



Executive Summary

SHAPING THE TRANSFORMATION: EDUCATION, DIGITALISATION AND SUSTAINABILITY

Far-reaching effects of the coronavirus pandemic

Shaping the transformation

Empower the economy for transformation

Create a suitable environment for the transformation

Seize the opportunities of the transformation

1. The global economy increasingly recovers from the coronavirus crisis, although its fallout continues to affect economic development. At the same time, a fundamental **transformation** is needed in order to **shape** a carbon-neutral and digital economy. Domestic action plans and strategies must be developed in a European and global context in order to address the challenges effectively. Lifelong learning and **education** need to be strengthened. Accelerated **digitalisation** can help to reap substantial amounts of untapped potential. **Sustainability** needs to be ensured in various dimensions. Combating climate change successfully calls for international cooperation. Increased private and public-sector investment needs to be mobilised for the transformation and the improvement of productivity. For all the above, fiscal sustainability needs to be assured.

Far-reaching effects of the coronavirus pandemic

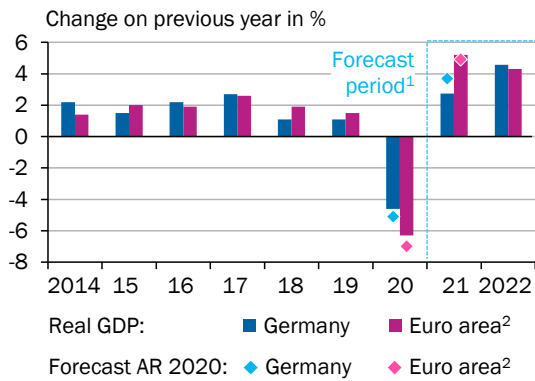
2. This summer, the German economy continued to recover from the impact of the pandemic. **Gross domestic product** (GDP) is likely to reach the level last seen before the crisis, that is in the fourth quarter of 2019, during the first quarter of 2022. ↘ [ITEM 53](#) A variety of bottlenecks on the supply side are disrupting global value chains and, combined with the pandemic-related restrictions that are still in place, are holding back growth. ↘ [ITEM 69](#) In particular, the German Council of Economic Experts (GCEE) expects that some industrial output will be postponed into next year. It is therefore forecasting that Germany's economic output will increase by 2.7 % in 2021 and by 4.6 % in 2022. ↘ [ITEMS 71 F.](#)

Future economic growth is subject to significant **risks**. The return of extensive measures to stop the spread of the coronavirus or persistent supply and capacity bottlenecks could take a heavier toll on the recovery than assumed in the forecast. If the bottlenecks are eliminated more quickly, however, there are **opportunities** for the pent-up consumer and investment demand to produce a more rapid upturn. ↘ [ITEM 51](#)

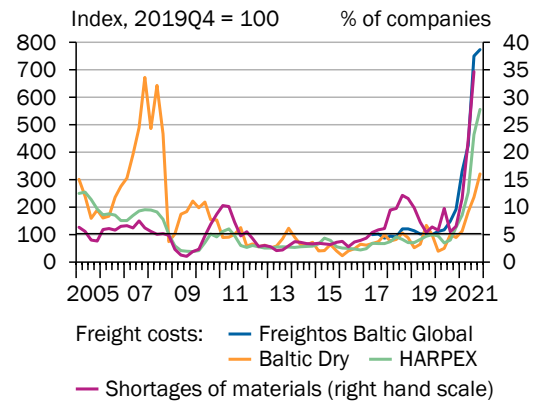
3. The recovery of the global economy has been accompanied not only by supply-side bottlenecks but also by a rise in commodity and energy prices. This has resulted in a sharp increase in **consumer price inflation**, which was already elevated owing to low prices in the previous year and one-off effects. The GCEE predicts an inflation rate for Germany of 3.1 % in 2021 and 2.6 % in 2022. ↘ [ITEM 74](#) Longer-lasting supply-side bottlenecks, higher wage settlements, and rising energy prices pose a risk, however, that what are in fact temporary drivers of prices could lead to persistently higher inflation rates. ↘ [ITEM 49](#)
4. In the labour market, the first half of 2021 saw a rise in **employment** following a decrease in 2020. This was primarily attributable to an increase in jobs that are above the earnings threshold for social insurance contributions. The number of people in marginal employment grew as well, following a sharp decline in 2020, while the number of self-employed persons continued to fall. ↘ [ITEM 77](#) The jump in the number of vacancies this year indicates that demand for workers is returning to normal. ↘ [ITEMS 79 F.](#)

Short- and long-term challenges facing the German economy

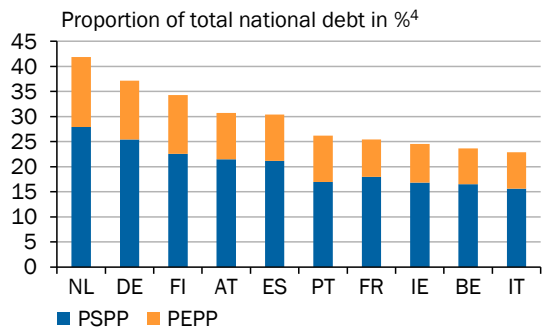
The recovery is being held back by the pandemic-related restrictions that are still in place and...



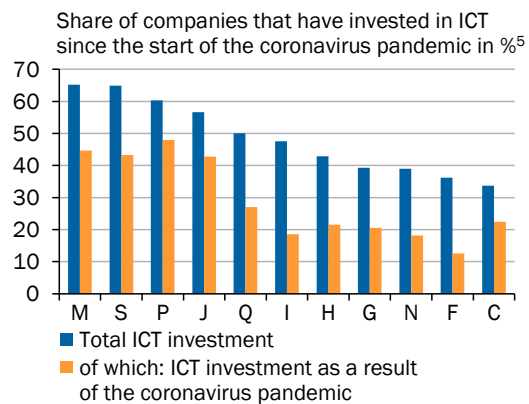
... a variety of supply-side bottlenecks that are disrupting global value chains.³



Expansionary monetary policy has intensified the interdependencies between fiscal and monetary policy.

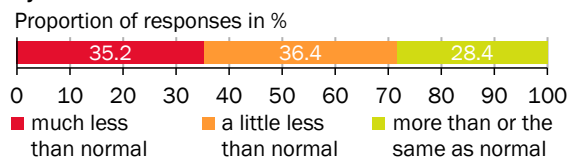


The coronavirus pandemic has brought about advances in digitalisation.

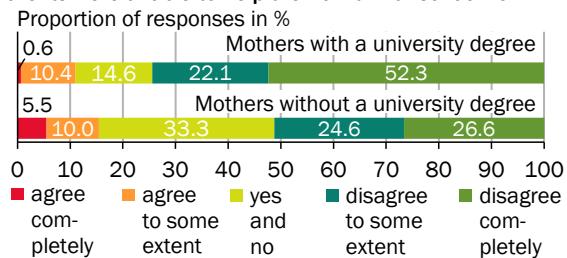


Education is one of the areas worst affected by the pandemic-related restrictions.

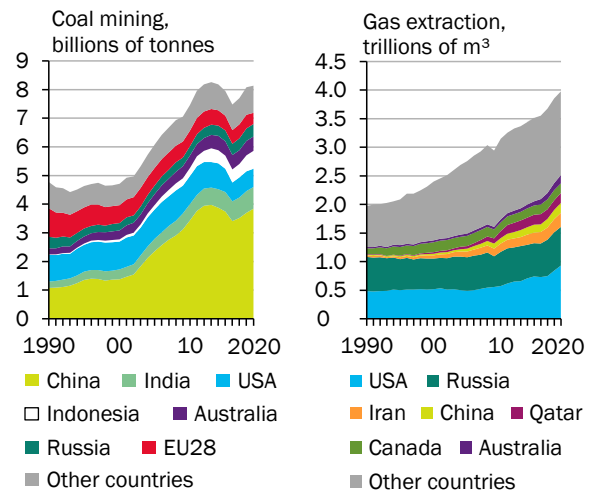
During school closures, the child's learning in the main subjects was...⁶



Parents were unable to help their child with schoolwork...⁷



Climate change must be viewed and addressed as a global challenge.⁸



1 – Forecast by the GCEE. 2 – Forecast based on seasonally and calendar-adjusted quarterly figures. 3 – For details, see Chart 5. 4 – For details, see Chart 53. NL-Netherlands, DE-Germany, FI-Finland, AT-Austria, ES-Spain, PT-Portugal, FR-France, IE-Ireland, BE-Belgium, IT-Italy. 5 – For details, see Chart 101. According to Statistical Classification of Economic Activities in the European Community (NACE Rev. 2). M-Professional, scientific and technical activities, S-Other service activities, P-Education, J-Information and communication, Q-Human health and social work activities, I-Accommodation and food service activities, H-Transportation and storage, G-Wholesale and retail trade; repair of motor vehicles and motorcycles, N-Administrative and support service activities, F-Construction, C-Manufacturing. 6 – For details, see Chart 91. 7 – For details, see Chart 92. 8 – For details, see Chart 134.

Sources: Baltic Exchange, BP (2021), ECB, European Commission, Eurostat, Federal Statistical Office, Freightos, Harper Petersen & Co., IAB, National Educational Panel Study (NEPS): Starting Cohort 2, wave 9 and additional survey on corona pandemic spring 2020 (Blossfeld et al., 2011), own calculations

5. Unlike previous recessions, the coronavirus crisis was characterized by a decline in the reallocation dynamics, as fewer employment contracts were terminated (the main reason for this is probably the special provision for short-time working) and the number of market exits and company insolvencies declined. ↘ ITEM 416 However, the impact of these dynamics on **productivity growth** is still unclear, especially as the crisis also brought about advances in digitalisation and increased the demand for data-driven services that may also lead to greater productivity. ↘ ITEMS 438 FF.
6. As a result of the crisis, earned income fell sharply in 2020, particularly in the lower deciles, and inequality in earned income increased. According to preliminary findings, however, **inequality** in disposable income has not increased due to automatic stabilisers and the discretionary measures implemented. ↘ ITEMS 267 FF. People in marginal employment, low-skilled workers and the self-employed were hit particularly hard by the coronavirus crisis and saw a loss of income. ↘ ITEMS 274 FF.
7. **Education** is one of the areas worst affected by the coronavirus pandemic. Children, students, trainees and apprentices all suffered considerable disruption to their education. This led to significant learning and development gaps, especially for low-achievers and those from socially disadvantaged families. ↘ ITEMS 333 FF. In the vocational training market, the crisis led to an increase in the number of vacant positions and in the number of applicants being unable to secure a place. ↘ ITEMS 291 FF.
8. In this Annual Report, the GCEE discusses various aspects of the sustainability of economic growth. The fiscal policy response to the coronavirus pandemic pushed the government budget balance well into the red and is likely to cause Germany's public-sector debt to increase to 70.6 % of GDP in 2021. ↘ ITEM 85 The bulk of the fiscal policy measures are expiring as the crisis comes to an end. Provided that fiscal policy returns to normal, Germany's **fiscal sustainability** should be assured, particularly as economic conditions are favourable (e.g. low interest rates). ↘ ITEM 107

Achieving **sustainable economic growth** requires long-term strengthening of potential output, which in turn relies heavily on research and development expenditure and on private and public-sector investment. There has recently been a sharp rise in public-sector investment. Further increases are likely in the areas of climate change mitigation and digitalisation against the backdrop of the German government's stimulus package and the European Recovery and Resilience Facility. ↘ ITEM 190 Private investment is also expected to pick up again once the supply-side bottlenecks have been eliminated. ↘ ITEM 76 Greenhouse gas emissions, an indicator of **environmental sustainability**, start to rise again, having temporarily dipped during the pandemic. Global carbon emissions from the burning of fossil fuels are predicted to grow by almost 5 % again in 2021. ↘ ITEM 521

Shaping the transformation

9. In this Annual Report, the GCEE discusses **possible courses of action** for shaping the transformation. The challenge is to empower the economy for transformation, create a suitable environment for the transformation and seize the opportunities of the transformation.

Empower the economy for transformation

10. **Education** for children and young people is crucial if society is to be empowered for transformation in the long-term. The learning and development gaps resulting from the education that they have missed in past months need to be closed in a targeted manner. Measures that could help include greater use of individual and small-group tutoring during and outside of teaching time, non-school mentoring programmes and the increased use of adaptive digital learning software as part of lessons. ↘ ITEMS 343 FF.

Shaping the transformation: possible courses of action

Overview of the action steps discussed in the Annual Report 2021/22

Empower the economy for transformation	Create a suitable environment for the transformation	Seize the opportunities of the transformation
Education <ol style="list-style-type: none"> 1. Reduce learning and development gaps ↘ ITEMS 343 FF. 2. Advance digitalisation in the school system ↘ ITEMS 365 FF. 3. Expand early-years education and childcare ↘ ITEMS 360 FF. 	Macroeconomic environment <ol style="list-style-type: none"> 12. Make public finances more sustainable and crisis-resilient ↘ ITEM 100 13. Communicate a normalisation strategy for monetary policy ↘ ITEMS 181 FF. 	Innovation <ol style="list-style-type: none"> 21. Establish bilateral technology partnerships ↘ ITEMS 583 FF. 22. Improve the conditions for sharing and using data ↘ ITEM 474 23. Digitalise public services ↘ ITEM 203
Education and training, skilled labour <ol style="list-style-type: none"> 4. Embed continuing professional development in the education system ↘ ITEMS 311 FF. 5. Boost the incentives for further training for low-skilled workers ↘ ITEMS 306 FF. 6. Ease the transition to company-based vocational training ↘ ITEM 299 7. Help workers to move between occupations and regions ↘ ITEMS 432 FF. 8. Boost the work incentives for second earners ↘ ITEMS 317 FF. 	European Union <ol style="list-style-type: none"> 14. Deepen the European single market ↘ ITEMS 187 AND 496 15. Ensure technological sovereignty ↘ ITEM 496 16. Implement structural reforms as a part of the EU recovery and resilience plans ↘ ITEM 190 17. Strengthen cross-sectoral, cross-regional carbon pricing ↘ ITEM 614 	Investment <ol style="list-style-type: none"> 24. Create a consistent environment for private investment ↘ ITEMS 195 FF. AND 560 25. Expand public infrastructure for a digital, carbon-neutral economy ↘ ITEMS 198 F. 26. Prioritise public-sector investment in the future ↘ ITEMS 218 AND 234 27. Remove the many different non-monetary obstacles ↘ ITEMS 200 FF.
Start-ups and market exits <ol style="list-style-type: none"> 9. Improve the availability of venture capital ↘ ITEM 427 10. Adjust the insolvency process for smaller enterprises ↘ ITEM 420 11. Provide better insurance for the self-employed ↘ ITEMS 313 FF. 	Transparency <ol style="list-style-type: none"> 18. Strengthen evaluation in the education system ↘ ITEMS 376 FF. 19. Increase the transparency of public-sector spending ↘ ITEMS 205 FF. 20. Evaluate measures that were introduced due to the pandemic ↘ BOX 25 	International cooperation <ol style="list-style-type: none"> 28. Step up international cooperation on climate change ↘ ITEMS 554 FF. 29. Establish standards for measuring and estimating carbon emissions ↘ ITEM 577 30. Increase competition in digital platform markets ↘ ITEM 480

Structural educational policy measures should also be implemented in order to ensure greater equality of opportunity and to improve the education system. ↘ [ITEMS 354 FF.](#) In particular, these include early-years educational measures, reforms to the structure of the school system and spending on staff and their training. Early-years childcare and education should be further expanded, in both qualitative and quantitative terms. Education for children from families with low educational attainment must also be supported. ↘ [ITEMS 360 FF.](#) There also needs to be a push for digitalisation in schools and the development of important skills relating to digital technologies. ↘ [ITEMS 365 FF.](#)

11. Structural change results in a reallocation of workers, i.e. employees moving between firms and between economic sectors. ↘ [ITEM 410](#) Boosting the reallocation dynamics requires empowering workers to make these moves. This can also help to reduce skill shortages and prevent unemployment. **Continuing professional development** (CPD) should increasingly become a firmly established part of working life. ↘ [ITEMS 300 FF.](#) One way to achieve this would be to create a law on continuing professional development in Germany defining the rights and responsibilities of the various parties involved in CPD. When designing adequate incentive systems, the focus should be on low-skilled workers. At the moment, low-skilled workers participate less frequently in CPD than those with higher qualifications, yet are more affected by the ongoing structural changes in the labour market. This calls for the development of a more visible CPD offering, easier access to advice and increased financial incentives. ↘ [ITEMS 301 FF.](#)
12. In the **vocational training market**, the crisis led to an increase in the number of vacant positions and in the number of applicants being unable to secure a place. This suggests that greater effort needs to be devoted to eliminating the imbalances (which existed even before the coronavirus pandemic) in the matching process for available training positions with applicants. ↘ [ITEMS 292 F. AND 293 FF.](#) Further to previously existing programmes by the German federal government, the transition to dual vocational training – especially for low-achieving youngsters – should be eased by offering school-based vocational training prior to entering the dual vocational training market. ↘ [ITEM 299](#)
13. Greater support is also warranted to increase the mobility of workers **between occupations and regions** in order to reduce shortages of skilled workers. This could include increasing the supply of housing in regions where the economy is growing, enabling people to work from home and lifting the requirement to hold specific professional licences. ↘ [ITEMS 432 FF.](#) Alongside a well-developed social insurance system, the availability of suitable skills training and development as well as support for labour mobility can be a significant help in cushioning social hardship. ↘ [ITEM 307](#) The **work incentives** for **second earners** should be boosted in order to further address the shortage of skilled workers, for example by reforming the taxation arrangements for couples (Ehegattensplitting) and expanding childcare provision. ↘ [ITEMS 317 FF.](#)
14. To support structural change and increase the reallocation dynamics, the business environment for **start-ups** and **orderly market exits** needs to be improved. This calls for a greater volume of venture capital to boost the number of

innovative, growth-oriented start-ups. To make this venture capital available, government measures need to be particularly aimed at mobilising private finance. ↘ ITEM 427 The bureaucratic hurdles to establishing a start-up must continue to be reduced. The efficiency of the market exit mechanism for low-productivity firms could be improved through easier access to insolvency proceedings for small companies and more efficient restructuring processes. ↘ ITEM 420

Some **self-employed** workers, in particular, saw their earned income decline during the coronavirus pandemic. Various government measures were quickly implemented during the crisis in order to stabilise the disposable income of the self-employed. So that more self-employed people insure themselves in future, voluntary unemployment insurance could be made more appealing by extending the registration deadline and adjusting the contributions. ↘ ITEMS 313 FF.

Create a suitable environment for the transformation

15. If the transformation is to be efficient, a suitable business environment is essential, in particular a stable and highly **resilient macroeconomic environment**. Following the crisis, fiscal policy needs to return to normal – without jeopardising the economic recovery – so that extensive fiscal measures can be taken in response to any future crises. ↘ ITEM 92 The exemption clause for Germany’s debt brake was rightly invoked in order to create the fiscal flexibility needed to overcome the crisis. According to the latest forecasts, this will no longer be needed from 2023 at the latest. Moreover, the funding of fiscal stabilisation measures was also immediately made possible during the crisis by flexibly applying the European fiscal rules through use of the general exemption clause. The GCEE has put forward for discussion two different approaches to further applying and potentially reforming Europe’s current fiscal rules. ↘ ITEMS 116 FF. AND 130 FF.

For monetary policy to be able to continue to focus primarily on maintaining price stability and thereby contribute to lasting economic growth, fiscal policy must ensure the sustainability of public finances. ↘ ITEM 152 The central bank should promptly communicate its strategy for ending its very expansionary monetary policy measures in order to prepare the fiscal policy of the member states and the financial markets for less expansionary monetary policy. ↘ ITEMS 181 FF.

16. The further deepening of the **European single market** is also highly important for the transformation, in particular to encourage innovation. It will help to promote the spread of business models in the data economy and of technologies that combat climate change in Germany and elsewhere in Europe. For example, secure data access and trading and – in view of the growing trend towards concentration – effective and fair competition in digital markets need to be ensured, as is intended with the Digital Markets Act. ↘ ITEM 480 To address cyber-risk, which is increasing as the data economy becomes more important, there should be a drive to establish an EU-wide, standardised certification system for cybersecurity. ↘ ITEM 500 Moreover, better consumer protection standards are required on online marketplaces so that consumers can make informed, rational decisions. ↘ ITEM 495

Technological sovereignty has become a more frequent motive for economic policy initiatives. However, such efforts must not call cross-border specialisation advantages or the international division of labour into question. Competition, combined with European and international collaboration, is the only way to ensure unrestricted access to technologies and the freedom to develop and use them as required. ↘ [ITEM 496](#) When it comes to climate policy too, the primary aim must not be independence with regard to energy supply. Rather, renewable energies open up the opportunity for a country to diversify its energy dependence internationally. ↘ [ITEM 549](#)

17. The EU established the **Recovery and Resilience Facility** (ARF) in order to help member states weather the coronavirus crisis. ↘ [ITEMS 190 FF](#). The ARF provides member states the chance to emerge from the crisis with greater resilience and higher long-term growth and to be better equipped for the future. In addition to the provision of funding, the focus on reforms in all EU member states will now take on an important role. The contribution to the transformation will depend heavily on the extent to which the announced structural reforms are implemented efficiently in the recovery plans. The European Commission should strive to ensure this when disbursing the funds. ↘ [ITEM 194](#)

The investment in a carbon-neutral economy under the ARF should be accompanied by the strengthening of **carbon pricing** at European level. An expanded European Emissions Trading System (EU ETS) could provide a cross-sectoral, cross-regional price signal aimed at cutting greenhouse gas emissions in the EU. It could also serve as a starting point for international cooperation on climate change, for example as part of a climate club. ↘ [ITEM 614](#)

18. Shaping the transformation effectively, requires economic policy measures to be based on scientific evidence. This highlights the need for greater **transparency** and scientific evaluation in many areas so that voters can judge the impact of policy measures. For example, Germany could benefit from the competition between the education systems of its individual federal states if transparency is increased by stepping up evaluation. This requires improved, more accessible infrastructure for education data and better comparability of the different types of qualification and assessment of educational achievement. ↘ [ITEMS 376 F](#). It is also important that detailed data on the measures introduced during the coronavirus pandemic is made available and evaluated without delay. For example, analysis of the effectiveness of the support measures could be carried out that would then strengthen the evidence base for future policy measures. ↘ [BOX 25](#) To support public debate about the setting of priorities for public investment, there needs to be greater transparency with regard to how it is structured, how it evolves and what it is expected to achieve. In addition, best-practice solutions have to be identified by means of continual evaluation that cuts across regional and local authority boundaries. ↘ [ITEMS 205 FF](#). Particularly when it comes to digital policy, there is a very clear need for greater coherence and the strategic prioritisation of public measures with verifiable milestones. An overarching strategy would be required in order to pool responsibilities at national level more effectively and prevent duplication of structures. ↘ [ITEMS 502 FF](#).

Seize the opportunities of the transformation

19. **Innovation** is crucial in driving the many different transformation processes. Meeting the targets of the Paris climate agreement requires new technologies to be brought to market-readiness and quickly made available globally. The generation of renewable energy and its transportation in the form of hydrogen or synthetic fuels can pave the way for climate neutrality and, at the same time, open up new business opportunities for German and other European companies. ↘ [ITEMS 537 FF.](#) The foundations can be laid now, for example through bilateral partnerships. ↘ [ITEMS 583 FF.](#) By contrast, subsidies that are harmful to the climate distort trade ↘ [ITEMS 574 FF.](#) and impede innovation in respect of technologies that may help to solve the climate problem. Germany and the rest of Europe need to call more loudly for the universal elimination of these subsidies.

20. The use of data for business purposes increasingly provides the basis for innovation and creates a competitive advantage in many parts of the economy. Data-driven business models in the industrial sector are thought to offer huge potential, particularly in relation to the Internet of Things. ↘ [ITEMS 438 FF.](#) The coronavirus pandemic advanced the digitalisation process in Germany. It is now time to seize this opportunity and support the development of a **data-driven economy**. To increase the availability of data as a production factor, it is necessary to promote and facilitate the sharing of data and the shared use of data. ↘ [ITEMS 474 FF.](#) It is therefore important to forge ahead with developing and testing the data spaces and data trustee models envisaged in the data strategies of the German government and EU. ↘ [ITEM 477](#) Furthermore, the public sector should deal with shortcomings in the availability of public administrative data and pursue a coherent and comprehensive digital strategy. ↘ [ITEMS 479 AND 502 FF.](#)

21. Implementation of the transformation processes will require considerable **investment** to replace or expand existing capital stock. This may stimulate economic and productivity growth. A consistent environment that encourages growth will be crucial for private-sector investment. ↘ [ITEMS 195 FF.](#) Furthermore, targeted public-sector investment is needed, particularly in the infrastructure, for the transition to a digital, carbon-neutral economy. This includes not only the expansion of broadband and data infrastructure but also infrastructure for the generation and transportation of renewable energies. ↘ [ITEM 198 F.](#) Public-sector investment is also necessary in order to create and leverage incentives for private investment. Public-sector spending should be focused on future-oriented public expenditures. The many different non-monetary obstacles have to be removed. The simplification of planning, approval and legal processes and the pooling of capacity and expertise in institutions that operate independently could help in that regard. ↘ [ITEMS 200 FF.](#) The GCEE has put forward for discussion two approaches to mobilising private and public-sector investment in the context of the debt brake. ↘ [ITEMS 206 FF. AND 229 FF.](#)

22. A successful transformation requires **international cooperation**. Many of the challenges can only be tackled effectively at international level. A climate club is one option for achieving progress with climate change mitigation and strengthening the international coordination of climate policy at institutional

level. This could help to reduce carbon leakage and the distortion of competition. [↘ ITEMS 613 FF](#). To promote global cooperation, there also has to be a focus on the more equitable sharing of the cost – for example by means of financial transfers from advanced economies to developing countries and emerging markets – along with collaboration on technology and the establishment of climate-friendly value chains. [↘ ITEMS 559 FF](#). Efficient climate change mitigation requires the transparent and verifiable measurement of greenhouse gas emissions and the establishment of international standards for measuring and estimating these emissions. [↘ BOX 32](#) Cooperation with the US may be helpful, particularly when addressing tendencies towards market concentration in digital markets. The regulatory proposals being drawn up in the EU and US need to be refined as part of a cross-Atlantic collaborative process and aligned more closely in order to take better account of the transnational activities of the big tech companies. [↘ ITEM 480](#)