

**Germany needs a comprehensive investment campaign. It is essential to make business locations fit for the future, to overcome the crisis sustainably and, above all, to become more resilient. To achieve this, private as well as public investment activity must be increased. The Chief Economists of the Savings Banks Finance Group wish to emphasise that the provision of a modern public infrastructure and spending on state-of-the-art private-sector capital stock must be conceived together.**

- Public-sector investment is the backbone of private economic activity, social life and consequently the active participation of the country's citizens. Municipal investment in particular is still too weak and must be raised to a sustainable level.
- Germany needs a framework that effectively promotes private investment, not least to achieve its climate targets which are as important as they are ambitious. In addition to a transparent path for the future costs of CO2 emissions, tax incentives should also be implemented.
- Public and private investment is necessary to make the German economy more resilient. Natural disasters and the current health crisis clearly show the need for infrastructural action.

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## Introduction

Even before and thus completely independently of the Covid-19 crisis, the German economy was already facing major challenges. In the current decade, the effects of demographic change and the challenges of climate change will become increasingly evident. In order to achieve the climate goals, investment in more climate-friendly technologies and a shift towards sustainable energy supply and mobility will be necessary. At the same time, technological developments - above all digitalisation - are changing markets, production processes and competitive structures at a rapid pace. Digitalisation also offers new opportunities to meet the challenges, although this too requires major investment.

A successful structural transformation of the German economy requires substantial private and public investment to modernise the country's infrastructure and capital stock appropriately. The corona crisis has also had a variety of effects on investment needs and on the investment environment. Firstly, the pandemic represents another major source of uncertainty, with a corresponding dampening effect on the willingness to invest. However, the comprehensive stabilisation policy measures which were swiftly adopted to counter the crisis have not only had a short-term stabilising effect on economic activity, but also a long-term stabilising effect by reducing the uncertainty shock.

The Covid-19 crisis has also revealed infrastructure deficiencies that had previously received little attention, especially in the areas of digitalisation, public administration, educational institutions and healthcare. Furthermore, the situation of government budgets and thus, ceteris paribus, the financing options for state investment have deteriorated compared to 2019 due to the crisis and as a result of the emergency fiscal policy expenditure. In addition to the need for investment, there are also consolidation requirements in the medium term. These are made easier by the persistently favourable financing conditions for the German state as well as for companies and households. Once again, the institutions of the Savings Banks Finance Group have played a decisive role in ensuring an adequate supply of credit to the German economy, and have made an important contribution to stabilising the situation through anti-cyclical lending.

In the corporate sector too, the coronavirus crisis has revealed sizeable structural deficits on the digitalisation front, especially in small and medium-sized enterprises. This will inevitably have a negative impact on their competitiveness in the coming years if no robust countermeasures are taken. Additionally, the reorientation towards sustainable, climate-friendly business models and the improvement of the CO2 balance of investment and real-estate portfolios will necessitate a high level of investment activity from companies and private households over the

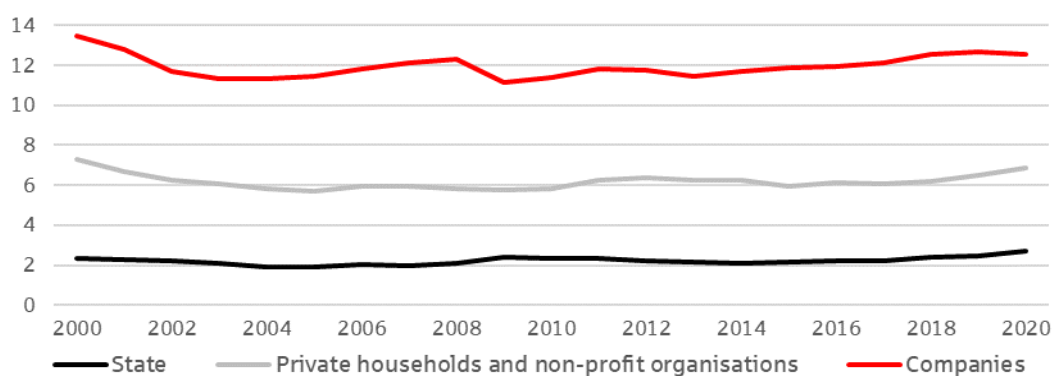
*Structural change requires public and private investment*

coming years. In order to make Germany fit for the future as a business location, the private sector must also significantly increase its investment activity in the coming years.

## The macroeconomic significance of public investment

Public investments maintain and expand the national capital stock. They enable necessary adjustments to the infrastructure to meet the challenges of technological and demographic change. They therefore play a key role in preserving the attractiveness and competitiveness of Germany as a business location and in ensuring prosperity and quality of life.

**Figure 1:** Public and private investment in Germany in relation to GDP



Source: Eurostat Institutional Sector Accounts, Key Indicators, NORD/LB Macro Research.

Public investment in Germany accounts for a significantly smaller share of value added than investment by the private sector (= companies as well as private households and non-profit organisations, cf. Figure 1). A comprehensive investment offensive can therefore only succeed if private investment can be increased in parallel to public investment. In the current situation, there is also no conflict between private and public investment. A potential crowding-out of private investment through rising capital costs would seem implausible in the persistently low interest-rate environment. On the contrary, there are in fact both theoretically convincing arguments and empirical evidence of a crowding-in effect.<sup>1</sup>

In addition to the immediate demand stimulus and multiplier and accelerator effects, the focus of public investment is particularly on the medium-term effect of increasing macroeconomic production potential.<sup>2</sup> Efficient production opportunities for companies are the result. According to a study by the German Institute for Economic Research (DIW), public-

*Public investment supports private investment*

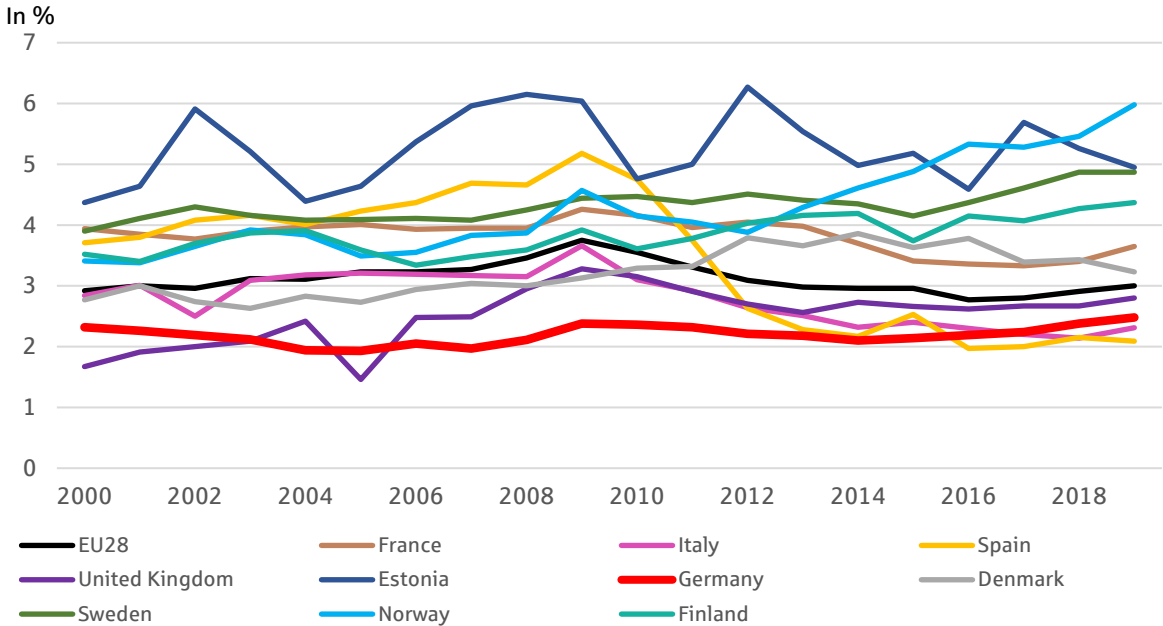
<sup>1</sup> Cf. Belitz, H., Clemens, M., Gebauer, S. and Michelsen, C. (2020): *Öffentliche Investitionen als Triebkraft privatwirtschaftlicher Investitionstätigkeit (Public-sector investment as a driver of private-sector investment activity)*. DIW Politikberatung kompakt, 158.

<sup>2</sup> Cf. Belitz, H., Clemens, M., Gebauer, S. and Michelsen, C. (2020): *Öffentliche Investitionen als Triebkraft privatwirtschaftlicher Investitionstätigkeit (Public-sector investment as a driver of private-sector investment activity)*. DIW Politikberatung kompakt, 158.

sector investment in tangible assets, in particular, provide stronger incentives for private investment, while government spending on research and development primarily boosts medium-term potential growth. Survey results among business leaders also favour a complementary relationship between public and private investment. In the IW Business Survey 2018, for example, the share of companies that see their business operations regularly impaired by infrastructure problems had increased significantly to around two-thirds.<sup>3</sup> Deficiencies in the areas of road transport and communication networks were the main complaints.

Germany still benefits from a comparatively good public capital stock. However, there is concern that the relative competitive position of the German economy could deteriorate significantly in view of the (by international standards) low level of public investment activity, which has been in evidence for some years, coupled with growing structural challenges and against the backdrop of increasingly tough international competition.

**Figure 2:** Trend in the share of public investment in an international comparison (measured against the respective GDP)



Source: Eurostat Institutional Sector Accounts, NORD/LB Macro Research.

Due to the macroeconomic importance of public investment, it is hardly surprising that the appropriate level of public investment is a regular topic of economic policy debate. Despite a trend reversal initiated in 2015 and successive improvements in the growth of public investment since then, numerous contributions to the economic debate consider the overall

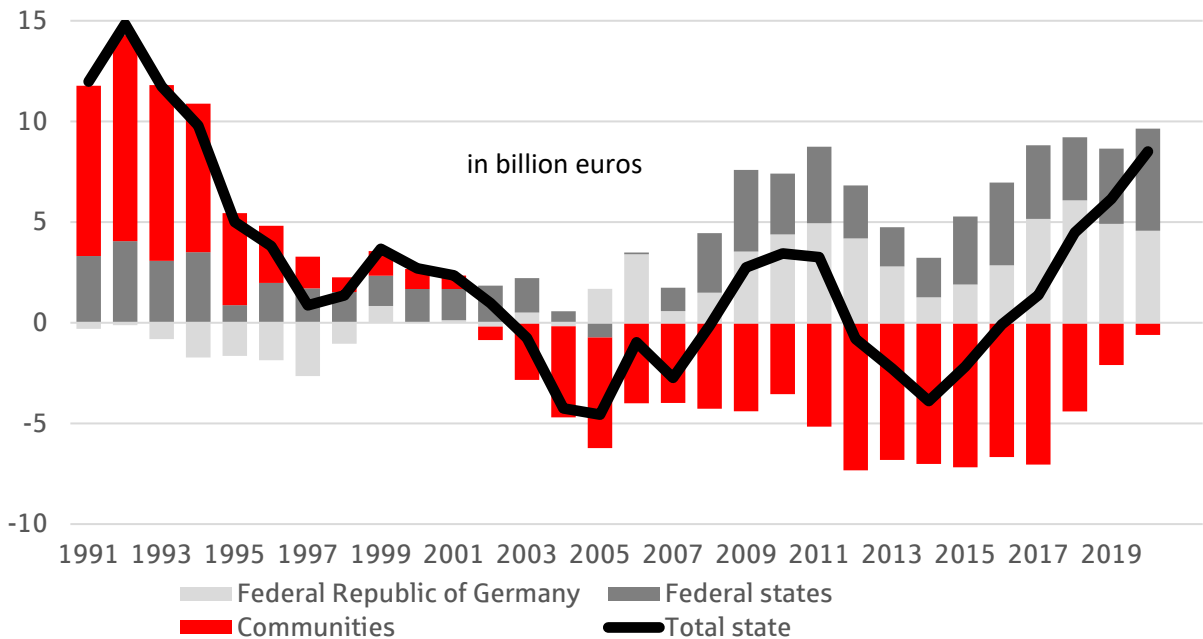
<sup>3</sup> Cf. Grömling, M. and Puls, T. (2018): *Infrastrukturmängel bremsen deutsche Unternehmen aus. (Infrastructure deficits are impeding Germany's companies)*, IW-Trends 2/2018 (available online).

volume of public investment at all levels of government to be too low to meet future requirements and to resolve the structural problems.<sup>4</sup>

**Indications of a (public) investment gap in Germany**

Both a comparison with other EU member states and a contract between the growth of infrastructure capacities with their intensity of use over the past 20 years indicate comparatively passive investment behaviour on the part of the German state.<sup>5</sup> An analysis of the development of public capital stock confirms this impression. For this purpose, public net fixed capital formation is often used, which is the difference between gross fixed capital formation and imputed depreciation.<sup>6</sup>

**Figure 3: Net fixed capital formation of the government sector by local authorities**



Source: Destatis, working paper “Investitionen 4”, NORD/LB Macro Research.

While net fixed capital formation for the state as a whole turned positive again in 2017 at the latest after sustaining slumps in the mid-2000s and at the beginning of the last decade, net fixed capital formation by the municipalities has been continuously in negative territory since the beginning of the 2000s, even if it has recently approached zero again. Complete compensation of municipal investment weakness by the other regional authorities seems unlikely, as the different government sub-

<sup>4</sup>Fratzcher, Freier and Gornig (2015): *Kommunale Investitionsschwäche überwinden (Overcoming municipal investment weakness)*, DIW Wochenbericht Nr.43 2015. Barišić, Krebs and Scheffel (2018): *Eine Investitionsagenda für Deutschland (An investment agenda for Germany)*, Wirtschaftsdienst, Jg. 98 Heft 3, S. 179-185

<sup>5</sup>Hüther and Jung (2021): *Unzureichende Investitionsoffensive (An inadequate investment offensive)*, Wirtschaftsdienst, 101 Jg. Heft 3, S. 158-161

<sup>6</sup>Gornig, Michelsen and van Deuverden (2015): *Kommunale Infrastruktur fährt auf Verschleiß (Municipal infrastructure is being left to erode away)*, DIW Wochenbericht Nr.43 2015

sectors focus their investment priorities on different categories of fixed assets.<sup>7</sup>

The persistently sluggish development of net fixed capital formation at the overall municipal level is also confirmed by survey results from KfW municipal panels over the last ten years, which reveal a continuously rising investment backlog at the country's municipalities. With an estimated total of around 150 billion euros in 2020, this is mainly reflected in roads, administrative buildings and schools.<sup>8</sup> In the latter area in particular, the pandemic has painfully revealed that classrooms still have a lot of catching up to do in terms of digital infrastructure.

*Public-sector investment weakness is especially marked in municipal investment*

The impression of government investment weakness is further reinforced when looking at alternative indicators, such as gross fixed capital formation. This has increased steadily in recent decades compared to stagnating net fixed assets. Since fixed assets that have already been written off continue to be used for the production of services until the date on which they become effectively unusable, one could argue that a stagnation of net fixed assets with simultaneous growth in gross fixed assets does not represent a weakness in investment, but rather an overestimation of imputed depreciation.<sup>9</sup> However, the divergence of the two variables also means that the share of net fixed assets in gross fixed assets is constantly shrinking. While it was still almost 60 per cent at the beginning of the 2000s, it had fallen to around 50 per cent in 2019.

From such a perspective, the state's investment weakness appears less like an active shrinking of the public capital stock and more like an increasing obsolescence of public infrastructure. Moreover, it seems unrealistic to conjecture that the productivity of assets remains constant over time, which is the assumption underlying the model calculation for gross fixed assets. Instead, higher repair costs and reduced performance must be factored in towards the end of a given asset's useful life. Therefore, the gross fixed assets represent more of an upper limit for the actual capital stock, while net fixed assets represent a lower limit.

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<sup>7</sup> Dullien and Rietzler (2019): *Verzehrt Deutschland seinen staatlichen Kapitalstock? – Replik und Erwiderung (Is Germany wasting away its public capital stock? - reply and rejoinder)*, Wirtschaftsdienst, 99. Jg. Heft 4, S. 286-294

<sup>8</sup> Raffer and Scheller (2021): *KfW-Kommunalpanel 2021 (KfW Municipal Panel 2021)*, KfW Research

<sup>9</sup> Grömling, Hüther and Jung (2019): *Verzehrt Deutschland seinen staatlichen Kapitalstock? (Is Germany wasting away its public capital stock?)*, Wirtschaftsdienst, 99. Jg. Heft 1. S. 25-31

Even if the determination of gross and net fixed assets leaves room for possible measurement errors, nevertheless the indicators point to a not inconsiderable government investment gap - especially at municipal level. This finding is also consistent with the observation that the number of staff in municipal administrations responsible for construction issues has declined steadily since the mid-1990s.<sup>10</sup> Overall, construction investment accounts for about two-thirds of total municipal investment.<sup>11</sup>

### **Maintaining and expanding municipal investment capacity**

If we break down municipal investment activity to the level of German districts and independent cities, it becomes apparent that municipal investment weakness is by no means evenly distributed. In fact, there are large regional disparities between and within the “Flächenländer” (non-city federal states). While per-capita investment in tangible assets has been at a high level across the board since 2000 in the economically strong states of southern Germany, it has fallen steadily in the eastern German states after the reunification-related increase in investment at the beginning of the 1990s. Within the federal states too, there are also considerable differences between neighbouring regions. Municipal investments in tangible assets per inhabitant are, for example, significantly lower in the Ruhr region than in other parts of the federal state of North Rhine-Westphalia. The level of investment in tangible assets correlates positively with the tax-paying capacity and negatively with the debts and the share of social-welfare recipients in the population of the various municipalities.

*Large regional disparities  
in municipal investment*

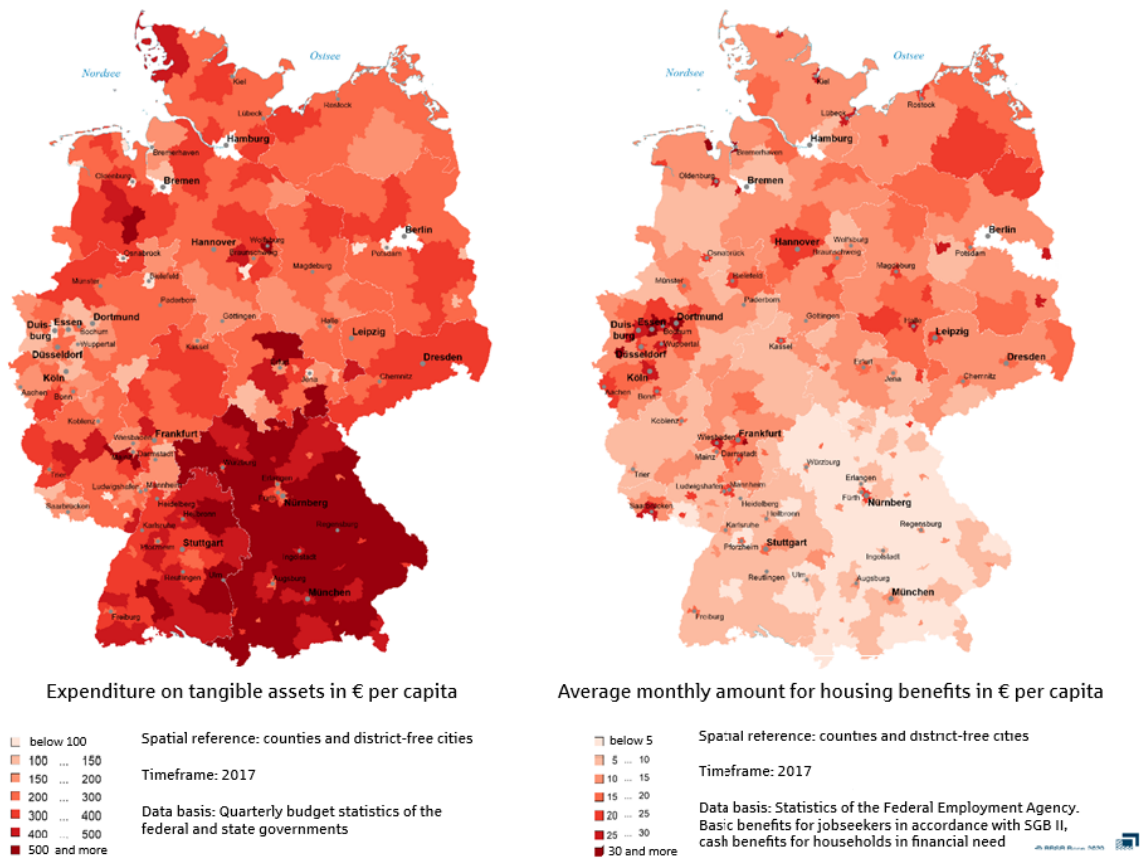
In accordance with this, as demanded for many years, a permanent increase in the federal contribution to housing costs by 25 percentage points was decided within the framework of the Economic Programme 2020, in addition to a temporary compensation for trade-tax shortfalls.

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<sup>10</sup> Goring and Michelsen (2017): *Kommunale Investitionsschwäche: Engpässe bei Planungs- und Baukapazitäten bremsen Städte und Gemeinden aus (Municipal investment weakness: bottlenecks involving planning and construction capacities are putting a drag on cities and municipalities)*, DIW Wochenbericht Nr. 11 2017

<sup>11</sup> Arnold, Freier, Geissler and Schrauth (2015): *Große regionale Disparitäten bei den kommunalen Investitionen (Major regional disparities in municipal investment)*, DIW Wochenbericht Nr. 43 2015

**Figure 4:** Expenditure on tangible investment and housing benefits in euros per inhabitant



Source: Indicators and charts for spatial and urban development INKAR © BBSR Bonn 2021, NORD/LB Macro Research.

This can be viewed as an important step in the right direction. In the short term, this move has noticeably reduced the pressure on municipalities to engage in pro-cyclical expenditure and to cut their investments, which would otherwise have been an imminent scenario, so it has definitely made an important contribution to cyclical stabilisation during the coronavirus crisis. Moreover, this permanent measure is well suited to give financially underperforming municipalities more structural scope for investment.<sup>12</sup> For the municipalities, the share of social-welfare recipients in their territory is an exogenous variable that is difficult for them to influence with the instruments at their disposal. At the same time, social expenditures such as housing costs account for a not inconsiderable proportion of municipal budgets. For municipalities - especially in regions strongly affected by structural change - there is accordingly the danger of a vicious circle of a large population of social-welfare recipients, correspondingly high municipal social expenditure and, as a consequence,

<sup>12</sup> Boettcher, Freier and Geißler (2021): *Bundesbeteiligungen an den Kosten der Unterkunft – ein „pragmatischer“ Transfer (Federal contributions to accommodation costs – a “pragmatic” transfer payment)*, Wirtschaftsdienst, 101. Jg. Heft 7, S. 552-558



structurally (too) low investment, which in turn inhibits structural change and keeps burdens high.<sup>13</sup>

## Steady public investment is needed, not a flash in the pan

High levels of public funding are needed to perform future tasks and to eliminate the current weakness in investment. In a joint study undertaken before the coronavirus crisis, experts from the German Economic Institute (IW) and the Macroeconomic Policy Institute (IMK) identified investment requirements of 45 billion euros per year in 2019.<sup>14</sup> Two years earlier, in a study compiled for the Bertelsmann Foundation, Krebs and Scheffel had also seen a need for public funding running into billions, but put it at an annual amount of 30 billion euros.<sup>15</sup> A need for higher public investment is seen above all in the areas of education, transport, digitalisation, sustainability and housing. Not least the resurgence of extreme weather events this year and the costs associated with this have highlighted the need for public action in the area of climate and environment.

*Strong demand for investment in education, transport, digitalisation, sustainability and housing*

In the field of education, these include, in particular, measures to strengthen early childhood education and expand the range of all-day schools, also through improvements in personnel and infrastructural capacities. The Chief Economists of the Savings Banks Finance Group regard this as an important lever to expand the human capital of a knowledge-intensive economy like Germany's in the long term and to enhance equal opportunities in the labour market. Especially in the light of the demographic challenges confronting us, the increase in labour-force participation which this would entail makes economic sense and is desirable. The experts from the IW and the IMK, partly drawing on the findings of the Krebs and Scheffel team, have estimated the need for investment in education at almost 85 billion euros within a decade.

In the transport sector, public investment requirements running into the billions can also be identified. The IW and the IMK (2019) each estimate that a sum of around 20 billion euros p.a. is needed for public-sector investment in the expansion of the local public transport network and in the transportation network in general. Investment in the digital infrastructure designed to close gaps in the mobile-phone network and to establish an essentially trouble-free nationwide communication network are described by the two economic institutes as a fundamental task, for

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<sup>13</sup> Gornig and Michelsen (2017): *Kommunale Investitionsschwäche: Engpässe bei Planungs- und Baukapazitäten bremsen Städte und Gemeinden aus (Municipal investment weakness: bottlenecks involving planning and construction capacities are putting a drag on cities and municipalities)*, DIW Wochenbericht Nr.11 2017

<sup>14</sup> Bardt, Dullien, Hüther and Rietzler (2019): *Für eine solide Finanzpolitik: Investitionen ermöglichen (Towards a solid fiscal policy: Enabling investment)*. IMK Report 152 (available online)

<sup>15</sup> Krebs and Scheffel (2018): *Eine Investitionsagenda für Deutschland (An investment agenda for Germany)*. Wirtschaftsdienst, 98. Jahrgang, Heft 3 (available online)

which public funds in the amount of 20 billion euros are considered necessary.<sup>16</sup>

There is also an investment backlog in housing construction. The lack of affordable residential space for households on low and medium incomes is increasingly threatening to become a barrier to accessing the local labour market. This development has intensified especially in cities and urban areas. On this score, there needs to be a critical scrutiny of whether public-sector investment, state incentives for private investment or other suitable measures to promote residential construction would be expedient. In their joint study, the IW and the IMK set an annual target of 1.5 billion euros for housing subsidies.

There is an urgent need for action in the field of decarbonisation. In order to enable environmentally friendly and sustainable production and to achieve the even more stringent climate targets, it is imperative to switch from outdated technological applications to modern, resource-optimising technologies. The IW and the IMK put the annual public-sector investment requirements for such a restructuring of the economy at 7.5 billion euros. In a recent study, researchers at DIW Berlin have formulated very detailed investment and action requirements, such as higher subsidies for the energy-efficient renovation of private buildings, further expansion of wind power and photovoltaic systems, a changeover premium for the use of public transport or bicycles instead of fuel-powered cars, and investment in recycling processes to achieve climate neutrality. From an economic point of view, however, the choice of instruments to achieve climate policy goals must always be based on the efficiency and effectiveness of the measures. It is not uncommon for correctly targeted government incentives to stimulate private-sector investment and innovation processes, thus enabling more cost-effective and efficient solutions on the path to "net zero".

*Urgent need for action in  
the field of  
decarbonisation*

A very sizeable amount of spending is also needed to close the personnel gaps in the education and care sector as well as in the planning capacities for the transport and construction sector. An important argument in favour of the model involving increasing and stabilising public-sector investment in the longer term is the improved planning capability for both private companies and individual local authorities, especially against the backdrop of scarce short-term planning and production capacities. However, the expansion of personnel capacities in the planning or education and care sector will only be carried out by the acting municipality or city if it can rely on a long-term framework and more stable financing bases. Short-term incentives or flash in the pan programmes are

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<sup>16</sup> Belitz, Clemens, Fratzscher, Gornig, Kempf, Kritikos, Michelsen, Neuhoff, Rieth and Spieß (2020): *Mit Investitionen und Innovationen aus der Corona-Krise (Investment and innovation as ways out of the coronavirus crisis)*. DIW Wochenbericht Nr. 24 (available online).

unlikely to bring about structural changes and thus will not lead to closing the investment gap described in the areas mentioned. In this sense, adequate funding at the municipal level and the associated stabilisation of municipal investments is also of vital importance for the planning security of private-sector investments.

## Reducing non-monetary barriers to investment

In the interest of stronger investment activity, non-monetary obstacles to investment must be addressed and, if possible, reduced in addition to improving the financial resources. Such obstacles exist, for example, in the capacity utilisation in the construction industry, in the construction departments in public administrations, through participation and approval procedures as well as through standards in the construction and planning sector.<sup>17</sup>

Capacity utilisation in the construction industry varies by federal state, but on average across Germany can lead to long delays in infrastructure projects. In particular, staff reductions in the construction industry between 1995 and 2006 are still considered noticeable today, not least due to the current price increases. The mounting shortage of skilled labour and the destabilisation of construction activity by the state as a result of so-called "pig cycles" are also threatening to inhibit future infrastructure projects.

Steady public-sector investment, even in phases of recession, should contribute to greater stability in the construction sector's workforce. Building capacity in the construction departments of municipalities and cities could provide tailwind for public investment. However, competition with the private sector for new staff is likely to intensify due to the shortage of skilled labour. Without active countermeasures, there is even the threat of the personnel situation worsening due to impending retirements. In addition to the shortage of personnel, the increasing complexity of the legal regulations to be observed in approval procedures and standards is also proving to be an obstacle to public and private investment. It should be noted here that individual regulatory provisions usually focus on the protection of goods worthy of protection (e.g. health, nature, climate, social standards etc), but that the interplay between the multitude of standards that has to be taken into account can result in a paralysing complexity.<sup>18</sup> In order to accelerate procedures, it should be

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<sup>17</sup> for more on the debate centering on obstacles and possible options for action cf. Scheller, Rietzler, Raffer and Kühl (2021): *Baustelle zukunftsfähige Infrastruktur - Ansätze zum Abbau nichtmonetärer Investitionshemmnisse bei öffentlichen Infrastrukturvorhaben (Enabling viable future infrastructure - approaches to dismantling non-monetary investment obstacles obstructing public-sector investment projects)*. Friedrich-Ebert-Stiftung, WISO Diskurs, Ausgabe 12/2021. [https://repository.difu.de/jspui/bitstream/difu/581774/5/FES\\_WISO-DISKURS\\_Infrastrukturinvestitionen\\_WEB.pdf](https://repository.difu.de/jspui/bitstream/difu/581774/5/FES_WISO-DISKURS_Infrastrukturinvestitionen_WEB.pdf)

<sup>18</sup> op.cit., p. 44.

ensured that the complex federal and state laws on building standards are compatible and that planning approval procedures are streamlined, which could be done by involving the public at an early stage. In addition, the experience of federal states in accelerating planning procedures could also be used at the federal level, especially with a view to the new legislative period.

### Strengthening resilience

The coronavirus pandemic and recent natural disasters have shown that Germany is poorly prepared for such events. To improve this, the institutional and regulatory framework for disaster management and the healthcare system needs to be adapted. In addition, the state needs to strengthen information systems and to build up emergency reserves for disasters together with the private sector.

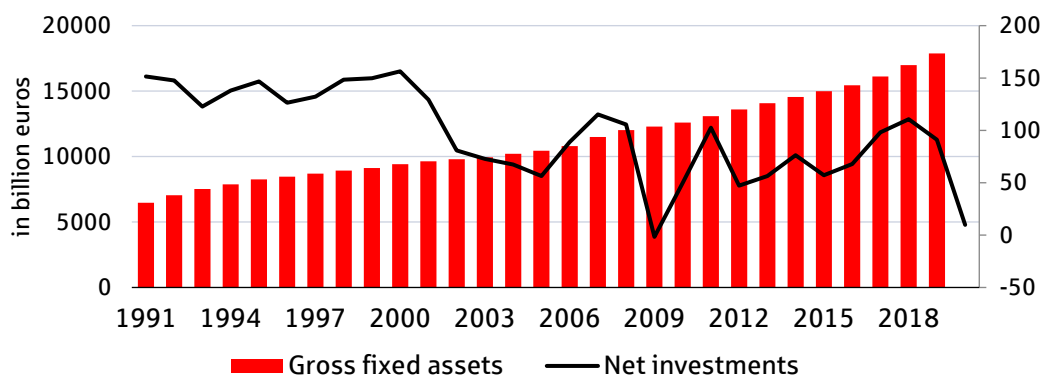
*The health crisis and natural disasters have exposed a need for change*

The pandemic has also highlighted the importance of basic medical research, which has contributed significantly to the rapid development of vaccines. In order to enable innovative solutions in the field of medicine, as well as in the fight against climate change and in digitalisation, an increase in state investment in these areas seems appropriate. These state-funded institutions should collaborate closely with private-sector companies to enable rapid implementation of innovative applications.

### Investment in a modern, climate-friendly private capital stock is needed

In order to make Germany fit for the future as a business location, it is not only necessary to provide a modern public infrastructure, but also an up-to-date capital stock in the private sector. In contrast to the public sector, gross fixed capital formation by companies and households has always exceeded depreciation since German Reunification in 1990 and has thus contributed to a continuous increase in net fixed assets (see Figure 5). Nevertheless, investment activity was not very dynamic in the years after the financial crisis and collapsed during the pandemic, although the provision of favourable financing facilities prevented worse.

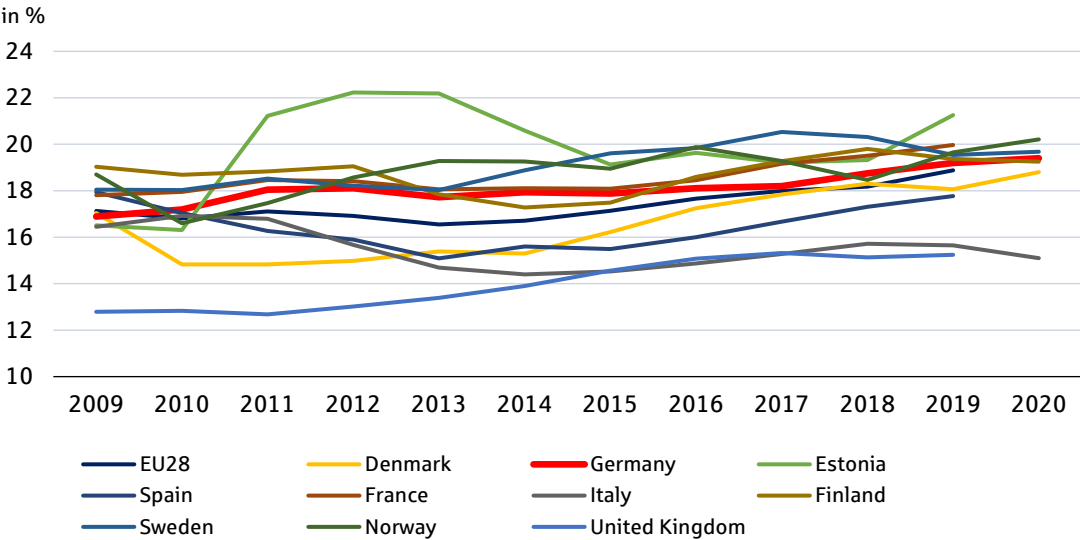
**Figure 5:** Net fixed assets and private-sector investment



Source: Destatis, BayernLB Research.

In a European comparison, the investment rate of the German private sector is above average. However, Germany does not occupy a top position here either (see Figure 6) and is likely to become less attractive as a business location due to the unfavourable demographic conditions. In addition, the German economy, which is strongly influenced by exports and the automotive industry, is likely to be further burdened by the upcoming geopolitical, technological and structural changes.

**Figure 6:** International comparison of the trend in the share of private investment

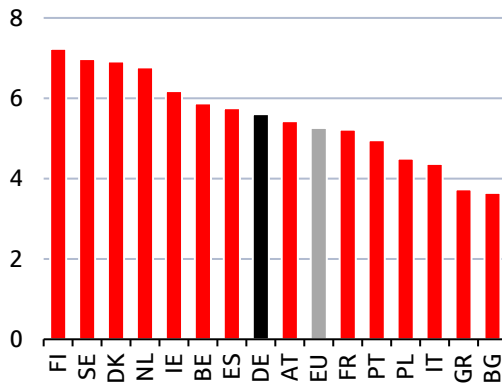


Source: Eurostat institutional sector accounts, BayernLB Research.

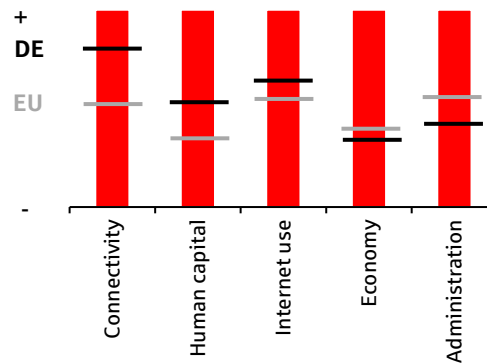
**There is a need to catch up in digitalisation**

Awareness of the importance of digitalisation for the economy and for society increased significantly during the pandemic. The existing deficits in this area became obvious. The European Digital Economy and Society Index (DESI) shows that Germany is only at the European average in this area and that, in addition to the public administration, the economy is also below the EU average (see Figures 7 and 8). While many large companies have been closing the digitalisation gaps for some time, a large number of SMEs continue to struggle with this issue. Although the KfW SME Digitalisation Report 2020 does show that in the first pandemic year, 33 percent of the companies surveyed expanded their digitalisation measures and only 5 percent reduced their efforts, it remains worrying that slightly more than a third of the companies are still not carrying out any digitalisation measures. Among the latter, the share of small companies is particularly high. These companies in particular often simply lack the digital competence of their employees or the willingness to work with external specialists. In order for digital investment to be accelerated at company level, it is therefore not only necessary to have a good infrastructure, tax incentives and favourable financing conditions, but also professional support. State institutions as well as vocational and industry associations must play an important role here, not least in protecting against cybercrime.

**Figure 7:**  
Digitalisation: Heterogeneous Europe  
Digital Economy and Society Index (DESI) 2020;  
total index in thousand points



**Figure 8:**  
Germany: Catch-up in the digitalisation stakes  
DESI 2020, performance of DE/EU on a scale  
ranging from the best to the worst national results  
for each category



Source: European Commission, BayernLB Research

In the course of the plans for the introduction of a digital euro by the ECB, the financial sector in particular is likely to face additional investment requirements in the coming years. As with other digitalisation investments, this will not only generate efficiency gains, but also create new business models in the financial sector as well as in many other industries.

### Massive investments needed to achieve climate goals

In view of climate targets which are becoming more and more ambitious, enormous measures are required to make the capital stock CO<sub>2</sub>-neutral. The investment requirements facing private-sector companies and households can best be derived from the European Commission's estimates of investment needs across the EU. In a study from 2020 (which, in turn, is based on an study from 2016), Brussels provides scenario-dependent forecasts for the total investment requirements within the EU to achieve the climate targets for 2030 (assumptions: reduction of greenhouse gas emissions by 55 percent compared to 1990, increase in the share of energy from renewable sources to at least 32 percent and an increase in energy efficiency by at least 32.5 percent) for the following areas: energy grid, energy generation, industry, transport and buildings (see table).

**Table:** Annual investment requirements under various scenarios. According to European Commission estimates per sector

In billion euros/year, between 2021 and 2030

	Minimum	Maximum
Electricity grid	-8	5
Power generation	3	28
Industry	2	39
Transport	24	44
Buildings (commercial)	7	249
Buildings (households)	41	367
<b>Total</b>	<b>90</b>	<b>732</b>
<b>Share Germany (~24% of greenhouse gas emissions)</b>	<b>22</b>	<b>176</b>

Source: BayernLB Research, European Commission (SWD (2020) 176 final und SWD (2016) 405 final)

If these investment volumes are apportioned to Germany on the basis of its share of greenhouse gas emissions, an investment gap of 22 to 176 billion euros per year is calculated. This approach assumes that for every euro invested, CO2 emissions in Germany will fall as much as the EU average.

However, as Germany already has a relatively CO2-efficient economy (in 2017, CO2 emissions relative to GDP were less than half the EU average), the necessary investment for further reductions is likely to be higher (the proverbial low-hanging fruit has already been harvested). Furthermore, the current dynamics of the discussion suggest that the somewhat more stringent and ambitious scenarios of the EU working group are likely to set the target corridor. We therefore assume additional annual investment requirements for Germany of between 100 and 150 billion euros by 2030 (2.9 to 4.5 percent of 2020 GDP). Although some of this expenditure will be in the public sector, the bulk will have to be borne by the private sector. The high figures for the building sector suggest that, in addition to companies, private households will also have to shoulder substantial investment spend. If Germany wants to achieve its ambitious climate targets, a framework should be created that steps up such investments. In addition to a transparent path for the future costs of CO2 emissions (which continue to rise either through taxes or certificates), tax incentives (e.g. by means of progressive depreciation) should also be put in place.

With the implementation of the EU taxonomy rules towards a sustainable economy, in addition to investments to reduce climate-damaging emissions, further investments to reduce the consumption of raw materials and to improve biodiversity will also be necessary. These investments should not only have the purpose of meeting regulatory requirements, but should also be utilised as product and process innovations ("Greentec"). In this way, considerable new business potential can be unlocked. Technological leadership in the "greening" of the

*Germany should aim for technological leadership while "greening" the economy and society in general*

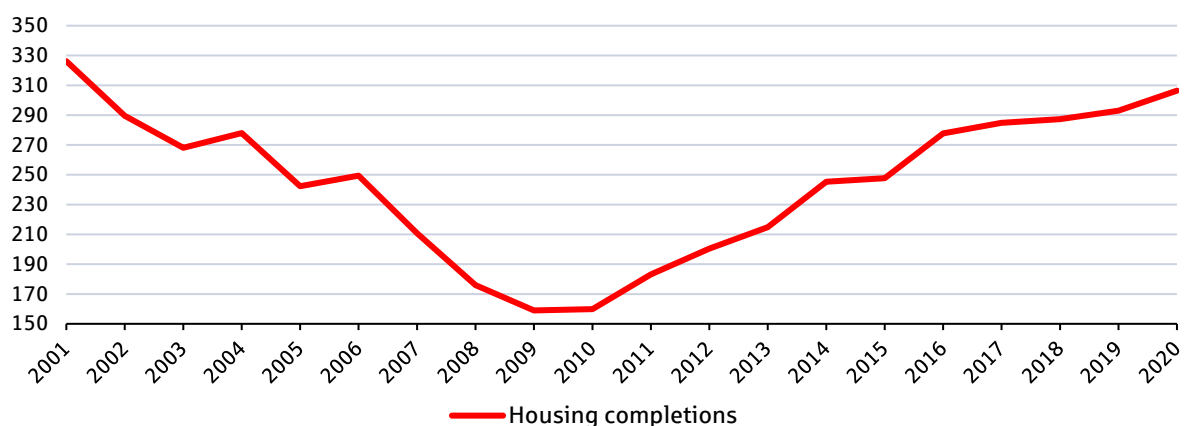
economy and society - in addition to the obvious contribution to protecting the planet - can open up long-term growth prospects for the German economy and create jobs with a viable future.

### The construction gap has not yet been closed

The construction sector has so far shown itself to be a mainstay of the economy since the outbreak of the coronavirus pandemic, and was even able to increase turnover during 2020. Despite the current bottlenecks in some preliminary products, the sector can also hope for further increases in turnover in 2021. Overall, however, the construction industry has been working at its capacity limit for years. Despite full order books and high sales revenues, an expansion of capacities is hardly possible. Admittedly, the number of people working in the construction industry could be increased to 888,000 by 2020 - an increase of almost 23 percent within the space of ten years. However, about 950,000 employees - about 60,000 more than today - were able to build just 326,000 dwellings in 2001. This makes it clear that, in addition to an employment offensive, investments in less labour-intensive production processes are urgently needed in the construction sector to satisfy the high demand. This is in addition to the investment needed to improve the climate balance. Since the EU's estimates do not take into account the need for additional housing and offices in Germany which generate CO2 emissions during construction, climate-related investment requirements are likely to be even higher.

In 2020, Germany celebrated the highest number of completions during the last 20 years with 306,376 new dwellings. This high figure demonstrates how well the construction industry came through the coronavirus crisis up to year-end 2020, managing to complete the construction projects it had taken on without major delays.

**Figure 9: Construction has not been able to cover the demand for housing for a long time**  
Housing completions per year in thousands



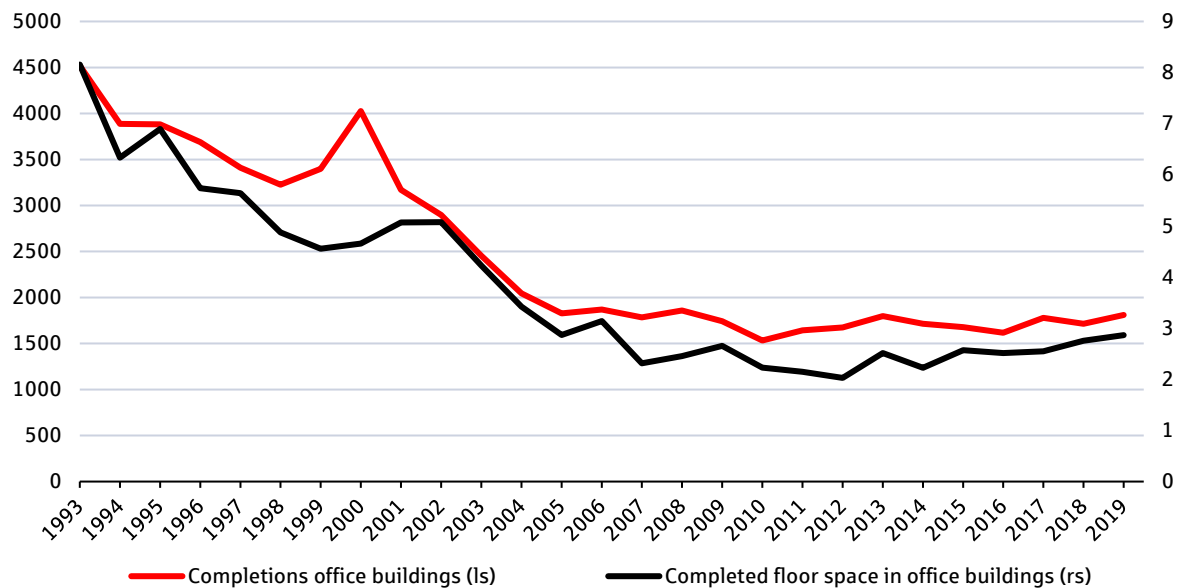
Source: Destatis, BayernLB Research

Despite the successes, the required number of new homes could still not be built in 2020. For example, according to estimates by empirica, the housing demand in 2020, which is mainly in the German cities, is 311,000



dwellings per year. However, by the previous year the construction gap between demand and supply had widened.

**Figure 10:** New offices have been in short supply for years Completions: Number of new office buildings (left scale) and new effective office-floor space in million m<sup>2</sup> (right scale)



Source: Bulwiengesa, BayernLB Research

For office buildings, conversely, construction activity has stagnated throughout Germany over the past 15 years. In 2019, a total of 1,810 office buildings with usable floor space of around 2.8 million m<sup>2</sup> could be erected. Thus, along with the building sector, the supply of office space remains scarce, especially in the country's top 7 cities. Although the outlook for office demand after the removal of the current restrictions remains unclear, even with an increased home office quota, the current completions are unlikely to meet the demand for modern office space.

## Conclusion

The foundations of the German economy are increasingly in danger of eroding. In order to overcome the coronavirus crisis, extensive funds were once again made available to stabilise the economic structure. Nevertheless, it has been apparent for some years that there is a threat of Germany living off its resources. In view of the disruptive challenges posed by climate change - a development which fundamentally calls into question the way in which the economy has operated up to now - the foundations urgently need to be reinforced. To this end, a sustainable increase in public and private investment is imperative.

## Disclaimer

This position paper by the Chief Economists does not necessarily reflect the position of DekaBank or the position of the respective Landesbanken and savings banks.

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