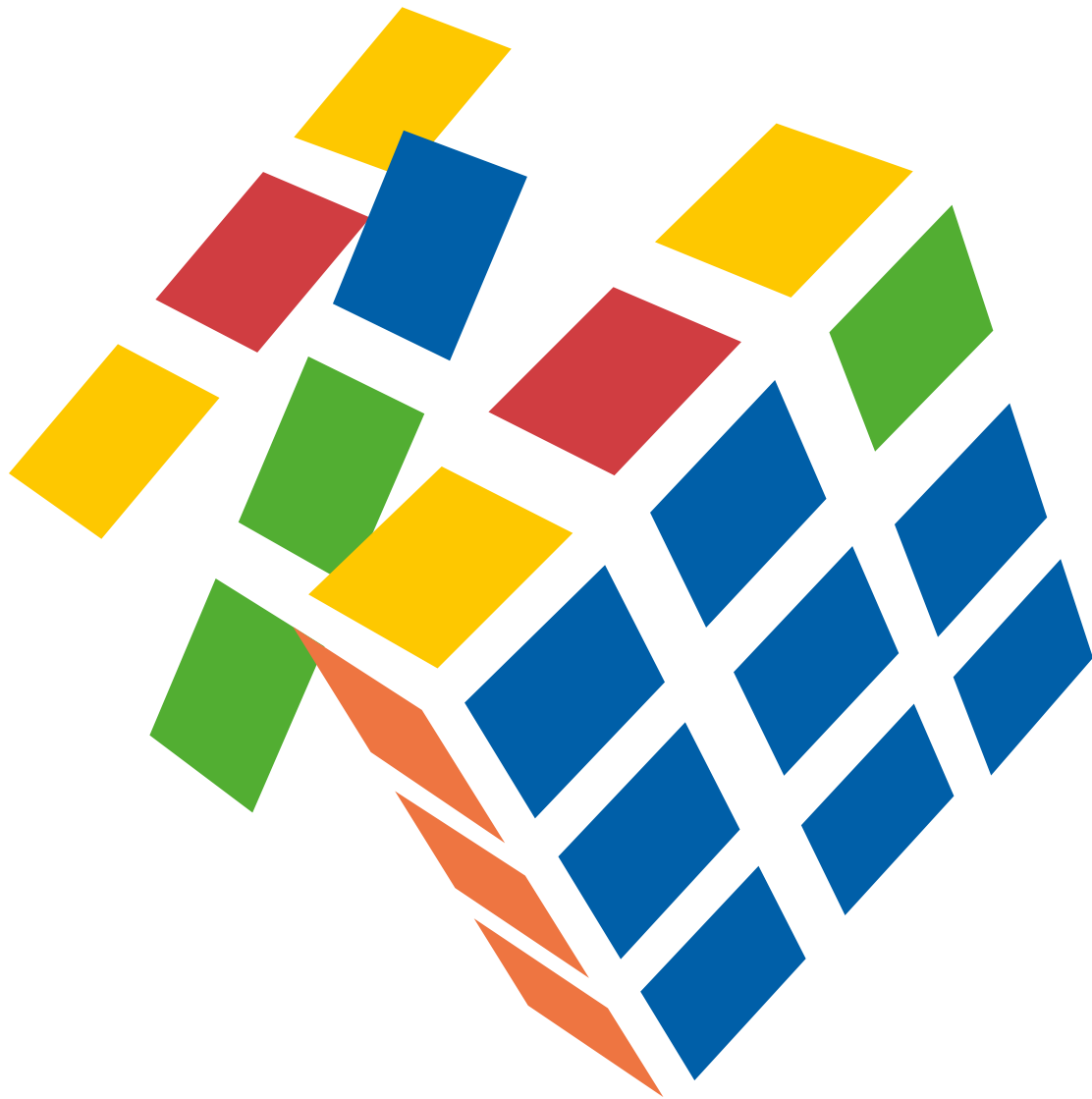




CEDEFOP

European Centre for the Development
of Vocational Training

EN



2023 skills forecast Luxembourg





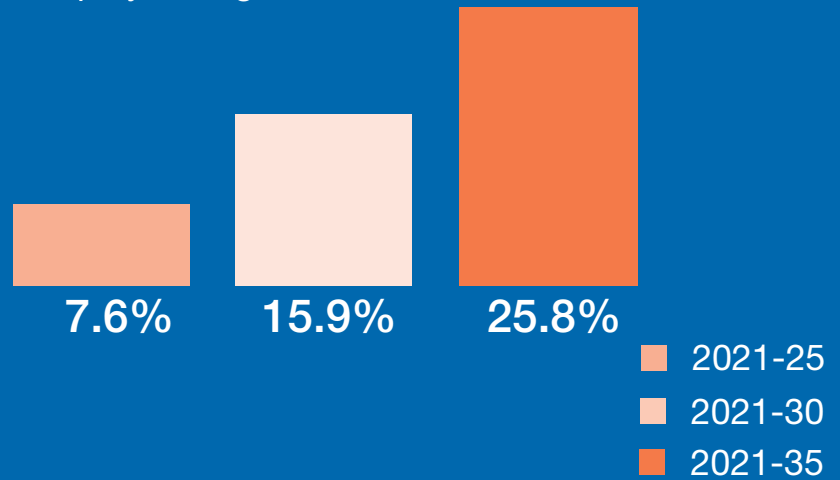
Employment in 2035

611 000

25.82%

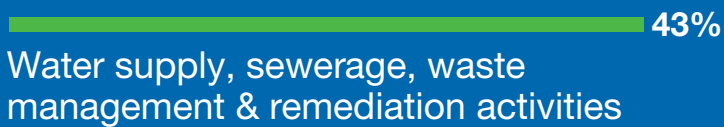
increase 2021-35

% Employment growth 2021-35



Fastest-growing sectors

2021-35% growth



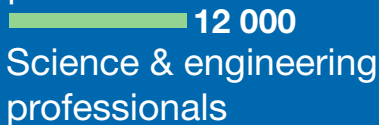
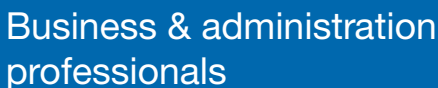
Total job openings, 2021-35

421 000



Highest-demand occupations

Largest creation of new jobs, 2021-35



increase in high-skilled labour demand 2021-35

53%

Total job openings by skill level 2021-35



- High-skilled non-manual occupations (65%)
- Skilled non-manual occupations (16%)
- Skilled manual occupations (10%)
- Elementary occupations (9%)



3.4%

employment increase in 2021-35



Fastest growing occupation
Legal, social and cultural professionals



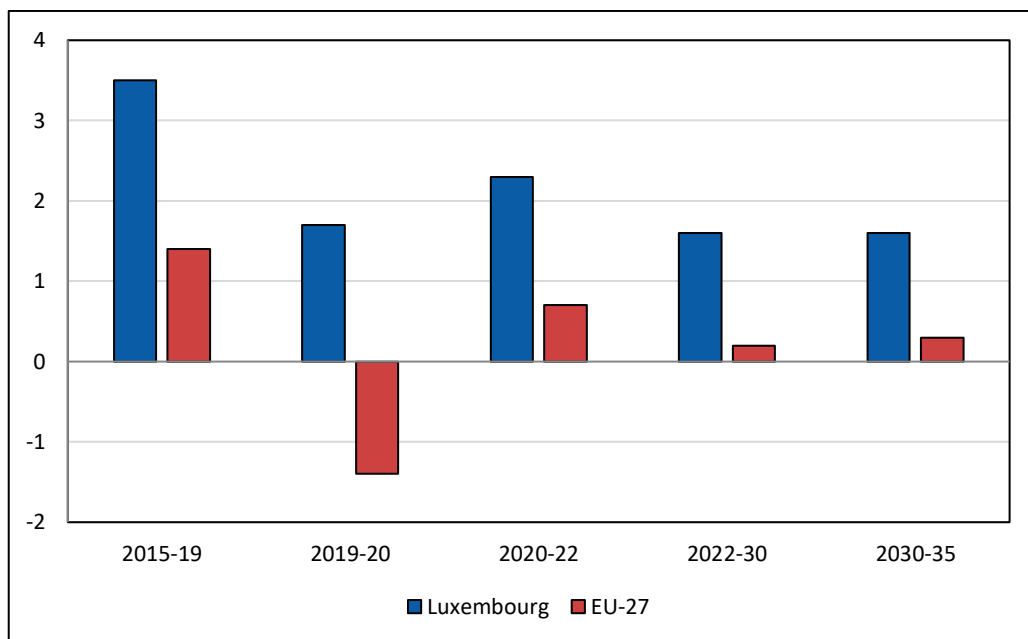
Fastest growing sector
Information and communication

Cedefop skills forecast: Luxembourg

1. Employment outlook

Employment in Luxembourg is forecast to grow much faster than the EU-27 average, albeit at slightly slower rates than seen over 2015-19. Figure 1 shows that employment in Luxembourg grew much faster than the EU-27 average over 2015-19 and continued to grow even in 2020 as the Covid-19 pandemic hit. Employment in Luxembourg is also estimated to have picked up much more strongly than the EU-27 over 2020-22. Across the forecast period, employment in Luxembourg is forecast to grow by more than 1.5% pa compared with growth of around 0.2-0.3% pa for the EU-27 as a whole.

Figure 1. Annual percentage employment growth in Luxembourg and the EU-27, 2015-35



Source: Cedefop (2022 Skills Forecast).

2. Labour force overview

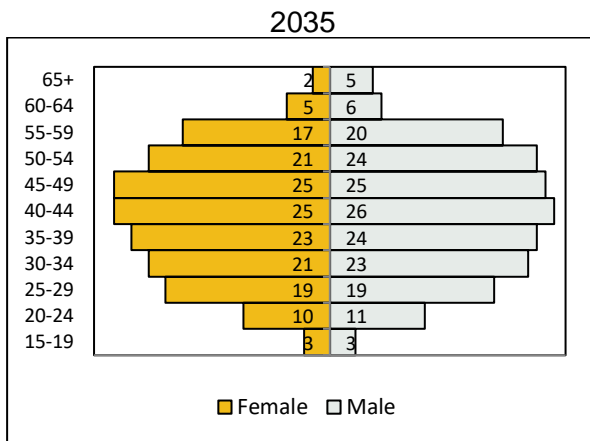
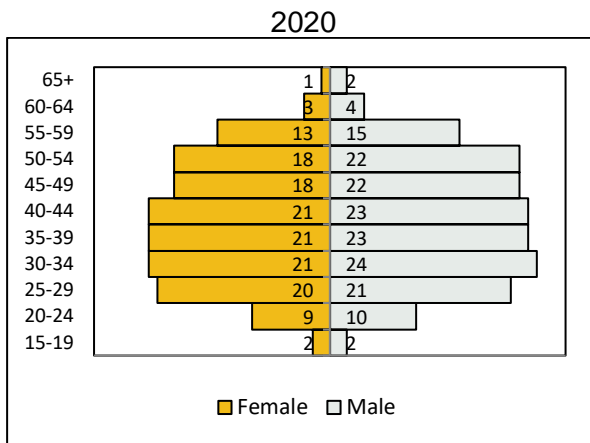
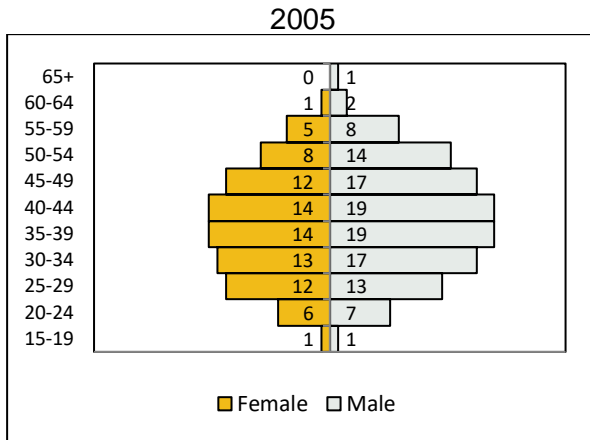
Figure 2 shows the labour force by age group in Luxembourg in 2005, 2020 and 2035. Changes in the labour force in Luxembourg over the forecast period will continue to be driven by the ageing population, although perhaps not as much as in the EU, and increasing participation rates in most age groups. Due to its size and location, Luxembourg experiences a high degree of cross-border in-commuting and is less dependent on the resident labour supply than other EU Member States. The total labour force in Luxembourg is projected to increase by 14% over 2020-35, compared to growth of 54% over the previous 15 years. This compares with an expected increase in the labour force of around 3% over 2020-35 for the EU-27. Due to changes in population in key age groups, the total participation rate in Luxembourg is forecast to decrease by 2 pp over 2020-35, compared with an increase of 1 pp in the total rate for the EU-27. Total population is forecast to grow by 17% over 2020-35, compared with a growth of 40% over 2005-20.

Unlike most other EU Member States, the population in Luxembourg is forecast to increase strongly in most age groups, apart from 25-34 year olds. However, the growth is projected to be strongest in the older age groups (40 and above), reflecting trends in the younger relevant cohorts in preceding periods, and so the population is ageing, as in the EU-27 as a whole.

The participation rates of all age groups in Luxembourg except for 25-29 year olds are forecast to grow over 2020-35, with the strongest increase projected for the 55-59 age group (10 pp).

The differences between male and female participation rates in Luxembourg are not as great as the EU-27 average, but, like the EU-27 average, female participation rates in Luxembourg are generally projected to increase more than male rates. Even so, and due to the changes in population in key age groups, the total participation rate for females is forecast to remain static over 2020-35, and the male rate to decrease by 3 pp.

Figure 2. Distribution of the labour force (thousands), 2005-35

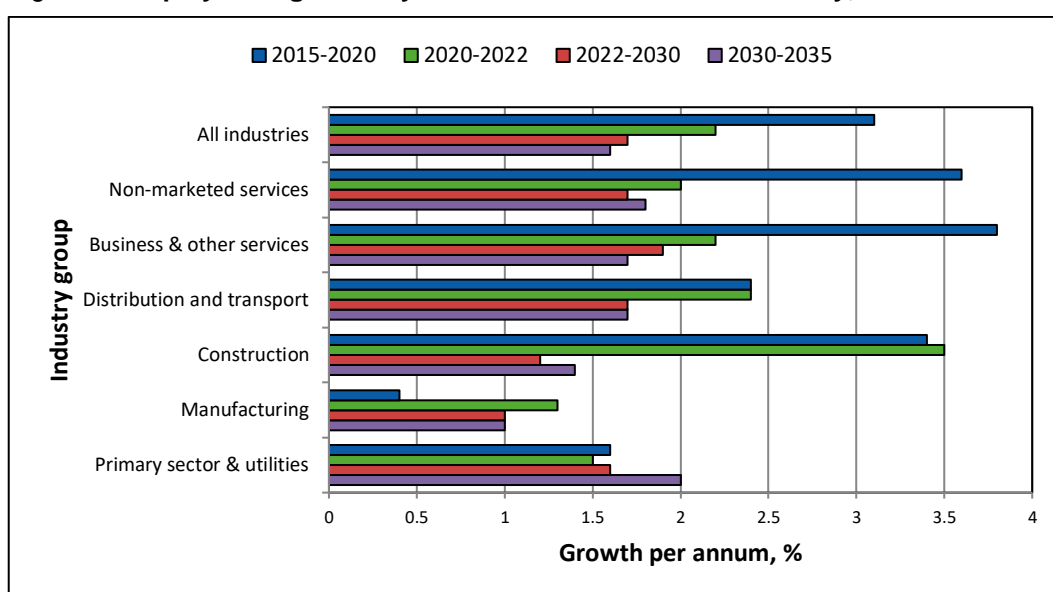


Source: Cedefop (2022 Skills Forecast).

3. Sectoral employment trends

Figure 3 shows an annual average employment growth by broad sector in Luxembourg between 2015 and 2035. All broad sectors are forecast to see strong employment growth, with the slowest growth forecast for *Manufacturing* (1% pa) and *Construction* (1.2% pa) over 2022-30. These two sectors, along with *Primary sector & utilities*, account for a much smaller proportion (19% in 2020) of employment in Luxembourg than the EU-27 average (27%).

Figure 3. **Employment growth by broad sector of economic activity, 2015-35**



Source: Cedefop (2022 Skills Forecast).

In terms of sub-sectors (i.e. below the level of the six broad sectors discussed above), the pattern of employment growth is more mixed, but is still generally expected to be positive. Among the larger sub-sectors within *Business & other services*, employment growth is forecast to be driven by *legal, accounting & consultancy services, computer programming & information services, administrative & support services* and *financial & insurance services*, all with forecast growth in employment of more than 2% pa over 2022-30. *Research and development* is the only services sub-sector forecast to see a decline in employment over this period. Within *Non-marketed services*, employment in *education* and *health* is forecast to grow strongly over 2022-30, while in *public administration & defence*, employment is forecast to grow more slowly over the same period. Within *Distribution & transport*, employment in *land transport* (3.7% of total employment in 2020) and *wholesale & retail trade* (11.5% of total

employment) is forecast to drive total growth over the forecast period. Within *Manufacturing*, although the sub-sectors tend to be smaller, accounting for a lower percentage of total employment, growth in employment growth is forecast to be driven by *food, drink & tobacco* and *basic metals & metal products*.

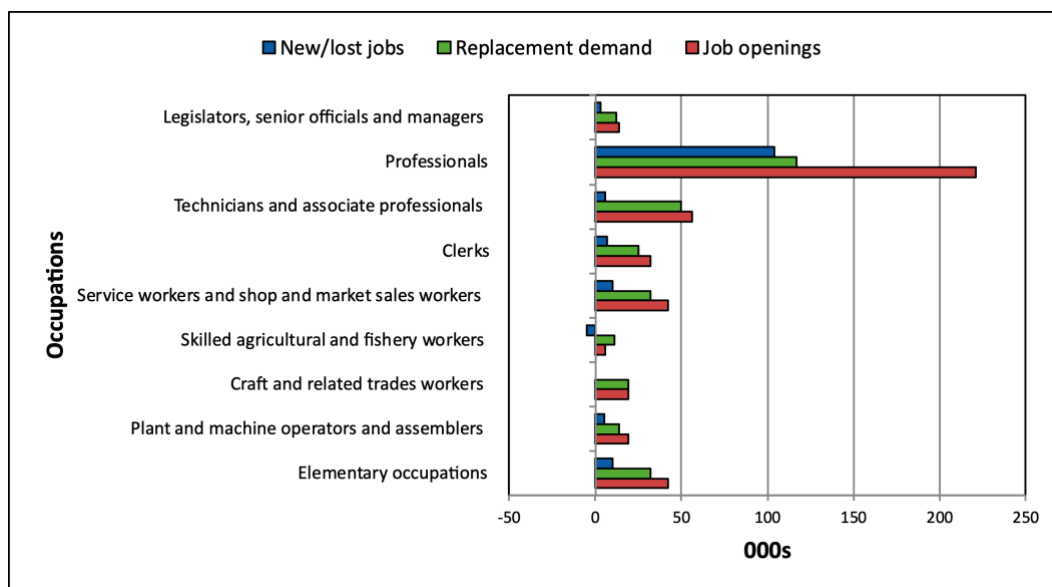
Job openings by occupational group

Cedefop skills forecasts estimate 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 or jobs lost due to the expansion or contraction 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 total job openings by broad occupational group over 2020-35. The number of job openings indicates the number of jobs required to be filled due to lost/newly created jobs and those requiring replacement workers. *Professionals* is expected to be the occupation providing the highest number of job openings (accounting for almost half of all job openings) and the highest number of new jobs (more than 100,000) by a large margin. No other occupations are expected to provide a sizeable number of new jobs, although replacement demand will still mean that there will be job openings in all broad occupations. These results are in line with the main features of the Luxembourg economy, which is largely based on the provision of services such as finance and has little manufacturing capacity. In total, 139,000 new jobs within a total of 452,000 job openings are expected to be created in Luxembourg between 2020 and 2035.

At the more detailed level, most job openings (taking both new/lost jobs and replacement needs together) are expected to be in highly skilled occupations such as *business & administration* and *associate professionals, legal, social & cultural professionals* and *science & engineering professionals*. Even so, the low skilled elementary occupation of *cleaners & helpers* and skilled manual occupation of *drivers & mobile plant operators* are also expected to provide a relatively large number of job openings, due in part to some new jobs but mainly due to replacement demand.

Figure 4. Job openings by broad occupational group, 2020-35



Source: Cedefop (2022 Skills Forecast).

4. 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).

The occupational composition of employment in Luxembourg is characterised by changes in the level of specialisation within occupations and by changes in industry size. However, the former, the occupation-specific effect, has a much stronger impact than the latter. Stronger occupation-specific and industry effects will lead to an increasing share of *professionals, technicians and other associate, customer services clerks*, but also in occupations which support the production process such as *assemblers* and elementary occupations such as *agricultural, forestry and fishery labourers*. The increase in the industry size has a positive impact, alongside a positive but modest occupation effect, only for *teaching professionals*. High-skilled occupations that can benefit the most from these trends are, for example

health and teaching professionals, and, in particular, *business and other professionals* and *science and engineering professionals*.

Therefore, the overall effect of occupational change depends on several factors that need to be considered together. Increasing automation and digitisation, and moving toward a service-oriented economy also within the manufacturing sector, are some factors impacting the various occupational changes.

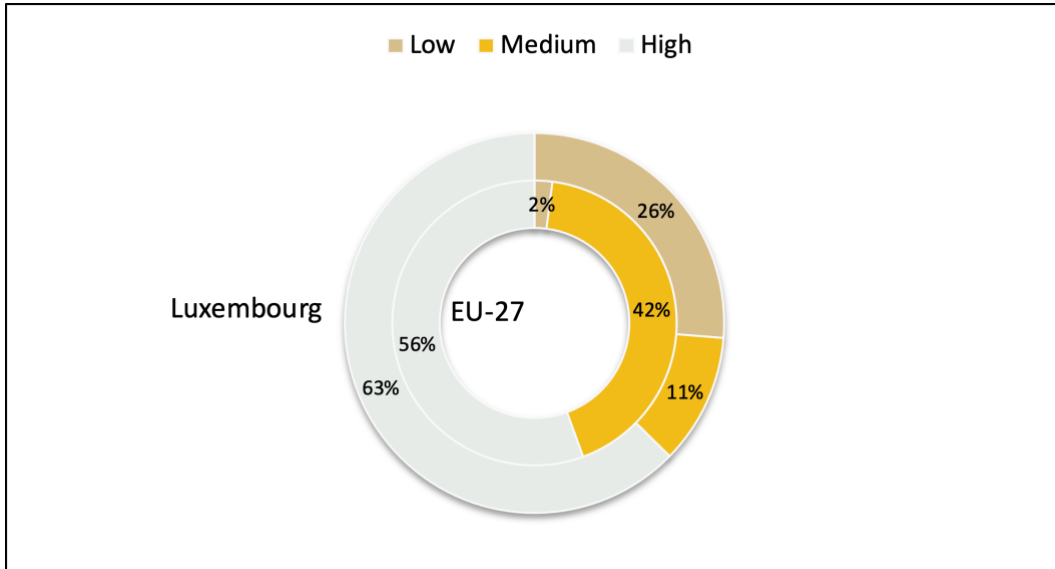
All relevant low-and high-skill occupations are expected to increase, except for *health associate professionals*. Although several medium-qualified occupations will decrease, the intermediate occupations will experience an overall increase, especially for *customer services clerks* and *assemblers*.

5. 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.

Figure 5 shows the shares of total job openings by qualification level for Luxembourg and the EU-27 over 2018-30. In Luxembourg, almost two-thirds of job openings (63%) are expected to require a high qualification. There is a much lower share of job openings among the medium qualified (11%), while more than a quarter (26%) is low qualified. Compared to the EU-27, a higher share of job openings is expected to require a high qualification, and a much larger share is low qualified. In contrast, the intermediate job openings are very low.

Figure 5. Shares of total job openings by level of qualification, 2022-35



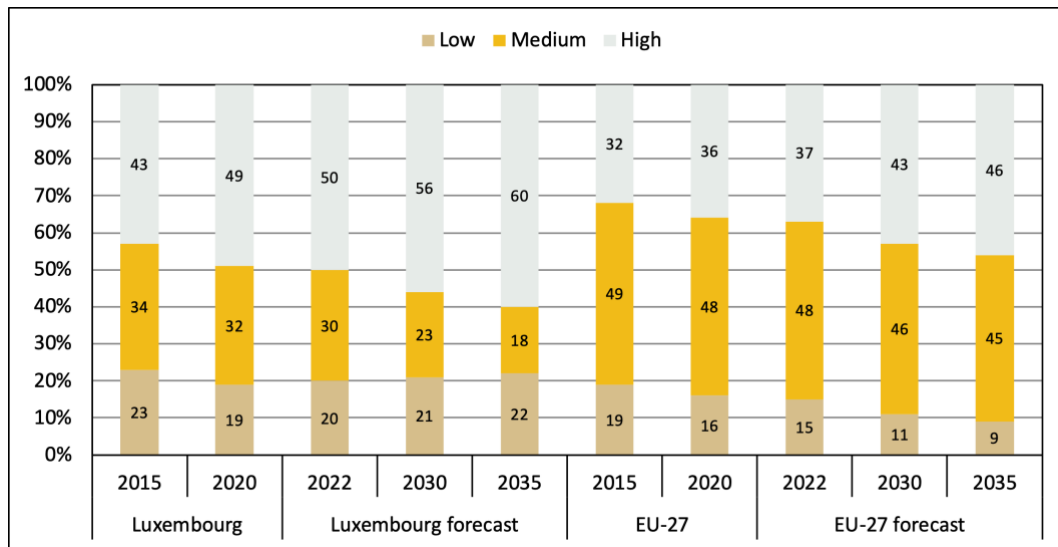
Source: Cedefop (2022 Skills Forecast).

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

Figure 6 depicts the development of qualification shares in the labour force in Luxembourg and the EU-27. Luxembourg is rapidly increasing its share of the higher qualified in the labour market. While the share was at 50% in 2022, it is expected to increase to 60% by 2035.

The increase in the share of the higher qualified has been predominantly through the outflow of older, medium qualified, workers. The share of low qualified workers is expected to increase from 20% in 2022 to 22% in 2035, while the share of medium qualified workers is expected to decline from 30% in 2022 to 18% in 2035. Relative to the EU-27 average qualification mix, Luxembourg is expected to continue to have a higher share of higher as well as lower qualified.

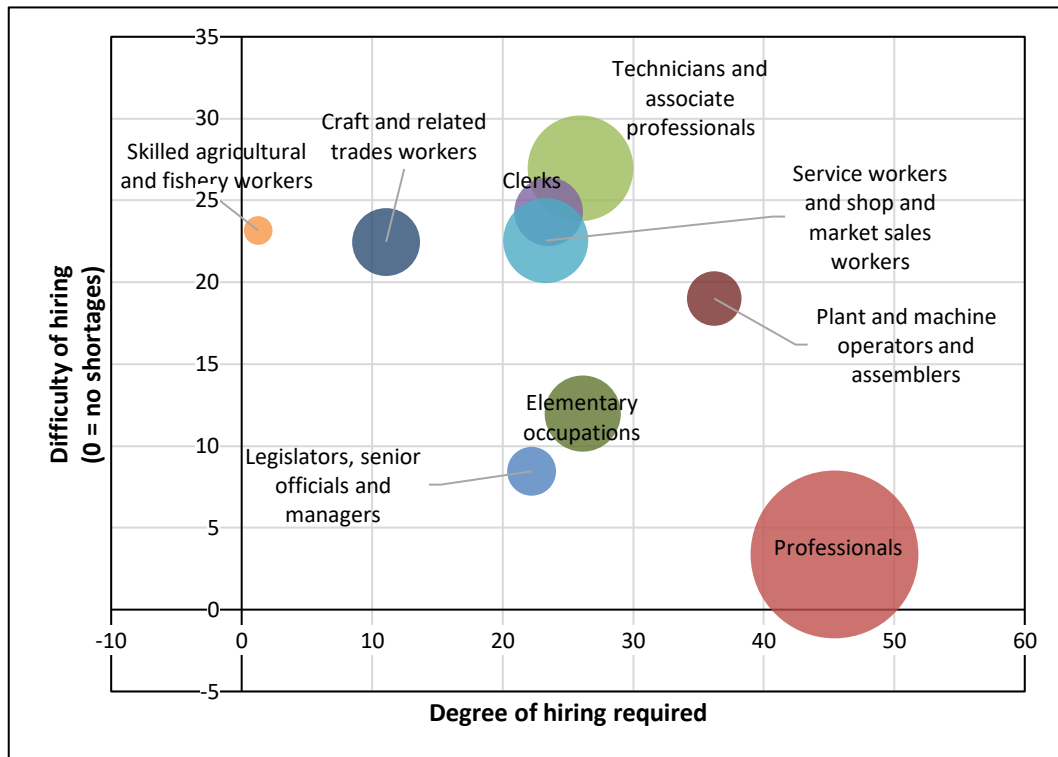
Figure 6. Labour force share by level of qualification, 2015-35



Source: Cedefop (2022 Skills Forecast).

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, 2022-35



Source: Cedefop (2022 Skills Forecast).

Note: Indicators were calculated at the level of the underlying 2-digit occupation groups. Aggregation was based on the employment weights within each 1-digit occupation group.

When it comes to imbalances between labour supply and demand within a country, Luxembourg is a special case due to the high level of commuting from France, Belgium and Germany. However, the imbalance indicators still indicate where hiring might be required and where there might be difficulties in hiring. The phenomenon of cross-border workers in Luxembourg started in 1985 and has been at a high intensity for many years now. In 2020, 47% of workers employed in the country commuted daily from abroad. In general, the most qualified workers hired in Luxembourg are cross-border workers.

The increasing supply of higher educated workers suggests there could be shortages, especially among the medium and the lower qualified. These shortages could therefore imply that in some cases, the higher educated may have to be employed within occupations at a lower level than they qualify for, or it will result in hiring difficulties. Medium level occupations such as *plant and machine operators and assemblers*, *service and shop and market sales workers*, and *craft and related trades workers* are expected to see *higher* hiring difficulties in the forecast (Figure 7). These are expected, however, to be seen alongside medium levels of change,

and thus relatively medium levels of hiring are required. While *professionals, legislators, senior officials and managers* are implied to have low hiring difficulties, as they usually hire from the supply of higher qualified, they also show a very high level of hiring required in the forecast period. A high degree of hiring required, along with quite high hiring difficulties, is expected among the *clerks*.

Although hiring difficulties among *professionals* are expected to be very low across the underlying occupations, the degree of hiring required will differ, with *legal, social and cultural professionals* (53) and *science and engineering professionals* (49) being well above the average of *professionals* as a whole (42), while the degree of hiring required among *health professionals* (18) is forecast to be well below the average.

Cedefop methodology

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 2035. The forecast takes account of global economic developments up to May 2022. The European Economy experienced a sharp downturn in 2020 due to the global pandemic, and partially bounced back in 2021. However, the strength of the recovery in the short term is threatened by global factors such as supply chain disruptions, the consequences of the war in Ukraine and high inflation.

The key assumptions of the baseline scenario incorporate the Eurostat population forecast available in May 2022 (Europop 2019) ⁽¹⁾, and the short-term macroeconomic forecast produced by DG ECFIN in May 2022 ⁽²⁾. Several revisions to the data affect the Cedefop Skills forecast 2022, when compared to the 2019 update. For example, the population projections used in the 2022 update are generally more pessimistic than those used in the 2019 update (i.e. Europop 2015), with a corresponding impact on labour force figures. The source of historical labour force data is the European Labour Force Survey, which in 2021 underwent important methodological changes causing a break in the time series for several variables, including labour force. As a consequence, in many Member States the participation rates in 2021 are noticeably above/below historical trends, which causes the Cedefop Skills forecast 2022 to be revised in the same direction, compared to the 2019 update. Moreover, some Member States experienced significant revisions in the historical data series for sectoral employment from the National Accounts.

The Cedefop Skills forecast 2022 is made consistent with the objectives set by the European Green Deal by incorporating suitable assumptions in terms of additional investment, power sector technologies, energy balances and carbon pricing.

Energy and commodity price forecasts from the World Bank and the IEA are used as inputs to the Cedefop Skills forecast, which therefore incorporate the recent surge in prices.

(1) <https://ec.europa.eu/eurostat/web/population-demography/population-projections/database>

(2) https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/spring-2022-economic-forecast_en

For the latest update and access to more detailed Cedefop skills forecast data visit our [Skills forecast project page](#).



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