



# SKILL SHORTAGE AND SURPLUS OCCUPATIONS IN EUROPE

Cedefop insights into which occupations are in high demand – and why

European policymakers have long-standing interest in the extent, causes and consequences of skill mismatch. Problems posed by skill shortages and surpluses are of particular concern. Cedefop has developed an innovative risk-based approach that helps identify occupations that European and national policymakers should prioritise due to skill mismatch. It also provides insights into why skill mismatches arise.

Mismatch priority occupations (MPOs) are those for which a critical shortage, or surplus, has important implications for the national economy (including strategic sectors) and for education and training. Cedefop uses a range of indicators <sup>(1)</sup> that uncover skill mismatches in the labour market; these are combined with qualitative insights from national experts. MPOs for each Member State have been identified using this approach.

Across the European Union (EU), MPOs for which there are skill shortages are a mix of regulated and non-regulated professional and associate professional occupations at higher skill levels. The top five are ICT professionals; medical doctors; science, technology, engineering and mathematics (STEM) professionals; nurses and midwives; and teachers (Figure 1). MPOs at intermediate skill level with skill shortages are cooks, welders and truck drivers.

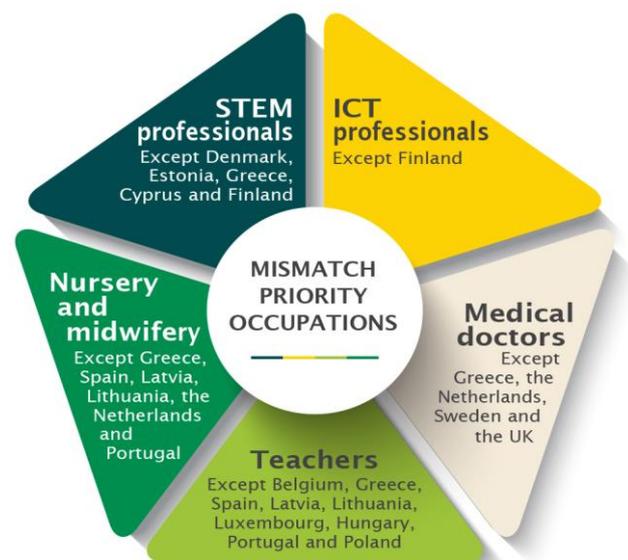
Although they receive less attention than skill shortages, skill surpluses – where there is

insufficient demand for the skills available – are an important element of skill mismatch. Skill surpluses represent a misallocation of resources and a loss of investment in education and training.

Surplus MPOs in the EU include building and related trades workers, labourers in mining, construction, manufacturing and transport, plant and machine operators, elementary occupations, secretaries and keyboard operators and social and religious professionals.

For policy to be effective in addressing skill shortages and surpluses, as well as identifying MPOs, it is essential to understand why they arise.

FIGURE 1: TOP 5 MISMATCH PRIORITY OCCUPATIONS: SHORTAGES, EU-28



Source: Cedefop

<sup>(1)</sup> <http://skillspanorama.cedefop.europa.eu/en/skills-theme/matching-skills-and-jobs>

## Reasons for shortages

### ICT and STEM professionals

Across the EU, a major reason for the shortage of both ICT and STEM professionals is insufficient supply of graduates from upper-secondary and higher education to meet increasing demand.

Too few young people are enrolling to study STEM subjects at higher education: entry requirements and dropout rates are both high and participation by women is low. In some EU countries supply is reduced by 'brain drain' as well-qualified STEM professionals emigrate for opportunities elsewhere.

Shortages become acute as problems with supply coexist with rising demand for STEM professionals due to the variety of occupations in which they can be employed. These are widening. Emerging 'green' sectors such as green construction and electric vehicle production also require STEM professionals.

But, despite demand, some STEM occupations are not attractive. One reason why shortages arise is job insecurity, for example scientists working on contracts that are short-term or with relatively low-pay in higher education institutions. Significant numbers of STEM graduates opt for non-STEM jobs, as happens in Bulgaria. STEM occupations are also becoming more demanding. In addition to technical and practical knowledge, STEM professionals are also increasingly required to have highly developed 'soft' skills such as foreign languages, management, communication, problem-solving and project management.

This situation is similar for ICT professionals, demand for which is rising for a combination of reasons. The growth in services, technological advance making it possible to outsource business through platform working, and ICT start-ups are all contributing factors. Digitisation of the economy also means that ICT operations, and, the need for ICT professionals, are embedded in nearly all economic sectors. The growing need to collect and analyse enterprise internal data to improve production and services is adding to the demand for ICT professionals.

Skill shortages also arise from the rapid development of ICT, stimulating new skill needs while making others obsolete. The pace of

technical change makes it difficult for education and training to keep up. UK employers, for example, have expressed concerns that courses may not equip graduates with the right skills. They are particularly uneasy that ICT courses lag behind technological advance and students do not have sufficient practical experience.

### Healthcare professionals and teachers

Europe's ageing population is also causing skill shortages for healthcare professionals and teachers, but in different ways. Many teachers are expected to retire in the coming decade and shortages arise from the need to replace them. For healthcare occupations, an ageing society is increasing demand for social care and medical services.

Several common reasons underlie skill shortages for doctors, nurses, midwives and teachers, one being academic entry requirements. Entry into high level healthcare professions is highly selective and studies are of long duration. Entry requirements have also changed for some teachers, with the introduction of specific minimum requirements, such as language and computing skills in the Netherlands.

However, other reasons, not related to skills, include unattractive working conditions such as stressful working environments and negative real wage growth, which can discourage young people from entering certain occupations.

In some countries, teaching has a negative image and salaries are low. Healthcare occupations often require shift and weekend work and are characterised by high staff turnover. Increasing numbers of healthcare professionals are employed in other sectors with better working conditions, such as the biotech industry, pharmaceuticals and medical equipment suppliers.

Emigration of healthcare professionals to find better working conditions, including higher wages, in other countries, is characteristic of countries that joined the EU after 2004, including Bulgaria, Hungary and Slovakia. In comparison, older Member States, such as Germany and Luxembourg face difficulties recruiting health professionals from abroad. Problems recruiting and retaining healthcare professionals in rural

areas and small towns can be acute in countries such as Denmark, Croatia, Latvia and Austria. Only the Netherlands has a surplus of healthcare professionals (Figure 2).

### Other mismatch priority occupations

Some Member States, such as Estonia and France, face shortages of legal professionals. Demand for judges in Estonia is expected to increase rapidly as by 2020 around a third of Estonian judges will be eligible to retire. Shortages also arise because of the relatively small group of professionals who meet the requirements to become judges.

Other countries, such as Ireland, Luxembourg, Hungary and the UK, have shortages of finance professionals. During the economic crisis that began in 2008, many financial sector jobs were lost in the UK but, as the sector recovers, growing demand for skills has made long-standing recruitment problems worse. Competition between firms for finance professionals with skills such as planning, administration, investment and quantitative analysis, is fierce.

Demand for architects with green skills is growing, for example in Italy, as customers are increasingly concerned about the environment. Shortages in these cases relate more to lack of skills sought by employers rather than insufficient number of architects.

### Reasons for skill surpluses

Skill surpluses arise because demand for the occupation falls but the reasons for such reduction vary for different occupations.

Economic recession has reduced the availability of jobs in specific sectors, such as construction and agriculture. High costs have seen some production moved outside the EU, reducing numbers of manual jobs. Increased digitisation has replaced many jobs, not only in manufacturing but also in the service sector. Many occupations comprising routine tasks, such as keyboard operators, have been replaced by technology. Clerical jobs are also being replaced as people

FIGURE 2: SURPLUS IN HEALTHCARE PROFESSIONALS IN THE NETHERLANDS

Despite strong growth in numbers of people employed in healthcare between 2008 and 2012, a large surplus of healthcare professionals is predicted for the Netherlands.

Pressure on budgets from insurance companies and budget cuts in public healthcare will reduce job opportunities. However, the inflow of graduates from health related studies will remain high, resulting in a surplus of personal care workers, nurses, midwives, and other health professionals.

buy or apply for goods and services directly online. A surplus of social and religious professionals is because fewer people seek their services.

### Tackling skill shortages

Member States are using various measures to reduce skill shortages and surpluses. These include stimulating supply:

- through education and training;
- by exploiting reserves of labour and skills;
- by upskilling employees.

### National strategies

Various approaches have been taken to improve education. Some countries have developed national strategies to encourage people to study and work in fields such as STEM, ICT, and research and development. For example, in the Netherlands education institutions, employers, employees, the so-called 'top-sectors', and regional and central governments, have agreed a national technology pact. A partnership between public and private sectors, the technology pact, was initiated to find ways to satisfy the Dutch labour market's need for highly skilled technology workers. The technology pact sets out three lines of action for the years to 2020. The first aims to increase numbers of learners choosing to study technology-related subjects. The second looks to increase numbers of learners with a technical qualification progressing into technology-related jobs. The third seeks to keep technology workers at risk of losing their jobs or marginalisation working in the sector.

## Using existing resources better

To make better use of the existing labour supply, public employment services have developed many initiatives to provide unemployed people with skills in demand. The Austrian public employment service, for example, has developed placement foundations which bring jobseekers whose skills are lacking or need updating into contact with companies with skill needs that are willing to provide training to meet them.

Placement foundations are widely used in different regional labour markets. Activities involve developing and adopting individualised paths to integrate or reintegrate people into the labour market through careers guidance, training, active job search and work experience. The success rate of participants, for example, finding regular employment after completing a work experience programme, is estimated to be above 80%.

Closer cooperation between enterprises and higher education institutions to match skills better is also being encouraged. Since 2014, EPSI in Nantes (one of eight computing engineering schools in France) has trained people as computing consultants. The programme admits 30 jobseekers a year who are over 45 years of age. The course addresses the skill needs of three local digital service firms but will expand to other regions.

National measures to use reserves of labour and skill more effectively include encouraging more women to study scientific and technical subjects and reducing dropout rates. Fast-track opportunities providing training and validation of existing skills to enable people to qualify in shortage occupations, are also being developed. Additional funding can be provided to cover the cost of studies in selected fields. Some countries have made it easier to employ foreign qualified workers in shortage occupations; others have adapted national strategies to encourage highly qualified nationals to return home from abroad.

Efforts to upgrade skills have not been limited to the young or unemployed. National strategies for lifelong learning include employees of all ages. Sector organisations also provide training to refresh or upgrade professional skills.

## Conclusion

These findings provide a snapshot of the results of the method developed to identify MPOs. More comprehensive findings for each EU Member State can be found in the *Skills Panorama*.

The MPOs value is that it provides a vital piece of the skills anticipation jigsaw: how to identify comprehensively and robustly current occupational skill shortages and surpluses. It helps identify shortages in occupations that are due to lack of skills rather than other recruitment difficulties. But it also helps identify shortages in occupations that arise not due to a lack of skills, but because of reasons such as poor terms and conditions of employment. Simply increasing skill supply in such circumstances may not reduce reported shortages, as people will still not be attracted to those jobs. The right remedies to tackle skill mismatch require the right diagnosis. Education and training alone cannot solve skill mismatch.