

# GERMANY: TOWARDS STRONGER, FAIRER AND GREENER GROWTH

Better Policies Series

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# Foreword

The new government of Germany is coming to power at a challenging time. Overall, the German economy is performing very well. Growth of gross domestic product (GDP) is expected to exceed 2% both this year and next, the unemployment rate reached an historic low of 3.5% in early 2018 and income inequality and poverty are below the OECD average. Still, many citizens feel they do not sufficiently benefit from Germany's good economic performance, as evidenced by the outcomes of the recent election. They perceive that their well-being is compromised by technological change, foreign competition and the arrival of migrants.

Germany's new government will have to tackle these issues by making growth not only stronger, but also fairer and greener. This report identifies key policy reforms to help the country achieve this goal.

First, maintaining robust GDP growth is crucial as broad-based improvements in living standards will not be possible without it. As the population gets older, economic growth will have to increasingly come from productivity gains. But, as in many other countries, productivity growth has weakened. During 2006-16, it averaged 0.8% per year, compared to almost 2% in the preceding decade. Fully reaping the opportunities of the next production revolution and digitalisation will be essential to reverse this trend. This requires improvements in innovation policy and firms' uptake of the latest technologies, further investment in information and communication technology (ICT) infrastructure and skills, as well as supporting labour and social policies to smooth the digital transition.

Second, public investment needs to be higher, especially in early and primary education, as well as in transport infrastructure. The federal government can do more to step up investment, including by supporting municipalities, both financially and through capacity building.

Third, greater efforts are needed to ensure that everybody can benefit from Germany's strong economy and that no one is left behind. Real disposable incomes of households at the lower end of the income distribution have grown by less than half a percent per year over the past decade. Further, some well-being outcomes are markedly lower for people with weaker socio-economic background. The German government needs the right labour, education and tax policies to foster access to quality jobs for everyone, including women, youth, the elderly and immigrants.

Fourth, while regional differences in income per capita and unemployment are below the OECD average, the catching-up process of the Eastern Länder has slowed in recent years. Moreover, some Länder in the North are starting to drop behind the rest. Housing has also become more difficult to afford in some parts of the country, especially in larger cities. Policy measures to reduce housing market imbalances and link rural areas better to Germany's dynamic urban centres can tackle these challenges.

Fifth, meeting the country's climate objectives, including its COP 21 commitments, requires additional efforts. Over the past decade, per-capita CO<sub>2</sub> emissions from fuel combustion decreased only half as fast in Germany as the OECD average. While emissions per capita are slightly below the OECD average, they are well above the average of European OECD countries. Putting in place low-emissions infrastructure, raising environmentally related taxes and accelerating the phase-out of support for fossil fuels would help lower emissions and boost growth and well-being.

Governments around the world need to ensure that citizens share the benefits of growth and that growth does not come at a cost to the environment. Germany has a crucial role to play in these endeavours by leading through example and putting in place the right domestic policies to support stronger, fairer and greener growth. The OECD is proud of its long-standing policy dialogue with Germany and looks forward to supporting the new government. Together, let us design, promote and implement better policies for better lives in Germany and worldwide.



Angel Gurría  
OECD Secretary-General

# Key recommendations

- Foster deeper and faster deployment of fibre in fixed networks through competition, such as that generated by municipal networks, particularly in smaller cities and rural areas.
- To facilitate diffusion of digital technologies in production, ensure that framework conditions facilitate growth among firms that use new technologies, while also stimulating business creation and scale-up.
- Assess and anticipate changing skill needs to adapt curricula and guide students towards choices that lead to good labour market outcomes.
- Further raise the retirement age over the long term, linking it to gains in life expectancy.
- Ensure targeted integration support for refugees with a strong focus on upskilling measures, particularly for the low-skilled, as well as language training.
- Tax capital income at the household level at slightly progressive rates.
- Lower the tax burden on labour, in particular for low-income earners.
- Lower the tax burden on the second earner in personal income taxation, for example by introducing a separate tax-free allowance for second earners.
- Increase public investment in childcare, early childhood education and full-day primary education, as well as transport infrastructure, particularly at the local level.
- Reform energy taxation and carbon pricing to adequately reflect social costs of pollution and climate objectives.

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# 1 Introduction

Germany outperforms the OECD average in many dimensions of well-being. Economic growth has been robust and broad-based in recent years and the unemployment rate is among the lowest in the OECD. Income levels are higher than the OECD average, while income inequality and poverty are lower. Germans are also generally well educated, with numeracy and literacy levels somewhat above the OECD average. However, the country still faces a number of challenges. First, as in many other countries, productivity growth has weakened. This makes further gains in living standards harder to achieve, particularly in the context of an ageing population. Fully reaping the opportunities of the next production revolution and of digitalisation will be key to reversing this trend. Second, low public investment, especially by poor municipalities, is a concern. Stepping up investment in key infrastructure would yield large benefits for long-term inclusive growth. Third, more could be done to ensure that everybody can benefit from Germany's strong economy. Low-paid workers have seen their earnings decline in the past 20 years and some well-being outcomes are markedly lower for people with weaker socio-economic background, notably in health and education. Fourth, regional gaps in economic performance have become more entrenched and housing has become more difficult to afford in the large cities. Fifth, meeting the country's ambitious climate objectives requires additional efforts to align policies in all areas with the need to reduce greenhouse gas emissions.

## Germans generally enjoy a high quality of life

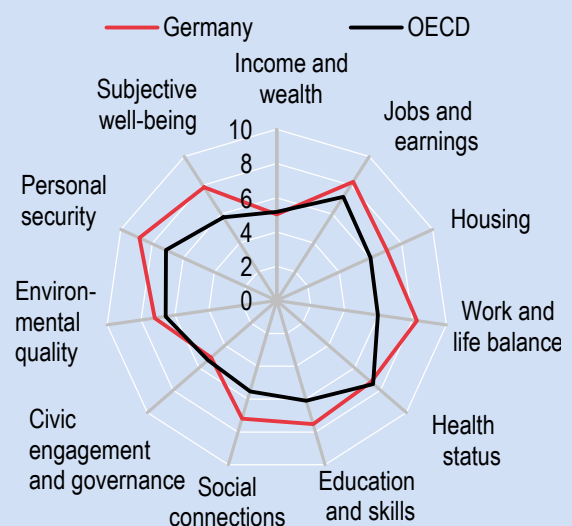
Germany has enjoyed solid economic growth following the outbreak of the global economic and financial crisis. Growth of gross domestic product (GDP) averaged 1.4% since 2007, close to the OECD average of 1.5%. Innovative export industries, in which Germany has a long-standing comparative advantage, such as transport machinery, have expanded their market shares. Firm's successful integration into global value chains has improved their cost competitiveness and boosted sales in distant dynamic markets, namely in Asia. In recent years, growth has increasingly been sourced from domestic demand, helped by expanding employment and associated increases in household consumption.

Germany performs well across most dimensions of well-being (Figure 1.1). In 2016, the employment rate was at 75%, well above the OECD average of 67%. German employees benefit from one of the lowest levels of labour market insecurity in the OECD. The unemployment rate reached 3.5% in seasonally adjusted terms in early 2018, one of the lowest rates in the OECD. Moreover, full-time employed report spending around 40 minutes more on leisure and personal care per day than the OECD average. 87% of the German adult working-age population has completed at least upper secondary education, compared with the OECD average of 75%. Numeracy and literacy levels are somewhat above average according

to the OECD Survey of Adult Skills (PIAAC). Germans enjoy high support from their social networks, with 92% of Germans reporting to have friends or relatives that they can count on in times of trouble (compared to the OECD average of 89%).

FIGURE 1.1. HOW'S LIFE IN GERMANY?

OECD Better Life Index, from 0 (worst performance) to 10 (best performance)

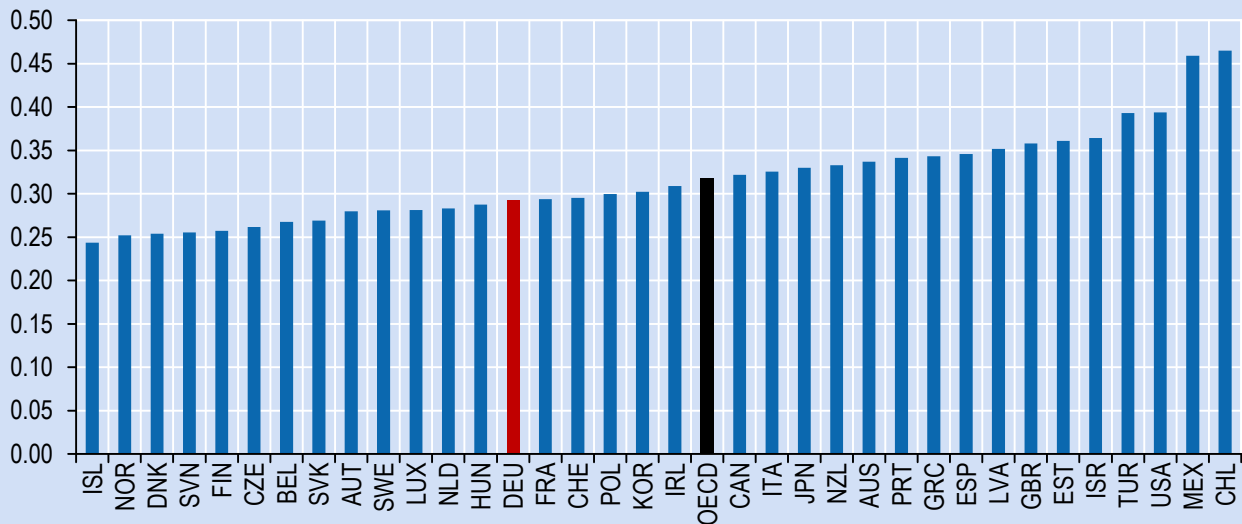


Note: Each well-being dimension is measured using one to four indicators from the OECD Better Life Initiative set. Normalised indicators are averaged with equal weights. Indicators are normalised by re-scaling (linearly) to be from 0 (worst) to 10 (best).

Source: OECD Better Life Index 2017.

FIGURE 1.2. INCOME INEQUALITY IN GERMANY IS RELATIVELY LOW

Gini coefficient of disposable income inequality, from 0 (most equal) to 1 (most unequal), 2014 or latest year



Source: OECD Income Distribution Database.



Life expectancy in Germany (80.7 years) is close to the OECD average (80 years). Still, only 65% of the German adult population perceive their health as good or very good (compared to 69% in the OECD).

Income is distributed more equally than on average in the OECD and more equally than in the other large OECD economies (Figure 1.2). The tax and benefit system reduces income inequality among the working-age population by 28% (i.e. the Gini coefficient for household disposable income is 28% lower than for market incomes, i.e. incomes before taxes and transfers). This is above the OECD average of 25% and well above the United States (18%), although lower than in Ireland (41%). Germany's low unemployment rate also helps to keep poverty low. In 2014, 9.5% of Germans had an income of less than half of the median, compared to the OECD average of 11.5%.

Germany has also improved over the last decade on the OECD's index of Multi-dimensional Living Standards (MDLS), which compounds household average disposable income, life expectancy at birth, the unemployment rate and income inequality (Figure 1.3). The improvement of the index was due to rising income, rising life expectancy and falling unemployment. Rising inequality has dampened improvement in the index. Income inequality as measured by the Gini Index, increased considerably in Germany in the early 2000s (from 0.259 to 0.290 between 1999-2005, compared to 0.312 to 0.317 for the OECD average), but then stabilised.



**A number of important policy reforms and long-standing strengths have contributed to these positive outcomes**

Germany took important steps to reform benefit entitlements and strengthen job placement of the unemployed in 2005. Bargaining of wages and work conditions became more flexible at the firm level. These reforms were followed by steps to adapt the public pension system to demographic change and to consolidate government finances. Germany’s safe haven status in the euro area crisis years allowed the economy to benefit from excellent funding conditions. Meanwhile, membership in the euro area reinforced the competitive position of Germany’s innovative manufacturing sector. All of these developments contributed to robust growth and record-low unemployment. Long-standing structural strengths also contributed. These include a strong tradition of social dialogue and a vocational education system that makes for a successful integration of youth into the labour market.

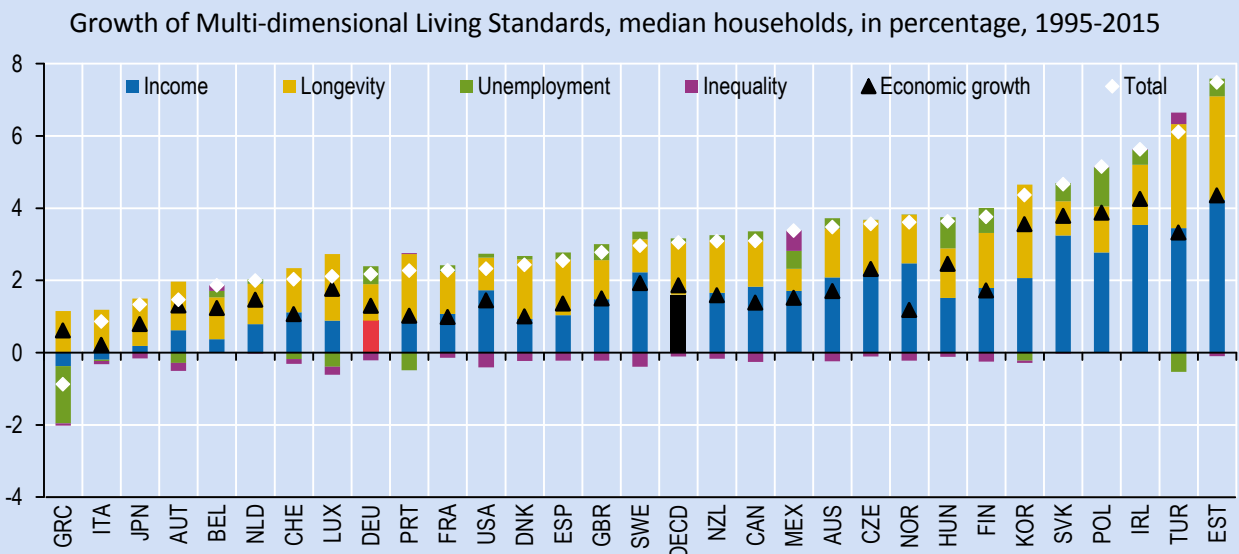
Germany has taken important steps to improve the integration of immigrants into the labour market. These steps will also help improve job prospects of the large number of refugees, which Germany has welcomed for humanitarian reasons in recent years. In 2015, Germany

introduced a general minimum wage, which equals 51% of the median wage of a full-time worker in 2014. It improved the income of low-wage workers without resulting in noticeable negative effects on employment.

Germany has also made progress in improving work-life balance and gender equity. Parental leave allowances have been reformed to encourage fathers to take parental leave. Parents can also combine the allowances with part-time work. Recent reforms require supervisory boards of large corporations to have at least 30% of members from each gender. The gap in hours worked between men and women has diminished in recent years, reflecting progress in expanding and improving the quality of childcare.

Public investment has been increased, including by providing more financial support to poor municipalities. Germany has also boosted investment in its public research institutions, which will continue to underpin the innovative capacity of German manufacturing. To prepare the country for a low carbon emissions future, it has continued to make strides in expanding renewable energy, while reducing the cost of its deployment. This is making it more responsive to market developments.

**FIGURE 1.3. LIVING STANDARDS HAVE BEEN RISING IN GERMANY**

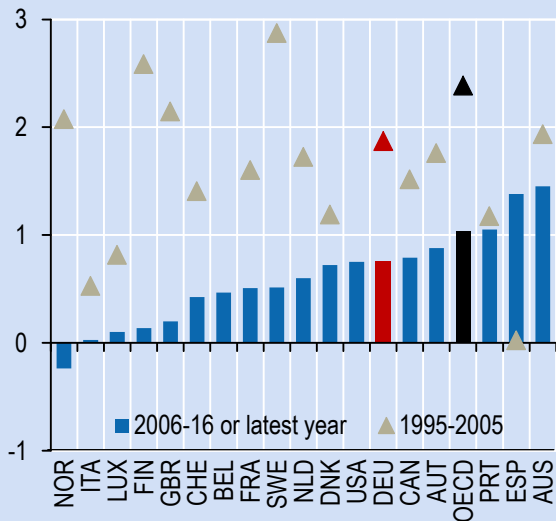


Note: Multi-dimensional Living Standards are measured by an index that compounds household average disposable income, life expectancy at birth, the unemployment rate and income inequality. The computation refers to living standards of individuals living in households with median incomes.

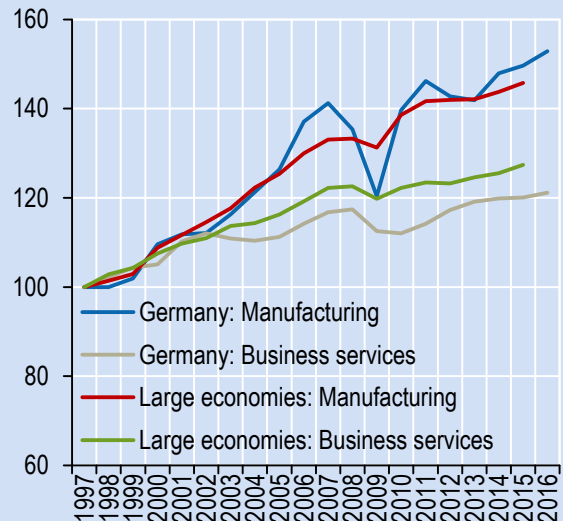
Source: OECD calculations based on OECD Annual National Accounts; OECD Income Distribution Database; and OECD Health Database.

FIGURE 1.4. **PRODUCTIVITY GROWTH HAS WEAKENED AND IS RELATIVELY LOW IN SERVICES**

A. Average annual change in gross value added per hour worked at constant prices



B. Gross value added per hour worked, constant prices, index 1997 = 100



Note: In panel B, large economies include Australia, France, Italy and the United Kingdom; unweighted average.

Source: OECD (2016a), OECD Economic Surveys: Germany 2016, OECD Publishing, Paris.

**But Germany also faces a number of challenges**

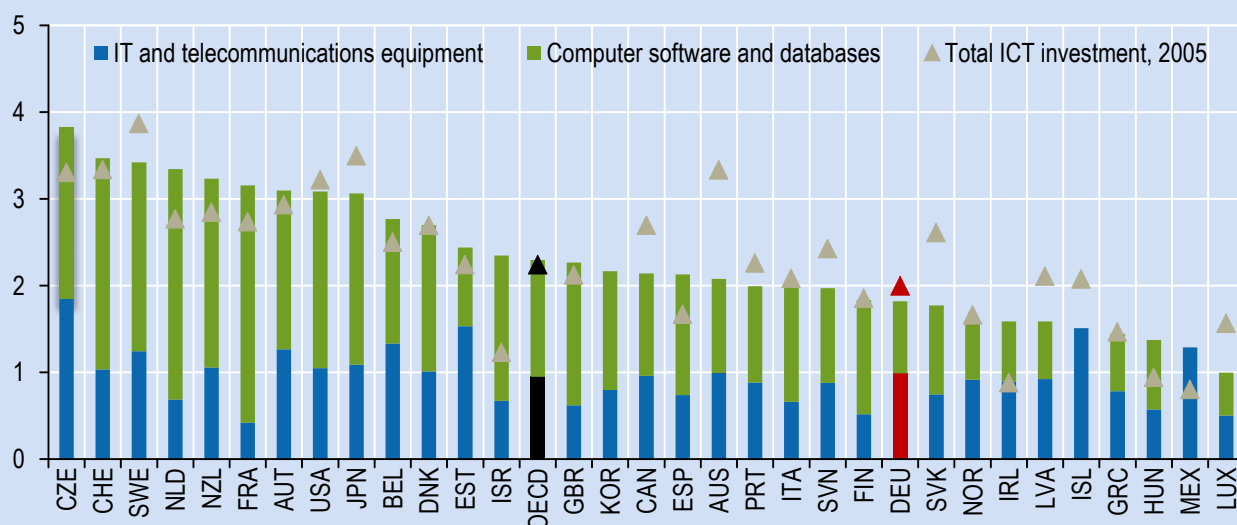
Despite this good overall performance, there is no reason for complacency. A first challenge for Germany will be to sustain past improvements in well-being. Labour productivity growth will be the main source of future gains in living standards, especially in view of demographic change (which will reduce the pool of available labour). As in other OECD countries, labour productivity growth has weakened over the last decade (Figure 1.4, panel A), in part because of lower investment. Moreover, the productivity gap between manufacturing and services in Germany is relatively large (Figure 1.4, panel B). Non-housing business investment has been subdued, including investment in information and communication (ICT) technology, software and other knowledge-based capital.

These areas increasingly drive productivity growth in advanced OECD countries (Figure 1.5). Against this background, Chapter 2 of this report discusses how Germany can better reap the benefits of rapid technological change, including digitalisation. Among other issues, it looks into Germany’s innovation policy framework and firms’ uptake of the latest technologies, the country’s ICT infrastructure and the need to support skills, labour and social policies to smooth people’s transition to the digital era.



FIGURE 1.5. INVESTMENT IN ICT CAPITAL AND SOFTWARE IS LOW

ICT investment, by asset, as percentage of GDP, 2015



Source: OECD (2017a), OECD Science, Technology and Industry Scoreboard 2017: The Digital Transformation, OECD Publishing, Paris, based on OECD, Annual National Accounts Database, Eurostat and national sources.

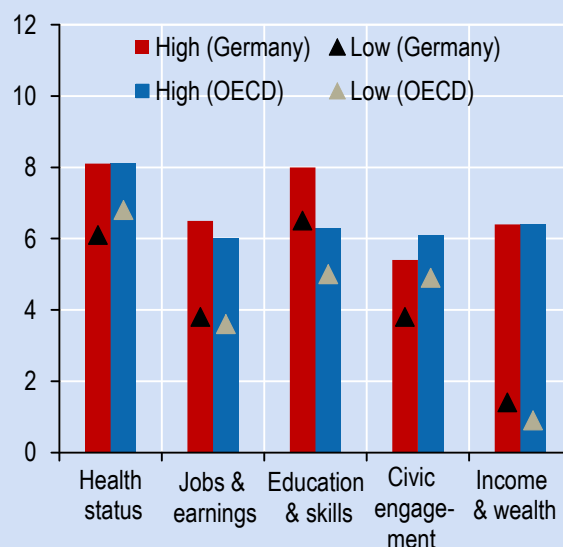
A second challenge relates to low public investment, which – together with low business investment and subdued consumption – contributes to Germany’s large current account surplus. The overall quality of public infrastructure continues to compare very favourably. However, it may be sliding as investment has at times fallen short of capital depreciation over the past decade, especially among municipalities. A particular concern is low investment in poor municipalities. In light of the large benefits of additional investment in key infrastructure for long-term inclusive growth, Chapter 5 of this report investigates policy options to satisfy unmet investment needs at the sub-national level.

Third, though the level of income inequality is rather modest, wealth is strongly concentrated among rich households. In 2014, the top 10% held almost 60% of the total wealth in Germany, more than on average in the OECD (almost 52%). Moreover, a significant gap exists between German people with high and low socio-economic background in some well-being dimensions. Disparities are larger than the OECD average when it comes to health status and, to a lesser extent, when it comes to jobs and earnings, as well as education and skills (Figure 1.6). Despite recent reforms, many workers are still on low pay, and most are employed in the service sector. The probability to be employed is much lower for

people with low education. At the same time, learning outcomes at school at the age of 15 depend more on socio-economic background than in many other OECD countries. Despite recent attempts to reduce gender inequality, the

FIGURE 1.6. DISPARITIES IN WELL-BEING ARE LARGE IN SOME AREAS

Normalised scores on a scale from 0 (worst condition) to 10 (best condition)



Note: High/low socio-economic background (denoted “High”/“Low”) is defined as having a disposable income among the top/bottom 20% or having attained tertiary/only primary education.

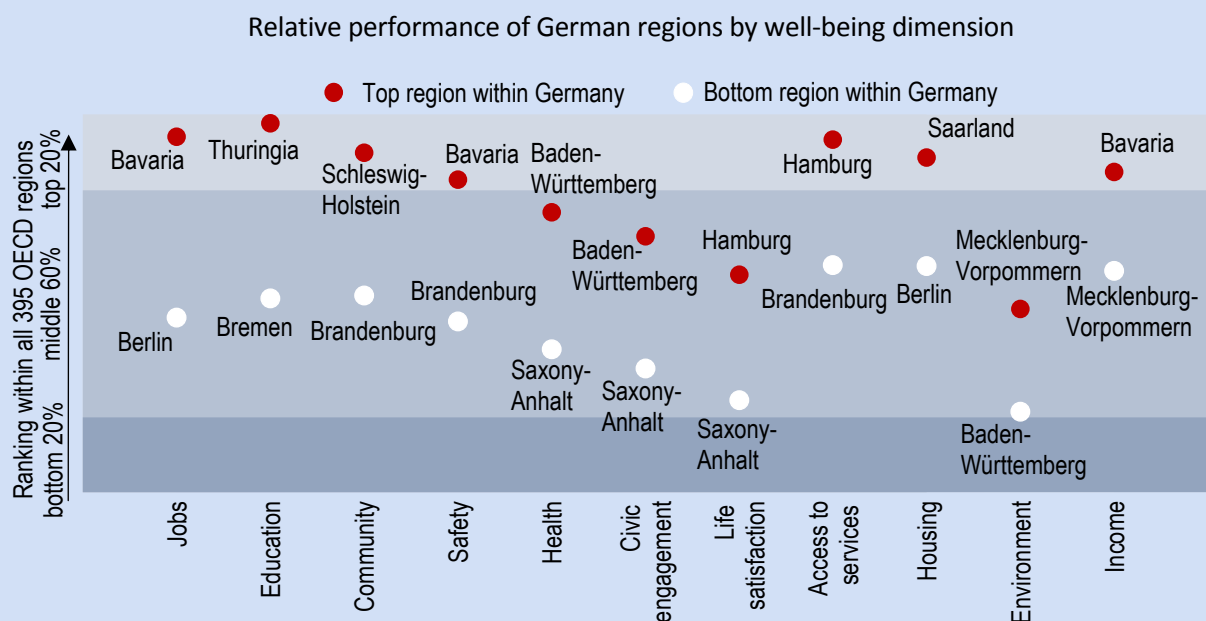
Source: OECD Better Life Index 2017.

earnings gap between women and men remains sizable, related to a high share of women working part-time. Experience across OECD countries shows that a smaller gender pay gap reduces poverty risks in households, as job loss and household re-formations are key triggers of poverty risk. A smaller gender pay gap could also substantially boost economic growth. Chapter 3 of this report investigates policy options to create quality jobs for everyone, focusing in particular on women, youth, the elderly and immigrants. Chapter 4 looks into tax policy, discussing the need to reduce the tax burden on labour, particularly at the lower end of the income spectrum. This could be financed through higher environmentally related taxes (Chapter 6) and higher taxes on capital gains, as well as through a tough fight against tax evasion and avoidance.

Fourth, despite Germany’s exemplary track record of good well-being across the country, there are a number of challenges at the regional level. Income disparities across the Länder, as measured by the Gini index of GDP per capita, are 1.5 percentage points below the OECD average. This is due to the catching-up of labour productivity levels in the less-developed Länder in the East over the past decades. Also, regional differences in unemployment do not stand out in

international OECD comparison. However, the catching-up process has slowed in recent years, in part reflecting lower equipment investment and smaller firm size. In addition, some Northern Länder appear to have fallen further behind in their productivity performance. Regional disparities are more marked when it comes to some non-income dimensions of well-being, notably access to jobs, education outcomes and social connections (Figure 1.7). Well-being outcomes are often strongest in the South, while the Eastern Länder and, since recently, also some Northern Länder, do less well. Poverty (defined as income less than half of national median income) is also concentrated in the Eastern Länder. Four German regions (Brandenburg, Mecklenburg-Vorpommern, Saxony-Anhalt and Thuringia) record poverty rates of more than 15% of their population, placing them above the average of all OECD regions. Moreover, even though housing investment has responded to rising demand, house prices have risen strongly in major urban centres, posing a challenge to well-being. Chapter 5 of this report discusses policy options to address these issues such as improved linkages between rural and urban areas, and measures to reduce housing market imbalances.

FIGURE 1.7. REGIONAL DISPARITIES ARE NOTEWORTHY FOR SOME NON-INCOME DIMENSIONS OF WELL-BEING



Note: Relative ranking of the regions with the best and worst outcomes in the 11 well-being dimensions, with respect to all 395 OECD regions. Each circle represents a region. The 11 dimensions are ordered by decreasing regional disparities in Germany, and are related to data around 2014.

Source: OECD Regional Well-Being Database.



Fifth, efforts need to continue to green Germany's economic growth. Per-capita CO<sub>2</sub> emissions from fuel combustion decreased by 6.3% between 2005 and 2014, only about half the OECD average of 12.8%. Similarly, pollution has a relatively strong impact on air quality. Estimated deaths from ambient air pollution amounted to 58 persons per 100 000 people in 2013, well above the OECD average of 38 persons and well above levels seen in countries such as France, Austria, Netherlands and Switzerland. Together with the other EU Member States, Germany has committed to reduce greenhouse gas emissions by at least 40% by 2020 and by 55% by 2030 compared to 1990 levels. By 2050, the country wants to reduce its emissions by 80-95% compared to 1990 levels. Achieving these targets will require aligning not only environmental policies, but policies in all areas with them. According to recent government projections, current policies will only result in a 32% reduction by 2020 (BMUB, 2017), which means that the national target will not be reached. It is also below the commitments to the European Union (about 34%). It is important to meet targets as the credibility of climate policy is critical in view of the long-term nature of the climate challenge. Chapter 6 of this report looks into these issues, focusing in particular on the need to put policies in place for low-emissions infrastructure, to strengthen the role of environmentally related taxes and to accelerate the phase-out of support for fossil fuels. Since new technologies will be crucial to make growth consistent with the low-carbon transition, Germany's climate objectives are also directly linked with its ambition to stay at the forefront of innovation (Chapter 2).

### **The coalition agreement of the new government addresses some key priorities**

The new government's stated overarching goal is to boost sustainable and inclusive growth and improve social cohesion. To this end, it envisages a number of policy reforms that will address some of the key issues raised above.

First, it emphasises the need to take action to make the most of digitalisation (Chapter 2), including more public investment in high-speed broadband infrastructure and in research and development. Starting-up a business is supposed to become easier.

Second, the government aims at making access to educational opportunities more equal by expanding full-day primary schools and childcare. It envisages introducing a legal right to primary full-day school places by 2025. Spending on digital equipment of schools and the qualification of teachers (Chapter 5) will be increased and a national life-long learning strategy will be developed to strengthen ICT skills.

Third, promoting a more inclusive labour market (Chapter 3) and strengthening social protection are key priorities. The new government plans to tighten regulation on temporary employment contracts and to allow for more flexibility in working hours. It also plans to strengthen support to improve employment prospects of the long-term unemployed. It will improve family benefits, increase spending on social housing and introduce tax incentives, as well as grants, for private home purchases for families with children. Pension reforms are aimed at keeping the benefit replacement rate constant and at helping low-income workers at risk of receiving low pensions, mothers with three or more children, disabled people and the self-employed. The *Länder* will also be given extra funds to relieve them of the costs of integrating refugees.

Fourth, regional differences in public service provision will be addressed (e.g. regarding health care provision and public transport). Poor municipalities will get special support and spending to support structural changes in regions and sustainable agriculture in rural areas will be increased.

Fifth, the need for urgent additional measures and overall stronger efforts towards reaching the climate goals are acknowledged. However, the commitment to the 2020 GHG emission target has been softened, as the agreement says it may not be reached in full. This could put the credibility of targets at risk more generally. Overall, climate policy measures aim at expanding the charging infrastructure to electrify transport; fostering low emissions transport (Chapter 6) and improving air quality, especially in cities. Digital mobility solutions that can support low emission transport (including shared mobility) should be promoted through digital test fields and open regulation. The coalition agreement also aims to phase out coal-fired power generation with regard to reaching the 2030 climate targets.



## 2 Reaping the benefits of digitalisation

Germany specialises in many technologically advanced industries, including complex business services and high-tech and medium high-tech manufacturing. However, as digital technologies become ubiquitous, sustaining robust economic growth will require Germany to ensure it has the right conditions in place for firms and individuals to make the most of the digital economy. Germany has relatively slow uptake of the most recent wave of digital technologies, and its digital infrastructure and skills need improvement. Tackling these issues and ensuring the digital transformation is underpinned by a strong innovation ecosystem will help Germany to successfully seize the opportunities offered by digital technologies and manage the accompanying changes in the world of work.

### German firms are slow to adopt the most recent wave of digital technologies

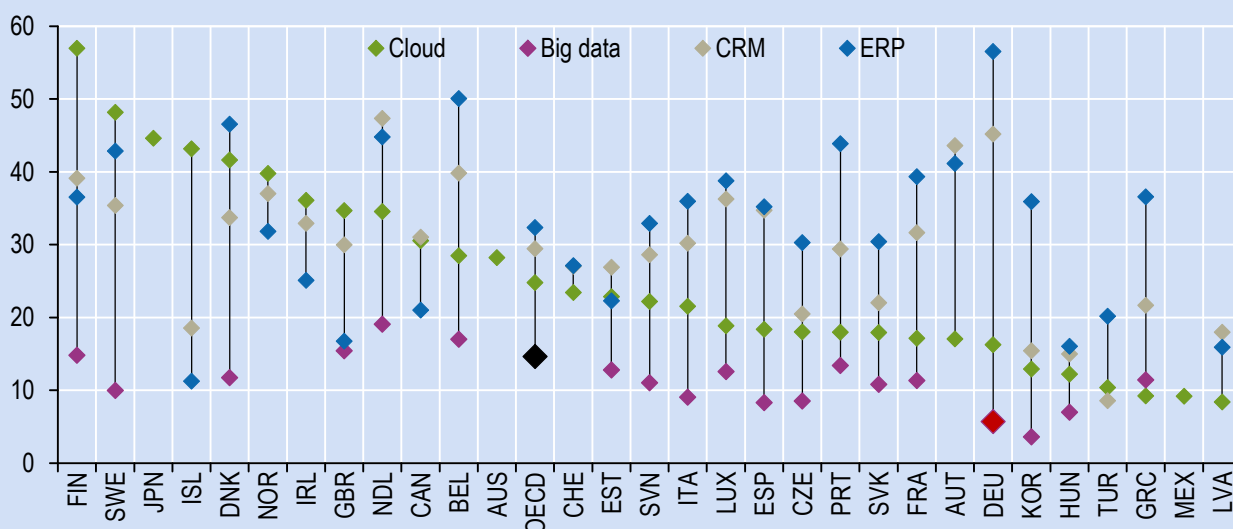
German firms lead in several areas of the digital economy, but are lagging behind in others. The country has the highest proportion of businesses using electronic resources planning (ERP) and customer relationship management (CRM) software among all OECD countries for which data are available (Figure 2.1). These figures reflect a high degree of digitalisation of the various processes that are essential to running a business, including inventory and order management, accounting, human resources and customer services.

As in other OECD countries, differences among large and small firms and different sectors remain large. For instance, 93% of large German firms

(250 employees and more) use ERP, compared to only 50% among small firms (10 to 49 employees). Firms in the services sector are in general more intensive in the use of key digital technologies than manufacturing firms. However, according to the Digital Scoreboard of the European Commission, the share of high intensive users in professional services, transport, storage and retail is considerably lower in Germany than in peer countries. Moreover, German firms seem to have been slower to adopt the most recent wave of digital technologies, which enable data-intensive e-services. Only 16% of German firms use cloud services and less than 6% conduct big data analytics – the OECD averages being 25% and 11%, respectively. As cloud services are a key productivity enhancer and innovation is

FIGURE 2.1. GERMAN FIRMS ARE LAGGING BEHIND IN ADOPTING THE LATEST WAVE OF DIGITAL TECHNOLOGIES

Enterprises using selected ICT tools and activities, in percent of all enterprises with ten or more persons employed, 2016

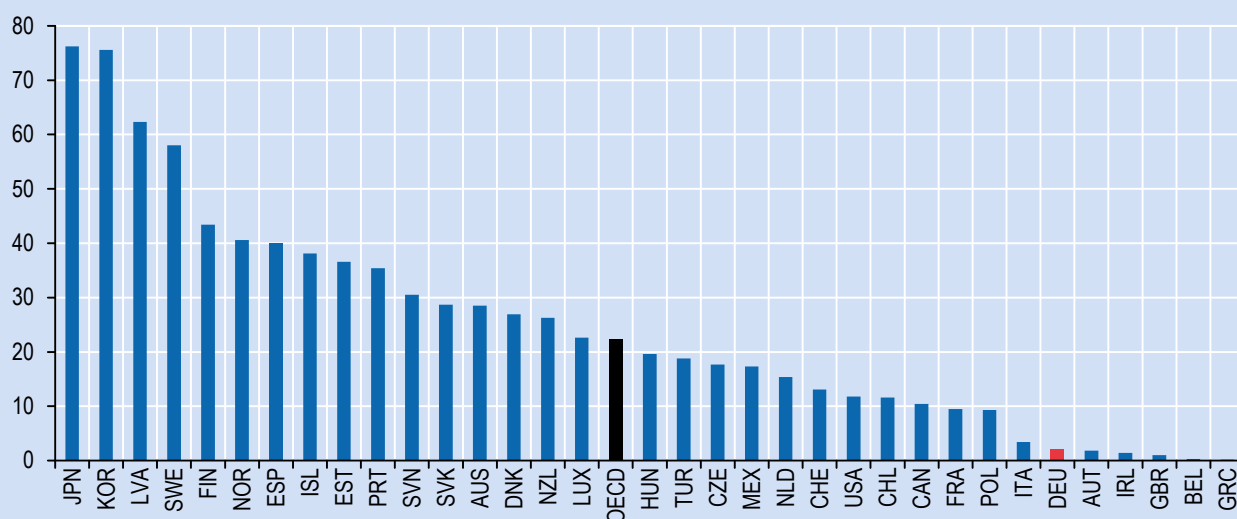


Note: Data for electronic resources planning (ERP) and customer relationship management (CRM) software refer to 2015.

Source: OECD, *ICT Access and Use by Businesses Database*.

FIGURE 2.2. GERMANY NEEDS TO FURTHER EXPAND ITS FIBRE NETWORK

Share of fibre connections in total broadband subscriptions, in percentage, June 2017



Source: OECD Broadband statistics, <http://oe.cd/broadband>.

increasingly data-driven, it is important to act promptly to close this gap. Especially for the German small and medium-sized enterprise (SME) sector, this is an untapped opportunity to boost productivity, considering that cloud computing lowers the cost of digitalisation by relieving firms from building their own in-house ICT systems.

The IT Security Act, in force since July 2015 and amended in June 2017, provides a solid framework to strengthen digital security for critical infrastructures. But initiatives to share information and experiences with businesses and organisations, such as the Alliance for Cyber Security, could be usefully scaled-up to improve digital trust. This would foster adoption of cloud services and data analytics, particularly by SMEs. Streamlining regulations on data storage and processing services would also increase competition among suppliers of cloud services and stimulate adoption among businesses.

### Germany urgently needs to expand and improve its high-speed broadband networks

Fully benefiting from the opportunities linked to digitalisation requires that all individuals, businesses and governments have reliable and widespread access to digital networks and services. The demand on high-speed infrastructures, especially fixed and wireless broadband networks, will only increase as the Internet of Things connects more devices to networks. Germany lags behind the OECD average for mobile broadband subscriptions (78.6

subscriptions per 100 inhabitants in June 2017, versus an OECD average of 101.8). Germans also have a lower level of mobile data usage. In 2016, for example, mobile data usage per subscription per month amounted to 1.2 GB for Germany compared to 11 GB in Finland and 8 GB in Latvia.

While Germany is ranked seventh in the OECD with respect to fixed broadband subscriptions (39.4 subscriptions per 100 inhabitants as of June 2017), fibre subscriptions only represent 2.1% of fixed broadband subscriptions (Figure 2.2). This compares to over 70% in leading countries (76.2% in Japan and 75.6% in Korea) and an OECD average of 22.3%. Since 2015, Germany has set aside more than EUR 4.0 billion in subsidies to help providers expand broadband in underserved areas. Further funding should be made available for this key infrastructure, while ensuring competition is used to maximise private sector investment. Taking fibre closer to homes and work places is critical. In the future, highways will need improved fibre coverage in light of developments such as autonomous vehicles. The future success of Germany's high-tech manufacturing will depend on widespread high-speed broadband that is well linked to networks and devices in other countries, especially in the automotive sector.

### Innovation policy needs to reinforce the digital momentum

Effective uptake and use of digital technologies typically requires additional investments in

complementary knowledge-based capital, from skills to managerial know-how, as well as new business models and processes. As indicated above, diffusion of digital technology is a challenge in Germany. In fact, in 2015, a survey of 4 500 German businesses found that just 18% were familiar with the term “Industry 4.0”. Further, only 4% had digitalised and networked production processes or had plans to implement them (ZEW-IKT, 2015). Senior management is an important driver for digitalisation (Löher and Schlepphorst, 2017). However, the return on digital investment is seen as highly uncertain and firms are thus reluctant to invest in new digital business opportunities. One-third of firms did not include digitalisation in their investment projects for 2018 (Zimmermann, 2017). Moreover, even though digitalisation does not necessarily require expensive investment, firms are concerned about potential pressures on their financial situation (Zimmermann, 2017). Well-designed innovation policies can help firms identify and integrate new technologies into their business processes and significantly strengthen their innovation performance.

Germany's programme “Plattform Industrie 4.0” offers a number of mechanisms to help foster diffusion, and the longstanding Fraunhofer Society and its institutes provide a range of advanced training programmes to business, including in digital technologies. Fraunhofer and its institutes also transfer knowledge through

extensive collaborations with companies. In addition, they support researchers to spin out and set up their own companies. Germany's Hightech-Strategie aims to create new instruments to improve regional, national and international networking between science and industry (OECD, 2016b). Initiatives under this policy priority include funding efforts for the internationalisation of clusters, and developing technology-specific open innovation research programmes and dual vocational training systems.

Nevertheless, the OECD's work on the Next Production Revolution underscores that technology diffusion must be well-integrated into the design and implementation of initiatives to advance production. Economic policy framework conditions that facilitate growth among firms that use new technologies, along with a healthy rate of new business creation, are critical. Germany's institutions for technology diffusion should also be encouraged to systematically review their service practices and approaches. This will help ensure these practices are effective and customised for the communities they serve. Ultimately, they can trial and expand new approaches as needs evolve and evidence of effectiveness is gathered. While support for research breakthroughs is important, policy makers must ensure sufficient attention to the industrial scale-up and diffusion of new technologies. There is an important human dimension to this. Effective diffusion of





technologies depends upon meaningful interaction between people, and a tacit exchange of knowledge.

### **Digital trade opens new prospects for German businesses and consumers**

Digitalisation is changing how countries trade. It is altering how products are made and delivered. It is leading to a greater bundling of goods and services, as well as the emergence of new services, both of which are particularly relevant for Germany's manufacturing firms. This, in turn, changes the effects of some traditional trade policy measures and also creates entirely new policy challenges. For example, digital platforms selling goods in global markets are associated with a much greater volume of small packages. This is raising issues in terms of handling and customs procedures, tax collection, *de minimis* thresholds for tariffs and counterfeit goods. Growing interconnectedness and a greater demand for just-in-time delivery means that trade needs to be ever faster and more reliable. For example, digitisation of information can help meet growing demands for the tracking and traceability of products across borders – facilitating trade, in particular for agricultural products, but also requiring interoperability of data exchange systems and harmonisation of e-certificates.

The blurring of the lines between goods and services raises definition and classification-related problems for applicable laws and trade commitments. As manufactured goods increasingly involve embedded services, barriers to trade in services now can impact trade in goods. New challenges and opportunities for competitive manufacturing exporters such as Germany arise from 3D printing, which will also be affected by market access in related services. Even where a transaction itself might not seem to be affected by any kind of trade measure, the disruption of a supporting service can prevent the transaction from occurring (e.g. restrictions on e-payment services for goods trade via digital marketplaces). With data flows underpinning digital trade, and the organisation of production in global value chains, restrictions on data flows can have important implications for market openness. Data flows are also increasingly a means of production, as well as assets that can themselves be traded. Policy needs to ensure that appropriate and proportional safeguards are available to pursue legitimate public policy goals (e.g. with respect to privacy), while preserving the significant benefits from an open digital environment and avoiding unnecessary trade restrictions.

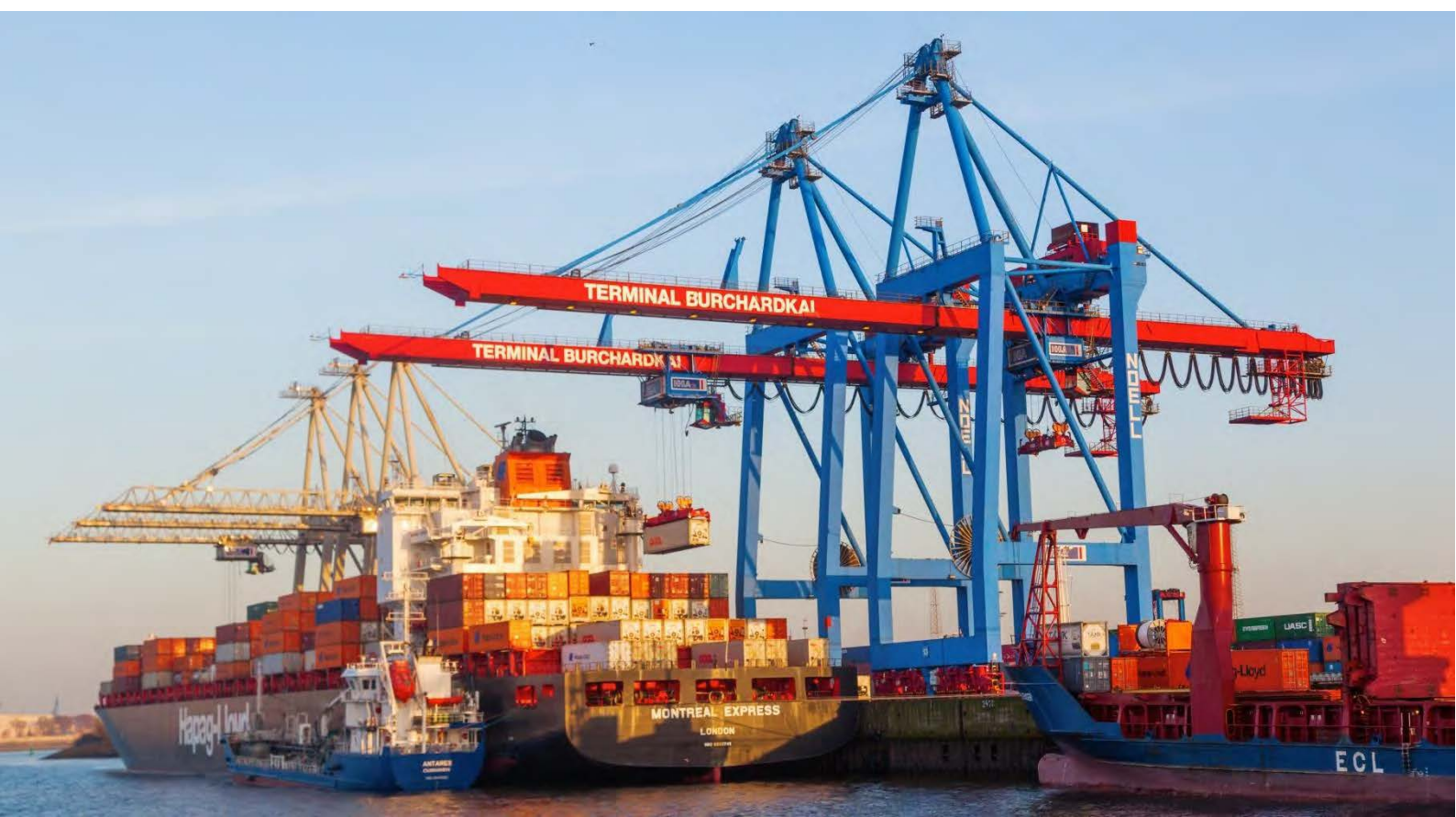
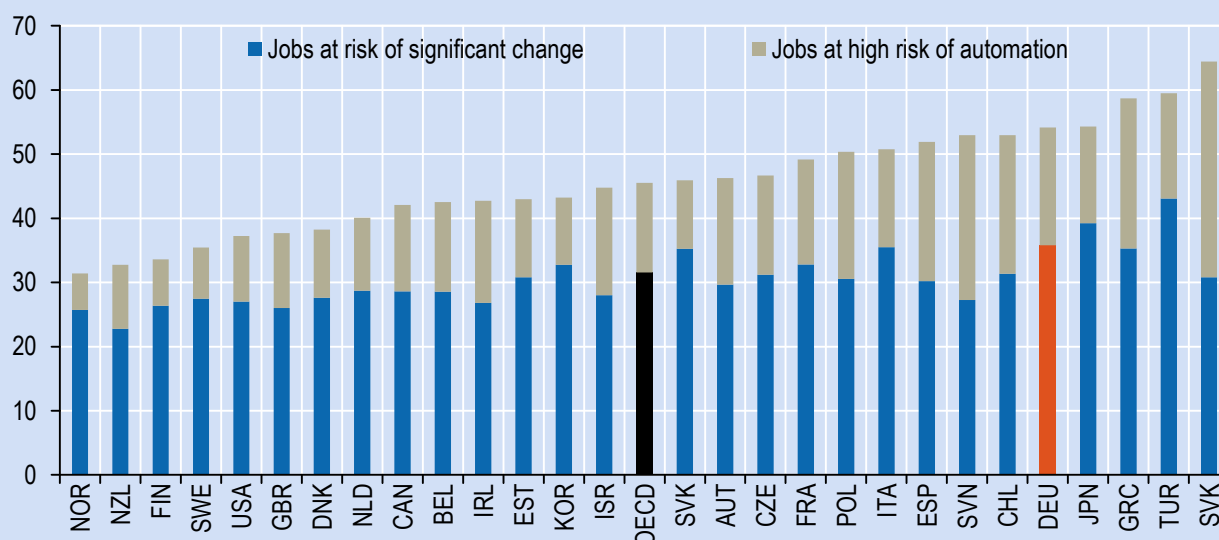


FIGURE 2.3. **MANY WORKERS IN GERMANY WILL SEE RADICAL CHANGE IN THEIR JOBS**

Percentage of workers in jobs at high and medium risk of automation



Note: Data for the United Kingdom correspond to England and Northern Ireland. Data for Belgium correspond to the Flemish Community.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) (2012); and Nedelkoska, L. and G. Quintini (2018), "Automation, Skill Use and Training", OECD Social, Employment and Migration Working Papers, No. 202, OECD Publishing, Paris.

### The future of work in Germany

The spread of new technologies leading to rapid digitalisation and automation has given rise to international anxiety about the risk of technological unemployment. The OECD estimates that about 14% of jobs are at high risk of being automated on average, but over 30% more are at risk of being radically changed by technology (Nedelkoska and Quintini, 2018).

Germany is among the countries with a higher-than-average share of jobs at high risk of automation. It also has a higher-than-average share of jobs that will face significant changes in tasks (Figure 2.3). In recent decades, the interaction of technological progress and globalisation has also radically changed the mix of available jobs. Germany, like the rest of the OECD, has experienced job polarisation. In this process, the share of middle-skill/middle-pay jobs has decreased relative to the share of low- and high-skill/high-pay jobs (OECD, 2017b). In Germany, the middle-skill share of employment fell by 8.2 percentage points between 1995 and 2015. Meanwhile, the employment shares of high- and low-skill occupations rose by 4.7 and 3.4 percentage points, respectively.

Activation and social protection policies need to adapt to these changes to help workers cope more effectively with potentially disruptive

economic changes. It is particularly important to adapt social protection systems to rapid structural change and emerging forms of employment. This could occur, for example, by making entitlements more portable from one job to the next. Social protection systems could also make it easier to cumulate contributions from multiple jobs. Workers who lose their jobs due to economic change must be helped more effectively to move from declining sectors and occupations to the sectors and occupations where new jobs are being created. Labour market adjustment to structural change is likely to proceed more smoothly and leave fewer workers behind if social partners play an active role.

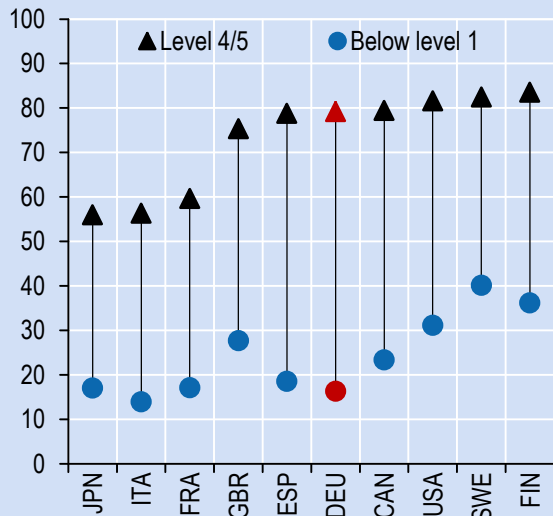
### Boosting access to adult learning is critical for improving skills for the digital economy

Germany's industrial specialisation appears to be supported by its skills characteristics (OECD, 2017b). However, the rapidly changing digital economy is placing pressure on education and training systems to remain up-to-date and to equip individuals with the right mix of cognitive (including ICT), social and emotional skills. Many SMEs and family-owned businesses perceive the lack in digital skills of their employees as a challenge for digitalisation (Saam, Viete and Schiel, 2016; Löher and Schleppehorst, 2017).



**FIGURE 2.4. IN GERMANY, THE LOW-SKILLED PARTICIPATE MUCH LESS IN ADULT LEARNING THAN THE HIGH-SKILLED**

Participation in education and training, by level of literacy proficiency, in percent of adults



Source: OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing, Paris.

The OECD Survey of Adult Skills reveals that the literacy, numeracy and problem-solving skills of German adults in technology-rich environments are around average. Nevertheless, many workers in Germany have low readiness to learn and 23% of adults are low performers in either literacy or numeracy (slightly below the OECD

average). Moreover, while overall participation in adult learning is average, the participation gap in adult learning between high-skilled and low-skilled adults is much larger in Germany than in most OECD countries (Figure 2.4).

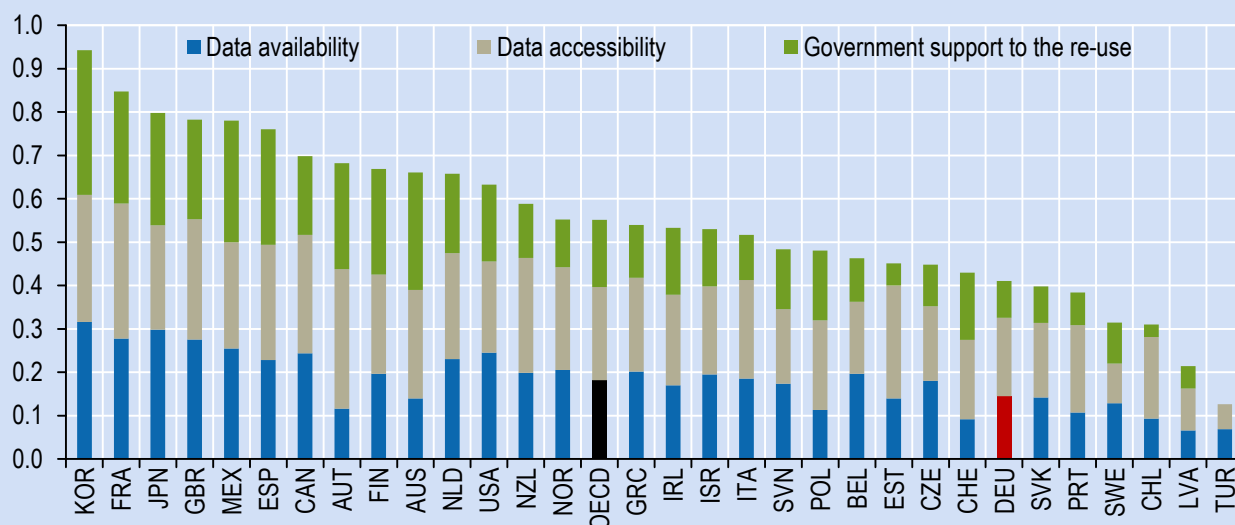
Current rates of participation in adult learning may not be enough for a country that specialises in high-tech manufacturing, especially as these industries are perpetually affected by digitalisation and automation. In order to prepare for the jobs of tomorrow, adults need ample opportunities to continuously develop and adapt their skills to meet the potential skills needs of the digital economy. Low- and medium-skill workers are the least likely to receive training in all OECD countries. Yet they may be facing the greatest risk of job loss.

Access to adult learning is also very important for older workers in Germany. They are less likely than their younger colleagues to be as proficient in a technology-rich working environment. Adult learning is also important for adult refugees and migrants who may need to develop language, vocational or other targeted skills to integrate successfully into the German labour market. Skills policies need to better support all workers at risk of displacement to ensure they can access quality adult learning. This will be key to helping everyone benefit from the opportunities offered by digitalisation and globalisation.



FIGURE 2.5. GERMANY COULD DO BETTER IN TERMS OF THE AVAILABILITY AND ACCESSIBILITY OF GOVERNMENT DATA AS WELL AS ITS EFFORTS TO PROMOTE DATA REUSE

OECD OURdata Index, from 0 (worst performance) to 1 (best performance), 2017

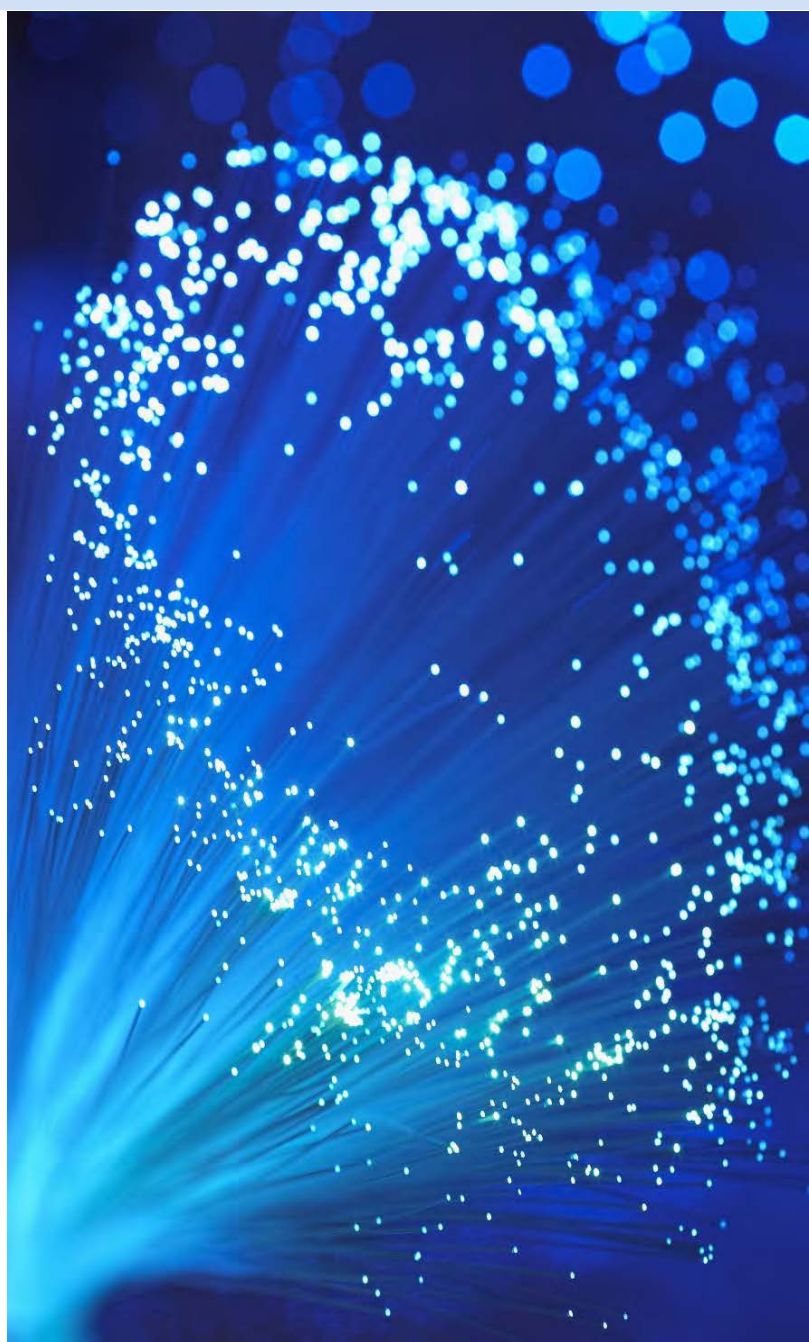


Source: OECD Survey on Open Government Data 3.0.

### Seizing new technological opportunities can help modernise Germany's public administration

The breadth and pace of change brought about by the digital revolution open up new doors for the delivery of better public services and higher public sector productivity. Governments can now use massive amounts of data to draw insights, understand patterns and design better and more tailored policy solutions. Germany's Digital Agenda places public sector modernisation and innovation as one of its core components. It emphasises the role of open data as a driver for the transformation of public service delivery. The country is also eager to use open data policies as strategic tools for greater public sector integrity and accountability.

While its ambitions are well placed, the German government starts from a challenging position. The OECD's Open, Useful and Reusable Data (OURdata) Index benchmarks open government data policies across countries in terms of availability, accessibility and efforts to promote the reuse of data within and outside of government. The German government scores significantly below the OECD average in all three areas (Figure 2.5). The new legislation on open data, which entered into force on 13 July 2017, stipulates the relevance of publishing open data following an open-by-default approach, thus underpinning the implementation of open data initiatives across the broad public sector in Germany.



## Key recommendations

- Foster deeper and faster deployment of fibre in fixed networks through competition, such as that generated by municipal networks, particularly in smaller cities and rural areas.
- Increase the number of mobile broadband subscribers and the use of mobile data through a competitive environment in the provision of mobile broadband services.
- Collect rigorous evidence on the cost-effectiveness of the various tools and approaches used by institutions that have diffusion remit.
- Take a holistic, horizontal approach to digital trade issues, given that issues tend to span both goods and services.
- Ensure the speed and efficiency of customs and logistics services, which can in turn be promoted by digitalisation.
- Assess and anticipate changing skill needs to adapt curricula and guide students towards choices that lead to good labour market outcomes.
- Ensure the education system equips students with solid literacy, numeracy and problem-solving abilities, but also basic ICT skills and soft skills, paying particular attention to the most disadvantaged groups.
- Improve the effectiveness of lifelong learning and training for adults by offering better incentives for workers and firms to re-skill and up-skill and making training opportunities widely available rather than linking them to one's work status or workplace.
- Pay particular attention to low-skilled workers, who tend to be neglected by on-the-job training programmes and participate less frequently in lifelong learning programmes.
- Support high-performance work practices among employers (e.g. team work, job rotation, bonus pay and flexibility in working hours).
- Ensure that activation measures are sufficiently preventive, taking into account megatrends and the likely risk of job loss in different sectors, and providing workers – especially older workers – with adequate information and re-employment support ahead of potential job losses (e.g. during the notice period prior to a mass redundancy).
- Adapt social protection systems to the new world of work by ensuring social protection for excluded groups of self-employed workers and linking entitlements to individuals rather than jobs.
- Given the central role of data flows in underpinning digital trade, continue to ensure that appropriate and proportional safeguards are available for pursuing legitimate public policy goals in a way that is least trade distorting and that preserves the significant benefits from an open digital environment.
- Raise awareness and develop capabilities that support the emergence of a data-driven culture in the whole public administration, having the central government play a key role, in particular during the first stages of the implementation of new regulations.
- Engage with the community of data consumers in the business, academia, journalism and civil society community, to understand their needs and take a user-driven approach to data publication, prioritising the publication of high impact datasets.



# 3 Promoting job quality for everyone

The German labour market does well in terms of job quantity, quality and inclusiveness. Besides high employment and low unemployment, German workers enjoy low labour market insecurity and high earnings quality. The share of jobs with excessive job strain and the gender labour income gap are the main areas of weakness, compared to other OECD countries. Moreover, in spite of the excellent VET system, too many young people leave school without an upper-secondary education, which leaves them ill-prepared for careers in Germany's skills-based economy. More can be done to foster employment and earnings for disadvantaged groups including older workers, immigrant workers and people with disabilities. A more inclusive economy, using the strengths of various societal groups, fosters stronger and more sustainable growth and will help address the projected decline in Germany's labour force.

## Germany scores well on most measures of job quantity, quality and inclusiveness

The German labour market scores well in terms of job quantity, with an employment rate of 66% for the population aged 15-74 (OECD average of 61%) and unemployment rates of just below 4% (OECD average of 6%) at the end of 2016. Germany also enjoys high earnings quality (average earnings adjusted for inequality) and low labour market insecurity (the risk and cost of job loss in terms of foregone income) (Figure 3.1).

Relative to other OECD countries, however, job quality in Germany could be improved by reducing the portion of workers in jobs characterised by job strain. According to the OECD Job Quality Database, 46% of employees in Germany work in strained jobs compared to less than 35% in the top three OECD performing countries. Germany's below-average performance in job strain is the result of relatively low levels of resources for workers to accomplish the required tasks. In particular, higher levels of social support available to workers and greater autonomy would increase well-being.

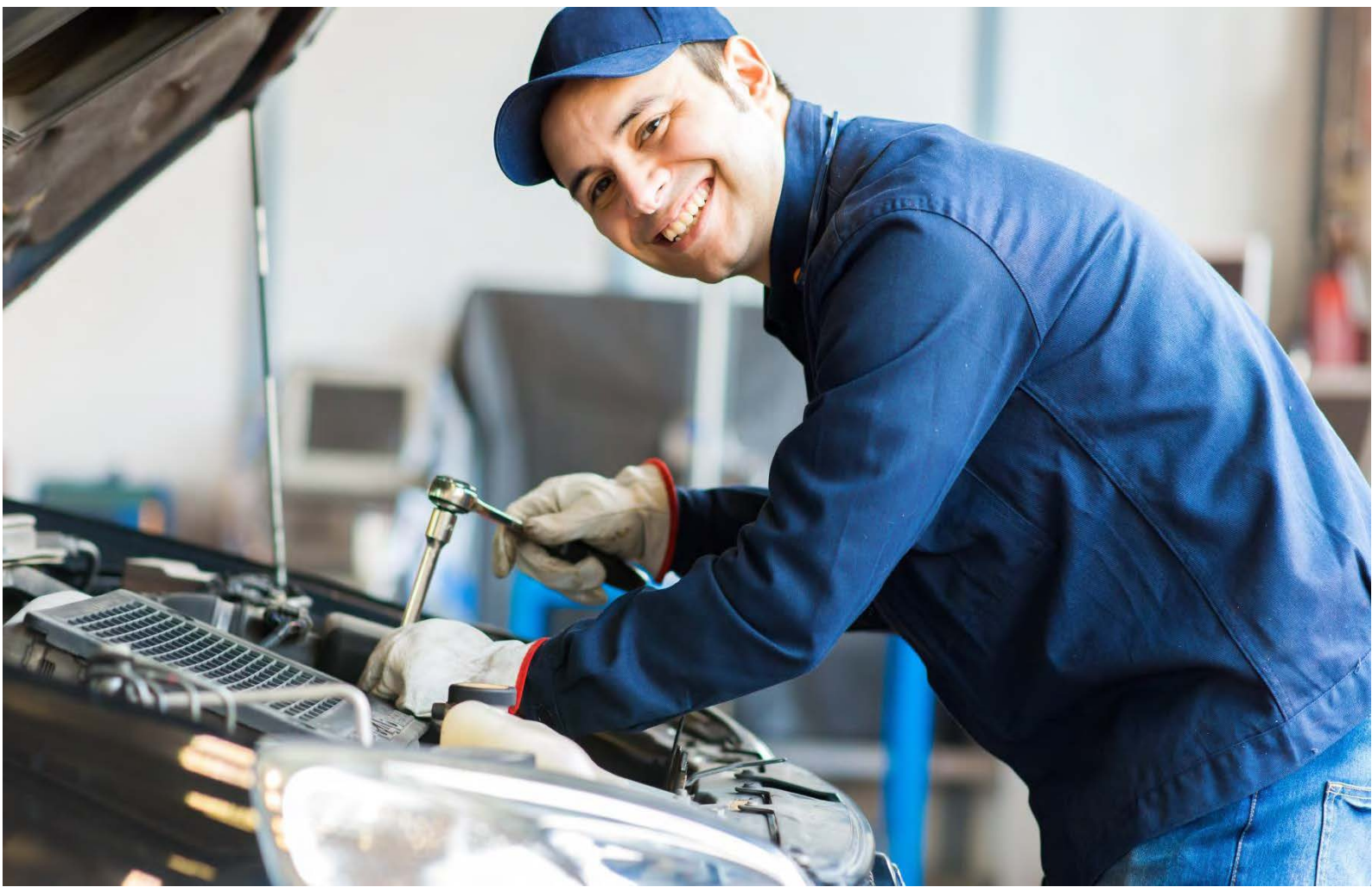
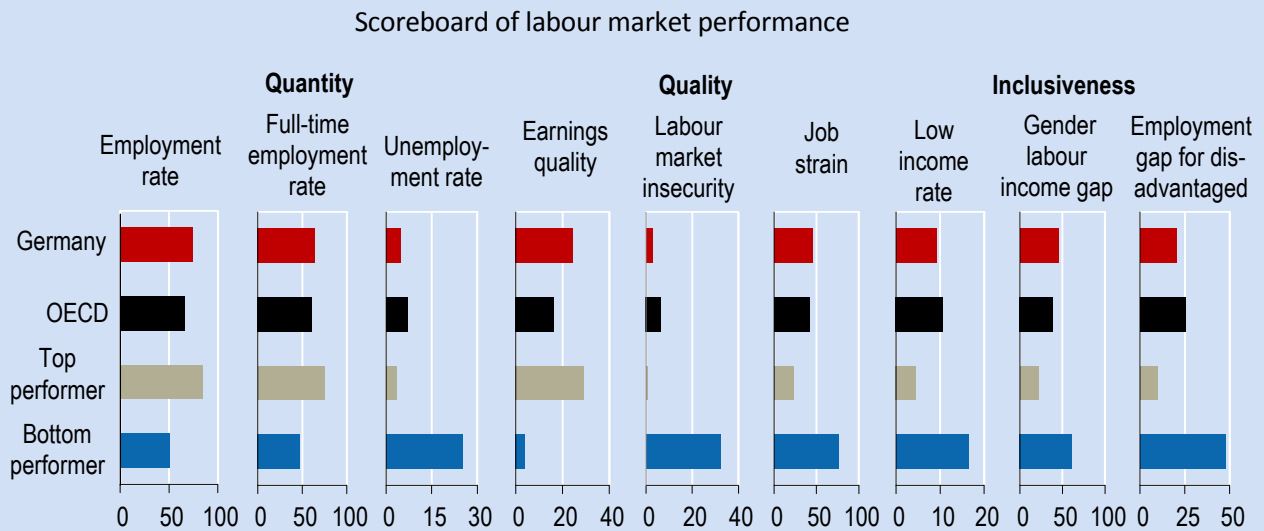


FIGURE 3.1. GERMANY PERFORMS WELL ON JOB QUANTITY AND QUALITY, BUT COULD IMPROVE ON JOB STRAIN AND INCLUSIVENESS



Note: Earnings quality: gross hourly earnings in USD adjusted for inequality. Labour market insecurity: expected monetary loss associated with becoming unemployed as a share of previous earnings. Job strain: percentage of workers in jobs characterised by a combination of high job demands and few job resources to meet those demands. Low income rate: share of working-age persons living with less than 50% of median equivalised household disposable income. Gender labour income gap: difference between average per capita annual earnings of men and women divided by average per capita earnings of men. Employment gap for disadvantaged groups: average difference in the employment rate for prime-age men and the rates for five disadvantaged groups (mothers with children, youth who are not in full-time education or training, workers aged 55-64, non-natives and persons with disabilities) as a percentage of the employment rate for prime-age men.

Source: OECD (2017b), *Employment Outlook*, OECD Publishing, Paris.

### Germany needs to close gender gaps in employment

Almost seven out of ten women of working age in Germany are in employment: this is just above the OECD average (almost 60%), but below Sweden (75%), for example. Furthermore, women in Germany often tend to work on a part-time basis. This is especially true for working mothers: more than half (57%) of all employed mothers in Germany are in part-time work, compared to 22% in France, 12% in Denmark and just below 25% across the OECD, on average; only in the Netherlands is the rate higher (almost 70%). A more equal sharing of paid work between men and women can help counteract the projected decline of the German labour force. If full-time equivalent participation rates of men and women aged 25 to 54 in Germany reached those of Sweden by 2040, it would reduce the projected decrease in the German full-time equivalent labour force by about 1.4 million workers. Further, full convergence by women to men in terms of labour market participation and hours worked could result in a gain of GDP per capita of 20% when convergence is complete, boosting GDP per capita growth by 0.4% annually if convergence is achieved by 2060 (OECD, 2016a).







Over the last decade, a number of social policy reforms in Germany increased opportunities for parents to find a better work/family balance. In 2007, for example, Germany introduced the two-month “bonus period” if both parents take at least two months of leave. Following this policy, the proportion of children with a father that used parental leave increased from 20.8% for children born in 2008 to 34.2% for children born in 2014. Also, with greater public investment in Early Childhood Education and Care (ECEC) supports, enrolment rates among under-three-year-olds increased from 14% to 33% between 2006 and the first quarter of 2015. This has improved the compatibility of work and family life, but access to ECEC and out-of-school-hours care remains insufficient. This constrains many women’s choice of job, reducing their prospects for pay. In addition, the tax system also creates barriers for full-time employment of workers (Chapter 4).

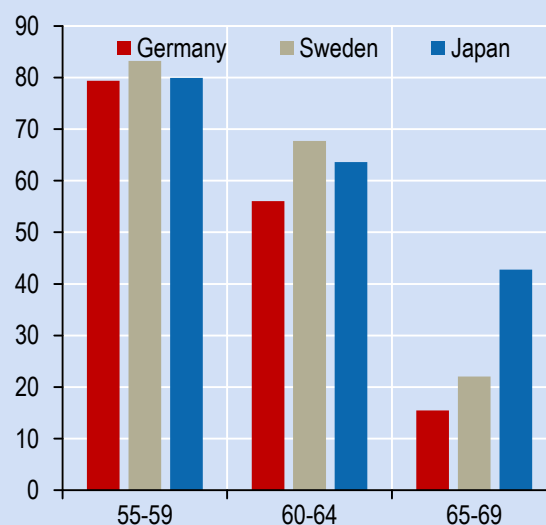
#### **Germany could better use the potential of its older workers**

Germany’s ageing labour force calls for raising participation rates of older workers and making the best use of their potential. Employment rates for 55-64 year-olds in Germany are well above the OECD average, but employment rates

of 65-69 year-olds are well below (Figure 3.2). Still, these rates increased significantly over the past decade. In addition, older workers are significantly more likely to work part-time in Germany than in other OECD countries, particularly in subsidised part-time schemes and

**FIGURE 3.2. EMPLOYMENT RATES OF 65-69 YEAR-OLDS ARE VERY LOW IN GERMANY**

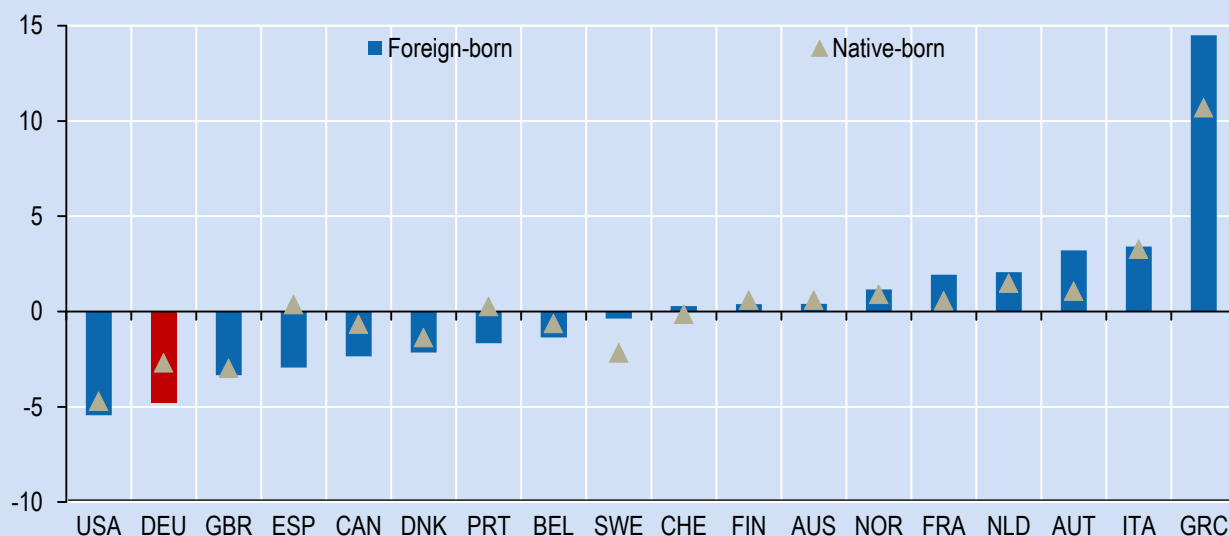
Employment rates of older workers, 2016



Source: OECD Employment Database.

FIGURE 3.3. GERMANY HAS MADE PROGRESS IN INTEGRATING FOREIGN-BORN WORKERS

Percent change in unemployment rates among native- and foreign-born, 2010-16



Source: OECD (2017d), *International Migration Outlook*, OECD Publishing, Paris.

mini-jobs. In 2017, incentives to continue working beyond the legal retirement age were improved. Earning ceilings were removed after reaching the statutory retirement age. Employed individuals who continue to work beyond this age can continue to earn pension entitlements on account of employee and employer contributions.

The employment rate of 55-64 year-old workers improved by more than 20 percentage points over the past decade. The increase was due to pension reforms, a fall in unemployment, skills shortages in some occupations and regions, and more use of management practices that consider the situation of older workers. Securing skilled labour for the future and employment of older workers is one of the key axes of Germany's strategy to address the projected decline of its workforce. The statutory pension age will increase from age 65 in 2012 to age 67 by 2029 (meaning that people born in 1964 will only be able to retire with an unreduced pension in 2031). Consequently, the employment rate can be expected to rise further, as long as workers can continue to work under good conditions.

Germany should also continue to encourage lifelong learning and workplace well-being to ensure that older workers have the requisite skills and health for continued employment. The coalition agreement foresees expanding funding for life-long learning support programmes. Further challenges include the high share of older workers

in small part-time jobs (mini-jobs) and little use made of transitioning to retirement via progressive and unsubsidised reductions in working time. Since July 2017, partial pension and supplementary earnings can be combined in a more flexible way, which may increase such gradual transitions. Participation rates in training that fall with age, difficulties in implementation of age-aware management practices in small and medium-sized enterprises, as well as low hiring rates of older workers are also issues still to be addressed.

### Upskilling immigrants is key to ensure their lasting labour market integration

Unemployment rates among the foreign-born population in Germany (who accounted for 15% of the total population in 2016) improved considerably between 2010 and 2016, declining by five percentage points (Figure 3.3). Yet, the unprecedented inflow of asylum seekers in 2015 and 2016 poses new challenges. Based on previous recognition rates, an estimated 700 000 persons are receiving international protection and have to be integrated into the German labour market. Many of them have low education levels and skills that were acquired in a very different labour market setting. Their integration into the labour market needs to be seen as a long-term investment. Specific challenges are posed by the large group of those who do not obtain asylum. Where possible, return and sustainable reintegration into the

origin country should have priority. However, for a significant group this is unlikely, given the situation in origin countries. For these, it will be important to avoid a situation in which they are effectively excluded from the labour market. Integration measures and possibilities for status change for this group, while ensuring the overall consistency of the immigration framework, as discussed in the coalition agreement, will be important elements in this respect.

Germany started to heavily invest in language training in reaction to the large inflow of refugees. It considerably increased the number of introductory language courses and rolled out vocational language learning programmes. These steps are very important to improve employment rates among refugees. Ensuring a lasting integration into the labour market, however, calls for additional efforts to closely align language learning to job-related training and upskilling measures. So far, most refugees who have found work are employed in low-skilled sectors (e.g. the hospitality industry) or are employed through temporary work agencies. A 2017 OECD-DIHK-BAMS survey suggests that German employers see future employment opportunities for refugees predominantly in medium- and high-skilled jobs. Helping refugees upgrade their skills is crucial to increase their employability in the long term and to ensure that German employers see a business case for employing them. Given refugees' highly heterogeneous skills profiles and educational backgrounds, integration measures will have to be more tailor-made to be effective.

### **Adapting the labour migration system to respond to labour needs**

As most needs for employment-oriented migration over the past decade have been filled by free mobility within Europe, managed labour migration to Germany has been small and largely focused on the highly-skilled. The current admission framework is largely based on formal qualifications, and indeed for highly-educated migrants with a corresponding job offer, and in contrast to widespread perception within Germany, its system is among the most open in the OECD. At the same time, as highlighted in the 2013 OECD review "Recruiting immigrant workers", employers place more importance on German language than on formal qualifications, and this is not adequately reflected in the current system. Going forward, a key challenge will be to

make sure that the labour migration system remains responsive to emerging labour needs, including at the intermediate level. No system is forever, and successful labour migration countries in the OECD frequently adapt their systems to new developments.

### **Tackling early-school leaving can help reduce youth inactivity**

Young people have benefited much from Germany's strong labour market performance over the past decade. The share of 15-29 year-olds in employment increased by over six percentage points between 2005 and 2015, from 52% to 58%. This increase bucked the negative trend observed across the OECD. Only 9.4% of people aged 15 to 29 years were not in employment, education or training (NEET) in 2016 – one of the lowest rates in the OECD (OECD, 2016d). Falling youth unemployment primarily drove the decline in NEET rates. However, the majority of Germany's remaining 1.2 million NEETs are inactive, i.e. not looking for work. Young parents with small children – and in particular mothers – make up a substantial share of these inactive NEETs. As a result, recent initiatives to increase the availability of institutional childcare and promote more flexible working-time arrangements for parents should help further reduce NEET rates. The coalition agreement foresees further increasing government support for institutional childcare and early childhood education. It also proposes to expand full-day primary education and a legal entitlement for parents to have full-day schools available for their children by 2025.

Still, young people who lack relevant qualifications often struggle to succeed in Germany's heavily skill-based economy. Too many young people still leave school without a degree. Germany's vocational education system is highly effective at promoting a smooth school-to-work transition. Yet many young people do not complete their programmes or fail to transition to the upper-secondary level in the first place. Indeed, 12% of all 25-34 year-olds have not obtained an upper-secondary degree in Germany. This compares to 10% in Austria and Finland, 8% in Switzerland and even lower rates in Japan and Korea. These early school leavers are much less likely than their peers with upper-secondary education to be employed. Moreover, they accounted for nearly half of all NEETs – a larger share than in most other OECD countries. They also face a much greater risk of living in poverty than other young people.



## Key recommendations

- Continue to encourage more fathers to take up parental leave, monitoring the effectiveness of the “ElterngeldPlus” and other working time measures on the uptake of leave and the sharing of working hours between fathers and mothers.
- Continue to increase investment in and ensure broader access to ECEC supports for young children, building on the good progress of the past 15 years, as well as to strengthen out-of-school-hours care supports.
- Further raise the retirement age over the long term, linking it to gains in life expectancy.
- Support models of phased retirement for workers with health problems and/or who have been exposed to bad working conditions for a long period, while setting strong incentives to improve working conditions to prevent health problems.
- Expand counselling and guidance on age-aware management practices for SMEs.
- Explore the potentials of digitalisation to improve working conditions of older workers and promote adaptation of older workers to new technologies.
- Implement targeted programmes aimed at preventing and reducing long-term unemployment of older workers.
- Consider introducing a tracking system to identify young people who leave school without an upper secondary degree similar to ones in Austria, Norway and Sweden.
- Further identify efforts by the public employment service and educational authorities to offer tailored interventions for early school leavers to help them obtain an upper secondary degree, including courses in foundation skills (literacy, numeracy), pre-vocational training and counselling.
- Ensure targeted integration support for refugees with a strong focus on upskilling measures, particularly for the low-skilled, as well as language training.





# 4 Promoting inclusive growth through tax reform

Tax reform can help Germany achieve stronger and more inclusive growth. The country's share of labour taxes in overall tax revenues is among the highest in the OECD. The country thus has ample room to reduce the tax burden on labour, which would be particularly beneficial at the lower end of the wage spectrum. The reduction in the labour income tax burden could partly be achieved by shifting tax revenue towards environmentally related taxes and taxes on capital income. Continuing the fight against international tax evasion and avoidance is crucial in this regard; use of offshore financial centres to hide assets and income is a key hindrance to the effective taxation of capital income.

## The tax burden on labour income is high

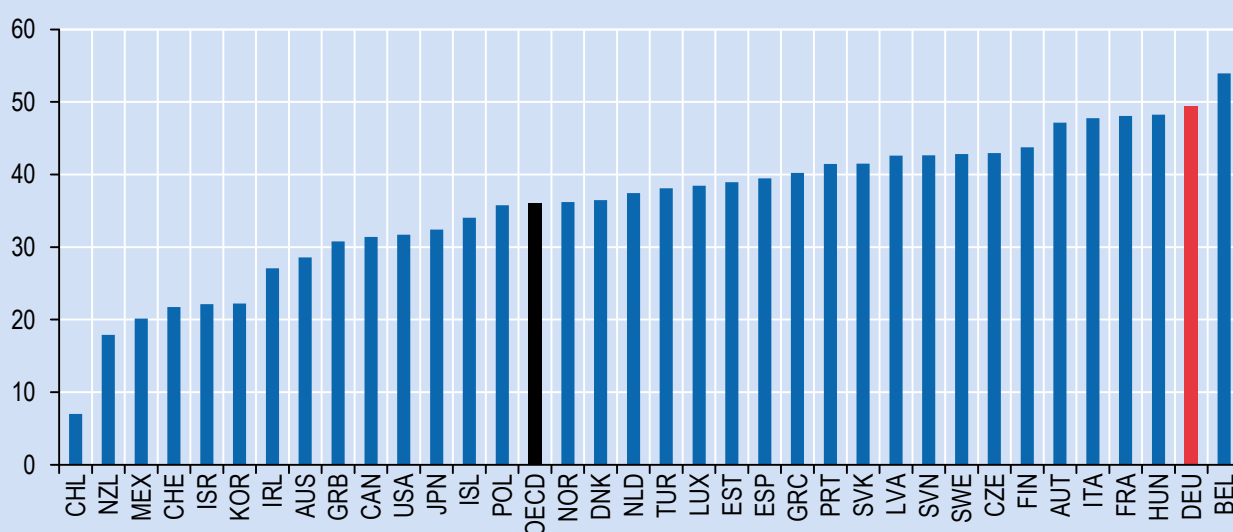
The share of labour taxes in total tax revenues in Germany is among the highest in the OECD. The labour tax wedge is very high (Figure 4.1). Since public health and long-term care spending – which will rise on account of demographic change and technological progress – is mostly funded from social security contributions (SSC) on wage income, the labour tax wedge may rise further. The taxation of labour income could be lowered, in particular for low-income and low-skilled workers. Work incentives could also be strengthened for second earners. The reduction in the labour income tax burden could partly be achieved by shifting tax revenue towards environmentally related taxes (Chapter 6) and taxes on capital income.

## Capital income taxes at the individual level could be more progressive

Interest income, dividends and capital gains are taxed at the household level in Germany at a flat rate, which is in most cases lower than the personal income tax rate. Households can benefit from a tax-free allowance for interest and dividend income. Taxing savings at progressive tax rates and expanding the tax-free allowance for savings income would strengthen the tax system's progressivity. At the same time, such a move would have relatively little impact on investment. As capital income is concentrated among higher income and wealth deciles, raising taxes on these income categories could make the tax system overall more progressive (OECD, forthcoming).

FIGURE 4.1 GERMANY HAS THE SECOND-HIGHEST LABOUR TAX WEDGE IN THE OECD

Average tax wedge on labour income for a single taxpayer at average wage earnings, in percent of total labour costs, 2016



Note: SSC = Social security contribution.

Source: OECD Taxing Wages Database.



In addition to rate changes, the base of capital taxation could be broadened. Germany has generous capital gains tax exemptions for immovable property, which are regressive given that wealthier households are more likely to have substantial housing wealth. Inheritance tax exemptions with respect to family firms lock in capital in these firms, harming reallocation and inclusiveness in view of the strong concentration of wealth on the richest households. Steps to give more time for family-owned businesses to pay inheritance tax liabilities and to treat the inheritance tax liability as subordinate debt in the balance sheet can help avoid unwanted liquidations. Also, while Germany's deduction into pension funds is capped, this deduction still mainly benefits those on higher incomes.

### **Continuing the fight against international tax evasion and avoidance is crucial**

A key barrier to the effective taxation of capital income is the use of offshore financial centres to hide assets and income. As part of the OECD's work to combat tax evasion and enhance tax transparency, Germany began automatically exchanging financial account information for tax purposes with more than 50 jurisdictions in September 2017. This comes on top of the more than 130 countries with which Germany is already exchanging information upon request. This enhanced transparency and exchange of information will allow Germany to strengthen the taxation of capital income at the individual level.

Germany has also been at the forefront of closing loopholes in the international tax rules that facilitate base erosion and profit shifting (BEPS). These loopholes cost governments an estimated USD 100-240 billion in lost corporate income tax revenue every year. In June 2017, Germany updated its bilateral tax treaty network in line with internationally agreed minimum standards for BEPS. To that end, Germany was among the earliest signatories of the Multilateral Convention

to Implement Tax Treaty Related Measures to Prevent BEPS, which will enter into force in July 2018, and one of the first jurisdictions which have ratified it. Other elements of the OECD/G20 BEPS package that are also part of EU directives such as the automatic exchange of tax ruling and Country-by-Country Reporting have already been implemented. With respect to hybrid mismatches, interest deductibility and controlled foreign companies, Germany is currently examining whether the existing rules are in line with the BEPS measures and to what extent changes and/or amendments are needed. Germany has also made a commitment to mandatory binding arbitration. Effective implementation of the agreed measures to address tax evasion and avoidance will be an important priority for Germany. In particular, efforts to identify a long-term solution to the tax challenges arising from digitalisation need to continue, after an interim report was presented to G20 Finance Ministers in March 2018.

## Key recommendations

- Broaden the contribution base for the funding of health and long-term care beyond wage income.
- Tax capital income at the household level at slightly progressive rates.
- Equalise the inheritance tax burden for different forms of wealth.
- Implement the OECD/G20 BEPS package, including a quick ratification of the Multilateral Convention on Tax Treaty Related Measures to Address BEPS.
- Lower the tax burden on labour, in particular for low-income earners.
- Lower the tax burden on the second earner in personal income taxation, for example by introducing a separate tax-free allowance for second earners.

# 5 Reducing geographic disparities in well-being

Despite Germany's exemplary track record of good well-being across the country, it faces persistent challenges in three key areas of regional economics. First, declining municipal investment has a major impact on Germany's transport and social infrastructure, reinforcing pre-existing regional inequalities. Third, housing prices have been on the rise since 2011, leading to a significant increase in the price-to-income ratio. Housing supply and demand are frequently mismatched: new units are built in rural areas with dwindling populations, while growing urban areas are undersupplied. Third, per capita gross domestic product (GDP) in German rural areas is converging to that of urban areas, but regional disparities remain. East German rural districts face higher rates of outward migration and have the highest rates of population ageing. This calls into question the long-term sustainability of public services in these areas.

## Unmet investment needs at the sub-national level are sizable

Approximately 69% of all public direct investment in Germany is undertaken by sub-national governments (SNGs). This is a higher share than the OECD average of 59% and also above the OECD average for federal countries. Investment by municipalities accounts for roughly half of this share, even though municipal net-investment has significantly declined since 2000 (OECD, 2017e).

Most sub-national investments in Germany are dedicated to economic affairs (e.g. transport, general economic, commercial and labour affairs, industry, and agriculture). Sub-national governments are in particular responsible for building and maintaining public roads and public transport services. Other major categories of investment spending include education and general public services. In contrast, SNGs invest very little in healthcare, social or environmental protection.

The decrease in net-investment by local governments since 2000 had important consequences. Germany's transport infrastructure is particularly at risk of deteriorating (OECD, 2016a). Alternative infrastructure investment mechanisms such as public-private partnerships (PPPs) can be useful. However, they need to be carefully designed as transferring demand risks to PPPs can be expensive without delivering efficiency benefits (ITF, 2017).

The country also needs to upgrade and expand its social infrastructure, which is often financed by local governments. For example, investment in early childhood education and care offers

significant social returns (Chapter 3). Consequently, federal and state governments should support investments by local governments in this area. In particular, municipalities in poorer regions that face high social transfer payments tend to invest less than municipalities with wealthier populations (OECD, 2016a). This threatens to perpetuate and exacerbate regional inequalities. The 2016 constitutional amendment allows the federal government to support municipalities' investment in education. However, the scope of the co-operation is limited to hard infrastructure. For example, it does not allow the federal government to finance staff costs.

In combination with greater fiscal support for municipalities, strengthening local administrative capacity can help maximise returns to public investment. Due to Germany's federal structure, procurement processes vary across regions. In some municipalities, the decline in local investment has led to a lack of expertise in the field. Enhanced learning from best practices across the country can improve the effectiveness of public spending (OECD, 2016a). Large-scale complex public investment projects in Germany often face strong resistance of the local population at late stages. This calls for greater involvement of different stakeholders earlier in the planning process.

An Expert Commission has recommended mechanisms for ensuring sustainable public investment to strengthen local infrastructure, and to deal with insufficient maintenance of public infrastructure. A "National Investment Pact for Municipalities" has been proposed to increase municipal investment, as well as to reinforce municipal capacities. This would enable

projects to be economically and efficiently planned and implemented. In addition, the progressive development of “public collaborations” has been proposed to strengthen local infrastructure. These procurement models, where collaboration between municipalities is a key element, offer advantages over existing methods (conventional approaches or public-private partnerships) (BMWl, 2015).

### Support for affordable housing supply and innovative land-use policies can help mitigate house price increases

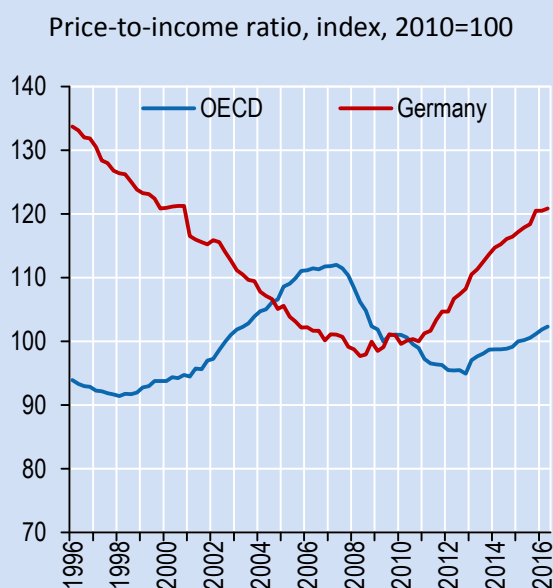
House prices and rents in Germany started to increase in 2011 after more than a decade of decline or stagnation. This led to a decrease in affordability as measured by the price to income ratio (Figure 5.1). The median mortgage burden (principal repayment and interest payments) was 19% and the rent burden 20% of disposable income in 2014 – close to the OECD average of 18% and 21% respectively. However, price-to-income ratios have been growing significantly, making housing less and less affordable in some of the largest cities with the highest population densities. This also threatens labour mobility if people are unable to afford housing in more expensive parts of the country.

While considerable numbers of new housing units are available in Germany, they are often not built where they are needed (Deschermeier et al., 2017). In many urban areas, building activity does not meet the rising demand associated with growing populations. By contrast, housing construction exceeds demand in rural areas with shrinking populations. This leads to high vacancy rates in the old housing stock and environmental degradation through urban sprawl.

In 2015, the government gave local authorities powers to introduce “rental price brakes”. Through this policy, landlords cannot ask new tenants to pay more than 10% higher than the local benchmark rent in areas where the market is overstretched. So far a negative effect on housing supply has not been observed. However, such an effect should be considered before further tightening rental rules in urban centres.

In spring 2017, Germany reformed its urban planning law and lifted barriers to densification and mixed land use in urban areas. The reform

FIGURE 5.1. HOUSE PRICES HAVE RISEN MARKEDLY OVER THE RECENT PAST



Source: OECD Affordable Housing Database.

made it easier to build new housing in cities. This was a step in the right direction. However, further measures are needed such as adapting land-use regulations to changing demographic patterns. In areas that face high demand for housing from growing populations, housing construction should be encouraged. This would help prevent house prices from rising further. Support for affordable and social housing is also needed. Where possible, densification and infill development should be preferred to sprawl (OECD, 2017f). In contrast, housing construction should be limited in areas with stagnant or declining populations. This would help protect landscapes and prevent high rates of vacant buildings in the future.

### Germany's dense rural settlement structure presents opportunities to further strengthen urban-rural linkages

Between 2001 and 2016, the share of the rural population in Germany declined slightly from 16.9% to 16.0%. Over the same period, rural regions narrowed the gap in per capita GDP levels relative to the rest of the country. Over 2001-14, per capita GDP in rural areas increased from 75% to 80% of the national average. Yet significant differences in economic outcomes and well-being persist between rural regions in the west and the east of the country. East German rural districts face higher rates of outward migration, especially among the young.

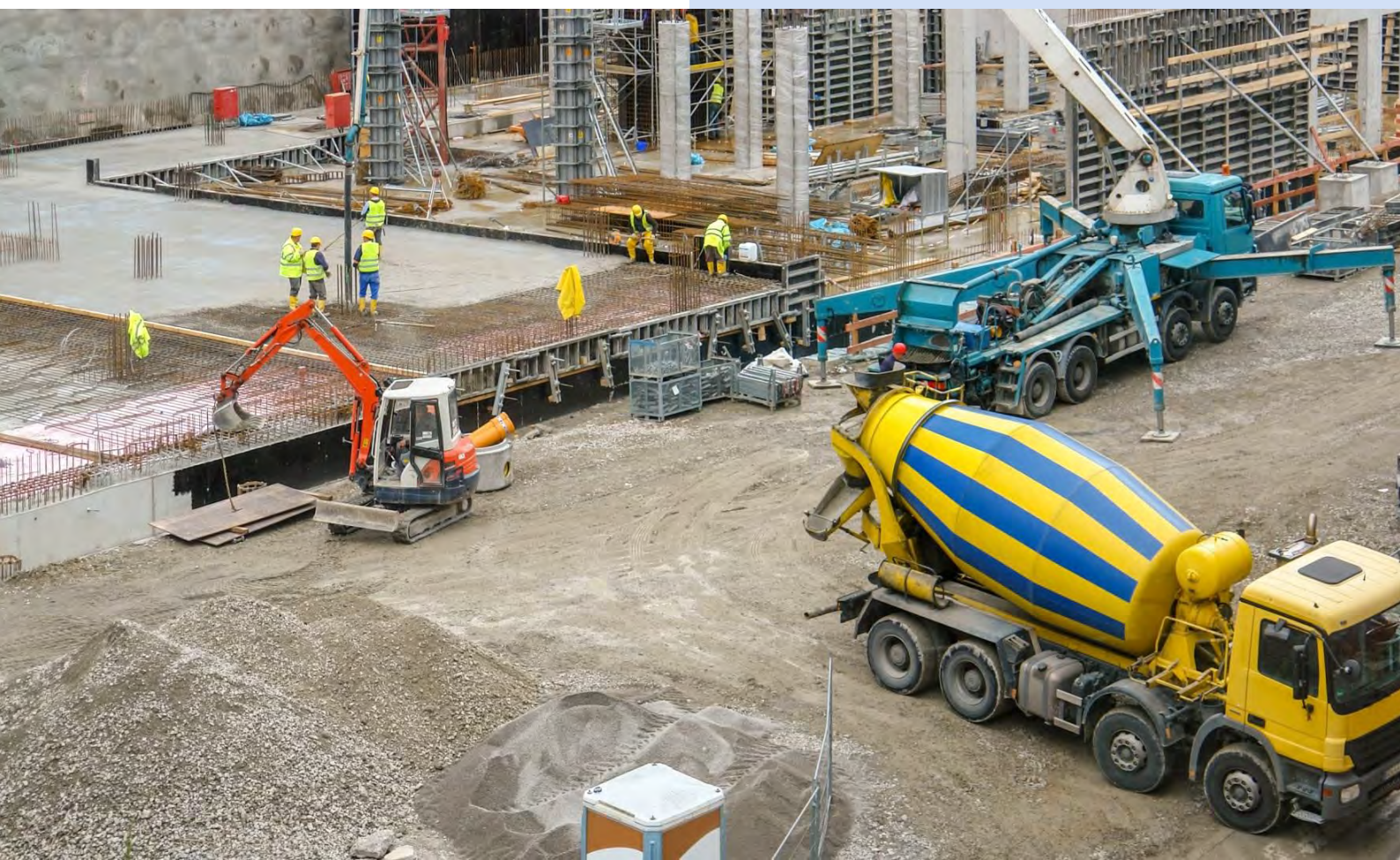


They also have the highest rates of population ageing, which is only expected to become more acute. The future sustainability of public services in some of these regions is a major concern. Place-based policies need to address issues such as ageing and co-location of public services. Such policies could make the most of public resources in areas with low population densities and ageing populations. Offering different public services in areas such as health, counselling and social welfare in a single location can help reduce costs, for example.

Many rural communities in Germany are located close to urban agglomerations. Rural regions close to cities are more dynamic, more resilient to shocks and register higher productivity growth than other types of rural regions (OECD, 2016e). This raises the importance of rural urban-linkages and partnerships for economic growth and well-being. Better co-ordination between urban and surrounding rural areas can, for example, help improve transport connections and provide access to urban amenities to rural populations. Some parts of Germany's metropolitan regions (Metropolregionen) are addressing such issues well in international comparison. However, Germany's comparatively dense rural settlement structure presents opportunities to further strengthen these partnerships.

## Key recommendations

- Increase public investment in childcare, early childhood education and full-day primary education, as well as transport infrastructure, particularly at the local level.
- Spread best practices for procurement and investment and encourage learning across state and local governments to ensure that public funds are spent as efficiently as possible in all parts of the country.
- Develop collaboration across municipalities for joint procurement.
- Consider incentives and adapt land-use regulations to encourage more construction of affordable housing in areas with upwards pressure on rental and housing prices.
- Restrict construction in areas with declining or stagnant populations to prevent sprawl and high vacancy rates in the existing housing stock.
- Improve the quality and efficiency of service delivery in rural areas, for example by expanding co-location and co-delivery of different public services among various municipalities.



## 6 Supporting Germany's ambitious climate objectives

**Germany has committed to reduce greenhouse gas (GHG) emissions by at least 55% by 2030 compared to 1990 levels and intends to reduce emissions by 80% to 95% in 2050 compared to 1990 levels, with the aim of reaching GHG neutrality in 2050. To achieve these targets, Germany will need to align its infrastructure investment plans and policies, including in transport, with its ambitious climate change objectives. In addition, strengthening the role of environmentally related taxes and carbon pricing, and continuing efforts to phase out support for fossil fuels, remain priorities.**

### **Germany needs to invest in and plan for low-emissions infrastructure, including in transport**

Reaching Germany's climate mitigation targets will require substantial investment in low-emission and resilient infrastructure, from both government and private sources. Infrastructure plans and projects should be consistent with long-term, low-emission development strategies. Reconciling short-term action and long-term decarbonisation goals is also important. Together, these policies can help shift and increase investment, and avoid costly lock-in of emissions-intensive technologies (OECD, 2017g). This would also have public health benefits. Estimated mortality rates from outdoor air pollution in Germany are high, as in other OECD countries. The cost of mortality induced by air pollution is estimated at 5% of gross domestic product (GDP) (OECD, 2014).

The German government launched its Federal Transport Infrastructure Plan 2030 at the end of 2016. The "strongest infrastructure programme of all time" is intended to increase mobility and modernise Germany's railways, roads and waterways. It envisages around 1 000 projects at an overall value of around EUR 270 billion. Germany has a strong record of green investment in areas such as energy efficiency (OECD, 2016f). However, the infrastructure plan does not explicitly address the need to reduce CO<sub>2</sub> emissions from transport. The country's Climate Action Plan 2050, adopted in 2016, envisages a reduction of emissions from the transport sector by 40-42% by 2030 compared to 1990 levels. It also aims to develop a climate strategy for road transport to address "emissions from cars, light and heavy commercial vehicles and issues related to GHG-free energy supply, the requisite

infrastructure and the interlinking of sectors (through electric mobility)". Transport represents around one-fifth of Germany's total GHG emissions. Consequently, Germany's climate mitigation targets will need to be fully reflected in the country's transport infrastructure planning. This would help the sector contribute effectively to Germany's emissions reduction goals.

In terms of financing green investment, the environment in Germany is generally positive, with respect to renewable electricity technologies, but could be hampered by unintentional side effects of banking sector regulations (Ang et al., 2017). Considerable support for the financing of renewable energy and energy efficiency has come from the state-owned Kreditanstalt für Wiederaufbau (KfW). KfW has established on-lending arrangements with commercial banks and provides direct debt financing for large projects. Further, building on its renewable energy programme, KfW is the largest issuer of green bonds in Germany (whose green bond market is the fourth largest in the world). Still, institutional investors seem to have scope for greater involvement, particularly for large-scale projects such as in offshore wind.

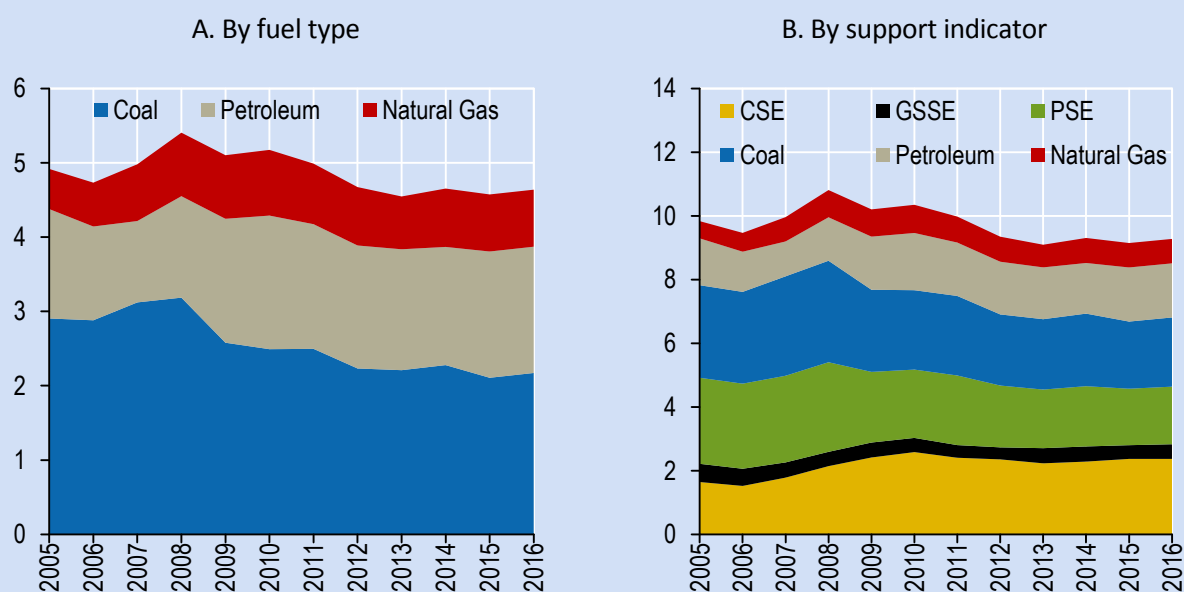
### **Germany continues to support fossil fuels**

The OECD has recommended accelerating reform of inefficient fossil-fuel subsidies that encourage wasteful consumption to help governments meet their commitments under the Paris Agreement (OECD, 2017g). Germany continues to support both producers of hard coal (though these will be phased out by the end of 2018) and provide several tax benefits to consumers of coal, petroleum and natural gas (Figure 6.1).



FIGURE 6.1. GERMANY'S SUPPORT FOR FOSSIL FUEL REMAINS SUBSTANTIAL

Total support for fossil fuels in Germany, in billions



Note: CSE=Consumer Support Estimate; PSE=Producer Support Estimate; GSSE=General Services Support Estimate.

Source: OECD Inventory of Support Measures for Fossil Fuels.

As a G20 member country, Germany has recently undergone a peer review of its inefficient fossil fuel subsidies. The government's financial assistance to the uneconomic hard-coal industry represents the most significant single measure supporting the production of fossil fuels in Germany. Payments by the federal government and the state of North Rhine-Westphalia to support the industry amounted on average to EUR 1.5 billion per year between 2012 and 2016. The cost of producing coal in Germany far exceeds the price of imported coal. This means that Germany's largest coal-mining company, Ruhrkohle AG, receives direct support from the government to cover the shortfall, in addition to receiving support for closing down its mines. The German government is phasing out subsidies to the coal industry in accordance with EU rules, with an envisaged end this year. The phasing out of support for fossil fuels is a high policy priority to advance Germany's climate change mitigation efforts.

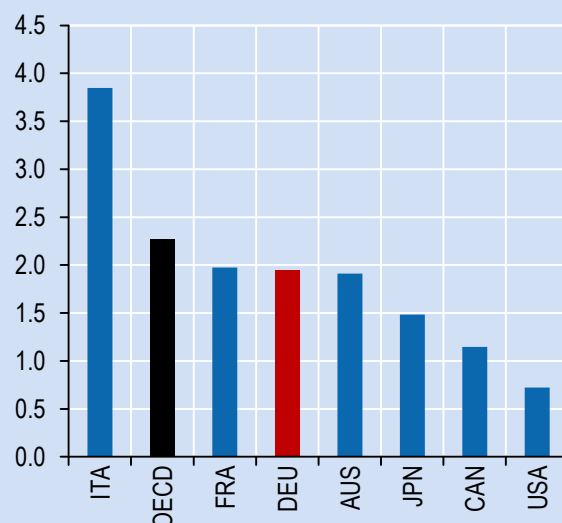
### The role of environmentally related taxes could be strengthened

Consumer support for fossil fuels has risen throughout the last decade, taking several forms. First, energy-intensive industrial processes that use coal and natural gas receive tax relief. Second, domestic aviation receives tax exemptions for fuel use. Third, as in most OECD countries, the agriculture and forestry sectors

receive a tax refund for diesel use. In 2014, the revenue from environmentally related taxes accounted for 2% of GDP (Figure 6.2), following a steady decline over the preceding decade. This is slightly below the OECD average and puts Germany into the lower third of OECD countries. Taxes on energy use, including excise taxes on

FIGURE 6.2. GERMANY'S REVENUES FROM ENVIRONMENTALLY RELATED TAXES ARE JUST UNDER THE OECD AVERAGE

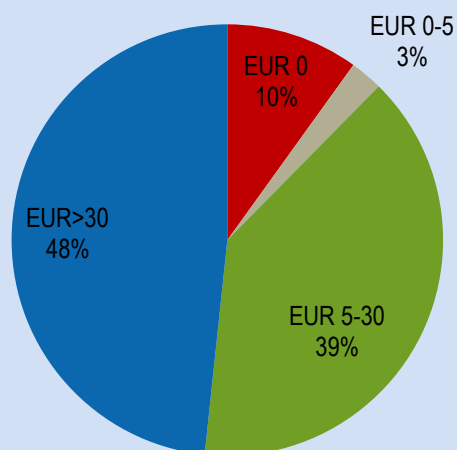
Environmentally related tax revenues, in percent of GDP, 2014



Source: OECD Database on Instruments used for Environmental Policy.

FIGURE 6.3. GERMANY IS PRICING CO<sub>2</sub> EMISSIONS, BUT OFTEN AT A LOW PRICE

Share of CO<sub>2</sub> emissions from energy use at different effective carbon rate intervals, in EUR per tonne of CO<sub>2</sub>, 2012



Note: Effective carbon rates measure the combined price signal on carbon emissions from taxes and emissions trading systems.

Source: OECD (2016g), *Effective Carbon Rates: Pricing CO<sub>2</sub> through Taxes and Emissions Trading Systems*, OECD Publishing, Paris.

fuels, accounted for 83% of environmentally related tax revenues in Germany in 2014. Energy use is often taxed below the social costs of environmentally harmful emissions associated with it, which means that the potential of taxes to cut pollution cost-effectively is not fully exploited. Low permit prices in the EU emissions trading system (ETS) also implies limited abatement incentives for the sectors it covers.

In Germany, 90% of carbon emissions are priced, but only 48% are priced above EUR 30 per tonne of CO<sub>2</sub>, a conservative estimate of the climate damage (Figure 6.3). The majority of unpriced emissions are from industry and the residential and commercial sector (OECD, 2016g).

More effort is needed to send strong price signals that steer behavioural change and induce carbon abatement in line with Germany's national climate objectives. Combining the EU ETS with higher taxes or a minimum ETS price would ensure that prices better reflect the social costs of carbon. To avoid inefficiencies, such a minimum price or tax would ideally be set at the EU level. Nevertheless, a carefully designed national initiative can also enhance the effectiveness of carbon pricing (Expertenkommission zum Monitoring-Prozess, 2016). The





coalition agreement acknowledges the EU ETS as Germany's leading instrument in carbon pricing, which highlights the importance of strengthening its effectiveness.

While well-designed carbon pricing mechanisms will deliver abatement at the margin, they will not necessarily by themselves drive structural shifts to a low-carbon economy. Misalignments throughout the economy can slow down the abatement. In relation to pricing, avoiding preferential treatment of more carbon-intensive fuels will increase the cost-effectiveness of carbon abatement in Germany. Presently, taxes on carbon-intensive fuels are often lower per tonne of CO<sub>2</sub> compared to those for low-carbon fuels – and often they equal zero (OECD, 2013, 2018). Apart from sending inefficient abatement signals, this also implies significant revenue foregone (BMF, 2015).

In the road sector, diesel is taxed at a lower rate than gasoline on a per litre basis. However, burning diesel emits higher levels of CO<sub>2</sub> per litre than gasoline. Further, depending on the technology, burning diesel also often emits more harmful air pollutants (Harding, 2014a). Within the industrial, residential and commercial sector, tax rates differ widely across energy users and fuels. Notably, coal use is taxed at much lower rates than natural gas use. In addition, natural gas is taxed at different levels depending on the user. Certain energy-intensive industries are fully exempt from energy taxes (OECD, 2013 and 2018). The EU ETS may cover tax-exempt fuels or users. However, due to low permit prices, this does not establish a level-playing field.

Policy misalignment can also weaken investment incentives for low-carbon assets. For example, corporate income taxes are not entirely technology-neutral, and this can sometimes discourage low-carbon technology choices (Dressler et al., 2018), an issue perhaps worth

exploring. Also, tax incentives that are not motivated on environmental grounds can nevertheless have adverse environmental impacts and can hinder the low carbon transition. The preferential tax treatment of company cars (Harding, 2014b) and of large industrial facilities (Flues and Lutz, 2015) can serve as examples. Free allocation of tradable permits in the EU ETS can also create windfall profits for carbon-intensive industries. This, in turn, can skew investment decisions towards more carbon-intensive technologies. Full auctioning of tradable permits avoids these drawbacks (Flues and Van Dender, 2017).

## Key recommendations

- Revisit the Federal Transport Infrastructure Plan to ensure that it supports the Climate Action Plan and make sure that infrastructure planning in other sectors does the same.
- Consider whether there is scope to enhance the role of institutional investors in the efficient financing of renewable energy projects, particularly large-scale ones.
- Continue efforts to phase out support for fossil fuel production and use, using the OECD Inventory of Support Measures for Fossil Fuels as a guide.
- Reform energy taxation and carbon pricing to adequately reflect social costs of pollution and climate objectives.
- Avoid preferential treatment of carbon-intensive or heavily polluting fuels.
- Review misalignments of the tax code with the low-carbon transition.



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