



# EUROPEAN SEMESTER THEMATIC FACTSHEET

## SKILLS FOR THE LABOUR MARKET

### 1. INTRODUCTION

Skills are vital for competitiveness and employability, as structural changes such as globalisation and technological progress call for ever higher and more labour market relevant skills for productivity growth and to secure good jobs.

This factsheet focuses on the skills directly linked to labour market needs. For a more comprehensive view on higher and lower education, please refer to the thematic factsheets *Tertiary education attainment* and *Early leavers from education and training*.

### 2. IDENTIFICATION OF THE CHALLENGES

#### 2.1. Basic skills

Having sufficient levels of basic skills (literacy, numeracy, science and technology) is essential for young people to easily access the labour market and for adults to retain employment in high quality and stable jobs. However large proportions (between 20% and 25%) of both young people in initial education (as evidenced by the 2015 PISA results)<sup>1</sup> and working-age adults (as evidenced by the 2012 PIAAC results)<sup>2</sup> are lacking those

basic skills, which hinders their capacity to find stable employment and participate in economic and social life in general.

In a large number of EU countries there is still a very high proportion of 15-year-olds who are 'low achievers' in basic skills<sup>3</sup>. These students are most likely to face serious difficulties in their further education, on the labour market and in everyday life.

The highest share of low achievers is in mathematics, at around 22% at EU level. There are only three Member States below the benchmark of 15%<sup>4</sup>, even if 12 Member States were able to reduce their share between 2012 and 2015 (Figure 1).

Results in reading and science literacy are slightly better, but both worsened considerably over time.

The performance of Bulgaria, Romania and Cyprus is poor in all three domains, particularly in mathematics with more than 40% of low achievers. Broadly speaking, the countries with relatively fewer low achievers also have larger shares of 'top performers' in PISA tests, i.e. those at level 5 or above, which

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<sup>1</sup> PISA refers to the OECD Programme for International Student Assessment. For more details on how these levels are defined, see <http://www.oecd.org/pisa/test/>.

<sup>2</sup> PIAAC refers to OECD Programme for the International Assessment of Adult Competencies. For more details on how these levels are defined, see <http://www.oecd.org/skills/piaac/>.

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<sup>3</sup> Low achievers are defined as those who scored below proficiency level 2 in one of the PISA test domains (reading, mathematics or science).

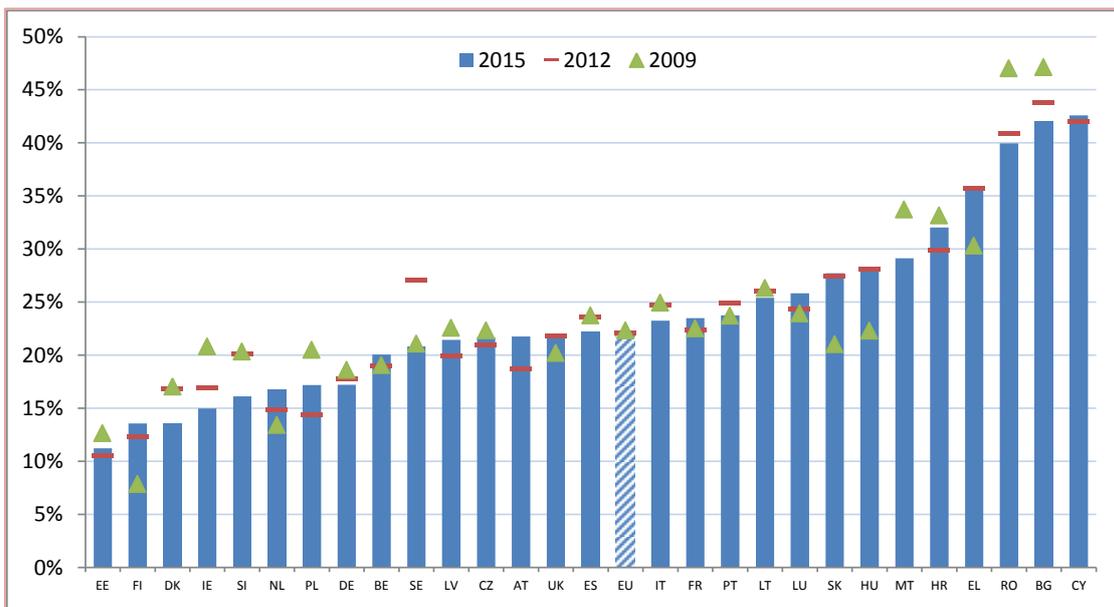
<sup>4</sup> Under the strategic framework for cooperation in Education and Training ('ET 2020'), Member States agreed that the share of low-achieving 15-year-olds in reading, mathematics and science should be less than 15% by 2020.

points to generally better-performing education and training systems rather than to a deliberate choice to privilege excellence over equity.

Education systems are not yet fully effective in reducing inequalities. The share of low-achieving boys in reading is much higher than that of girls (23.5% to 15.9%), although gender differences in reading literacy tend to disappear later

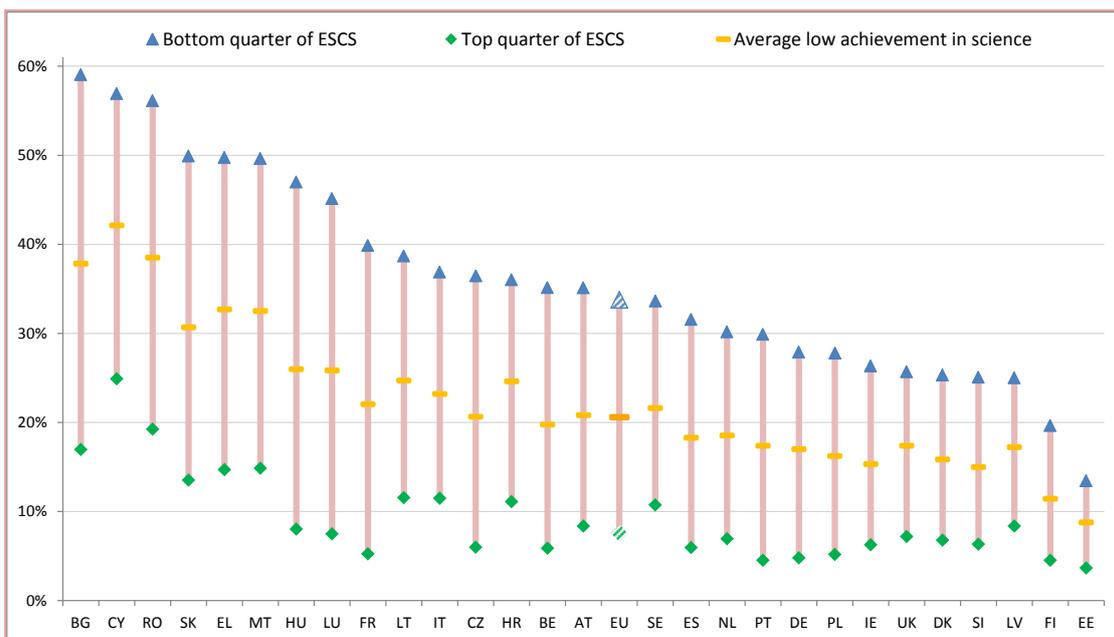
on (as shown by PIAAC data on 16- to 24-year-olds). Boys and girls perform more equally in the two other basic skill domains. Socioeconomic background remains one of the main determinants of skills acquisition in schools. The difference in the share of low achievers in science between the pupils in the bottom quarter of the socio-economic status and those in the top quarter is very high (Figure 2).

**Figure 1 – Shares of low achievers in mathematic skills in PISA, selected years**



Source: OECD (PISA).

**Figure 2 – Impact of socio-economic background on performance in mathematics, 2012**



Source: OECD (PISA).

The fact that European education and training systems do not provide the most basic skills to 20% of pupils goes hand in hand with high opportunity costs. This highlights not only the size of the challenge to improve the performance of education and training systems but also the huge potential gains in terms of increased growth and employment, if this share of pupils, that is likely to face a serious employability problem, were reduced.

Among the working-age adults (aged 16 to 65), on average 43% showed medium or high levels of literacy skills (levels 3 to 5) within the EU countries that participated in PIAAC survey. This is well below the OECD average (49%).

Also, one in five adults in participating EU countries displays a low level of skills in literacy. In numeracy, it is even one in four. For very high skills, only a handful of Member States is able to match the performance of the best non-EU countries, such as Japan. Other big non-European economies like Canada and the US score similar to many EU countries.

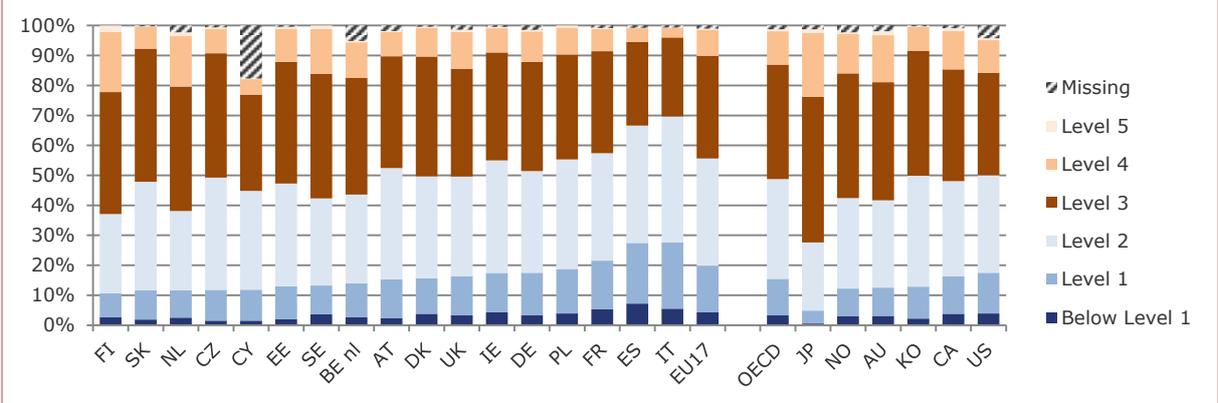
However, there are considerable differences in the distribution of skills across EU Member States. Broadly speaking, three groups of countries can be identified:

- 1) those with high shares of medium to top-performing adults and few of low-performers (like the Netherlands, Finland, Sweden and Flanders in Belgium);
- 2) countries with results not significantly different from the OECD average; and
- 3) countries with relatively few medium to top performers and very high shares of low performers (Spain and Italy).

While in some countries it is mainly the older age groups that show very low skills levels, in others it seems to be also younger age groups that perform rather poorly (e.g. Cyprus and the United Kingdom). Moreover, survey results confirm that proficiency is very strongly related to parental education and to migrant status, however to a different extent across countries.

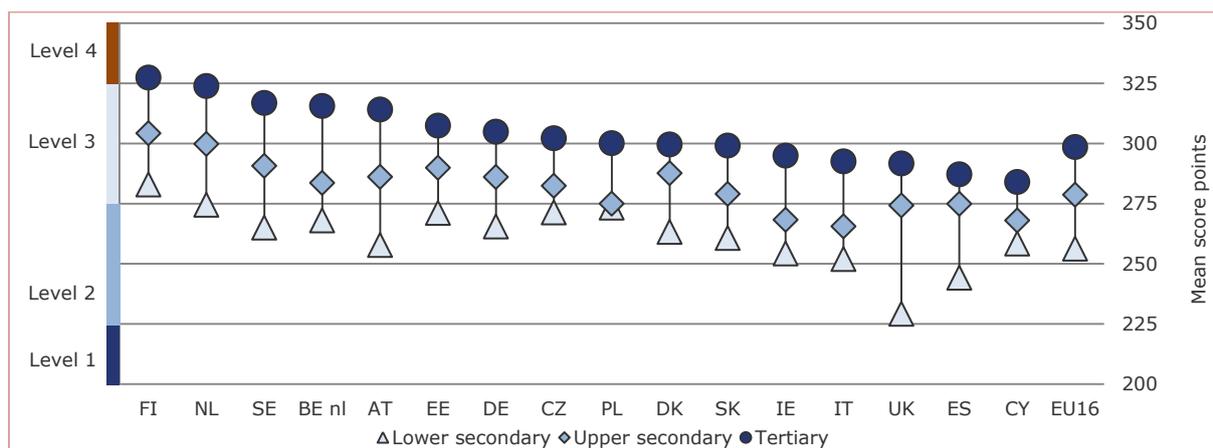
PIAAC results also show considerable differences across countries in average skill levels between people who hold comparable educational degrees. For instance, young people with only an upper secondary degree in Finland, the Netherlands or Sweden show higher average skills than those with a university degree in Spain or Cyprus.

**Figure 3 – Share of the population aged 16-65 at each level of proficiency in literacy, 2012**



Source: OECD (PIAAC). Note: countries ordered by share of levels 1 and below combined. Missing: not taken the test.

**Figure 4 – Average proficiency in literacy (16-29 year-olds) by educational attainment, 2012**



Source: OECD (PIAAC). Note: countries are ordered by average score at tertiary education level.

## 2.2. Transversal skills

New ways of working and more frequent changes in jobs (by necessity or opportunity) call for a broader set of skills. Transversal<sup>5</sup> skills are those relevant to find jobs and occupations in different fields from the present or past ones. Currently 40% of employers report difficulties in finding people with the right skills, many of them stressing a lack of transversal skills<sup>6</sup> among job applicants.

More than a half of EU employees require foreign language skills for their jobs (though such skills tend to be specific to a subset of jobs). However, only 42% of teenage pupils are competent in their first foreign language<sup>7</sup>.

<sup>5</sup> The skills individuals have which are relevant to jobs and occupations other than the ones they currently have or have recently had. These skills may also have been acquired through non-work or leisure activities or through participation in education or training. More generally, these are skills which have been learned in one context or to master a special situation/problem and can be transferred to another context.

<sup>6</sup> OECD/European Union, *The Missing Entrepreneurs 2015: Policies for Self-Employment and Entrepreneurship*, OECD Publishing, 2015.

<sup>7</sup> EU Skills Panorama (2014) Foreign languages Analytical Highlight, prepared by ICF GHK and Cedefop for the European Commission.

Although employers value employees with initiative and the ability to adapt to challenges and changing environments<sup>8</sup> entrepreneurial skills are still quite low among the EU population. There is only a handful of Member States where more than half of the adult population believes they have the required skills and knowledge to start a business<sup>9</sup>.

Furthermore, only half of the EU population aged 15 years and above agree that their school education helped them to develop a sense of initiative and a sort of entrepreneurial attitude (see Figure 5)<sup>10</sup>.

## 2.3. Skills mismatch

Skills mismatch refers to a discrepancy between the demand and supply of skills on the labour market. In other words a situation in which the skills sought by employers are different from the skills offered by job-seekers or workers. If persistent, skills mismatch, which can take different forms, can lead to short- and long-term economic and social losses for people, employers and society.

<sup>8</sup> OECD/European Union, *The Missing Entrepreneurs 2015: Policies for Self-Employment and Entrepreneurship*, OECD Publishing, 2015.

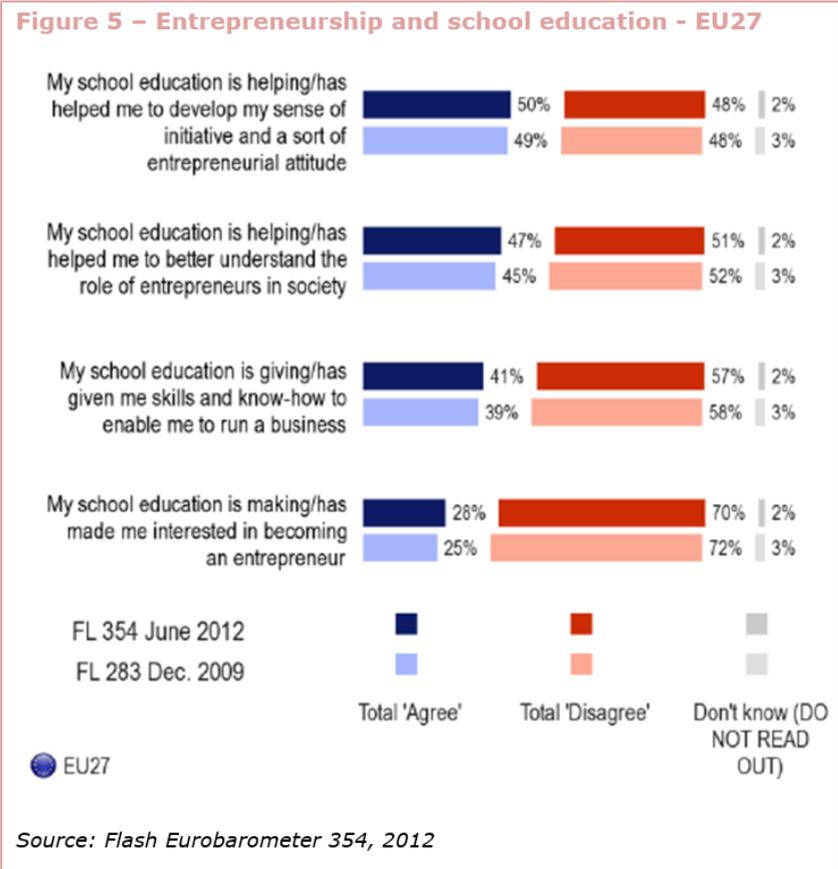
<sup>9</sup> Kelley D., Singer S., Herrigton M., *2015/16 Global Report*, Global Entrepreneurship Monitor.

<sup>10</sup> European Commission, *Flash Eurobarometer 354, Entrepreneurs in the EU and beyond*, 2012.

Three major dimensions which have received attention by policymakers and scholars are:

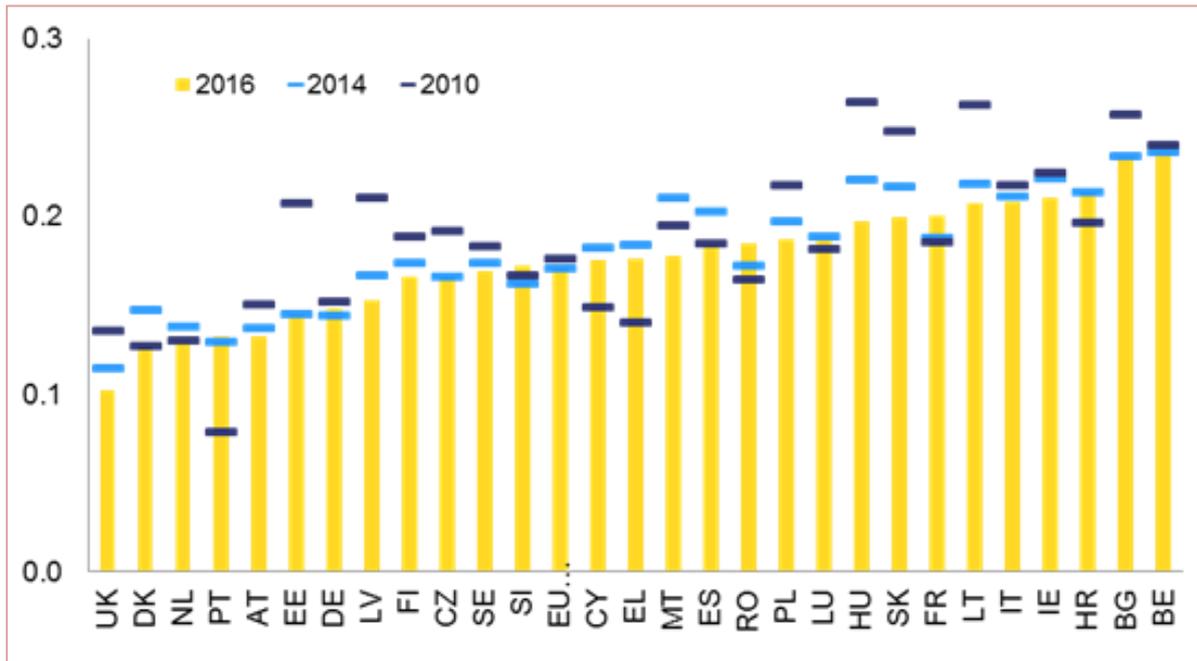
- 1) macroeconomic skills mismatch, referring to differences in skills between the jobs on offer and the pool of unemployed along broad qualification levels;
- 2) specific skills shortages, referring to employers' inability to find workers with a specific skill or occupation; and
- 3) skills mismatch on-the-job, referring to differences between employed individuals' skills and the skills needed to perform their job<sup>11</sup>. Macroeconomic indicators of skills mismatch can be more useful under the European Semester, being more reliable, more frequently available, and having a stronger link to major policy concerns such as long-term or structural unemployment.

One way to measure macroeconomic skills mismatch is to see how employment rates of the different skills groups (high-skilled, medium-skilled and low-skilled) differ from the employment rate of the whole population for a given country and year. The higher the difference (relative dispersion) the higher the macroeconomic skills mismatch. Figure 6 shows how EU Member States compare with each other in this regard. Employment rate dispersion is very high in Belgium, Bulgaria, Croatia, Ireland and Italy. In most cases, this is driven by low employment rates for the low-skilled (in particular in relation to high-skilled workers). Although deeper country-specific analysis is needed to understand the underlying drivers, studying trends over a longer time period is also useful.



<sup>11</sup> For a detailed review, see Kiss, A. and Vandeplas, A. (2015) Measuring Skills Mismatch. Analytical Webnote 7/2015, DG EMPL.

**Figure 6 – Relative dispersion of employment rates by educational level**

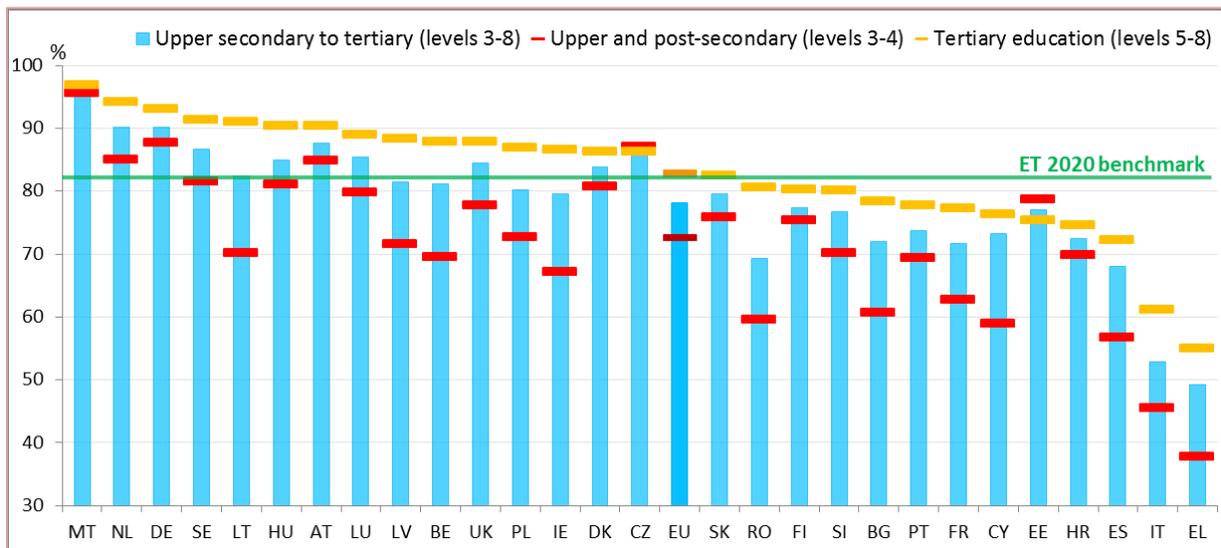


Source: Own calculations based on Eurostat. Annual average based on the average of four quarters.

Although over the crisis period labour market outcomes have worsened also for the tertiary-educated, equipping young people with relevant knowledge, skills and attitudes still eases the transition from education to employment. Figure 7

shows the percentage of young recent graduates in employment against the benchmark, set by the Council in 2012, according to which at least 82% of young recent graduates should be in employment by 2020.

**Figure 7 – Employability: employment rates of recent graduates aged 20-34, 2016**



Source: Eurostat, Labour Force Survey

The employment rate of young recent graduates in the EU as a whole increased further to 78.2% in 2016, consolidating the gradual recent recovery. Since 2013, the employment rate of upper secondary graduates rose by 3.2 pps, while the rate for tertiary graduates gained 2.1 pps. Tertiary-educated young people thus have a 10 pp employability advantage over secondary graduates. The advantage exists in all Member States except Estonia and the Czech Republic.

For vocational education and training, evidence from a study by JRC<sup>12</sup> shows that in many EU countries, upper secondary school graduates from programmes oriented towards vocational education and training (VET) have higher employment rates than their non-VET counterparts. They also have lower unemployment and inactivity rates<sup>13</sup>. OECD analysis<sup>14</sup> confirms that at the upper-secondary and post-secondary non-tertiary education levels, VET is associated with a higher probability of being employed (Figure 9), but slightly lower hourly earnings.

The differences are small particularly when considered by gender. At the ISCED 5 level, there is a strong advantage of academic education in terms of earnings and employment.

### 3. IDENTIFICATION OF POLICY LEVERS TO ADDRESS THE CHALLENGES

Sufficient investment in education and structural reforms enhancing the efficiency and effectiveness of education and training systems can improve **basic skills**. To reduce the incidence of low-performers among the young, inclusive

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<sup>12</sup> JRC CRELL (2015): Education and youth labour market outcomes: the added value of VET. Technical briefing; based on a special extraction from LFS provided by Eurostat concerning the third quarter of 2014.

<sup>13</sup> Measured as proportion of employed individuals aged 20-34 whose highest level of education is upper secondary or post-secondary non-tertiary (ISCED 3-4).

<sup>14</sup> OECD (2015): The effects of vocational education and training on adult skills and wages. What can we learn from PIAAC?

policies also need to be targeted at raising the outcomes of pupils from a disadvantaged socio-economic or a different linguistic background.

**Initial Vocational Education and Training** is valued for developing job-specific and transversal skills, enabling the transition into employment and maintaining and updating the skills of the workforce. Over 13 million learners attend a vocational programme every year. Yet, labour market forecasts indicate an upcoming shortage of VET graduates in several Member States<sup>15</sup>.

Recent graduates with VET qualifications at upper secondary and post-secondary non-tertiary level generally display an easier transition from education to the labour market. They also have higher employment rates than graduates from general education pathway with comparable attainment levels. Despite this, for many young people and their parents, VET is still not as attractive as the academic education pathway.

In fact, the attractiveness and labour market relevance of VET programmes could still be substantially improved. An insufficient number of programmes in the Member States fully exploit the potential of work-based learning. Also opportunities to progress from VET to higher education are still insufficient.

Quality-wise, each VET student should be prepared for living and working in an increasingly globalised society, including by learning foreign languages.

Around 50% of EU students enrolled at upper secondary, post-secondary and short-cycle tertiary levels undertake vocational education and training (VET). This makes VET a key source of skills and competencies for EU economies.

It is therefore essential that initial VET systems provide adequate basic, transversal, and vocational skills that fit the

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<sup>15</sup> European Parliament (2015), *Labour market shortages in the European Union* (<http://www.europarl.europa.eu/thinktank/en/home.html>).

needs of employers. They should also equip learners to engage in learning later in life and to manage transitions from education to employment as well as from one job to another or from unemployment to employment.

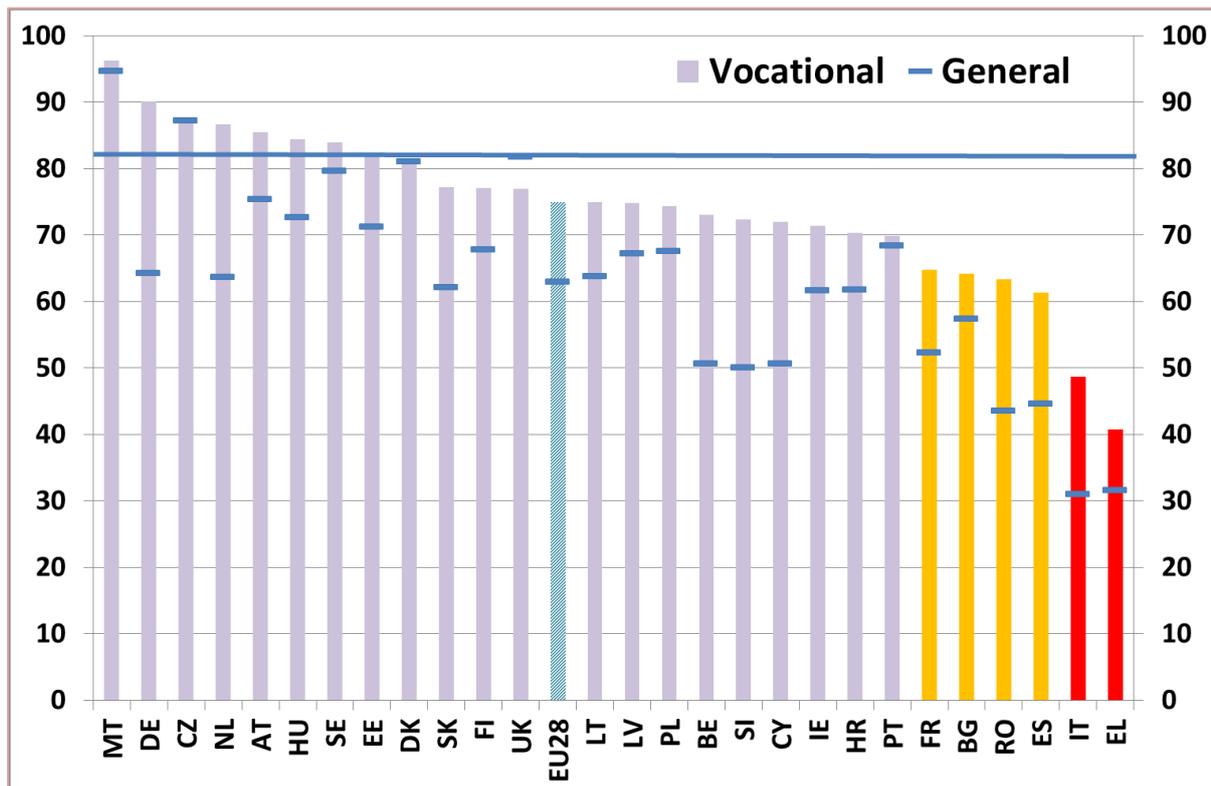
The relevance of education to the labour market, the employment rates of young people and the transition from education to work have been the focus of economic and sectorial policies over the last few years.

For those who complete their initial education at secondary or post-

secondary non-tertiary levels, VET shows systematically better transition into the labour market than those who hold an upper secondary or post-secondary non-tertiary qualification from the general pathway and do not continue into higher education.

Recent VET graduates had an overall employment rate of 75% in 2016 in the EU. They therefore displayed better employment outcomes than recent upper secondary education graduates from general orientation programmes (62.9%) (Figure 8).

**Figure 8 – Employment rate of recent upper-secondary and post-secondary non tertiary graduates 2016**



Source: Eurostat (LFS, 2016) Online data code: edat\_lfse\_24.

The indicator measures the employment rates of persons aged 20 to 34 having completed education 1-3 years before the survey with a diploma from upper secondary education (ISCED 3) or post-secondary non tertiary education (ISCED 4), out of the people in the same age group who are currently not enrolled in any further formal or non-formal education or training.

Overall this indicates that overall VET is a good choice for those young people who do not intend to continue studying in higher education programmes. Still, average outcomes hide some disparity between different countries also showing scope to improve the quality of VET in those countries where VET outcomes lag behind the EU average.

In recent years the absolute number of students in VET and their share on the total of students in upper-secondary education has been declining in the EU.

The overall number of i-VET students at the upper-secondary level in the EU since 2013 dropped by around 500 000 (4.7%), to 10 309 154 in 2015. This downward trend was evident in all the four countries with largest VET student population which represent more than 50% of all EU VET students.

Therefore, the relative share of VET students decreased from 48.9% in 2013 to 47.3% in 2015.

However there is a high degree of variation between countries in terms of absolute and relative size of their VET systems. This is partly driven by the variety of VET programmes offered across countries.

Several EU Member States have a relatively high share of young people who choose the general upper secondary educational pathway, but do not continue into higher education (Figure 9).

A large proportion of these young people suggest that there is room to

provide them with opportunities to gain a vocational qualification — either at secondary, post-secondary or at tertiary level.

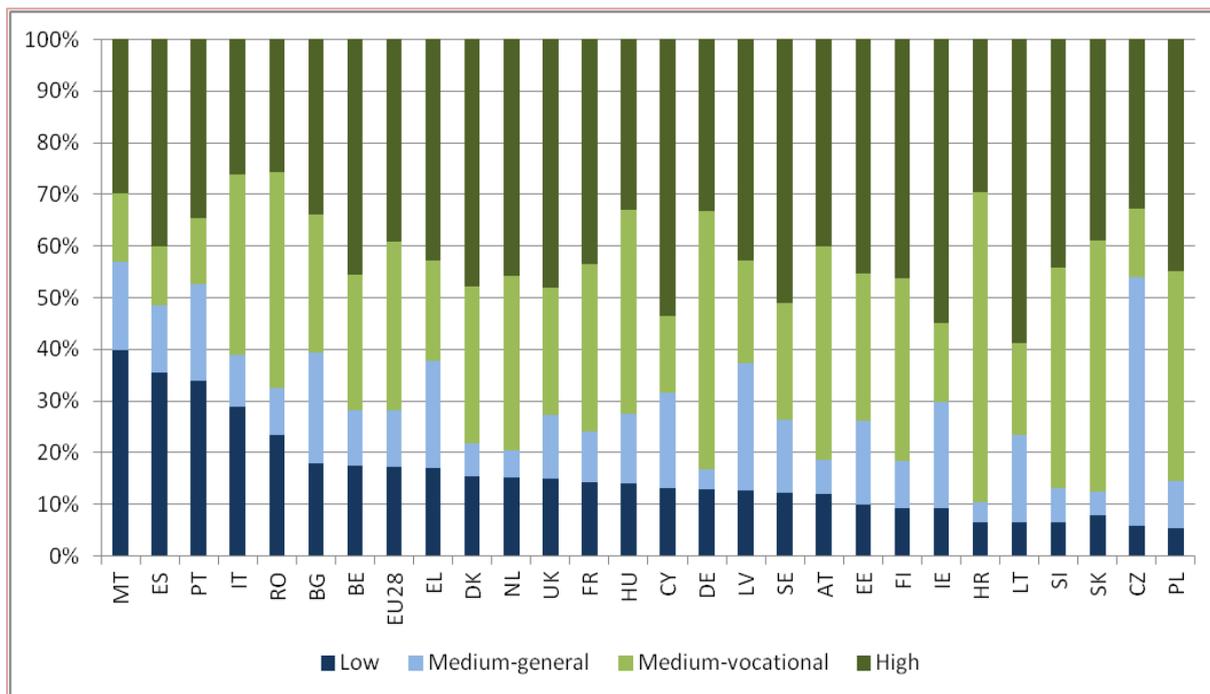
Member States can approach the extension of initial VET in different ways, taking into account the demand for different qualifications on the labour market. Broadening the attractiveness and provision of upper secondary VET is particularly useful for countries with large shares of early school leavers. In these countries VET could substantially contribute to raising educational attainment.

For countries with large shares of general upper secondary graduates who do not continue into higher education, broadening the provision of post-secondary non-tertiary or short-cycle tertiary VET could be a useful option.

To address persistent youth unemployment, Member States should also provide adult learning opportunities, enabling the return to education and training for those young people who have already left initial education.

For example, a more targeted use of the ESF could address the challenge, particularly as training for the unemployed was found to be one of the most effective intervention areas of the ESF in the period 2007-2013 (Section 3.5).

**Figure 9 – Education attainment of young adults aged 30 to 34, 2016**



Source: Eurostat, LFS, 2016 [edat\_lfs\_9914]

Note: the indicator shows the highest level of education attainment achieved by 30 to 34 year-olds.

The benefit of VET is that under the scheme people can develop skills and competences that are directly relevant to the labour market. There are different instruments ensuring that vocational schools and training centres are providing relevant, up-to-date training for given professions. These instruments include the involvement of the private sector in the design and evaluation of education curricula, professional standards and the testing of students. Moreover, one of the most straightforward ways to ensure that skills acquired by the students are relevant for the labour market is to carry out part of the training outside the school environment, for example in a work experience placement.

Apprenticeships are the best known example to organise VET in this way. They are defined as a formal VET programme that includes alternation between work experience (practical work experience at a workplace) and school-based education (periods of theoretical/practical education followed in a school or training centre)<sup>16</sup>.

<sup>16</sup> European Commission (2015) Apprenticeships — a form of work-based learning.

This training, upon successful completion, should lead to a nationally recognised qualification.

Often there is a contractual relationship between the employer and the apprentice, with the apprentice receiving a salary in exchange for the work undertaken.

Apprenticeships are not the only possible scheme for work-based learning. There are other, less intensive work-based learning approaches. These include, for example, school-based VET combined with on-the-job training elements, where these elements typically represent less than 50% of the training programme duration.

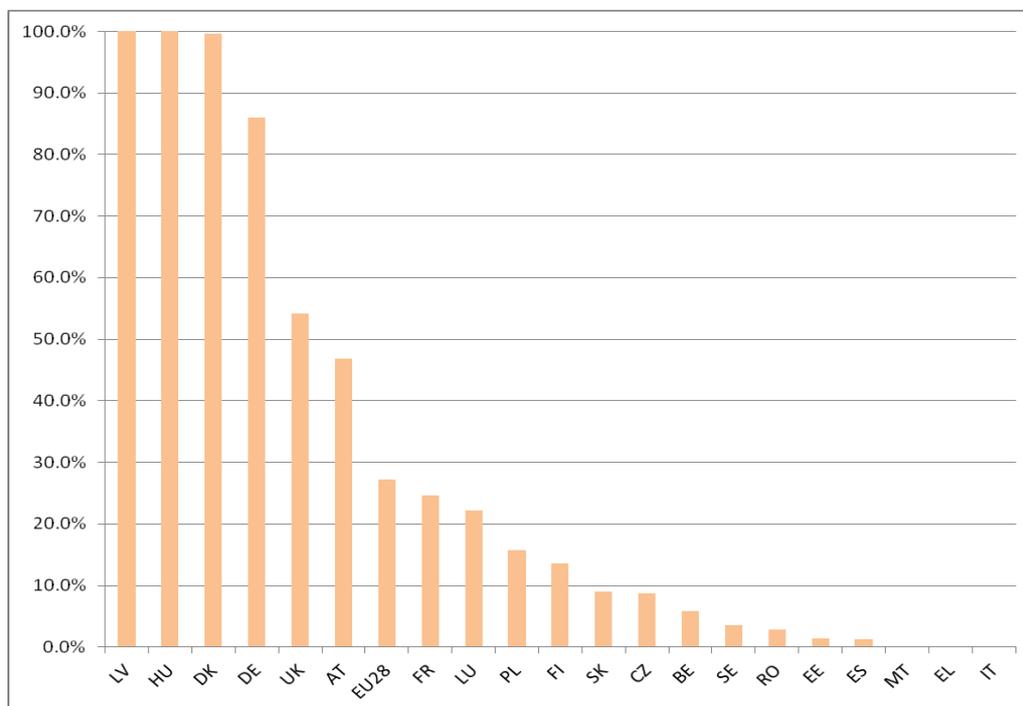
There are also ways to deliver work-based learning at school by providing school-based programmes with on-site labs, workshops, kitchens, restaurants, practice firms, simulations or real business project assignments<sup>17</sup>.

<sup>17</sup> European Commission (2013), Work-based learning in Europe: Practices and policy pointers [http://ec.europa.eu/education/policy/vocational-policy/doc/alliance/work-based-learning-in-europe\\_en.pdf](http://ec.europa.eu/education/policy/vocational-policy/doc/alliance/work-based-learning-in-europe_en.pdf).

The availability of comparable data on the current status of work-based learning programmes in initial education and training across Member States is limited.

Still, from available data (Figure 10) it is clear that combined work- and school-based programmes are most common in Latvia, Denmark, Hungary and Germany.

**Figure 10 – Initial VET students in combined work-and school- based training, 2015**



Source: Eurostat (UOE, 2015 [educ\_uoe\_enrs04]). Data for MT, EL and IT are missing.

Given the broad consensus that wider availability of high quality apprenticeships would be an effective instrument to improve sustainable transitions from school to work in many Member States, efforts to persuade companies, mainly SMEs, to invest time and money in young learners need to be intensified. Other challenges that need to be addressed are:

- securing sufficient availability of qualified trainers;
- establishing and implementing proper quality assurance systems; and
- attracting/organising funding and other types of support for cooperation arrangements between VET institutions and businesses.

**Adult learning and continuing vocational education and training:** in fast-changing working environment adults need to continuously update and improve their skills to remain competitive and productive. Adult

learning systems must respond to a large variety of needs expressed by learners, companies and society. They need to ensure that all individuals have easy and fair access to learning opportunities. In particular, those who have left initial education or training without the minimal level of skills needed for contemporary economic and social environment should be given opportunities to obtain those skills later in life. Through upskilling and reskilling, adults can ensure that their skills remain relevant and up-to-date; not only within the work environment, but also for active participation in society.

In many EU Member States those adults who already possess a high level of skills, usually also have good access to learning opportunities in order to continuously update and renew their skills. However those who possess only limited skills and thus have the greatest need to access education and training, usually face the biggest obstacles to

access learning. For these reasons, support for adults with low basic skills or low level qualifications is now commonly included into Member States' policy agendas, often as a part of education and training policies.

Across Europe, countries finance or co-finance a wide range of education and training programmes. In few cases those programmes are accompanied by skills validation schemes, including an initial skills assessment, guidance support and outreach campaigns. Still to in many cases too few adults have possibilities to access high quality and relevant training programmes to up-skill or re-skill.

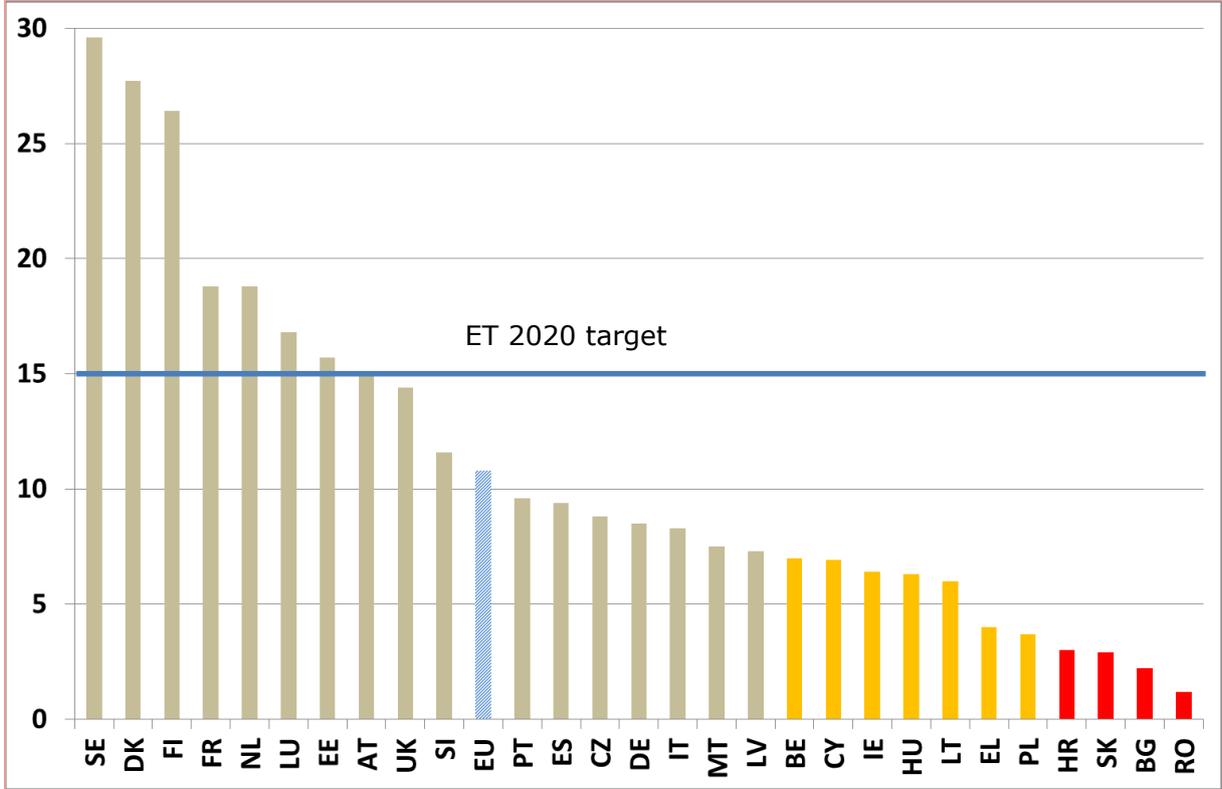
In 2016, as part of the skills agenda package, the European Commission proposed to establish a **skills guarantee** to help respond to skills gaps, inequality and emerging labour market needs requiring ever higher levels of skills. Through the skills guarantee Member States would ensure

that low-skilled adults are offered an upskilling pathway consisting of the opportunity to:

- (a) have their skills assessed and any gaps identified;
- (b) receive a tailor-made package of education / training; and
- (c) have their skills validated.

Under the open method of coordination in education and training (ET 2020), Member States agreed on a target to be reached by 2020, where at least 15% of the adult (aged 25-64) population should participate in learning. However, the average performance in 2016 was only 10.8%. Unfortunately, participation tends to be lower for people that return back to the job market after experiencing a spell of unemployment, older people and those employed in semi-skilled and low-skilled occupations – those who need to update and improve their skills the most.

Figure 11 – Participation in adult lifelong learning (population aged 25-64,%, 2016)



Source: Eurostat, Labour Force Survey

**Full transparency and comparability of qualifications** across the EU will help Member States to trust the quality of each other's qualifications and ease the mobility of learners and workers. To this end, the Member States are referencing their qualification levels to the eight levels of the European Qualifications Framework (EQF) and are indicating EQF levels and national qualifications framework levels on newly issued certificates/diplomas.

**Skills acquired outside of the formal education and training system** are often not documented or formally recognised. Member States have agreed to set up national arrangements for the validation of non-formal and informal learning by 2018<sup>18</sup>. In particular, they agreed to provide skills audits to all the unemployed ideally within six months of identifying the need. A skills audit helps to assess the knowledge, skills and competences of an individual to prepare for the validation of non-formal or informal learning outcomes and/or plan a professional reorientation or training project. Therefore, it is particularly relevant for people with lower qualifications, the unemployed or people at risk of unemployment, migrants, youth and those seeking career change. The best conceived opportunities to validate skills acquired outside formal education are accessible and lead to qualifications, or parts of qualifications.

Well established **skills governance systems** can help build and optimise the skills and competences of the current and future workforce. Efficient systems are based on sound skills intelligence produced by robust mechanisms of skills assessment, anticipation and forecasting. This information contributes to guide the education and training policies and career guidance services.

The Commission has been addressing digital skills challenges in the EU through its grand coalition for digital jobs

initiative<sup>19</sup> and has developed a common **European digital competence framework** (EDCF) describing the set of digital competences that are needed by all citizens today. Member States are using the EDCF and the related assessment tool in developing their education curricula, learning outcomes or teacher training.

Similar work has been carried out to develop a **European reference framework for entrepreneurship** (EntreComp), which can be used as a basis for the development of curricula and learning activities fostering entrepreneurship as a competence.

The Commission also supports the setting up of European Sector Skills Alliances to design sectorial skills strategies, anticipate the need for skills in specific sectors, and enhance the responsiveness of VET systems to those needs. The Sector Skill Alliances aim to help provide for new skills in strategic sectors necessary to achieve Europe's objectives on growth and jobs, competitiveness, energy and climate change. For example, the Alliance on renewable energy and green technologies will address skills gaps and skills mismatches to ensure Europe's global leadership in renewable energy and underpin the transition to a modern low-carbon economy with a decarbonised energy sector in its centre.

#### 4. CROSS-EXAMINATION OF POLICY STATE OF PLAY

**Skills formation:** Policies against early leaving from education and training [see separate factsheet on early school leavers] also support the goal of minimum education attainment for all youth, as a precondition for building further skills either in higher education or for the labour market.

Member States made some progress in basic skills achievement:

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<sup>18</sup> In line with Council Recommendation on the validation of non-formal and informal learning (2012/C 398/01).

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<sup>19</sup> See factsheet on *Digital Skills and Jobs*.

- Bulgaria improved access to quality education for students from disadvantaged backgrounds;
- Portugal's local administrations and school clusters cooperate in implementing the national plan to promote success in school;
- Ireland set specific targets for literacy and numeracy skills in disadvantaged schools, and relatively ambitious national targets for low- and top-achievers by 2025;
- the Czech Republic supports (pre-)primary and secondary schools in socially excluded areas by introducing and implementing individual integration plans; and
- Romania runs an ESF project to attract high quality teachers to disadvantaged schools and has started phasing in new competence-based curricula in lower secondary education.

**Initial vocational education and training:** recent VET graduates displayed better employment outcomes than recent upper-secondary education graduates from general orientation programmes. Still, average outcomes hide some disparity between different countries also showing scope to improve VET quality in those countries where VET outcomes lag behind the EU average (Belgium, Greece, Spain, France, Italy, Latvia and Romania). Several EU Member States (the Czech Republic, Greece, Spain, Malta and Portugal) also have a relatively high share of young people without an upper secondary diploma, or who choose the general upper secondary educational pathway, but do not attain higher education degrees.

**Adult learning and adult skills:** seven countries have adult participation rate in learning above the ET 2020 benchmark (15%): Denmark, Estonia, France, Luxembourg, the Netherlands, Finland and Sweden. The lowest participation is observed in Bulgaria, Hungary, Romania and Slovakia.

**Transparency and recognition of skills and qualifications:** to date, 24 Member States have referenced their

national qualifications frameworks to the European Qualifications Framework (EQF) and 16 Member States are putting or have set a date for putting the EQF levels on national certificates and diplomas.

**Validation of non-formal and informal learning:** Member States are preparing to put in place national arrangements for validation of skills acquired outside formal education and training. Progress is mixed and there is still a lot to do before the deadline of 2018. For example, in the 2014 European Inventory on Validation 15 Member States (Bulgaria, the Czech Republic, Denmark, Germany, Ireland, Greece, Spain, Cyprus, Lithuania Malta, Austria, Portugal, Romania, Slovakia and the UK) reported that a skills audit system, one element of the national validation arrangements, was not in place.

**Skills governance:** regular monitoring of labour market demand is essential and a system for monitoring occupations that are in need or in surplus is a basic building block of the labour market intelligence system. Despite this, most Member States currently do not have sufficiently good monitoring mechanisms. Only a third of Member States monitor the evolution of labour demand with a further third only having partial data<sup>20</sup>.

**Digital skills:** the Digital Agenda Scoreboard measures progress of the European digital economy via the Digital Economy and Society Index (DESI), which is a composite index that summarises relevant indicators on Europe's digital performance and tracks the evolution of EU Member States in digital competitiveness<sup>21</sup>. Digital skills development is tracked under the Human Capital Dimension of the index. Denmark, Luxembourg, the Netherlands, Finland, Sweden and the UK score

<sup>20</sup> Qualitative data; based on European Commission: Mapping and analysing bottleneck vacancies in EU labour markets, 2014.

<sup>21</sup> <http://ec.europa.eu/digital-agenda/en/digital-agenda-scoreboard>.

highest for basic skills and usage. Ireland, Austria, Finland, Sweden and the UK, score best for advanced skills and development. Bulgaria, Greece and Romania score consistently at the bottom of the rankings for both sub-dimensions.

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