the future national implementation of a recast of the EU Energy Tax Directive, which is currently still being negotiated, a review of the taxation of diesel fuel is envisaged. The tax breaks given to plug-in hybrid vehicles in the context of taxation of company cars will be oriented more to distances which are purely battery driven for newly registered vehicles. Further to this, tax concessions which refer to the commercial use of electricity are to be reduced. The relief from the abolition of the EEG surcharge is to be taken into account here, so that the overall burden on companies does not increase.

Continuing the modernisation of competition law

142. Digitalisation, sustainability and global distortions of competition also require an ongoing fine-tuning of competition policy. The previous Federal Government's ARC (Act against Restraints of Competition) Digitisation Act is a far-reaching revision in the interest of proactive, digital and focused competition law which provides clear rules for the digital markets. It has created the world's first clear competition rules for large digital companies with an overriding cross-market impact. A key element here is the adaptation of rules on abuse on dominant positions so that the antitrust authorities can address the challenges of the digital economy.

143. In the current legislative term, the Federal Government will subject the Act against Restraints of Competition to an overall evaluation and will develop it further with regard to the effectiveness of these measures and to fair competition in general. The focus here – taking account of the Green Deal reforms of the European Commission in this policy field – is particularly on the interests of small and medium-sized enterprises, but also on the goals of innovation, sustainability, consumer protection and social equity. In this process, the Federal Government will reform the ministerial authorisation of mergers and acquisitions with a view to ensuring that appropriate legal remedies against a ministerial authorisation exist again, and that the Bundestag is involved in the procedure. Also, possibilities for a potential strengthening of the role of the Bundeskartellamt (Federal Cartel Office) in the field of consumer protection and possible interoperability requirements for dominant companies and a further strengthening of data access for small and medium-sized enterprises will be considered.

144. At European level, too, the Federal Government will continue to press for a further development of competition policy and an ambitious Digital Markets Act. The key aims here include the effective enforcement of the Act, not least also by the national competition authorities, and solutions to competition issues raised by “killer acquisitions”. The Federal Government is making use of European competition law and the strength of the European single market with regard to unfair competitive practices of authoritarian regimes in particular. Further to this, the Federal Government supports the establishment and further development of the autonomous measures against unfair trade practices at European level.

145. The GCEE also gives detailed consideration in its Annual Report to the phenomenon of killer acquisitions and their consequences

(cf. GCEE Annual Report Items 460 ff.). Here, the Council points out not least that many competition experts believe that the competition authorities' response to a number of mergers has been inadequate. The Federal Government will therefore continue to advocate a change in the thresholds for action in EU merger control legislation and better possibilities to ban killer acquisitions.

Making public procurement more digital and sustainable

146. The Federal Government will also press ahead in a legally secure way with the digitisation of public procurement in order to promote public-sector investment. To this end, it will set up a user-friendly central platform in the context of the Federation-*Länder* collaborative project to implement the Online Access Act (the "simplified corporate access" sub-project), which from 2023 will contain announcements of, if possible, all procurement procedures in Germany. The public sector is to make more thorough use in future of possibilities for swift awarding of contracts whilst ensuring that the procurement makes economic sense. The *Länder* and municipalities are to be helped with simplifying and digitising procurement procedures, and with making them more sustainable. Further to this, the Federal Government will introduce the new electronic standard forms, which are basically designed to be uniform throughout the EU, for announcements of invitations to tender ("eForms") as it plans to introduce the central platform for announcements and the various national procurement solutions. It will provide the announcements as open public data.

147. The public sector serves as a role model in this transformation project. A step towards a procurement policy which is more oriented to climate friendliness and sustainability has already been taken for federal purchases in the form of the Gen-

eral Administrative Instruction on the Procurement of Climate-friendly Services, which entered into force on 1 January 2022. This takes account of the requirements of the Federal Climate Change Act with regard to the inclusion of a shadow carbon price. In order to make the new rules easier to apply in practice, a "negative list" of services which are in principle not to be purchased has been created, covering products which are of particular relevance to the climate. Also, the public sector will take part in the establishment of a system to calculate climate and environmental costs. In addition to this, the Federal Government will introduce minimum quotas for the public procurement of climate-friendly products. It is also important to make greater use of the possibilities for public procurement to encourage innovative services, so that the influence of the public sector can promote the practical deployment of innovative technologies and processes.

148. Public procurement will be guided even more strongly by social standards in future. To this end, the Federal Government will draw up rules for the mandatory compliance with representative collective wage agreements by contractors working for the Federation.

149. The new Competition Register at the Bundeskartellamt enables contracting authorities to find out quickly and easily whether a bidder has committed relevant violations of the law (e.g. tax evasion or corruption) so that it can decide on this basis whether to exclude the company from the tender procedure. It will be compulsory for contracting authorities to search the Competition Register from June 2022. This also removes the need to consult the corruption registers which exist in some of the *Länder* and which have different pre-conditions for the blacklisting of companies.

Avoiding structural damage as a result of the crisis

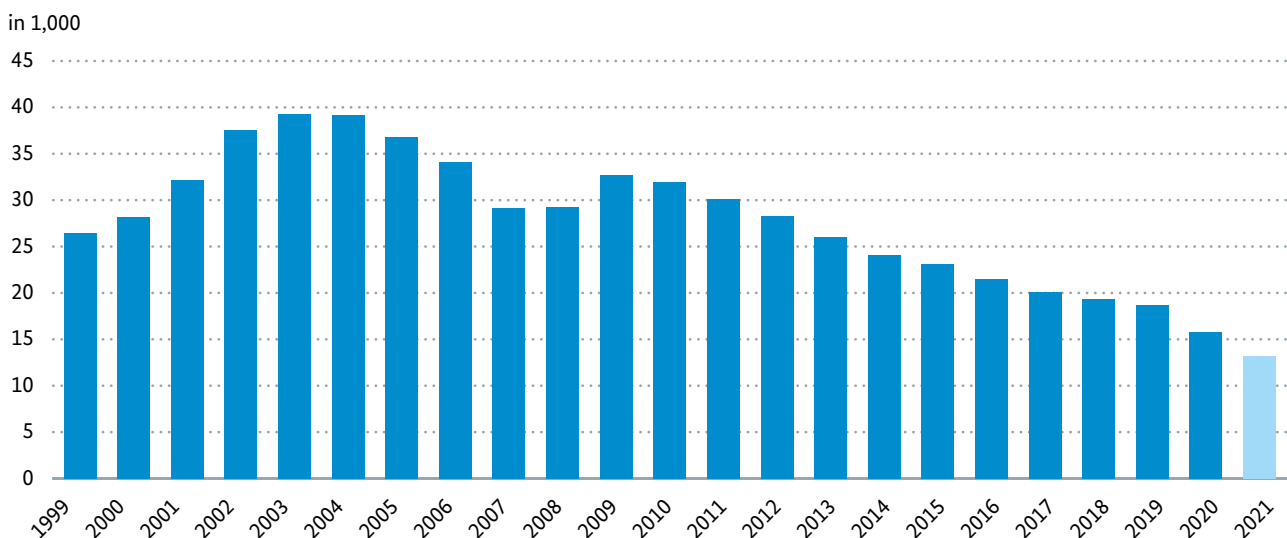
150. Whereas in 2003 and 2004 the number of corporate insolvencies neared 40,000 per year, the number has since dropped – a decline interrupted only by the 2008-2009 economic and financial crisis – to around 19,000 in 2019. In the first year of the pandemic, the number of corporate insolvencies dropped further; 2021 seems likely to have seen a renewed fall to a new record low.

151. A rise in the number of insolvencies has been avoided so far thanks to substantial state assistance backed up temporarily by rules suspending the requirement to file for insolvency, a good corporate equity base, and the stamina and adaptability of the companies. It has proved possible to retain jobs and the substance of the economy. At the same time, the GCEE rightly points out in its Annual Report that restrictions on the reallocation of production factors

between companies, regions or sectors slows down necessary adjustment processes (cf. GCEE Annual Report, Items 382 ff.) in the economy, particularly when companies with no viable business model are kept on the market solely by comprehensive economic assistance. This needs to be taken into account as assistance programmes are set up, continued and gradually scaled back.

152. The GCEE rightly emphasises the importance of insolvency and restructuring law for the tackling of the challenges posed by the forthcoming structural change (cf. GCEE Annual Report Item 420). German restructuring and insolvency law is well equipped to cope with these challenges. In particular, the legal framework for corporate restructuring introduced by the Act to Develop Recovery and Insolvency Law makes it possible and easier to undertake recovery measures to avert an insolvency and thus to avoid insolvency proceedings. Also, the recovery

Diagram 7: Corporate insolvencies per year



Source 1999-2020: Federal Statistical Office, 2021: in-house estimate

moderation procedure has created a framework giving small and micro-enterprises in particular low-cost but professionally supported access to procedural restructuring processes. There may be further need for action if – contrary to the current expectations, which are also shared by the GCEE – a systemic wave of insolvencies does take place and affects large numbers of companies which are basically capable of surviving and making money. In such a case, it might be worth introducing temporary simplifications relaxed rules on access to restructuring options for small and micro-enterprises (cf. GCEE Annual Report Item 422). In principle, however, it makes sense for the time being to gather experience with the recent updates to restructuring and insolvency law.

Strengthening the solidarity-based and social economy as a driving force for the transformation

153. During the COVID-19 pandemic, the social infrastructure of non-profit institutions and organisations of social work has shown how important these are for social cohesion in general and for coping with the pandemic and its social repercussions in particular. Companies whose main motivation is to resolve societal problems rather than to make profits for shareholders can gain further in significance. A modern business culture also includes new forms like social enterprises, cooperatives, social entrepreneurs and companies with tied assets.

154. The Federal Government will draw up a national strategy for social enterprises in order to give greater support to companies which serve the common good, and to social innovations. The statutory framework for companies which serve the common good, such as for cooperatives, social

enterprises and integration enterprises, is to be improved. A suitable legal basis which excludes the possibility of tax-saving arrangements is to be put in place for companies with tied assets. Barriers to access to finance and funding are to be reduced. The disadvantages currently suffered by companies serving the common good compared with other forms of companies are to be systematically removed. Finally, the legal framework will be put in place so that assets in dormant bank accounts can be used to promote the common good.

Tackling forward-looking issues on a cross-border basis, strengthening resilience

155. Challenges like climate change are characterised by their global nature: in order to address them, there is a need for joint efforts at European and international level. In the case of Europe, such challenges include digital, transport, security and energy infrastructure, and research. The Federal Government will work with its European partners to initiate an investment campaign which also focuses on transnational projects with added value for the EU as a whole and lends particular significance to the closing of gaps in networks. Both public and private capital are to play a role here. Improving the policy environment for investment in Europe also entails completing the capital market union and the banking union. In the context of an overall package for the European single market for financial services, the Federal Government is willing to establish a European reinsurance scheme for national deposit guarantee schemes, the contributions to which are strictly differentiated in line with risk. The precondition for this is a further reduction in the risks in bank balances, a further strengthening of the resolution regime, and the continued existence of schemes safeguarding the viability of institutions. Further to this, steps need to be agreed to restrict the nexus between states and banks and to effectively prevent an excessive

concentration of government bonds in bank balances. Also, a more flexible deployment of capital and liquidity is to be made possible within EU banking groups.

156. The Federal Government intends to strengthen rules-based free trade on the basis of fair social, ecological and human rights standards in order to guarantee prosperity and sustainable economic growth. The Federal Government – not least in the context of the German G7 presidency (cf. Box 3) – rejects protectionism and supports multilateralism and the further development of the World Trade

Organization (WTO). A special focus is placed here on the modernisation of WTO law on distortions of competition, e.g. in the form of industrial subsidies, on the reform and restitution of the blocked WTO dispute-settlement process, and on improved integration of sustainability aspects. Not least, in the long term the WTO should be oriented to the Paris Climate Agreement and the UN's Sustainable Development Goals. Europe should grasp the opportunity to engage in an intensive dialogue with the new U.S. administration with a view to promoting trade and investment which comply with high environment and social standards, so

Box 3: German G7 presidency in 2022

Germany took over the presidency of the G7 from the United Kingdom on 1 January 2022. The G7 summit will take place at Schloss Elmau from 26-28 June. The Federal Government will seize this opportunity to tackle key issues of multilateral cooperation, cohesion in and between societies and common global challenges together with our G7 partners. The G7 should become a pioneer of climate-neutral economic activity and an equitable world.

Progress towards an equitable world will be the objective that guides the work of Germany's G7 presidency. The agenda will be geared towards the following fields of action and pursue specific progress on:

- a sustainable planet: pioneering strong alliances for progress on climate action, especially through the establishment of an open and cooperative international climate club, on the protection of the environment and biodiversity and on accelerating the global energy transition.
- economic stability and transformation: setting the course for economic recovery, financial stability and for a sustainable, social and just global economic system.
- healthy lives: strengthening global health with pandemic preparedness and response and an enhanced international health architecture.
- investment in a better future: promoting sustainable development and infrastructure, expanding partnerships on the climate, energy and development, as well as a commitment to peace and security.
- stronger together: committing to open, resilient and gender-equitable societies and human rights, defending liberal democracies, social participation, freedom of science and of the press, tackling disinformation, promoting the digital order and digital progress.

The Federal Government will follow up on the results and decisions of previous presidencies, ensure the continuity of the G7's work and on implement measures adopted in the past. At the same time, the Federal Government attaches importance – as was the case during its last G7 presidency in 2015 – to close cooperation with developing and emerging economies, the G20 and civil society. On 1 January 2023, Japan will take over the G7 Presidency.

that the transatlantic economic area can set global standards in this regard.

157. Tariff reductions, access to public procurement markets and the reduction of non-tariff trade barriers in third countries allow modern trade agreements to diversify and enhance the resilience of international supply chains and to open up new opportunities for German and European companies. This can make it possible to secure market opportunities in the Indo-Pacific region and in Latin America in particular. At the same time, the Federal Government supports the negotiations and implementation of AfCFTA, the African free trade area, and urges it to contribute to the establishment of sustainable value chains. Also, bilateral trade agreements contribute to the attainment of EU sustainability targets. To this end, the Federal Government supports the ongoing review of the sustainability chapter by the European Commission.

158. Further to this, the Federal Government advocates the establishment and further development of the measures against unfair trade practices at European level. The Federal Government supports an effective EU supply chain act which is based on the UN Guiding Principles on Business and Human Rights and does not place an excessive burden on small and medium-sized enterprises. The national Supply Chain Due Diligence Act serves to improve the international human rights situation and to mitigate certain environmentally related risks. It prescribes binding due diligence obligations for certain companies. The Federal Office for Economic Affairs and Export Control is the authority responsible for enforcing the Supply Chain Due Diligence Act; it will be building up the necessary expertise in the course of 2022. In the G7 context, the Federal Government wants to discuss requirements with respect to an internationally accepted, binding standard for corporate due diligence.

159. An open market economy in combination with a values- and rules-based trading system can make a major contribution towards economic resilience in Germany and Europe by diversifying supply chains. The pandemic has shown how important a fully functioning internal market is. The Federal Government has therefore called for the internal market to be kept open as far as possible and will continue to work towards the strengthening of its resilience. The Federal Government therefore welcomes the European Commission's initiative to safeguard the free movement of goods and services in the event of future crises and to present a proposal for a single market emergency instrument. A viable internal market is crucial for the economic recovery of Germany and the EU.

160. At the same time, the Federal Government wishes to increase the EU's strategic sovereignty so that it is less dependent in key areas like energy supply, health, security, imports of raw materials and key enabling technologies. The Federal Government wishes to afford European companies better protection against extraterritorial sanctions. Recently, the Foreign Trade and Payments Ordinance was amended to dovetail the national investment screening rules with the new EU legal framework. The core elements of the rules are new reporting requirements for investments in high and forward-looking technologies. Further to this, the sector-specific screening, which previously only applied to manufacturers of certain military equipment, has now been extended to cover manufacturers of all military equipment within the meaning of the Foreign Trade and Payments Ordinance. The Federal Government will examine whether, in the case of clearly defined threats to security as a result of the acquisition of critical infrastructure by foreign investors, the statutory instruments are sufficient, and will introduce suitable instruments where necessary.

161. Disruption to numerous supply chains has arisen during the pandemic. In principle, it continues to be the responsibility of the companies to act in their own interest by diversifying supply chains and stockpiling sensitive intermediate products. In order to strengthen the resilience of the economy, the Federal Government is primarily pursuing the policy of ensuring technological competitiveness and sovereignty via investments in forward-looking key enabling technologies and via the promotion of innovative capacities. In strategic areas, the Federal Government is supporting the establishment of production capacities and reserves in Germany, e.g. for the production of vaccines and in relation to the National Health Protection Reserve. The Federal Government is calling at EU level for joint procurement, coordinated production of critical goods, and the reduction of imports of critical products.

162. The Federal Government is aiming at more binding rules for a restrictive export control policy for military equipment and would like to coordinate a corresponding EU military equipment export regulation with the European partners. The Federal Government is also planning to introduce a national military equipment export control act. The intention is to anchor in this act the EU's Common Position and its eight criteria, as well as the Political Principles of the Federal Government on the export of war weapons and other military equipment, the Small Arms Principles and the expansion of post-shipment controls.

E. The digital transformation: enabling innovation, boosting productivity

163. Safeguarding prosperity and quality of life against the backdrop of decarbonisation and growing evidence of the impact of demographic change calls for a higher degree of innovation and economic dynamism. Increased structural productivity – either through more efficient processes, innovative and higher quality products and services, or by reallocating factors of production to more productive economic sectors and businesses – therefore remains a fundamental objective of the Federal Government's economic and fiscal policy.

164. In this context, the digital transition, and particularly data-based value creation, offers enormous potential for boosting productivity and for new value added. An accompanying economic policy can help unlock this potential in Germany and Europe more effectively. To ensure that the technological opportunities are reflected in concrete investments and regional value added, infrastructure development, framework legislation and the promotion of innovation and technology must mesh together well and complement one another. At the same time, this also calls for a digital, service-oriented administration and the further strengthening of start-up activity. These conditions create opportunities for a digital awakening in Germany and Europe.

A modernised digital infrastructure

165. If Germany is to be a competitive digital hub it requires a top-class digital infrastructure. The aim of the Federal Government is to ensure the nationwide provision of fibre optic connections and the latest mobile telecommunications standard. The expansion of broadband and 5G therefore has priority. The Federal Government is also already

focussing its attention on the next generation of mobile communications, 6G.

166. By mid-2021, gigabit-ready connections delivering speeds of at least 1000 Mbps were available for around 62% of households overall (cf. Item 264). The provision of fibre optic connections, in particular, must grow at a faster pace in the coming years than it has in the past. In this context, private-sector network expansion continues to have priority. According to industry information, at least €43 billion will be available for the next five years for the commercial expansion of fibre optic networks in Germany. In areas where infrastructure expansion is not driven by the market – mostly in rural and sparsely populated regions – the Federal Government will provide additional funding to support the expansion of digital infrastructures. The Federal Government is currently making funding available on an appropriate scale through the “Digital Infrastructure” special fund to support broadband roll-out.

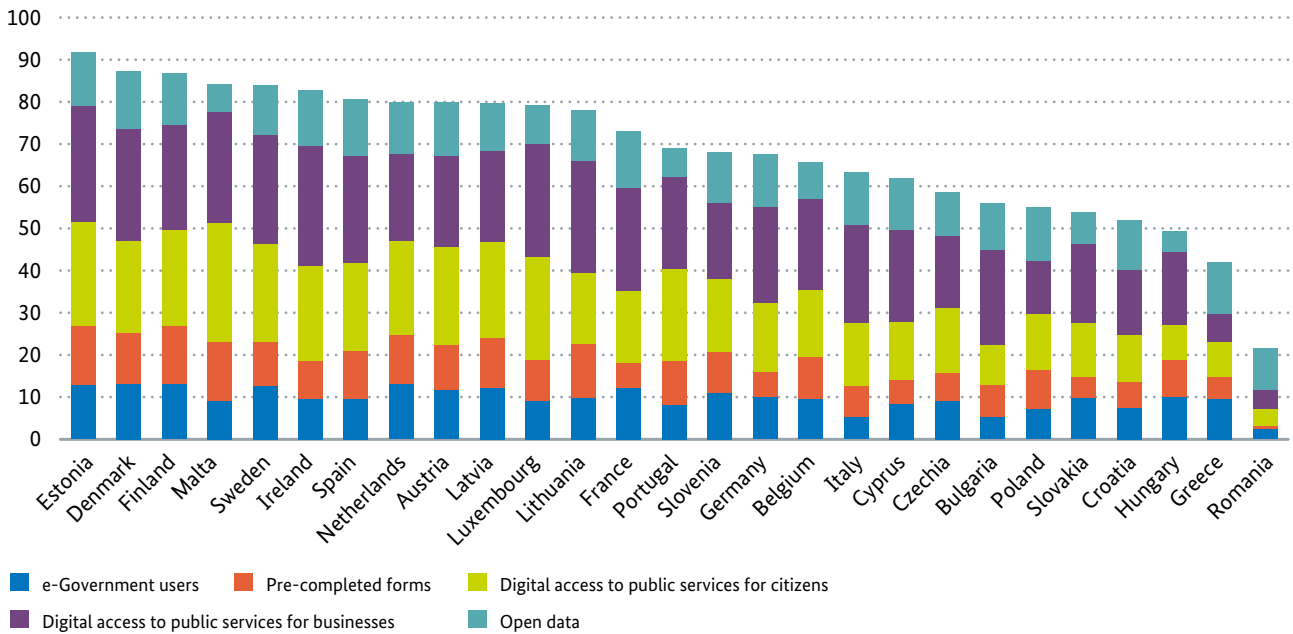
As a result of the revised Telecommunications Act, the regulation of telecommunications markets is now more geared towards investment, in line with European requirements. The legal framework has been modernised in central thematic areas – such as market regulation, frequency policy, and end user protection. For example, collaborations have been strengthened within the parameters of competition law and a regulatory differentiation between old copper networks and new gigabit networks has been enabled. Further to this, approval procedures have been streamlined and the use of alternative installation methods and technologies has been simplified. The Federal Government is seeking to accelerate infrastructure expansion further with lean digital application and approval processes, the standardisation of alternative installation technologies and the establishment of a nationwide gigabit land register.

167. Strong 5G coverage is another important component of the continued digital transformation of the economy, and particularly of industry. Infrastructure expansion is making significant progress here. The Federal Government is therefore supporting research into and the development and application of 5G through a variety of programmes. Additional stimuli for 5G innovations, such as in the area of Industrie 4.0, can be expected particularly in connection with the allocation of “campus licences”. The aim of the Federal Government is to close any remaining gaps in mobile coverage – particularly in areas lagging furthest behind. Negative auctions are also to be used to this end. The Federal Government will also invest specifically in the research and development of forward-looking technologies, such as 6G.

Strengthening government as a (digital) service provider

168. Not only business enterprises and companies but also the government itself must seize the potential associated with a modern digital infrastructure and put it to work in the interest of all citizens. Modern and efficient interaction between government and businesses creates more room for innovation and progress. Despite constructive efforts, Germany still lags behind other European countries when it comes to the digital modernisation of government. In the European Commission’s Digital Economy and Society Index, Germany currently ranks 11th out of 28, and only ranks 16th in the EU in the specific area of digital public services. Not least in light of existing transformation needs, the aim of the Federal Government is to make life and business activities significantly easier for our citizens and business enterprises by putting an agile and digital administration in place.

Diagram 8: Development of e-Government (index value from 0 to 100)



Source: European Commission, Digital Scoreboard.

169. All local authorities face the considerable task of making government services digitally accessible. With the introduction of the Online Access Act, Germany laid the foundation for this in 2017 and created modern structures particularly for businesses – such as the recent example of the COVID-19 assistance programmes. Nevertheless, the momentum of the digitalisation of public services has fallen short of expectations, as the GCEE also points out (cf. GCEE Annual Report, Item 431). Therefore the Federal Government is placing a priority on the implementation and continued development of the Online Access Act. In addition to providing actual digital access, the main priority here is to also take a user-oriented approach, with automation and pre-completed forms for instance. To support the nationwide implementation in the *Länder* and municipalities, the Federal Government is focussing on the standardisation and harmonisation of IT processes (one-for-all principle). To

this end, the economic stimulus programme has also made €3 billion available for the faster implementation of the Online Access Act and a further €300 million for the modernisation of registries (Items 40 and 41).

170. With this additional funding for the Online Access Act, the economic stimulus programme provides a new framework for action to establish a nationwide digital administrative service in Germany more quickly, to specifically relieve the burden on the *Länder* and municipalities, and to provide economic incentives. This also includes the promotion of innovative projects and forward-looking technologies.

171. Under the EU's Single Digital Gateway Regulation, German authorities at all federal levels are required to make effective progress in the digitalisation of public administration, with the ultimate creation of a single digital entry point to the

administrative services of the EU and the Member States. With the Single Digital Gateway, citizens and businesses are to have user-friendly online access to information, to procedures and to assistance and problem-solving services in all EU Member States. In addition, 21 selected administrative procedures are to be offered for cross-border users in such a way that they can be completed fully online without the need for paperwork. The existing “Your Europe” digital EU platform will be expanded to this end, producing a smart link between national portals and the European gateway. The simultaneous implementation of the Online Access Act supports the authorities in complying with European requirements.

172. In future, obstacles to digitalisation (requirement for the written form etc.) will be overcome through general clauses and terminology (e.g. “income”) will be standardised. Furthermore, the Federal Government plans to reduce legal barriers to encourage the increased use of digital options among businesses: in addition to a permanent provision for virtual general meetings, the possibilities for certification and authentication via video communication are to be expanded in corporate law.

173. The modernisation of registries offers a key contribution to creating a more efficient state. In future, citizens and businesses will be able to use administration services according to the “once-only” principle. In this context, secure electronic identification is a central prerequisite not only for administrative processes but also for many value chains in the economy (cf. also Item 133).

174. The Federal Government has been standardising its IT for the federal administration since 2015, with the goal of increasing efficiency and IT security. The Federal Government Service Consolidation Programme has been set up for this purpose.

As one of the Federal Government's largest digitalisation projects, this programme is due to be completed in 2025.

175. The Federal Government shares the opinion of the GCEE that public administration should have a positive impact on digitalisation also through the increased provision of data (cf. GCEE Annual Report, Item 479). In this connection, the Federal Government promises the consistent implementation of the Open Data Strategy adopted to this end and the creation of authorisation standards, within the framework of the GDPR optionality clauses, for the secondary use of personal data in the healthcare sector that complies with data protection legislation.

Developing the data economy

176. The volumes of data associated with the digital transition will enable more efficient production processes and new business models. For Germany and Europe to reap greater benefits from data-based value creation, we need framework conditions that go far beyond the digital network infrastructure and put the use and protection of data on a clear, sound footing. For this reason, the Federal Government is making provisions for additional measures, particularly to support the development of data and cloud infrastructures and to facilitate the use of data. The Federal Government's Data Strategy (2021) brings together goals, measures and instruments in connection with the use of data by civil society, public stakeholders, the scientific community and the business sector. Chiming with the EU Data Strategy, the goal of Germany's Data Strategy is to increase the innovative and responsible provision and use of data for all stakeholders and therefore take advantage of the opportunities of the data economy.

177. The data economy draws its strength from the maximum possible reach and diversity of the services offered. If German start-ups and SMEs are also to have a chance on digital, international markets, they need better access to data. Competition law, which has been modernised with regard to digital markets and access to competition-related data, is a central component in this respect (cf. Item 142). Additional improvements to general conditions under antitrust law for access to data, particularly for SMEs and start-ups, are being examined.

178. The completion of the EU Single Market for Data is of central importance for economic competitiveness. Major steps towards a European data economy can be taken, as demonstrated by the ongoing EU legislative processes regarding the Data Governance Act (DGA), the Digital Markets Act (DMA), the Digital Service Act (DSA) and the Artificial Intelligence Act (AI Act) in addition to the Data Act (DA) announced for the first quarter of 2022 and the planned sector-specific legislation on data spaces, such as the European Health Data Space Act (EHDS).

The aforementioned legislative processes (DGA, DA and EHDS) particularly seek to foster the availability and innovative use of data. The DGA will harmonise the rules for the re-use of data held by public sector bodies. Clear rules are defined for data intermediaries and organisations that want to make data available voluntarily in the interests of the general public. The DMA is intended to strengthen competition in digital markets by safeguarding and improving fair competition in such markets. The aim of the DSA is to update the E-Commerce Directive (2000/31/EC) and enhance consumer protection, foster competition and innovation in the internal market and increase the transparency of online platforms, inter alia. The DA is intended to set down rules for access by public bodies to data of businesses (business-to-government, B2G) and

the sharing of data between businesses (business-to-business, B2B). In particular, for the central area of the “Internet of Things” (IoT) it is to clarify who has access and usage rights for data and under which specific conditions. Incentive-driven mechanisms are also particularly important in this context. The Federal Government will continue to play an active role in the realisation of this project.

179. The GCEE rightly highlights the importance of further deepening the European Digital Single Market and emphasises the need for greater coherence and prioritisation of digital policy measures. According to the GCEE, policy initiatives to advance digitalisation should contain specific milestones with a timetable for intermediate steps in order to measure and show progress in implementation. The European Council drew similar conclusions in October 2020.

180. The European Commission has addressed this situation with two initiatives: the “2030 Digital Compass: the European Way for the Digital Decade” communication presented in March 2021 describes a vision for the digital transformation in Europe with specific ambitions and milestones to be achieved at the EU level by 2030. This was followed by a proposal for a decision establishing the 2030 policy programme “Path to the Digital Decade” in September 2021, which envisages an annual monitoring mechanism and a framework for multi-country projects for critical EU capacities.

181. The Gaia-X initiative launched by the Federal Government in 2019 aims to create an interlinked European data and infrastructure ecosystem that sets standards in data protection, transparency, interoperability and openness. The Federal Government supports Gaia-X with a total of around €500 million through a variety of funding projects. Funding is granted, for example, to the “Catena-X” flagship project – which is open at the European

Box 4: “go-digital”

Funding programmes can encourage businesses to harness the potential of the data economy. For example, the new “data competence – go-data” module has been added to the “go-digital” programme so that SMEs can also benefit from the opportunities afforded by the data economy. Consulting firms authorised for the “go-digital” programme advise small and medium-sized enterprises and trade and craft businesses on specific issues, such as data generation and processing and the commercial exploitation of data, and assist and support them in the implementation of concrete measures. The aims in this context are the development of new business models and the introduction of new digital technologies such as artificial intelligence.

level and globally – whose aim is the end-to-end digitalisation of automotive value chains and, with its specific applications, is the central reference project for Gaia-X. This project also demonstrates the potential of advanced *Industrie 4.0* technologies to reach sustainability goals, such as with the use of data-based solutions for a comprehensive and interconnected circular economy (see also Items 184 ff.).

182. The GCEE underlines the importance of cloud edge computing as a technological foundation for data-based business models, stating that the dominance of a handful of non-European providers stifles competition due to lock-in effects and adversely affects the implementation of European standards in the field of data processing (cf. GCEE Annual Report, Items 470 f.). In this connection, the Federal Government points out that a completely new European digital infrastructure is being built with the IPCEI Next Generation Cloud Infrastructure and Services. With twelve EU Member States now participating in the project, the IPCEI enables the upscaling of digital applications on an industrial level. Furthermore, the Catena X project, which the GCEE also mentions, is not only proof of the growing demand among companies but also that implementation is making significant progress.

183. The Federal Government is pushing ahead with the use of secure and user-friendly digital identities as the key to secure activities online. The European Commission published proposals for a European digital identity on 3 June 2021. The aim is the development of a standardised ecosystem across Europe in the area of digital identities and trust services in the interests of the Digital Single Market. According to the Federal Government, a high degree of acceptance among users, in the business community and in public administration should be ensured and uniform European standards should be sought.

184. Distributed ledger technology (DLT) or blockchain are key enabling technologies that can facilitate secure and efficient processes in many areas of the economy, including the matching of supply and demand via smart contracts on the energy market or the secure exchange of documents that are verified in a decentralised manner when recruiting skilled labour from abroad, for instance. Opportunities are also presented for sustainable business operations, such as in the case of the tamper-proof tracking of supply chains and related possibilities to support a resource-efficient circular economy. Under the European Blockchain Partnership, the Federal Government will continue to advocate the testing of these technologies, also in order to enable innovative business ideas in Germany and to protect the climate.

185. Ensuring that individuals and businesses can operate in a trusted digital environment is a central objective of the Federal Government. Not least, this calls for a competitive research practice in the field of IT security. Under the “Digital. Secure. Sovereign” research framework programme published in June 2021, the Federal Government is funding R&D in IT security in various fields of application, with an emphasis on quantum communication and post-quantum cryptography, artificial intelligence and the Internet of Things.

Strengthening innovation policy and technology transfer

186. Germany's strength as a centre of innovation lies in its technological diversity and the strong regional presence of Germany's innovative companies, which are often SMEs. For this reason, the Federal Government will continue to resolutely pursue the goal of investing 3.5% of GDP annually in research and development by 2025 together with the *Länder* and the business community. During the COVID-19 pandemic in 2020, less research was conducted by businesses than in previous years. As a result, research spending dropped from 3.17% of GDP in 2019 to 3.14% in 2020 (cf. Item 261). In light of this, the priority is to boost private sector research and innovation particularly in SMEs and also outside the main centres with attractive programmes to promote research and innovation.

187. The Federal Government introduced a mission-oriented approach with the High-Tech Strategy (HTS) 2025. Behind this approach is the idea to organise research and innovation policy around ambitious goals, to mobilise stakeholders across disciplines and sectors and to unite them behind the mission goal. The Federal Government will continue to pursue mission-based action in the future in tandem with stakeholders from the scientific community, the business sector, policy-makers

and society. Under the Future Strategy for Research and Innovation, the Federal Government will develop new, ambitious approaches for a systemic research and innovation policy for the 20th legislative term that is geared towards current central challenges, and therefore build on the success of the High-Tech Strategy.

188. As the GCEE emphasises in the 2021/22 Annual Report (cf. Item 498), the transfer of scientific research findings to the market must continue to be a top priority in innovation policy. The programmes under the funding line “From the Idea to Market Success” make a key contribution in this regard. Under this technology-neutral funding that is directed towards innovative SMEs, the businesses themselves choose the specific topics on which they want to conduct research and innovate. Open to all topics, these programmes also promote social and green innovations. The priority is to develop them further on an appropriate scale and assign them financial resources in line with needs. The Transfer Initiative was launched in 2019 to accelerate the transfer of new knowledge from science to business.

189. The Federal Government specifically aims to strengthen applied research and the transfer of knowledge and technology within the framework of regional and interregional innovation ecosystems and is open to the establishment of a German Tech Transfer Fund. To give innovation an appreciable boost, the priority is to strengthen the culture of spin-off companies in higher education institutions and non-university research centres on a broad scale. The Federal Government will develop a German Agency for Transfer and Innovation (DATI) to foster social and technological innovations particularly at universities of applied science and small and medium-sized universities in conjunction with start-ups, SMEs and social and public sector organisations, for example.

190. With the establishment of the Agency for Breakthrough Innovations (SPRIND) at the end of 2019, the Federal Government has created a new agent for the promotion of disruptive, game-changing innovations. Open to all topics, disciplines and technologies, the Agency for Breakthrough Innovations is agile, flexible and prepared to take risks in the high-risk world of disruptive innovations. Ideas with the potential for breakthrough innovation can be supported by the Agency through the validation of project ideas and the establishment of venture-specific affiliate companies, for example. Further to this, innovation competitions specifically enable the identification of disruptive innovations in key thematic fields and the promotion of highly innovative activities. The Federal Government will develop the Agency for Breakthrough Innovations further and substantially improve its legal and financial framework to ensure it can operate even more comprehensively and with greater freedom in the future.

191. The Agency for Innovation in Cyber Security GmbH (Cyber Agency) was founded by the Federal Government in 2020. Its aim is to examine internal and external security from a cybersecurity perspective across all departments and with an application focus. The Cyber Agency initiates, finances and manages high-risk projects that offer major potential for innovation. The knowledge obtained is made available to the Federal Government.

192. Regulatory sandboxes make it possible to test innovative technologies, services or business models under real-life conditions. With this approach, law-makers can also learn about the impact of innovations at an early stage in order to formulate associated regulations responsibly in an innovation-friendly and evidence-based manner. The Federal Government will create a legal framework that offers uniform, pro-innovation conditions for regulatory sandboxes and experimental spaces to test out new technologies, services and business models.

193. Aside from plans for a better legal framework to facilitate the trialling of innovative approaches, under the Federal Government's seventh energy research programme "Innovations for the Energy Transition" the Federal Government promotes the testing of innovative energy technologies in a real-life setting. Under the new funding pillar "Regulatory Sandboxes for the Energy Transition", pioneering innovation projects (e.g. involving hydrogen) commenced in 2021 in the interests of a competitive and climate-neutral industry, clean power generation and supply and sustainable mobility.

Mastering and applying key enabling technologies

194. The successful development and application of (digital) key enabling technologies has a decisive influence on the future competitiveness of the German economy. The Federal Government considers itself a driver of a strong technology centre that is based on European values, attracts talent and safeguards the future viability and prosperity of our country. In this connection, the technological and digital sovereignty of Germany and Europe is, not least, a primary objective of the Federal Government.

Digital sovereignty is the commitment and ability to (co-)design key technologies and technology-based innovations on a collaborative basis. This is not a goal that will be achieved through protectionist measures. Rather, it can only be achieved by promoting research and innovation in key enabling technologies that will shape future decades, through conscientiousness, collaboration and the self-determined utilisation and development of technological options in a manner that encourages competition.

195. The Federal Government sees artificial intelligence (AI) as one of the most important digital key enabling technologies and is therefore committed

to making Germany, and Europe as a whole, a leading location for AI research, development and application. On the basis of the AI Strategy, the Federal Government has launched a variety of initiatives that specifically focus on strengthening Germany's position as an AI research hub, promoting the transfer of research findings to practical applications, particularly in SMEs and start-ups, and encouraging the sector-specific development and use of AI in diverse socially relevant fields of application with significant future potential, such as the healthcare sector, the world of work and environmental and climate protection. For research and for parts of the German economy, high-performance computing and supercomputing are important and necessary preconditions to be able to compete at the global level. Under the "High-performance Computing and Supercomputing for the Digital Age" programme, the Federal Government is actively promoting the development and expansion of the computing infrastructure in Germany and is investing in research and development to this end.

196. Quantum technologies promise additional disruptive developments in a variety of areas. Their use for simulation, analysis and control purposes is likely to have a considerable impact on productivity, and therefore competitiveness, in many sectors. Quantum computing is also set to enable major advances in the modelling of complex systems, such as climate change and associated impacts. With the "Quantum Technologies – from the Basics to the Market" framework programme, the Federal Government supports the continued development of various fields of application (sensors, computing and communication through to quantum cryptography via satellite). Additional funding of €2 billion is available to quantum technologies through the Stimulus and Future Packages. In the coming years, this money is to fund the development, inter alia, of the first quantum computer demonstrators and quantum-enhanced sen-

sors for projects in the medical field through to satellite-based Earth observation. On the longer term, the latter promises to be an important tool for comprehensive and regular monitoring, with Earth observation satellites making key contributions to nature conservation and climate action and improving transparency with regard to compliance with international climate change commitments.

197. Trustworthy microelectronic products are the indispensable basis to any digitalisation project. As the current semiconductor shortage highlights, a secure supply is of central importance to many user industries manufacturing in Germany. Supply still frequently depends on non-European producers. The Federal Government is therefore anxious to make the semiconductor value chain more resilient in Germany and Europe overall. To this end, it is engaged in close dialogue with other Member States of the European Union, the European Commission and the manufacturer and user industries. Within the framework of another Important Project of Common European Interest (IPCEI), the German semiconductor industry is to also receive financial support along the entire value chain and be strengthened as a strategic field of technology. The latter goal will also be supported by the recently announced European Chips Act.

Under the Framework Programme for Research and Innovation, the Federal Government is also placing a focus on trustworthy and sustainable microelectronics. The main emphasis here is on energy efficiency for the purposes of green information and communication technologies, special processors for AI and edge computing or other developments in the field of sensors or power electronics for efficient energy use.

Boosting momentum in the start-up sector

198. Germany has become increasingly attractive as a location for start-ups and business creation. Recently there has been a reversal of trends in enterprise birth rates, although it must be said that the COVID-19 pandemic will have thwarted or delayed some new start-ups (cf. Item 248). The Federal Government is committed to boosting existing momentum and to supporting the new culture of entrepreneurship, particularly also with regard to start-ups. The aim is for Germany to become a leading start-up location in Europe and for this reason the Federal Government will adopt a comprehensive Start-up Strategy. With a view to attracting more talent, a priority will be placed on further improving access to capital and increased networking within the start-up landscape.

199. Building on the measures and initiatives of recent years, the Federal Government plans to make it easier for start-ups and young businesses to access public contracts. With nationwide one-stop shops that enable business start-up advice, support and registration, the aim is to make the

process of setting up a business even faster. The proportion of women entrepreneurs in the digital sector is also to be increased with grants for female business founders.

200. To further improve access to venture capital (VC) specifically in the capital-intensive growth phase, the Federal Government is already making €10 billion available for a venture capital fund for forward-looking technologies ("Future Fund") at the KfW (cf. Box 5). The aim is to use the Future Fund to strengthen the VC ecosystem in Germany and Europe, particularly to provide more high-volume growth financing. Comprising flexible modules, the Future Fund will help open the venture capital market to more institutional investors. With KfW Capital an established fund investor, women's access to venture capital is also to be improved under the Future Fund, as this is important for innovation and will increase diversity in the German VC environment.

201. The Federal Government will continue to pursue its successful equity financing programmes from the ERP Special Fund and develop it further

Box 5: Future Fund – venture capital fund for forward-looking technologies

The Future Fund, with a budget volume of €10 billion, consists of several closely linked modules. Over an investment period through to the end of 2030, it is designed to support all start-up development phases with a focus on the expansion of capital-intensive growth financing. More consideration is to be given to market segments and investor groups that have received insufficient attention up to now. Three modules were already launched in 2021: the DeepTech Future Fonds, the ERP/Future Fund Growth Facility and the GFF EIF Growth Facility (GFF = German Future Fund, EIF = European Investment Fund). A new fund of funds for venture capital is specifically designed to attract new institutional investors to the venture capital market and thereby mobilise urgently needed venture capital. Being risk-averse, institutional and private investors, such as insurance companies, foundations or family offices, are still frequently underrepresented in the VC market. Among other measures, the existing Venture Tech Growth Financing programme is to be expanded in 2022. The programme makes venture debt financing available to start-ups and young, innovative growth companies together with private-sector financing partners in the growth phase. Work on the conceptual design and/or implementation of other modules of the Future Fund is not yet finished. For example, the modules are to be realigned to reflect the changing market environment and new requirements.

as required. For example, the investment phase of the High-Tech Start-up Fund IV which was founded in 2021 (with a planned funding volume of at least €350 million) is due to commence mid-2022. The Federal Government is also developing its instruments further in the field of debt capital with the restructuring of the ERP and KfW promotional loan programmes (planned loan volume of approx. €9.1 billion for 2022). The funding landscape will be streamlined in January 2022 and the conditions for business start-ups, succession, growth, digitalisation and innovation will be significantly improved.

F. Transforming the world of work, enabling social participation

202. The previous sections of this report have described the considerable challenges facing the German economy in the course of transformation. Social participation and public acceptance are key prerequisites for successful structural change. The labour market plays a prominent role in this context – with regard to a higher level of employment, intensification of training and skills development, and fair pay. Further to this, the social insurance systems must be able to guarantee an adequate level of protection on a sustained basis. Housing policy conditions must also contribute to social participation. The Federal Government sees a need for action in all these areas.

Supporting structural change on the labour market

203. Having sufficient numbers of well qualified skilled workers is central to the success of the German economy. Therefore proactive, forward-looking measures to secure the supply of skilled labour are crucial for our future prosperity. In light of demographic change, the primary challenge of the coming years will be the dynamic pace of struc-

tural change, which will lead to increased problems of mismatch on the labour market. The combination of digitalisation, demographic change and decarbonisation – each a major driving force in itself – results in the increasing concurrence of skilled labour shortages and structural changes in the demand for labour, which vary depending on the industry and region. The situation is compounded by the particular challenges still presented by the COVID-19 pandemic. The Federal Government will continue to develop its Skilled Labour Strategy and the National Further Training Strategy. The priorities here are to ensure a higher labour market participation of women and older workers, provide new impetus for vocational training (initial, advanced and continuing), encourage more immigration of labour and put more attractive working conditions in place in areas already experiencing, or likely to experience, a shortage of skilled workers.

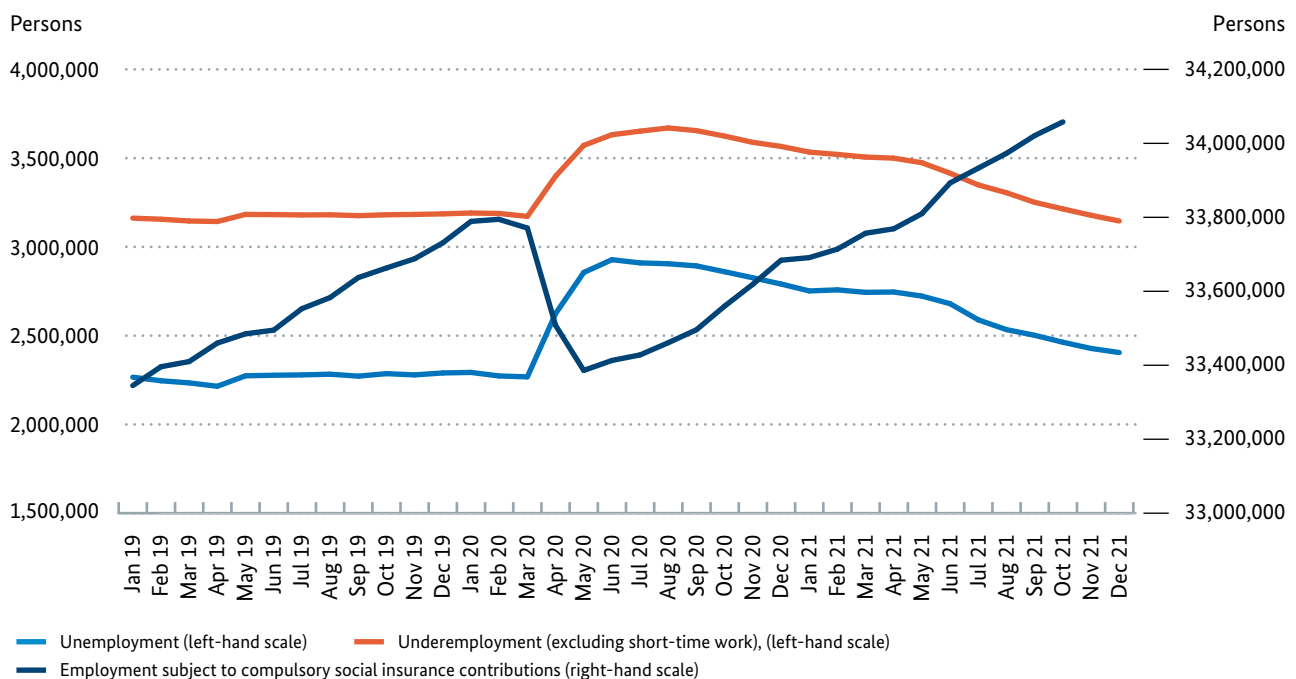
204. As the GCEE also demonstrates, comprehensive economic and labour market policy measures have managed to cushion the impact of the COVID-19 pandemic on employment and income (cf. Diagram 9 and GCEE Annual Report, Items 269 ff.). This success also helps maintain stability in the distribution of income (cf. Item 266). Contrary to the assessment of the GCEE (cf. GCEE Annual Report, Item 432), special arrangements for short-time work allowance which were introduced due to the pandemic, such as easier access to short-time work allowance, have been extended until 31 March 2022 due to the recent sharp increase in the rates of infection and the associated restrictions in economic activity. The reimbursement of social insurance contributions has also been extended, but has been reduced to 50% since 1 January 2022. The Federal Government agrees with the GCEE that the reallocation of labour in the course of structural change should be supported by incentives to pursue further training during

short-time work. With the Act to Promote Vocational Further Training amid Structural Change and Enhance the Promotion of Training and the Act to Secure Employment, the Federal Government has already established a procedure for the promotion of further training during short-time work that is void of bureaucracy. To strengthen further training during short-time work, employers who enable their workers to pursue vocational further training during short-time receive a 50% reimbursement for their social insurance contributions and full or partial reimbursement for the training costs, depending on the size of the business. To be eligible, workers must take part in a training measure that is certified according to Book III of the Social Code and is provided by a licensed educational provider for a period of over 120 hours.

Improving school education, strengthening skills development

205. Education and skills development begin in early childhood and continue through our entire working lives. The Federal Government shares the opinion of the GCEE that the COVID-19 pandemic is exacerbating educational inequalities (cf. GCEE Annual Report, Item 249). To remedy this situation, the Federal Government has launched the €2 billion “Action Programme to Catch up after Covid” for children and young people. Furthermore, digital learning is becoming increasingly important, both within the context of the COVID-19 pandemic and beyond. To make progress with digital learning in all stages of education, the Federal Government launched the “Digital Education Initiative”. Funding for the “Digital Pact for Schools” was increased by a further €1.5 billion, the process of drawing

Diagram 9: Seasonally adjusted development of the labour market



Source: Statistics of the Federal Employment Agency.

down funds is to be simplified further and the disbursement of funds accelerated. Digital platforms spanning multiple *Länder* increase the efficiency of the national education infrastructure. Further to this, the Federal Government will launch a Digital Pact 2.0. Through the Special Fund to “Expand all-day education and care services for children of primary school age”, the Federal Government is making €3.5 billion available for investment to expand all-day education and care services for children of primary school age. The Federal Government intends to continue to support the expansion of all-day services for primary school children with a particular focus on quality. Like the planned support for household-related services, this measure is also designed to help reconcile family and work commitments. The introduction of basic security benefits for children is intended to create better opportunities for children and young people and, through digitalisation and simplification, to lift more children out of poverty. Until its introduction, an immediate supplement is to be paid for children already in need.

206. Improvements in the field of school education are of central importance to the medium- and long-term development of prosperity in Germany – not least in light of the aging population. The Federal Government intends to significantly increase public spending on education together with the *Länder* and, while respecting the autonomy of the *Länder* in educational and cultural affairs, seeks a closer, more focussed and binding collaboration at all federal levels (principle of cooperation). By combining the ability and ambition of local school authorities to put solutions into practice, the educational and cultural autonomy of the *Länder* and the support potential of the Federal Government, the aim is to establish a new culture in educational collaboration. In addition, the Federal Government will hold an education summit at which the Federation, the *Länder*, the

municipalities, the scientific community and civil society will agree upon new forms of collaboration.

207. In this context, the Federal Government shares the opinion of the GCEE (cf. GCEE Annual Report, Items 372 ff.) that closer and binding coordination between the *Länder* – such as in the area of quality standards – presents opportunities for greater efficiency in education policy. The Federal Government also supports the proposal for increased analysis of education data for useful scientific comparisons and evaluations (cf. GCEE Annual Report, Items 376 ff.).

Promoting initial and further training

208. The Federal Government is aware of the risks of the COVID-19 pandemic for those just entering the labour market and the imbalances in the matching process that already existed on the labour market before the outbreak of the pandemic, which the GCEE highlights in its report (cf. GCEE Annual Report, Items 291-293). The Federal Government has rolled out a series of measures to address the negative impacts of these changes. On the short term, these included the “Summer of Vocational Training”, an initiative launched in 2021 by the Alliance for Initial and Further Training, or the efforts by the Federal Employment Agency to place people in training in a second round of referrals. On the long term, career guidance services are to be stepped up, the dual system of vocational education and training is to be made more attractive, and everyone requiring additional support is to receive it, for example in the form of “assisted training”, which also incorporates training-related assistance measures for weaker candidates. In addition, the Federal Government has launched the “Federal Programme to Safeguard Training Places” with a total budget volume of €850 million for the 2020-2022 period to help small- and medium-sized enterprises to main-

tain existing training places and create additional ones despite the problems caused by the pandemic. The Federal Government will make federal educational assistance (BAföG) less dependent on parents' income and will scale up funding for vocational further training. Further to this, the Federal Government will raise the training allowance from €924 to €1200. Technological and societal change also impacts job requirements. The Federation, the *Länder* and the social partners will continue to develop occupational profiles for initial and advanced training. The profile content will be overhauled based on job- and sector-specific needs and new professions will be added. The Federal Government will facilitate access to master-level training in a trade or craft by significantly lowering the costs of master-level courses and certificates for participants. In addition, the Federal Government will provide targeted support to training in the trades and crafts sector, particularly in light of the overall investment needed in the economy to support climate change objectives.

209. The Federal Government agrees with the GCEE that vocational further training – as an inherent part of our working lives – should play a key supporting role in ensuring successful structural change (cf. GCEE Annual Report, Item 300). The pandemic has additionally highlighted the need for and increasing importance of vocational further training in times of rapid economic transformation. A longstanding, overarching and collaborative process of exchange in the field of further training policy is already in place with the National Further Training Strategy.

210. The Federal Government will further improve conditions for vocational re-orientation and initial and further training. In particular, there is a significant increase in the need for tailored vocational further training, including for those who are

changing jobs or switching from one sector to another. With a period of training that can also be completed on a part-time basis, the aim is to boost financial support for the further training of workers to suit the labour market. New data spaces are being created with the continued development and interconnection of further training platforms and their interlinkages with the National Education Platform, which extends to all areas of education. These spaces enable transparent and individual access to educational and advisory services and funding instruments. Under the “Creating Further Training Alliances” federal programme, the Federal Government is making over €100 million available in total through to 2024 to increase further training activities particularly in SMEs and to strengthen regional business and innovation networks. To support structural change in the automotive industry, additional further training alliances will be sponsored through a second funding guideline in 2022.

211. In light of the intense pressure nursing professionals are under in the pandemic, it is important to further improve training and working conditions as well as pay in the nursing care sector. In future, the Act to Further Develop the Healthcare System will require long-term care facilities to pay a collectively agreed wage customary in the region. On the basis of the nationwide procedure for the allocation of staff, additional jobs for professionals and assistants can be agreed from 1 July 2023 onwards.

212. With a skills development allowance that is modelled on the short-time work allowance, the Federal Government seeks to support businesses affected by structural change so they can keep their workers through in-work training and secure the supply of skilled labour. In the case of vocational qualifications, those entitled to benefits under Book II and III of the Social Code are to receive an additional, monthly further training allowance of

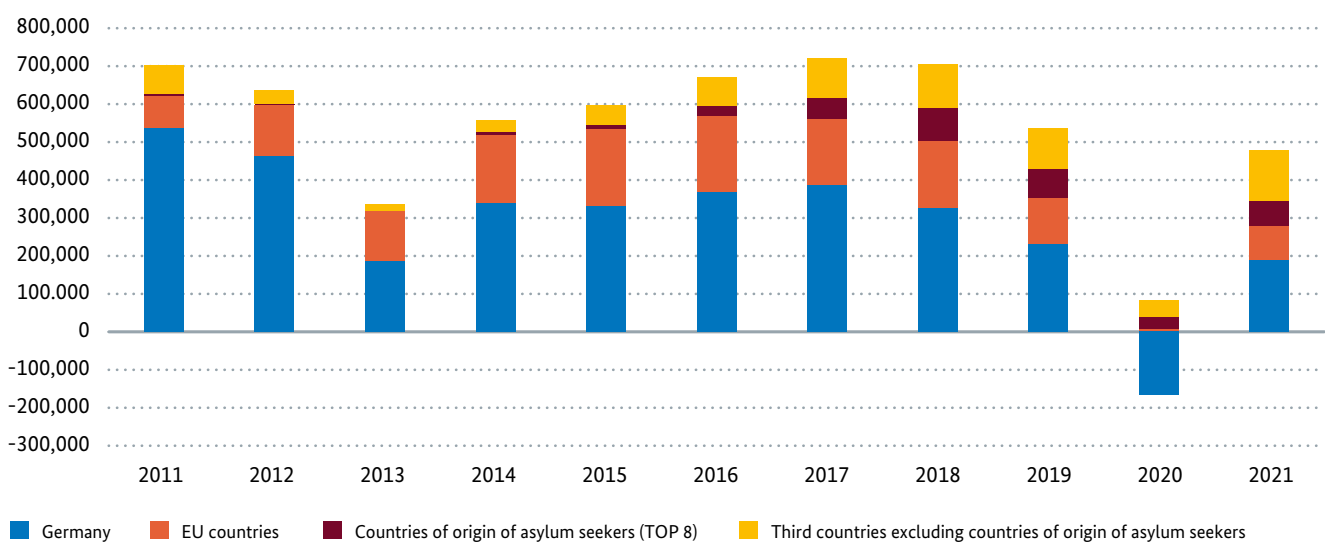
€150. Furthermore, following a period of further training individuals are to at least have an entitlement to three months' unemployment benefit. Rules surrounding priority of placement in Book II of the Social Code are to be abolished.

213. The Federal Government agrees with the analysis of the GCEE regarding the shortcomings in the German further training landscape, such as the lack of commitment to uniform quality standards or the lack of standardised and nationwide validation processes for experienced workers who do not have formal professional qualifications (cf. GCEE Annual Report, Items 301 ff.). An established certification process for quality assurance purposes is at least in place for publicly funded further training under Book II and III of the Social Code, and the validation of vocational qualifications in the trade and industry, skilled crafts and agricultural sectors has been expanded further with the "ValiKom Transfer" project.

Tapping international labour and skills potential

214. In addition to increasing the domestic supply of skilled labour, the priority is also to tap into cross-border labour potential. The Skilled Immigration Act, which entered into force in 2020, aims to support actions to secure the supply of skilled labour in line with economic needs by promoting the targeted and increased immigration of skilled professionals from non-EU countries. In recent years, the employment of international workers has contributed significantly to the high level of employment in jobs subject to social insurance contributions – albeit with regional differences (cf. Diagram 10). The Federal Government wants to develop existing immigration legislation further and remove the time limitation on proven approaches of the Skilled Immigration Act, such as the "Western Balkans arrangement". Complementing this, a second pillar is to be established in immigration law on the basis of an "opportunities

Diagram 10: Change in the number of workers in jobs subject to social insurance contributions by nationality compared to the previous year



Source: Statistics of the Federal Employment Agency; the value for June compared to the previous year is shown in each case.

card” with a points system to facilitate controlled access to the German labour market for job-seekers. At the same time, barriers to the recognition of foreign educational and professional qualifications are to be lowered, bureaucracy reduced, procedures stepped up and job-specific language courses promoted more vigorously. The conditions for the temporary suspension of deportation are to be reorganised and new opportunities created for people who are already part of German society (e.g. “opportunities to obtain right of residence” instead of the previous practice of issuing successive suspensions of deportation, and faster access to the right to stay). More legal certainty is to be created for persons in training whose deportation status has been temporarily suspended and for businesses. In addition, the Federal Government is to lift the time limitation on tolerated stay for working professionals whose deportation status has been temporarily suspended and associated rules are to be made more practicable. The Federal Government intends to lift bans on employment for people already living in Germany. Furthermore, an ongoing asylum procedure should not stand in the way of a person being granted a residence permit provided that the conditions for residence authorization are satisfied on entry into Germany and the individual is entitled to the issuance of a permit (referred as “lane change”, i.e. switching from one status to another). To ensure the successful, long-term integration of international skilled professionals in the German labour market and in society, the Federal Government wants to create fresh prospects and, in particular, make it easier for individuals to obtain German citizenship.

Improving conditions on the labour market

215. The Federal Government is providing incentives for greater participation in the labour market. To this end, the statutory minimum wage will be increased to €12 per hour in a one-off adjustment. Following this, the independent Minimum Wage

Commission will convene again to discuss any additional increments.

216. The Federal Government intends to reduce the use of limited term employment contracts without objective reasons by the Federal Government as an employer. To avoid the practice of repeat limited term contracts, employment contracts with the same employer that are limited for objective reasons are to be restricted to a maximum period of six years. It should only be possible to exceed this maximum duration in very limited circumstances.

217. To respond to changes in the working world and address the desire of workers and businesses to have more flexible working time arrangements, the Federal Government will support trade unions and employers in making flexible working time models possible. This year, the Federal Government will draft a bill whose aim is to allow workers to work more flexible hours within the framework of collective bargaining agreements. In this connection, there are also plans to allow limited derogation from the current rules in the Working Hours Act governing maximum daily working hours. The 8-hour day will remain the general rule, however.

218. Workers in suitable jobs are to have the right to be considered for teleworking and working from home (remote working) arrangements. Accordingly, employers will only be able to withhold consent if operational concerns require otherwise. This means that an application cannot be rejected randomly or for inappropriate reasons. In this context, scope must be left for diverging collective bargaining and operational rules. Remote working should be possible without difficulty across the EU. Further to this, the Federal Government will extend tax rules surrounding remote working through to the end of 2022 and evaluate them.

219. The Federal Government intends to remove obstacles that stand in the way of people taking up employment in a job subject to compulsory insurance contributions. In the course of adjusting the minimum wage (cf. Item 215), the low income ceiling is to be raised to €520 and made more dynamic. The earning limit for “midi-jobs” is to be increased to €1,600.

220. In principle, the Federal Government shares the view of the GCEE that obstacles to increasing the labour supply must be removed and – coupled with this – incentives for second earners should be increased to encourage higher labour force participation (cf. GCEE Annual Report, Items 317 ff.). The Federal Government has therefore set itself the goal of developing the family taxation system further, e.g. by making changes to the tax brackets, in a manner that strengthens economic independence and the spirit of shared responsibility.

221. The equal participation of women and men in economic life also requires a fair pay structure and fair representation in executive positions. The Federal Government is committed to ensuring equal pay in order to close the gender pay gap and will develop the Pay Transparency Act further to this end. At the European level, the Federal Government will also lobby for an ambitious formulation of the EU Directive on Pay Transparency. The introduction of a fixed quota of women in executive positions with the Act on the Equal Participation of Women and Men in Executive Positions has resulted in a pronounced increase in the percentage of women on the supervisory boards of the 106 businesses currently falling under the scope of the Act, rising from 25% to 35.9% in the period from 2015 to 2021 (cf. Item 246). A central new rule of the Second Act on the Equal Participation of Women and Men in Executive Positions is that there must be at least one woman on the boards of large German companies with more than three board mem-

bers. The Federal Government also wishes to significantly increase the participation of women in the investment committees of state-owned funds and investment companies. Furthermore, the gradual restructuring of support for household-related services is designed to increase the labour force participation particularly of single parents and others who, until now, have been under particular pressure with responsibility for nursing and care activities in the family.

222. To ensure that parents can split work inside and outside the home even more effectively in a spirit of partnership, the Federal Government also intends to further develop the Federal Act on Parental Allowance and Parental Leave. Improvements are to be added, such as an additional partner month, a paid two-week leave of absence for the partner (male or female) following the birth of a child, the entitlement of foster parents to parental allowance, dynamic adjustments to the minimum and maximum amounts, and the expansion of entitlements to additional parental allowance in the event of premature birth. The extension of protection against dismissal during parental leave will reduce disadvantages facing parents in their professional life. The Federal Government also plans to expand child sick leave, increasing the number of days (per child and parent) that an employee can take off to care for a sick child.

223. The Federal Government aims to maintain existing national rules surrounding corporate co-determination and improve them in specific areas. To this end, rules governing the apportioning of workers within a company group as defined under the Co-determination Act will be extended to the Act Concerning One-Third Employee Representation on the Supervisory Board. The Federal Government will also work to ensure that corporate co-determination is also refined at the European level. The Federal Government plans to develop company co-determination further in view of

advances in digitalisation and ecological social transformation. For this purpose, it intends to grant trade unions the right to digital access to companies that corresponds to their analogue right of access and evaluate the Works Council Modernisation Act, which has facilitated the establishment and election of works councils.

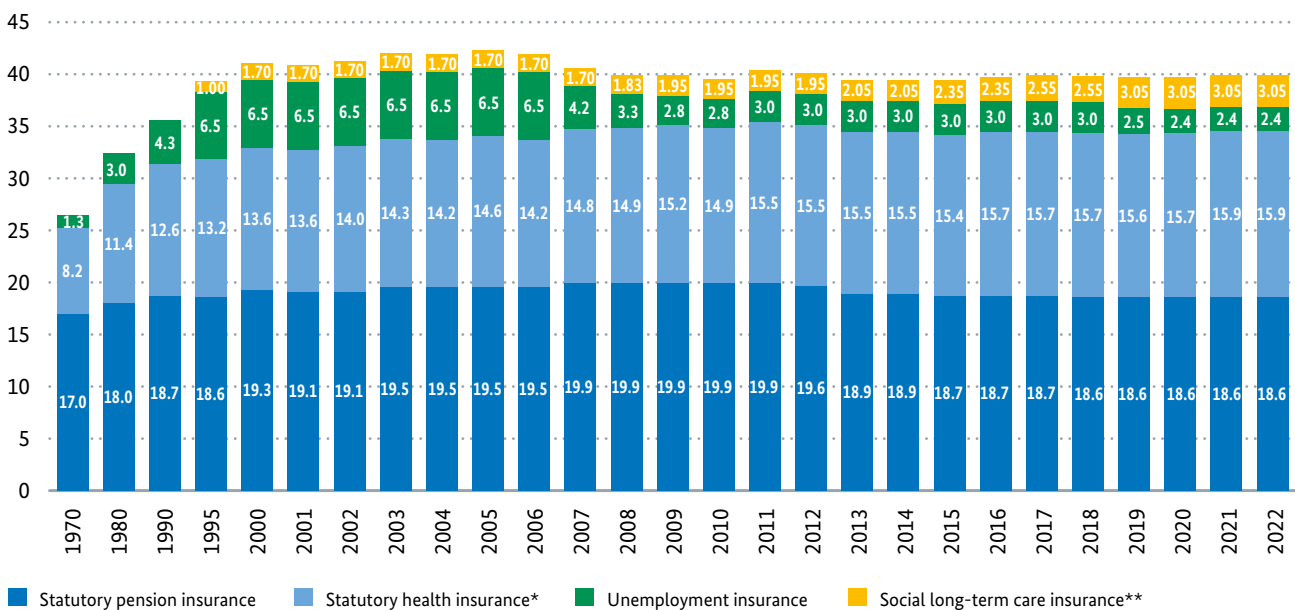
A modern welfare state that is fair for all generations

224. The Federal Government will make the welfare state more citizen-friendly, more transparent and less bureaucratic. The comprehensive digitalisation of services is an important step towards bringing government closer to the people. Further to this, the quality of the analogue provision of advice is to be improved with digital support. Benefits that citizens are entitled to should be paid

automatically wherever possible. Citizens should receive these benefits and services as if from a single source, within the framework of low-threshold, single points of contact in the local area. To this end, the Federal Government will set up a joint Federal/Länder working group with the participation of the social insurance institutions.

225. Structuring the social insurance systems in a manner that is fair and equitable for all generations is one of the most important challenges of economic policy. The core priority is to ensure sustainable financing and confidence in the financial capacity and performance of the social insurance system: for example, the Federal Government has consolidated the total social insurance contribution to below 40% in recent years (cf. Diagram 11). The Federal Government will also continue sustainability reporting for the social insurance systems.

Diagram 11: Annual median social insurance contribution rates as a percentage of gross assessable earnings



* Including member-specific additional contribution (subject to parity funding since 2019)
 ** Excluding the 0.25% contribution supplement for childless persons levied since 1 January 2005

226. The statutory pension system is to be strengthened and the minimum pension level of 48% guaranteed on a permanent basis. The contribution rate will not exceed 20% for the period up to 2025. Furthermore, from 2022 the Federal Government will reintroduce the “catch-up factor” in pension calculations before the pension adjustments. To stabilise the pension level and contribution rate on the long term, the Federal Government plans to introduce partial capital-funding of the statutory pension insurance system. For this purpose, the Federal Government will deploy €10 billion in capital from the public budget to *Deutsche Rentenversicherung* in 2022. The Federal Government will ensure that any “double taxation” of pensions from the basic provision system is avoided.

227. The Federal Government will radically reform the current system of private old-age provision. To this end, it will examine the possibility of setting up a public fund offering effective and inexpensive products with an opt-out option, and assess the legal recognition of private investment products with higher returns than the current *Riester-Rente* state-sponsored pension products. Support measures are to provide incentives for people on lower incomes to sign up for these pension products. Current *Riester* contracts will enjoy special protection of acquired rights.

228. Not only does the Federal Employment Agency have to navigate the consequences of the COVID-19 pandemic, it must also deal with the challenges of structural change and imminent skills shortages. In light of this, it is necessary to relieve the Federal Employment Agency of debts resulting from expenditures during the COVID-19 pandemic and give it a solid financial basis for the future.

229. To avoid any additional burdens on individuals paying into the statutory health insurance system (SHI) in 2022 and therefore to contribute to

the faster recovery of the German economy following the COVID-19 pandemic, a supplementary federal grant to the SHI of €14 billion has been established in addition to the federal grant of €14.5 billion. This means that the average additional contribution rate designed to cover expenses can remain stable at the current level of 1.3%. From 2022 onwards, the Federal Government will also pay €1 billion annually towards the costs of social long-term care insurance. The surcharge paid by persons without children has been increased by 0.1 percentage points.

230. The Federal Government intends to finance non-insurance benefits, such as pension insurance contributions for family care-givers and pandemic-related additional expenses, from tax revenue. The provision of medical treatment procedures in long-term care facilities is to be transferred from the social long-term care insurance to the SHI system and balanced on a flat-rate basis. A moderate increase in the contribution to social long-term care insurance is to be introduced in order to put this system on a sound financial footing. Furthermore, by 2023 a committee of experts is to put forward concrete proposals for the best approach to amend the social long-term care insurance system to include voluntary, co-funded comprehensive insurance with the aim of absorbing the full costs of long-term nursing care. The policy of the Federal Government is geared towards the stable and reliable financing of the SHI. This includes regular adjustments to the federal grant to the SHI and higher contributions for recipients of basic income support for job-seekers (unemployment benefit II) to be financed from tax revenue.

231. The Federal Government intends to replace basic income support for job-seekers with a citizen's income (“*Bürgergeld*”) in the 20th legislative term. Under the provisions, means testing will be suspended in the first two years of receipt of citizen's income and actual costs for accommodation

and heating are considered reasonable costs. The Federal Government also plans to reorganise obligations to cooperate and abolish rules governing priority of placement. Furthermore, the agreement on integration is to be replaced by a participation agreement, time limitations for the Inclusion Act are to be lifted and incentives to gain a qualification are to be strengthened. In addition, the Federal Government wants to introduce a reform to ensure that citizen's income, housing allowance and other tax-financed social benefits are dovetailed to deliver positive effects for employment subject to social insurance contributions. By improving rules for allowances when income is taken into consideration, high marginal burdens are to be avoided. An independent commission of experts is to develop the reform model for this purpose.

232. Many self-employed persons suffered serious loss of income as a result of the COVID-19 pandemic and had to rely on income reserves or directly on basic income support for job-seekers. In light of this, the Federal Government intends to facilitate access to the voluntary unemployment insurance system and in doing so provide particular support for self-employed persons and business entrepreneurs. All new self-employed persons who are not subject to a compulsory old-age provision system will be obliged to build up old-age provision with freedom of choice. Self-employed persons will be insured under the statutory pension system unless they choose a private old-age provision product – via an unbureaucratic opt-out solution – that is protected against insolvency and seizure. To relieve the burden on self-employed persons above the mini-job limit, contributions to the statutory health insurance system will only be levied strictly on the basis of the individual's income.

Ensuring affordable housing

233. The Federal Government is providing impetus for a sufficient supply of affordable housing through the construction of social housing, inter alia. So far, the Federal Government is making available €1 billion in programme funding each year for social housing in the period from 2020 to 2024. Under the Immediate Climate Action Programme, an additional €1 billion is set aside in 2022 for new energy-efficient buildings or for the energy-efficient modernisation of social housing units. This helps to reconcile the goals of climate action and affordable housing. The aim of the Federal Government is the construction of 400,000 new apartments per year, 100,000 of which through public funding. The Federal Government intends to continue to provide financial support for the construction of social housing and to increase the level of funding. It also plans to establish an "Affordable Housing Alliance", to launch a new housing model organised around the principle of being "in the public interest" (*Wohngemeinnützigkeit*) with tax funding and investment grants, and to strengthen the KfW programme for the purchase of cooperative shares. The linear depreciation for the construction of new dwelling units is to be increased from two to three percent.

234. This year the Federal Government will make a further €0.68 billion available in the form of the child benefit for home buyers and home builders (*Baukindergeld*) to help families with children, and also intends to provide long-term assistance to help marginal households with purchasing a home. In addition, the *Länder* are to have greater flexibility in the structuring of the real estate transfer tax in order to facilitate the purchase of self-used homes. To help finance this, tax loopholes with respect to the purchase of shares in undertakings that own property (known as "share deals") shall be closed.

235. In addition, through urban development assistance, the Federal Government is helping cities and municipalities to address imbalances in the urban infrastructure and make the necessary adjustments. One particular area eligible for funding is the reactivation of brownfield sites to support housing construction. Furthermore, the reduction of greenhouse gas (GHG) emissions and climate change adaptation measures are central components of urban development funding. The Federal Government plans to increase financial support for urban development from the current annual rate of €790 million and to lower the funding barriers for municipalities with inadequate financial resources.

236. The housing benefit reform of 2020, the introduction of a carbon component in the housing benefit and the dynamic adjustment of the level of housing benefit every two years help ensure that accommodation also remains affordable for low-income households. The Federal Government intends to improve the housing benefit further, introduce a climate component and pay a one-time heating cost allowance in the near term. During the COVID-19 pandemic, the housing benefit also acts as a stabiliser for low-income households. The Act to Reform Rent Level Surveys is designed to increase the legal certainty, importance and prevalence of qualified rent level surveys. The Federal Government also plans to continue and strengthen the provision of assistance for tenants and private-sector owners for the age-appropriate conversion of dwelling units.

237. The Federal Government will evaluate and extend existing tenant protection regulations. In this connection, the rent control mechanism is to be extended until 2029. In tight housing markets, the rent increase cap is to be reduced to 11% in three years.

G. Special section: sustainable and inclusive growth – measuring dimensions of well-being

Preliminary remarks

238. As explained in detail in the previous sections of this Annual Economic Report, a central goal of the Federal Government is to follow a sustainable development path for our economy and society in order to avoid the over-exploitation of our planet's limited resources, become climate-neutral, create more social justice, and preserve the high standard of living in all regions of Germany also for future generations. The Federal Government also accepts this responsibility at the international level.

239. With the information presented in Part II of this Annual Economic Report, the Federal Government provides a detailed assessment of the growth prospects of the German economy. Macroeconomic growth, measured by the increase in gross domestic product (GDP), is a necessary but by no means sufficient prerequisite for lasting prosperity, employment, participation and social security. For this reason, the Federal Government is looking beyond GDP and examining additional dimensions of material and non-material wealth and equal living conditions in Germany's regions in order to give a more complete picture of the overall state of social well-being in selected areas on the basis of the data available.

240. Accordingly, in the Annual Economic Report the Federal Government intends to measure and describe both Germany's transformation to a sustainable and climate-neutral economy, and the associated development of the well-being of society overall, using quantitative indicators.

241. For decades, the scientific community and policy-makers have hotly debated the best ways to measure and report well-being – i.e. quality of life


in a society – “beyond GDP”. In the German Sustainable Development Strategy and other reports, the Federal Government has regularly commented in detail on the state of well-being and the outlook for the future.

Seeking to build on this, this section will examine aspects of well-being and sustainability that are related to economic development and the economic and fiscal policy of the Federal Government. It does not claim to provide a comprehensive measurement of well-being. Rather, the selected indicators complement the aspects of well-being and sustainability discussed in the previous sections of this report and illustrate the development in individual, key areas.

242. The objective is to demonstrate how added value is generated in Germany and which resources are used in the process. This includes an assessment of the extent to which economic output is climate-neutral or gender equality is achieved, for example. Ultimately the indicators are to provide an overview of the development of technological knowledge, human capital, capital stock, public finances and natural capital and their availability for future generations.

243. Diagrams and explanatory text describe the development of the individual indicators over a

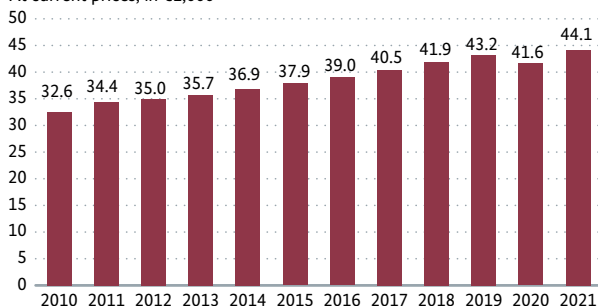
multi-year period. Due to the complex challenges facing the economy and society – such as the successful completion of the green transition – the selected set of indicators is not exhaustive nor does it provide any indication regarding the prioritisation of individual goals and action areas. Furthermore, it does not serve as a substitute for the broader and in-depth reporting provided within the framework of the German Sustainable Development Strategy or specialist reports of the individual government ministries.

In this respect, the Federal Government sees the presentation of the set of indicators for the first time in the 2022 Annual Economic Report as the start of a process in which the measurement of well-being, the provision and currency of the underlying data, the methodology, and the selection and systematisation of the indicators will be continuously reviewed and improved. As part of this process, the next report is also to include a set of indicators for the tax and contribution burden and other relevant factors, including biodiversity. Indicators that are part of the German Sustainable Development Strategy are indicated by the symbol  in the graphics. In this connection, it is important to note that these indicators are oriented towards the goals of the German Sustainable Development Strategy and must be considered accordingly (cf. explanations of the indicators).

I Growth, income and employment

Per-capita gross national income

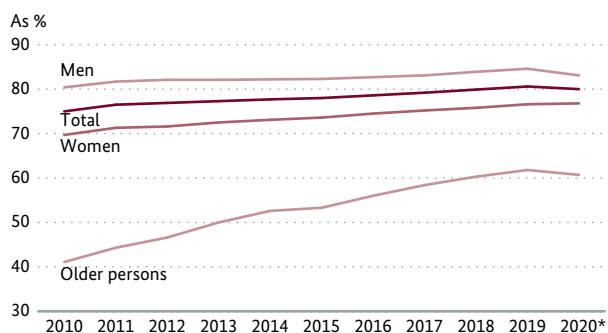
At current prices, in €1,000



Source: Federal Statistical Office.

Explanation: Sum of gross value added generated by all domestic residents plus all taxes on products (less subsidies), plus net revenue from primary income abroad (employee compensation and income from real estate).

Employment rate



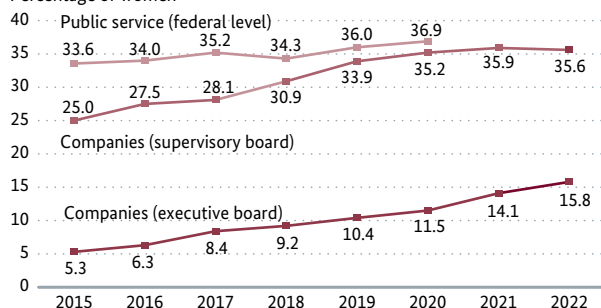
Source: Federal Statistical Office on basis of EU-LFS.

Explanation: Employed persons as a percentage of the same-age population. Data for persons aged 20-64; older persons: 60-64 year-olds. The Federal Government's goal is an overall employment rate of 78% by 2030 and of 60% for older workers.

* Preliminary values for 2020. Due to a redesigned methodology used in the microcensus which integrates the labour force survey (LFS) of the EU, these values are no longer fully comparable with those of the previous years (break in time series), see <https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Haushalte-Familien/Methoden/mikrozensus-2020.html> (in German). In addition, technical issues with the roll-out of a completely new IT system in 2020 along with the impact of the COVID-19 pandemic placed constraints on the collection of data and the enforcement of the duty to disclose information.

Women in executive positions

Percentage of women



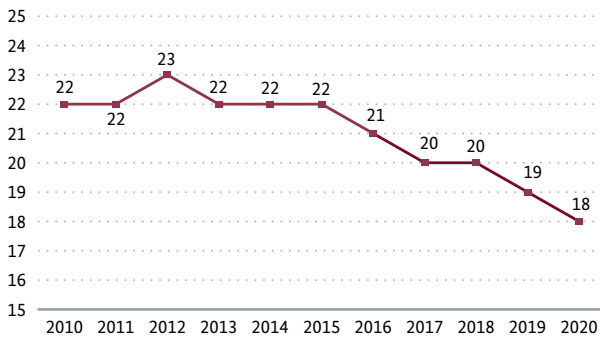
Source: Federal Statistical Office, Initiative for More Women on Supervisory Boards (FidAR).

Explanation: Companies: Percentage of women on the executive/supervisory board of companies with a quota that are listed on the stock exchange and subject to co-determination. Data as at January of each year. The aim of the Federal Government is for women to make up at least 30% of the supervisory boards of companies that are listed on the stock exchange and subject to co-determination by 2030. Public service: Percentage of women in executive positions in public service at the federal level (supreme federal authorities). All positions with supervisory or managerial duties excluding the highest positions of governance (e.g. ministers, parliamentary state secretaries, presidents or similar positions). Missions abroad included from 2018 onwards. Data as at 30 June of each year. According to the Second Act on the Equal Participation of Women and Men in Executive Positions, which entered into force on 12 August 2021, the equal participation of men and women in executive public service positions is to be achieved by the end of 2025.

Gender pay gap

(N)

As percentage of men's earnings



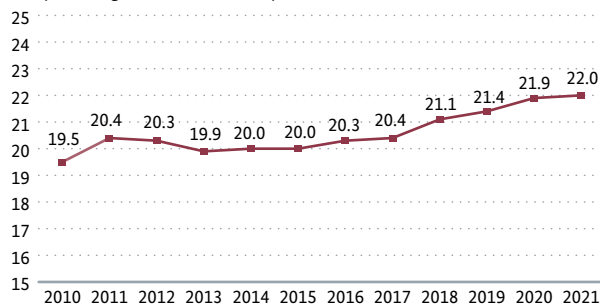
Source: Federal Statistical Office.

Explanation: Difference in the average gross hourly earnings between women and men. The graphic presents the unadjusted pay gap which does not factor in structural differences between the gender groups, such as differences in professions, the volume of work, level of education, professional experience or the lower percentage of women in executive positions. It also does not include other information on factors influencing wages, such as information on career breaks in particular. The Federal Government pursued the goal of reducing the pay gap to 10% by 2020; this goal is to be maintained in the period through to 2030.

Gross fixed capital formation

(N)

As a percentage of GDP at current prices

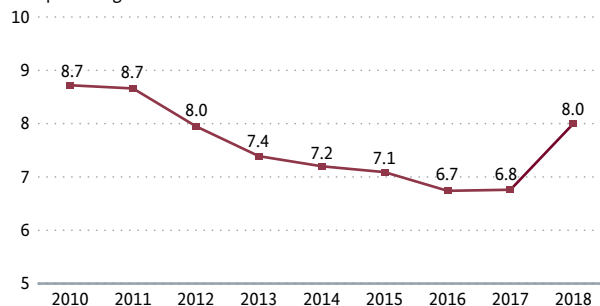


Source: Federal Statistical Office, system of national accounts.

Explanation: Gross fixed capital formation refers to the value of assets acquired by domestic economic units for use in the production process for a period of more than one year. They consist of machinery and equipment, buildings and other investments.

Enterprise birth rate

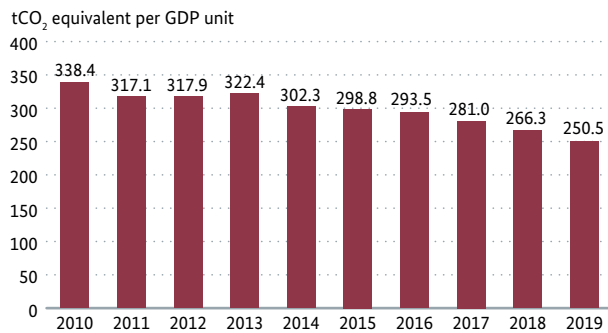
As a percentage of all businesses



Quelle: Eurostat.

Explanation: Ratio between the number of business start-ups in the reporting period and the number of active businesses in the reporting period.

Greenhouse gas intensity of GDP



Source: European Environment Agency.

Explanation: Greenhouse gas emissions (total emissions according to UNFCCC) in tonnes of CO₂ equivalent per GDP unit. For information on the Federal Government targets, see the text below.

244. Economic growth and a high employment rate are central goals of economic, social and fiscal policy; they are not, however, a sufficient precondition for greater well-being. The average income situation, measured in terms of the nominal **gross national income per capita** (which, in contrast to the gross domestic product also includes income transfers from and to the rest of the world), has increased by 2.5% p.a. on average over the last ten years. Thanks to the extensive assistance programmes and stabilisation measures introduced by the Federal Government, it has been possible to largely absorb the economic impacts of the Covid-19 pandemic, with the result that the crisis has had a much more pronounced negative impact on value added than on per capita income (cf. Part II of the Annual Economic Report).

245. Gainful activity is a key prerequisite to safeguarding personal material wealth. In addition to making a central contribution to protecting the livelihood of a household, it enables better participation in society and is an important precondition for social cohesion. Furthermore, in light of the imminent decline in the potential labour force in an ageing society, a high level of employment is also

vital for the country's overall economic welfare. A high rate of employment in Germany on the whole, but also in the various regions, is therefore a central political objective. Starting from an already high level, Germany has managed to further increase the number of people in employment overall and in various gender and age groups since 2010 thanks to the country's strong economic performance and the resulting high demand for labour. Despite the economic downturn caused by the pandemic, the **employment rate** remained at a high level even during the crisis due to the skills shortages already felt before the COVID-19 crisis and the instrument of short-time work (cf. Section F).

The better **integration of women in the labour market** plays an important role in gender equality and guarantees women's economic independence. Strong female participation in the labour market is crucial also in light of the imminent shrinkage of the labour force due to demographic changes. Following a steady increase in recent years, women's participation in the labour force fell slightly in the wake of the COVID-19 crisis, a development which is primarily attributable to a deterioration in employment opportunities in sectors in which women are

chiefly employed and that were hit hard by the crisis (retail, hotel and catering, close contact services). The development of the labour market and the availability of skilled professionals will play a pivotal role in safeguarding long-term prosperity. This is linked to a good framework for combining family and professional commitments, the removal of barriers to employment, and a fair division of child-minding, nursing and housework in private homes to fully unlock the potential of mothers, in particular, but also of fathers. The employment rates of mothers and fathers (aged 15-64 with children under the age of 18) have shown a positive trend in the period under review and are consistently higher than the employment rate of women and men in a comparable age group overall (not illustrated in the graphic).

246. The equal participation of women and men in economic life also calls for a fair wage structure and appropriate **representation in executive positions** (cf. Section F). It is encouraging to note that the percentage of women on the supervisory and executive boards of companies that are listed on the stock exchange and subject to full co-determination has risen steadily and significantly in recent years, standing in January 2022 at 35.6% for supervisory boards and 15.8% for executive boards. In public service at the federal level (supreme federal authorities), the percentage of women in executive positions has also risen sharply and, at 36.9% in 2020, remained above figures for the private sector. However, the parity yet to be achieved and the existing **pay gap between women and men** continue to be indicators of social inequality. While an appreciable reduction of 5% in the (unadjusted) pay gap has been achieved in recent years between 2012 and 2020, this improvement is not ambitious enough considering that the average gross hourly wage of women is still 18% below that of men.

247. An economically strong and competitive German economy and, importantly, a successful green

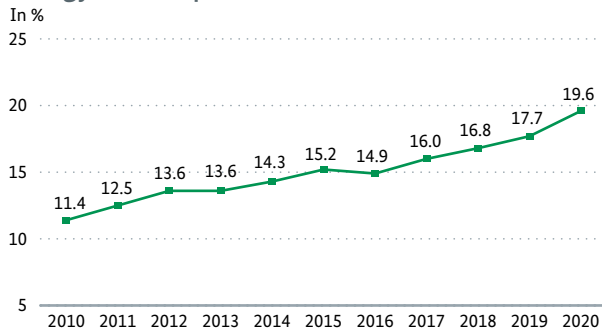
and digital transition, call for high levels of investment, particularly by the private sector but also by the public sector (cf. Section C). In the period between 2014 and 2021, (public and private) **gross fixed capital formation in relation to GDP** rose steadily from below 20% to 22% recently (cf. Part II of the Annual Economic Report).

248. A high level of growth and employment also requires a dynamic start-up and entrepreneurial environment (cf. Section C). Following a downward trend since 2011, the **enterprise birth rate**, i.e. the number of new businesses that have been created as a percentage of all active businesses, rose again in 2018. Additional official data shows that business start-up activity was rekindled somewhat in the first three quarters of 2021 following a slowdown in the 2020 crisis year; this data does not, however, distinguish between different reasons for starting a business.

249. Protection of the natural foundations of life for future generations, as enshrined in Article 20a of Germany's Basic Law, is fundamentally threatened by climate change. Sustainable development will depend on the reduction of GHG gases that impact our climate and our ability to keep the anticipated temperature increase below 1.5 degrees. The Federal Government therefore aims to cut greenhouse gas emissions in Germany by at least 65% by 2030 compared to 1990 levels, and by at least 88% by 2040; Germany is to achieve greenhouse gas neutrality by 2045. Significant progress has already been made in recent years, with the **GHG intensity of GDP** in 2019 down roughly 25% on 2010, which equates to a GHG emissions reduction from 941.8 to 809.8 mt CO₂ eq. (14%). Estimates indicate that GHG intensity dropped further in 2020. As the pandemic reduced economy activity in 2020, both greenhouse gas emissions and economic output dropped significantly that year. Nevertheless, this development documents initial progress by the government and businesses in the transformation to a climate-neutral economy and society (cf. Section C).

II Environmental protection and climate action

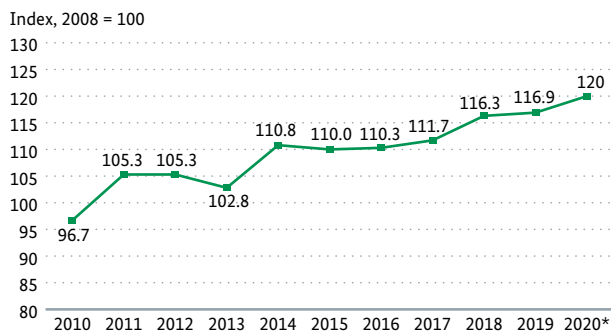
Share of renewable energy in gross final energy consumption



Sources: Working Group on Renewable Energy Statistics, Working Group of the Länder on Energy Balances, Federal Ministry for Economic Affairs and Climate Action.

Explanation: Use of renewable energy in relation to gross final energy consumption. In this context, final energy refers to the part of the energy that is available as energy to final consumers, e.g. in the form of thermal or electrical energy. The Federal Government's target was to increase the share of renewables in gross final energy consumption to 18% by 2020. The target is 30% for 2030; 45% for 2040 and 60% for 2050.

Final energy productivity

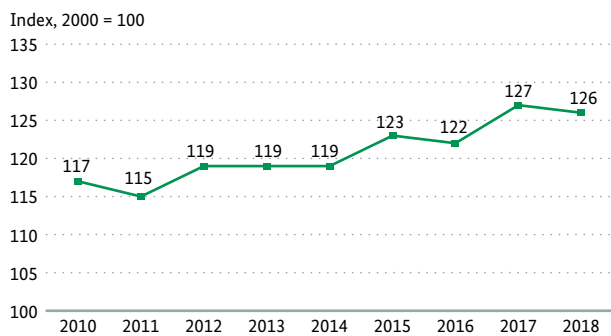


Sources: Federal Statistical Office, Working Group of the Länder on Energy Balances.

Explanation: Value added for each unit of energy used that is provided as thermal or electrical energy for the production of goods or for use in private households. The Federal Government's target is to increase final energy productivity in the period from 2008 to 2050 by 2.1% annually. At the same time, primary energy consumption is to be reduced by 30% by 2030, and by 50% by 2050, compared to 2008 levels.

* Preliminary value.

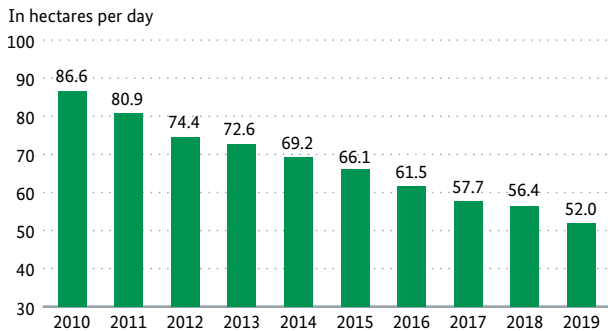
Raw material input productivity



Source: Federal Statistical Office.

Explanation: Value of all goods supplied for final use (domestic consumption and domestic investment as well as exports) relative to the mass of the raw materials used domestically and abroad for their production.

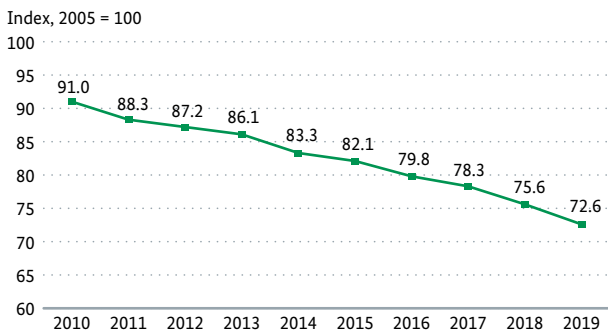
Expansion of settlement and transport area (N)



Source: Federal Statistical Office.

Explanation: Average daily expansion of area used for settlements and the transport infrastructure (moving four-year average). Please refer to the text below for Federal Government targets.

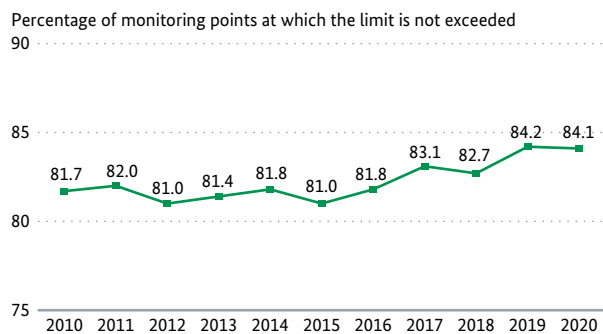
Emissions of air pollutants (N)



Source: German Environment Agency.

Explanation: Unweighted arithmetic mean of the national emission indices of five air pollutants: sulphur dioxide (SO₂), nitrogen oxides (NO_x), ammonia (NH₃), non-methane volatile organic compounds (NMVOC) and particulate matter (PM_{2.5}). The Federal Government's target is to reduce air pollutant emissions by 45% by 2030 compared to 2005 levels.

Reduction of nitrate in groundwater (N)



Source: German Environment Agency and Länder Initiative for a Core Set of Indicators on the basis of data from the Working Group of the Länder and the Federal Government on Water Issues.

Explanation: Percentage of monitoring stations at which the annual average concentration of nitrate in groundwater does not exceed the threshold of 50 milligrams per litre. Please refer to the text below for Federal Government targets.

250. Alongside the limitation of global warming, the preservation of nature and natural resources is one of the central challenges of the 21st century. Safeguarding the quality of life in a society also requires preserving the climate and natural capital, such as diverse and functioning eco-systems (forests, moors, floodplains, fertile soils, marine ecosystems etc.), their contribution to biological diversity and clean air and clean water. Therefore, in the interests of this generation and future generations, the Federal Government considers it our duty to reconcile human activity with the limitations of our planet, prevent irreversible damage to environmental assets and to continue to bring (net) emissions of greenhouse gases closer to zero (cf. Section C).

251. On our path to climate neutrality, one key sector is energy, both with regard to the environmentally sound provision of energy and its efficient use. The **share of renewable energy** in relation to total **gross final energy consumption** – which includes heat and fuel in addition to electricity – stood at 19.6% in 2020, and has therefore increased by 4.4% compared to 2015. The increase between 2019 and 2020 amounted to 1.9 percentage points.

252. In addition to the increasing share of renewable energy, the more efficient use of energy by applying new technologies and optimising processes will also help reduce greenhouse gas emissions. Energy efficiency is therefore a key ingredient of action to ensure future energy needs are fully met by renewable energy. It is measured by the **final energy productivity** metric, which indicates how high total economic added value is in relation to the final energy used. When interpreting the data it is, however, important to note that domestic final energy productivity can also increase by the relocation of the production of energy-intensive goods or intermediate products to other countries. A glance at the indicator shows that final energy productivity has increased signifi-

cantly and in 2020 was a solid 23 index points above the 2010 value.

253. Tying in with energy efficiency, the use of abiotic and biotic raw materials extracted from the environment is to be kept to a minimum with increasingly efficient products and production processes in order to decouple economic growth from the use of raw materials. The **raw material input productivity** indicator relates the value of all goods supplied for final use to the mass of the raw materials used domestically and abroad for their production. By considering imports in terms of both monetary value and mass, the indicator takes into account the value added and the raw material input along the entire domestic and international value chain. As with final energy productivity, this indicator also shows a general upward trend, i.e. the economy is becoming less resource-intensive. Between 2010 and the last available data in 2018, raw material input productivity rose by 9 index points.

254. Pervious surfaces and the underlying soil provide a wide range of ecosystem services and therefore need to be protected. Starting from a high level, the **increase in land used for settlements and the transport infrastructure** has dropped gradually, from a moving four-year average of 86.6 ha/day in 2010 to 52 ha/day in 2019 (-40 percent). This can be put down to measures such as the densification of use, space recycling or the restoration of pervious surfaces. Factors such as decreasing demographic and economic development and the sharp increase in land prices also play a role. The Federal Government's target of max. 30 ha/day by 2030 is not yet within reach, however; a closed-loop land use regime (i.e. net zero land use) in 2050 is therefore still a long way off.

255. Human activities, wherever they take place, not only require space but also mostly involve the emission of a variety of substances to the air. The

emission of air pollutants, e.g. by the energy sector, the manufacturing industry, agriculture, the transport sector or private households, affects human health and our ecosystems. In the EU, Germany has pledged to reduce its emissions of sulphur dioxide (SO₂), nitrogen oxides (NO_x), ammonia (NH₃), non-methane volatile organic compounds (NMVOC) and particulate matter (PM_{2.5}) by 2030. The indicator represents the mean of the national emission indices for the air pollutants listed above. As the chart indicates, pollutant emissions have been declining steadily for years, by a total of 20% since 2010. Emissions of the individual air pollutants have changed by varying degrees, however. More detailed information and up-to-date pollutant concentration data are available on the website of the Federal Environment Agency (www.umweltbundesamt.de).

256. Water – both as surface water or groundwater – is one of the most crucial environmental media and one of the most important natural resources (cf. Section A). Up to now, the perception among many people in Germany has been that water is available in unlimited amounts and of a consistently high quality. However, changing precipita-

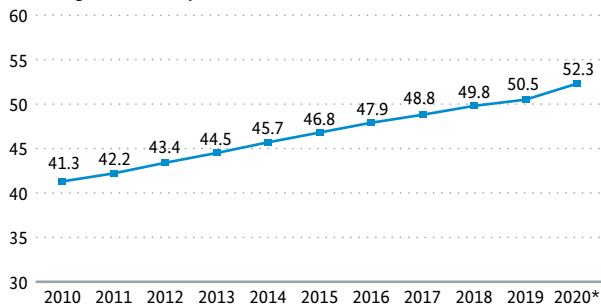
tion patterns (volume, distribution, frequency, intensity) are increasingly driving regional shortages in the water supply. Due to the shortage of space on land, the energy transition brings with it additional demand for surface water through the use of floating PV, which affects aquatic ecology. At the same time, water pollution impacts water ecology and the production of drinking water. One cause of water pollution is **nitrate contamination leaching into the groundwater**, which is largely attributable to the agricultural industry. The EU-wide limit for nitrate in groundwater is 50 mg per litre. Nitrate contamination in Germany is monitored by over a thousand monitoring stations (EUA monitoring network). In 2020, nitrate values were below the threshold at 84.1% of monitoring stations, an increase of 2.4 percentage points on 2010. Nevertheless, nitrate contamination in our groundwater remains high, which has already prompted the European Commission to bring action against Germany. The Federal Government's goal of adherence to the limit at all monitoring stations by 2030 therefore requires the consistent and swift implementation of the fertilizer application legislation in the *Länder* to reduce the level of nitrate entering the groundwater.

III Education, research and innovation

30 to 34-year-olds with a tertiary or higher vocational qualification

(N)

Percentage of all 30-34 year-olds



Source: Federal Statistical Office, microcensus.

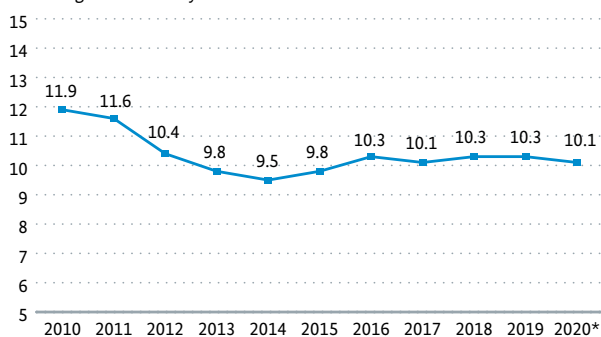
Explanation: Share of 30-34 year-olds with a tertiary (levels 5-8 of the International Standard Classification of Education (ISCED) or a post-secondary, non-tertiary education (ISCED level 4). The Federal Government's target is for 55% of 30-34 year-olds to have a tertiary education by 2030.

* The results of the 2020 microcensus are comparable to prior year figures to a limited extent only (break in time series; see explanations for employment rate in section I).

Early school-leavers

(N)

Percentage of all 18-24 year-olds



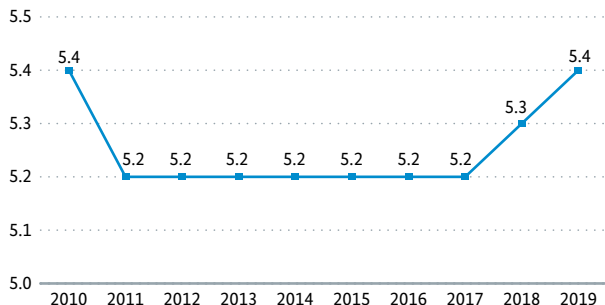
Source: Federal Statistical Office, microcensus.

Explanation: Share of 18-24 year-olds in all persons of the same age group who, at the very maximum, have successfully completed lower secondary education (Hauptschule or Realschule) (ISCED level 2) and who have not gone on to earn a further professional qualification or who are currently not in training or education. The Federal Government's target is to reduce this share to 9.5% by 2030.

* The results of the 2020 microcensus are comparable to prior year figures to a limited extent only (break in time series; see explanations for employment rate in section I).

Expenditure on publicly and privately owned educational institutions

As % of GDP

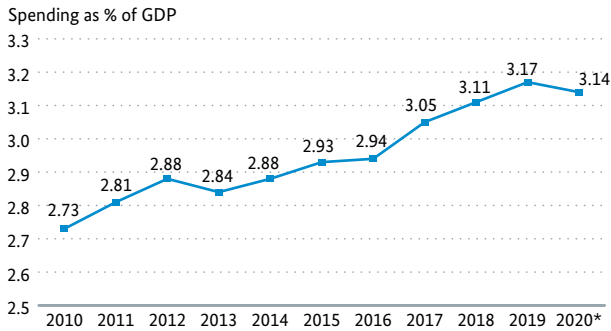


Source: Federal Statistical Office.

Explanation: The expenditure refers to crèches and nurseries, schools (excluding day-care centres), vocational education and higher education institutions (excluding adult education centres); definition according to 2020 Report on Education Financing (Federal Statistical Office on behalf of the Federal Ministry for Education and Research, BMBF).

Private and public spending on research and development

(N)

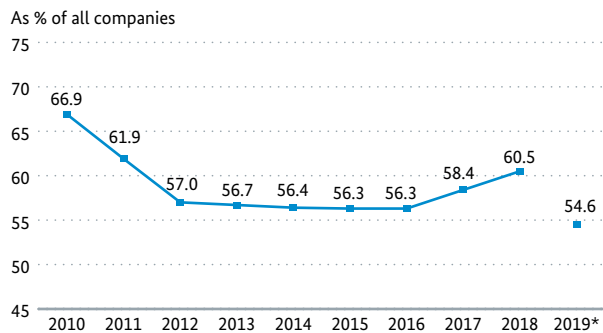


Source: Federal Statistical Office, National Accounts of the Länder, Stifterverband Wissenschaftsstatistik.

Explanation: Research and experimental development (R&D) “comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge” (definition according to the OECD’s Frascati Manual 2015). Please refer to the text below for information on the Federal Government’s target.

* Preliminary value.

Innovator rate

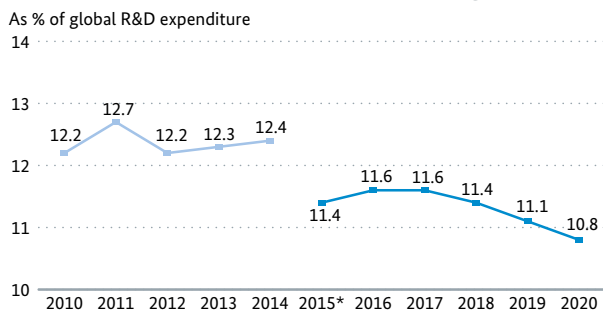


Source: Leibniz Centre for European Economic Research.

Explanation: Share of businesses that have introduced product or process innovations expressed as a percentage of all businesses. Values for 2006 to 2016 based on the definition of product- and process-innovations according to the 4th edition of the Oslo Manual (2018). All data extrapolated over total businesses with five or more employees in Germany.

* Value for 2019 only comparable with 2018 to a limited extent due to a definition change in the business register (break in time series).

Share of world trade in R&D-intensive goods

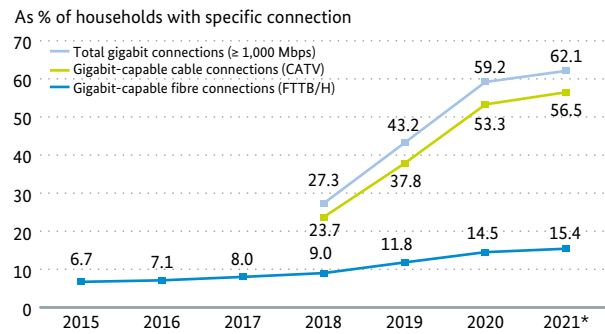


Source: UN Comtrade database, calculations of the Centre for Economic Policy Studies (CWS), and from Gehrke/Schiersch “FuE-intensive Industrien und wissensintensive Dienstleistungen im internationalen Vergleich” (An international comparison of R&D-intensive industries and knowledge-intensive services) in Studien zum deutschen Innovationssystem (Studies on the German System of Innovation), No. 6-2021

Explanation: Share of German exports of R&D-intensive goods in global exports of R&D-intensive goods.

* 2015 break in time series due to extension of list of countries.

Broadband rollout



Source: Broadband Atlas of the Federal Ministry for Digital Infrastructure and Transport

Explanations: Availability of broadband with a download speed of at least 1,000 Mbps (1 gigabit/s) overall and categorised by fibre (FTTB/H) and cable TV (CATV) wired technologies. Year-end values.

* 2021 mid-year values.

257. Good, inclusive and equal education is both important for each individual to enjoy opportunities and participate in society and also the bedrock of a strong research and innovation system and a competitive economy. Ultimately, it is the principal foundation for prosperity in Germany and for development opportunities in the regions (cf. Section F). Germany is one of the leading nations for innovation and among the most attractive centres of science in the world. Nevertheless, additional efforts are needed given the significant challenges we are facing, such as climate change, digitalisation, demographic change, a secure supply of skilled labour in businesses, or the strengthening of technological sovereignty and competitiveness in Germany and Europe.

258. Highly skilled workers are an important factor for the economic success of businesses in our country. Workers will need to meet increasing requirements, not least owing to the rapid development of technological changes in the workplace. Success in the training of highly skilled workers can be gauged, inter alia, from the share of **people aged between 30 and 34 who have a degree or a higher professional qualification** (e.g. master-level in a

trade). In the period from 2010 to 2020, this share has risen continuously by a total of 11 percentage points, increasing from 41.3% to 52.3%. Germany's long-established dual system of education and training continues to play a key role in the recruitment of well-qualified skilled workers. This system is not only a backbone of the German economy, but also offers young people a path to a career with good employment prospects. In many cases, it also serves as the basis for further training to obtain master-level qualification in a craft or trade or a university degree, and therefore for the recruitment of skilled staff with practical experience right from the outset.

259. On the other hand, there are young people who have neither a higher education entrance qualification, such as *Abitur* or *Fachhochschulreife* (upper secondary education), nor have completed vocational training, nor are in initial or further training. The **share of these early school-leavers** in all 18-24 year-olds stood at 10.1% in 2020. Having dropped by 2.4 percentage points to below 10% between 2010 and 2014, it has since inched above 10% again.

260. A strong education infrastructure is the basis for a good education and a prerequisite for a top-quality research and innovation system that safeguards economic competitiveness. The availability of adequate financial resources for education is of central importance. A key performance indicator (KPI) in this respect is therefore **total expenditure on central publicly and privately owned educational institutions**, i.e. child day-care facilities, schools, vocational training establishments and higher education institutions (HEIs). Expressed as a percentage of GDP, this expenditure has risen again recently after stagnating at around 5.2% between 2011 and 2017, and reached 5.4%, or €185.7 billion, in 2019.

261. **Private and public spending on research and development (R&D)** is, in turn, an important parameter for assessing the pace of innovation in an economy. The higher this level of spending, the greater the likelihood of a dynamic development of productivity, stronger economic growth and increased competitiveness. Spending in this area in relation to GDP has grown almost steadily since 2010, from 2.73% to 3.17% in 2019. In the pandemic year 2020, however, R&D expenditure was down slightly on the previous year, falling to 3.14% of GDP. Normally, the private sector accounts for the lion's share (roughly two-thirds) of R&D spending in Germany, with the remaining investment coming from the state, HEIs and public and private non-profit research institutions. The Federal Government has set itself the goal of increasing public and private spending on R&D to 3.5% of GDP by 2025 (cf. Section E).

262. Innovation plays an important role in processes of economic renewal and is a driver of economic growth. A central benchmark for centres of innovation is the **innovator rate**. It is defined as the share of businesses that have introduced product or process innovations expressed as a percent-

age of all businesses. Between 2010 and 2016 this rate declined in Germany from around 67% to roughly 56%, and rose again to 60.5% in 2018. The decline to 54.6% in 2019 is due in part to a definition change in the business register, as a result of which a larger number of small businesses from less innovation-driven sectors were included in the scope of the report. It is an explicit objective of the Federal Government to promote and expedite innovation by and in businesses, to be aided by the removal of bureaucracy, the strengthening of applied research and the transfer of research findings to business. Furthermore, the Federal Government seeks to create and strengthen regional and transregional innovation ecosystems and to set up experimental spaces within specific limits (geographical area, timeframe) to enable and promote innovative technologies, services and business models under real-world conditions (cf. Section E).

263. Another important indicator of innovation is the development of the share of German **exports of research-intensive goods in world trade**. In 2020, it stood at 10.8%, and, internationally, means that Germany took second place behind China (17.6%) and pushed the United States into third place. The German share of exports has been on a downward trend since 2017, however.

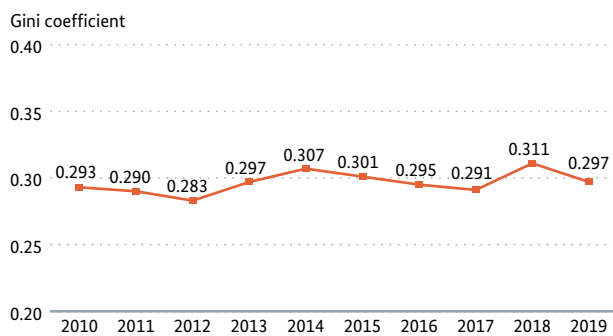
264. The **nationwide provision of high-speed gigabit networks** that are available to all citizens, businesses and public-sector facilities is the basis for the successful development of digital opportunities in all sectors of the economy and society: they are a prerequisite for new forms of production and therefore a crucial location factor in the competitive global arena, for smart mobility, the use of artificial intelligence, digital education and networking. The demands placed on network capacities and the network infrastructure are growing constantly in this context. A monitoring mechanism to track the growth of installed broad-

band availability in Germany is of central importance to assess progress. By mid-2021, fibre connections (FTTB/H) offering speeds of over 1,000 Mbps were available in 15.4% of German households. Availability more than doubled in the period from 2015 to 2020. Roughly 57% of households

have gigabit-capable cable connections, the availability of which also more than doubled between 2018 and 2020. Overall gigabit-capable connections with a minimum speed of 1,000 Mbps were available for roughly 62.1% of households in mid-2021 (cf. Section E).

IV Social aspects, demography and integration

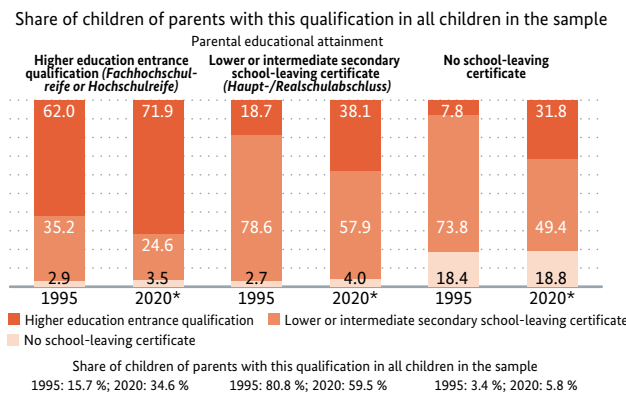
Gini coefficient of income after social transfers



Source: Federal Statistical Office on the basis of the EU-SILC.

Explanation: Indicator for the unequal distribution of income in society, here following redistribution (i.e. taxes and social transfers, excluding pensions) on the basis of equalised income per person. Values can be between 0 (completely even distribution) and 1 (maximum inequality of distribution). Values for the survey year are shown. With regard to the data used, the reference year for determining the net equalised income is the year prior to the survey year in each case. The Federal Government's target is for the Gini coefficient of equalised disposable income to remain below the EU value (0.307 index points in 2019) through to 2030.

Educational mobility between parents and children



Source: Federal Statistical Office, microcensus.

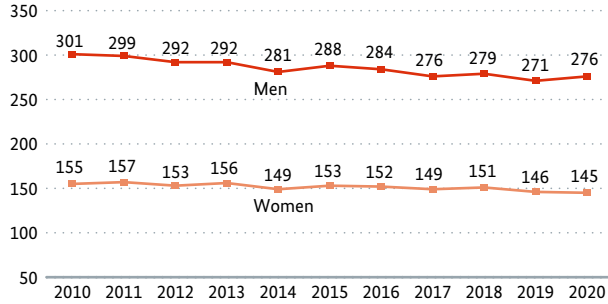
Explanation: Comparison of highest general education school-leaving certificate of parents with that of their children. The statistic captures single children aged 15-25 who still live with their parents and are no longer in the general education school system. A higher educational qualification may be gained afterwards. Post-school education or vocational training qualifications are not considered.

* The results of the 2020 microcensus are only comparable with values from 1995 to a limited extent (see explanations on the employment rate in section I).

Premature mortality



Deaths per 100,000 population below the age of 70

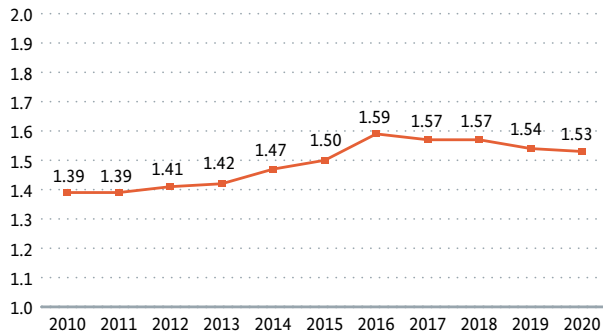


Source: Federal Statistical Office.

Explanation: Number of fatalities among females and males in the population below 70 years of age per 100,000 of the old European standard population under 70 (excluding those less than 1 year old). The Federal Government's goal is for premature mortality among women and men to not exceed 100 and 190 fatalities, respectively, per 100,000 inhabitants by 2030.

Birth rate

Children per women



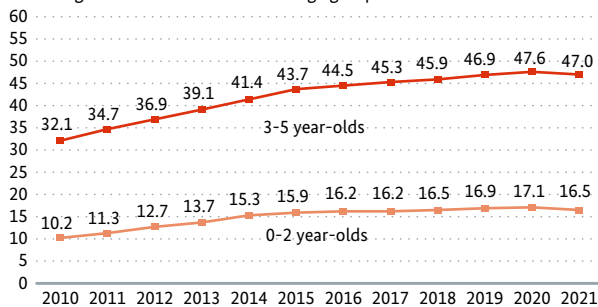
Source: Federal Statistical Office.

Explanation: Total fertility rate by calendar year; it indicates how many children a woman would have in her lifetime if her fertility behaviour were the same as all women aged between 15 and 49 in the year under review.

Children in all-day care in child day-care centres



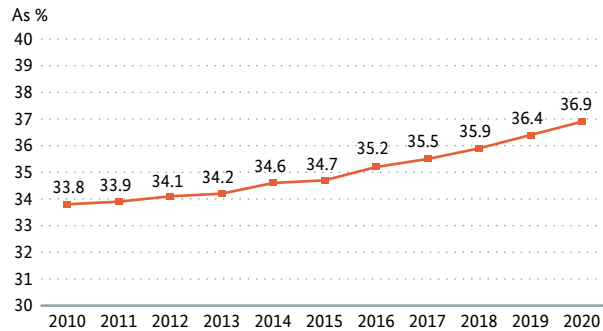
Percentage of all children of the same age group



Source: Federal Statistical Office.

Explanation: Children in all-day care on 1 March of a given year as a percentage of all children of the same age group on 31 December of the previous year. All-day care refers to an uninterrupted and contractually agreed period of care exceeding seven hours per day of care provision; day care at private homes and the care of school children are not taken into account. The Federal Government would like to increase the share to at least 35% for 0-2 year-olds by 2030 and to 70% for 3-5 year-olds; the target for the latter group for 2020 was 60%.

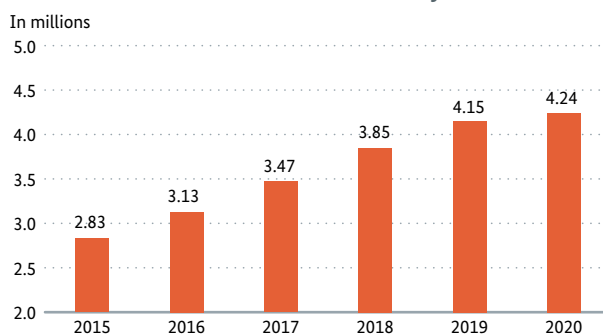
Old-age dependency ratio



Source: Federal Statistical Office.

Explanation: Ratio of persons of pension age to persons of working age; here: number of people aged 65 and older per 100 people aged between 20 and under 65.

Number of workers in jobs subject to social insurance contributions who are citizens of an EU Member State or a third country



Source: Statistics of the Federal Employment Agency.

Explanation: Workers subject to compulsory social insurance contributions including trainees; data at: end of June of the particular year.

265. The Federal Government's fiscal and economic policy places a strong emphasis on the broad participation of society in economic development. A high rate of employment is a key prerequisite for this. Differences in productivity, wages and capital income, but also the level of welfare benefits, play an important role in the personal distribution of income. In a pay-as-you-go social insurance system, demographic trends have serious implications for social insurance. For this reason, distribution policy indicators as well as

fundamental demographic figures are discussed in the following section.

266. The level of income inequality in Germany has been measured for many years both on the basis of official survey data (e.g. EU-SILC) and surveys conducted by academic institutes (e.g. SOEP). An established indicator is the **Gini coefficient**, according to which the level of inequality in disposable income (after tax and social transfers) has remained largely unchanged in the recent past. Having risen to over

0.3 index points in 2018, the Gini coefficient dropped below 0.3 index points again in 2019.

267. **Educational mobility** compared to parental educational attainment is an important approximate indicator for educational equality. A comparison of available data regarding the highest general education school-leaving qualification obtained by parents compared to that of their children indicates that educational mobility has been on an upward trend since the mid-1990s. For example, in 2020 31.8% of children aged 15-25 of parents without an actual school-leaving qualification had obtained a school-leaving certificate qualifying them to study at a university (*Hochschulreife*) or a university of applied sciences (*Fachhochschulreife*); this figure was even higher for the children of parents with a lower or intermediate secondary school-leaving certificate (*Hauptschulabschluss* or *Realschulabschluss*), at 38.1%. These figures were still below 10% and 20%, respectively, in 1995. It is important to note, however, that the statistic captures children aged 15-25 still living with their parents. If there has been a change in the pattern of children leaving their parent's home between 1995 and 2020, and therefore of the share of children in this age group being sampled, this could have affected the results. Compared with other countries, educational mobility in Germany is still relatively low, as documented by the OECD. It is therefore an explicit objective of the Federal Government to guarantee educational opportunities for all children and young people on a lasting basis (cf. Section F).

268. Health is central to quality of life. The Federal Government sees the increased life expectancy in recent decades as a reflection of the steady progress that has been made, both with regard to increased health consciousness, better environmental conditions or an improvement in the provision of medical services, health promotion and

prevention. Compared to general life expectancy, the **premature mortality** indicator provides an even more specific insight into the health of the population. In the period up to 2019, the number of fatalities in the population under 70 per 100,000 had dropped, with data showing a significant gender-specific difference that only decreased slightly over time. 271 men and 146 women per 100,000 under 70 died in 2019. In 2020, premature mortality among men rose again slightly, a development which is also likely attributable to the COVID-19 pandemic.

269. The average number of children per woman of child-bearing age (birth rate) is an indicator for the long-term demographic development of a society. In addition to structural factors, such as mothers tending to be older and the effects of immigration, the increase in the **birth rate** in the last decade is likely due in no small part to the favourable economic environment and the good state of the labour market – as a reflection of material security – as well as family policy measures, such as the introduction and continued improvement of parental allowance system and the expansion of the child-care infrastructure.

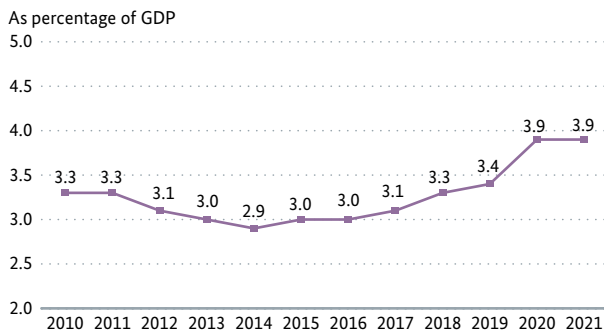
270. The provision of **all-day care for children under the age of six** is a key prerequisite for a high participation of parents in the labour market (cf. Section F). At the same time, the care services open up opportunities for German language acquisition, early childhood education and integration, particularly for children from unskilled backgrounds or from families where little or no German is spoken. The sharp overall increase in the share of children in all-day care in the past few years is therefore a reflection of a preventive social and educational policy and also a prerequisite for parents to more effectively reconcile family and work commitments, which in turn facilitates the employment of parents (cf. Section C).

271. The higher life expectancy and a low birth rate for several years have contributed significantly to the continued aging of society, which negatively impacts labour force potential and the financing of the social systems (cf. Section F). While the rejuvenating effect of the net immigration of over 400,000 people per year on average has indeed slowed this aging process in the past decade, it has not managed to stop it entirely. The **old-age dependency ratio** reflects this development: while there were roughly 34 people of pension age for every 100 persons aged 20-65 in 2010, there are now almost 37. The old-age dependency ratio is expected to increase further through to 2040 due to the advancing age of those born in the 1950s and 1960s (baby boom generation).

272. In recent times, immigration has contributed significantly to slowing down the contraction of the labour force and to stabilising the social insurance systems on the short and medium term (cf. Section F). Between 2015 and 2020 alone, the **number of workers in jobs subject to social insurance contributions who are citizens of an EU Member State or a third country** rose by 50% to roughly 4.2 million. This development not only reflects the relatively high level of net immigration of recent years but also a higher employment rate among the international population in Germany.

V Public finances and equal living conditions

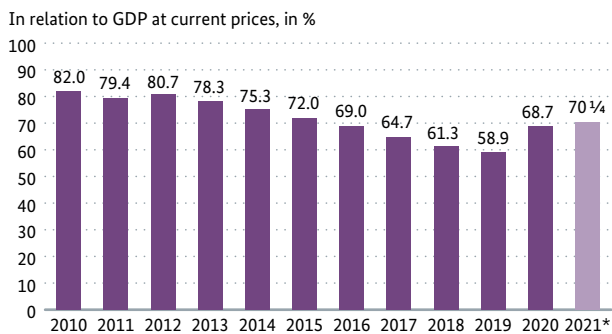
Government investment expenditure



Source: Federal Ministry of Finance.

Explanation: Government gross fixed capital formation and investment grants.

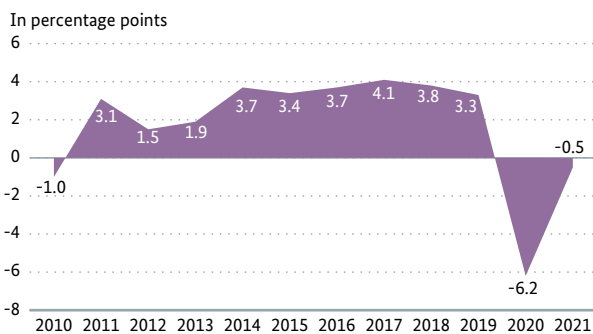
Public debt ratio



Source: Federal Statistical Office; *forecast of Federal Ministry of Finance

Explanation: Government debt according to the definition in the Maastricht Treaty; target value: see text.

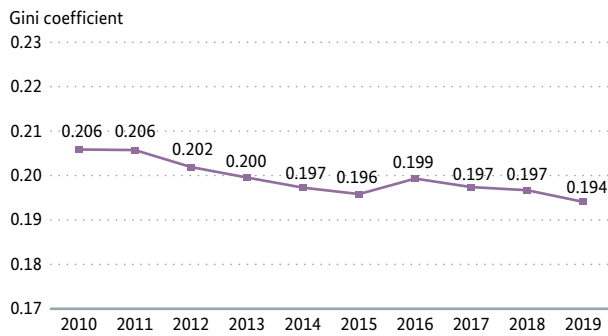
Debt stabilising deficit ratio gap



Source: Federal Ministry of Finance.

Explanation: Difference between the actual general-government budget balance and the budget balance to stabilise the debt ratio (as percentage of GDP in each case). Positive values = sustainability surplus; negative values = sustainability gap.

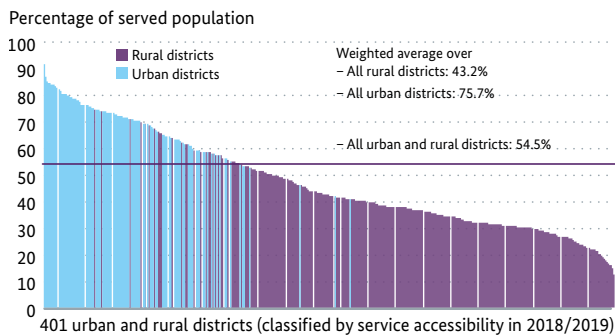
Regional income inequality



Source: Statistical Offices of the Federal and the Länder, own calculations.

Explanation: Gini coefficient (see also the explanation of the Gini coefficient in section IV) of per capita GDP of urban and rural districts in Germany.

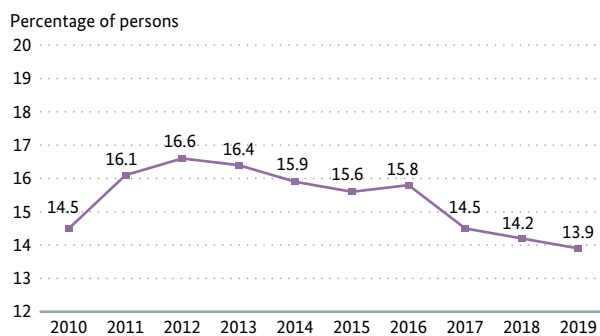
Accessibility of central facilities providing general public services



Source: Federal Institute for Research on Building, Urban Affairs and Spatial Development.

Explanation: Percentage of the population (by urban/rural districts) in 2018 or 2019 that reached the nearest supermarket/discount store, post office, primary school, public transport stop with min. 20 departures a day within a 1,000 meter radius, the nearest hospital with primary medical services within 30 minutes by car and the nearest secondary school within 15 minutes by car.

Excessive burden posed by housing costs



Source: Federal Statistical Office on the basis of the EU-SILC.

Explanation: Percentage of persons who live in households that spend more than 40% of their disposable household income on accommodation. The Federal Government aims at a maximum share of 13% by 2030.

273. The investment that is needed in climate action, digitalisation, education, research and infrastructure calls for substantial financing from the private and public sector. This requires sufficient and sustainable fiscal flexibility for public investment at all levels of government. In the past five years, **government investment expenditure** has increased significantly by around one percentage point to roughly four percent in relation to GDP, with a primary focus on the expansion of the public infrastructure in the areas of mobility and digitalisation as well as projects focusing on the energy transition and climate action (cf. Section C).

274. Sound public finances are essential to ensuring future generations can continue to enjoy lasting prosperity and a positive economic environment. Up until the current crisis, the Federal Government had managed to consistently pare down the **public debt ratio** – as an indicator of the financial burden on future generations – thanks to Germany's strong pre-crisis economic performance and the fiscal surplus generated from 2014 to 2019. However, owing to the economic impact of the COVID-19 pandemic and the necessary support measures adopted by the state, but also due to the increased volume of investment, the general government debt ratio rose again recently and in 2020 and 2021 (BMF forecast) was again well above the 60% of GDP threshold set down in the Stability and Growth Pact (cf. Section C).

275. The development of the budget balance is another indicator for sound public finances as the basis for lasting prosperity. The expansion of fiscal measures due to the crisis is also reflected in the **gap between the actual budget balance and the budget balance needed to stabilise the debt-to-GDP ratio** (known as the “financing gap”). This indicator identifies the fiscal action that would be needed to stabilise the debt-to-GDP ratio at the given rate of GDP growth. The financing gap has been positive since the global financial and eco-

nomical crisis of 2009/10, i.e. the government deficit was lower than needed to stabilise the debt-to-GDP ratio at the level at the given time. As a result of the stabilisation measures introduced because of the pandemic and the use of the emergency clause in the debt brake rules, which are anchored in the constitution, it dropped deeply into negative territory in 2020 (cf. Section C).

276. Limiting regional disparities is a central prerequisite for societal cohesion, social harmony and the acceptance of the system of government and economic order in Germany (cf. Section F). One indicator for equality of living conditions is regional income inequality, as measured by the **Gini coefficient of per capita GDP of urban and rural districts**. Regional income inequality has declined slightly in recent years, supported by transfers under the federal fiscal equalisation system and the Federal Government's support policy. Nevertheless, structural deficits persist in many regions. For this reason, the Federal Government will gear its actions in regional structural policy more effectively to improving living and locational conditions in these areas (cf. Section C).

277. Apart from a regionally comparable income situation, the **accessibility of central facilities providing general public services**, such as schools, supermarkets or public transport connections, is a key prerequisite for equal living conditions across Germany. In 2018 / 2019, 54.5% of the population in Germany had a supermarket, a post office, a primary school and a public transport stop with at least 20 departures a day within a 1 kilometre radius, as well as the nearest hospital providing primary medical services within a 30-minute car drive and the nearest secondary school within a 15-minute car drive. There is a marked difference between the figures for urban districts and those for rural areas, however: with 75.7% service accessibility, urban districts have better access than rural districts, where 43.2% of the population enjoy the level of

service accessibility described above. A further comparison between districts in eastern and western Germany (not in the graphic) shows that the population in eastern Germany is slightly better served (56.5%) than that in western Germany (54%). It is interesting to note that urban districts in eastern Germany (80.2%) enjoy better accessibility than those in western Germany (74.3%). When it comes to rural districts, on the other hand, the situation is reversed (38.9% in eastern Germany vs. 44% in western Germany). Towns and cities in eastern Germany have therefore caught up considerably, while eastern Germany's rural districts, which are rather sparsely populated, still find it more difficult than rural districts in western Germany to offer the same level of accessibility to central facilities providing general public services. The Federal Government has identified the creation of equal living standards as a central task in the coming

years. The aim is to offer people all across Germany good prospects in life and fair chances of participation. Access to central facilities providing general public services is an essential prerequisite for this (cf. Section C).

278. High costs of housing restrict households' consumption capacity in other areas, wherein **expenditure on housing that exceeds 40% of disposable household income** is considered an excessive burden. The percentage of people living in households burdened to this extent, or more, has dropped steadily in recent years. There are, however, stark differences here also, particularly between thriving urban and metropolitan regions with a large influx of people and structurally disadvantaged, peripheral regions with a declining and aging population (cf. Section F).

II. The Federal Government's 2022 annual projection



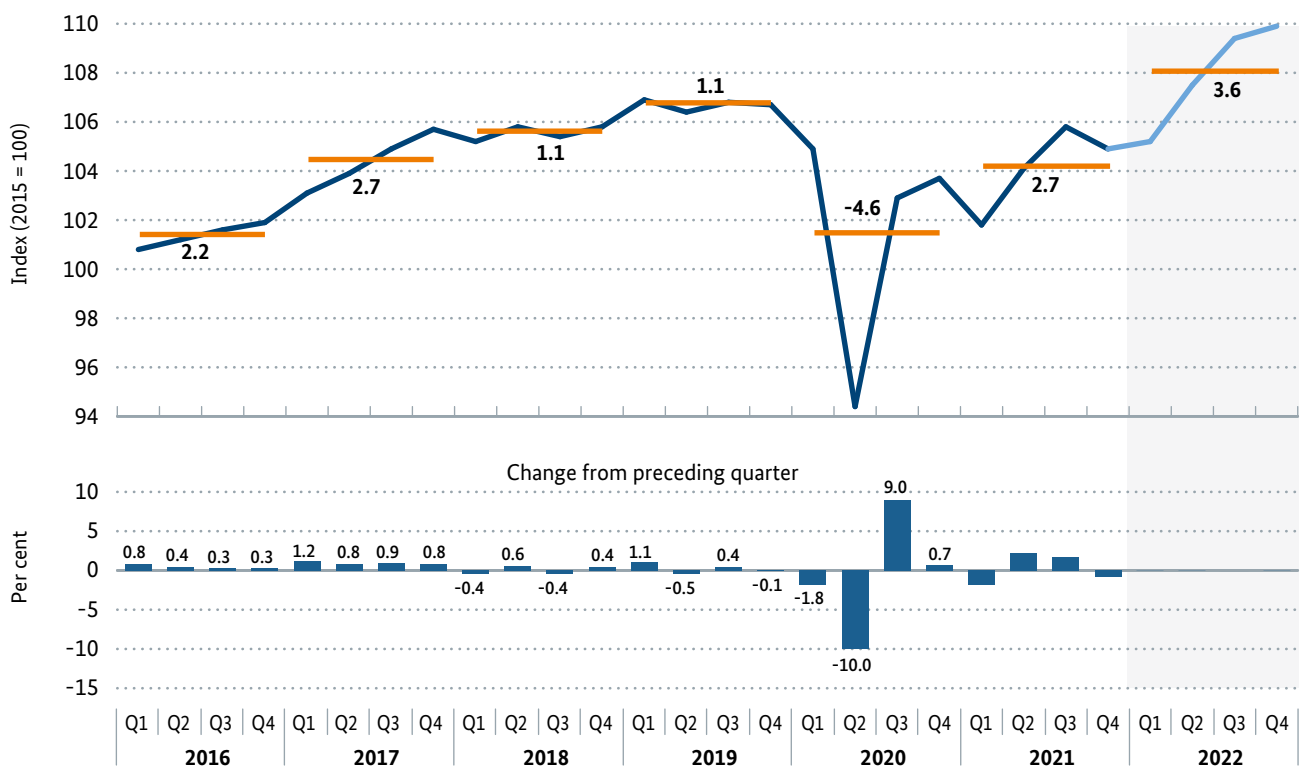
Overview: Weak start to the year, strong economic recovery later in the year

279. 2021 was another turbulent year for the German economy. Whilst the first half of the year was dominated by the pandemic and the measures taken in response to it, the progress on vaccinations and the seasonal nature of the rate of infections enabled almost all sectors of the economy to recover in the summer. At the same time, however, the economic development was also increasingly affected by supply-side bottlenecks and shortages of materials, which particularly hit the manufacturing sector. The autumn saw a renewed substantial rise in the rate of infections. As a consequence,

the economic recovery experienced a significant set-back in the final quarter. All of this means that Germany's price-adjusted gross domestic product expanded at a rate of 2.7% in 2021.

Overall for 2022, the Federal Government expects an annual average increase in gross domestic product (GDP) of 3.6% in price-adjusted terms. Here, the economic output in the first quarter will probably continue to be affected by the pandemic and the related restrictions, particularly in the services sector. Going forward, the cyclical recovery is likely to pick up speed again following the expected drop in the rate of infections and the related removal of restrictions. The industrial sector is also likely to be

Diagram 12: Gross domestic product (price-adjusted)



Blue line: Quarterly development in pre-year prices, adjusted for seasonal and calendar-day effects
 Orange lines: Annual averages, in pre-year prices; changes from preceding year in per cent
 Blue columns: Changes in per cent, adjusted for seasonal and calendar-day effects

Sources: Federal Statistical Office; annual projection by the Federal Government.

able to substantially expand its output once the supply-side problems gradually disappear over the course of the year.

280. Global economic output will expand further this year, albeit at a somewhat slower pace than last year (which had been characterised by a bounce back from 2020). In this context, the high level of orders on the books suggests that German exports should again increase significantly, and this in turn should trigger increased investment activity by companies later in the year.

In annualised terms, gross fixed capital formation should rise again appreciably this year following the anticipated reduction in infections and the softening of the related supply bottlenecks. Investment in construction will also rise further and give

a boost to the German economy, although the development of the price level of construction materials is likely to slow this rise.

It is good to see that the recovery on the labour market continued last year despite the cyclical weakness in the industrial sector due to the supply shortages and despite renewed restrictions in the services sector. This development is likely to continue this year, although the rate of the recovery will probably lessen as the pre-crisis level is reached over the course of the year. The related rise in employment and higher wages will enable consumer spending to grow strongly. Public-sector consumption is likely to remain at its high level in real terms.

Overview 1: Selected key indicators of overall economic development in the Federal Republic of Germany¹

	2020	2021	Annual Projection 2022
Change as compared to preceding year in %, unless indicated otherwise.			
FORMATION of gross domestic product (GDP)			
GDP (adjusted for price)	-4.6	2.7	3.6
Gainfully active (domestically)	-0.8	0.0	0.9
<i>Unemployment rate in % (as classified by Federal Employment Agency)²</i>	5.9	5.7	5.1
USE of GDP in price-adjusted terms (real)			
Consumer spending and priv. non-profit organisations	-5.9	0.0	6.0
Machinery and equipment	-11.2	3.2	4.1
Buildings	2.5	0.5	1.0
Domestic demand	-4.0	1.9	3.9
Exports	-9.3	9.4	5.5
Imports	-8.6	8.6	6.3
<i>External component (momentum)³</i>	-0.8	0.9	0.0
Gross wages and salaries per employee	-0.1	3.2	3.7

Sources: Federal Statistical Office; The Federal Government's 2022 Annual Projection.

1 Until 2021, preliminary calculations by the Federal Statistical Office, as of January 2022.

2 Among all gainfully active persons.

3 Total changes in stocks/foreign contribution in % of GDP of the preceding year (= contribution to GDP growth).

Overview 4: Technical details of the annual projection 2022

	2020	2021 ¹	2022
In percent or percentage points			
GDP rate as an annual average	-4.6	2.7	3.6
Statistical overhang at the end of the year ²	2.2	0.7	1.8
Development over the year ³	-2.9	1.2	4.8
Average annual GDP rate, adjusted for work days	-4.9	2.7	3.7
Effect of the number of calendar days ⁴	0.4	0.0	-0.1

Sources: Federal Statistical Office; the Federal Government's 2022 Annual Projection.

- 1, Up to December 2021: preliminary calculations by the Federal Statistical Office.
- 2, Index adjusted for season and calendar days in Q4 of the preceding year as compared to the quarterly average (adjusted for calendar days) of the preceding year.
- 3, Rate of annual change in Q4, adjusted for season and calendar days.
- 4, In % of GDP.

Total sums may be affected by rounding differences.

Overview 5: Contributions to GDP growth

	2020	2021	2022
Year-on-year contributions to growth (in %)			
Gross domestic product (growth) = (1)+(2)+(3)+(4)	-4.6	2.7	3.6
(1) Consumer spending	-3.0	0.0	3.0
(2) Public-sector spending	0.7	0.8	0.0
(3) Gross investment	-1.4	1.1	0.7
(3a) Changes in stocks	-0.9	0.7	0.1
(3b) Gross capital investment	-0.5	0.3	0.6
Investment in construction	0.3	0.1	0.1
Machinery and equipment	-0.8	0.2	0.3
Other capital investment	0.0	0.0	0.2
Domestic demand 0 (1)+(2)+(3)	-3.7	1.9	3.6
Exports of goods and services	-4.3	4.1	2.6
Goods	-3.1	3.5	1.7
Services	-1.3	0.6	0.9
Imports of goods and services	3.5	-3.2	-2.6
Goods	1.5	-2.4	-1.3
Services	2.0	-0.8	-1.3
(4) External contribution	-0.8	0.9	0.0

Sources: Federal Statistical Office; own calculations.

281. The Federal Government's annual projection for 2022 is below the November 2021 forecast by the GCEE. The GCEE predicted growth of 4.6% for 2022. However, the increased rate of infections, which the Council had been unable to factor in, means that the impact on dynamism, also in the services sectors, will have been greater in the first quarter of 2022. In principle, the assessments are similar: both the annual projection and the Council's forecast expect strong impetus for growth to come from consumer spending in 2022.

282. The 2022 annual projection is based on the following assumptions:

- The price for Brent crude oil will rise slightly to around USD79 a barrel as an average for 2022. This is derived from futures prices.
- The exchange rates in the projection period are assumed to be constant at their respective averages of the last six weeks before the production of the projection. This produces a euro rate of around USD1.13, or a depreciation of just under 4.5% from last year.
- The interest rate for main refinancing transactions of the European Central Bank will remain constant at 0.00% until the end of the projection period.

283. In the view of the Federal Government, and given the assumptions cited above, the underlying course indicated by the annual projection is the most likely development of the German economy. Nevertheless, the estimate does involve major uncertainties. The main risks are assumed to lie in the future development of the pandemic, which might make further-reaching containment measures necessary than assumed. It is also possible that

longer restrictions and supply problems, particularly in the context of global infection rates and the responses to the pandemic in other countries, could have a stronger negative effect on economic output in the manufacturing sector. Should inflationary pressure increase, the central banks could feel the need to adopt a more restrictive policy than has been assumed. Other potential risks result from high debt levels in the corporate sector across the world, high levels of sovereign debt, and potential bubbles forming on the financial and real-estate markets. If the supply problems are resolved and the pandemic is tackled more quickly than anticipated, there are prospects of a generally better macroeconomic development than expected. Also, in view of the high levels of savings in the last two years, the degree of pent-up consumer demand could be greater than assumed in the annual projection.

Global economy slower but on track for recovery

284. Following last year's recovery, this year is also expected to see a rise in global economic output. The Federal Government expects a corresponding price-adjusted year-on-year expansion of 4.9%⁴, following growth of an estimated 5.9% last year.

The simultaneous pick-up in economic activity all around the world, repeated regional halts to output, and disruption to logistics resulting from the pandemic caused shortages in supplies of key intermediate goods and raw materials, and these are still impacting the upswing at the beginning of the new year. The Federal Government assumes that these shortages can gradually be addressed in the course of 2022, which should also alleviate related price pressures.

4 GDP of the global economy calculated on the basis of purchasing power parities.

The expectation for the eurozone is that the economy will continue to suffer in the first quarter of 2022 due to the rate of infections from the Omicron variant in particular. As further progress is made on vaccinations, if the rates of infection fall as anticipated, and as this leads to gradual relaxations in the restrictions, the economy is likely to start growing again from the spring. Additional momentum for the European economy is coming from the fiscal-policy measures taken by the Member States and the EU. The persisting expansive course in monetary policy continues to facilitate low-cost financing options. Unemployment has now come closer to the level seen before the pandemic. A clear overall increase (+4.2%) in economic output in the eurozone is expected for 2022.

U.S. gross domestic product exceeded its pre-pandemic level as early as the second quarter of 2021. The rapid expansion was also facilitated by a stimulus programme of unprecedented dimensions. The development also went hand-in-hand with substantially higher inflation rates. It looks as though prices will remain dynamic in 2022. This is likely to put the brakes on consumer spending. In view of this, the Federal Reserve announced interest rate rises last year. Overall, the United States is expected to see lower real GDP growth than last year. This year's rise is expected to amount to 4.0%.

Economic development in the developing and emerging economies is also dominated by the pandemic. Following a significant setback last year, China is expected to see growth at pre-COVID levels. In contrast, India, Russia and Brazil are at different stages of recovery from the slump. For the emerging economies in general, the Federal Government expects to see growth of 5.1% in 2022, following real GDP expansion of 6.4% in 2021.

Continued strong growth in German foreign trade

285. The appreciable pick-up in global economic activity was reflected last year in a rise in German exports. In view of the supply issues, price-adjusted exports were unable to return to their pre-crisis level. A boost to the ongoing recovery in exports is deriving from the effective exchange rate of the euro, which has depreciated significantly in recent months. Also, the announcements that monetary policy in the U.S. will be tightened are likely to result in a further depreciation of the euro against the dollar. Overall, exports of goods and services are set to rise considerably once again this year, by around 6.3%, following an expansion of 8.6% in 2021. As the supply problems are increasingly resolved, imports will also rise considerably, not least in order to serve the high level of domestic demand. Also, travel and tourism are expected to recover, and this will generate increased imports and exports of services. For this reason, imports are also predicted to rise sharply, by around 7.1% (2021: +9.2%). Expectations on the financial markets suggest that energy and raw materials prices will gradually fall over the reference period. Despite this, prices of imports are likely to rise by considerably more than prices of exports in 2022. The terms of trade will only deteriorate slightly following the substantial worsening in them last year.

Due to the strong domestic demand, imports will grow more than exports during the reference period. The current account surplus will remain at 6.5% this year, the same level as last year. Since its high-point in 2015 (8.6%), the current account surplus has been declining. The surplus has diminished significantly with regard to the other EU countries in particular. The balance on the current account is largely influenced by factors which cannot be steered directly via economic and fiscal policies. It is primarily the result of market-based sup-

ply and demand decisions by companies and private consumers on the global markets. At the same time, the German current account surplus is also an expression of the high level of competitiveness of the German economy and the way its product portfolio is oriented to capital goods.

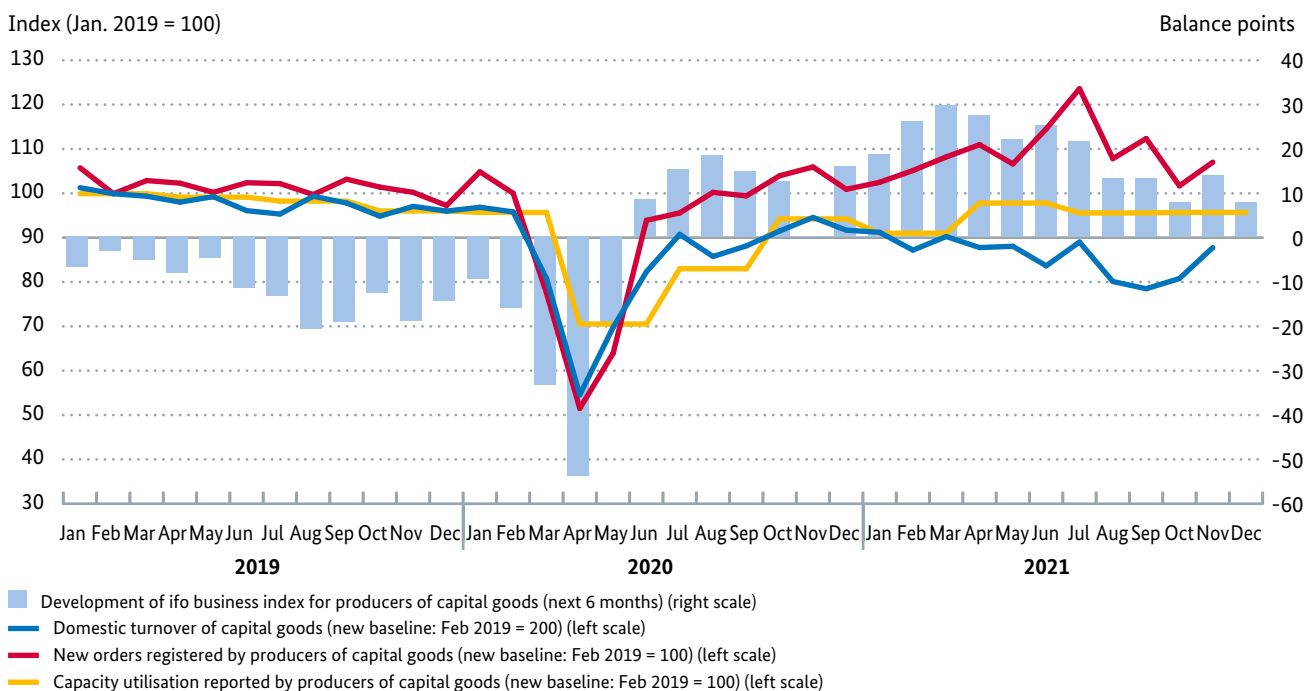
Investment to grow significantly following slow start

286. For 2022, the Federal Government expects overall gross fixed capital formation to rise by 2.6%. This means that investment will expand rather faster than last year (2021: 1.3%). An important driving force for growth over the course of the year is likely to derive from the reduction in uncertainty related to the pandemic which is stifling investment. On top of this, there will be the additional investment relating to the transition to an ecological and social market economy which is

more focused on digitisation. The additional funding in the Energy and Climate Fund will also bolster investment. However, the current supply issues are hampering the producers of capital goods, so that gross fixed capital formation is not expected to return to pre-crisis levels until later in the year. The investment rate – i.e. nominal gross capital formation as a percentage of GDP – will increase to 22.1% in 2022.

287. Sentiment amongst the producers of capital goods has tended to worsen over recent months (cf. Diagram 13). For example, following an all-time high in mid-2021, the level of new orders has returned to its pre-crisis level. Domestic sales of capital goods also fell in 2021; due to the global supply problems, they are still well below their pre-crisis level. As long as the companies' output continues to be hit by a lack of input, they will postpone the purchase of new machinery. This is

Diagram 13: Indicators for investment in plant and equipment



Sources: Federal Statistical Office; ifo Institute; own calculations.

resulting in a rather slow development in investment in machinery and equipment at the beginning of 2022. However, assuming the supply issues gradually diminish, investment activity is expected to pick up speed from the middle of the year. Brighter prospects are also expected to be rooted in the continuing favourable financing conditions and the positive domestic economic outlook.

The close link that exists between German investment activity in machinery and equipment and the development of foreign trade is expected to have a decisive impact on the rebound of investment activity. This is because a large portion of investments is made by capital-intensive and export-driven industrial companies. Here, the ongoing recovery in world trade and the global industrial economy is likely to generate a tangible upswing.

An important role will also be played by the realisation of projects which were put aside during the pandemic in 2020 and 2021. The situation here varies from sector to sector: in the case of manufacturers of electrical equipment and data, electronic and optical equipment, sales are already exceeding pre-crisis levels. These sectors have benefited from the shift in demand caused by the pandemic, and started stepping up their investments last year. In the automotive and mechanical engineering sectors, in contrast, turnover remains below the pre-crisis level, and this suggests that a potentially large amount of pent-up investment will be realised this year if turnover continues to rise. The automotive sector in particular is also facing a need for additional investment as it restructures its product range away from internal combustion engines to electric mobility. In overall terms, too, additional investment in climate action is likely to boost investment in machinery and equipment. Against this background, the Federal Government is anticipating growth in investment in machinery and equipment of 4.1% this year (after 3.2% in 2021).

288. Last year, growth in investment in construction was weaker than the year before that (+0.5%). The reason for the weaker performance was a shortage of and a rise in the price of materials, which particularly affected the construction industry. There was a record rise in the deflator for construction investment in 2021 (+8.3%). This year is also expected to see a dynamic development in the price level (+7.1%). This will slow the development of investment in construction in real terms. It will continue to benefit from the favourable financing conditions and the high demand for accommodation, particularly in the conurbations, but it is expected that the shortage of materials will persist on the supply side. Also, the level of new orders in the construction sector indicates a high and stable level of demand, and capacity utilisation remains high. These circumstances will give a further push to construction prices in the reference period.

Within the construction sector, residential construction outpaced overall investment in construction in 2021. Investments in this area thus continued the uninterrupted trend seen since the financial market crisis of 2008/09. Above-average growth (+2.0%) is also expected during the reference period, although the development in residential construction will be hampered by the high construction prices and ongoing supply bottlenecks. In line with the coalition agreement, a stimulus can also expect to come from public-sector construction.

Robust recovery on the labour market

289. The slump on the labour market caused by the COVID-19 pandemic was quickly followed by a robust recovery in 2021. Gainful employment picked up pace substantially in the course of last year, even if the statistical underhang meant that this did not really find expression in a rise in the annualised figure for 2021. There was a small increase of 7,000 people. This year is expected to see a sharp expansion, by 425,000 people, as a

result of the continuing economic recovery. The pre-crisis level of employment (fourth quarter of 2019) should be reached in mid-2022.

Registered unemployment had already fallen considerably in 2021 (82,000 people; average unemployment rate 5.7%). As the economic recovery continues, this development will persist into this year (240,000). The rate of unemployment is predicted to fall by 0.6 percentage points to 5.1% in 2022.

The instrument of short-time work was able to substantially alleviate negative effects on the labour market throughout the pandemic. At the same time, the number of people on short-time work declined clearly as an average for 2021. It seems likely, though, that increased use will again be made of this instrument in the winter. This is because of limitations on output in the manufacturing sector caused by supply chain disruption and the increased use of short-time work in the services sector due to new measures to curb the rate of infections. The use of short-time work should then decline considerably later in the year.

The improvements on the labour market are mainly being driven by a rise in jobs subject to social security contributions. The removal of restrictions in the field of consumption-related services has also led to a rise in people in marginal employment since the middle of last year. There were further falls in the number of self-employed persons. However, this year is only likely to see a small drop in the number of the self-employed.

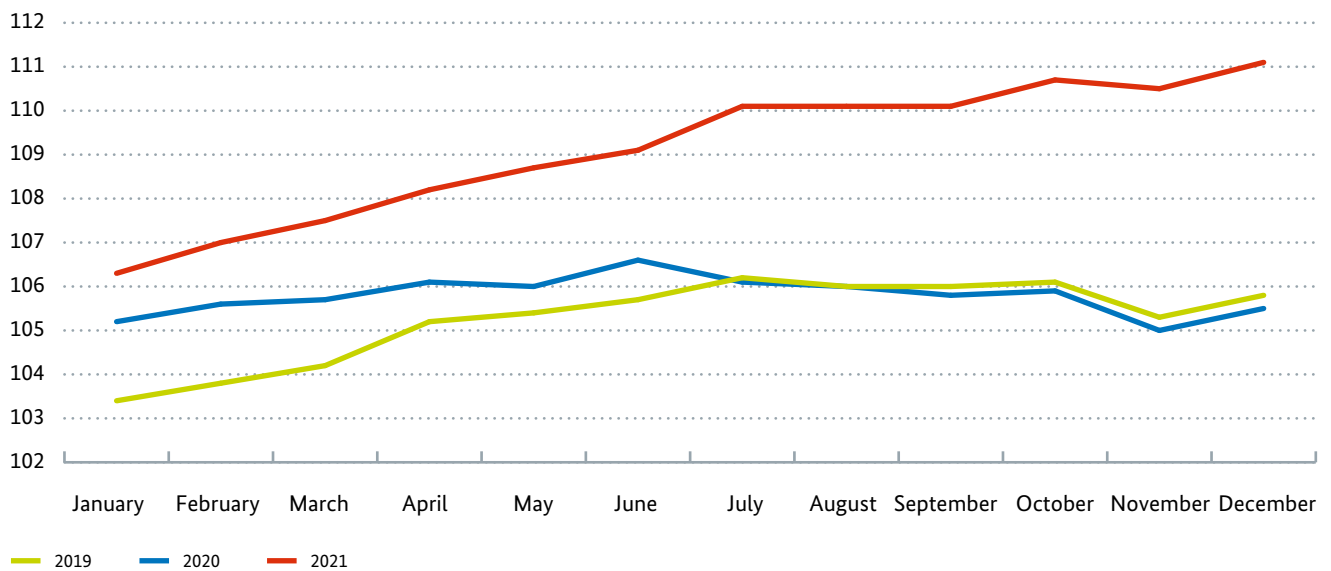
High inflation rate: gradual improvement only later in the year

290. The rise in the level of consumer prices in Germany grew appreciably in 2021, to an annualised figure of 3.1% (2020: 0.5%). This means that the inflation rate was well below the European Central Bank's target for the entire eurozone in 2020, and

well above it in 2021. This development was driven by a number of special factors. In addition to supply-side effects, prices were pushed up by strong global demand for fossil fuels. The second half of 2020 had seen lower consumer prices in year-on-year terms due to the cut in VAT rates. In contrast, the pre-year basis was lowered by the reduced VAT rates for six months of 2021, and the inflation rate was correspondingly higher in 2021. The effect on inflation deriving from prices of energy, imports and raw materials was similar. Following the outbreak of the pandemic in spring 2020, these prices had initially fallen considerably due to a slump in demand, and they subsequently rose very clearly as the global economy picked up speed. If the development of the consumer price index is compared for the years 2019 to 2021 (cf. Diagram 14), it can be seen that the price level dropped clearly in the second half of 2020 in particular. As a consequence, the distance between the price level in the second half of last year and that of the preceding year was comparatively great.

These special factors are likely to play much less of a role this year. The prices of oil futures on the financial markets are indicative of a softening. The effect of carbon pricing in the sectors of transport and buildings at the beginning of 2022 is much smaller than it had been when it was introduced at the start of 2021. The reduction in the EEG surcharge to fund renewable energy will have a tangible impact on lowering prices. A central factor driving prices this year is, however, once again the supply-side constraints (cf. Box 6). The situation is expected to improve incrementally in the course of 2022. Until then, however, the companies are likely to raise prices considerably, partly due to the high level of demand for their products, and partly due to the much higher input prices. Also, there will be higher rates of increase in energy prices in the first half of the year in year-on-year terms, because the rise in prices only set in during the course of 2021. All in all, it is expected that the rise in the consumer price

Diagram 14: Consumer price index from 2019 to 2021



Source: Federal Statistical Office.

level will again be significant this year, at an annualised figure of 3.3%. The core inflation rate expected for 2022, which ignores the highly volatile prices for food and energy, stands at 2.4%. Due to changing consumption patterns, the consumer spending deflator will rise by 3.0%, a little less than overall consumer prices.

The Federal Government is keeping an eye on the development in the inflation rate and the main factors driving prices, particularly on the energy markets and resulting from the supply chain disruption.

Box 6: How long will the German economy continue to suffer from supply problems?

Following the first lockdown in 2020, an economic recovery set in and boosted demand simultaneously all around the world, a process that was coupled with global shutdowns in production lines and restrictions on trade in goods due to the pandemic. This resulted in persistent shortages of raw materials and intermediate products. Highly synchronised transport mechanisms got out of joint. At the beginning of last year, these supply problems were restricted to a few categories of goods. In the course of the year, a growing number of goods and raw materials became more scarce.

The ifo Institute provides regular updates from its survey of industry, construction and trade about this and about the sectors and products which are particularly affected.

These suggest that the bottlenecks cannot be overcome as quickly as initially expected. Last November, manufacturing companies expected the problems to persist for an average of eight months, but the range of forecasts was very wide: some firms suggested the problems would take two years to overcome. The most frequently

cited figure was six months. The two key sectors of the automotive industry and mechanical engineering cited an average of 8.5 and 8.2 months respectively. On average, the retail trade was anticipating supply issues for another nine months, whilst the majority agreed with industry that six months would be needed. So the ifo data suggest that the supply problems will diminish appreciably in the course of the year.

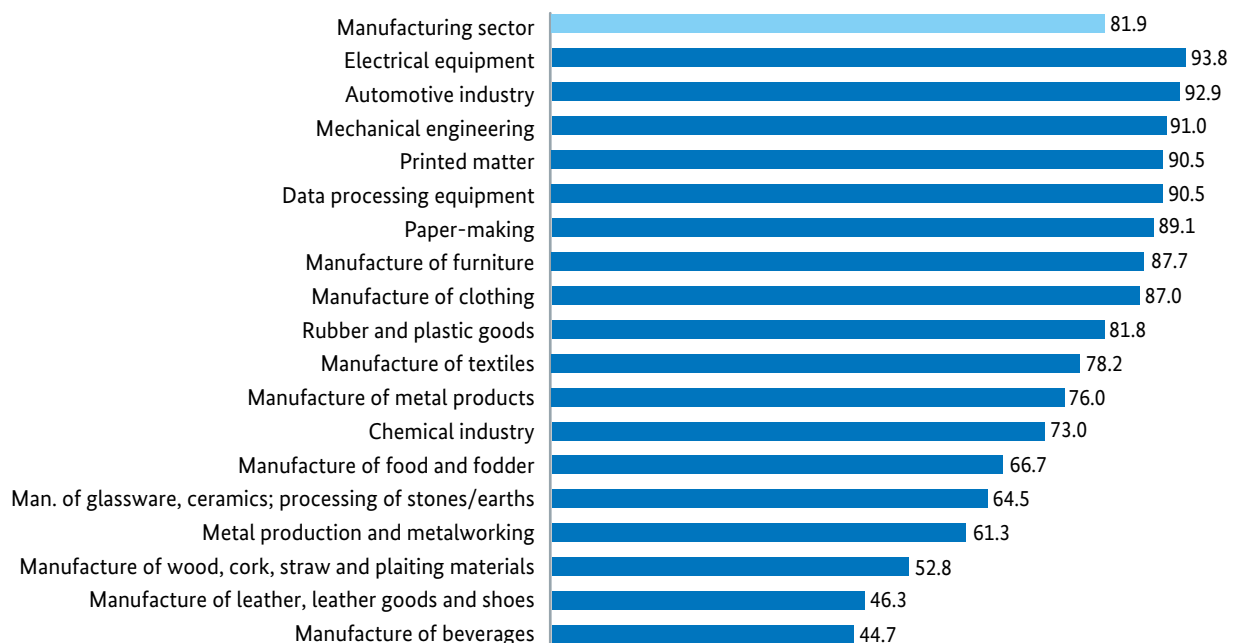
In the industrial sector, the vast majority of companies – nearly 82% – complained that their production processes were suffering from bottlenecks and problems with the supply of upstream goods. This is a very high figure in the historical comparison. Since the surveys of this issue began in 1991, it has been rare for the figure of 15% to be exceeded when the economy is growing or booming.

Also, a clear majority of companies are suffering from a shortage of materials:

in the automotive industry, production capacities are significantly underutilised, primarily due to problems with the supply of semiconductors, and electronic components are also lacking in many other sectors of industry. There is a widespread shortage of metal products like steel and aluminium as well as copper and magnesium. The chemical industry is suffering from a lack of raw materials and pigments, resulting in turn in a scarcity of granules for rubber and plastic production. There is also a general lack of packaging materials because not enough plastics and timber are available.

The impediments to industrial output were also felt in the retail sector. Furthermore, many consumer goods were affected by the logistics problems on the world's seas, e.g. because they are imported from Asia. Furthermore, there are higher freight costs for the transport of goods, especially from Asia to Europe. In November, almost 78% of retailers were complaining that they were unable to receive all their orders on time. A lack of computer chips particularly affected electronic components and electric bicycles and cars. There is also a shortage of many toys at present.

Scarcity of upstream products in manufacturing sector (in per cent)



Source: Federal Statistical Office.

The pandemic has also caused shortfalls of materials in the construction sector. In July of last year, more than 46% of firms were complaining about problems with supplies. Once again, this was the highest figure since 1991. The situation has improved in some respects since July. The price of timber had risen dramatically in the spring, but recent figures show a clear softening.

As a consequence of the problems with materials and supplies, many firms are passing on the resulting increase in purchase prices to their customers. This is reflected in the ifo's surveys of the companies' expectations of prices.

The findings made by the ifo Institute largely coincide with a survey by the Cologne Institute for Economic Research undertaken in November 2021. Here, three-quarters of German firms reported that production was lost because of a lack of upstream products. They felt that the situation will improve in the second half of 2022. The survey by IHS Markit/BME, which also highlights the significance of supply chain disruption for production problems, arrives at similar findings.

Cyclical recovery boosts incomes

291. Against the background of the economic problems caused by the pandemic, the collective wage agreements were very moderate in 2021. In the course of the economic recovery, collective wages are expected to grow somewhat more strongly this year, but they are not likely to rise beyond the level seen before the pandemic this year. There are no signs at present of a wage-price spiral.

Actual wages are likely to rise somewhat more strongly in 2022 given that the economic recovery is likely to go hand in hand with earnings not covered by collective wage agreements. Further to this, the average reduction in short-time work and the planned rise in the minimum wage will cause a positive wage drift in 2022. Consequently, gross wages and salaries per employee (actual earnings) will rise by 3.7% and therefore more strongly than earnings subject to collective wage agreements.

Since employment already recovered last year, the macroeconomic payroll also rose; it is likely to grow by another 4.8% this year. Net wages and salaries are also likely to rise sharply. Given the expected economic development, incomes generated by self-employed persons and private-house-

hold incomes from assets should also grow (2022: +9.6%). The macroeconomic development suggests that disposable incomes of private households will expand sharply this year, by 4.4%. This year is also expected to see clear growth in consumer spending, of 6.0%. The reasons for this are developments in income and a reduced savings rate.

Public-sector consumption remains at high level

292. In 2021, public-sector consumption expanded very dynamically once again, by 3.4%, against the background of the efforts to tackle the pandemic. The many measures taken to support businesses (cf. Items 38 ff.) and additional spending on health were the main driving forces behind this rise. The expectation is that public-sector consumption will remain at this high level in real terms this year. The public-sector deficit in 2021 stood at 4.3% in terms of nominal gross domestic product, the same level as in 2020. This year, the expected economic growth and correspondingly higher tax revenues, and the expiry of temporary pandemic-related increased spending, should result in an improvement in the overall balance of public finances. The impact of the implementation of the coalition agreement will be specified in greater detail when the government's draft 2022 budget is produced.

Overview 6: Key figures of the 2022 annual projection

Macroeconomic trends in the Federal Republic of Germany ¹	2021	Annual projection 2022
Percentage change on preceding year, unless otherwise stated		
Gross domestic product (GDP). Output approach		
GDP (real)	2.7	3.6
Total employment	0.0	0.9
GDP per employee	2.7	2.7
GDP per hour worked	0.8	0.7
<i>for information:</i>		
<i>Unemployment rate in % (ESA concept)²</i>	3.2	3.1
<i>Unemployment rate in % (Federal Employment Agency definition)²</i>	5.7	5.1
GDP by expenditure (at current prices)		
Consumption expenditure		
Private consumption expenditure	3.1	9.1
Public consumption expenditure	6.6	2.0
Gross fixed capital formation	6.4	7.3
<i>Change in stocks (€ billion)</i>	<i>11.8</i>	<i>18.1</i>
Domestic demand	5.8	7.1
<i>Foreign balance of goods and services (€ billion)</i>	<i>204.3</i>	<i>200.6</i>
<i>Foreign balance of goods and services (as % of GDP)</i>	5.7	5.3
<i>Current account balance (in % of GDP)</i>	6.5	6.5
Gross Domestic Product (nominal)	5.8	6.6
GDP by expenditure (real)		
Consumption expenditure		
Private consumption expenditure	0.0	6.0
Public consumption expenditure	3.4	0.0
Gross fixed capital formation	1.3	2.6
Machinery and equipment	3.2	4.1
Construction	0.5	1.0
Other plant and equipment	0.7	4.8
<i>Stockbuilding (GDP growth contribution)³</i>	<i>0.7</i>	<i>0.1</i>
Domestic demand	1.9	3.9
Exports	9.4	5.5
Imports	8.6	6.3
<i>External balance of goods and services (contribution to GDP growth)³</i>	<i>0.9</i>	<i>0.0</i>
Gross Domestic Product (volume)	2.7	3.6
Prices (2015 = 100)		
Consumer price index	3.1	3.3
Private consumption expenditure	3.0	3.0
Domestic demand	3.8	3.2
Gross Domestic Product ⁴	3.1	2.9
Distribution of gross national income <i>(resident concept)</i>		
Compensation of employees	3.4	4.7
Income from self-employment and property	15.4	7.3
National income	6.6	5.4
Gross national income	6.0	6.8
<i>for information (resident concept):</i>		
Employees	0.2	1.0
Total gross wages and salaries	3.4	4.8
Total gross wages and salaries per employee	3.2	3.7
Disposable income of private households	1.8	4.4
<i>Savings ratio in⁵</i>	<i>15.0</i>	<i>11.0</i>

Sources: Federal Statistical Office; the Federal Government's 2022 Annual Projection.

- 1 Up to 2021 figures from the Federal Statistical Office; National Accounts status: January 2022.
- 2 In relation to the total labour force.
- 3 Absolute change (stocks/external balance) in per cent of pre-year GDP (=contribution to change in GDP).
- 4 Unit labour costs, percentage change on preceding year: 2021: 0.5 %; 2022: 0.8 %.
- 5 Saving in per cent of private households' disposable income including occupational pension claims.

Box 7: Review of the 2021 Annual Projection

According to provisional annual figures from the Federal Statistical Office, price-adjusted gross domestic product grew by 2.7% in 2021. Last year's annual projection had predicted an expansion of 3.0%. Against the background of the increased uncertainty affecting forecasts due to the pandemic, the Federal Government's prediction was slightly too optimistic, but not all that far from the official figure. The reasons for this were as follows:

The annual projection for 2021 was made during the second wave of COVID-19 infections. At the time, contact-intensive services, the hotel, restaurant and catering industry, and the retail trade were subject to a strict lockdown. The 2021 annual projection assumed that this would continue until the end of February, but in fact the continuing rate of infections necessitated an extension until mid-May. The vaccination campaign was only just starting up. In contrast, industrial output had been comparatively dynamic and had not really experienced any problems until the beginning of 2021. The Federal Government therefore assumed that industry would continue to expand and bolster the German economy.

However, the emergence of the supply issues in the course of 2021 resulted in falling industrial output, thus dashing the hopes that had existed at the beginning of the year. In contrast, the services sector developed more dynamically following the end of the lockdown than had been anticipated. The progress on vaccinations did trigger a boom in consumer spending during the summer, and this was able to offset some of the weakness in industry.

However, contrary to expectations, the fourth wave of COVID-19 infections put the brakes on economic activity in the autumn of 2021. Industry continued to be hit by shortages of upstream products, and turnover in the hotel, restaurant and catering industry also fell during the final months of last year. All in all, gross domestic product grew by 2.7%, or three-tenths of a percentage point less than was expected one year ago.

Real consumer spending did not rise as expected in the 2021 annual projection, but stagnated due to the restrictions in place for much of the first half of 2021, the fourth wave of infections and the dynamic development of the price level. At the same time, the recovery on the labour market progressed as expected: gainful employment remained fairly constant, whilst the unemployment rate fell. Wages and disposable household income expanded by less than had been expected a year ago.

Overview 7: Comparison between the 2021 annual projection and actual outcomes

Key figures for macroeconomic trends in the Federal Republic of Germany ¹	Annual projection 2021	Actual outcomes 2021
Percentage change on preceding year, unless otherwise stated		
Gross domestic product (GDP). Output approach		
GDP (real)	3.0	2.7
Total employment	0.0	0.0
GDP per employee	3.0	2.7
GDP per hour worked	0.3	0.8
<i>for information:</i>		
Unemployment rate in % (ESA concept) ²	3.9	3.2
Unemployment rate in % (Federal Employment Agency definition) ²	5.8	5.7
GDP by expenditure (at current prices)		
Consumption expenditure		
Private consumption expenditure	5.3	3.1
Public consumption expenditure	4.0	6.6
Gross fixed capital formation	5.3	6.4
Change in stocks (€ billion)	-52.8	11.8
Domestic demand	5.1	5.8
Foreign balance of goods and services (€ billion)	174.0	204.3
Foreign balance of goods and services (as % of GDP)	5.0	5.7
Current account balance (in % of GDP)	6.3	6.5
Gross Domestic Product (nominal)	4.3	5.8
GDP by expenditure (real)		
Consumption expenditure		
Private consumption expenditure	3.6	0.0
Public consumption expenditure	1.1	3.4
Gross fixed capital formation	3.6	1.3
Machinery and equipment	6.5	3.2
Construction	1.9	0.5
Other plant and equipment	4.1	0.7
Stockbuilding (GDP growth contribution) ³	0.0	0.7
Domestic demand	3.1	1.9
Exports	6.4	9.4
Imports	7.2	8.6
External balance of goods and services (contribution to GDP growth) ³	0.1	0.9
Gross Domestic Product (volume)	3.0	2.7
Prices (2015 = 100)		
Consumer price index	1.5	3.1
Private consumption expenditure	1.6	3.0
Domestic demand	1.9	3.8
Gross Domestic Product ⁴	1.3	3.1
Distribution of gross national income (resident concept)		
Compensation of employees	3.3	3.4
Income from self-employment and property	7.2	15.4
National income	4.4	6.6
Gross national income	4.4	6.0
<i>for information (resident concept):</i>		
Employees	0.2	0.2
Total gross wages and salaries	3.2	3.4
Total gross wages and salaries per employee	3.0	3.2
Disposable income of private households	2.7	1.8
Savings ratio in % ⁵	14.1	15.0

Sources: Federal Statistical Office; 2021; the Federal Government's 2022 Annual Projection.

1 Up to 2021 figures from the Federal Statistical Office; National Accounts status: January 2022.

2 In relation to the total labour force.

3 Absolute change (stocks/external balance) in per cent of pre-year GDP (=contribution to change in GDP).

4 Unit labour costs, percentage change on preceding year: annual projection 2021: 1.8%; actual outcome 2021: 0.5%.

5 Saving in per cent of private households' disposable income including occupational pension claims.

