



**CEDEFOP**

# Strengthening skills systems in times of transition

Insights from Cedefop's 2022 European skills index

**POLICY BRIEF**





# **POLICY BACKGROUND**

## **In this section**

**Skills drive recovery and  
enable transitions**



# Skills drive recovery and enable transitions

The COVID-19 pandemic hugely disrupted and challenged European Union economies, societies and life in general at a time when the impact of long-term megatrends, such as population ageing and the digital and green transitions, was increasingly becoming visible (Cedefop and Eurofound, 2018). In EU policies adopted to counter the adverse impact of the health crisis, and in 'twin' transition policies more generally, skills take centre stage. The same holds for overcoming the economic and social challenges that are emerging as a result of the situation in Ukraine. Developing the skills of Europeans and encouraging skill-intensive job creation and transformation that supports Europe in making transitions are headline priorities. In the words of European Commissioner for Jobs, Nicolas Schmidt: 'In the midst of the digital and green transitions, skills are a necessity' <sup>(1)</sup>.

Realising the [European Green Deal](#) ambitions and its 55% CO2 reduction target will require significant investment in creating and implementing green technology. Apart from new jobs requiring high-level skills to develop green-tech solutions for sectors strongly impacted by it, the European Green Deal will also change many existing jobs fundamentally; this will occur not only in sectors

and in occupations driving the green transition, but also in those that support it. While technology will often be the starting point for realising Europe's green ambitions, it is ultimately the skills of Europeans that will make the green transformation possible (Cedefop, 2021b).

Current and forecast future labour market trends show how technological change and transformation are making many jobs increasingly complex and digital. With job growth stagnating at the middle end of the skills spectrum, the share of high-skilled employment is growing; this is not only because of more employment in high-skilled occupations but also because qualification requirements within occupations are rising. Particularly in sectors such as manufacturing and logistics, much replacement need in medium and low skilled jobs is likely not to materialise due to automation (Cedefop, 2021a). While the pandemic has boosted demand for digital skills, it has also shown that such skills are enablers of new ways of working and protect workers from job loss (Livanos and Ravanos, 2021).

Recent Cedefop evidence clearly points towards the significant up- and reskilling potential Europe needs to address to make and shape the digital and green transitions. Even before the pandemic, almost half (46%) of European adults had low or outdated skills (Cedefop, 2020b). The 2020 European company survey shows the enormous impact of the pandemic on EU

<sup>(1)</sup> See the [relevant article](#) by Samuel Stolton on Euractiv.com.

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...the **European Green Deal** ambitions and its **55%** CO2 reduction target will require significant investment in creating and implementing **green technology**...



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business: three in every four EU companies surveyed experienced changing skills due to the pandemic; in more than 80% of companies, the health crisis led to organisational change and more than a third of EU companies experienced substantial changes in their core business activities (Van Loo; Eiffe and Van Houten, 2021). Many changes are here to stay and skills systems will play a significant role in accommodating and further shaping them.

Citizens are well-aware of the idea that learning and training are important. Some 88% of EU citizens with jobs that already require constant skills updating believe that post-initial adult learning and training will become even more important to career progression in the next decade. At least two thirds of adults in every EU Member State believe that adult learning and training are as important as school or university, and agree that their governments should prioritise investment in adult learning (Cedefop, 2020a). First findings from Cedefop's second skills and jobs survey show that about two in every three adult workers feel they need to develop their knowledge and skills to do their job better <sup>(2)</sup>.

European skills systems face a multifaceted challenge: providing young people with a wide range of skills so that they can enter and navigate a dynamic and rapidly evolving labour market; and up- and reskilling working adults to keep up with change and make transitions to more digital and greener jobs <sup>(3)</sup>. They must do so in ways that leave no one behind. With recovery policies strongly emphasising the twin transitions, by powering the green transformation and the digital transition, skills also play a crucial role in the context of overcoming

<sup>(2)</sup> See the relevant Cedefop [Twitter post](#).

<sup>(3)</sup> See the [relevant headline](#) on Cedefop's news web page.

the challenges linked to the pandemic and to the crisis unfolding in Ukraine.

Strong skills systems are drivers of productivity, innovation and resilience; they also contribute to inclusive societies <sup>(4)</sup>. The idea that skills acquired via education, training, and lifelong learning are at the heart of well-functioning and inclusive labour markets underlies key EU policy initiatives. Among them are the [European pillar of social rights](#), the [Osnabrück Declaration](#) on vocational education and training (VET), as an enabler of recovery and just transitions to digital and green economies, and the [Council Recommendation on VET](#) for sustainable competitiveness, social fairness and resilience. The overarching strategic framework for European cooperation in education and training for the period 2021-30 was set up to provide the essential structure for collaboration between Member States and key stakeholders to develop the European Education and Training Area. By focusing on innovative and future-oriented education and training systems, and promoting synergies with other policy areas such as research and innovation, social policy, employment or youth, the framework contributes to just transitions.

As a driver of recovery and an enabler of transitions, skills have become an overarching policy priority. Investing in people, their skills and opportunities to use them is a leitmotif spanning multiple policy domains. Understanding skills systems in terms of their capacity to deliver qualifications and the right mix of key competences and job-specific skills to activate these and to match skills to labour market needs in order to achieve economic aims and social ambitions, is crucial.

<sup>(4)</sup> See the [relevant headline](#) on Cedefop's news web page.

The [2020 European Skills Agenda](#) points towards the importance of further developing skills intelligence and fostering national skills strategies. As a tool for mapping performance and reflecting on progress in national skills systems over time, [Cedefop's European skills index \(ESI\)](#) contributes to both. The ESI approaches skills systems in a multi-dimensional way and goes beyond the traditional approach of seeing skills systems as a means of delivering skills; it also considers the role of a skills system in ensuring a smooth transition from education to work and an appropriate skills match at the workplace. The ESI therefore takes stock of the state of play with respect to both skills supply and its interaction with demand. It uses a composite indicator approach to characterise skills systems based on three pillars (Figure 1). This policy brief provides an overview of the 2022 ESI main findings and trends and their implications for policy. The [Cedefop ESI web tool](#) offers detailed results by country and by indicator.

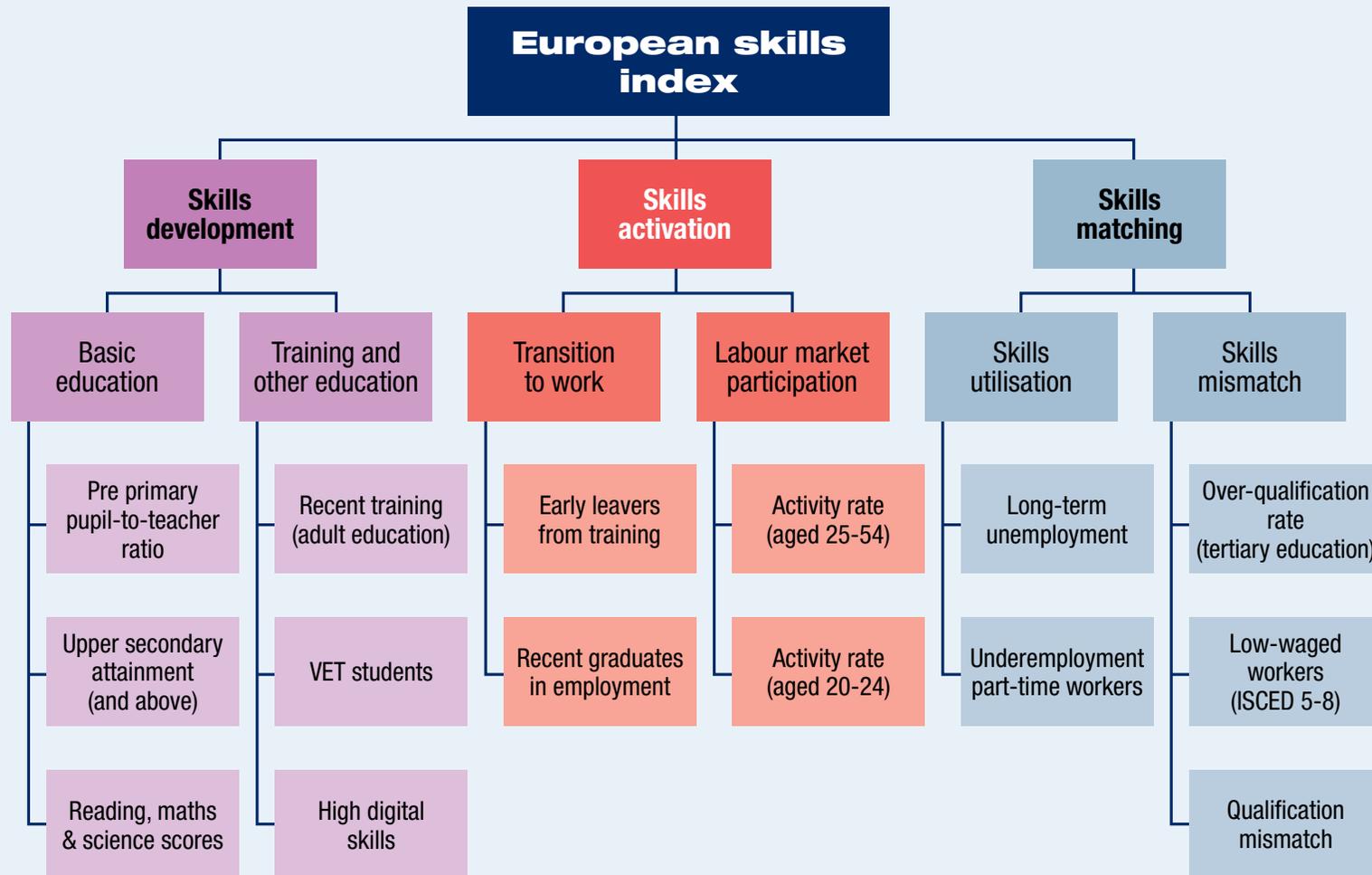
Figure 1. The European skills index approach to characterising skills systems



Source: Cedefop European skills index 2022.

## Cedefop's European skills index (ESI): 2022 release

- Covers EU Member States and Iceland, Norway, Switzerland and the UK.
- Considers inputs, processes and outputs of skills systems.
- Is formed around 15 harmonised indicators drawn from international sources. Its full structure is shown below.
- Focuses on measuring outcomes rather than policy intentions.
- Follows the OECD-JRC Handbook for composite indicators (Nardo et al., 2008) and has a 10-step methodology (more information in the ESI [technical report](#)).
- Has successfully undergone an independent statistical audit by the Joint Research Centre (Caperna and Becker, 2022).
- Allows monitoring over time and enables cross-country analysis and policy learning.
- Partly captures the impact of the COVID-19 pandemic by using 2020 data.
- Makes use of Cedefop's ReferNet to assess, interpret and contextualise results.



Source: Cedefop European skills index 2022.



## EVIDENCE

### In this section

**State of play of European skills systems**

**Trends in European skills systems**



# State of play of European skills systems

As with every composite indicator, the ESI approach of using statistical information to capture and characterise a complex and multi-dimensional concept implies a simplification of reality. While the ESI cannot be directly used to draw definite conclusions or decide on policy actions, it can act as a starting point for looking at issues, trends and challenges and aid in identifying possible improvement areas. The cross-national set-up of the ESI, which helps identify patterns and trends that can provide food for thought at European level and locate role models at national level, can guide evidence-based policy learning.

ESI 2022 findings were used to identify national skills systems as leaders, upper or lower middle performers or low achievers (Figure 2). This categorisation in no way implies a formal assessment or evaluation of national skills systems; rather, the aim is to use it as a starting point to dig deeper into what drives and what inhibits skills system performance <sup>(1)</sup>.

<sup>(1)</sup> The description of the characteristics of the groups is based on ESI scores and indicators and expert insight collected via [ReferNet](#), Cedefop's VET expertise network.

## What makes a leader?

There are strong signals that a good state of the economy drives skills system performance in the four countries leading the rankings of the 2022 ESI. Czechia is ranked first and this is partly due to an overall strong economic performance which has led to almost full employment and high skills utilisation and matching. The other three 'leaders' have also benefitted from recent strong economic performance. This does not mean that a skills system merely reflects the state of the economy. Estonia manages to achieve strong skills system performance with relatively low spending in education. A strong emphasis on basic and preschool education, as reflected in its PISA excellence, positively impacts all other skills system levels.

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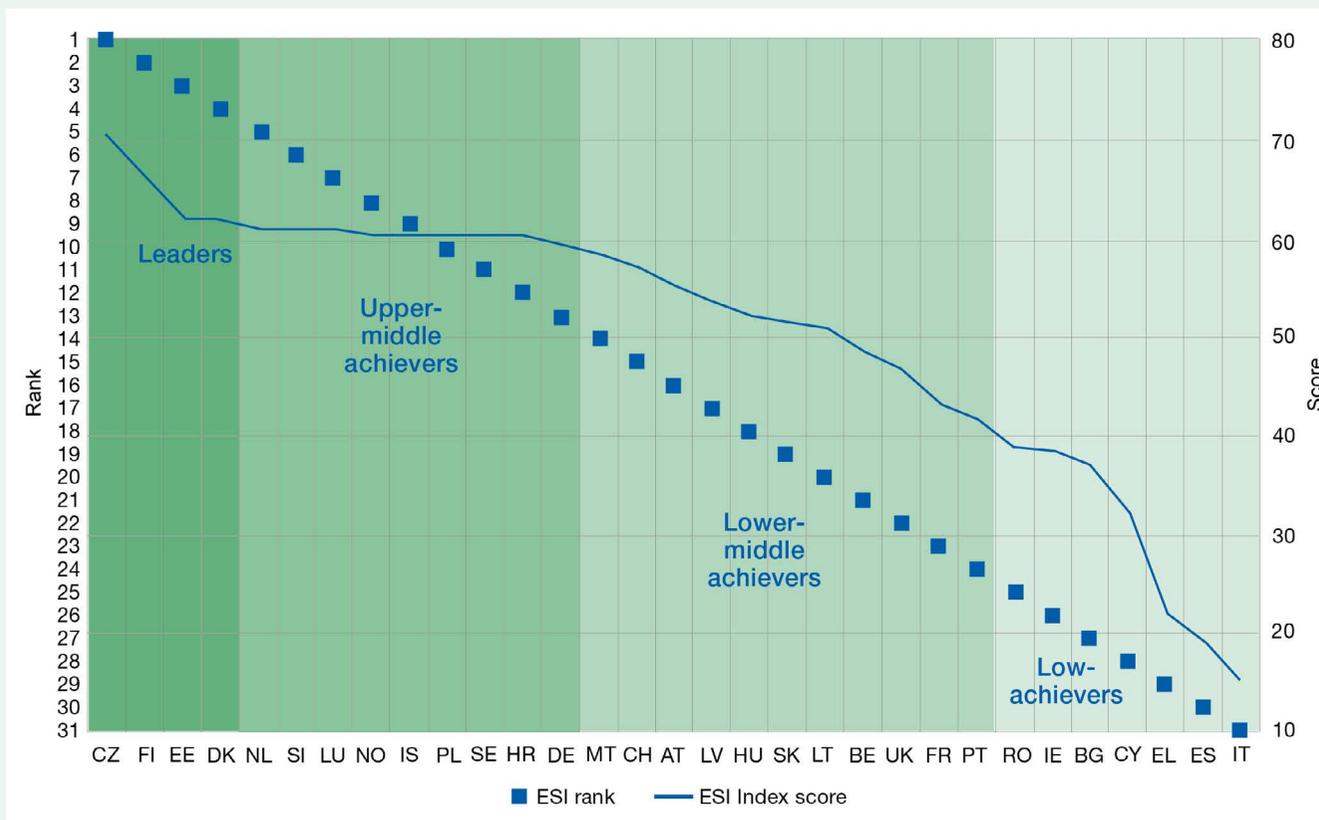


...the **cross-national set-up** of the **ESI**, which helps **identify patterns and trends**, can guide evidence-based policy learning...



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Figure 2. Categorisation of European skills systems based on ESI ranking and scores



Source: Cedefop European skills index 2022.

Emphasis on VET attractiveness, effectiveness and relevance is another key aspect characterising well-performing skills systems. Leading countries have modern VET that meets labour market needs and is held in high regard by the wider public. A good example is Czechia, with its historically strong secondary school system; this incorporates a wide variety of vocational and technical tracks that are considered mainstream. In Finland, VET is popular and perceived as attractive because of features such as work orientation, validation opportunities, and progression opportunities to higher education. Despite the benefits of well-performing VET, not all skills system leaders are VET-focused, nor is this a precondition for success. Denmark’s performance relates to efficient provision of elementary education and the flexibility of the education system, which offers many possibilities. VET is still seen as a second choice and young people often prefer other pathways. This contributes to mismatch and overqualification.

### What drives good performance?

Countries belonging to the group of upper middle performers have also benefited from strong economic performance. This can lead to good outcomes in some skills system areas but also, to some extent, mask structural weaknesses. Slovenia, for example, thanks to the economy’s job availability has had very low long-term unemployment and high levels of recent graduates in employment; simultaneously, low labour market participation rates among younger people reflect many of them deciding to continue in education, benefitting from the secure economic climate. In Iceland, favourable economic conditions coincide with high early leaving, as many young people prefer taking a job over acquiring a qualification.

Well-performing basic education is a common feature of most countries belonging to this group. In Norway, there is a strong focus ensuring equal opportunities in education, and tripartite collaboration (employers, employees and the State) underlies programme development. In Sweden, the education system is geared towards meeting individual preference, as opposed to strictly labour market needs, and students are typically prepared for higher education. In both countries, there is substantial qualification mismatch, but this not necessarily seen as being at odds with national policy priorities. Challenged with similar skills mismatch problems, Slovenia and Iceland have invested in tracking labour market needs and graduate employability; they have also benefited from Cedefop support in developing their national skills forecasting systems.

Few countries have a strong focus on initial VET. Alongside Germany and the Netherlands, this also applies to Croatia, where there is still strong demand for VET even though the system needs further development. Luxembourg, Norway and Sweden have broad access to, and wide participation in, training and lifelong learning, typically with a focus on digital skills. In most other upper mid-level performers, lifelong learning activities lag somewhat behind. Lacking interest in post-initial skill development can partly be attributed to favourable economic conditions, where a short-term perspective dominates as demand is strong. Insufficient incentives and difficulties to integrate specific groups, such as older and lower-educated individuals, were reported in Poland and Croatia.

## What are typical skills system bottlenecks?

Countries positioned in the middle and towards the bottom end typically face more significant challenges in their skills system. In several, these relate to education and VET systems that have been under reform over the past two decades. The benefits take time to show while negative outcomes (e.g. low PISA scores, high early leaving) appear persistent. In Latvia, Lithuania, Malta and Slovakia lagging skills development coinciding with skills shortages and other skills mismatches signal weaknesses in matching skills demand and supply.

Other socioeconomic characteristics also play an important role in skills system performance. Hungary reported a prevalence of small businesses where training remains limited and little interest in learning generally. This signals that employee skills are typically perceived as matching employer skills needs. Whether or not this is justified, such insights show how important it is to consider national economic context carefully before making firm conclusions about the performance of a skills system; what could be interpreted as a negative outcome in one country may well be explained and accepted in another.

## What drives low achievement?

Most countries ranked lowest in the 2022 European skills index ('low achievers') were hit hard by the economic crisis of the past decade and its long-lasting impacts. National experts often point to a need for basic education reform to address the causes of low achievement in

reading, mathematics and science. Another important observation is that, in almost all countries designated as low achievers, VET is traditionally seen as a second choice, and the need to improve its attractiveness features prominently in policy debates. The focus on, and cultural preference of individuals and employers for, academic education typically leads to an overproduction of skills which do not directly correspond to labour market needs. This is clearly visible in Greece and Spain, and to some extent in Italy and Cyprus, and the immediate result is significant mismatch. In Bulgaria and Romania, skills matching is less of a problem, and this is mostly sustained by a relatively low demand for high-skilled jobs that the education system is not challenged to match. These countries face stronger problems in terms of skills activation, mostly driven by financial constraints of individuals leaving school early and difficulties in integrating vulnerable groups into the labour market. Low achieving countries typically also have limited activity in lifelong learning.

# Trends in European skills systems

Comparing ESI scores over time makes it possible to track trends in European skills systems and to reflect in broad terms on how the COVID-19 pandemic affected them. This is challenging because it takes time for skills policy initiatives and measures to lead to systemic change reflected in measurable progress. However, grouping countries based on their overall ESI performance and comparing the scores for each ESI pillar with their rate of change leads to insightful results (Figure 3).

## Skills development

In terms of skill development, European skills systems appear to be converging to some extent, as lagging countries have been improving fastest. Skills system leaders have remained at the same level, while countries in the upper middle have improved only slightly. It is too soon to use the 2022 ESI to assess the impact of COVID-19 on skills development, as the data it incorporates only partly capture the pandemic time-wise. Many people turning to or returning to education or training to strengthen their skills may have partly offset negative effects of the pandemic on skills development.

In terms of ranking, most countries maintained their relative position in skills development, with deviations lim-

ited to one or two places throughout the period. Sweden (falling from second to eighth) and Croatia (improving from the 16th to 12th place) are exceptions. The decline in Sweden can be linked to deteriorating pre-primary pupil-to-teacher ratio and a slightly decreasing score for 'recent training'. In Croatia, digital skills improved following major investment in ICT infrastructure and digital skills of teachers and learners to promote ICT use in all primary and secondary schools. Progression is also visible in the pre-primary pupil-to-teacher ratio and upper secondary (and above) education attainment.

## Skills activation

With the score for all country groups – including leaders – deteriorating between 2018 and 2020, COVID-19 appears to have hit skills activation hard. The decline is driven by the rapidly worsening labour market situation for young people, which led to less employment among recent graduates and lower youth (20-24) activity rates. Low-achieving countries were most strongly impacted and their skills activation scores fell most. Managing better the impacts of the health crisis, countries with stronger skills systems were more resilient, also because their economies have a high share of jobs that can relatively easily be carried out remotely and that typically rely more on intellectual and social tasks.

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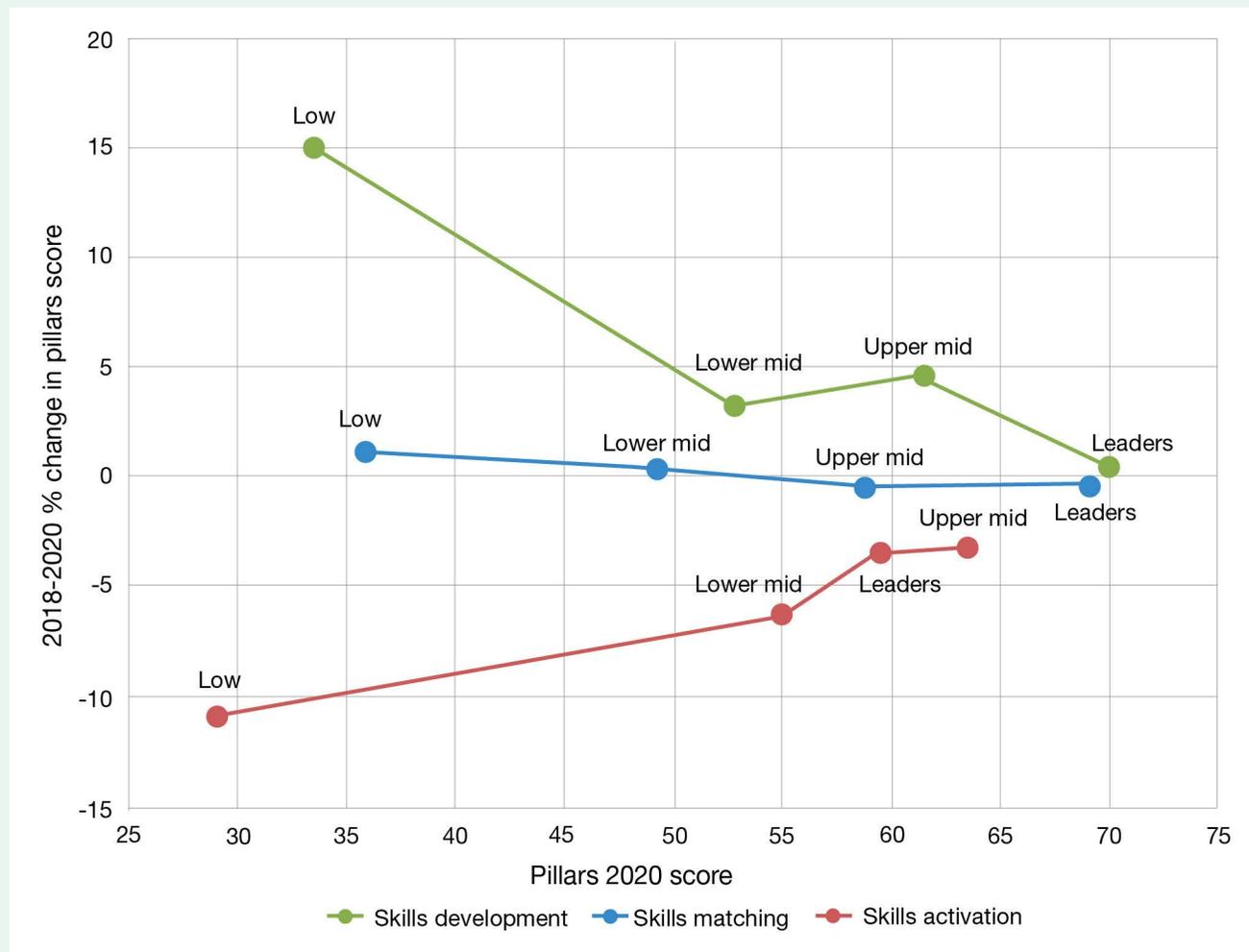


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...in most countries **(23 out of 31)** skills matching scores improved between 2018 and 2020, which suggests that **efforts to tackle mismatch** are having **some effect...**

Figure 3. Skills development, activation and matching: 2020 versus 2018-20, % change



Source: Cedefop European skills index 2022.

Rankings did not change substantially, and no country changed its position by more than five places. Denmark went from 18th to 13th position in skills activation thanks to a slight improvement in early leaving from education and training and the two activity rate indicators, but also because skills activation scores declined in most other countries. It appears that policies and local measures aimed at preventing early leaving, such as guidance for parents and VET awareness-raising among young people, have contributed to the improvement. In Lithuania, despite improving activity rates and proactive policies aimed at preventing dropout, worsening performance in terms of early leaving and recent graduates in employment caused the country to fall from ninth position in 2018 to 14th in 2020.

### Skills matching

In most countries (23 out of 31) skills matching scores improved between 2018 and 2020, which suggests that efforts to tackle mismatch are having some effect. Six out of seven low achievers (all except Italy) recorded strong growth of 11% or more. Although, given their low starting point in 2018, small changes in absolute values can lead to high growth rates, this suggests some catching up. Countries higher up in the ESI ranking show less growth over the period, which can partly be explained by their already high matching scores in 2018. Despite deteriorating matching scores in some countries characterised as leaders, upper middle achievers or lower middle achievers, it appears skills matching has been improving overall.

It is too early to assess the full impact of the pandemic on skills matching. Nevertheless, it is reasonable to assume that the relative stable performance in skills

utilisation can be attributed to the unprecedented support and employment protection measures put in place during 2020. With most changes amounting to one or two positions, changes in rankings were limited. Notable exceptions are Denmark (dropping from sixth to 12th place) and Croatia (improving from eighth to third place). In Denmark, while the skills matching score declined slightly (mainly due to a decreasing score for the underemployed part-timer indicator) most of the drop in rank relates to improving skills matching scores in most other countries. The rank improvement for Croatia is largely due to better scores for the 'overqualification rate (tertiary graduates)' and 'long-term unemployment' indicators. Croatia has employment and training subsidies in place to encourage employers to hire the long-term unemployed and recently expanded the coverage of (self-)employment subsidies. However, participation in training measures remains low, negative perceptions among Croatian employers about the long-term unemployed persist and there is a lack of post-placement support services.





# CONCLUSIONS

**In this section**

**Policy learning opportunities**



# Policy learning opportunities

What the ESI analysis and interpretation suggest is that, even though some common patterns can be identified, and countries can learn from one another, there is no one-size-fits-all remedy. It is helpful to distinguish between skills formation (development and activation, or the 'supply' side in skills systems) and matching (the interaction between skills supply and demand), since these are the main areas that policies typically address (Figure 3). This is a basis for identifying possible policy directions for strengthening European skills systems, which is possible in all countries, including the ones the ESI identifies as leaders.

## Learning from role models

A realistic reflection on how role models achieve good performance in skills formation and matching should start by acknowledging that even in countries with the highest ESI ranking (e.g. Czechia, Denmark, Estonia, Finland) there is considerable variation in the relative performance across these two dimensions and room for improvement. This is evident as no country – apart from Finland – scores higher than 70 on skills development and because even in digitally developed countries (e.g. Finland, the Netherlands, Norway) there is still considerable way to go in expanding digital skills in the population. The low 'recent training' indicator

score in most countries confirms more emphasis on up- and reskilling, and lifelong learning is needed. Policies, practices and support measures of Finland, Sweden and Switzerland, which have the best ESI scores for training, can be used to shape new approaches elsewhere.

Recognising and actively pursuing their improvement potential, role models place emphasis in their policies on developing VET and apprenticeships, encouraging and valuing adult learning and digital skills development, promoting and expanding skills intelligence, and stimulating cooperation between education and training and the labour market. This policy mix typically aims at systemic and balanced improvements impacting all parts of the skills systems. While it can inspire countries facing skills challenges, national context should always be considered before adopting policies that have proven successful elsewhere.

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...the **low 'recent training' indicator score** in most countries confirms more **emphasis on up- and reskilling**, and **lifelong learning** is needed ...



...while there is no **one-size-fits-all** approach to improve matching, it is **worthwhile to shift** the policy perspective towards the **demand side** of the **labour market...**



...high **'qualification mismatch'** suggests that structural problems complicate **matching the supply of graduates** with the demand of employers for specific profiles...

## Overcoming matching problems

In several countries that manage to supply their labour markets with skills via effective development and activation, skills matching is a significant bottleneck. In Switzerland, mismatch mainly relates to involuntary part-time work (underemployment) and qualification mismatch, signalling that, even though activity rates are high and unemployment is low, many workers cannot find suitable full-time work or are not matched (in terms of qualifications) to their jobs. In the UK, on top of these issues comes substantial low-wage employment among the mid- to high-skilled (ISCED5-8) because they cannot find suitable, high-quality jobs.

Although qualification mismatch appears to be a more common problem than skills utilisation, the root causes of matching challenges differ across countries. While there is no one-size-fits-all approach to improve matching, it is worthwhile to shift the policy perspective towards the demand side of the labour market and aim at innovation and expanding skills-intensive activities, for instance in the context of shaping the digital and green transitions. This can also help countries become more resilient in the face of rapid economic change, shocks and disruption. Better skills anticipation, and governance and career guidance to inform citizens about promising careers and career development opportunities, can support such efforts. Austria, which performs similarly to Estonia in terms of skills formation, could look at that country to explore whether matching tools and approaches (such as the OSKA system) or elements of it might prove useful in its national context.

Figure 4. Skills formation and matching in European countries



NB: The lines represent the median score value for each of the axes. The scores are presented as the 'distance to frontier'. This means that a score of 100 corresponds to achieving the 'frontier', i.e. an aspirational target performance for that indicator. A score of 0 corresponds to a lowest-case performance. Thus, a score of 65 means that a country has 35 left until it reaches the frontier.

Source: Cedefop European skills index 2022.



## Escaping from a low/medium skills equilibrium

In Bulgaria and Romania, in particular, but also in Hungary and Slovakia, even though skills formation (i.e. development and activation) can be characterised as relatively poor from a cross-national perspective, skills are matched relatively well. Drivers of low/medium skills equilibria include strong demand for medium-level skills (rather than high-level ones), which can easily be met by supply, and brain-drain of young talents leading to comparatively little mismatch, because the skills of older workers who remain behind mostly match their jobs. While this may have been sustainable to some extent in the past, growing demand for higher-level skills without sufficient supply is problematic from a longer-term perspective and is already causing skills shortages.

Bulgaria, Romania and Slovakia score relatively well on skills matching overall, but perform fairly poorly when it comes to overqualification of tertiary graduates. This suggests field of study mismatch resulting from a misalignment between education tracks young people pursue and current and future labour market needs. Bulgaria and Romania have particularly poor scores in early leaving and activity rates, with possible causes including difficulties in integrating vulnerable groups (e.g. the Roma population), limited entrepreneurial culture, low labour mobility, and a large share of the population living in rural areas with limited employment opportunities and access to vocational training. These and other countries with low scores in skills activation could look at Denmark, Iceland, the Netherlands, Sweden and Switzerland to strengthen policy and practice.

To get out of low skills equilibria, skills formation needs to be accompanied by demand-side policies to stimulate skill-rich job creation, measures to improve skills intelligence and careers guidance for youth and adults who need to make a career transition. Significant policy learning opportunities exist. Benefiting from experience elsewhere to strengthen basic education and to improve scores in 'reading, maths and science' is a sensible course of action for the 10 countries (including Croatia, Malta and Slovakia) scoring only about halfway compared to the best performer. Slovakia could look at policy and practice in Denmark for inspiration to strengthen skills formation.

## Making a skills system turnaround

Countries with relatively sluggish skills formation and poor matching performance face the most challenging situation. There are no rules of thumb for establishing priorities for policies or reforms; as in the group of countries facing multiple skills challenges, there is wide variation in the relative performance on the two dimensions. In Italy, for example, skills development and activation appear to be more pressing problems than skills matching. Essential elements of policy packages aiming at improvement include modernising education and training, reducing early leaving and dropout from VET, ensuring equal access to adult training, and supporting workers to take part in training.

In Spain and Greece, skills matching appears to be the weakest link in skills system performance. In these countries, significant education expansion driven by the focus on facilitating access to academic pathways has not been met by growing demand for highly qualified workers. At the same time, high ‘qualification mismatch’ suggests that structural problems complicate matching the supply of graduates with the demand of employers for specific profiles (Livanos, 2010). Shaping forward-looking and ambition-driven skills intelligence, and taking a whole of government approach to governance by effectively connecting priorities in different policy domains (employment, digitalisation, greening, growth and innovation, migration and others), can become drivers of change. As Greece’s recent experience with strengthening its skills governance approaches shows, being ambitious in forging stronger feedback loops between education and training systems and labour markets can become a platform for strengthening skills formation and contribute to alleviating mismatch.



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## POLICY BRIEF

# Strengthening skills systems in times of transition

Skills lie at the core of well-functioning economies and inclusive societies. Skills systems support and shape transitions and play a crucial role in delivering skills, in using talent and in matching skills to jobs. With a view to promoting evidence-based skills policy in the EU, this policy brief uses Cedefop's 2022 European skills index to take stock of trends, to identify improvement potential and to locate best practices.

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