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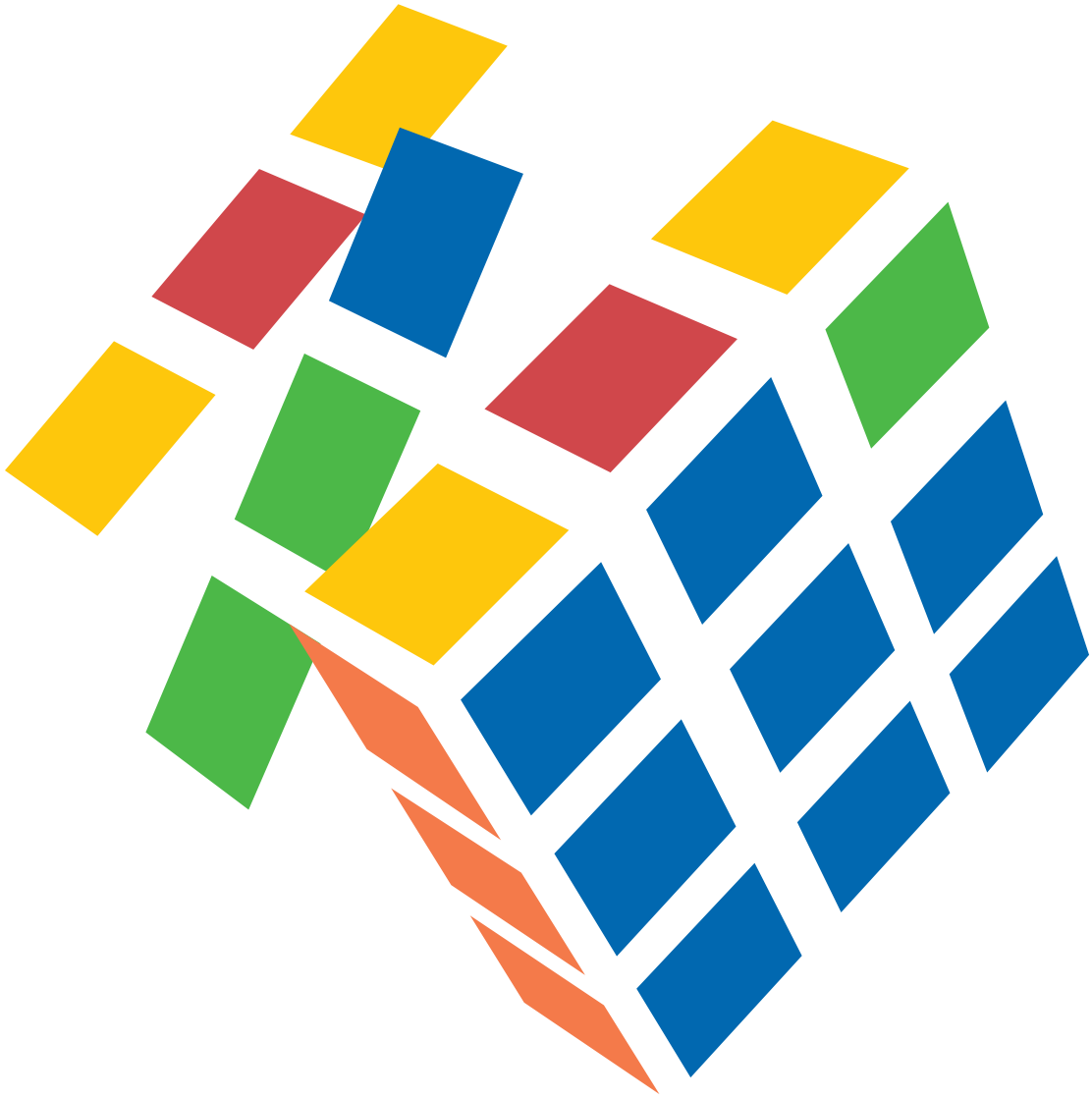


2020 skills forecast

Germany

CEDEFOP SKILLS FORECAST 2020

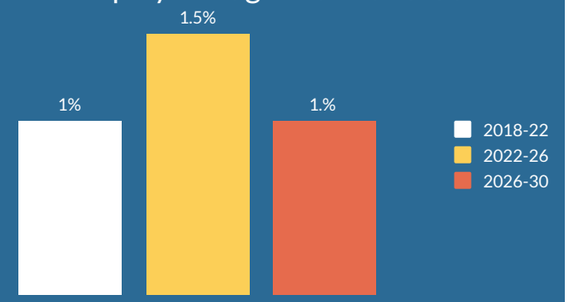
Key facts: Germany

CEDEFOP

45 689 000
Employment in 2030

3.5%
Increase 2018-30

% Employment growth 2018-30



FASTEST-GROWING SECTORS
Growth per year 2018-30

Distribution & transport	0.5%
Non-marketed services	0.4%

HIGHEST-DEMAND OCCUPATIONS
Total job openings 2018-30

2 102 000	Business & administration associate professionals
1 563 000	Personal service workers
1 450 000	Sales workers

4.4%
Increase in employment in 2018-30

EU overview 2030

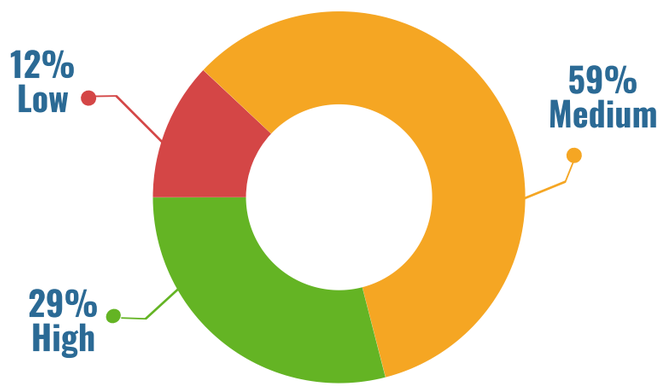
Fastest-growing sector
Non-marketed services

Highest-demand occupation
Business & administration associate professionals

25 535 000
Total job openings, 2018-30

Replacement needs (90%)
New job openings (10%)

Total job openings by qualification level 2030:

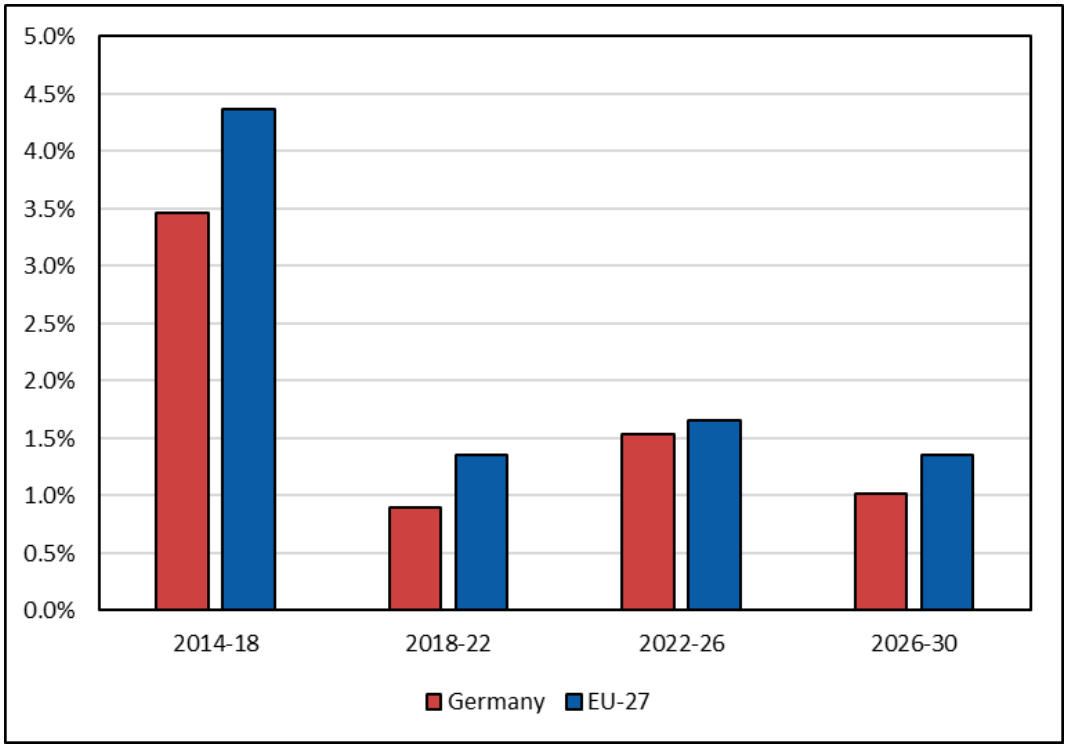


10% Increase in high-skilled labour supply 2018-30

1. Employment outlook

Employment in Germany – as in the entire EU-27 economy – is forecast to grow at a lower rate than was seen over 2014-18, as shown in Figure 1. Employment in Germany is expected to grow slightly faster in the medium term (2022-26) compared to the short term (2018-22) and longer term (2026-30). This is similar to the pattern for the EU-27 average across all sub-periods, albeit with growth lagging slightly.

Figure 1. Percentage employment growth in Germany and the EU-27, 2014-30

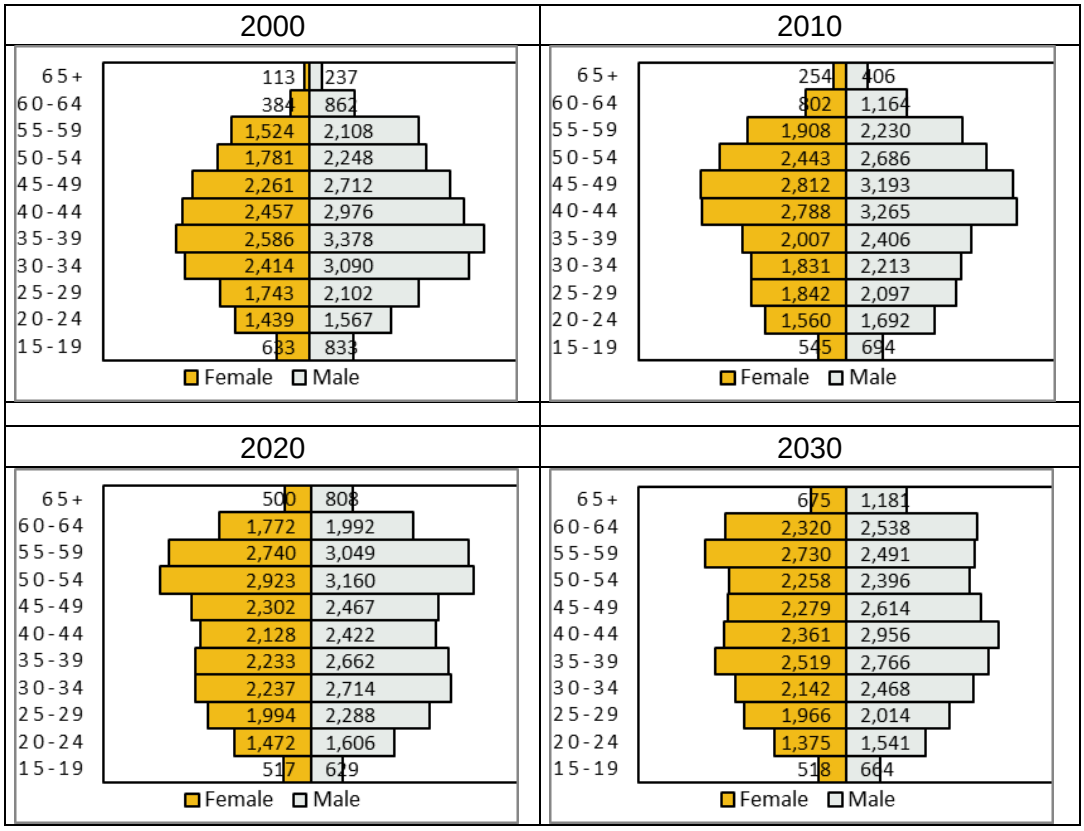


Source: Cedefop (2020 Skills Forecast).

2. Labour force overview

In Germany, the labour force is expected to grow by 14% over the three decades from 2000 to 2030. This increase in the labour force is driven by an increasing participation, especially among 60-64 and 65+ years-olds (see Figure 2). The participation rate of those who are 65 or above is very low, so their contribution to the expected growth in the overall labour force will be small. The change in share of the labour force is expected to be the greatest among 60-64-years-olds, with an increase of 9 percentage points (pp) over 2000-30. Within this age group the participation rate is expected to increase the most, from 23% (2000) to 76% (2030) reflecting changes in the typical retirement age. Future growth in the labour force is adversely affected by the greying of the population: among those aged 30-34 and 35-39 a decline in population can be observed, reducing growth in the labour force as a result (by more than 3 pp for both over 2000-30). This is likely to affect the German labour market well beyond 2030.

Figure 2. Distribution of the labour force (thousands), 2000-30



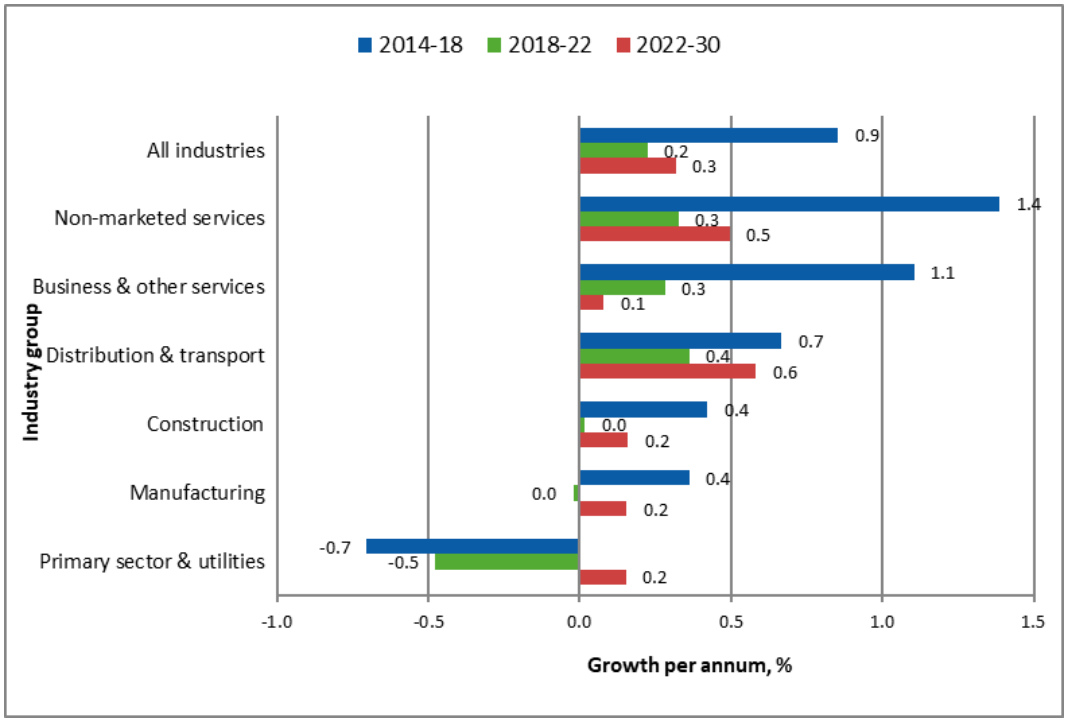
Source: Cedefop (2020 Skills Forecast).

3. Sectoral employment trends

As Figure 3 shows, most sectors are expected to see a slowdown in growth in the short term (2018-22) while growth is expected to pick up again in the longer term (over 2022-30), yet remaining well below the historically favourable rates that were seen over 2014-18.

Non-marketed services, which saw the strongest growth in employment (1.4% pa) over 2014-18, is expected to see much slower growth over the forecast period, albeit picking up from 0.3% pa over 2018-22 to 0.5% pa over 2022-30. *Business and other services*, which also saw strong growth (1.1% pa) over 2014-18, is expected to stagnate, with meagre growth of 0.2-0.3% pa over the whole forecast period. *Distribution & transport* is expected to see employment growth pick up to around 0.6% pa over 2022-30, only slightly slower than the growth seen over 2014-18. Employment in *construction* is expected to stagnate over the forecast period. Germany's important *manufacturing* sector is expected to see a slight decline in employment growth in the near future, and then to grow slightly, by 0.2% pa to 2030. Employment in *primary sector & utilities* is expected to continue to decline initially (2018-22) following the strong decline of 0.7% pa over 2014-18, to then growth slightly, by 0.2% pa, over 2022-30.

Figure 3. Employment growth by broad sector of economic activity, 2014-30



Source: Cedefop (2020 Skills Forecast).

In terms of sub-sectors (i.e. below the level of the six broad sectors discussed above), *architectural &* engineering (-0.4% pa over the period 2022-30), *computer programming & information services* (0.4% pa), and *administrative and support services* (0.3% pa) are the sectors that are expected to experience the greatest slowdown in their growth rates, hence driving the low expected growth in the broader *business & other services* sector. Even so, some sub-sectors of *business & other services* (e.g. *real estate activities, research & development* and *telecommunications*) are expected to be the top performers over 2022-30, with growth of 1.5% pa or more.

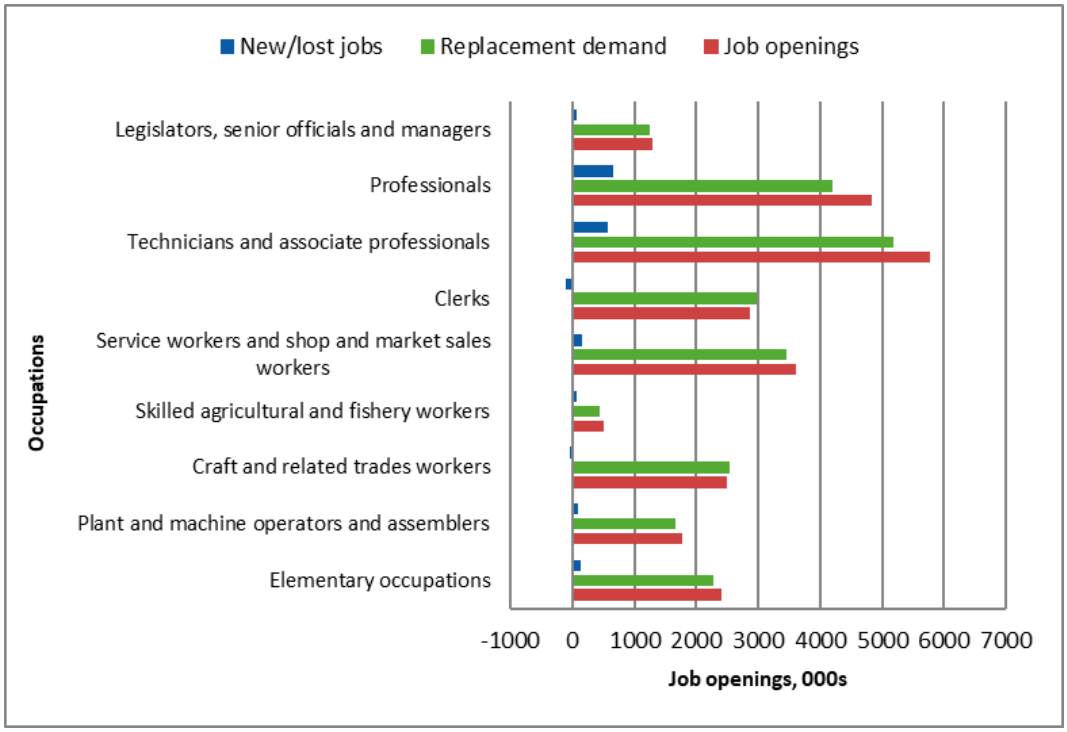
4. Job openings by occupational group

The Cedefop skills forecast estimates the total job openings by occupational group as the sum of net employment change and replacement needs. Net employment change refers to new jobs created due to the expansion of employment in that sector or occupation. Replacement needs arise as the workforce leaves the occupation due to retirement or career changes. Replacement needs, generally, provide more job opportunities than new jobs, meaning that significant job opportunities arise even in occupations declining in size (i.e. agricultural workers are a typical example, as ageing workers employed in the sector will need to be replaced).

Figure 4 shows the total job openings by broad occupational group over 2018-30. The number of job openings indicates the number of jobs that are required to be filled due to lost/newly created jobs and those that are in need of replacement workers. Most occupations, except for *clerks* and *craft and related trade workers* (which are shrinking), are expected to experience an increase in the number of jobs. *Professionals* and *technicians and associate professionals* are the two occupations that are expected to generate the largest number of job openings over the forecast period, accounting for 19% and 22% of total job openings respectively. Around 9 out of 10 job openings are expected to be created by replacement demand – a typical depiction of an economy without much employment growth.

At the more detailed level, the most job openings (taking both new/lost jobs and replacement needs together) are expected to be in highly skilled non-manual occupations for all qualifications (approximately 12 million), such as *business and administration professionals* and *health associated professionals*. On the other hand, all occupations with low qualification requirements, including high-skilled non-manual jobs, are expected to shrink.

Figure 4. Job openings by broad occupational group, 2018-30



Source: Cedefop (2020 Skills Forecast).

5. Drivers of occupational change

Within the Cedefop skills forecast, future employment growth (or decline) of occupations is further broken down by separating national economic components from regional industrial and economic effects, helping to interpret what is driving the change. From this perspective employment growth can be explained by three possible drivers: (a) overall trends of the economy (i.e. growth or decline), (b) shifts of employment between sectors and (c) changes in the occupational structure within sectors (i.e. factors making some occupations more important than others).

An increasing specialisation in many sectors influences the occupational composition of employment in Germany. This is reflected in stronger occupation-specific effects, leading, overall, to increasing shares of *professionals* and *technicians and associate professionals* in the economy. These changes reflect changes in job organisation in many sectors, and in many cases an increasing specialisation. Along with these specialisations there is also a move towards managing these new work forms. High-skilled occupations that can benefit from this trend are, for example*, legal and business professionals, managers*, as well as b*usiness and other associate professionals*. *Health professionals* as well as a*ssociate health professionals* both benefit from the increase in the underlying health sector, yet not all of the increases in employment translate into higher employment in these important health occupations. An increasing specialisation will lead also to a larger share of other occupations in that sector.

The overall effect of occupational change therefore depends on a number of factors that need to be considered together. Increasing digitalisation and the move towards a more service-oriented economy, including within manufacturing, will lead to a greater use of higher-level occupations. At the other end of the spectrum, lower-level occupations supporting production, as well as in the service sector, seem to be increasing at the cost of intermediate occupations.

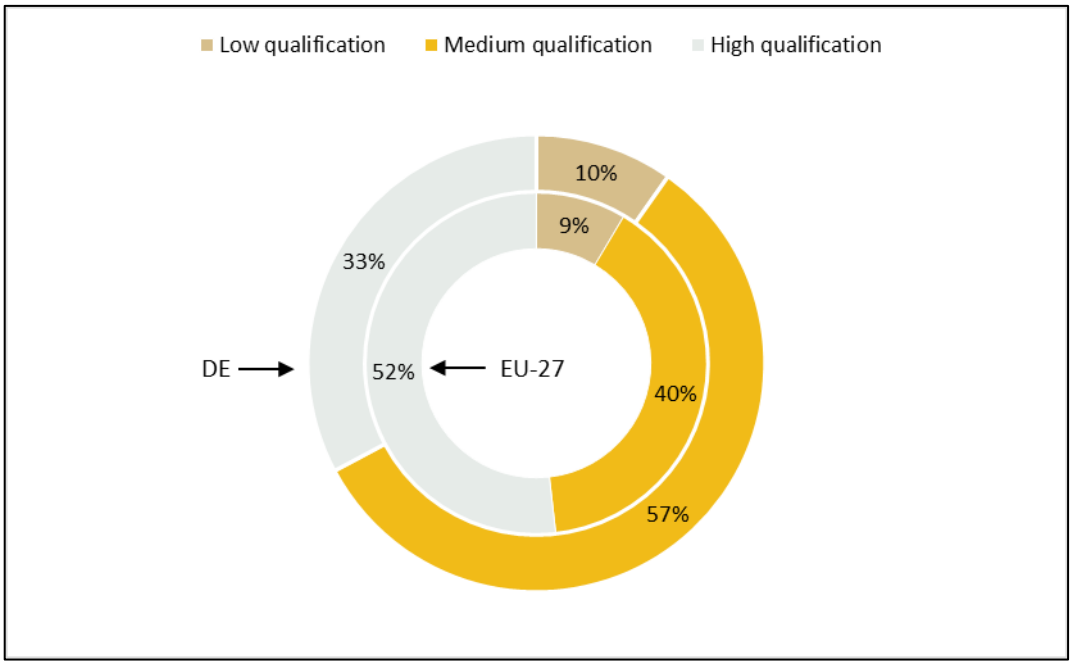
The strength of intermediate occupations, with a strong intermediate qualification level in Germany, limits the overall effect on the medium qualified occupations. Whereas building and related trade workers remain somewhat stronger, the industry-based metal, machinery and related trade workers are decreasing in number, most likely through increases in automation within the sectors. Clerical work is expected to see a decrease in its employment share in all but customer service clerks.

6. Demand for and supply of skills

Within the Cedefop skills forecast, skills are proxied by the highest level of qualification held by individuals in the labour force and in employment. Three levels are distinguished, high, medium, and low, which correspond to the official ISCED classification. The occupational group also offers an indication of the skill level required, as some occupations (e.g. professionals) typically require high-level skills, while some others (e.g. elementary) typically require only basic ones. Therefore, occupational groups are also linked to a skill level.

Well over half (57%) of the total job openings that are expected to be created in Germany over the period up to 2030 will require medium level qualifications, about 17 pp more than the EU-27 average (see Figure 5). This reflects the strong standing of Germany's dual system of education. One third of total job openings will require high level qualifications and one in ten will require low level qualifications.

Figure 5. Shares of total job openings by level of qualification, 2018-30



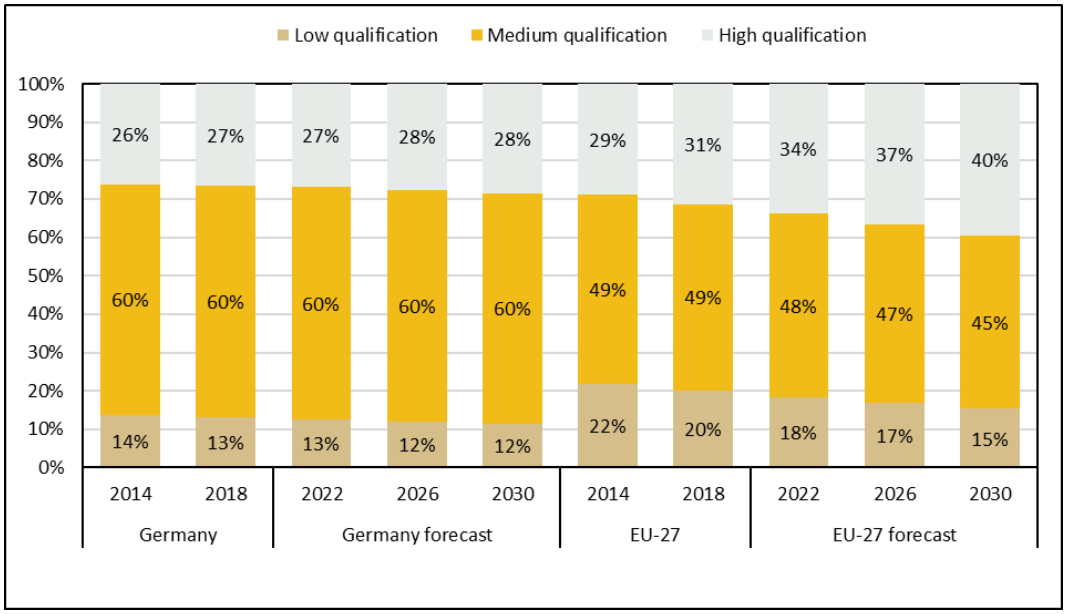
Source: Cedefop (2020 Skills Forecast).

Total job openings are highest among teaching professionals, followed by Stationary plant or machine operators, and Market-oriented skilled agricultural

workers. Among the higher qualified occupations, Science and engineering (associate) professionals along with Business and administration professionals are expected to see the highest total job openings.

Future labour supply trends depend on the size of the working age population (defined as aged 15 or older), labour market participation rates, and the extent to which people acquire formal qualifications.

Figure 6. Labour force share by level of qualification, 2014-30



Source: Cedefop (2020 Skills Forecast).

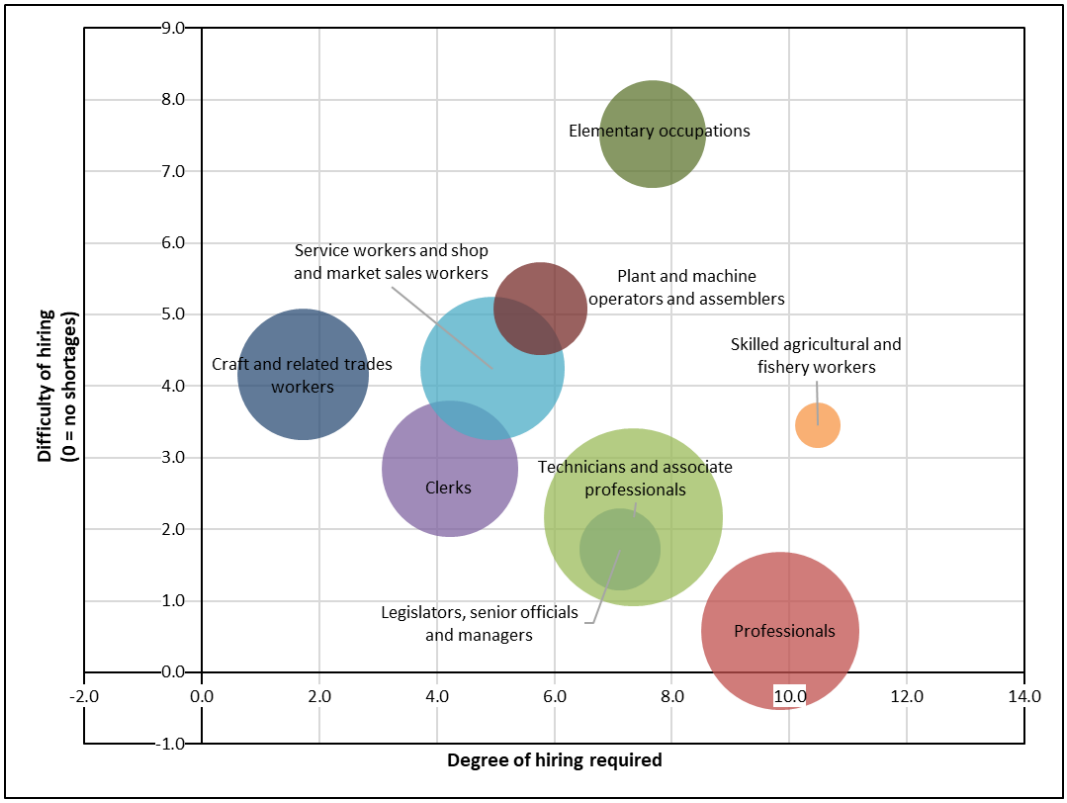
In general, Germany is not expected to experience substantial changes over 2018-30 in shares of qualifications in the labour force, as can be seen from Figure 6. The share of people with high level qualifications in Germany is expected to increase over the period to 2030. The share of medium qualified labour force is expected to remain stable, and remain the largest qualification group. Those with low levels of qualification are expected to decrease slightly. In Germany, the proportion of the labour force with medium level qualifications remains at a higher level than the EU-27 average.

In Germany, the supply of low and medium qualifications is expected to be below what is required by demand by 2030, while the supply of high skill workers is expected to broadly meet the demand for those qualifications.

Figure 7 shows an indicator, *difficulty of hiring*, whose aim is to approximate shortages of supply by qualifications and its impact on occupations. This measure, shown along the vertical axis, indicates increasing difficulties to fulfil demand given the available supply of qualifications used in the occupation. Along the horizontal axis, the *degree of hiring required* in the occupation is depicted. Higher values indicate that to reach the forecast result that occupation will need to adjust more (in terms of workers with particular qualifications) relative to the base year (2018) levels. These changes (degree of hiring required) can be due to a change in the qualifications required or increases in the number employed. The size of the bubble indicates the *overall employment level*, bigger bubbles indicate more employment while smaller bubbles less employment.

Occupations with both a high *degree of hiring required* and a high *difficulty of hiring* (i.e. towards the top right of the figure) are likely to have the most difficulties in achieving a suitable workforce.

Figure 7. Indicators of future hiring difficulties, 2018-30



Note: indicators were calculated at the level of the underlying two-digit occupation groups. Aggregation was based on the employment weights within each one-digit occupation group.

Source: Cedefop (2020 Skills Forecast).

The figure shows that occupations within *professionals* are forecast to experience a lot of changes, which will require the hiring of new workers, mainly highly qualified workers. It is not expected that there will be many hiring

difficulties for this group, however, as they require high qualified job-seekers who are not projected to be in shortage. However, within (i.e. for 2-digit occupations) professionals, the degree of hiring required will differ, with *information and communications technology professionals* (17) and *business and administration professionals* (17) being well above the average for *professionals* as a whole (10), while the degree of hiring required among *health professionals* (5) and *teaching professionals* (2) is expected to be well below the average.

Back at the broad (1 digit) occupations level, crafts and related trades workers are expected to experience higher levels of hiring difficulties, mainly for lower and intermediate qualified personnel, but there is expected to be only limited hiring required. *Elementary occupations* are hit by the shortage of low qualified workers. Whether this will result in the projected hiring difficulties will depend on the willingness of higher qualified workers to be employed for the typical work conditions and salaries of these occupations.

Cedefop methodology and scenarios

The Cedefop Skills Forecast offers quantitative projections of future trends in employment, by sector of economic activity and occupational group. Future trends in the level of education of the population and the labour force are also estimated. Cedefop's forecast uses harmonised international data and a common methodological approach allowing cross-country comparisons between employment trends in sectors, occupations and qualifications. The forecast and methodology is validated by a group of national experts. The forecast does not substitute national forecasts, which often use more detailed methodologies and data, while they also incorporate in-depth knowledge of a country's labour market.

The latest round of the forecast covers the period up to 2030. The forecast takes account of global economic developments up to May 2019. The European economy is continued to expand for the seventh year in a row in 2019, with real GDP growing in all EU Member States. As global uncertainties continue to weigh, domestic dynamics are set to support the European economy. The key assumptions of the baseline scenario incorporate the Eurostat population forecast available in May 2019 (Europop 2015) ([2]) and the short-term macroeconomic forecast produced by DG ECFIN in May 2019 ([3]).

The Cedefop Skills forecast was developed before the global Covid-19 pandemic had begun. The short-term economic impacts of the pandemic and subsequent lockdowns in many countries are very uncertain, and therefore the current short-term forecast is likely to be over-optimistic. However, the key long-term factors (such as the ageing population, increasing use of automation/artificial intelligence, globalisation, resource scarcity and moves towards a carbon neutral economy) will still hold as the EU Member States put plans in place to deal with the virus and their economies move forwards. The trends in the longer-term forecast are therefore still likely to hold.

For the latest update and access to more detailed Cedefop skills forecast data please visit:
http://www.cedefop.europa.eu/el/events-and-projects/projects/forecasting-skill-demand-and-supply

([2]) https://ec.europa.eu/eurostat/web/population-demography-migration-projections/population-projections-data

([3]) https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/spring-2019-economic-forecast-growth-continues-more-moderate-pace_en

For more details, please contact Cedefop's Skills Forecast team at: Skills-Forecast@cedefop.europa.eu

The country fiche for Germany has been developed in collaboration with Tobias Maier, researcher at the Federal Institute for Vocational Training and Education (BIBB), Germany.

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