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## External factors influencing VET Draft Synthesis Report

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Cedefop project 'Changing nature and role of vocational education and training in Europe'. Working paper 2

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EXECUTIVE SUMMARY .....	v
The challenges facing VET systems.....	v
The responses.....	v
Patterns of convergence and divergence.....	vi
Concluding comments .....	viii
Introduction.....	1
1.1 The economic and social context.....	1
1.2 The external environment and VET systems.....	2
1.3 Main objectives and research questions .....	4
1.4 Structure of the report .....	5
Understanding change in VET systems.....	6
2.1 Developing a general approach .....	6
2.2. Analysing change .....	8
2.3 The national context and path dependency.....	9
2.4. Developing a framework to understand change .....	12
2.5 Conclusion.....	15
Changes in the external environment.....	17
3.1 Introduction.....	17
3.2 The economy.....	18
3.3 Technology, economy and employment.....	24
3.4 Demographic Trends .....	29
3.5 Conclusion.....	36
The development of VET systems over time .....	49
5.1. Introduction.....	49
5.2 Selecting countries to study .....	49
5.3 The changing role of VET .....	52
5.4. VET policy shifts in the post-1990s period .....	55
5.5 Participation in VET and the preference for work-based learning.....	59
5.6 Attractiveness, standards, and skills matching.....	62
5.7 Providing access to higher education and the inclusion of adults.....	65
5.8 Change in the former Soviet bloc countries.....	67
5.9 Conclusion.....	69
Responses to external factors.....	71
6.1 Introduction.....	71
6.2 Economic change .....	71
6.3 Technical change.....	74

6.4.	Demographic change.....	79
	Responding to the fall in the number of young people.....	80
	Migration and the demand for VET.....	83
6.5	Conclusion and summary.....	83
7.	Reflections on VET's responsiveness to external conditions.....	86
7.1	Introduction.....	86
7.2	Change over time.....	86
7.3	Challenges and responses.....	89
7.4	Trends over time.....	90
	The resilience of VET.....	90
	The changing nature of VET.....	91
	Devolution of control.....	91
	Broadening the scope of occupational standards.....	91
	The quality of the VET infrastructure.....	92
	Extending VET to higher levels.....	93
	The disappearing boundary between IVET and CVET.....	93
7.5	Patterns of convergence and divergence.....	93
7.6	Questions and answers.....	94
	To what extent are demographic developments influencing the need for and provision of VET?.....	94
	To what extent are changes in the labour market, and notably occupational profiles, influencing VET?.....	95
	To what extent are changes in VET based on targeted labour market intelligence, for example on skills needs analysis at national/regional, sectoral or local level)?.....	96
	To what extent is the role and nature of VET influenced by changing policy priorities at national level?.....	97
	References.....	98
	Annex A: Information for an initial classification of IVET systems.....	103

## Figures

Figure 1.1:	Beveridge curve, 2006q4 to 2015q4 (four-quarter average rates).....	2
Figure 1.2:	Schematic Outline of how the external environment affects the VET system ...	4
Figure 2.1:	Schematic outline of approach to the study.....	7
Figure 2.2	Labour market regulation and training (Protection against dismissal and percentage of students taking the vocational pathway through upper secondary education).....	11
Figure 2.3:	Schematic outline of analytical framework.....	15
Figure 3.1:	Year on year growth in real GDP in the EU-28, 1995 -2005.....	18

Figure 3.2:	Long-term percentage change in real GDP, 1995 - 2005 .....	19
Figure 3.3:	Percentage change in real GDP, 2007-2009.....	19
Figure 3.4:	Employment rate (%) age-group 20 to 64, EU-28, 2002-2015.....	20
Figure 3.5:	Employment rate (%) age-group 20 to 64, by country, EU-28, 2008 and 2015.....	21
Figure 3.6:	Unemployment rate in Europe, 1995 to 2015.....	21
Figure 3.7:	Unemployment rate by country, 2015 .....	22
Figure 3.8:	Youth unemployment rates, 1995 - 2015 .....	23
Figure 3.9:	Youth unemployment rates in Europe, 2015 .....	23
Figure 3.10:	Gross domestic expenditure on R&D (% of GDP), EU-28, 2000–2014 .....	24
Figure 3.11:	Projected Changes in the occupational employment 2000 to 2025 (employment gain and loss) .....	27
Figure 3.12:	Fertility rates within the EU: 1995 and 2015 compared .....	30
Figure 3.13:	Increase in the share of the population aged 65 years or over between 2005 and 2015 (percentage point change) .....	31
Figure 3.14:	Projected change in the age structure: 2015 and 2080 compared .....	32
Figure 3.15:	Percentage of population born in another country .....	33
Figure 3.16:	Fertility rates and percentage of the population born outside the country (2015/16) .....	34
Figure 3.17:	Employment rate (%) age-group 20 to 64, by citizenship, EU-28, 2006-2015.....	36
Figure 5.1:	Apprenticeship starts in England.....	59
Figure 5.2:	Participation in apprenticeships in Germany .....	61
Figure 5.3:	New apprenticeship contracts per year from 1973-2008, distributed according to craft, industry, and other trades.....	62

## Tables

Table 5.1:	Classification of countries by position of various indicators of the external environment.....	51
Table 6.1:	Responding to the challenges of economic, demographic and technical change.....	85
Table 7.1:	VET in the early 1990s compared with today.....	86
Table 7.2:	Major developments in VET from the 1990s onwards.....	88

# EXECUTIVE SUMMARY

## The challenges facing VET systems

There are a common set of challenges facing VET systems in all (or most) countries, including:

- developing the capacity of the VET system so that it is better able meet the needs of the labour market (i.e. to counter the tendency in some countries for vocational schools to teach what they have the means to teach rather than meet the needs of the labour market) and society;
- increasing the attractiveness of VET to both would-be vocational students and employers;
- securing a sufficient volume of students to teach in competition with the general stream, especially so where the number of young people is in sometimes sharp decline;
- ensuring that the system can be responsive to the changes resulting from technological drivers with respect to both mitigating the impact of skills obsolescence and ensuring that the demand for new skills in new jobs is met;
- ensuring that those employed in vocational schools possess the technical knowledge and have access to the latest technologies so that the teaching they deliver is relevant to the needs of industry;
- maintaining a balance between provision of broad based education and the demand, from some quarters, for VET to be tightly focused on the supplying the skills for a specific, narrowly defined occupation;
- being able to do more in those countries where pressure on public finances has reduced funding for VET.

## The responses

- The common responses – though not necessarily evident in every country - to the various challenges outlined above include: reconfiguring the ties between the labour market and wider society with the VET system in specifying competences and curricula. This is sometimes reflected in giving social partners more say over the content of VET and in the development of work-based learning;
- finding new sources of students / learners. The demographic challenge results in a need to find new sources of skills. Accreditation of existing skills has assumed greater importance in many countries as has the accreditation of the skills of migrants;
- moving to an outcome / competence based system of IVET (in some instance shortening the duration of training);

- attempting to increase participation in apprenticeship training and access to work-based learning as these are seen as a particularly effective means of linking training to the needs of the labour market / employers;
- trying to increase the direct participation of social partners in VET so that, inter alia, students have access to the latest technologies (i.e. to those typically not available in vocational schools because of their cost) and teachers can better keep their industry knowledge up to date;
- making substantial investments in skill anticipation systems; increasingly extending VET so that it is available at the post-secondary level and / or ensuring that VET at upper secondary level potentially provides the means to continue education at higher levels (either in or outside the VET stream);
- developing and utilising qualification frameworks to make the VET system more transparent.

## Patterns of convergence and divergence

The above lists a number of common responses to common factors over the past 20 years or so. But adaptation to change is influenced by the respective starting points of countries. For instance, the former Soviet bloc countries had to completely reinvent their VET systems in the 1990s, whereas in other countries change was more piecemeal or incremental even if over the longer-term the changes introduced have had the impact of substantially reforming the structure and content of VET provision.

A number of factors are evident.

- VET appears to go in and out of fashion over time. The 2010s has proved to be a period of increased public policy interest in VET. In part this is a response to increasing concerns about the degree of skill mismatch in the economy. But at other junctures, there has been much less public policy interest in VET; especially so perhaps during the 1990s and 2000s when, for some countries, the concern was with boosting participation in higher education (i.e. general education).
- IVET today, in many countries, looks very different to how it looked at the beginning of the 1990s in several countries. Even if the esteem in which IVET is held is not as high as that in which general / academic education is held, in many countries it has matured over time into a major constituent part of the formal education system. This of course differs by country, but is notable that in some countries VET was not as firmly established a part of the formal education system in the late 1980s and early 1990s as it is today. In part this reflects the elongation of the transition from school to work and increasingly flexible labour markets (cf. the effect this has upon employer willingness to fund VET).
- Policy shifts are apparent in countries between centralisation and decentralisation with respect to which institutions are responsible for VET. In some countries - such as the Netherlands, Italy, and the UK – there have been shifts in the extent to which authority and autonomy is granted to the regional and local levels (even to the level

of the individual vocational school or college) and also to business sectors. This is not necessarily unidirectional – even if there pressures to grants parts of the VET system more autonomy so that it is more responsive to the labour market, there appears to be forces that sometimes operate in the opposite direction (i.e. towards centralised authority over the VET system).

- The evidence suggest a broadening of course content (and a reduction in the total number of qualifications available) reflecting pressures to equip people with broad skill sets to meet changing labour market demands. The broadening of courses - i.e. with respect to their occupational scope – has led to more transversal skills content in VET courses. At the same time, there is some flexibility such that courses can be flexed so that they meet skill demand at the local level.
- Arguably the increased autonomy key institutions in the VET system have acquired over time - and the flexibility it potentially confers upon the VET system - means that it is better placed to respond to changes in the labour market and economy. In some countries this potentially allows change to be introduced in curricula relatively quickly, in others less so. There is a tension here between being able to speedily adapt courses with the attendant risk that the skills they provide quickly become obsolescent, versus having courses that have relatively broad foundations and in doing so have some flexibility in accommodating change, but which may be inherently more difficult to reform and, therefore, run the risk of becoming dated over the longer-term. The comparison of England with countries such as France and Germany is instructive here.
- The nature of recent technological changes (c.f. robots, AI, etc.) has resulted in concerns that VET schools falling behind in their attempts to keep abreast of the rate of change. They are expected to equip people with skills that are in short-supply in the labour market and have access to the latest technologies. Accordingly, they struggle recruiting staff with the skills required and having access to the latest technologies. The economic climate of austerity and its impact on public finances also means that they have more limited financial resources with which to respond to change, especially technical change.
- Demographic change, in combination with austerity, has led to some consolidation in VET provision. . So one is faced with increased pressures being placed on the VET system to deliver the skills a country needs and, at the same time, resource provision is becoming tighter, which has consequences for the VET infrastructure. This is apparent in some countries more than others.
- There is an emphasis on the VET system becoming more responsive to the needs of the labour market and society more generally. According VET providers need to be increasingly responsive. Their continued survival is dependent upon them being able to capture a sufficient market share to make the service they provide sustainable. This should not be over-stated and the difference between, for example, the UK and, say, Norway or Finland is substantial in this regard. But the notion of making the VET system more responsive to the rapidly changing labour market and

society implicitly implies, in some countries, that the imperative for VET providers to adapt to the changing market needs has intensified.

- A common thread is that of IVET being extended to higher levels, beyond its upper secondary level heartland – this is part of the process of ensuring that VET is attractive to young people (i.e. it does not close off access to higher education), but also that of meeting the need for vocational skills at higher levels. Where there is less clarity is with respect to whether the VET stream: (a) becomes embedded within existing higher education institutions and structures; (b) develops along its own parallel track; or (c) embodies a mixture of both. There is a degree of policy experimentation taking place in some countries but not necessarily a common trend.
- CVET has been, to a large extent, a private investment decision for, respectively, employers and individuals. Although this situation continues to prevail, it is noticeable that the division between IVET and CVET has become less well defined over time. This is mainly a consequence of labour markets becoming more flexible and people being expected to spend longer in them before retiring. This creates a concomitant need for the skills of the workforce to be replenished over time; a need which is not necessarily met by in-company CVET (especially in more flexible labour markets) but which can be fulfilled by various IVET programmes.

In general, the authors of the country studies paint a relatively optimistic picture for the future of VET but, at the same time, suggest that a range of external factors could easily bring about a more pessimistic outcome (c.f. the overall aggregate level of demand for labour and skills, funding levels for VET, its capacity to meet labour market needs, etc.).

## Concluding comments

In general, there is a high degree of commonality in the direction of travel. What differs is the relative starting point (i.e. the extent to which the VET system was already established at the start of the 1990s) and the extent to which external shocks in the period between the early 1990s and 2016 have had an impact on the economy and labour market. The impacts are mediated through different institutional settings but the types of change introduced in response to external factors shows a degree of similarity. Indubitably the resemblances rather than the differences are the interesting findings.

# Introduction

## 1.1 The economic and social context

Europe faces a number of medium- and long-term challenges. Recovery from the financial and sovereign debt crisis in 2007-9 has proved slow; output growth is gradually improving but unemployment continues to be at historically high levels especially for young people (European Commission, 2015a). Moreover the economic situation is uneven across the EU. Meanwhile long-term structural changes continue to take place in the global economy with technical change continuing apace, affecting both the nature of skill demand and its location (McIntosh, 2013). Consequently weak employment growth has intensified competition for jobs in Europe which, for some groups of jobseekers, is further heightened by global shifts in the centres of production and increased automation (Brynjolfsson and McAfee, 2012; Frey and Osborne, 2013). There is also some indication that technical change – via various digital platforms – may be increasing non-dependent employment levels which may well have implications for VET (Huws et al., 2016). Potentially, the challenges these changes pose for vocational education and training (VET) systems across the EU are formidable: weak employment growth tends to result in skill / labour surpluses and rapid technical change, if VET systems are not sufficiently responsive to that change, skill shortages may arise.

To date, the evidence points to a potential matching problem. Over time there is some evidence that the Beveridge Curve – that captures the ratio between job vacancy and unemployment rates – is being pushed outwards (see Figure 1.1). This means that relatively high levels of job vacancies can co-exist with relatively high levels of unemployment. It can be seen in Figure 1.1 that over time the curve has shifted outwards from a situation in 2006 where a relatively high vacancy rate was accompanied by a relatively low unemployment rate, to 2015 where both unemployment and vacancy rates are relatively high. The factors that underlie movements in the Beveridge Curve are multifarious and are typically explained with reference to the operation of passive and active labour market policies (Elsby et al., 2011). VET systems in themselves are unlikely to be able to bring about significant movement in the Beveridge Curve but they will, at the margins, have a bearing on the extent and speed with which vacancies are filled.

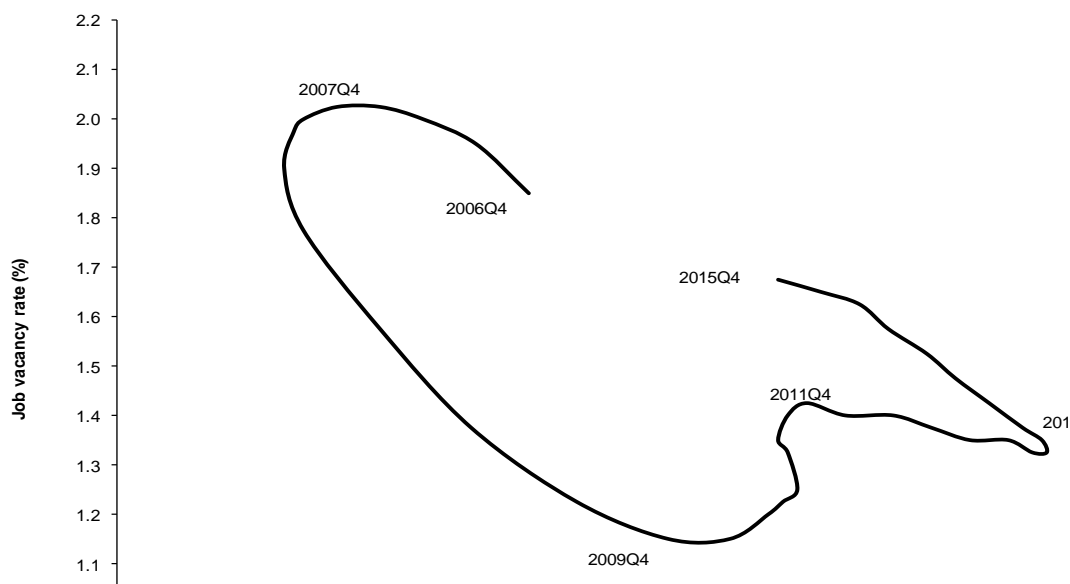
Evidence suggests that mismatches between the levels of qualification held and the jobs undertaken have, over time, increased, but at the same time there is evidence that skill shortages persist especially in key sectors such as ICT/digital, but can also be found in more traditional sectors such as manufacturing and construction.<sup>(1)</sup> It seems likely that even with

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<sup>1</sup> It is acknowledged that the concept of skills mismatches is a complex one. Vertical mismatches occur where people's skills are at a level inappropriate for the jobs available resulting in, for example, people being over- or under-qualified for the jobs available. Horizontal mismatches occur where the type of skills the individuals hold, irrespective of their level, are not suited to the jobs available. There is also skills obsolescence to consider where individuals' skills lose their relevance as a consequence of various changes both in the external labour market and within the workplace. Skill mismatches might reflect short-supply in the external labour market, but also where employees within a workplace do not possess

relatively weak overall skill demands, and despite the increase in levels of educational attainment, skill shortages persist (DG EMPL, 2015; Cedefop, 2015a, 2015b, 2015c). This is not simply a cyclical issue. It is no surprise then that the New Skills Agenda places such an emphasis on better intelligence to inform choices about investments in skills. It also places an emphasis upon making ‘VET a first choice’ in looking for a better match between skills supply and skills demand (European Commission, 2016a). It will be the way in which countries are able to flex their VET systems to meet current skill demand and, at the same time, sufficiently anticipate future demand, which is the critical issue in this regard.<sup>(2)</sup> But it is not only the way in which VET systems are designed to anticipate skill demand arising from a range of external factors that is of interest. It is also the way in which they are able – or are configured – to effectively respond to the occasional shocks to which the European economy is subject. This is important if one considers the manifold events with which Europe has had to contend over the past 10 years. Arguably the external environment has resulted in the state being increasingly interested and influential in the provision of VET (Goodson, 2001). It is these issues which form the core of the current study.

**Figure 1.1: Beveridge curve, 2006q4 to 2015q4 (four-quarter average rates)**



Source: Eurostat Unemployment Rates [lfsq\_urgan] and Job vacancy statistics [jvs\_q\_nace2]. Figure from [http://ec.europa.eu/eurostat/statistics-explained/index.php/Job\\_vacancy\\_and\\_unemployment\\_rates\\_-\\_Beveridge\\_curve](http://ec.europa.eu/eurostat/statistics-explained/index.php/Job_vacancy_and_unemployment_rates_-_Beveridge_curve)

## 1.2 The external environment and VET systems

There a number of external factors that will have implications for any VET system. These include:

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the level of competence required to fulfil the tasks in their current job. For further information see: Cedefop (2010) *The skill matching challenge: Analysing skill mismatch and policy implications*. Luxembourg: Publications Office of the European Union

<sup>2</sup> Though the way organisations adapt their patterns of work organisation is also import\*\*ant.

- demographic change (including migration);
- the business cycle;
- globalisation / offshoring;
- technical change / digitisation / robotics;
- organisational change within workplaces and within sectors (including sectoral restructuring, etc.); and
- public policy (e.g. systems of social protection that use VET as part of their efforts to combat social exclusion, macroeconomic policy, etc.).

Figure 1.2 outlines how the external environment can affect a VET system. Signals from the external environment will be mediated by the policy and societal norms extant within a country. There are a number of elements to consider here: the prevailing approaches to economic and social policy, the historical development of education and training systems, the value attached to VET, etc. For instance, in England there has been, and continues to be a market based orientation to developing almost all public policy including the provision of VET, which is more marked than in other parts of the UK.<sup>(3)</sup> This has allowed a large number of players to enter the market – be that the provision of training or the development of programmes or the provision of qualifications – because this increases competition. By turning students into consumers, and providing them with information about the value of investing in different types of VET, it is assumed that the system will be oriented towards developing economically valuable skills (Gambin and Hogarth, 2016a, 2016b, 2017; Hogarth and Gambin, 2016). But the policy context or lens is not the only one of interest. There are societal norms to consider as well. Perhaps the most pertinent here is the relative esteem in which VET is held by employers, individuals, and policy makers. This might affect the policy priority attached to ensuring that the VET system is responsive to the external environment compared with, for example, other sectors of the education system. Funding levels can be an indication of policy prioritisation within a country.

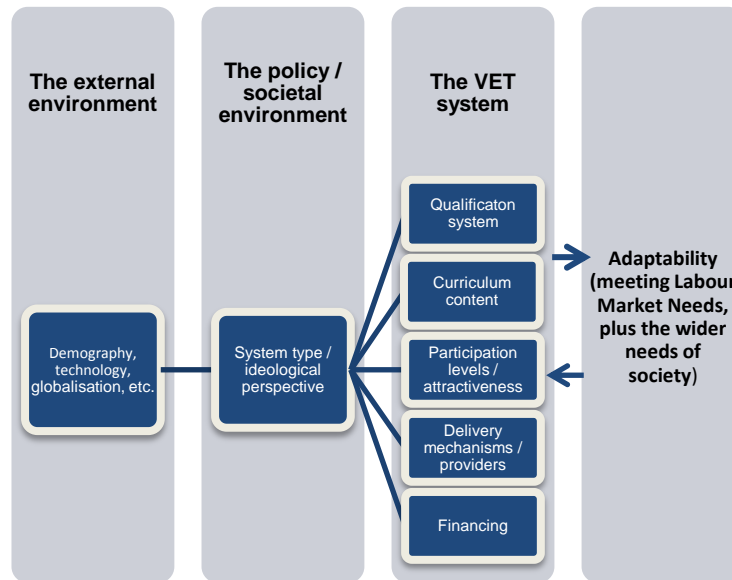
There is then a question of what constitutes the VET system within a country. In other words, what are the constituent parts of the system that are expected to respond in some way to the external environment? There are a number of elements to consider – as indicated in Figure 1.2 – from the perspective of understanding how they are configured to respond to developments in the external environment, and how have they behaved in practice. This will be strongly related to the policy context as described above, as it is likely to have had an influence over the configuration of the system and the way in which actors behave within it. The policy context is also likely to determine which actors are influential within the system and the actions they take. From here it is possible to gauge the extent to which the VET system responds in a way which brings about effective labour market outcomes; that is, the production of economically valuable skills that will serve individuals, employers, and the State as a whole, over the short- and long-run (i.e. providing employment, combatting skill mismatches, promoting career adaptability, stimulating productivity and competitiveness,

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<sup>3</sup> A case study of the external factors affecting the provision of VET in England was undertaken as part of the study.

etc.). Important here are the feedback mechanisms in place to ensure that VET systems are responsive to labour market needs (Cedefop, 2013).

**Figure 1.2: Schematic Outline of how the external environment affects the VET system**



### 1.3 Main objectives and research questions

The key questions which the study addresses are set out below.

**1. To what extent are demographic developments influencing the need for and provision of VET?**

In the context of an ageing EU labour force there is a need to consider how Member States are addressing this issue, in particular the role of CVET in allowing people to re-skill in later years in order to avoid their skills becoming obsolete. On the other hand, migration into the EU and migration between Member States may reduce the scale of the problem facing certain countries. At the other end of the age spectrum many countries are faced with declining youth cohorts which increases the competition between the general and VET steams for available students.

**2. To what extent are changes in the labour market, and notably occupational profiles, influencing VET?**

There are manifold changes affecting the occupational structure of employment. Existing jobs are changing and new jobs are emerging, the skill content of which is only just becoming apparent. There are a number of differing perspectives on what is driving both changes in the occupational structure (e.g. task-based technological change) and the changing skill content of existing jobs (technical, organisational, and environmental change) (Ford, 2016; Autor et al. 2013; Goos et al., 2011)..

### **3. To what extent are changes in VET based on targeted labour market intelligence, for example on skills needs analysis at national/regional, sectoral or local level)?**

The role of information advice and guidance / LMI (labour market intelligence) is important in providing those in the labour market with data, including on the returns to taking various courses (IVET, CVET and non-VET). LMI extends labour market information (descriptive data such as statistics or survey results) by adding a layer of analysis, interpretation, conclusions and in some cases policy recommendations. The extent to which LMI systems are up and running in the EU varies by Member State: while countries such as the Netherlands have developed sophisticated systems supported by data at a detailed level of disaggregation over time, other countries are still in the early stages of developing LMI systems. This provides a natural experiment of sorts to look at the way LMI can change VET provision and how institutional arrangements have developed to ensure that the supply of skills is better matched to their demand.

### **4. To what extent is the role and nature of VET influenced by changing policy priorities at national level?**

Considerable emphasis has been given above on understanding the institutional and policy context in which national debates on adapting VET systems – both CVET and IVET - to better meet the needs of the population and economy. This is seen as all important in being able to understand how VET responds – and how it could respond better – to the exigencies of the economy and labour market.

## **1.4 Structure of the report**

The report is structured as follows. The next chapter outlines the conceptual framework for the study. This is followed in Chapter 3 by an exploration of the quantitative data on the relationship between VET and the variety of external factors. In Chapter 4 an indication is provided on the way in which VET systems have responded to external factors. Chapters 3 and 4 provide the context for the analysis in Chapter 5, which shows how various countries have modified their VET systems over time. Chapter 7 looks more specifically at how national systems have responded to demographic and technical change and the vagaries of the economic cycle. Finally, Chapter 7 provides a conclusion.

# Understanding change in VET systems

## 2.1 Developing a general approach

Countries are, more or less, facing the same set of external factors which are placing pressure on their VET systems. This is perhaps less so with respect to demographic trends (i.e. with respect to ageing and levels of migration), but the other factors are relatively common across countries. Of particular interest to this study are:

- demographic change (ageing, migrant flows, declining youth cohorts, etc.);
- globalisation / offshoring;
- technical change / digitisation / robotics;
- organisational change within workplaces and sectors (including sectoral restructuring, etc.) that affects the structure of work;
- the outflow from other policy areas (e.g. systems of social protection that use VET as part of their efforts to combat social exclusion, macroeconomic policy, etc.) which affect the demands made of VET systems.

In many respects, the above can be considered to be long-term structural shifts in the economy that give rise to a number of demands on VET systems. It is expected that these factors will result in changes being made to various elements of the VET system, including:

- the means used to anticipate emerging skill needs;
- curriculum and course design;
- the means used to deliver skills (including both teaching / learning methodologies, and the emphasis placed on work based learning);
- funding levels and mechanisms;
- the measures used to direct or nudge behaviour in relation to VET (including the use of subsidies, incentives, and markets);
- the means used to raise participation levels (especially in particular types of courses or fields of study where demand is in danger of not being met; the role of labour market information systems and careers guidance, etc.).

Alongside the longer-term structural shifts there are shorter-term, frictional exigencies that affect VET provision and VET policy. The most obvious is the business cycle and the effect it has upon the demand for skills and labour. It is readily apparent that the sovereign debt crisis at the end of the 2000s continues to cast a shadow over the EU's economy, especially with respect to the relatively high levels of youth unemployment that still prevail in many countries. The impact the crisis had upon government finances resulted in there being constraints on public investment in VET. This is certainly evident in countries such as the UK where the budget available for publicly funded VET has been substantially reduced in real

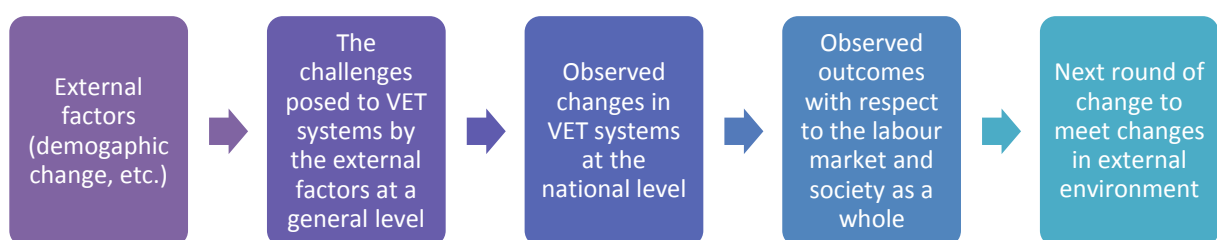
terms over the past five years (Wolf, 2015). So whilst one may want to understand the impact of more structural external factors, it is difficult to disentangle this in practice from whatever political / economic needs prevail at any one point in time.

Both structural and frictional changes in the external environment will be mediated by a number of factors. These include:

- national policy priorities and the way in which these are enacted (e.g. the preference for the use of market mechanisms in some countries versus a more co-ordinated social partner based approach);
- path dependency in VET. Just as countries exhibit a particular approach to policy making in general - such as the preference for market-based approaches in the UK and Ireland and some eastern European countries – there is also the historical development of the VET system to consider. The way in which they react to structural changes will be in part determined by the way in which they are currently institutionally structured and the behaviours that have developed within those structures.

Schematically, it is possible to outline how external factors affect events as shown below (see Figure 2.1).

**Figure 2.1: Schematic outline of approach to the study**



One can broadly set out the general challenges posed to VET systems by each of the external factors of interest. Where the variation exists is with respect to country approaches (the third box from the left in Figure 2.1). It is here that one can begin to understand how different types of VET systems accommodate external factors and the implications of this for meeting the demand for skills in the labour market. The skills demands relate to both now and in the future and, more generally, in providing skills to the population as a whole which contributes to fulfilment outside of work (e.g. through social inclusion). In general, the approach is one of moving from the general to the specific to look in detail at how countries have responded differently to a common set of external factors and based on this analysis obtaining an indication of the resulting outcomes. The differences are likely to emerge with respect to the way in which national policies – and the historical development of the VET system – determine responses to common issues. For example, the way Germany responds to ensuring that technical change is reflected in the content of training delivered in the dual system is likely to be very different from the approach adopted in other countries. Additionally, the UK not only has marked differences in the type of apprenticeship system and approach to VET provision from say, Germany, but also has different approaches

between the four constituent parts of the UK. Estonia, for instance, has relatively low participation in IVET and an industrial structure that differs markedly from either Germany or the UK.

## 2.2. Analysing change

When analysing change there is a tendency to concentrate on major exogenous shocks to a system when as much, if not more change can be observed from piecemeal or incremental change over time (Mahoney and Thelen, 2010). Defining 'major' change relative to that of piecemeal or incremental change can prove difficult;<sup>4</sup> in practice a more nuanced understanding of change is perhaps required, such as that provided by Streeck and Thelen (2005):

- displacement – removal of existing rules and the introduction of new ones;
- layering – new rules on top of, or alongside, existing ones;
- drift – changed impact of existing rules due to shifts in the environment;
- conversion – the changed enactment of existing rules due to their redeployment.

It should be noted that our interpretation of 'rules' should be a broad one and which encompasses the entire gamut of regulations, practices, concepts, values and norms that make up a VET 'system'. To a large extent, the above is an ex-post classification. There is also an interest in understanding the drivers of policy changes that might result in one of the above outcomes. Understanding the interaction between various agents of change is of interest here. Goodson (2001) makes a distinction between various agents involved in educational change. He describes them as follows:

- internal change agents who work within school settings to initiate and promote change within an external framework of support and sponsorship;
- external change is mandated in top-down manner, as with the introduction of national curriculum guidelines or new state testing regimes;
- personal change refers to the personal beliefs and missions that individuals bring to the change process. (Goodson, 2001, p.46).

Goodson's interpretation of change over time suggests that until the end of the 1970s internal change agency tended to be dominant. With changes in the external environment - the onset of globalisation is specifically mentioned – the direct involvement of government and other corporate bodies became increasingly involved in educational matters. That is, the external agency mandates became dominant. In other words, education systems adopted a top-down approach to policy development and overall control of the system. In many respects, the top-down approach was one that increasingly stressed the importance of education and training contributing to competitiveness. Internal actors within the educational sector increasingly found themselves responding to change rather than initiating it.

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<sup>4</sup> For example, in political science there is relatively little consensus about the definition of what constitutes a 'revolution'.

Moreover, this can result in the personal change agents being opposed to the external change they see as being imposed upon them.

The extent to which there is co-operation and conflict between the three agents is important. Inevitably change can result in some parties seeking to 'play' the system, where they focus upon narrow targets or indicators to the exclusion of other desirable outcomes. For example, learners may be entered for qualifications where achievement suits the institution rather than the learners. The intended outcomes of change are then potentially compromised by the failure to gain the co-operation between the necessary parties.

It always needs to be considered that the way in which change is decided upon and how it is implemented will be dependent upon the existing configuration of a system.

## 2.3 The national context and path dependency

The relationship between actors in the education system, the inter-relationship between endogenous and exogenous factors, and the pattern of change these give rise to over time are important. If there is interest in looking at these relationships, then there needs to be recognition that each country's starting point is different both with respect to the existing level of development but also the institutional arrangements in place to design and deliver VET.

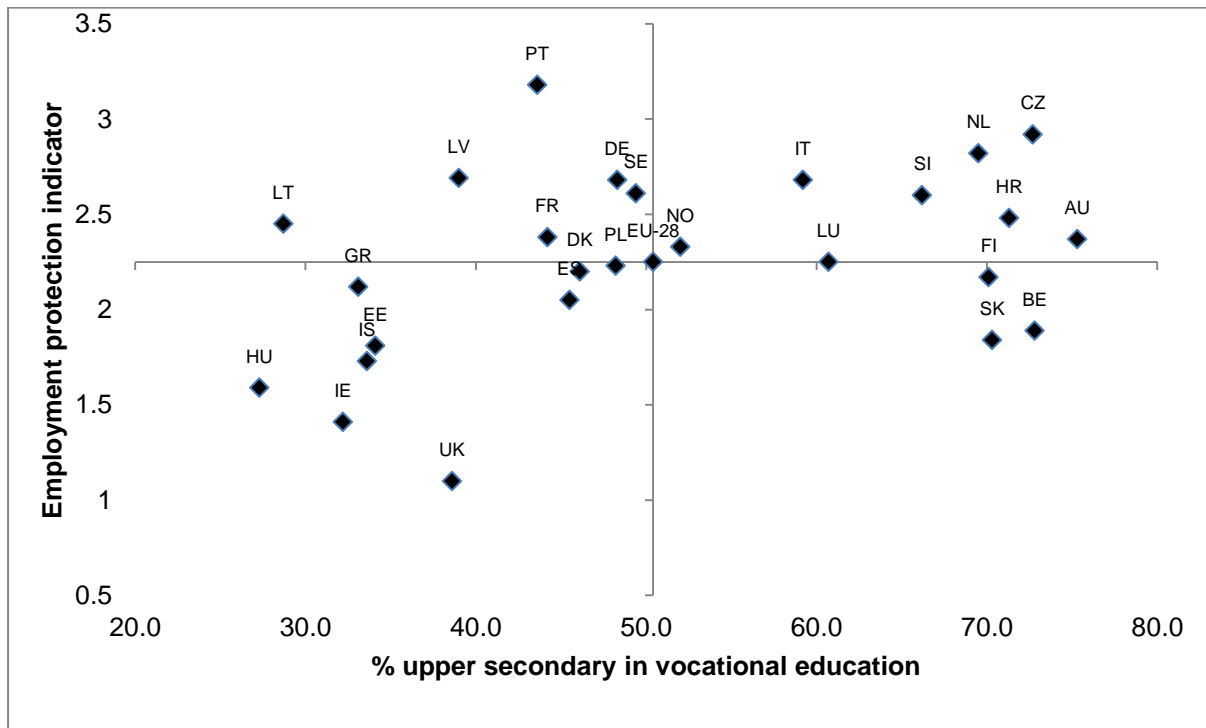
There are a number of theories that seek to explain why the processes and structures of skill formation differ so much between nation states. The 'varieties of capitalism' theoretical perspective, which tries to get to grips with both the politics and economics of VET provision, sees the process of skill formation within nation states as emerging from different forms of social contract that have been forged over time (for example, Estévez-Abe, 2001). The perspective is not fully formed but it is useful in helping to understand both how the systems have come to exist in their current forms and the interplay of the various actors within the system. As such it illuminates how various exogenous factors that are likely to affect both the supply of and demand for VET are mediated through labour market institutions (whether the institution is the market or the institutions that comprise a more corporatist, social partnership approach). But it is insufficient for current purposes. In many respects one of the primary goals of any VET system is to provide skills that are economically valuable to individuals, employers and, in aggregate, the economy as a whole. Economic value might be defined with reference to the extent to which skills are able to produce a return over the medium- to long-term (for example, with reference to providing access to employment, contributing to productivity / efficiency growth within the workplace, etc.). If one focuses on the post-1995 period it is clear that most EU VET systems have had to accommodate a substantial amount of change taking place in the external environment (for instance, globalisation, technical change, the economic crisis, demographic change, etc.).

In order to provide an analysis of how VET systems have responded to, and been shaped by, the external environment there is a need to control a range of starting points. Whilst member states' VET systems have had to respond to a largely common set of external stimuli (for instance, technical change and globalisation) they have done so from very different positions. If one looks back to, say, 1995, the extent to which economies engaged

in trade varied considerably by member state as did levels of productivity per hour worked or levels of investment in fixed capital formation. Similarly, VET systems differed – and continue to differ – with respect to levels of participation, structure, governance, and funding. Accordingly, one might expect the ways in which VET systems respond to changing external circumstances to differ, especially when one looks at the detail of what is being carried out.

If one looks at this more prosaically, with reference to the degree of flexibility in the labour market, then one has a degree of insight into the policy regimes in place across Europe. Figure 2.2 uses the OECD's employment protection against dismissal as a proxy measure of a flexible labour market (i.e. a relatively unregulated labour market). The higher the value, the more protection there is against dismissal. This has been cross-classified by level of participation in VET to provide an indicator of the relative extent of IVET's importance in an economy. The data shows that there are distinct groups of countries: (i) those with relatively low levels of participation in VET and employment protection compared with the EU average (UK, IE, HR); (ii) those with relatively high levels of participation in VET and relatively high levels of employment protection (CZ, NL, AU); and (iii) relatively low levels of participation in VET and high levels of employment protection (LV, LT, PT). The quadrant with low levels of employment regulation and high levels of participation in VET is more or less empty. Arguably in more regulated labour markets there is more certainty regarding investments in VET. Where occupational licensing, either actual or de facto, is in place there is a relatively high degree of certainty regarding the destination associated with a particular course. And employers, where they are engaged in apprenticeship-like training, are more certain of obtaining a return on their investment in this form of training in a labour market characterised as being relatively less flexible (Acemoglu and Pischke, 1999). In contrast, where there is a high degree of labour market flexibility there is less certainty about what a course might lead to, and more risk attached to the employer making investments in programmes such as apprenticeship (Gambin and Hogarth, 2016b, 2017).

**Figure 2.2 Labour market regulation and training (Protection against dismissal and percentage of students taking the vocational pathway through upper secondary education)**



Source: Eurostat Participation/ Enrolment in Education [educ\_ipart\_s] and OECD Employment Protection Database

From a VET perspective, there is also the possibility of classifying countries according to the percentage of upper-secondary education students studying in vocational programmes and the percentage of students in combined school and work-based vocational programmes. This is the basis of the country classification of countries in Work Assignment (WA) 4 based on the research of Hanushek et al. (2011) (see box).

### **Classification of countries according to the share of VET delivered in the workplace versus vocational schools**

Type 1. These are dual systems of apprenticeship. Apprenticeship systems are closely integrated with labour market institutions and the world of work, and this has important effects on the labour market value of the qualifications they offer and the consequent incentives this provides for apprentices. Examples include Denmark, Germany, and Switzerland.

Type 2. These are systems with participation distributed relatively equally between school based general education and employment-based dual systems of apprenticeship. Austria and the Netherlands belong to this type.

Type 3. Hungary represents an exceptional type because the percentage of IVET students is low but the percentage of work-based students is very high.

Type 4. The United Kingdom is classified as a separate type because the percentage of IVET students as well as work-based students, are at the medium level in this country.

Type 5. These are predominantly school-based systems with general academic and vocational provision in different types of dedicated upper-secondary institutions and with apprenticeships representing separate but residual systems. Most Central and Eastern European (CEE) countries (the Czech Republic, Slovakia, Croatia, Romania, Bulgaria, Poland and Slovenia) as well as Finland, Luxembourg, Belgium and Italy belong to this type.

Type 6. These are 'non-vocational' countries with the limited vocational systems. This is the modal type in most southern European countries (Spain, Portugal, Greece, Cyprus) and other western countries influenced historically by the French education system (France) but also in Baltic countries (Estonia, Latvia and Lithuania) and in Sweden.

Source: Changing Nature of VET Work Assignment 4

## **2.4. Developing a framework to understand change**

Technological and demographic changes, coupled with major geographical shifts in the locus of production, have placed a number of demands on vocational education and training (VET) systems across Europe over recent decades. Not least of which has been that of guaranteeing VET's relevance to the needs of the labour market over a period of increasing uncertainty. Looking back, the period from the mid-1990s to mid-2000s was one of benign macroeconomic conditions where globalisation was seen to be invigorating economic growth across the western world. The ramifications of the economic crisis that rocked the global economy from 2007 onwards are still working through many national economies today. There is, however, a greater appreciation of the potential for technologies notably in the guise of robots and AI to transform the nature and location of work, though there is, perhaps, less certainty about what the future may hold. No doubt at the time of the first industrial revolution, commentators were similarly uncertain about the consequences of steam driven machines. Nevertheless, countries have been - and continue to be - buffeted by economic, demographic, and technological turbulence over the past twenty years which has, inevitably, placed pressure on VET systems. That pressure is, at a high level, simply one of being able to anticipate change so that VET remains relevant and attractive to its participants and consumers. But how can the responsiveness of VET systems across the EU to sometimes rapidly changing external environments be gauged? This is made all the more arduous

given the amount of variation that exists between, and sometimes within, countries, whether one is looking at their respective histories and structures, participation levels, or the esteem in which the populace holds those systems. VET systems may be subject to similar external pressures over time, though not identical ones, but they are doing so from very different starting points.

From a system perspective, an understanding is sought of the way in which external factors shape the supply of skills. Much is already known about the process of skills anticipation in place across Europe and to a large extent these approaches are designed to diagnose and predict skill demand. But much less is known about the way in which the system itself, however configured, responds to whatever signals it receives about demand. Here the interest is in the mix between policy, institutions, and behaviour on the ground (by learners, employers, and training providers). In essence the institutions responsible for VET supply will mediate between policy and behaviour by influencing or interpreting the intent of policy into a series of actions. These actions, however, may be more in alignment with their own interests than those of the policy-makers, and there will be 'friction' at each level.

Analytically, then, this can be addressed at a number of levels. At the highest level, one can try to conceptualise the nature of policy discourse. It is here that the 'varieties of capitalism' approach has had some success in classifying countries on a continuum between neo-liberal and more statist policy regimes (cf. Hall and Soskice, 2001). This analysis provides the basis for understanding the VET policy interventions that have been introduced over the recent past as these are likely to be shaped by the wider policy context in which decisions are made. Policy, of course, does not necessarily result in the changes sought actually taking place. One needs to look at the way the various institutions interpret and act upon the policies and, from there, look at the outputs and outcomes this brings about. Policy failures for one reason or another will result in further policy initiatives as will the ongoing need to update various elements of the VET system. Further policy reform sometimes results in institutional reform and reconfiguration. Accordingly, a dynamic policy context can also be reflected in a particularly fluid situation regarding the institutional architecture of the VET system.

Conceptually one can think of a series of layers:

- policy regime (the ideological dimension that tends to colour all policy making)
- VET policy development
- institutional interpretation and action; and
- the observable behaviour of the groups at which policy is targeted.

Not every aspect of VET policy can be analysed over a twenty or thirty-year horizon, so the scope of the study needs to be reined in. By closing in on those issues that are pertinent to the VET debate in the EU at the moment, a focus for the study is readily provided. Here one can address the issues that lie at the core of the European Commission's recent policy announcements on skills, especially the New Skills Agenda and its emphasis on achieving an improved match in the supply of, and demand for, skills in order to improve the competitiveness of the EU economy. As noted above, countries within the EU have taken

very different routes to achieving this outcome. For instance, in some countries a traditionalist (or neo-liberal) approach is more to the fore where the emphasis is upon a relatively high degree of school-based learning, concentrating on the acquisition of disciplinary knowledge. In others, a technical instrumentalism emphasises equipping people with the technical skills to work in a specific occupation. These perspectives on the role of VET are evident in differing policy regimes (e.g. neo-liberal versus statist), and they may be combined with differing institutional configurations. This approach then provides the lens through which to analyse the responses of countries to various external factors.

Whether VET systems are better able to withstand the various external pressures to which they are subject, becomes, if you like, the dependent variable. It is the way in which the tension between being able to flexibly respond to external stimuli and maintaining stability in the system is resolved that provides the focus for the analysis. Repeated change, especially when it is swinging between different poles, can result in past achievements being devalued or, in some instances, the entire VET system being regarded as dysfunctional. On the other hand, moribund systems which are unable to adapt to change may well bring about the same result.

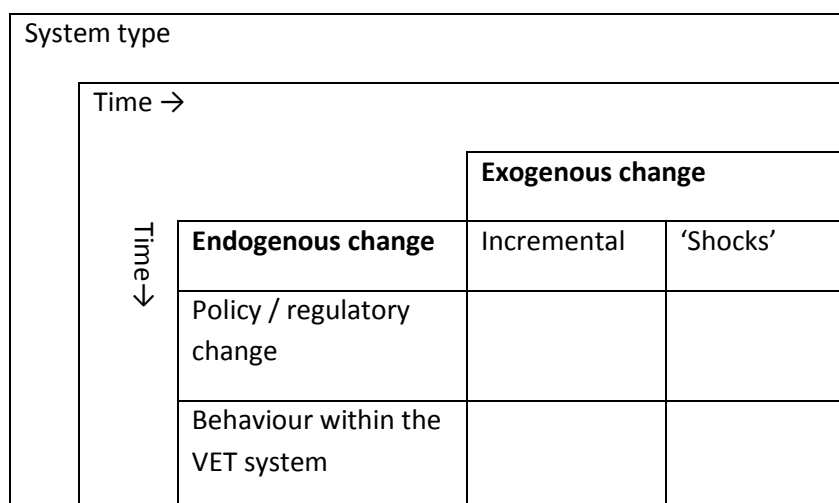
The above theory of change represents a technical-rational model of VET system responsiveness to external events. Change, however, can also be generated from within a system because of feelings that the system is not delivering all that is required of a VET system (as defined by different stakeholders). VET systems need to address a variety of challenges, which include:

- delivering learning that can support both social inclusion and improving productivity and economic competitiveness;
- structuring initial VET in a manner that allows it to provide an efficient transition between education and work, offers recognised career pathways, but also fosters the development of career adaptability, while also providing a wider platform for learning throughout adult life. Again this is a very difficult set of tasks even if the labour market is buoyant.
- trying to achieve a balance of responsibility between the education system and employers for different types of VET provision and different sorts of learning.
- designing a system architecture that is easy to understand, transparent, flexible and accountable.
- building progression routes through the VET system that can accommodate changing patterns of demand and shifts in individuals' career pathways – again fostering career adaptability is vital in this respect. This tends to emphasise the need for flexible learning pathways, lifelong learning, and the permeability of education and training systems..

In simple terms the analytical framework is based on understanding how the endogenous features of VET systems interact with the various changes in the external environment over which it has relatively little influence (exogenous change). The nature of the interaction will change over time and according to the national policy context (c.f. the 'varieties of capitalism')

discourse). Figure 2.3 schematically outlines the framework. For each national VET system one is looking over time at the interplay between exogenous and endogenous factors, recognising that a distinction needs to be made between regulatory or policy change and the behaviour it results in from various actors within the system.

**Figure 2.3: Schematic outline of analytical framework**



Source: Authors

Indeed, this link between policy change and actors' behaviour is crucial for understanding policy change within VET systems. Regard needs to be given to the fact that within each VET system there are not only the various "horizontal" layers referred to above, but also at least two further **institutional layers**, typically (i) the region or municipality and then (ii) the training providers and employers themselves. These layers might react in different ways to similar policy inputs "from above" depending upon their own structures, processes, norms and values as well as those within the system as a whole. Regard also needs to be given to the existence of "vertical" layers comprising the different stakeholder groups or **'policy and practice communities'** involved in the system, e.g. employers and teachers. Each of these policy communities possesses its own institutional set-up, including norms and values, which may position them in different ways in respect of the same policy. This is likely to affect policy outcomes.

Furthermore, if the change model is conceived as cyclical, then at the broadest level policy outcomes feed back into the policy-making process. But equally, feedback mechanisms may also exist at other horizontal levels, and may influence the way in which policy is implemented and therefore the outcomes. The extent to which this takes place is likely to reflect to some extent the degree of autonomy within systems. In other words, where there is much de-centralisation of roles and responsibilities, there may be greater variation in how policies are implemented and their outcomes.

## 2.5 Conclusion

One can identify a number of external changes – some of them incremental, some of them shocks – that have some bearing on the VET system at different levels. VET systems respond in a number of different ways and at different levels. The underlying premise, as

evidenced by the 'varieties of capitalism' school of thought, is that VET systems and their policies reflect wider social and economic structures and processes. Accordingly, systemic changes may be witnessed across the entire range from whole system adjustment (as has been taking place in ex-communist countries since the demise of the USSR) to a myriad of smaller adjustments in VET programme content. Within this one can view how the influence of the system switches between different levels over time (and why) and the impact this has upon VET policy making. It is important within this to consider behaviour. Agents of change will act in different ways depending upon their own agendas and client groups. Outlined above is the general approach that is being adopted to analysing the way in which external factors influence the VET system in countries. It is the country case studies that provide the detailed information about the way in which external factors have been accommodated or not, given that it is at this level that it is possible to observe the process of policy making and the factors that influence it in practice.

## Changes in the external environment

### 3.1 Introduction

Looking back over the past thirty years or so and the events that transpired, it is apparent that these have proved to be, in equal measure, both invigorating and challenging times for policy makers across Europe. Technical change, notably that stemming from digital innovation, has been increasingly seen to have a transformative impact on production processes. Robots and artificial intelligence (AI), as encapsulated in the concept of Industry 4.0, have the potential to significantly increase productivity and competitiveness and create new types of economic activity. Previous waves of technical change, such as the rapid diffusion of microelectronics in the 1980s, led to the creation of new forms of employment the type and content of which could have been barely imagined in the decades before. It was seen to be a source of employment growth. But this time around, there are perhaps more uncertainties about the employment impact with some commentators fearing that robots and AI will bring about a net loss in employment (Freeman, 2015). It is also worth noting that it is not only the character and magnitude of change which are significant, but also the speed of change. It took a century to make a transition from an agricultural to manufacturing economy, and around sixty years for channelling jobs from manufacturing in to services. The fourth industrial revolution may happen in less than two decades, giving both learning providers and policy makers much less time to adapt.

At the end of the 1990s, Europe's economy had largely recovered from the relatively deep recession many countries experienced at the start of the decade. Globalisation, in particular the role played by China in stimulating growth, presaged a relatively benign period in world economic history. All of which contributed to the intensity of the economic shock unleashed on the global economy in 2007; a shock or crisis from which many economies in Europe and beyond are still recovering. Arguably in the post-crisis period globalisation is regarded a little more cautiously than hitherto in some countries. Technical change is important here because digital technologies facilitate the production of goods and services via networks spread across the world. Whereas in the past Europe might have been reasonably confident that it could retain a significant share of the high skill, high wage jobs to be found in global production networks, that may no longer be so true in the post-crisis period. Perhaps there is more recognition of the potential threats posed by globalisation and offshoring even if, on balance, they are seen to confer more benefits than costs on Europe's economy.

Human capital has played a large part in Europe's response to the economic and technological challenges it has faced over recent decades. Raising skill levels and simultaneously ensuring that they are better matched to current and future needs of the economy has played a central role in policy making at both pan-European and country levels. Demographic change has complicated this to some degree. With ageing populations and falling birth rates, simply depending upon declining numbers of young people to acquire many of the new skills needed to sustain economic growth in the future, has become a less feasible policy response. Priority has been given to increasing the volume of supply of those

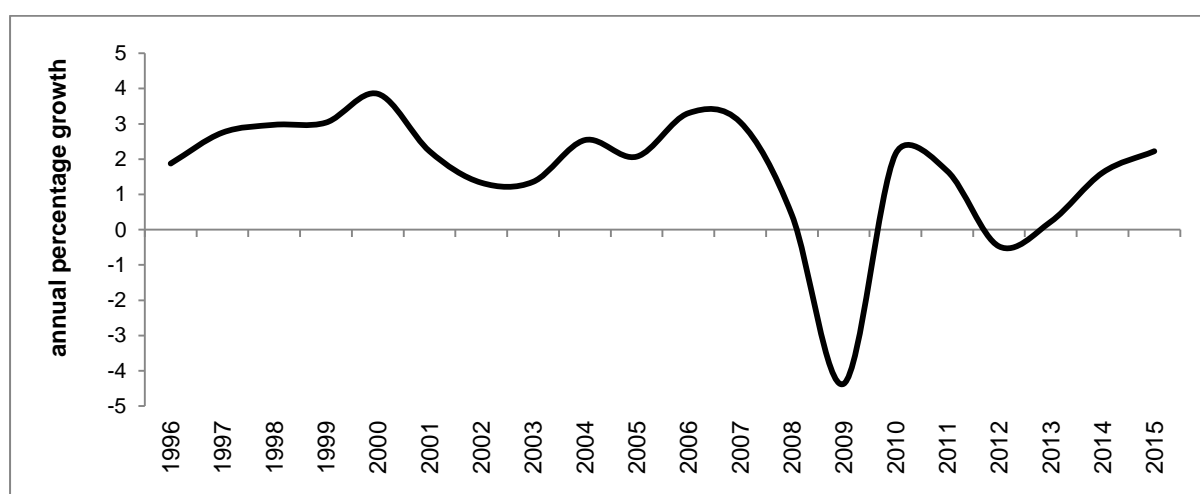
skills upon which the labour market confers value and where demand exceeds supply. One consequence of this focus is that less attention has been given to tackling skills obsolescence amongst the adult population, who will spend longer in economic activity than in previous years. The free movement of labour within the EU and EEA might even out the demographic pressures to some extent across Europe, as might the recent heightened inflow of migrants from third countries; though this latter development poses a distinct set of VET challenges in its own right. Yet, whether they are able to do so effectively is a moot point. The EU has sought to address the issues set out above through a range of strategies and tools as described in section 4.1.

In the remainder of this chapter further information is provided about the external environment within which VET policy has been shaped and the implications of the various changes for the delivery of VET.

## 3.2 The economy

At an aggregate level the business cycle will determine the overall level of labour demand and thereby that of skill. It is apparent from Figure 3.1 below that the EU economy has been a rollercoaster over recent decades. As will be noted below because of its impact on employment levels, especially youth unemployment, it can place acute pressures on VET systems to respond.

**Figure 3.1: Year on year growth in real GDP in the EU-28, 1995 -2005**



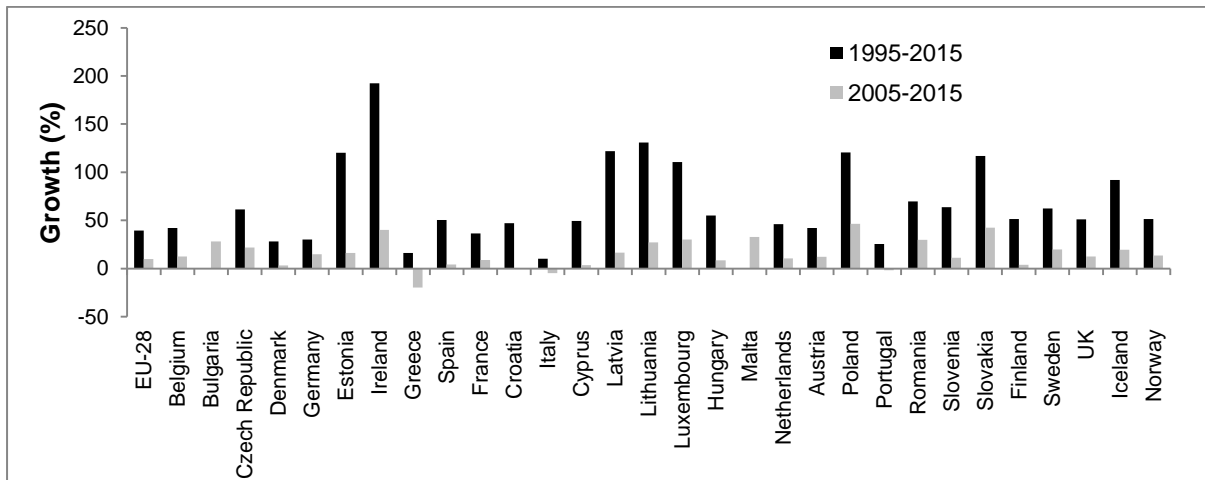
Source: Eurostat GDP and main components (output, expenditure and income) [nama\_10\_gdp]

The variation in growth rates across the EU is marked. This can be discerned from looking at long-term growth rates by country (see Figure 3.2) and, equally, from the sharpness of the cycle judging by movements in real GDP growth rates over the period of the financial crisis (see Figure 3.3). The principal mechanism through which these changes affect VET will be via employment demand. But there are a related set of issues that need to be considered, such as:

- some sectors, such as manufacturing and construction (that employ significant numbers of VET graduates) recover more slowly from the impact of economic downturns;
- where the external environment becomes more complex and unstable, skills anticipation becomes increasingly difficult; and
- the resources for VET can be reduced as part of governmental strategies to reduce public spending.

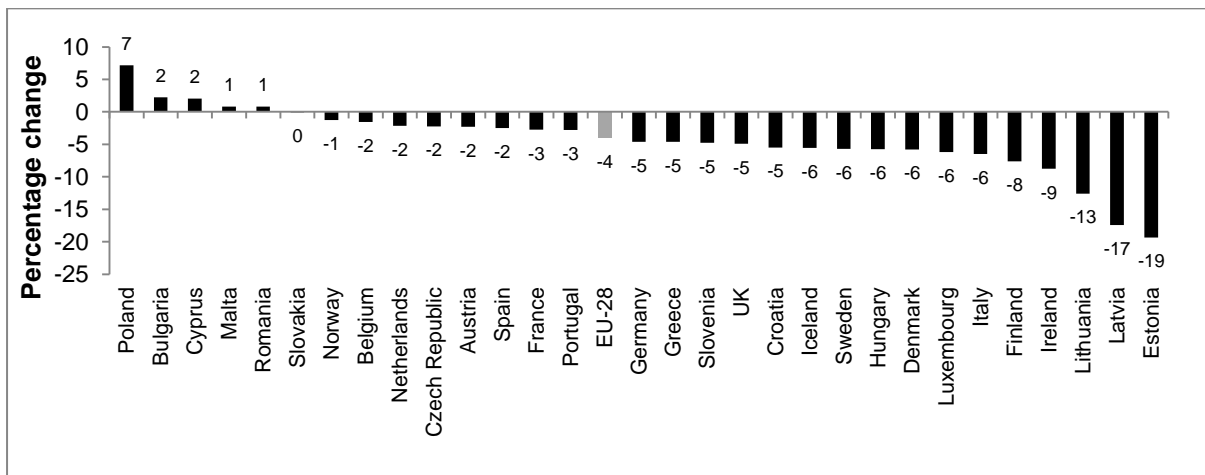
The above, though short-term in some respects, have a cumulative bearing on VET systems' need and capacity to respond to the external environment.

**Figure 3.2: Long-term percentage change in real GDP, 1995 - 2005**



Source: Eurostat GDP and main components (output, expenditure and income) [nama\_10\_gdp]

**Figure 3.3: Percentage change in real GDP, 2007-2009**

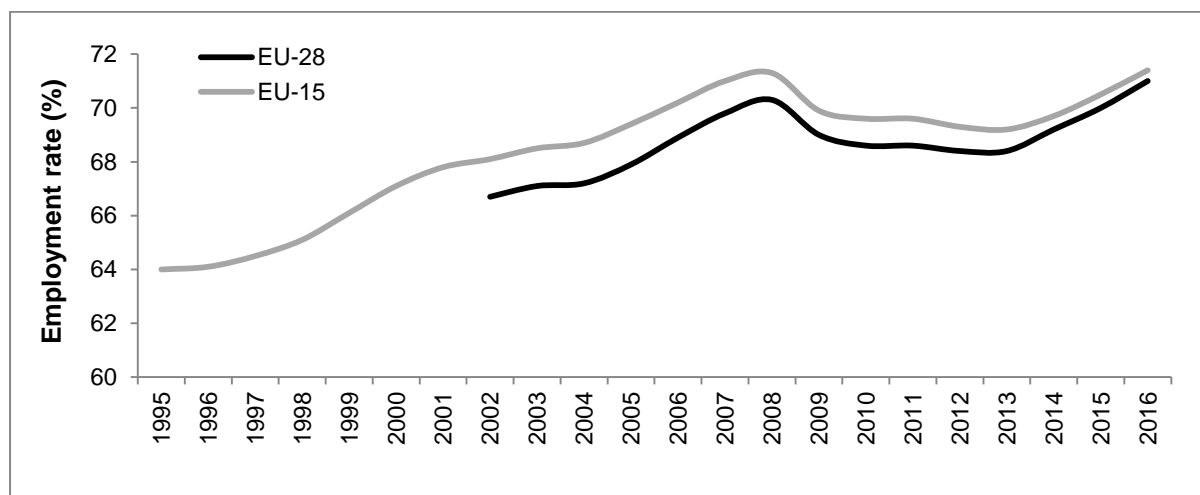


Source: Eurostat GDP and main components (output, expenditure and income) [nama\_10\_gdp]

After a steady increase over many years, the employment rate in the European Union for citizens aged 20 to 64 years reached a peak in 2008 of 70.3 per cent (see Figure 3.4). In the years following, employment rates declined reflecting the impact of the economic crisis

on the labour market. In 2013, the employment rate fell to 68.4 per cent, began to increase in 2014 and in 2015 was 70.1 per cent which is almost at it 2008 level, though it is still significantly below EU28 employment target of 75 per cent.

**Figure 3.4: Employment rate (%) age-group 20 to 64, EU-28, 2002-2015**



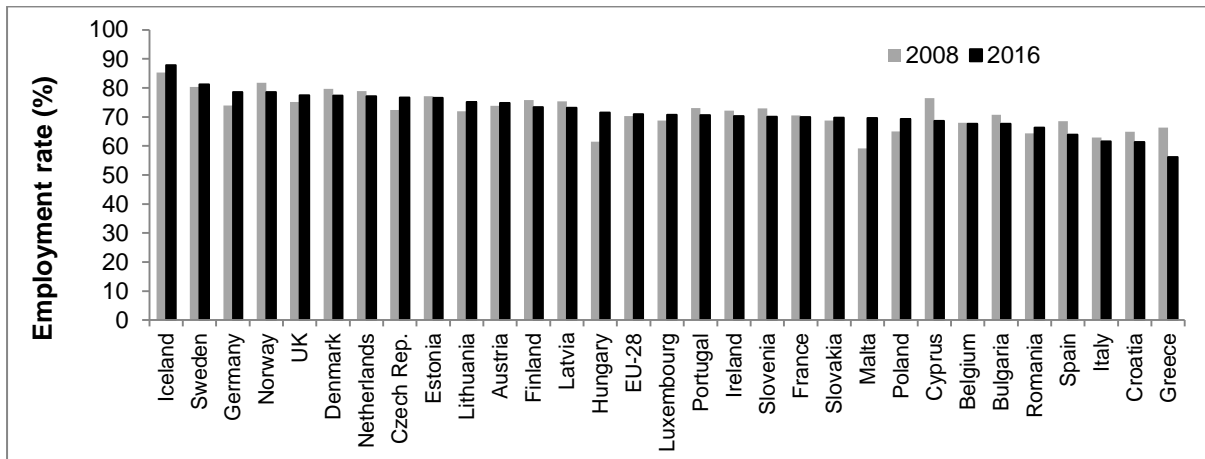
Note: 2020 target is for 75% of the population aged 20 to 64 to be employed by 2020.

Source: Eurostat Employment rates by sex, age and citizenship (%) [lfsa\_ergan]

The decline in employment rates from 2009 to 2013 largely affected young people, citizens with low levels of educational attainment, and non-EU nationals. Older people (55 to 64 years old) in the workforce were also at risk as the employment rate for their group grew but remained lower than that for younger people. Gender differences in employment became smaller in the years since 2002 with the largest gap of 14 percentage points occurring for those in age group 30 to 34 years. These age-related gender gaps may be considered to be a combination of a cohort effect for women who did not participate in the workforce moving up the age distribution, or a lack of care facilities for children or dependant older adults. The EU employment package 'Towards a job-rich recovery' made investment in skills a priority, including improvements to the monitoring of skill needs and enhanced cooperation between the workplace and educational providers. Specific measures targeting young people include support for the transition to work through youth guarantees, quality traineeships and activation measures for youth mobility. One effect of these measures is to extend the period young people are held in transition to permanent employment, especially in countries with high levels of youth unemployment.

The employment rates across the 28 Member States typically show a north-south divide (ranging from 54.9 per cent to 80.5 per cent, see Figure 3.5) both at a country level and at the level of regions with many of the highest performing countries also showing high regional employment rates (e.g., Germany, Sweden, the UK, Netherlands and Austria). Countries with employment rates under 65 per cent included Spain, Croatia, Italy and Greece. The employment rates for the EFTA countries were high with Iceland's exceeding the EU Member States.

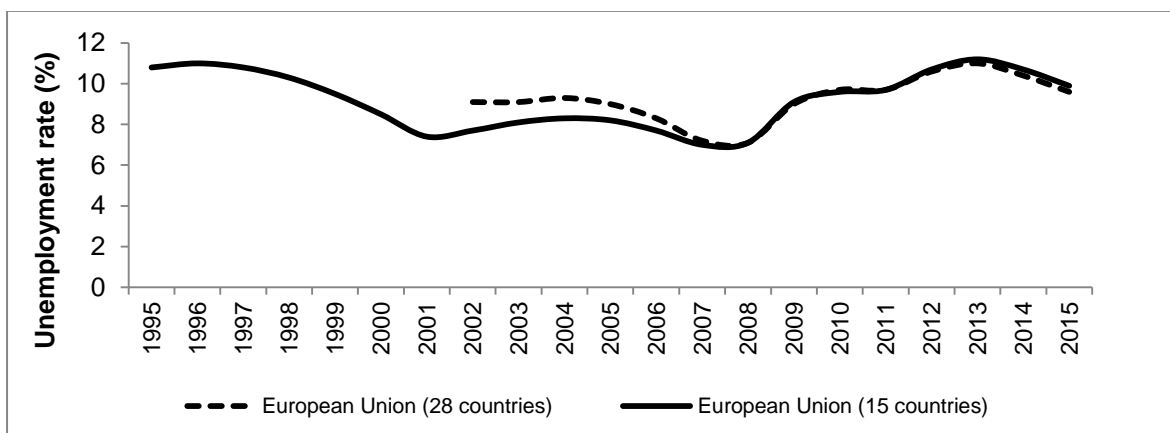
**Figure 3.5: Employment rate (%) age-group 20 to 64, by country, EU-28, 2008 and 2015**



Source: Employment rates by sex, age and citizenship (%) [lfsa\_organ]

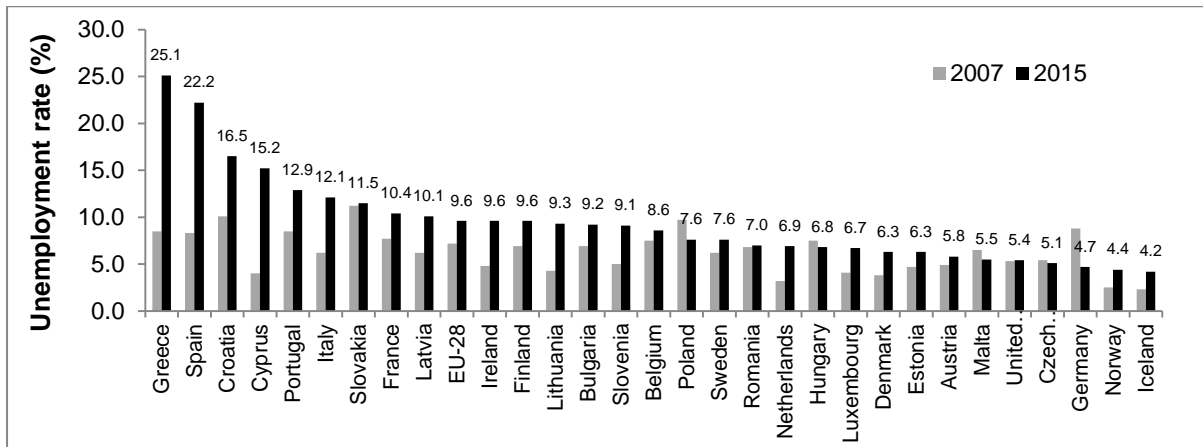
Figure 3.6 shows the unemployment rate across the EU in the period since 1995. The EU economy has had a prolonged period of growth over the latter half of the 1990s and the early part of the 2000s which was reflected in a fall in the rate of unemployment (see Figure 3.6). What is perhaps notable about the trend in unemployment is that given the depth of the recession in 2007-2009, unemployment rates did not rise as high as previous recessions would have suggested in many countries. It could be argued that the reasons for this trend lay principally outside the remit of labour market or education policies. For example, the huge public stimulus allied to the rescue of collapsing banks prevented wider consequences for economy, thus saving countless jobs from destruction. The same may be said for the role of quantitative easing etc. These effective policy responses could also have been helped by a tendency for employers to hoard skills that they might have been concerned about recruiting when the economy recovered. Of course not every country escaped as lightly as the data in Figure 3.8 might suggest; variations by country are large as shown in Figure 3.7.

**Figure 3.6: Unemployment rate in Europe, 1995 to 2015**



Source: Eurostat Unemployment rates by sex, age and nationality (%) [lfsa\_organ]

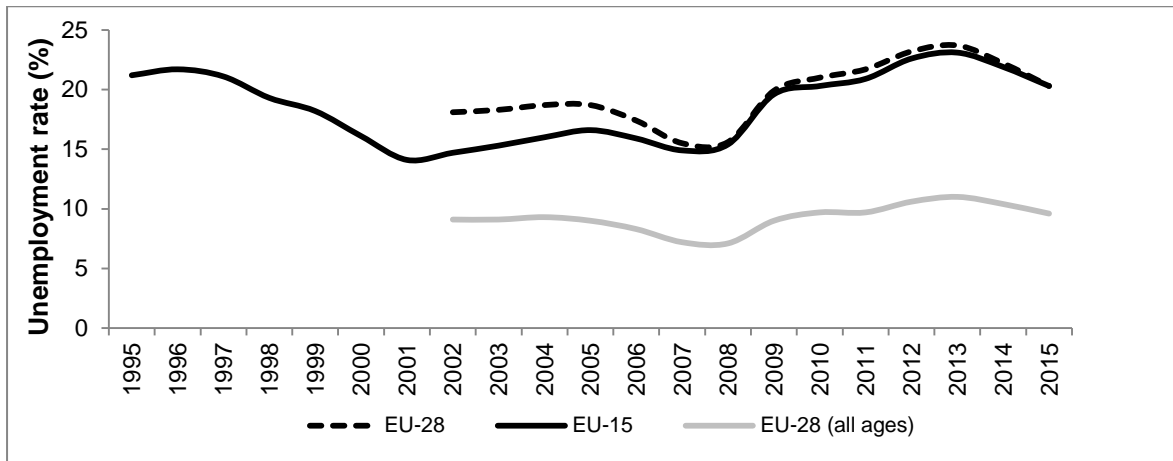
**Figure 3.7: Unemployment rate by country, 2015**



Source: Eurostat Unemployment rates by sex, age and nationality (%) [lfsa\_urgan]

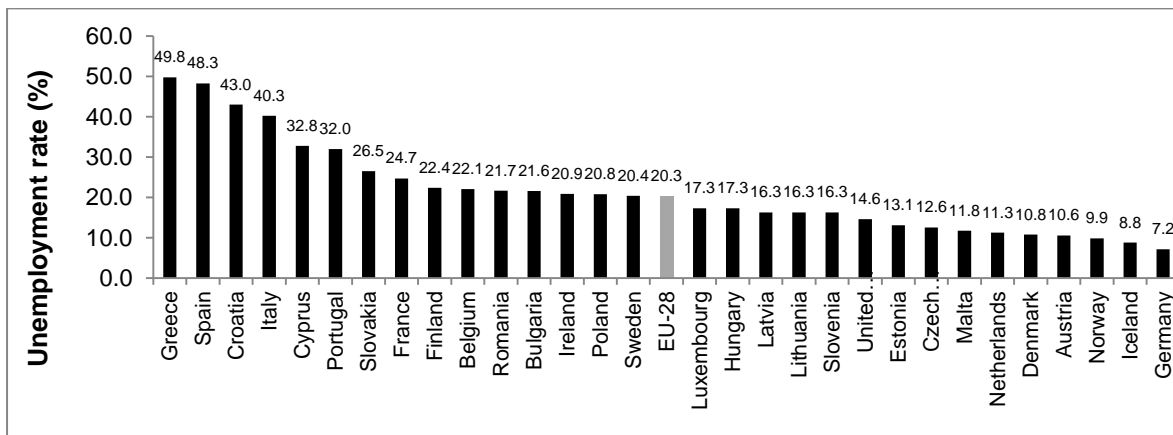
It is known that downturns in the economy adversely affect young people in the labour market. A process of ‘bumping down’ typically occurs: people looking for work will be prepared to take jobs for which they are over-qualified and while those who would normally have taken those jobs are squeezed out (Reder, 1955). It also poses problems for young people as they are in competition with experienced workers looking for employment, and less well placed simply because they lack experience. Figure 3.8 shows the youth unemployment rate over time. It is around twice that of the labour force overall and showed a marked rise following the recession in 2007- 2009. Across the EU as a whole it has risen to levels in the post-recession period similar to those observed over the mid-1990s. Again the variation between countries is substantial as shown in Figure 3.9. Around half of all youths in Greece were unemployed in 2015 compared with 7.2 per cent in Germany and 8.8 per cent in Iceland. In some respects the danger facing young people in some countries is that they will be unable to find the jobs and forms of career progression that their counterparts ten or twenty years previously enjoyed. In this way their long-term economic prospects are affected. Something similar was observed in the early 1990s in Japan when that country’s economy was stagnating. The generation of young people who graduated in the early 1990s did less well than those who graduated before and after (Reiko, 2006). The implications of this for VET systems is uncertain; over-time if people are unable to obtain a return from various forms of VET it can send a powerful signal to the next cohort of would-be VET students.

**Figure 3.8: Youth unemployment rates, 1995 - 2015**



Source: Unemployment rates by sex, age and nationality (%) [lfsa\_urgan]

**Figure 3.9: Youth unemployment rates in Europe, 2015**



Source: Unemployment rates by sex, age and nationality (%) [lfsa\_urgan]

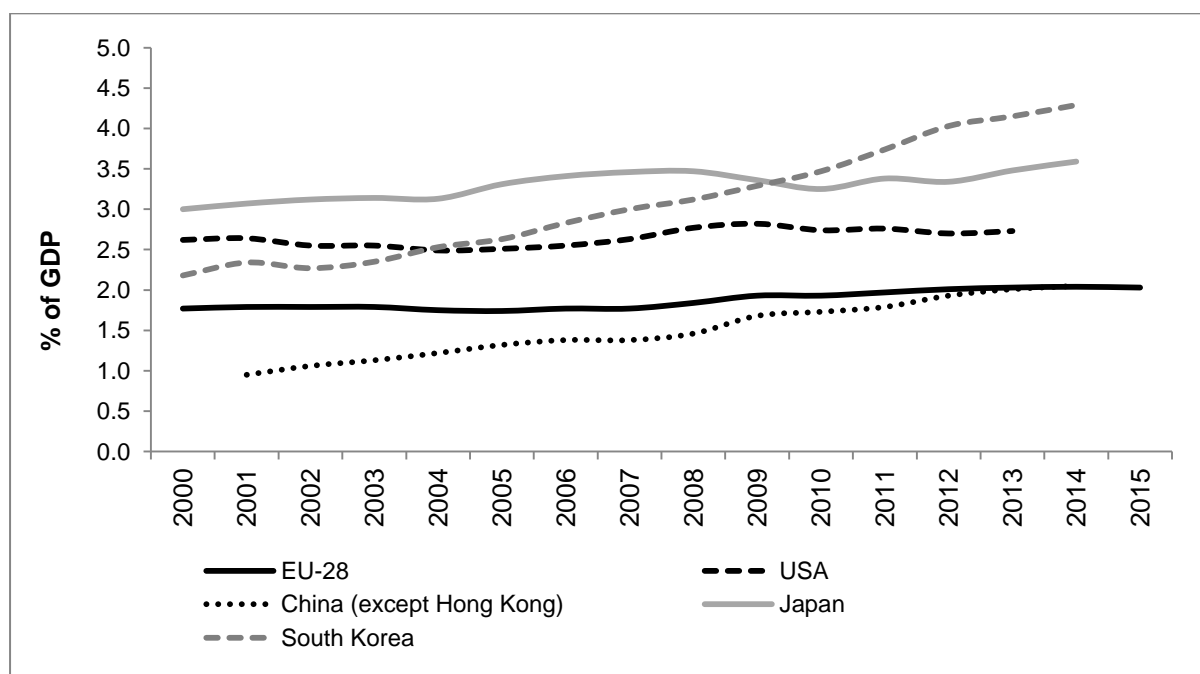
The impact of weak economic conditions on VET systems is a complex one. Employers' decisions to continue hiring trainees / apprentices will be determined in part by their views of about the future flow of benefits that are likely to follow from making an investment in these forms of IVET (Brunello, 2009). Arguably the depth of the recession at the end of the 2000s and the sluggish growth that followed is a disincentive for employers to train. Unless a system can be found that minimises the employers' financial exposure to the risks of training or acts to share the costs of training between all employers (e.g. training levies) and the State, then employers may still be reluctant to train. There is evidence that continuing training might also be affected in recessionary periods both quantitatively and qualitatively: i.e. it tends to be essential, basic skills training that employers are willing to continuing funding (Mason and Bishop, 2010). Individuals, however, might be more prepared to invest in VET – or any kind of education for that matter – in order to improve their chances in a labour market where there is an excess supply of labour. In such instances, the challenge for the skills system is to identify those courses / programmes that will provide the best

return to the individual making the investment. Hence the emphasis now placed on skills anticipation processes that incorporate a forward looking aspect.

### 3.3 Technology, economy and employment

The discussion about the economy in the preceding section was principally about cyclical effects and how it affects the demand for labour. In the post-recessionary period Europe has had to meet the challenge of stimulating employment growth and reducing levels of unemployment which reached alarming levels in some countries in the immediate aftermath of the economic crisis. Technology is seen as a driver of economic and employment growth but it also brings about structural shifts in the demand for employment and skills. Embracing technical change is embedded within EU-policy. For instance, two objectives of the Europe 2020 strategy for smart growth include: (i) job creation through increased industrial competitiveness, labour productivity and the efficient use of resources; and (ii) finding optimal solutions to challenges for society that include climate change and clean energy, security, and active and healthy ageing. These challenges require substantial resource allocation, but also offer opportunities for developing innovative products and services. The strategy sets the target of improving the conditions for innovation, research and development by means of an increase in combined public and private investment to 3 per cent of GDP by 2020. But as Figure 3.10 reveals R&D expenditure as a percentage of GDP (and in monetary terms) is behind that of other key players in the global economy. The implications of this for future employment and skill demand, given that Europe increasingly operates in a global market, remain to be seen.

**Figure 3.10: Gross domestic expenditure on R&D (% of GDP), EU-28, 2000–2014**



Source: Total intramural R&D expenditure (GERD) by sectors of performance [rd\_e\_gerdtot]

The interest in technical change is its impact upon the demand for skills. This is seen to operate in a number of ways:

- the direct impact on the demand for skills related to the introduction of new products and services;
- the wider, less direct impact with regard to the effect it has upon the organisation of work; and
- globalisation.

Innovation leads to the development of new products, services, and production processes, including the automation of production systems that were previously labour intensive. The pace of technical change is substantial. The ICT revolution which commenced in the 1970s – the second industrial revolution - has continued apace and is likely to continue to do so in the future, especially with the development of key enabling technologies (KETs) including nanotechnologies, nano-electronics, biotechnology, *etc.* (European Commission, 2015b), and the digitisation revolution (cf. Industry 4.0). Environmental change, and the technological response to it, also has the capacity to create new demands for product and services. Renewable technologies are the most obvious example where there has been an increased demand for new products (e.g. production of off-shore wind turbines) and services (e.g. marketing green energy supply). Depending upon the direction of policy in the future and the price of energy sources with high carbon content, the environmental, low-carbon policy agenda also has substantial scope to affect the demand for future products and services. Foresight studies reveal a number of common trends with respect to the future of technology, including the rise of on-demand manufacturing incorporating the production of more personalised products, the emergence of regenerative medicines, use of new materials, and such like. Much importance is attached to creating an infrastructure in which innovations can be developed and take root. This includes developing links between industry, including small businesses, and research institutions (including universities). In particular, attention has been drawn to the need for, in future, higher education's capabilities to be harnessed in business led research and innovation. This reflects a general consensus in many future-looking studies that Europe's competitive advantage is its creativity and it will be creative skills sets which allow ideas to be generated and turned into the products and services which will be increasingly in demand in the future.

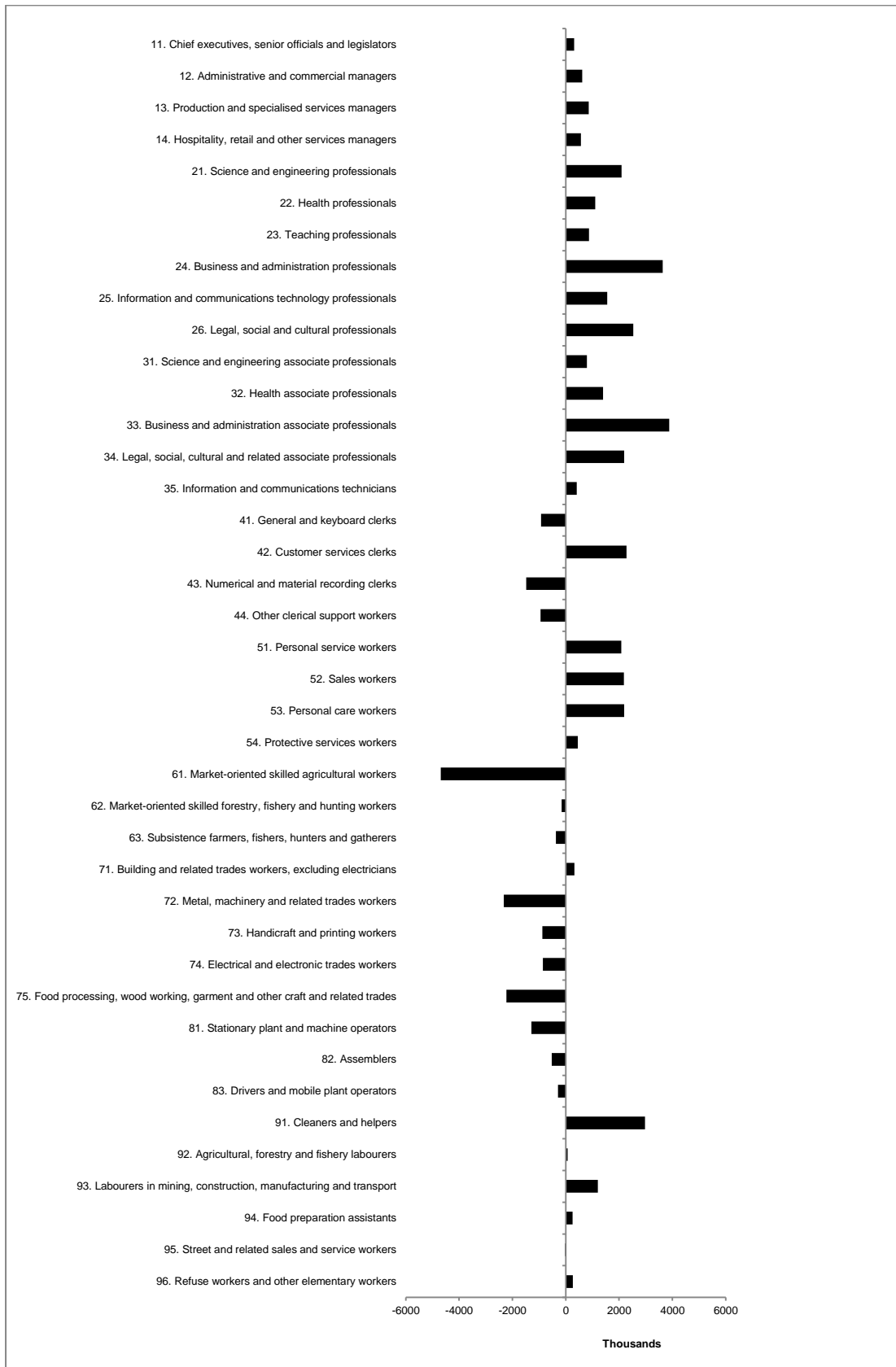
From an innovation perspective the above points to an increasing demand for relatively high level skills (often related to STEM subjects). But there are wider impacts to consider. The explanation, which has received the most attention, is the theory of task-based technological change (TBTC) associated with Autor et al. (2003). Technological change is seen to have most impact on routine jobs, which do not require their incumbents to respond to outside stimuli. Accordingly, their jobs can be replaced by technology, which automates the tasks they once carried out. Higher level skilled jobs which require their incumbents to utilise cognitive skills which cannot be readily substituted by automation, and lower skilled jobs which require their incumbents to interact with customers – such as deliveries - are similarly not readily substituted by automation. But the once skilled jobs in the middle of the occupational structure are subject to substitution by the automation which drives productivity change in the sector. Goos and Manning (2007) observed that routine jobs, susceptible to being replaced by automation, are typically found in the middle of the occupational structure:

administrative jobs and skilled production jobs. Higher level skilled jobs which require their incumbents to utilise cognitive skills cannot be readily substituted by automation and lower skilled jobs, such as those found in hospitality, require their incumbents to interact with customers such that they too are not readily substituted by automation. Evidence suggests that this trend towards a hollowing out of the skills structure is rather more marked in countries that have more market based economies such as in Ireland and the UK compared with other European countries that are less market oriented (Eurofound, 2016). Nevertheless, the evidence from Cedefop's projections of future skill demand suggests that there will continue to be a degree of 'hollowing out' in the occupational structure in the period to 2025 (see Figure 3.11). It is perhaps with reference to relatively high level jobs (managers, professionals, and associate professionals) that one will see technical change have an impact on skills, especially in those jobs that have a substantial science, technology, engineering or mathematics component. The projections, however, are based on a continuation of past trends into the future. The pace of technical change is such, perhaps, that the past is becoming a less reliable guide to the future than it once was.

Until recently the received wisdom in economic circles was that technical change has a beneficial impact on economic growth and employment. It tends to boost increases in productivity and workers' incomes (Simon, 1965). A more pessimistic picture, though speculative, suggests that technical change in the future, via the diffusion of robotic and AI technologies, will have an impact on employment levels overall and affect both the demand for relatively high level and relatively low level skilled workers (Freeman, 2015). These technologies have the capacity to reduce the demand for both high level and low level skills (Cedefop, 2016).

It is also apparent that the technical change, especially the digital revolution, has the capacity to change the nature of employment relationships. This is seen most readily in the rise of crowd sourcing where digital platforms have the capacity to more readily link the suppliers of services to those with a demand for them. There are some insights into how online platforms might affect the employment of people in different occupations. Professionals can potentially maximise their earnings by serving a wider range of clients than hitherto; but there are some risks if this results in higher levels of self-employment simply because this group sometimes has more difficulty in engaging ongoing professional development. Less skilled workers similarly may increase their access to employment through online platforms; but again there are risks that this might result in the increasing precariousness of their employment position if they too are pushed into self-employment (i.e. the Uberisation of work) (Huws et al., 2016; European Commission, 2016b; Hogarth and Papantoniou, 2017). Again the issue of how these workers gain access to skills training is of legitimate policy interest. This may all be too pessimistic. The point is simply that more needs to be known about the types of job that are affected by online platforms, how those jobs are transformed (if at all), and what the skill implications are. In this way it is possible for the New Skills Agenda and related policy initiatives at EU and national levels to be focus more readily on where specific interventions are needed if the wider goals of policy are to be realised.

**Figure 3.11: Projected Changes in the occupational employment 2000 to 2025  
(employment gain and loss)**



Source: Cedefop Skills Projections Database

Technical change also has a link to globalisation which in turn feeds through to which skills are demanded and in what locations. In a global economy which has seen many trade barriers lowered, if not removed, firms have a greater degree of choice regarding the location of production. With the development of ICT it is increasingly possible for products and also services to be produced anywhere in the world and exported. ICT allows complex supply chains to be created which are able to take advantage of the relative advantages of a particular country. Companies have a degree of choice about where to locate various elements of the production process, such as, research and development, product design, assembly, sales and marketing, etc. This choice is likely to be determined by a range of factors including the regulatory environment, but the availability of labour and skills is likely to be a key determinant. The impact of globalisation can further hollow out the occupational structure with many production jobs increasingly undertaken offshore. This may have the impact of redistributing work within Europe, but the labour cost advantage in countries such as Asia and South America means that labour can be transferred there.

Though patterns of scientific literacy found in OECD studies such as PISA and the IEA's TIMSS studies suggests substantial variation in the quality of science education across countries, the EU generally has a good education system and produces a growing number of tertiary education graduates in science and technology. Comparing 2014 with 2008 for the EU-28, the number of tertiary graduates in those subjects grew by around ¼ from 14.5 to 18.3 graduates per 1000 persons aged 20 to 29. There is, however, likely to be some double-counting of graduates due to the 'Bologna effect' whereby students with both a masters and bachelor degree are counted twice as tertiary graduates. Similarly the low levels of science graduates in Cyprus and Luxembourg may well reflect the number of students who follow their studies overseas.

Access to broadband and digital skills is a necessary requirement for knowledge diffusion and functional digital literacy underpinning VET and skill development across all areas of society. Across Europe Internet access has improved substantially in recent years (in 2015 there was 95 per cent availability for enterprises and 80 per cent of households), though 45 per cent of the EU population are viewed as having insufficient digital skills, with those citizens having at least basic digital skills ranging from 26 per cent in Romania to 86 per cent in Luxembourg. Countries which exceed the EU average level for digital literacy include the Nordic countries, Luxembourg, the Netherlands, the UK, Germany, Estonia, Austria, Belgium, France, the Czech Republic and France. Large sections of eastern and southern Member States tend to show limited digital skills, e.g., for Romania and Bulgaria, 74 per cent and 69 per cent of the population, respectively, report no or limited levels of digital competence.

Results from the OECD's PIAAC study are also challenging.<sup>(5)</sup> PIAAC assessed adults' proficiency in a range of skills including literacy, numeracy and problem solving in "technology-rich environments". The findings show that in Europe individuals with vocational upper- or post-secondary non-tertiary education tend to do better in the labour market than

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<sup>5</sup> OECD Survey of Adult Skills (PIAAC); see <http://www.cedefop.europa.eu/en/publications-and-resources/statistics-and-indicators/statistics-and-graphs/adult-skills-and-vet>

general education graduates, but that their level of development of information-processing skills, such as literacy and numeracy, lags behind. PIAAC measures skills levels on a proficiency scale and Level 3 could be regarded as the level required for adults to be fully participant in the labour market, as well as in education and training, and social and civic life.<sup>(6)</sup> In many European countries, only one third of adults aged 25-64 with vocational education have proficiency Level 3 on the PIAAC literacy scale; only one in twenty make it to Level 4/5. This suggests that many individuals are ill-equipped in terms of basic skills development for the occupations increasingly required in 21<sup>st</sup> century labour markets.

### 3.4 Demographic Trends

Demographic trends pose a variety of challenges to VET systems across Europe. This has already been alluded to in the section on employment. In particular there are a number of elements that have implications for VET systems (BIS Foresight, 2012):

- increased longevity – and the pressures on pension schemes – will require people to work longer;
- with an ageing population there is likely to be an increase in demand for people to work in jobs that are related to ageing (i.e. health and social care) and also in the production of goods that an ageing population will require (e.g. ambulatory aides, etc.);
- given changes in the dependency ratio, unless it proves possible to find new sources of labour supply (e.g. via migration) or a means to substitute technology for labour, then there will be labour / skill shortages;
- high levels of replacement demand due to large numbers of workers in some sectors with many VET graduates reaching retirement age mean there may still be opportunities for new entrants even in occupations in decline;
- with declining youth cohorts in many countries there is increased competition between the general and VET streams for students.

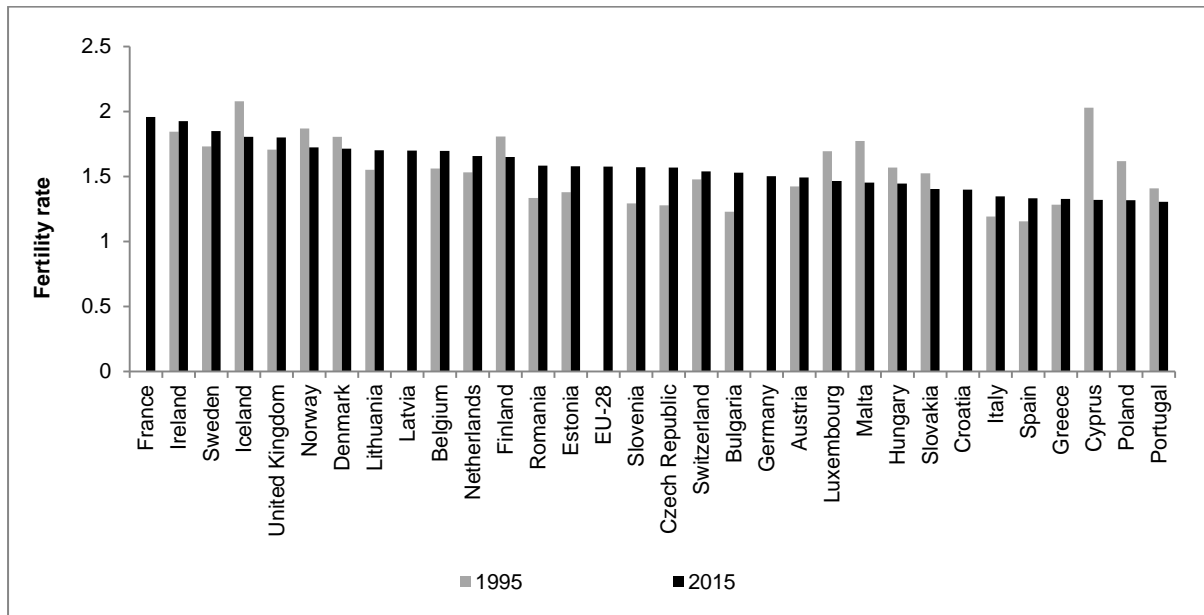
The general trend is that of Europeans to have few children. The fertility rate measures the mean number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year. A total fertility rate of around 2.1 live births per woman is considered to be the replacement level in developed countries: in other words, the average number of live births per woman required to keep the population size constant in the absence of migration. The fertility rate is below replacement levels: 1.58 in 2015 and has been so for some time. There is some variation between countries: in 2015 the fertility rate was highest in France at 1.95 and lowest in Portugal at 1.30 (see Figure 3.12). But more recently, the fertility rate has

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<sup>6</sup> Adults performing at Level 3 on PIAAC proficiency scale can understand and respond appropriately to dense or lengthy texts, including continuous, non-continuous, mixed, or multiple pages. They understand text structures and rhetorical devices and can identify, interpret, or evaluate one or more pieces of information and make appropriate inferences. They can also perform multistep operations and select relevant data from competing information in order to identify and formulate responses.

continued to be below replacement rates such that this has been a relatively long-standing issue for VET systems to accommodate.

**Figure 3.12 Fertility rates within the EU: 1995 and 2015 compared**

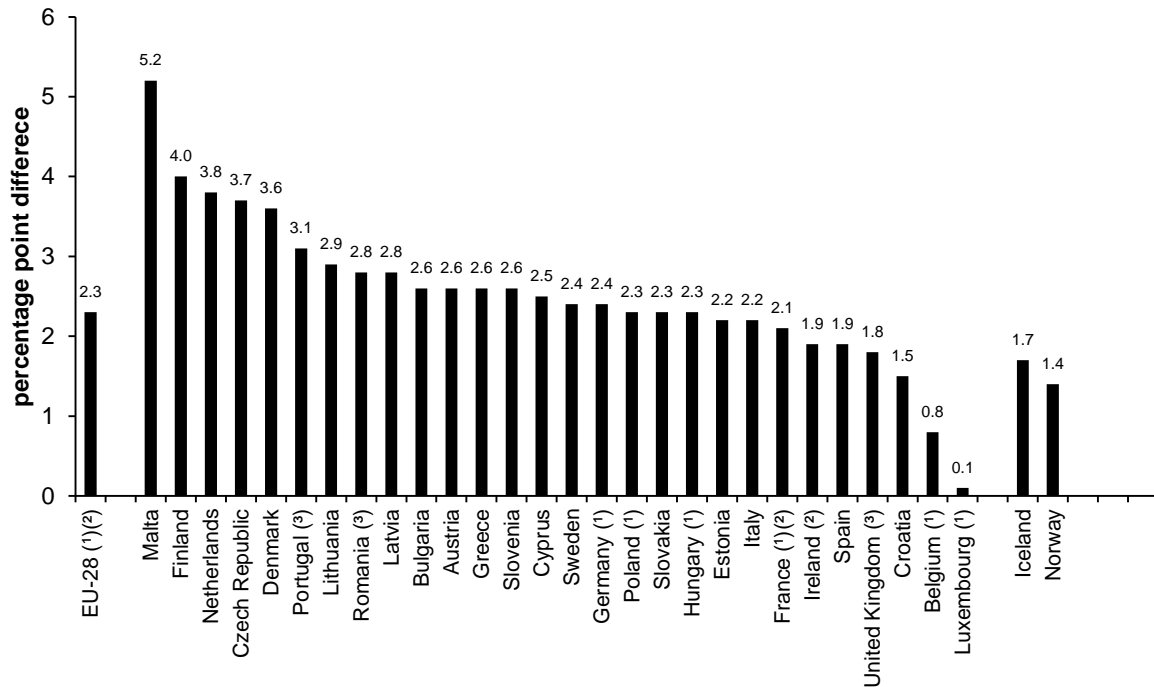


Source: Eurostat Fertility rates by age [demo\_frate]

Changes in fertility rates have an impact on the age structure of the population. Figure 3.13 shows the extent of variation across Europe with respect to changing age structures on a country by country basis. Clearly some countries are ageing faster than others, though it is common phenomenon across the EU. Figure 3.14 shows how the age structure of the population will change into the future. In particular, the relatively large percentage change in people aged over 70 years of age by 2080 is notable. Perhaps most striking about Figure 3.14 is the extent to which the population in 2080 will comprise people who, by today's standards, would be near the end of their working life. The change in the age structure is likely to pose substantial challenges on countries: first, how to find a sufficiently large number of people to fill jobs; second, how to ensure that people will be prepared or sustained to spend a longer period of time in the labour market than they are expected to today; and third, how to provide the skills of those who will look after people in extreme old age (cf. given the percentage of the workforce who will be aged over 80 years of age). It is perhaps the latter two points that have major implications for VET systems, not least being able to tackle any skills obsolescence through CVET. The period of time people might be expected to spend in the labour market – perhaps fifty years or more – against a background of rapid technical change will result in those skills acquired in the initial education and training system being unlikely to be sufficient to serve a fifty year plus career. This also potentially places pressures on the IVET system to prepare people to learn throughout their careers. It also means that the CVET system will need to be prepared to train people, say in their 40s, 50s or even 60s, to take on jobs which may be radically different to those that have undertaken previously. In some respects CVET systems will need to look more like IVET ones where they provide the skills necessary for initial entry to a job. For some countries the

scale of such change may be substantial and raise a range of questions of who should fund such training.

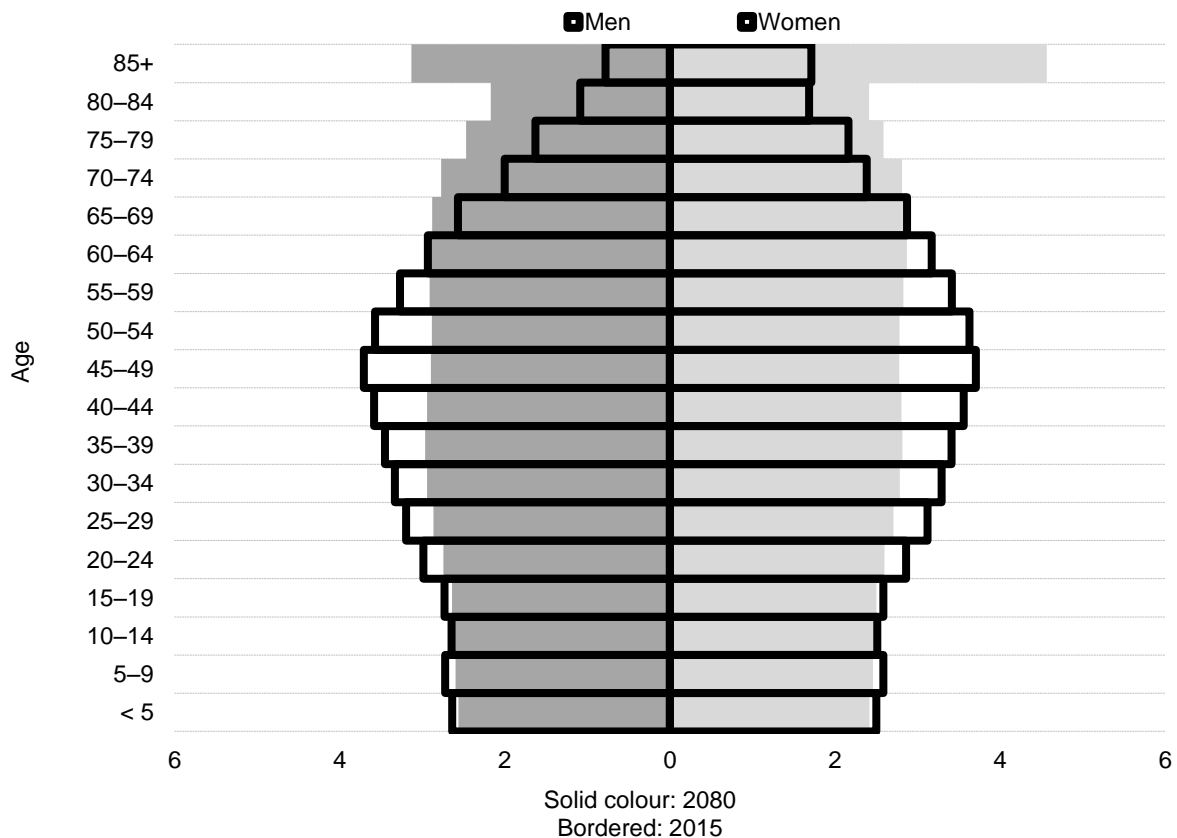
**Figure 3.13: Increase in the share of the population aged 65 years or over between 2005 and 2015 (percentage point change)**



Notes: (1) Break in time series in various years between 2005 and 2015; (2) Provisional; (3) Estimation.

Source: Eurostat (online data code: demo\_pjanind)

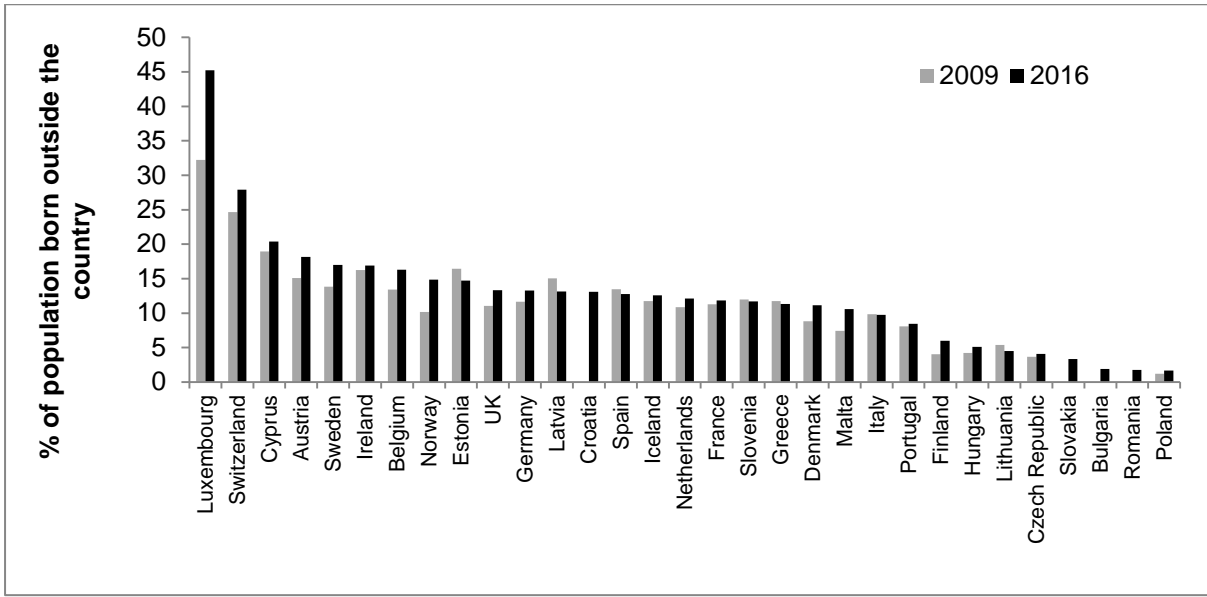
**Figure 3.14: Projected change in the age structure: 2015 and 2080 compared**



Source: Eurostat (online data code: demo\_pjanind)

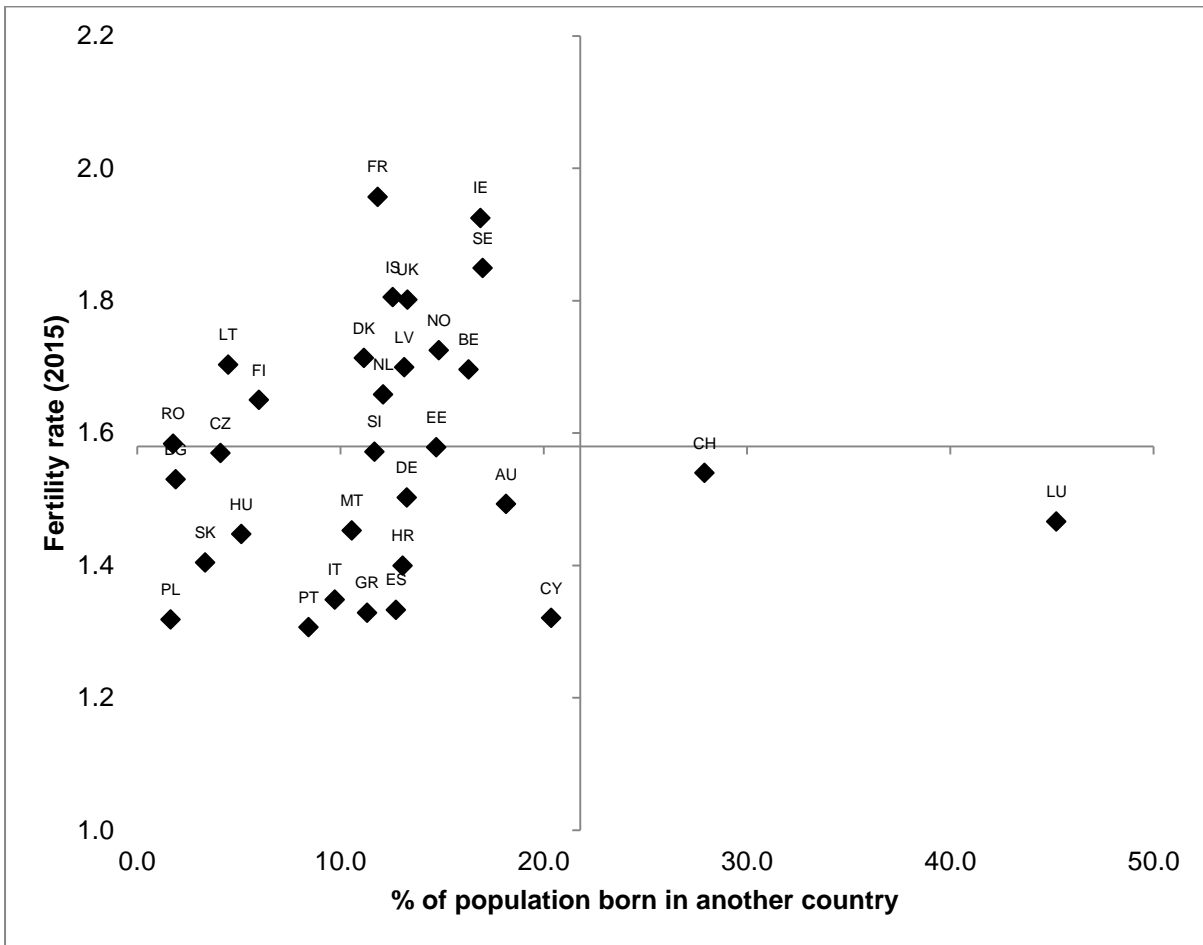
For some countries immigration provides a means of meeting their employment and skill demands. Data on migration reveals that the percentage of people born in another country has increased (though comparable data are available for only a relatively short time span), but there is considerable variation between countries (Figure 3.15). The extent to which people might provide a source of skills supply varies substantially by country. It is notable that there are countries with relatively low fertility rates and relatively low shares of people born in other countries (see Figure 3.16). It is also notable that this group of countries includes those that have experienced relatively high rates of emigration, such as the Baltic States, Poland, Greece, Cyprus, and Spain (many of these are Type 6 countries mentioned in Chapter 2 - 'non-vocational' countries with the limited vocational systems). This suggests, other things being equal, that the labour markets in these countries could tighten substantially with the VET system having relatively little scope to increase skills supply in the face of labour and skill shortages. The implication then is that industrial development does not take place which eventually drives down the demand for labour (creating a vicious cycle).

**Figure 3:15: Percentage of population born in another country**



Source: Population on 1 January by age group, sex and country of birth [migr\_pop3ctb]

**Figure 3.16: Fertility rates and percentage of the population born outside the country (2015/16)**



Source: Population on 1 January by age group, sex and country of birth [migr\_pop3ctb] and Fertility rates by age [demo\_frate]

As noted above there are a number of implications for VET of the demographic trends outlined above, not least of which is the need for lifelong learning. If people are to spend longer-periods in the labour market, then it is unlikely that the skills they obtained in their initial VET will carry them through potentially 50 or more years in the labour market. Hence the need for lifelong learning to prevent skills obsolescence occurring. It is likely that specific skill needs will arise as a result of an ageing society including an increased demand for health and social care services, with a consequent demand for workers with skill sets comprising a mixture of emotional, relational and technical skills. There could also be an increased demand for goods that provide assistance to older people (e.g. a range of medical technology devices) that could increase demand for people to work in manufacturing (if the goods are produced in Europe).

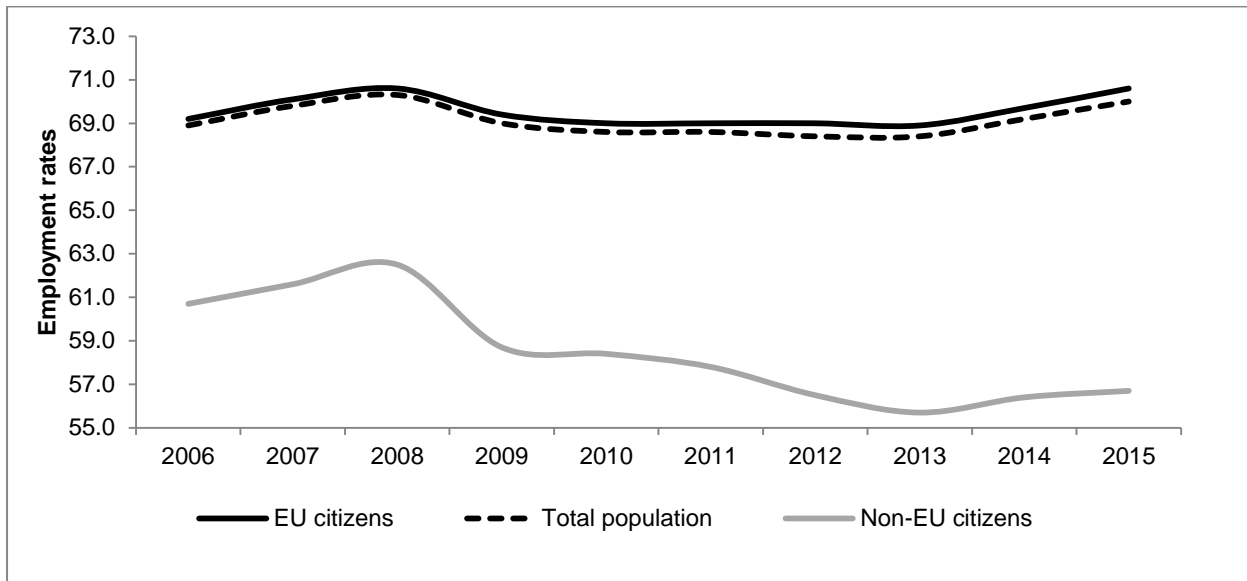
Given changes in the old-age dependency ratio there is a question about the extent to which labour shortages could arise in given population projections. These can be offset to some extent by people working longer. It is also apparent that migration has proved to be one means of increasing labour supply (both intra-EU migration and that from outside). This

creates its own set of demands on the VET system not least with respect to the recognition of qualifications and competences, and for language proficiency.

Changes in the demographic structure of the EU population in the long-term emphasise the necessity of increasing employment rates. Low fertility rates and increasing life expectancy, against a back-drop of a growing population suggest a shrinking EU labour force with a large proportion of economically inactive citizens. Increased employment rates, in particular for women, older workers and younger persons, will be needed to compensate for an expected decline of the working-age population (20 to 64 years old) by 2020 of 4.3 million people. For the majority of Member States (19 countries) including Italy, Spain, Ireland and the Netherlands, an increase in the employment rate for older people in the years 2006 to 2015 corresponded to a decrease in the employment rate for younger people. Therefore to raise the overall employment rate, policies which are aimed at increasing the employment rate for older people must not be offset by similar or larger increases in youth unemployment. With youth unemployment remaining close to historical high-levels it is essential to implement policies which allow young people to enter the labour market, by improvements in the relevance of education, enabling secure transitions from education to work. VET has an important role to play in this context. The major driver, however, for skill development for people entering the labour market is access to challenging work. If work-relevant VET is not followed by challenging work the skills developed in VET may not only not be consolidated, they may actually atrophy through lack of use.

Economic migration will become increasingly important to addressing Europe's shrinking labour force and shortages in skills. The European Commission estimates that in the absence of net migration the working age population can be expected to decrease by 12 per cent in 2030 and by 33 per cent in 2030 (European Commission, 2010). Countries experiencing net immigration may well be able to obtain a supply of skills that can reduce pressures on the VET system to produce those skills. That said, workers from countries outside the EU show considerably lower employment rates than EU citizens such that the major issue here is one of getting them to participate in the labour market in order that their skills may be used (see Figure 3.17).

**Figure 3.17 Employment rate (%) age-group 20 to 64, by citizenship, EU-28, 2006-2015**



Source: Eurostat Employment rates by sex, age and citizenship (%) [lfsa\_ergan]

The EU employment package 'Towards a job-rich recovery' highlights the importance of migration for addressing expected skill shortages to address deficits in qualified job-specific skills. The flagship initiative 'An Agenda for new skills and jobs' proposed a range of measures to anticipate and match labour market and skill needs including labour market observatories to bring labour market actors together with education and training providers, as well as enhancements to geographical mobility across the EU, and better integration of migrants, crucially including better recognition of their existing skills and qualifications.

### 3.5 Conclusion

The implications of the trends in the external environment are formidable ones for VET systems and education systems in general. Europe is faced by a situation where technology is radically reshaping the nature of production systems in both manufacturing and services. Technology has accelerated the process of globalisation. It has also had a marked impact on the demand for skills with much growth at the higher and lower ends of the occupational hierarchy with much less growth in intermediate level occupations; those that typically require a qualification at the upper secondary level and which have traditionally been served by the VET system. But the VET system has also had to deal with demographic change that have seen a decline in the youth population which has been its main market for learners, and the need to cope with immigration from third countries where the skills of individuals need to be validated. This has all taken place against a particularly sharp economic cycle which saw relatively benign economic conditions come to shuddering halt with the economic crisis in 2007/8 the aftermath of which is still keenly felt in many countries. How VET systems have responded in addressed in the next chapter.

## The VET response across Europe

### 4.1 A brief history of VET and skills policies in Europe

Following the end of WWII, politicians in Europe became increasingly focused on economic and political integration. This can be traced back to the creation of the European Coal and Steel Community (ECSC) in 1951 and to the signing of the Treaty of Rome in 1957. The latter gave birth to the European Economic Community (EEC), through to the signing of the Maastricht Treaty in 1991 that brought about the modern day European Union (EU). Over the period from the 1950s to the present day one can observe policy makers tackling a number of recurrent problems: improving economic competitiveness and tackling unemployment resulting from structural change while, at the same time, trying to address skill-shortages in certain parts of the European economy. It is apparent that the ECSC, from the outset, recognised the importance of improving VET provision in order to bring about productivity gains and simultaneously ensure that any gains were not wiped out as a result of wage-push inflation resulting from skill shortages (Meschi, 2004). The ECSC's Standing Committee on Vocational Training undertook activities including the compilation and dissemination of documentation on vocational training in the six Member States for the two industries, as well as making available training materials. The Treaty of Rome (1957) contained several articles that related to VET, including Article 128 that specified that the Council of Ministers would lay down the 'general principles for implementing a common vocational training policy capable of contributing to the harmonious development both of the national economies and of the common market', and Article 118 which stated that basic and advanced vocational training was a matter where the Commission was given the task 'of promoting close cooperation between Member States' (Petrini, 2004).

Initially the Commission sought to push forward with a top-down approach to a European VET agenda by establishing the content of the general principles on training as required by Article 128 (in 1963) and by pushing ahead with an action programme on common vocational training policy (in 1965). The action plan sought to offer 'all young people of the Community, and when necessary adults, an appropriate opportunity for training'.<sup>(7)</sup> The actions set out in the plan were designed to gradually implement a common VET policy that might contribute to the harmonious development of both national economies and the common market, to accelerate the raising of living standards and to improve the prospects of employment for workers, whether in employment or self-employed' (Petrini, 2004). Included in the actions was harmonisation of training standards in order to bring about the free movement of workers across Europe. Despite approval from within the Commission and the Parliament, the initiative was not pursued because it was seen as transgress national competences. The French delegation, for example, thought the actions strayed into the realm of employment and school policy which were outside the competence of the EEC.

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<sup>7</sup> ASCE, BAC 6/1977, 679. *Projet de programme d'action en matière de politique commune de formation professionnelle [Draft action programme on a common vocational training policy], 1964 – as cited in Petrini (2004).*

Accordingly the plan was dropped by the Commission and, in the years that followed, it adopted a less ambitious approach concentrating on studying measures for harmonising vocational qualifications. At the beginning of the 1970s, actions at the European level were essentially those of promoting cooperation and the exchange of ideas between Member States.

The reining of action at the European level took place against a backdrop of relatively strong economic growth across the EEC. As economies within the EEC weakened in the early 1970s – especially with the oil price shock of 1973 – some of the ideas initially floated in the early and mid-1960s were revisited. One of these – first mooted in the principles of 1963 – was the creation of a European vocational training institute (i.e. Cedefop). It is also increasingly apparent that VET – both IVET and CVET – were becoming, at least implicitly, of central importance to the wider goals of the EU. The need to boost competitiveness, tackle unemployment, reduce social exclusion, and improve the mobility of labour, were all seen to have a human capital and VET dimension. Through a series of communiqués and declarations from Copenhagen to Riga - via Helsinki, Maastricht and Bruges - one can see the coming of age of VET policy in Europe. In the various documents there is an emphasis on, amongst other things, increasing access to VET, ensuring that skill systems are responsive to labour market needs, harmonising of qualifications / competences across Member States, increasing transparency, and so on. Even if the Lisbon Treaty identified vocational training as being a ‘supporting competence’, - that is the European Union can carry out actions to support, coordinate or supplement Member States’ actions – it was apparent that there was room for a European dimension. One can see this in the Copenhagen Declaration (2002) that starts by reiterating the need for action at the European level: “Economic and social developments in Europe over the last decade have increasingly underlined the need for a European dimension to education and training.” It then goes on to identify the priorities for action (*see box*).

### **Copenhagen Declaration’s Main Priorities**

#### **European dimension**

Strengthen the European dimension in vocational education and training with the aim of improving closer cooperation in order to facilitate and promote mobility and the development of inter-institutional cooperation, partnerships and other transnational initiatives, all in order to raise the profile of the European education and training area in an international context so that Europe will be recognised as a world-wide reference for learners.

#### **Transparency, information and guidance**

Increase transparency in vocational education and training through the implementation and rationalisation of information tools and networks, including the integration of existing instruments such as the European CV, certificate and diploma supplements, the Common European framework of reference for languages, and the EUROPASS into one single framework.

Strengthen policies, systems and practices that support information, guidance and counselling in the Member States, at all levels of education, training and employment, particularly on issues concerning access to learning, vocational education and training, and the transferability and recognition of competences and qualifications, in order to support occupational and geographical mobility of citizens in Europe.

### **Recognition of competences and qualifications**

Investigate how transparency, comparability, transferability and recognition of competences and/or qualifications, between different countries and at different levels, could be promoted by developing reference levels, common principles for certification, and common measures, including a credit transfer system for vocational education and training

Increase support to the development of competences and qualifications at sectoral level, by reinforcing cooperation and co-ordination especially involving the social partners. Several initiatives on a Community, bilateral and multilateral basis, including those already identified in various sectors aiming at mutually recognised qualifications, illustrate this approach.

Develop a set of common principles regarding validation of non-formal and informal learning with the aim of ensuring greater compatibility between approaches in different countries and at different levels.

### **Quality assurance**

Promote cooperation in quality assurance with particular focus on exchange of models and methods, as well as common criteria and principles for quality in vocational education and training.

Give attention to the learning needs of teachers and trainers within all forms of vocational education and training.

Source: Declaration of the European Ministers of Vocational Education and Training, and the European Commission, convened in Copenhagen on 29 and 30 November 2002, on enhanced European cooperation in vocational education and training

Fast forward to the Riga a decade or so later and one can see a similar set of issues being pursued as in Copenhagen (*see box*). In many respects the issues that are being addressed are not so very different from those being pursued in the 1950s and 1960s with respect to the harmonisation of qualification / competence standards, to the need to promote free movement, and to tackling skill shortages. Arguably, the difference now is that there are many more tools and resources available to address the priorities outlined in the Riga Conclusions, including EQAVET, Europass, the EQF, etc.

### **Riga Conclusions: New Set of Medium Term Deliverables 2015-2020**

*With a view to developing high quality and labour market relevant vocational skills and qualifications, based on the learning outcomes approach:*

1. Promote work-based learning in all its forms, with special attention to apprenticeships, by involving social partners, companies, chambers and VET providers, as well as by stimulating innovation and entrepreneurship.
2. Further develop quality assurance mechanisms in VET in line with the EQAVET recommendation and, as part of quality assurance systems, establish continuous information and feedback loops in I-VET and C-VET systems based on learning outcomes.

*For people's informed choice of pathways and long-term employability and adaptability to evolving skills needs:*

3. Enhance access to VET and qualifications for all through more flexible and permeable systems, notably by offering efficient and integrated guidance services and making available validation of non-formal and informal learning.

4. Further strengthen key competences in VET curricula and provide more effective opportunities to acquire or develop those skills through I-VET and C-VET.

*In support of successful implementation of reforms and to raise the overall quality and efficiency of VET:*

5. Introduce systematic approaches to, and opportunities for, initial and continuous professional development of VET teachers, trainers and mentors in both school and work based settings.

Source: On a new set of medium term deliverables in the field of VET for the period 2015-2020 as a result of the short-term deliverables defined in the 2010 Bruges Communiqué.

In parallel with the developments described above, in 2016 the European Commission published the New Skills Agenda.<sup>(8)</sup> While there have been a number of skill initiatives over recent years, the New Skills Agenda provides a somewhat starker picture of the challenge facing Europe than previously. It states: “Tackling the skills challenges will require significant policy efforts and systemic reforms in education and training. It will require smart investments in human capital from both public and private sources, in line with the Stability and Growth Pact”. The New Skills Agenda will achieve its goals through a three-pronged approach that is based on boosting skills supply, ensuring that the skills which national systems produce are measureable against a set of Europe wide standards, and that information is available that will guide investments in skills. The box below outlines the principal components of the New Skills Agenda.

### **Summary of the New Skills Agenda**

#### **Improving the quality and relevance of skills formation**

Tackling a lack of basic skills

Developing a core competence framework

Making VET a first choice in large part through promoting work-based learning as an effective means of skills supply

Improving the supply of digital skills (via the Digital Skills and Jobs Coalition to develop a large digital talent pool and ensure that individuals and the labour force in Europe are equipped with adequate digital skills).

#### **Making skills and qualifications more visible and comparable**

Revision of the European Qualifications Framework in order to improve the mutual recognition of qualifications / learning in a single EU labour market;

Recognition of third country national’s skills and qualifications

#### **Improving skills intelligence and information for better career choices**

Improving the transparency and comparability of qualifications

Improving labour market intelligence

Boosting skills intelligence in sectors

Better understanding the performance of graduates

Source: European Commission (2016) [A New Skills Agenda for Europe: Working together to strengthen human capital, employability and competitiveness](#) (SWD(2016) 195 final)

<sup>8</sup> New Skills Agenda - <http://ec.europa.eu/social/main.jsp?catId=1223>

The commentary provided above indicates the way in which VET and skills policies at the European level have developed. As the demands upon the VET system have increased it is readily apparent that the tools developed at the EU level, and the exchange of ideas and know-how across countries, have become an important part of the response at national levels to meeting a number of external challenges. The next section looks more quantitatively at how VET provision has developed over the recent past.

## 4.2. Key developments in the supply of VET

Education and training are seen as central to the Europe 2020 strategy acting as important drivers for growth and employment. Two important challenges affecting the context of education include the recent economic crisis and the implications of an ageing population which have economic, labour market, and societal impacts. The two Europe 2020 strategy headline indicators and related targets are:

1. reducing the share of early leavers of education and training to less than 10 per cent; and
2. increasing the share of the population aged 30 to 34 having completed tertiary or equivalent education to at least 40 per cent by 2020.

In addition to these two Europe 2020 targets there are five further benchmarks under the Strategic Framework for Education and Training 2020 (ET 2020)<sup>(9)</sup> that provide relevant statistical information for characterising education, including VET:

- an average of at least 15 per cent of adults should participate in lifelong learning;
- the share of low-achieving 15 year olds in reading, mathematics and science should be less than 15 per cent;
- at least 95 per cent of children between the age of four years and the age for starting compulsory primary education should participate in early childhood education;
- an EU average of at least 20 per cent of higher education graduates and of at least 6 per cent of 18 to 34 year olds with an initial vocational qualification should have had some time studying or training abroad (Erasmus-plus);
- the share of employed graduates (20 to 34 year olds) having left education and training no more than three years before the reference year should be at least 82 per cent.

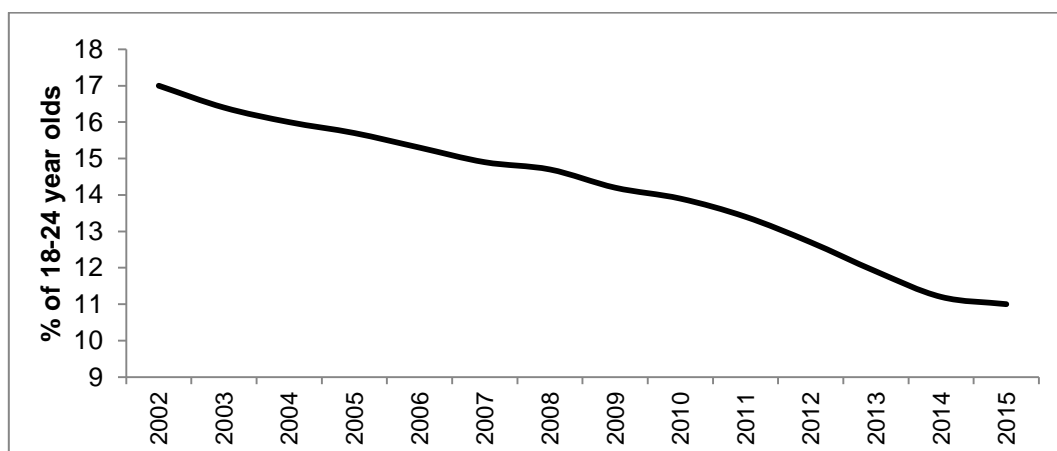
### Reducing early leaving

Figure 4.1 shows that there has been a continuous fall in early leaving from education and training from 2002 (17.0 per cent) to 2015 (11.0 per cent), which occurred for both women and men, while there is a gap of 2.9 percentage points in favour of women in 2015 who were already below the overall EU target.

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<sup>9</sup> Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training ('ET 2020') (2009/C 119/02), Official Journal of the European Union, 28.5.2009.

**Figure 4.1 Early leavers from education and training (% of the population aged 18–24 with at most lower secondary education and not in further education or training), EU-28, 2002–2015**



Note: Breaks in time series in 2003, 2006 and 2014; 2020 target is for <10 % of early leavers from education and training by 2020.

Source: Cedefop Way to 2020 database; also available from - [http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=0&pcode=t2020\\_40&language=en](http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=0&pcode=t2020_40&language=en)

The common EU-28 target has been converted into national targets by all Member States (with the exception of the UK), varying from 4 per cent in Croatia to 16 per cent in Italy. By 2015 Austria, Croatia, Cyprus, Denmark, France, Greece, Ireland, Italy, Lithuania, Luxembourg, Latvia, Slovenia and Sweden had achieved their targets for 2020. The countries furthest from their targets were Romania, Spain and Malta (the latter 10 percentage points above its target), also having the highest proportions of early school leavers (at least 19.0 per cent). The lowest proportions were found for Croatia, Cyprus, Lithuania, Poland and Slovenia with fewer than 6.0 per cent early leavers from education and training. Norway was slightly lower than the EU-28 average while Iceland had above average levels. Countries from Southern European countries had the largest reductions over the period from 2002 to 2015.

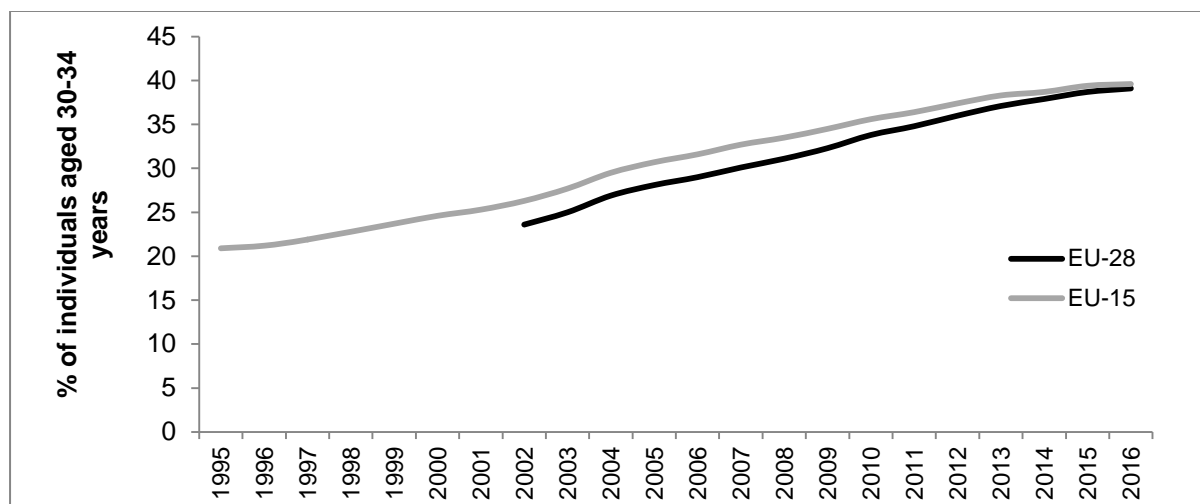
It is difficult to discern why countries have been successful in reducing early leaving but it has been through a mixture of measures including second chance education and preventative interventions including the use of VET as a more attractive option for young people who have had negative experiences in general education. It should also be remembered that early leaving may in some cases be a positive choice where an individual prefers early labour market entry and can obtain employment, although in the long-term this may prove to be economically disadvantageous to them.

### Increasing levels of attainment

At the level of attained tertiary education for 30 to 34 year olds the share across the EU-28 showed a steady increase from 2008 to 2015 rising from 31.1 per cent to 38.7 per cent. This trend suggests that the EU is on track to meet its target of increasing the proportion of the population in this age group to at least 40% by 2020. Figure 4.2 shows the trend over time

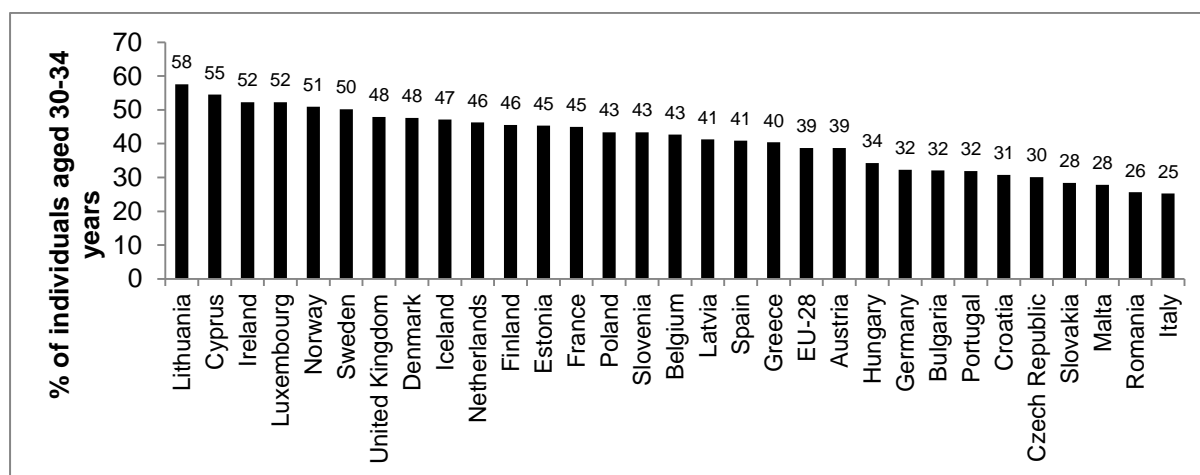
with an increasing share of the population achieving tertiary level attainment. Figure 4.3 presents the country-level comparisons for 2015 to reveal wide variation: from 40 per cent in the UK to 15 per cent in Romania.

**Figure 4.2 Tertiary educational attainment (% of the population aged 30–34 with completed tertiary education)**



Source: Eurostat Population by educational attainment level, sex and age (%) - main indicators [edat\_lfse\_03]

**Figure 4.3 Tertiary educational attainment (% of the population aged 30–34 with completed tertiary education), by country**



Source: Eurostat Population by educational attainment level, sex and age (%) - main indicators [edat\_lfse\_03]

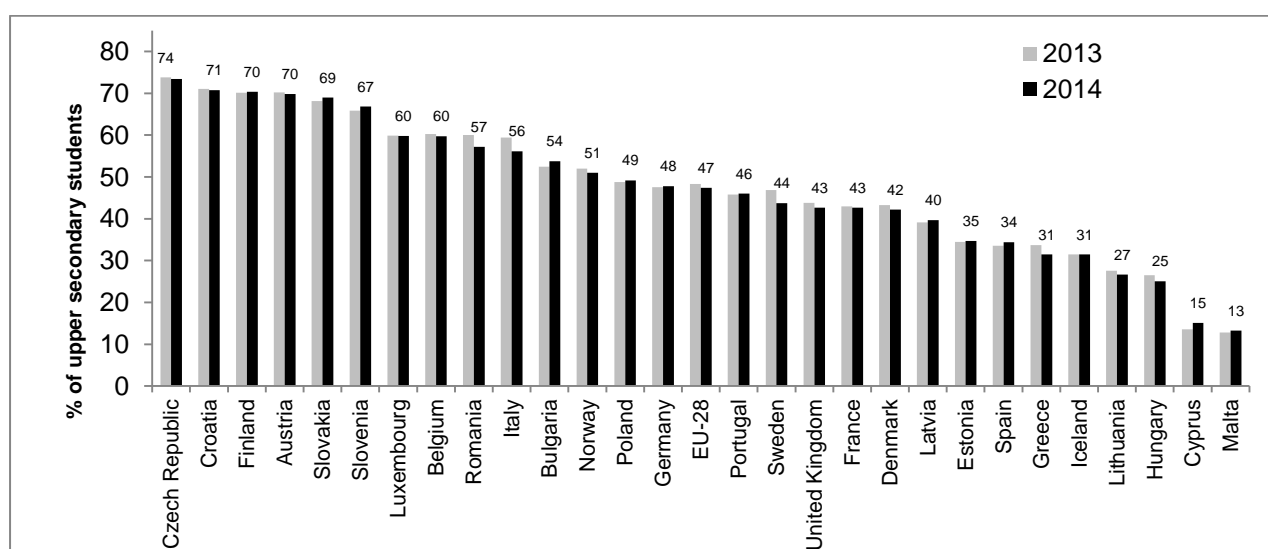
The observed trends reflect increased investment in higher education, but also a shift to shorter degree programmes after implementation of the Bologna process in certain Member States. The national targets varied from 26 per cent for Italy to 66 per cent for Luxembourg. Several variations in the units of measurement of the targets complicate matters (Germany's target includes post-secondary, non-tertiary attainment; in France it refers to the age group of 17 to 33 year olds and for Finland the target excludes former tertiary VET).

It is difficult to tease out the implications for VET of these increasing levels of attainment because through-flow data are lacking that would indicate the tracks which people have followed to enter higher education. But since it is reasonable to assume that most people enter higher education through general education routes at the upper secondary level, it is likely that increasing numbers of people with higher education qualifications have been at the expense of VET at lower levels, with fewer people passing through upper secondary VET. In terms of outcomes, it is notable that in some countries we can observe the situation where there are large, and rising, numbers of unemployed or under-employed higher education graduates with general qualifications (see section 4.3 below). Whether such trends will continue into the future is a moot point. Many countries are enhancing or developing new vocational provision at higher levels.<sup>(10)</sup> This may increase the overall numbers of people entering tertiary education and/or it may re-route people into vocational programmes who would otherwise have done general higher education programmes. At the same time, much will depend on external labour market factors.

### Participation in vocational education

There are limited data available on the extent to which people engage in vocational rather than general education. Figure 4.4 provides data on the share of pupils enrolled in vocational upper secondary education as a percentage of the overall share of pupils at this level. On average, it is around half of all students, but the variation across Europe is large: from 74 per cent in the Czech Republic to 13 per cent in Romania. Other trends mentioned in this report are likely to influence both the overall size and the relative share of the number of secondary level pupils in vocational studies, such as the extent of early school leaving, uptake of tertiary education and a decline in the size of the youth cohort in many countries.<sup>(11)</sup>

**Figure 4.4 The share of upper secondary level pupils in vocational studies**



Source: Pupils enrolled in upper secondary education by programme orientation, sex, type of institution and intensity of participation [educ\_uae\_enrs04]

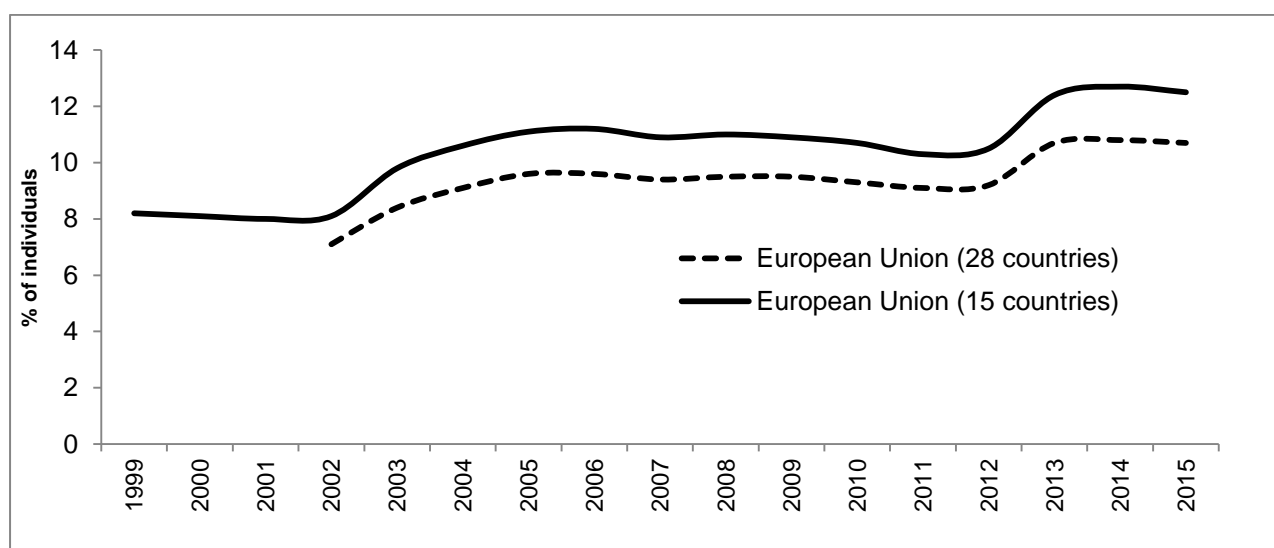
<sup>10</sup> This is an issue being addressed in WA5 of the current study.

<sup>11</sup> WA3 of the current study uses national data to look into trends in VET in more detail.

## Increasing participation in lifelong learning

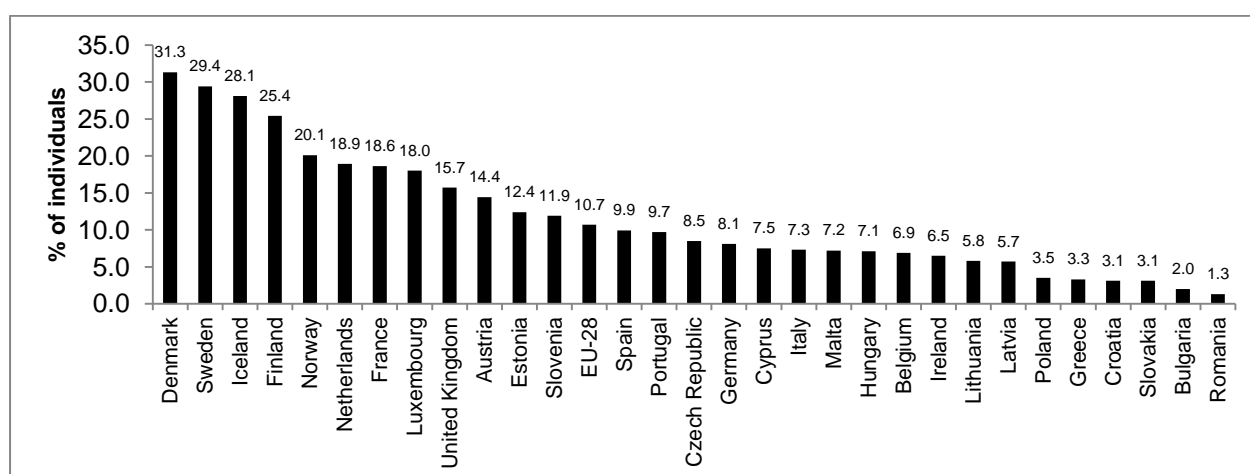
Figure 4.5 shows the trend in participation in lifelong learning (people who have received training over the last four weeks who are older than 25 years of age). It generally shows that there has been a step change in the percentage of people engaging in lifelong learning: in the early 2000s; and again around 2013 (see Figure 4.5). The variation by country is substantial: from 31 per cent in Denmark to a negligible 1 per cent in Romania in 2015 (see Figure 4.6).

**Figure 4.5 Percentage of people 25 -64 years of age participating in lifelong learning, 1999-2015**



Source: Population by educational attainment level, sex and age (%) - main indicators [edat\_ifse\_03]

**Figure 4.6 Percentage of people 25 – 64 years of age participating in lifelong learning by country in 2015**



Source: Population by educational attainment level, sex and age (%) - main indicators [edat\_ifse\_03]

A degree of caution is required in looking at training statistics such as those presented in Figures 4.5 and 4.6 since information is not available on the level, quality or duration of

training. Studies have demonstrated that training volumes have been maintained, despite the vagaries of the economic cycle, because of the amount of mandatory training employers have to provide to their employees (e.g. health and safety, induction, etc.) (Felstead et al., 2011; Felstead and Jewson, 2014). This may mean that over time comparisons of training activity may not be comparing like with like.<sup>(12)</sup>

### 4.3 Matching skills supply to demand

At face value, the data show that for individuals – and employers – there are benefits to be derived from investing in VET. For instance, educational attainment is related to successful access to the labour market. 58.3 per cent of early school leavers from education and training in 2015 were either unemployed or inactive in the labour market. In the case of recent graduates (those 20 to 34 year olds who left education and training within the last three years) the economic and financial crisis has led to falls in their employment rate from 82.0 per cent in 2008 to 75.4 per cent in 2013, with a small increase to 76.9 in 2014, but this was still higher than for lower levels of educational attainment. The fact that people with higher levels of educational attainment are more likely to be in employment is, in many respects, a poor indicator. It may simply reflect the fact that in a labour market with weak demand, employers will prefer those with higher levels of educational attainment because they are perceived as being more skilled (other things being equal).

A variety of other evidence suggests that whilst training volumes and levels of educational attainment have been rising, there remains a skills matching problem (Cedefop 2015a, 2015b). Skills mismatch is a major concern with implications for VET, because rising levels of educational attainment on their own will not address this issue. At heart, skills mismatches are driven by a shortage of particular skills, both technical and soft skills, which VET and vocational streams within HE could supply. The appropriate provision, however, must be available and learners must find that provision an attractive offer, both at the point of entry into training and into employment itself, while issues around rates of pay and conditions of work also come into play.

Though media headlines across Europe are often concerned with labour or skill shortages, in recent years there have been growing worries about the potential for skill surpluses and the implications of this type of mismatch on individuals and the economy. There is concern that investments being made by governments and individuals are not seeing these investors achieve sufficient returns in the labour market as the skills acquired through higher education and other forms of training leading to higher level qualifications are not meeting employer demand (Cedefop, 2010).

Skill surpluses can have negative implications for individuals, employers and economies. For individuals, being in a position for which one is overqualified can over time lead to dissatisfaction and overqualified employees have been found to not be able to recoup the expected returns over their adequately skilled co-workers even after spending time in the job or labour market. Very much related to this, employers' may see lower productivity and greater labour turnover where overqualified employees are dissatisfied and demotivated.

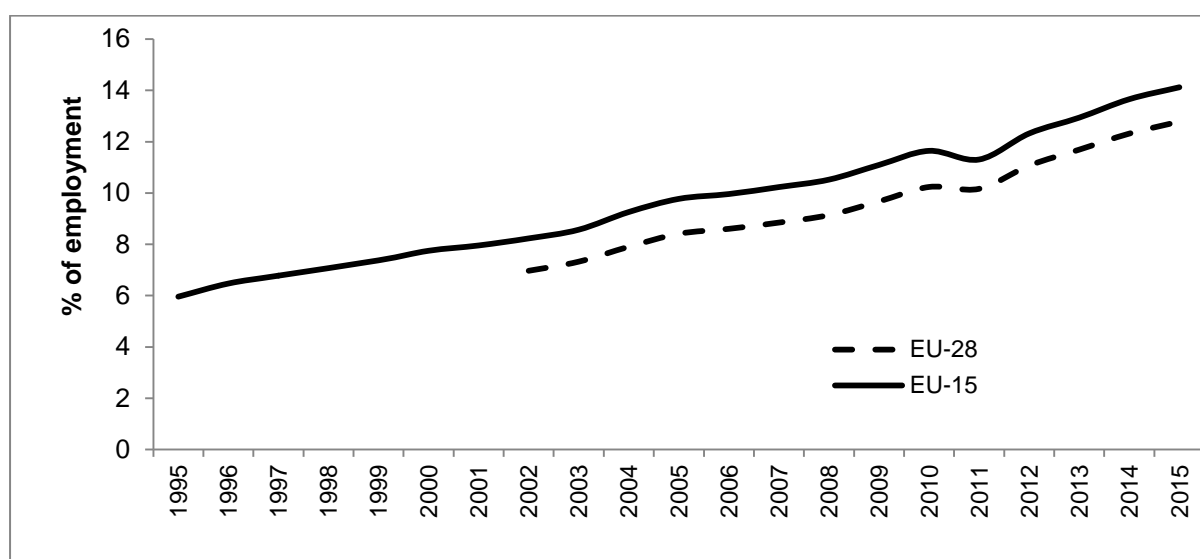
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<sup>12</sup> WA4 looks in more detail at trends in CVET over time.

There is the possibility too that employers may be able to benefit from the presence of overqualified employees where they pass on skills / knowledge to other workers or where the overqualified are able to perform several different roles and can shift around the workplace as needed. In aggregate though, over-education represents sub-optimal returns being achieved from public expenditure on education and training and also constrains productivity in the economy. With the vast expansion of participation in higher education across many European countries over the past few decades, skills surpluses or over-education represents a major policy issue for governments.

Measuring skill mismatches, especially skill surpluses or over-education, proves to be challenging and the available data that indicates the presence and degree of mismatches are limited and sometimes open to different interpretations. Figure 4.7 indicates the share of people who have tertiary level educational attainment and not working in managerial, professional, or associate professional occupations.

**Figure 4.7: Indication of over-qualification in the EU, 1995 - 2015**



Source: Eurostat Employment by sex, occupation and educational attainment level (1 000) [lfsa\_egised]

The 2014 European Skills and Jobs Survey found that nearly 40 per cent of all adult employees in the EU felt that their skills were under-utilised in their current jobs (Cedefop, 2015c). The share of employees reporting that the skills they possessed were higher than those needed to fulfil their current roles was highest in elementary occupations (47 per cent of adult employees) and plant and machine operators and assemblers (45 per cent). Unsurprisingly perhaps the incidence of this type of over-qualification was higher for those with a high level of education (43 per cent compared with 39 per cent for those with medium level education and 31 per cent with low level of education). Austria and the United Kingdom exhibited the highest rates of skills under-utilisation (54 per cent and 51 per cent, respectively) in 2014. The implications of these data for VET are two-fold. First, the availability of mid-career career guidance might help those whose skills are under-utilised to

consider their career options. Second, greater attention should be given to CVET for adults which allows for changes in career direction.

Data from the 2015 EU Labour Force Survey have been used to look at the share of tertiary education graduates that are not employed in what can be considered graduate jobs (i.e. ISCO 1, 2 or 3). Overall, more than a quarter (26 per cent) of 25-34 year-old tertiary education graduates were not employed as managers, professionals or associate professionals ('graduate jobs'). This figure has increased from 24 per cent in 2011. This over-qualification amongst graduates was highest in Cyprus, Spain and Greece in 2015 at around 40 per cent of young graduates reportedly being employed in non-graduate jobs. It is important to note that identification of a skill surplus partly depends on how a graduate job is defined. It is also worth considering that the evidence or measures of over-qualification in the data may reflect a transitory phenomenon. The increase in higher education participation, for instance, may be taking considerable time to filter through and be accommodated by the labour market. It may also be that some general education graduates would benefit from developing particular combinations of technical and soft skills which are in demand in the labour market which would have implications for VET. Indeed, there is evidence of general education graduates making use of post-secondary non-tertiary VET to fill gaps in their vocational skills (McCoshan et al., 2008).

What was apparent from the evidence relating to the way in which VET systems were looking to adapt to the challenges posed by the labour market was to increase work experience in IVET, often in the form of apprenticeship training which was considered to be a particularly effective means of matching skills to supply given that the role of the employer is quite large in the design and provision of training. Whilst much of this is at the upper-secondary level, the intention in many countries is to increase provision at higher levels. Making education more vocational appears to be the preference of policy makers in many countries to tackle matching problems.

It needs to be borne in mind that in relation to skill mismatches there have been a number of EU initiatives, often funded through the European Social Fund, to assist countries to develop more effective means of skills anticipation. The anticipation systems that have been developed use a range of methodologies but are generally concerned with how to effectively anticipate skill demand and, importantly, how to disseminate the findings so that target groups' behaviour will be influenced.

## 4.4 Conclusion

The commentary provided above shows how policy has developed at the European level to assist countries in responding to the various external challenges that their labour markets face. It is apparent that, over recent decades, substantial investments have been made in raising skill levels across the EU by persuading more people to participate in IVET and to engage in lifelong learning. It is apparent that the stock of skills has increased, but the extent of skills mismatch has increasingly become a policy priority. It also needs to be borne in mind that there remains substantial variation across Europe with respect to participation levels in VET and to the skills structure of the workforce. How particular countries have responded at the national level is explored in the next chapter.

# The development of VET systems over time

## 5.1. Introduction

The way VET systems respond to long-term developments in the labour market, as well the various exigencies they need to address from time to time, will be shaped, at least in part by the development paths those systems have taken over the recent past. Evidence is presented below from the case studies of selected national systems to illustrate the way in which the structure and provision of VET has changed over time. While the next chapter illustrates how VET systems have responded to particular external factors (i.e. demographic, economic and technical change), this one looks more generally at how systems have changed. It pays particular attention on the interplay between internal and external factors, the types of change that have arisen in the provision of VET, and the degree of divergence or convergence in the trajectories countries have followed.

## 5.2 Selecting countries to study

The selection of countries for case study was based on, first, looking at how countries in Europe compare with one another against a number of indicators that in some way reflect the main external factors likely to affect the provision of VET. In Table 5.1 below countries have been grouped according to whether their position with respect to each of the external factors is, for want of a better expression, favourable or unfavourable. The groupings are as follows:

- Economy
  - the long-term growth has been relatively strong (favourable) or weak over the 1995 to 2015 period;
  - the degree of cyclicity – i.e. the extent to which the drop in growth during the financial crisis was relatively modest (favourable) or steep
- Labour market
  - the unemployment rate for all and that for young people respectively. A favourable positioning is where the respective unemployment rate is relatively low.
- Demography
  - this has been measured with respect to the increase in the proportion of the population aged over 65 years. A favourable rating is where the rate of increase is low
- Technical change
  - This has been measured with respect to the share of GDP on R&D. Where it is high, this is recorded as favourable.

Table 5.1 lists the top / bottom six for each of the measures. Based on Table 5.1, it is possible to identify particular groups of countries. There is a group of countries (GR, EE, LT, PT, ES) that are relatively weak on measures related to the economy and / or unemployment; a group of countries that have experienced relatively low rates of unemployment (DE, IS, NO, AU, DK, and NL). With respect to demographic change, those that appear to have a relatively rapidly ageing population are MT, FI, NL, CZ, DK, and PT. And with regard to technical change, the grouping with a relatively high level of investment in R&D is similar to those with low levels of unemployment: FI, SE, DK, AU, DE, and IS. The group with the lowest levels of investment in R&D includes those that have displayed relatively weak economic performance (RO, CY, LT, HR, BG and GR).

**Table 5.1: Classification of countries by position of various indicators of the external environment**

	Economy		Labour Market		Demography	Technical change	Importance of VET
	Long-run growth	Sharpness of cycle	Unemployment rate	Youth unemployment rate			
<b>Favourable</b>	EE	PL	IS	DE	LU	FI	CZ
	IE	BG	NO	IS	BE	SE	HR
	LT	CY	DE	NO	HR	DK	FI
	LI	MT	CZ	AU	UK	AU	AU
	LU	RO	UK	DK	ES	DE	SK
	PL	SK	MT	NL	IE	IS	SI
<b>Unfavourable</b>	GR	EE	GR	GR	MT	RO	MT
	IT	LT	ES	ES	FI	CY	CY
	DK	IE	HR	HR	NL	LT	HU
	DE	FI	CY	CY	CZ	HR	LI
	AU	IT	PT	PT	DK	BG	IS
	BE	LU	IT	IT	PT	GR	GR

As well as using the external factors as a means of identifying countries that might be included as case studies, there is also a desire to ensure that there is a mix of countries that includes: (a) some variation with respect to the importance of VET; and (b) the nature of the policy regime in place within a country. In Table 5.1 a measure has been provided that gives an indication of the importance of IVET to a particular country (i.e. the share of those enrolled in upper secondary education who are taking the vocational pathway). It reveals that there are a group of countries where there is a relatively high share: CZ, HR, FI, AU, SK, and SI. This includes a mix of countries with respect to the other measures in Table 5.1, but they are all relatively small with respect to the share of the EU's population they account for. The countries with the smallest share enrolled in the vocational stream are: RO, CY, LT, HR, BG, and GR. These are all countries with relatively weak economic and employment performance. A further measure is with respect to the policy regime in place. This is relatively difficult to identify using a single measure. Based on the OECD employment protection regulation indicator – which might be considered a proxy measure of labour market flexibility – the countries that are most regulated (least flexible) are: PT, CZ, NL, LT, DE, and IT. The countries that are most flexible are: UK, HU, EE, SK, BE, and ES.

In the end the selection was based on including countries with relatively:

- weak economic and labour market performance, where IVET is of relatively less importance to be selected from: Italy, Estonia, and Greece;
- strong economic and labour market performance where VET is relatively important to be selected from: Finland, Germany, Norway, and the Netherlands;
- strong economic and labour market performance where IVET is or has been relatively less important: France, and Poland.

Within the above, there are few examples of countries with relatively flexible approaches to labour market regulation, so for this reason the UK (England) is included. All in all, the selection of countries chosen for case study analysis reflects a variety with respect to both the nature of VET provision and the external challenges that are likely to shape responses to VET.

The remainder of the chapter highlights how VET systems in these countries have changed in the period since the late 1980s / early 1990s.

### 5.3 The changing role of VET

In most countries VET is defined with respect to certain elements of the education system; typically that related to upper secondary level education which is oriented towards equipping young people to enter a profession or occupation, even if they subsequently choose not to enter that occupation. And this is typically defined in contrast with the general or academic stream, so that it is something which is related to a profession and is not academic. This is an over-simplification but it captures the essence of VET in practice in the late 1980s or early 1990s.

As will be explained below all countries have experienced almost continuous incremental changes to their VET systems interspersed with major reforms and the occasional necessity to respond to external shocks typically in the form rapidly rising unemployment as a

consequence of economic downturns. This may be regarded very much as a labour market oriented interpretation of VET. Allied to this, however, is the social role VET is expected to play in protecting young people from social exclusion given that VET is often the choice of less advantaged young people. This of course affects the prestige in which VET is held by the wider public and its attractiveness to young people. Courses which are perceived to be for those who are disadvantaged in some way transmit a powerful signal about the purpose of VET. This is a point returned to below.

In the period between the late 1970s and early 1990s, many VET systems appeared to undergo a step change. Prior to this point VET was, to a large extent, concerned with the provision of education and training to a relatively narrow range of industries (e.g. manufacturing and construction). If one exempts the former Soviet bloc countries for a moment, it is possible to observe in countries - such as, for instance, England, the Netherlands, Norway and Finland – a need to extend the provision of education and training to young people beyond lower secondary education. This reflects, to some extent, the employment decline of traditional sectors – which had historically provided IVET - and the emergence of new typically service based industries. It was also related in some countries to rising levels of youth unemployment. Countries were keen to expand their VET provision to ensure that the education system in general was aligned with the needs of the economy and thereby met the skill needs resulting from sectoral change and dealt with youth unemployment.

Over time, one can observe a number of common challenges and responses that countries have had to address:

- making VET more attractive to young people, often by stressing the opportunity to continue with further study beyond the upper secondary level;
- ensuring that VET curricula are responsive to meeting labour market needs and relevant to the needs of sectors where there has historically been much less tradition of VET;
- changes in the structure of VET, especially with the increasing emphasis given to competence based approaches to the acquisition of a VET qualification and, in several countries making VET provision more individualised (e.g. by allowing a degree of mix and match between various VET courses or modules);
- placing a relative emphasis on work-based learning over that which is located solely in vocational schools; and
- blurring the definition between what has traditionally been considered initial versus continuing VET.

In the former Soviet bloc countries, one can see a similar set of factors at play, except that their VET systems needed to be reinvented in the transition from being a centrally planned to market economy.. The transition in these countries resulted in collapse of a significant number of employers in less competitive sectors once they were opened to international competition. It had an especial impact on manufacturing, where there has also been overemployment as a result of low technology intensity. Countless people with former VET

qualifications lost their jobs and this is often seen as an important factor at a time when children of this generation had to choose their education pathways. Many were reluctant to choose VET pathways whose esteem had been hit very hard.

It is apparent, notably in the case of Poland, that VET policy took several twists and turns before settling into its current configuration. In a sense, the changes which took place in other countries over several decades had to be enacted in a much shorter time frame without much of a historical foundation to build upon.

In some respects, one can see changes in the 1980s and 1990s as providing a significant break with the past; a step-change in the VET system that significantly affected both the structure of provision and its scope (i.e. the breadth of the skills training provided). It is equally apparent that VET systems are subject to ongoing changes – essentially incremental adaptations consistent with the overall direction of policy. These incremental changes – as the example of England and the Netherlands will demonstrate – over time can substantially alter the structure of VET systems and behaviour within them. It is also equally apparent that, from time-to-time, countries engage in the substantial change that ushers in a radical restructuring or rapidly accelerates progress towards a given goal. One can see this, for example, in Reform 94 (1994) in Norway, the introduction of the Vocational Training Act (1996) in the Netherlands, or the introduction of the Apprenticeship Levy (2017) in England. And, of course, in the former Soviet Bloc countries, there are various substantial shifts in policy as attempts are made to, more or less, create a VET system from scratch and then adapt it to needs of the economy and society as indicated in the example of Poland.

What also becomes apparent across time is the centrality of VET policy to the wider public policy discourse relating to economy and society. This is often in the guise of skills anticipation. This reflects the wider policy debate about competitiveness and productivity within more integrated European and global markets. To some extent countries compete on their relative skills stocks and flows. Germany - and other countries with similar dual-systems - is seen to excel in this respect given the high esteem in which its VET system is held. In other countries – such as England – there has been a tendency, arguably, to place more emphasis on skills supply emanating from tertiary (university) education that, for the most part, is general in its orientation. Being able to better match skills supply in order to offset skills shortages, manage skills obsolescence, and ensure an effective transition from school to work for young people have all continued to be important considerations for VET systems. But the need to address concerns about economic competitiveness has arguably focused more attention on a VET system that has expanded in scope in the period since the early 1990s. It is perhaps no surprise therefore that some of the more significant changes are oriented towards bringing about a better alignment between VET and the needs of the economy. How much of a role one wants to hand over to employers in this regard is an interesting question. In the Netherlands or Norway, for example, one observes less direct influence being handed to employers / social partners, whereas in England, increased prominence has been given to employers in the design of the occupational standards upon which the apprenticeship system is founded.

In relation to skills anticipation and the better aligning of skills supply to demand, the role of Europe has been influential. More so in some countries than others, but one can see policy at a European level facilitating the introduction of, amongst other things, national qualification systems and frameworks (linked to the European Qualifications Framework), the shift to competence based systems of attainment, and the validation of informal learning. In addition, often through the assistance of the European Social Fund, skills anticipation systems have been developed. In a sense, the transaction costs of introducing certain forms of change have been lowered through the intervention of the EU in providing frameworks in which to develop national policies and tools and sharing of relatively effective practice.

Based on the foregoing, one observes over time substantial transformation in the scale, structure and nature of VET in many countries. Arguably, compared with the situation three or four decades ago, VET is more central to public policy discourse relating to issues such as competitiveness and social inclusion. One may say that the role of skills is prominent in a wider range of policy than hitherto. This has resulted from incremental change over time, interspersed with occasional substantial shifts in policy. Just as the substantial policy shifts tend to capture the headlines, it needs to be borne in mind that much of the change over time has its origins in incremental, piecemeal change.

Whilst more sophisticated analysis has looked at the changing meaning of VET from, for instance, an epistemological and pedagogical perspective (Cedefop, 2017a, 2017b), the evidence presented has a more prosaic diagnosis. VET's importance is articulated with respect to its capacity to meet a range of labour market and economic needs that will, in turn, afford a degree of protection to both young people entering the labour market. And it is the various structures in place designed to bring that about that give meaning to the concept of VET in the policy debate. This is especially so regarding the prominence given workplace based training, especially apprenticeships, as preferred means of delivering VET. This is common across all of the case study countries, though the exact junctures at which critical changes take place varies by country.

#### 5.4. VET policy shifts in the post-1990s period

At the beginning of the 1990s in many countries one can observe major developments in the provision of VET that, in essence, provide at least some of the foundations of the modern VET systems in place today. In the early 1990s – outside of the former Soviet bloc – the major policy shifts are observed with respect to:

- creating a mass participation VET system (where this was not extant previously) such that VET is seen as a key element of the overall education system;
- integrating VET within the wider education system and establishing parity between vocational and general qualifications;
- rationalising VET provision to create a more integrated provision (i.e. creating a national VET system out of the fragmented systems in place beforehand); and
- bringing about improved alignment between VET provision and its demand.

In general, one can see a process of increasing participation and bringing about better alignment between skills supply and demand. To some extent these are simultaneous inter-dependent processes where increasing participation is dependent upon making the system more attractive to would-be learners and, critically, to employers which might provide workplace based learning opportunities (e.g. through apprenticeships). Making the system attractive to employer in general necessitates delivery something that employers demand.

The way in which VET became integrated into the mainstream education system is exemplified by Norway (see box), though something similar is seen in other countries too such as in the 1998 reforms in Finland.

#### **Reform 1994 in Norway**

During the 1980s Norway witnessed a revitalisation of the system of collective skill formation within the manufacturing sector, a process driven step by step by local and central actors. The vocational system however, was considered complex, fragmented, and largely filled by older youths and adults. Furthermore, it was numerically a modest apprenticeship system. Building up to the comprehensive school reform of 1994 was an over-burdened education system and increasing youth unemployment. This was the backdrop to the efforts made to transform the Norwegian apprenticeship system through Reform 94; subsuming vocational education and general academic education under a common law. In parallel, so-called Local Training Agencies (LTA) emerged in the beginning of the 90s, privately owned, and intended to relieve companies from the increased administrative coordination following the integration of vocational training into the general upper secondary education system. The interest among employers in recruiting apprentices from upper secondary school significantly grew. With this reform came expectations that workplaces would not only offer more apprenticeship places, but also to expand and renew their capacity as places for training. This development was welcomed both by employers, and by the social partners, contributing to raising the general status and educational standards of the vocational system.

With the reform in 1994 all young people were given the right to upper secondary education. The core of the restructuring of the vocational education during the 1990s was the forging of tighter links between the apprenticeship system and upper secondary education. The vocational track was integrated in to the general upper secondary education system. Thus, it follows that the apprenticeship system also became evaluated in line with the education system's requirements for effectiveness and transparency. With this integration, one can say that the vocational system increasingly developed into an educational arrangement for young people.

Source: Cedefop Changing Nature of VET National Studies

The emphasis on apprenticeships is observed in other countries too. In England, for instance, the establishment of the Modern Apprenticeship programme in 1994 was seen as a means to simultaneously increase participation in VET and ensuring that VET was delivering skills that had value in the external labour market (see box).

#### **Modern Apprenticeships in England (1994)**

During the 1970s and 1980s policy became increasingly focused on how to increase levels of participation in post-compulsory education. There was increasing recognition that the existing system of employer funded and delivered apprenticeships trained relatively few people and was affecting the capacity of the country to match the competitiveness of, for instance, Germany,

France or the Netherlands. At the same time, relatively high levels of youth unemployment and recognition that employment programmes, such as the Youth Opportunities Programme, failed to deliver much in the way of the skills needed by employers working in relatively high value-added markets. This led policy makers to introduce Modern Apprenticeships designed to deliver to the type of skills training that was observed to work well in economies considered to be more productive. Moreover, it would introduce an effective means of training – apprenticeship – to sectors that had little tradition of this form of training and which, importantly, were considered to be the ones which accounted for most employment growth. Apprentices would receive a qualification – a National Vocational Qualification – that was to have parity with qualifications obtained in the general educational stream.

Source: Cedefop Changing Nature of VET National Studies

Creating a system that is responsive to the needs of the labour market (cf. a demand-led VET system) was facilitated through some noteworthy developments:

- the introduction of competence based qualification systems;
- reforming the role of employers / social partners in establishing competence based standards in VET (within the national qualifications system); and
- ensuring a degree of flexibility to serve local labour market needs.

These are common across many countries but exemplified to some degree by the case of the Netherlands with the introduction of the Vocational Training Act in 1996 (see box).

#### **The Introduction of the Vocational Training Act (1996) in the Netherlands**

A key date in the development of the the Dutch VET system was the introduction of the Vocational Education Act (*Wet educatie en beroepsonderwijs, WEB*) in 1996. Under the 1996 WEB Act, hundreds of vocational training centres were merged to form the present 42 ROCs plus 12 Agricultural Education and Training Centres (AOCs), and 15 smaller, specialised VET colleges. The introduction of the WEB had a number of consequences. First, it introduced one national qualification structure for all vocational education courses. This was intended to increase labour market support for vocational education and the willingness of businesses to invest in promoting vocational education. Second, it provided VET institutions a high level of autonomy in organising VET programmes as long as the curricula led to labour market relevant competences. Third, it brought together vocational education courses within a coherent qualifications structure where employers set out what students should know to qualify at a certain level of qualification. The WEB also shifted the VET system from being a supply-driven to a demand-driven one with a shift from learning a subject to developing a competence related to a profession. In 1999 the *Adviescommissie Onderwijs en Arbeidsmarkt*, ACOA (Advisory Committee on Education and the Labour market) recommended strengthening the existing structure of VET, based on learning outcomes, by strongly focusing on "core competencies". This marked the start of competence based education in the Netherlands.

Source: Cedefop Changing Nature of VET National Studies

The general picture, then, to emerge at the end of the 1980s / beginning of the 1990s is that of VET systems experiencing a degree of major reform in order to integrate VET within the education system and increase its attractiveness to young people and employers (as the principal skills consumers). If the early period was characterised by major changes, the more

incremental ones that followed cumulatively have had a major influence on the provision of VET. Over time the changes introduced can be substantial, as the example of the Netherlands demonstrates. With the introduction of the WEB in 1996 the system switched to being increasingly demand driven with a shift from learning a subject to developing a competence related to a profession. By 1999, greater emphasis was provided to learning 'core competencies' which, by 2002, led to the introduction of a competence based qualification system and, by 2004, training centres were delivering competence based education within the MBO. Further changes were introduced in 2015 with a reduction in the number of qualifications available and, with the introduction of the Vocational Training Act in 2016, there was greater scope for the individualisation of qualifications with the introduction of the core and optional parts where the optional parts allowed training to be tailored to local needs. In this way the system is regarded as being more responsive to labour market needs

The example of Italy also illustrates the various twists and turns taken by VET policy over time which can result in much cumulative change (*see box*). It illustrates the way in which VET systems have faced and needed to adapt to a multiplicity of challenges over time. It also illustrates that the changes that need to take place in the VET system to meet the needs of economy and society can take time to develop.

#### **The development of IVET in Italy**

In the 1950-1960s initial vocational training was conceived as an instrument for social development and creating employment opportunities. With the crisis in the Italian economy stemming from the oil price shock in the early 1970s, VET became increasingly focused on matching the supply of skills to its demand and supply. The 1980-1990s, further changes were evident. These decades proved to be a dynamic period in the development of VET as it came to terms with:

- de-industrialisation and the emerging knowledge-economy;;
- the need to support long-term unemployed people and the marginalisation of socially vulnerable groups in the labour market;
- ensuring that employees were supported in adapting to organisational and technological change; and
- creating an environment of lifelong learning to improve employability and active citizenship.

In the 2000s one arguably begins to see the tools and policies developed that will allow the VET system to flexibly respond to external challenges. This includes developing the adoption of a learning outcomes approach, qualification frameworks, increased permeability in the education and training system.

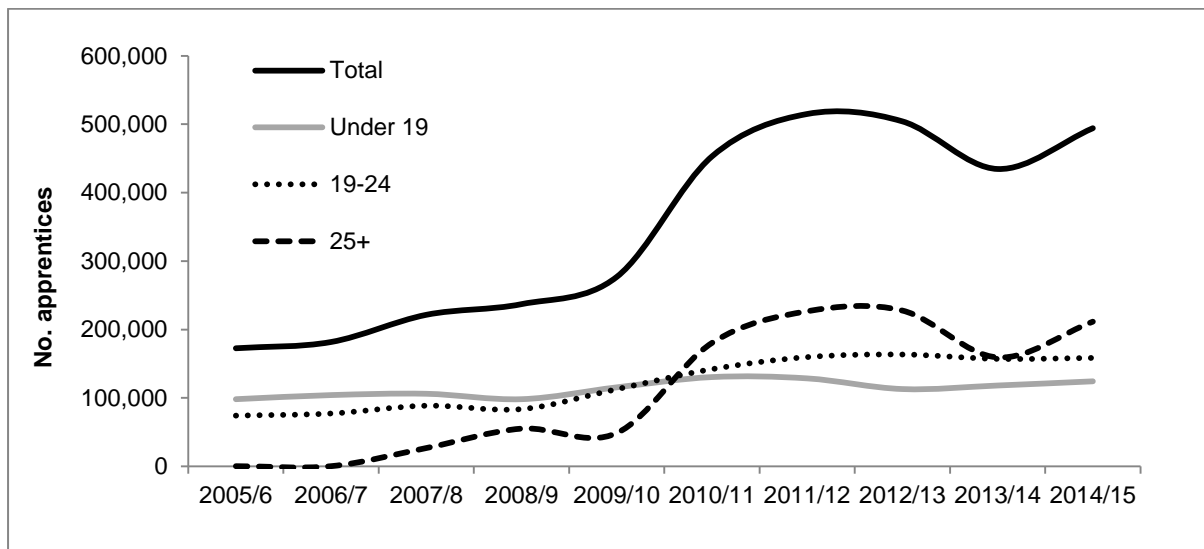
Source: Cedefop Changing Nature of VET National Studies

The examples provided above illustrate the way in which cumulative change, ushered in response to changes taking place in the external labour market, can have a substantial impact on VET systems.

## 5.5 Participation in VET and the preference for work-based learning

There is a policy preference in many countries for workplace based learning. The preference stems in part from the view that the involvement of the employer almost by definition ensures that the training delivered is related to employer demand. It is also more likely to give access to key technologies and work practices in a way that a vocational school might find more difficult. But many countries have struggled to increase participation levels in workplace based learning in IVET. To some extent this relates to the structure and regulation of national labour markets. In the German labour market there is a degree of wage compression resulting from collective bargaining which makes it more worthwhile for the employer to train workers than to leave them unskilled. And because collective bargaining establishes the wage rates of workers, it is difficult for employers that do not train to recruit the former apprentices of those companies that do train. Hence there are incentives in place to train people. In contrast, in a relatively unregulated labour market such as that found in England, the amount of risk faced by the employer in training an apprentice is that much greater and, without the State offsetting that risk through increased funding, one would expect the employer to invest less in training apprentices. This is because an employer who trains someone, such as an apprentice, is at risk of losing them to another employer (other things being equal) because the non-training employer can pay a higher wage because they have not borne the costs of training. It is certainly the case that increasing participation rates in apprenticeships in England, especially so amongst young people, has been a uphill policy struggle almost from the time Modern Apprenticeships were first introduced (see Figure 5.1).

**Figure 5.1: Apprenticeship starts in England**



Source: Statistical First Release – Apprenticeship Starts by age

Employer demand for apprenticeships is largely driven by employers' current and future demand for skilled labour. In the Netherlands there are two tracks in the VET system:

- school based training (*Beroepsopleidende Leerweg, BOL*) where students typically spend four days a week at a VET school and one day at an employer on a work placement; and
- work based training (*Beroepsbegleidende Leerweg, BBL*) where students typically spend four days a week on work placement and one day at VET school, and have an employment contract.

In general, during periods of weak aggregate demand in the labour market, the numbers entering the BOL increases, and during relatively strong periods of growth employer demand for the BBL increases. The important point is that despite the policy preference for workplace based training – especially in the guise of apprenticeships - demand for it from employers is sometimes relatively weak. It is, however, not just the economic cycle that influences the demand for workplace training. The availability of skilled labour has been boosted through immigration. In many instances the availability of skills in the external labour market negates, other things being equal, the employer’s need to train. The case of Norway illustrates this case (see box).

#### **Challenges to Apprenticeships in Norway**

Apprenticeship as a training model receives widespread political support in Norway, but is challenged by external pressures, such as the supply of relatively low cost labour resulting from immigration in the wake of globalisation, and ‘academisation’ tendencies in society following the substantial expansion of tertiary education. These external pressures affect the VET system in different ways. First, since the EU-enlargement in 2004 and 2007, Norway has experienced a large increase in labour immigration, particularly from Poland and the Baltic states, leading to changes in the conditions for VET notably within the building and construction sector. Increasingly international labour markets are believed to affect employers’ willingness to invest in apprenticeship training, due to easy access to cheap foreign labour, which presumably affects the degree to which young people perceive the vocational education system as an attractive and a suitable platform for career progression. Second, the development whereby higher education credentials are ascribed higher value in society implies a potential weakening of the attractiveness of the VET system.

Source: Cedefop Changing Nature of VET National Studies

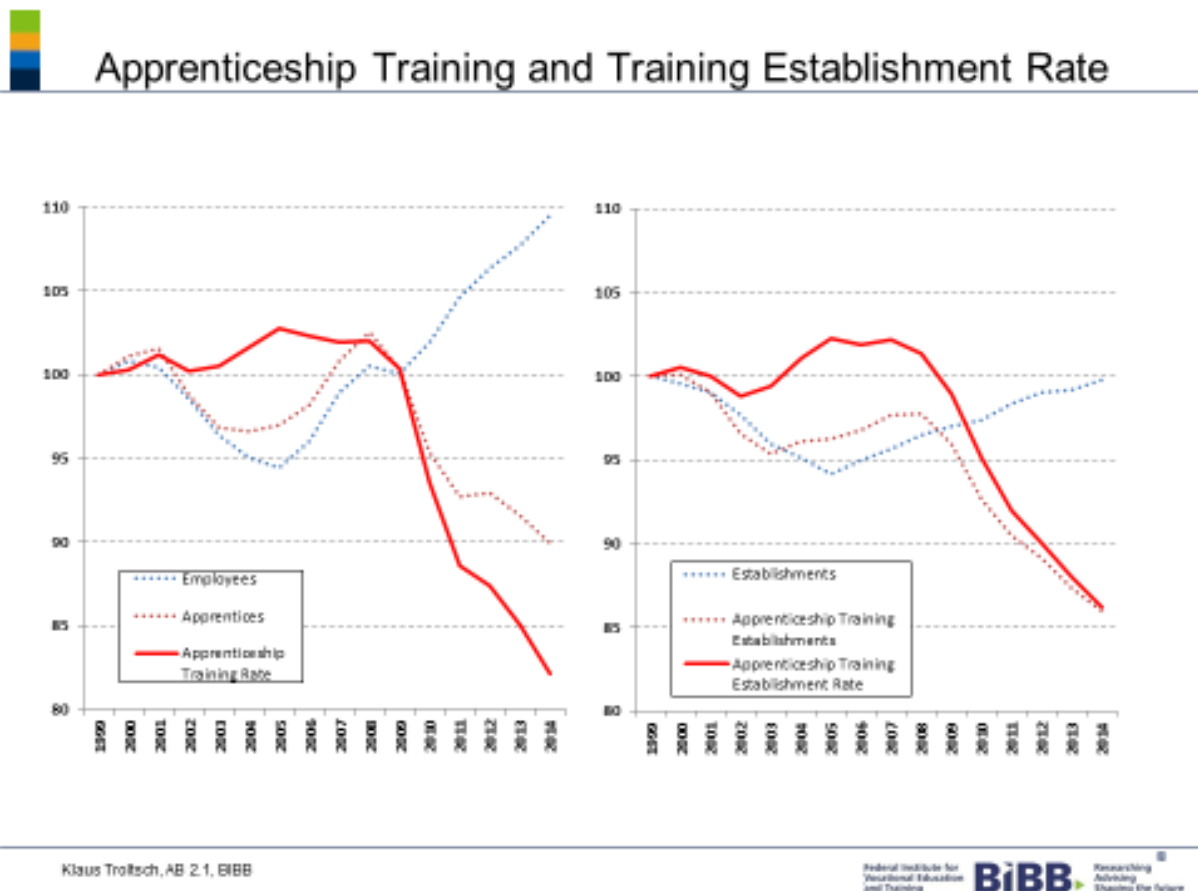
In some respects, the role of immigration, especially where the incomers are relatively highly skilled represents a supply-side shock that has the capacity to dampen employer demand for IVET.

There are other factors at play. In Germany, the demand for apprenticeship from employers has decreased constantly over the last years (see Figure 5.2). Employers in 2017 are no longer engaged in apprenticeships the way they were 10 years ago. This puts pressure on the VET system vis-à-vis the Vocational Education and Training Act since the supply of apprenticeship positions is pre-requisite to the functioning of the entire VET system. Currently around 40 per cent of German employers provide apprenticeship places. Of those that do not, these have been categorised, with respect to their participation in apprenticeships, as (Mohr et al., 2015):

- those committed to the apprenticeship model, but experience difficulty finding applicants who have the qualities that the employer is looking for in an apprentice;
- those that stress that there is no need for internally skilled staff. They prefer to recruit skilled workers from the external labour market; and
- the cost-benefits optimisers that place an emphasis on the on the costs and benefits of apprenticeship training.

Clearly even within the German system there is an element of employer behaviour that is predicated on the cost-benefit of engaging in apprenticeships.

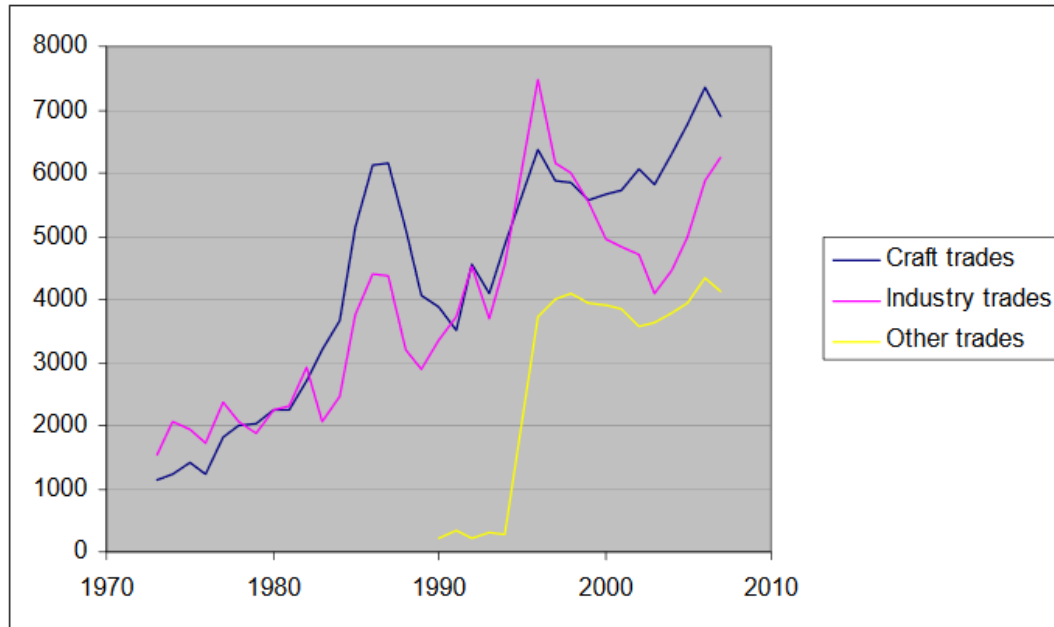
**Figure 5.2: Participation in apprenticeships in Germany**



There is perhaps a sense in which the traditional employers of apprentices have a declining demand for apprentices as a consequence of changes in the sectoral and occupational structure of employment (cf. arguments about task based technical change and its impact on the skill structure). In the case of Norway, it is certainly evident that the apprenticeship scheme has struggled to gain traction in the service sector where the idea of an apprenticeship has little tradition. Figure 5.3 shows three categories of trades: (i) craft and craft-oriented trades, (ii) industrial and industry-related trades, and (iii) other trades i.e. new trades within sectors previously not included under the law on vocational education. It illustrates that the trades/crafts and industry account for the most significant share. Carpentry, hairdressing and construction have contributed strongly, whereas the smaller,

traditional crafts have declined (Høst et al., 2008a, 2008b). The new trades that emerged in the service sector in the wake of Reform 94 i have not been able to sufficiently gain foothold.

**Figure 5.3: New apprenticeship contracts per year from 1973-2008, distributed according to craft, industry, and other trades**



*Figure 2.2: New apprenticeship contracts per year from 1973-2008, distributed according to craft, industry, and other trades.*

Sources: RFA's annual report, Linda vocational education, The Ministry of Education, Statistics Norway

Workplace based learning – particularly apprenticeships - has gained particular prominence in policy discussions over recent years (cf. the New Skills Agenda and the European Alliance for Apprenticeships). The evidence points to this type of VET having the potential to confer substantial benefits on employers and would-be apprentices / learners, and there have been a number of policy initiatives across Europe – including pan-European ones – designed to promote its take-up. But as the evidence above indicates, persuading employers – and sometimes young people – to provide apprenticeships can face a number of challenges that stem from: (a) the overall level of aggregate demand from employers for the types of skill that apprenticeships deliver; and (b) the relative cost-benefit of using apprenticeships versus something else.

## 5.6 Attractiveness, standards, and skills matching

Having a VET system that is attractive to employers and learners is important. If VET is not attractive to employers and learners, then it is unlikely to satisfy its societal and economic objectives. VET has a need to meet both current and future skill needs of both employers and individuals (i.e. learners). As noted above, one of the major shifts in the early 1990s was that of moving to a competence based model of VET provision. A competence based approach allied to professions / occupations potentially creates a tension between providing

training that is related to one particular profession and essentially makes the trainee / apprentice ready to work in that profession, versus providing training that is less occupation specific but provides increased opportunity for mobility. The latter approach has a stronger focus on transversal skills and career adaptability (the ability to apply your skills, knowledge and understanding in a variety of contexts). Such an approach also provides a degree of protection from future economic change.

A potential outcome of allowing employers to have a central role in the design of standards is that it could lead to a proliferation of fairly narrow occupational standards. A concomitant risk would then be that these standards might not provide the breadth of learning that will afford a degree of protection to the learner and / or the employer from the forces that lead to skills obsolescence (for the learner) and skills shortages (for the employer). Some employers in standard setting bodies may recognise the importance of the development of transferable skills, but they may also be concerned that it may increase the likelihood that too many learners choose another career direction rather than staying in the occupation for which they initially trained.

One of the attractions to employers of providing apprenticeships relates to the degree of influence they have over the training delivered. Although there are curricula to be followed, whilst the apprentice is in the workplace the employer has a degree of flexibility in deciding the way in which skills are learnt and used in practice. This might be regarded as one of the essential ingredients that will ensure an apprenticeship is tightly tied to the demand for skills in the labour market. This then relates to a wider set of issues about the extent to which the social partners – particularly employers - are engaged in design and delivery of VET..

With respect to this issue, there are pressures in different directions. In England employers have been granted increased influence over apprenticeship standards (*see box*) and the risk here is that the occupational standards developed are both numerous and rather narrow. At the same time, outside of apprenticeships, amongst the vocational qualifications that have many more participants, the government is seeking to simplify the system into a small number of 'technical education routes' aimed at 16-18 year olds as attractive alternatives to the long-established general 'Advanced' level qualifications. Indeed, the general European trend, as highlighted by countries such as the Netherlands and Finland is to reduce the number of qualifications. Here there has been a twin-track policy of simplifying the VET system in order to make it more transparent by reducing the number of qualifications on offer and, at the same time, increasing the subject breadth of those that remain to increase their attractiveness to young people. For example, there is sometimes more emphasis on transversal skills. In Finland, the inclusion of optional modules is important to allow the tailoring of broad qualifications to local and sub-sectoral needs.

#### **Employer influence and co-investment in England**

From May 2017 in England there has been a major shake-up in the way VET is designed and funded. Large employers – with a payroll over £3m a year – will be expected to pay the Apprenticeship Levy, and those who fall outside scope of the Levy will be expected to co-invest in VET (i.e. meeting around 10 per cent of the cost of training delivered outside of the workplace). In return for the employer being requested to make a direct financial investment in

apprenticeships, employers have been granted more say in the design of the occupational standards that determine the content of a specific apprenticeship. Subject to meeting certain criteria, an employer or group of employers can design an apprenticeship standard for an occupation if one does not already exist. This is seen as placing the apprenticeship at the heart of the VET system and ensuring that it is demand led.

Source: Cedefop Changing Nature of VET National Studies

As noted above, the example of England contrasts with that of other countries - such as the Netherlands, Finland and Norway - where the trend is towards broader standards with a particular emphasis on the inclusion of transversal skills. This has been achieved with sometimes with less engagement of employers or social partners more generally (see box).

#### **Broadening occupational standards in Norway**

A key reform in the Norwegian vocational education system was the Knowledge Promotion reform of 2006. In the wake of this reform, the VET system offered vocational training in fewer trades with the consequence that many vocational students had broader and less trade-specific vocational education and training during the first two years of their training in vocational school (the final two years being based with the employer). Another significant change was the introduction of the school subject called the 'in-depth study project', which was implemented in the two school-based years of vocational education. Critics had warned against the negative consequences of abstract and theoretical courses at the expense of practical training. The distance between the subjects taught in school and the trades and occupations might have negative effects on student motivation as well as on skills development. An important aim of the in-depth study project was to introduce VET students to authentic work methods and tasks within relevant trades and occupations at an early stage of their training, partly in order to counteract the presumed negative effects of broad vocational programmes (Olsen et al., 2015). Currently, several trades are clustered together in eight vocational programmes, branching out to 52 second year courses. The first of the school-based year in a vocational programme has a broad vocational content with students prepared, potentially, for many different trades within the same programme. The second year involves further specification yet usually still encompasses several trades (Bråthen and Fløtten, 2017). Recent research shows that the content and learning provided in the placement periods is rather arbitrary and non-standardised, owing to decentralised school responsibility (Nyen and Tønder, 2012).

Source: Cedefop Changing Nature of VET National Studies

In the Netherlands there has been a similar trend towards reducing the number of VET qualifications / standards, but at the same time this has involved more flexibility in the delivery of IVET. Whilst there are fewer standards to work towards, there is greater scope for mixing and matching particular modules or elements from other courses by providing for core and optional elements in the delivery of courses.

It is apparent that the changes ushered in the Netherlands and Norway has been undertaken with reduced involvement of employers. There is, to some extent, more influence vested in vocational training schools and / or regional agencies. So in effect one is observing a shift from relying upon employers (or their representative organisations) to vocational schools and, in some cases, regional agencies, to determine how the skills system should be flexed to meet local labour market needs. Employers may be represented on regional

agencies, but the key point is that the employers are not the main drivers of the system in the way they might have been in the past. The example below from France illustrates the way in which regionalisation is designed to bring about more alignment between IVET and the labour market (see *box*).

#### **Regionalisation in France**

In the recent period, a process of decentralisation has given more responsibilities to the regional level in the field of IVET as well as CVET. The law of 2014 gives regions authority over vocational training, career advice and coordinating job support policies: managing training policies, implementation of VET including apprenticeships for young people and adults, and supporting small and medium size enterprises in their territory. This new law also created regional public training services and regional public guidance services. The dynamics created by this decentralisation process is an essential element of VET strategy that contributes to more effective public action by bringing the decision-making and management bodies close to local realities.

Source: Cedefop Changing Nature of VET National Studies

In general, then one can begin to see a divergence between:

- providing the employer with increased influence in return for meeting more of the cost of the training delivered by publicly funded IVET systems (e.g. England) with concomitant risk that occupational standards might be narrow; and
- developing broader occupational standards (i.e. more occupations are grouped together) in response to being better able to support occupational mobility and future skill needs (e.g. Norway) and, at the same time, providing a degree of flexibility with respect to the mixing and matching of modules so that the learner can individualise their training to some extent (e.g. the Netherlands). The risk here is that the IVET system proves to be less attractive to employers especially in relation to offering apprenticeships.

The above are relatively recent developments such that the impact of the trade-offs made between delivering what employers want now versus a longer-term view about what the economy might need in the future, is difficult to discern.

## **5.7 Providing access to higher education and the inclusion of adults**

As will be addressed in the next chapter many countries are faced with a declining youth cohort which increases the competition between the general and VET steams for the available students. There are two clear developments here:

- providing a pathway from VET at upper secondary level to higher education; and
- increasing levels of adult / lifelong learning.

The idea that VET is in some way a dead end providing few opportunities to continue study beyond the end of upper-secondary education is seen as one factor by policy makers that acts as a disincentive for young people to take the VET pathway. It should, however, not be

assumed that all young people want the opportunity for further study since they may select IVET precisely because it offers early labour market entry.

A differentiation should be made between access for upper secondary VET graduates to (a) general and (b) vocational higher education. Dead ends to general higher education were eliminated from most systems some years ago through bridging courses and double qualifying pathways (McCoshan et al, 2008), notwithstanding well-known objections from many universities. At the same time, as was pointed out a decade ago, where pathways to general higher education have been available they have tended to remain under-utilised, perhaps because of the extra effort involved in double qualifying pathways and the extra effort and delayed access to higher education involved in bridging courses. A further barrier has been the different pedagogies and learning environments involved which has been a challenge to VET graduates, with consequent high rates of early leaving. Thus, the challenge in respect of VET graduate access to general higher education is less about bringing pathways into existence and more ensuring that they are well promoted and that upper-secondary VET graduates are well supported so that they remain in the programmes.

Regarding higher level VET, most countries over recent decades have been seeking to develop post-secondary level VET. France is particularly interesting in this regard with the creation of the *bac pro* and harmonising the time taken to complete the *baccalauréat professionnel* with its counterpart in the general stream (*see box*). Such developments are a comparatively new trend, reflecting the needs of the economy and the labour market for higher level VET skills. It remains to be seen how popular such developments will be and whether they will suffer from the same issues of under-utilisation and early leaving as has traditionally been experienced by VET students in general higher education.

#### **Increasing access to higher education through VET in France**

The main changes that have had an impact on VET's image and attractiveness in France over recent years were: (i) the creation of the vocational baccalauréat (*bac pro*) in 1985; (ii) the possibility to take higher education exams through apprenticeships starting in the 1990s; and (iii) more recently, in 2009, the decision to set the duration of the '*baccalauréat professionnel*' to three years (instead of four years as before) to make it the same as the technological and the general baccalauréat.

The decision to create the vocational baccalauréat (*baccalauréat professionnel*) increased considerably the attractiveness of upper secondary VET because the upper secondary vocational pathway could now lead to a certification at level EQF4, or still higher as it opened the possibility to go on to higher education, mainly through two types of two-year post-baccalauréat institutions: (i) the 'sections de technicien supérieur' (STS) (post-baccalauréat classes in 'lycées généraux et technologiques' (LEGT) preparing for a 'Brevet de Technicien Supérieur' (BTS); and (ii) the '*Instituts Universitaires de Technologie*' (IUT) institutions which are within universities and prepare for a '*Diplôme Universitaire de Technologie*' (DUT). Both of these official qualifications are at level EQF5 and are increasingly followed by a supplementary year of training leading to a '*licence professionnelle*' (professional Bachelor) which is a qualification at level EQF6.

Source: Cedefop Changing Nature of VET National Studies

France is not the only country to have developed these types of approach, though it may have been somewhat ahead in the availability of apprenticeships at the higher education level. Similarly, Finland has historically had a system that gave access to higher education through the VET pathway. But in other countries too, one can observe initiatives designed to grant vocational students at EQF level 3 access to higher education. In the UK, for example, apprenticeships have been developed at EQF levels 4-8 though it is not always clear whether this, in practice, allows people to continue their studies to the higher level via apprenticeship, or whether continuing professional development courses are being rebadged as apprenticeships. It has been observed in the financial sector, for example, that the level 4 course in accountancy to a very large extent subsumed an existing professional qualification (Gambin and Hogarth, 2016b).

The provision of VET into higher education – especially where it is delivering courses that may have previously been delivered under the rubric of gaining a professional certificate – demonstrates to some extent the blurring of the boundary between IVET and CVET. The debate about IVET is often framed by a concomitant one about the transition from school to work. It is clear that the boundary between one might call IVET and CVET is breaking down to some extent with various IVET programmes being amendable to reskilling individuals at risk of skills obsolescence. By providing IVET providers with a degree of autonomy with respect to what is delivered, there is potentially more scope to meet the needs of adult learners. In some countries, such as England, IVET programmes such as apprenticeships have always been open to adults. Indeed, much of the growth in participation in this form of training has been due to adults rather than young people participating in this form of training. In Figure 4.1, above, that shows the number of apprentice starts by age, it is notable that much of the growth in apprenticeships has taken place amongst the over 25s. And it is also apparent in countries such as Finland that apprentices are often relatively old.

## 5.8 Change in the former Soviet bloc countries

The foregoing discussion has concentrated on countries outside the former Soviet bloc. The cases of Estonia and Poland provide examples of countries that had to make the transition from centrally planned economies to liberal market ones somewhat quick and, in doing so, transform their VET systems accordingly. Estonia provides an example of a country that, perhaps, more speedily developed its VET system in the post-communist period so that it responded to labour market demand. It went through a multi-stage reform programme. During the 1990s the VET infrastructure fell into disrepair as it served the needs of an economy that disappeared with the collapse of the Soviet Union. By 2000, however, it had developed professional standards via a process of social partnership and, with assistance from EU-PHARE had begun to develop a VET system that was responsive to the demands of the labour market. By the 2004/5 national VET curricula had been developed that corresponded to professional / occupational standards. The system that was eventually created is one that is highly centralised and regulated.

The situation in Estonia can be contrasted with that of Poland. In Poland, during the communist period vocational schools were divided into three types depending upon the level of learning they delivered:

- basic vocational schools;
- vocational education schools; and
- technical colleges.

Basic vocational schools were the most commonly chosen type of schools at the time; about 55 per cent of all primary school graduates attended basic vocational schools. For the majority of them, this was their last level of education. In the 1970s the first public criticism of the VET system were aired. A report at the time, demonstrated that vocational schools were second rate. Most of the graduates went straight to work with no prospect of further study, and the courses offered were narrow, used outdated methods and equipment, and provided little or no basis for continued study. With the emergence into a liberal market economy the VET system needed to be completely rebuilt. In 1991, the Education System Act was passed – it is still valid today though it has been amended several times - but it treated VET marginally. For the most part there was not much interest in VET at this time. The number of students decreased, many VET schools were abolished, and the remaining ones, due to their under-funding, offered a low quality of service.

A key change in the Education System in Poland was the Handké Reform in 1998. The reform led to the introduction of the lower secondary school “gymnasium” as a new type of school. The decision was made to reduce the duration of primary school education to six years, after which pupils would continue their education in secondary school (gymnasium) for three years and only upon completion of this cycle would a decision be made about whether they would continue in the general track (specialised lyceum) or enter a two-year cycle of education in vocational school. In the period following the reforms there was a feeling that the VET system had failed to flourish. It was still very much a second-choice for students. After 2008, and encouraged by EU regulations, the aim was to develop a more coherent VET system. The 2012 vocational education reform focused on increasing the attractiveness of VET and adjusting it to the needs of the labour market. The reforms introduced in 2012/13 included a learning outcomes based curriculum, a new formula for external assessment, new procedures for validating non-formal and informal learning and workplace based VET. The reforms also led to an integrated qualification system. In 2016 the Polish Qualifications Framework (PQF) came into being which means that qualifications in formal and non-formal education will be assigned to designated PQF levels. The integrated qualifications register was launched in July 2016. By extending the possibility to accumulate and transfer learning outcomes achieved in various contexts, the new VET system allows for greater flexibility in obtaining further qualifications and makes learning pathways more flexible (European Commission, 2016c).

It is apparent that both Poland and Estonia have had to quickly come to face the same challenges as other countries in the EU in making VET relevant to the needs of the economy and ensure that sufficient people participate in it. The pressures faced by these countries are perhaps exacerbated by demographic change (high levels of emigration) but they are nonetheless the same as their western counterparts. What is readily apparent is the important role that the EU has played in bringing their VET systems up to speed. The example for Poland provides clear evidence of this development (see box).

### **The role of the EU in supporting VET development in Poland**

The EU has played an important role in driving change in the VET system in Poland. Resolutions by the European Commission in 2004<sup>(13)</sup> and 2009<sup>(14)</sup> obliged EU countries to develop a National Qualification Framework on the basis of the EQF (ICF International, 2014). As of 2016 this has been implemented. As has a competence based approach to completing a vocational qualification. There are signs that the VET system has become more flexible over time. There is a registry of professions with VET qualifications designed to grant entry to these professions. The registry of professions lists the qualifications necessary to gain access with the curriculum for that qualification increasingly being drawn up with the involvement of industry (e.g. via sector skills councils). Moreover, with the introduction of a core VET curriculum, there is more autonomy for vocational schools (and employers) to determine the skills, competences, and knowledge to be delivered.

Source: Cedefop Changing Nature of VET National Studies

## **5.9 Conclusion**

Over the past three decades one can observe a period of change that saw, in the first instance of change, VET become an integrated part of the formal education and qualification system in many EU countries. From there on there were concerted efforts to increase participation rates and ensure that the VET system was increasingly demand led. It is also apparent that from the 1990s onwards that IVET became competence based with the associated certification of those competences integrated into national qualification frameworks. Thereby there was increased transparency in the competence based VET system.

Prior to integration of the VET system into the formal education there tended to be a fragmented, uncoordinated industry led system in place. This is perhaps less the case in Germany than in the other countries selected for case study. The first step was, then, creating a formal VET system that met the needs of industry and learners both currently and in the future. The future element is important given that economies were experiencing substantial change resulting from external factors that were bringing about structural changes in employment.

One might regard the changes introduced in the 1980s and 1990s as a major step-change in the provision of VET in Europe. The changes brought into being the system that is extant today. But from then on one can see incremental changes that have cumulatively transformed the provision of VET. This is best observed with respect to the tension between, on the one hand, making sure the VET system is attractive to employers and

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<sup>13</sup> Draft Resolution of the Council and of the representatives of the Member States meeting within the Council on Strengthening Policies, Systems and Practices in the field of Guidance throughout life in Europe of 18th May 2004 No. 8448/04 EDUC 89 SOC 179, Internet: <http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%209286%202004%20INIT> on 2017-06-16

<sup>14</sup> Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training ('ET 2020') No. 2009/C 119/02, Internet: [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009XG0528\(01\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009XG0528(01)&from=EN) on 2017-06-16

would-be learners and, on the other, to ensuring that the system meets the wider societal and economic needs of a country both now and in the future. There has been a continuing struggle in some countries to convince young people that VET offers them the opportunity to engage in a programme of learning that has relatively good employment prospects. There is a continuing preference for the general stream from young people. The VET system is typically mandated not only to provide high quality training that the economy needs, but also to assist those who may be struggling to make the transition from school to work or re-enter employment. Accordingly, to a certain degree, it is seen as something associated with disadvantage. Countries, however, have worked hard to overcome this perception and develop the means to drive up participation levels.

As well as making the VET system attractive to employers and individuals by emphasising its direct links to the world of work (i.e. via workplace based learning), there is also a need to ensure that it can accommodate future change. This has seen, in some countries, a reduction in the number of occupations / trades one can train towards; in other words, there has been the merging of standards so that they cover a broader range of occupations / trades. At face value this might reduce the attractiveness of VET to employers as there is a less of a one-to-one match between the training course that might be delivered and its alignment with jobs in the workplace. To some extent this has been offset by increasing the flexibility in provision. For example, it is observed that there are sometimes core and optional elements of a programme so that learners are able, via the selection of optional elements, to ensure their individual skill needs are met. Whether or not the learner chooses an appropriate mix, however that might be defined, is dependent upon the advice and guidance available to them. Improving skills anticipation has been something nearly all countries have invested in over the recent past. The foregoing points to the tension policy makers have had to address in balancing making the VET system attractive to learners and employers over the short-term, and ensuring it meets longer term societal and economic needs. It is of note that some countries have sought to achieve this through a lesser degree of social partnership than has been in the case in the past. There is perhaps more state control over the system with, in selected cases, devolution of some responsibilities to vocational schools and regional authorities so that local provision meets local need. This is not to say that social partnership has come to an in the VET arena, more that its role has perhaps become less influential.

If one observes piecemeal, incremental change from the 1990s onwards, the next major shock to the system is that of the economic crisis in the late 2000s that substantially affected the demand for skills, the capacity of employers to continue to invest in workplace learning, and the funding available to the VET system. That this should have occurred at a point when VET system were facing pressures resulting from demographic change and the need to meet the skill needs of the new technologies ushered in by Industry 4.0, has created an environment where the challenges have become increasingly complex but, in some instances, with less resource with which to deal with them. This is the subject of the next chapter.

# Responses to external factors

## 6.1 Introduction

In the preceding chapter consideration was given to major changes that have affected VET. In some respects, demographic change represents a supply-side shock, especially where there are high levels of immigration or emigration. It is analogous in some countries to the types of economic shock that are periodically visited on labour markets with consequences for the supply and demand of labour. In contrast, the introduction of technical change in the workplace can be piecemeal or incremental but over time that change can have substantial impacts on the demand for skills across a wide range of jobs. There is talk of various industrial revolutions resulting from technical change, but in practice the technologies often enter the workplace in an incremental fashion even if the effect, ultimately, is that of radical restructuring of occupational employment structures and the content of jobs. The remainder of this chapter outlines how VET systems have responded to each type of change.

## 6.2 Economic change

The mid-1990s through to the mid-2000s was a period of relatively benign economic conditions in the world economy (see Chapter 3 for more details). GDP growth was relatively strong and this manifested itself in employment growth. As such conditions were fairly stable in which to construct skills policy. In 2007, the world economy faced a seismic shock the type of which not seen before. More precisely the impact was described in the following terms by Paul Krugman (2008):

“...it might be more accurate to say that it’s like everything we’ve seen before, all at once: a bursting real estate bubble comparable to what happened in Japan at the end of the 1980s; a wave of bank runs comparable to those of the early 1930s (albeit mainly involving the shadow banking system rather than conventional banks); a liquidity trap in the United States, again reminiscent of Japan; and, most recently, a disruption of international capital flows and a wave of currency crises all too reminiscent of what happened to Asia in the late 1990s” (p.15).

Whilst Krugman’s analysis emphasises the financial aspects of the crisis, its impact was also felt in the real economy through its impact on output, employment and unemployment. In all of the countries included as case studies the crisis had a dramatic impact on employment, especially so in Greece and notably so in relation to young people. It also had the impact of making employment growth, rather than issues relating directly to human capital, the policy priority. This was especially noticeable in Greece where the impact of the crisis was felt hardest but it is evident in the other countries as well. Even if the recession did not affect employment to the extent initially feared in some countries, it certainly had a calamitous effect on youth employment. In general, if employers were not laying-off workers, the resulting spare capacity in the workplace meant that there was little need to recruit new trainees. And where employees were laid off, there was a glut of experienced workers in the external labour market that meant employers had little need to take on new trainees.

For some countries, the economic crisis brought about a situation where a pressing policy concern was that of how to appropriate the return on any VET investment when economic conditions were such that people the acquisition of additional skills meant that it was easier

to leave the country. This has been observed in its most acute sense in Greece where GDP fell by quarter between 2008 and 2014 (see box).

**The challenge of appropriating the returns from VET: the case of Greece**

The challenge facing the VET system – and the education system in general – is to encourage investments in human capital that can be captured by the Greek economy. But as noted throughout the study there is a preference for people to take the general route through the education system because this gives access to higher education. And this then potentially provides the means to leave the country to work abroad. There is now an emphasis on apprenticeships which has the potential to improve the attractiveness of the vocational education to young people. The danger is that economic recovery could be hampered by a lack of skills (and the lack of skills may be a disincentive to investment). It is apparent that the country is investing skills anticipation via the Mechanism and this may provide the means to ensure that the country is able to better match skills supply to skills demand as the economy begins to grow.

Source: Cedefop Changing Nature of VET National Studies

As the example of Greece illustrates, the economic crisis exacerbated emigration trends in some countries. This is presented in more detail below in the section on demographic trends, other than to say that countries with relatively high standards of living and where employment growth was less adversely affected by the crisis became even more of a magnet to those from less economically advantaged countries. In some countries this results in a vicious spiral: there is the emigration of young highly skilled people which has the effect of lowering participation rates, which leads to tightening of skill supply potentially bringing about skill shortages (over the short-run) which constrains the productivity growth necessary that that will allow a country to increase its standards of living so that there is less incentive for the highly skilled to emigrate (cf. Poland, Estonia and Greece).

Where the impact of the crisis has had a lasting impact that continues to be felt today is in relation to public expenditure on VET in some countries. The example of Finland is interesting in this regard simply because it is one of the countries in Europe that has experienced a particularly sharp economic cycle over the past thirty or so years (see box). There is a constant worry that where the VET system experiences cuts in expenditure that they are not subsequently reinstated when the economy begins to grow. So each economic crisis ratchets down VET provision.

**The impact of the cycle on VET provision in Finland**

The macroeconomic environment is mostly visible in VET through public expenditure. Because of the depression in the early 1990s, a lot of public funding was cut from all sectors, including secondary education. After the situation started to improve and the economy started growing again, these cuts in public expenditure were never restored. Instead, more funding has been cut and public expenditure is expected to continue decreasing in the future. VET is facing budget cuts of EUR 190 million at the beginning of 2017. The macroeconomic problems may have resulted in a shift of the government's education policy which now emphasises faster graduation and entrance to the labour market. This is meant to tackle costs (shorter time at school means less costs) and provide more labour supply to increase employment levels. At the VET level, this can be seen in an increase of acquired skills acceptance. The structural

changes have affected VET. When there have been massive lay-offs in industries such as the paper industry or electronics ones, the vocational colleges have needed to adjust. Sometimes the structural changes have taken place over a long period of time, as in the case of the textile industry, and sometimes they have been more acute such as when factories have been closed. The VET system has been mainly reactive to the external changes. The major impact has been that of economic fluctuations which has cut funding in the bad years which has been not restored in the good ones. The results are still visible in less contact teaching and less vocational teaching units.

Source: Cedefop Changing Nature of VET National Studies

As in the case of Finland, the impact of the crisis on VET was also observed in Greece (see *box*). Italy has seen a reduction in the budgets available at regional level for IVET leading to a closure of some training institutions (sometimes in the more economically deprived areas) and pushed other training institutions to find efficiency savings. And in the case of England there has been, in the post-crisis, a reduction in the VET budget such that increasingly the government has sought employers to meet more of the cost of programmes such as apprenticeships (Gambin and Hogarth, 2016c, 2017; Wolf, 2015).

#### **The impact of the crisis on VET expenditure in Greece**

It is apparent that one impact of the crisis has been to reduce the amount of public funding available for VET. Initial Vocational Education is part of upper secondary education of the Greek educational system. Thus, Vocational Schools - EPAL and EPAS - are funded from the state budget. Initial vocational training at post-secondary level delivered by vocational training institutes (IEKs) and supervised by the Ministry of Education is funded by the money allocated to the Ministry from the national budget as well as by European funds. Although relevant data are not available, the budgetary constraints implemented as a consequence of the economic crisis are likely to have had the impact of reducing significantly public expenditure on VET. This has led to deep concern on the part of social partners and private companies being expressed.

Source: Cedefop Changing Nature of VET National Studies

The impact of the expenditure cuts in VET which have been experienced in some countries is essentially that of more needing to be done with less. A number of impacts can be observed:

- it tends to reinforce the need to ensure that the VET system delivers the skills the country needs. This almost becomes a value-for-money test for many VET systems;
- VET schools have fewer resources to invest in the technologies that people need to be trained in if their skills are to be relevant to the labour market, and it can make it more difficult to recruit lecturers / trainers in certain subjects because the VET schools cannot pay the wages required;
- transferring the costs of training away from the State to employers and learners. To some extent this can be observed in the preference for apprenticeship training where

arguably more of the cost of the training is met by the employer than would be the case if the student remained in a vocational school;(15)

- identifying the means to more efficiently stimulate skills supply such as focusing more on recognising workers' skills that they have acquired on the job, outside formal training.

Often there are other deep rooted reasons why the changes listed above need to take place other than the effects of the economic cycle on public expenditure on VET. For example, in the UK ensuring that the costs and benefits of VET are 'fairly' shared between the employers, learners and the State has been a long standing policy objective. It is the case, however, that the economic cycle can have the impact of accelerating these types of change.

### 6.3 Technical change

Technical change is generally seen as having a positive impact upon employment though it does tend to give rise to new forms of employment and thereby skill needs (Simon, 1965). In general, one needs to consider:

- the long-term impact of technical change on the demand for skills; and
- the contemporary debate about impact of AI, robots, Industry 4.0 and such like on employment and skills.

The long-term impact on technical change can be seen in relation to its impact on de-industrialisation.(16) Some VET systems, such as those in Norway and Germany, are based on clearly defined occupational knowledge and skills. In certain services sector jobs do not have the well-defined occupational background as those typically found in manufacturing, which makes it difficult to define the jobs which learners / apprentices are being prepared for. As a result, in the service industries trade certificates sometimes have low labour market currency and employers have come to prefer training and recruitment strategies disconnected from the formal VET system. In England, where the apprenticeship system has permeated the service sector, there remains an ongoing debate about whether an EQF level 2 qualification in, for instance, retailing is really equivalent to that of, say, a level 2 qualification in electrical engineering. The former will be largely completed by undertaking on-the-job training, whereas the latter will require substantial periods of off-the-job training with completion dependent upon passing an external examination.

The VET system has responded to this challenge of promoting apprenticeships / workplace based training in what one might refer to as non-traditional sectors, by trying to strengthen employer engagement in the development of training standards. In this way the training

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<sup>15</sup> The extent to which the employer is able to recover the costs of apprenticeship training via the productive contribution of the apprentice in the workplace is somewhat uncertain – see Gambin and Hogarth 2016b, 2015.

<sup>16</sup> Apprenticeships have traditionally been associated with the manufacturing and construction sectors. It is certainly the case in the manufacturing sector that productivity gains bring about an overall reduction in employment which means that future employment growth is dependent upon the service sector. So if the aim is to increase participation in apprenticeships, this will inevitably mean boosting the number of apprentices in the service sector.

standard gains currency with employers. But this can be an uphill struggle as the evidence below shows (see box).

**De-industrialisation and challenges to the apprenticeships system in Norway**

The share of apprentices compared to young labour market entrants who have other types of qualifications varies a great deal across the sectors of the Norwegian labour market. While 99 per cent of young people employed in the building and construction sector are apprentices, in the retail sector apprentices have only a 10 per cent share. Active employer engagement in the development of vocational education and apprenticeships is considered essential in ensuring that apprenticeships remain an important part of training and recruitment policy in Norway. However, within the weakly established trades, such as trades directed towards the service sector, concerns have been raised about the lack of employer influence.

Source: Changing Nature of VET National Case Studies

More recently, the debate has tended to regard technical change as having a less benign impact on employment and skills. First there has been the debate about robots and the extent to which they will substitute for employment at a rate which outstrips their positive impact on economic growth to create new jobs (Brynjolfsson and McAfee, 2012). The risk here is that robots (essentially an advanced form of automation) reduce the demand for good jobs whilst leaving humans to undertake relatively low skilled, low paid ones (Freeman, 2015). In other words, there is a de-skilling effect. To some extent this is a recasting of the task-based technological change explanation where technological change is seen to have most impact on routine jobs, which do not require their incumbents to respond to outside stimuli. Accordingly their jobs can be replaced by technology, which automates the tasks they once carried out (Autor et al., 2003). Goos and Manning (2007) observed that routine jobs, susceptible to being replaced by automation, are typically found in the middle of the occupational structure: administrative jobs and skilled production jobs. Higher level skilled jobs which require their incumbents to utilise cognitive skills cannot be so readily substituted by automation, and lower skilled jobs, such as those found in hospitality, require their incumbents to interact with customers such that these jobs too are not readily substituted by automation. The impact of this is to bring about a hollowing out of the skill / occupational structure that sees a growth in high skill jobs and low skill ones, but not much in between. This appears to be a phenomenon that is more apparent in the UK than in other countries (Eurofound, 2016), but is nevertheless in evidence to some degree across all the case study countries. Rather than being seen as a natural consequence of technical change, the hollowing out of the labour market may result from the combination of industrial and employment policy. The implication is that policy makers have a degree of strategic choice with respect to how they want to develop employment in their countries. Arguably the nature of the social contract makes it easier to create relatively low skill, low wage jobs in the UK than it would be in, for instance, the Netherlands or Germany. This points to the real and pressing need to ensure that VET policy – alongside that in other domains – is able to deliver something which is the overall benefit of economy and society.

Across all countries the technical change has created pressures to ensure:

- people possess the latest technological skills (i.e. those related to Industry 4.0);

- VET gains traction in emerging service sectors;
- a VET infrastructure is in place to deliver skills that value in the labour market;
- people are equipped with the skills that will provide them with means to move job when necessary as a result of structural skills;

The response to these pressures can be observed in developing the VET system that is:

- better aligned with the needs of the economy (i.e. being more demand driven, but also trying to develop links with skills anticipation systems);
- more broad based with an emphasis on delivering transversal skills;
- better able to meet higher level skill needs.

The previous section has outlined the way in which all VET systems have been transformed so that they are better able to meet current and future skill needs – this relates, inter alia, to improved systems for skills anticipation and the introduction of competence based VET programmes and qualifications. It was also noted that the way in which the social partners are engaged in the process has changed somewhat. In countries such as the Netherlands, Norway, the state seems to have gained more control over the VET system (relative to other stakeholders) but, at the same time, has sought to tighten the links between training supply and demand with individual companies by promoting the workplace learning option. The example of the Netherlands is interesting in this regard (*see box*).

**The promotion of workplace based learning in the Netherlands**

Although VET in the Netherlands is shaped in close collaboration between the VET schools and labour market stakeholders, there are major concerns about whether VET provision is able to align properly with new developments and changing labour market needs. Recent reports stress the importance of strengthening learning at the workplace and in particular the work based training pathway (*beroepsbegeleidende Leerweg, BBL*) as a means to bring education providers and companies closer together (SER, 2016). This emphasis is a sign that the adjustment of VET programmes does not rely so much on elaborate feedback loops, labour market demand surveys, and systems to forecast future demand, but on more direct forms of feedback through interaction between VET teachers and trainers and companies. This was also the outcome of a discussion between the SER and VET directors in January 2017 (SER, 2017). It is also illustrated in an increased interest in the idea of ‘hybrid-model teachers’, i.e. teachers that work in their professional field and are engaged in delivering education / training (including VET and WBL) (Dorenbosch et al., 2017).

Source: Changing Nature of VET National Case Studies

Something similar has been observed in Poland (*see box*).

**The pressures faced by vocational schools in meeting fast changing skill needs in Poland**

Whilst it is important to increase skills supply, there is also a need to ensure that it is relevant to the needs of the labour market. It has been readily apparent in the post-communist period that the IVET system has not been able to meet the needs of the labour market which has, in turn, contributed to its lack of attractiveness to young people. There has been a tendency for vocational schools to teach subjects they have the resources to teach rather than what is in

demand in the labour market. It has been further noted that vocational schools often do not have either the equipment or the teachers with the knowledge to develop the (new) skills in demand in the labour market. It is interesting to note that the latest reforms of the VET system look to bring vocational schools and employers closer together, so that employers can share their expertise more in teaching young people.

Source: Changing Nature of VET National Case Studies

By promoting the workplace based option there is thought to be a greater likelihood that the skills delivered will be more in line with the needs of employers. By delivering skills in the workplace there is an assurance that skills are being delivered that the employer has a demand for, otherwise why would they – the employer – deliver them. There is the danger that the balance between delivering skills needed now versus preparing the student or trainee for the future becomes tipped in favour of the former. The extent to which employers are granted a degree of influence over the VET system is important here – in countries such as the Netherlands there seems to have been some move away from direct employer influence over the content and structure of VET, whereas in countries such as England it is very much towards providing the employer with more influence.

At the same time, workplace based training develops links between vocational schools and employers which ensures that the vocational schools are able to gain access to the latest technologies and ensure that their students are able to benefit from the experience of skilled workers within companies. As noted above, the climate of austerity has meant that there is sometimes less funding available for vocational schools to purchase new technologies or offer wages sufficiently high to attract trainers with the skills and experiences required. In Finland and the UK on-the-job training of VET students, for example, is seen as not only the best way to ensure that students become familiar with the latest technologies, but also reflects that this may be the only way in which they will be able to get access to the latest, costly technologies..

In recognition that technical change brings about a need for more mobility in the labour market, the VET curriculum is becoming more oriented towards delivering transversal skills. This issue was covered extensively in the previous chapter. It is apparent that transversal skills increasingly encompass digital skills in an effort to prepare people for a fast changing technological environment. For example, in the Netherlands, the introduction of “21st century skills” into the VET curriculum includes entrepreneurial and digital skills. And new technologies are being embedded in the VET curriculum in other ways. In Finland, as part of the current VET reform, there is a plan to implement new technologies (such as AI and robotics) in vocational education and training. A key element of the reform is to ‘digitalise’ the VET system by incorporating digital learning platforms and simulators and such like into learning delivered by vocational schools. There are also pilot projects in vocational colleges to explore how to make more use of robotics and big data.

Regardless of whether technical change brings about a hollowing out the labour market, the evidence does point to an increasing demand for high level skills across Europe. This has been driven, at least in part, by globalisation which, in itself, is a consequence of technical change. Europe has sought to carve out a higher share of high value activities in the global

market. There has been segmentation in the global market with mass production undertaken in relatively low labour cost countries both inside and outside of Europe, and relatively high value, high wage activities, such as R&D, design, and the production of prototypes undertaken in western Europe, North America and Japan. There has also been the development of high value added services in, for example, the areas of financial and business services. These have all created a demand for relatively high level skills. Again, as noted in the previous chapter, there have been developments in many countries to either allow VET students to progress from upper secondary education to higher education and / or develop a distinct VET track through higher education.<sup>(17)</sup> What is perhaps less clear from the data is the extent to which technical change creates a demand for higher level VET skills, or a higher demand for graduates from higher education (typically traditional higher education institutions). Clearly countries have a degree of strategic choice in how they manage this state of affairs. In some countries there have been substantial efforts to develop a separate VET track at the higher education level (e.g. in France and the UK), whereas in others there has been more emphasis on allowing people to progress from upper secondary VET to general higher education (e.g. Finland). But it is not clear, from the evidence available, whether the economic value of the qualifications the VET system at the higher level confers on participants is any greater or lesser than the comparable qualifications delivered through the traditional higher education system.

The above paints a rather optimistic picture of the way in which VET systems have responded to technical change, but there are problems that need to be mentioned. In some case study countries, the VET system has not responded very well to the challenge of technical change. In Italy, for instance, the system continues to focus on the skills needed in the manufacturing sector and SMEs, which are characterised by low R&D investment and a non-strategic approach towards innovation. Some national VET systems - such as the Netherlands, UK, and Poland - have struggled to accommodate the demand for higher level or broader skills in the VET system and meet their commitment to assisting young people with low levels of school achievement.<sup>18</sup> These students were traditionally steered towards the VET system but as the demand for low level vocational skills is gradually decreasing in some countries or employers demand a wider range of skills, there are fewer opportunities for this group to achieve a qualification and find employment. The example of the Netherlands is instructive here (see box).

**Meeting the needs of students with low levels of attainment in the Netherlands**

The demand for higher level skills puts a strain on the VET system as it still has a responsibility to provide skills to those people with a lower level of ability so that they acquire the start qualifications that assist them in making the transition into the labour market. The problem here is that the jobs these people might have gained access to in the past with level 1 or 2 qualifications are not as numerous as they once were, and their numbers are expected to decline further in the future. In addition, given the economic developments, graduates need to be able to change professions and sectors and for this reason there is increasing attention paid

<sup>17</sup> In some countries this takes place on a relatively small scale because the VET track through upper secondary school is designed to lead directly to employment at the end of the training.  
<sup>18</sup> It is recognised that these countries deal with these issues differently.

to delivering more transversal competences. So the balance between providing technical skills directly related to a specific job to providing more transversal, generic skills has shifted. By placing more emphasis on transversal skills there is a greater likelihood that skills will remain valid over the long-term. This idea was initially articulated in the 1997 SER report which asked questions about how the secondary VET system should deal with increasing flexibility and mobility in the labour market (SER, 1997). It was given prominence in the Action Plan: Focus on Craftsmanship 2011-2015 (*Actieplan: Focus op vakmanschap 2011-2015*) (Ministerie van Onderwijs / Cultuur en Wetenschap, 2011); and echoed in the 2015 revision of the qualification structure. Forward looking projections also emphasises the need for transversal competences.

Source: Changing Nature of VET National Case Studies

This of course places more pressure of vocational schools to meet a wider range of demands.

The commentary provided above has concentrated on how VET systems respond to technical change. But it needs to be borne in mind that there are sometimes formidable barriers to the VET system being able to meet the challenges posed by technical change as the example of Italy serves to illustrate. Sometimes those employers which potentially have much to gain from investing in vocational skills are reluctant to engage with the VET system in part because they are not making the investments in technology that would give rise to a demand for skills. The example below from Italy illustrates this point (see box).

#### **Skills as a derived demand – the example of Italy**

The major challenge faced by the VET system in Italy is technological change. This is reflected in the high levels of skills mismatch that are widespread across the country. The VET system continues to focus on providing skills for the manufacturing sector which has a low to medium skilled workforce, and a large number of SMEs normally characterised by low R&D investment and a non-strategic approach towards innovation. One of the key issues here, in the first instance, is that of ensuring the investments in new technologies takes place. It is only then that the VET system can step in and ensure that the skills are available that will optimise the utilisation of new plant machinery and equipment in the workplace. But the first step is often missing. There is also a wider question of how the VET system needs to adapt so that it can serve wider needs of labour market – i.e. the service sector.

Source: Changing Nature of VET National Case Studies

The above reiterates the point made in the introductory chapters about skill being a derived demand; one that emanates from the extent of change taking place, in this case, in the technological environment.

## **6.4. Demographic change**

Demographic change poses a number of challenges to the VET system, especially those related to an ageing population and managing the inflows and outflows resulting from migration. The evidence from the national case studies points to countries experiencing the following challenges albeit to different extents.

- The need to fill those jobs which people retiring from the labour market will exit. It has been observed that the replacement demands even in jobs where the overall number of people is expected to decline over the next 10 years can be high.
- Being able to equip people with lifelong learning in their later years to prevent their skills becoming obsolescent. The skills people acquire in what might be referred to as their initial, initial vocational education in their early years is even less likely than in the past to carry them through the labour market to their retirement. This is because the age of final exit from the labour market is expected to increase.
- There are questions about the future financial well-being of older people which might induce them to continue working beyond the age at which they become eligible for a state pension. This might place pressure on the employment and VET systems to equip people with the skills that will grant them access to jobs that older people – especially at the upper end of the age distribution of the economically active – are willing to take.
- The demand for people to work in jobs that related to the ageing of the population (including health and social care jobs).
- Being able to maintain a VET infrastructure especially where the number of entrants to VET is projected to decline.
- Managing the process of migration.

### Responding to the fall in the number of young people

Traditionally the VET system has served the interests of young people making the transition from school to work. It is apparent in many countries that the youth cohort is declining either because of emigration and / or declining birth rates. In some countries the impact of emigration is stark as in the case of Poland (see box).

#### **The disappearing youth cohort in Poland**

In some instances, the impact of demographic change is stark. For example, one of the most formidable challenges facing Polish society – and the education system – is demographic change. The population is declining quickly as a consequence of emigration and a declining birth rate. The scale of demographic change can be seen readily from the Central Statistical Office's forecast. The number of people aged under 17 years will decrease by 1.2 million in the period to 2040, and by 2050 the population in this age group will be 30% lower than in 2013. Taking the age groups into consideration, the number of people in the range of 19-24 will decrease the most.

Source: Changing Nature of VET National Case Studies

It is not just in countries with high rates of emigration that has created problems for the VET system. Even in Germany with its 'gold standard' dual system, the combination of a declining birth rate and a preference amongst young people to enter higher education, has resulted in fewer young people entering the VET track.

A consequence of the declining number of young people is increased competition (a) between VET institutions for students and (b) increased competition between the general and VET streams for students. In Italy there has been a competition for students between upper secondary schools (general education) and VET providers since 2000, when the number of 14-15 year olds reached a critically low level. In recent years the number of students enrolled in three-year certificate regional VET courses has increased while enrolments in national vocational education system have stagnated. If the dwindling numbers of VET graduates is combined with high replacement demand due to increasing retirements in VET driven occupations, then the consequences for skills shortages might be severe.<sup>19</sup>

More competition between vocational schools for students resulting in falling VET enrolments means less income / revenues for the schools. This begins to threaten the economic viability of some vocational schools and essentially leaves them looking for alternative sources of income. This situation can be exacerbated by policies in some countries where increasing financial responsibility has been placed on training providers to find the means to make their operation viable by being responsiveness to labour market needs (e.g. in the Netherlands and England). In other words, training providers / vocational schools need to develop a market for their services.

In practice, where there are decreasing student numbers this has prompted some VET schools/centres to cut down on the variety of courses on offer and, consequently, employ fewer teachers, and in some instances vocational schools have closed (especially where they are situated away from the major centres of population). The following example from Finland is fairly typical of the effect of demographic change (see *box*).

**Moving towards the economies of scale in the Finnish VET system**

Finnish geographical and demographic pressures led to the merging of municipalities. In 2007, the government introduced a law that stated that the organisation of vocational education requires a population of 50,000 inhabitants. This led to municipalities founding consortiums to organise VET, since most Finnish municipalities have less than 50,000 inhabitants and even the larger ones typically collaborate with smaller municipalities around them. This led to the closing of many VET units across the country to save costs.

Source: Changing Nature of VET National Case Studies

Potentially this might have the effect of making the vocational choice less attractive and, in doing so, undermine one of the major thrusts of VET policy over the past few decades. There has, however, been a degree of innovation here. By establishing closer links with employers, vocational schools have been able to circumvent some of the problems falling

<sup>19</sup> A more detailed analysis of the trends in VET has been undertaken in WA3 of the current project. This has been used on the use of national statistics. It reveals the countries where VET enrolment rates have been: (a) increasing in both general and vocational education at the upper secondary level (e.g. the Netherlands, France, United Kingdom and Sweden); (b) increasing in the vocational but not general stream (e.g. Cyprus and Spain); (c) where there has been a decline in both vocational and general (e.g. Estonia, Latvia, Lithuania, Bulgaria, Romania, Greece, and Poland); and (d) where there has been a decrease in the vocational but an increase in the general stream (e.g. Austria, Denmark, Hungary, and Italy). So there are a substantial number of countries where participation rates in VET are in decline.

school rolls and decreased income might otherwise lead to: employees in local companies can become trainers and the companies can provide access to the technologies that the vocational school cannot afford.

But with falling school rolls, it has become important for vocational schools to find new market. The example from the Netherlands is typical in this regard (*see box*).

#### **Expanding the supply of would-be VET students in the Netherlands**

Student numbers in secondary VET have been declining since 2009: partly because of demographic change and partly because more young people study in higher education. The government is currently investigating how to introduce the demand-driven financing of VET providers. The VET system - and the policies supporting the system – is cognisant of the implications for participation levels stemming from demographic developments in the Netherlands. Each year reference-projections (*referentieramingen*) are produced by the Ministry of Education, Culture and Science (*Min. Onderwijs, Cultuur en Wetenschap, OCW*) to estimate the number of participants by sector. One of the key indicators used is demographic change. It is projected that by 2029 the number of enrolled students will have dropped to around 410 thousand from the current 480 thousand, far below the number in 1995. In response to the decreasing numbers in IVET, there are ongoing policy discussions about establishing incentives for adults to enter the VET system - to mitigate any potential future labour shortages and skills mismatches. To make VET more attractive to adult learners, VET centres are offering more flexible delivery and modular courses.

In the provision of learning linked to continuous upskilling and reskilling, the formal VET system is not a key player (this is predominantly delivered by private providers). With an increasing emphasis on lifelong learning, should the formal VET system fail to fully engage with this agenda, then its relevance to the labour market might be further questioned.

Source: Changing Nature of VET National Case Studies

As the example from the Netherlands demonstrates, some VET schools have responded to falling student numbers by focusing on CVET and broadening their offer to adult learners (individuals and companies).<sup>20</sup> But this is not an easy solution since VET schools trying to enter the lifelong learning market face severe competition from the private providers.

#### **Opening the VET system to adults with the use of EU funds in Estonia**

In Estonia, while successive cohorts of younger people have become smaller, the number of IVET students has remained stable since 2007, indicating a growing share of adult students. Indeed, the proportion of students aged 25 + has increased from 14% in 2007 to 34% (in the present). This was partly due to the financial support from European Union: a large share of EU funds in Estonia has been dedicated to improving 'human resources', that is, various forms of training. Formal VET institutions offer CVET courses at no or low costs to unemployed and inactive adults, many of whom are referred to the courses by the Public Employment Service.

Source: Changing Nature of VET National Case Studies

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<sup>20</sup> This is taken up in more detail in WA3 of the current study.

## Migration and the demand for VET

The impact of migration on the demand for VET is substantial. As the example above Poland above demonstrates, emigration has resulted in the exit of many skilled workers to elsewhere in the EU and because many of those emigrating are young, it has an overall impact on the age structure of the population and the demand for VET. Poland has responded by recruiting people from outside the EU (e.g. Ukraine) whose skills need to be validated in some way. But the evidence suggests that where there are high levels of emigration of young skilled workers, this can result in a tightening of the labour market with the risk that skill shortages can constrain growth (which has been relatively high in Poland over recent years in comparison with the rest of the EU). The room the VET system has to manoeuvre in this scenario is severely constricted.

Immigration also has an impact on VET. Over the short-run, it increases the supply of skills which has implications for employer demand for VET. The example of Norway is instructive in this regard (*see box*).

### **The impact of immigration on the VET system in Norway**

Net migration predicted to fall. Currently around 40,000 to 50,000 net migration a year over recent years. In this main projection, net migration will stabilise at around 15,000-20,000 individuals a year from 2040 onwards. An increased flow of immigrants might pose a strain on the Norwegian welfare system, thus policy-makers are keen to integrate immigrants rapidly into the labour market. Recently, measures have been by piloting modularisation within the VET system, in order to speed up the qualification route, which immigrants are to undertake in order to access the labour market. Modularisation entails vocational competence to be divided into smaller components, where immigrants may obtain a qualification after completing each module. Through this, the government aims to create a more flexible adult learning system. It remains to be seen how the current VET system, and employers, response to such modularisation efforts, pans out. Second, labour migration is believed to have had an impact on the VET system, particularly within labour market sectors such as building and construction. In a high labour-cost country such as Norway, the consequences of opening up international labour markets in the wake of EU-expansion, was to see an influx of labour migrants who were willing to work for lower wages compared with Norwegian workers.

Source: Changing Nature of VET National Case Studies

In Germany the immigration and integration of refugees is increasingly viewed as a policy option that might help solve skills shortages even if this has posed substantial challenge to the authorities in validating the skills of refugees. In the UK, the immigration of young skilled workers has eased many of the skills shortages that would otherwise bear down on the labour market and VET system. On the other hand, employers have been accused of not investing in training, because a skilled migrant workforce is easily available to them (the construction and built environment sector is an example for this).

## 6.5 Conclusion and summary

Table 6.1 provides a summary of the main challenges posed by various external factors and how countries have responded to them. In general, the challenges facing VET systems resulting from these changes are formidable – essentially that of maintaining a supply of

VET allied to the needs of the labour market during a period where the configuration of skills is more complex (a need to supply skills company need but also skills that will protect learners from future economic change), and the resources to deliver those skills have become squeezed for a variety of reasons (the continuing impact of austerity, demographic change increasing competition between different kinds of education providers). The national case studies indicate that countries have been inventive in developing responses, but they nonetheless prove to be formidable ones that will continue to be experienced at least over the short to medium-term.

**Table 6.1: Responding to the challenges of economic, demographic and technical change**

	<b>Challenge</b>	<b>Response</b>
<b>Economic cycle</b>	In some countries the economic cycle has been sharp over recent years and the after effects of the economic crisis is still being felt in many countries (e.g. less public funding available for VET). Moreover the emphasis given to WBL means that it can be vulnerable to the economic cycle (because of its impact on employer demand for skills and labour).	In some countries there is less reliance on WBL with school based courses available which helps even out cyclical effects. There is a more general expectation that by ensuring the skills supply system is tied to employer demand that this may ameliorate some cyclical effects.
<b>Demographic change</b>	Securing a sufficient volume of students to teach in competition with the general stream, especially so where the number of young people is in sometimes sharp decline	Finding new sources of students / learners. The demographic challenge results in a need to find new sources of skills. Accreditation of existing skills has assumed greater importance in many countries as has the accreditation of the skills of migrants. Opening up VET systems to train adults is also important in countries such as Finland, Norway, and the UK.
<b>Technological change</b>	Ensuring that the system can be responsive to the changes resulting from technological change with respect to both mitigating the impact of skills obsolescence and ensuring that the demand for new skills in new jobs is met	Important here is the role of skill anticipation systems where the skills system is able to flexibly respond to emerging / foreseen skill demands in a timely fashion
	Ensuring that those employed in vocational schools possess the technical knowledge and have access to the latest technologies so that the teaching they deliver is relevant to the needs of industry;	Reconfiguring the ties between industry and the VET system in specifying competences and curricula. This is sometimes reflected in giving the social partners more say over the content of VET)

Source: Changing Nature of VET National Case Studies

## 7. Reflections on VET's responsiveness to external conditions

### 7.1 Introduction

The research questions which the report set out to address were the following.

- To what extent are demographic developments influencing the need for and provision of VET?
- To what extent are changes in the labour market, and notably occupational profiles, influencing VET?
- To what extent are changes in VET based on targeted labour market intelligence, for example on skills needs analysis at national/regional, sectoral or local level)?
- To what extent is the role and nature of VET influenced by changing policy priorities at national level?

Before going to provide an answer to these specific questions, a summary of the main findings from the study are presented. This then forms the basis for providing an answer to the questions listed above.

### 7.2 Change over time

In the early 1990s VET looked very different to how it does today (see Table 7.1). Whilst there were countries that had established VET systems which were well integrated into their education and training systems and had extensive coverage (e.g. Germany), there were other countries that were much less advanced in this regard.

**Table 7.1 VET in the early 1990s compared with today**

	<b>Early 1990s</b>	<b>Mid 2010s</b>
<b>Formal part of the education system</b>	Emerging from the fragmented provision of largely industry led training	A coherent system of VET with qualifications accredited under NQFs
<b>Participation levels / Attractiveness of VET</b>	Often relatively low (often because continuation into post-compulsory education low)	Still a struggle to increase rates, but seen as a mainstream choice at upper-secondary level
<b>Standard setting</b>	Often in the hands of specific industry who set their own standards	Centralised control of standard setting with some autonomy granted to vocational schools / regional authorities
<b>Competence based approaches</b>	Only just being established	Now an accepted part of the VET system

<b>The prioritisation of workplace based learning</b>	Recognition that 'apprenticeship' style training is advantageous but nothing more than this	Very much the preferred means of delivering VET in many countries
<b>Skills anticipation</b>	Not much in evidence / piecemeal	Increasing integrated systems being put in place
<b>Accreditation of skills acquired outside of formal education system</b>	Not much in evidence	An integral part of the VET system
<b>Higher level VET / progression to higher education</b>	Not much in evidence	Still patchy, but an active area of policy development

Source: Authors

Of course, the extent to which the situation in the early 1990s differs to today varies by country, but Table 7.1 captures some of the key differences between then and now. One might say that there has been considerable amount of change in a relatively short period of time. Over the past thirty or so years there has been the creation of the modern VET system in countries across Europe. This is perhaps less true of Germany amongst the countries selected for case study as its VET system was more firmly established than that of other countries at the beginning of the 1990s. But it holds true for the other countries. By way of context, Table 7.2 provides an indication of some of the key events that are associated with the transformation of VET since the early 1990s. It indicates the hive of activity – much of it at a European level – that has shaped the way in which VET systems are able to anticipate and respond to changes in the demand for skills.

**Table 7.2: Major developments in VET from the 1990s onwards**

Timeline →	1990	1995	2000	2005	2015
Establishing the VET system	The integration of VET in the education system as a mainstream choice upon completion of lower secondary education				
Major thrust in building participation	Increasing participation levels in VET especially where little previous history of delivering, for example, apprenticeships				
Emphasis on WBL			Increased emphasis on workplace based learning as a relatively effective means of delivering skills		
Increased emphasis on skills matching		Major developments in trying to better match skills supply to skills demand			
Developing a competence based approach		Creating a competence based systems		Introduction of qualification frameworks that recognise competence	
Focus on transversal skill needs				EQF / NQF Broadening occupational skill profiles Increased recognition of transversal skills (especially digital ones in the context of Industry 4.0) – e.g. the agreement between MS on key competences in 2006 Austerity affects VET budgets leading to some rationalisation of provision	
Consolidation of the VET market for training		Importance of finding ways to accredit skills learning outside of formal learning		Increased emphasis on CVET within the formal VET system	
Skills supply			Substantial boost to skills supply with accession of nine countries to EU		Further boost to skills supply with inflow of refugees to EU
The push to higher level VET		Push toward provision of VET at higher levels			

Source: Authors

In looking at change over time there is also a need to say something about the external environment. From an economic perspective, it was a benign period; one over which employment continued to grow until the global economy fell apart in 2007. It was also a dynamic period with technical change, especially in the form of digital technologies, gathering pace. And with the accession of nine countries to the European Union there was, for Europe as a whole, a massive boost to skills supply even if the benefits of this were not shared equally across countries (especially those that observed the exodus of their skilled workers to work elsewhere in Europe).

### 7.3 Challenges and responses

Based on the national case studies, it is possible to identify a set of common challenges facing VET systems in all or most countries, including:

- developing the capacity of the VET system so that it is better able meet the needs of the labour market (i.e. to counter the tendency in some countries for vocational schools to teach what they have the means to teach rather than meet the needs of the labour market);
- increasing the attractiveness of VET to both would-be vocational students and employers;
- securing a sufficient volume of students to teach in competition with the general stream, especially so where the number of young people is in sometimes sharp decline;
- ensuring that the system can be responsive to the changes resulting from technological change with respect to both mitigating the impact of skills obsolescence and ensuring that the demand for new skills in new jobs is met;
- ensuring that those employed in vocational schools possess the technical knowledge and have access to the latest technologies so that the teaching they deliver is relevant to the needs of industry;
- maintaining a balance between provision of broad based education and the demand, from some quarters, for VET to be tightly focused on the supplying the skills for a specific, narrowly defined occupation;
- being able to do more with less given the pressure on public finances that has reduced, in some countries, funding for IVET.

The common responses – though not necessarily evident in every country - to the various challenges outlined above, include:

- substantial investments in skill anticipation systems (sometimes with assistance from the EU);
- moving to an outcome / competence based system of IVET (in some instance shortening the duration of training);

- finding new sources of students / learners. The demographic challenge results in a need to find new sources of skills. Accreditation of existing skills has assumed greater importance in many countries as has the accreditation of the skills of migrants;
- the development and utilisation of qualification frameworks to make the VET system more transparent (often with assistance of the EU in several instances);
- reconfiguring the ties between industry and the VET system in specifying competences and curricula. This is sometimes reflected in giving employers (or their representatives more say over the content of VET);
- attempts to increase participation in apprenticeship training as this is seen as a particularly effective means of linking training to the needs of the labour market / employers;
- trying to increase the participation of industry / employers in VET so that learners have access to the latest technologies (i.e. to those typically not available in vocational schools because of their cost);
- increasingly extending VET so that it is available at the post-secondary level and / or ensuring that VET at upper secondary level potentially provides the means to continue education at higher levels (either in or outside the VET stream).

The responses set out above are very much those that one observes today. If one refers back to either Table 7.1 or 7.2, then it is clear that the tools / solutions available to policy makers were much more limited in the early 1990s.

## 7.4 Trends over time

The above lists a number of common responses to common factors over the past 20 or 30 years or so. But adaptation to change is influenced by the respective starting points of countries. For instance, the former Soviet bloc countries had to completely reinvent their VET systems in the 1990s, whereas in other countries change was more piecemeal or incremental even if over the longer-term the changes introduced have had the impact of substantially reforming the structure and content of VET provision.

### The resilience of VET

VET appears to go in and out of fashion over time. The 2010s has proved to be a period of increased public policy interest in VET. In part this is a response to increasing concerns about the degree of skill mismatch in the economy. But at other junctures, there has been much less public policy interest in VET; especially so perhaps during the 1990s and 2000s when, for some countries, the concern was with boosting participation in higher education (i.e. general education). One can observe this in different types of VET system. In Germany, for example, the fact that young people would appear to be more interested in entering higher education has meant that VET is no longer regarded in the same way that it was at the beginning of the 1990s. In the UK, where the VET system in the form of apprenticeships is much less developed than that found in, for instance, Germany, there was an initial flurry

of interest in developing the apprenticeship system in the post 1994 period. But the policy interest was always more focused on developing the higher education sector and it was only with the concerns that further increases in higher education participation rates might worsen skill mismatches that interest returned to the VET system – particularly apprenticeships.

### The changing nature of VET

IVET today, in many countries, looks very different to how it looked at the beginning of the 1990s in several countries (see Table 7.1 above). Even if the esteem in which IVET is held is not as high as that in which general / academic education is held, in many countries it has matured over time into a major constituent part of the formal education system. This of course differs by country, but is notable that in some countries VET was not as firmly established a part of the formal education system in the late 1980s and early 1990s as it is today. In part this reflects the elongation of the transition from school to work and increasingly flexible labour markets (c.f. the effect this has upon employer willingness to fund VET). It is likely that developing qualification systems that allow direct comparisons with general education to be made has helped to improve the public's understanding of what the VET system delivers. Even if VET is in a much better place than it was in the early 1990s with respect to the esteem in which it is held, it is still almost uniformly considered a second-best option across countries. Although things might have improved, policy makers think that there is still much to be achieved if the vocational is to have parity of esteem with the general.

### Devolution of control

Policy shifts are apparent in countries between centralisation and decentralisation with respect to which institutions are responsible for VET. In some countries - such as the Netherlands, Italy, and the UK – there have shifts in the extent to which authority and autonomy is granted to the regional and local levels (even to the level of the individual vocational school or college). This is not necessarily unidirectional – even if there pressures to grants parts of the VET system more autonomy so that it is more responsive to the labour market, there appears to be forces that sometimes operate in the opposite direction (i.e. towards centralised authority over the VET system). In those countries that had, at best nascent VET systems in the early 1990s, the foundation of the system was very much a top-down process led by central government. In the period since then a degree of responsibility has been granted to regional authorities and / or vocational schools. The role of social partnership in those systems where it was firmly established in the early days of the VET system (such as in Norway and the Netherlands) appears to have been marginalised to some extent.

### Broadening the scope of occupational standards

Although there is some evidence of more autonomy with respect to standard setting, course design, etc., it is not clear - as yet - whether this results in a broadening or narrowing of the education provided. In making courses / qualifications more relevant to the labour market and, in some cases, granting employers (and their representative organisations) more say over course content, there are, perhaps, nascent pressures that lead to a narrowing of the scope of some courses. It would appear that this is evident mainly in relation to England

where employers are centre stage with respect to developing occupational standards for apprenticeships. In the other countries the trend would appear to be directed more towards broadening the content of VET by placing much more emphasis on transversal skills. Arguably the increased autonomy key institutions in the VET system have acquired over time - and the flexibility it potentially confers upon the VET system - means that it is better placed to respond to changes in the labour market and economy. In some countries this potentially allows change to be introduced in curricula relatively quickly, in others less so. There is a tension here between being able to speedily adapt courses with the attendant risk that the skills they provide quickly become obsolescent, versus having courses that have relatively broad foundations and in doing so have some flexibility in accommodating change, but which may be inherently more difficult to reform and, therefore, run the risk of becoming dated over the longer-term. The comparison of England with countries such as France and Germany is instructive here.

### The quality of the VET infrastructure

The nature of recent technological changes (c.f. robots, AI, etc.) has resulted in some VET schools struggling to keep pace with the rate of change. They are expected to equip people with skills that are in short-supply in the labour market and have access to the latest technologies. Accordingly, they struggle to keep pace with change: i.e. with respect to recruiting staff with the skills required and having access to the latest technologies. The economic climate of austerity and its impact on public finances also means that they have more limited financial resources with which to respond to change, especially technical change. There is a potential vicious circle where falling levels of investment by the state in the VET infrastructure decreases its attractiveness to employers and would-be learners. To counter this, vocational schools in several countries are moving closer to employers – or are being encouraged to do so – in an effort to solve this type of problem. In this way there is the anticipation that employers will give access to their technologies and general know-how. It is this which is, in part, driving the public policy interest in apprenticeships. This far from being a panacea as the evidence demonstrates that increasing participation in apprenticeships is far from straightforward.

Demographic change, in combination with austerity, has led to some consolidation in VET provision. There is evidence that VET schools have had to look at how to broaden their markets in order to survive. So one is faced with increased pressures being placed on the VET system to deliver the skills a country needs and, at the same time, resource provision is becoming tighter, with consequences for the VET infrastructure. This is apparent in some countries more than others. The situation is quite stark in some countries. In Poland, for example, low fertility rates, high levels of emigration of young people, and low levels of immigration, has resulted in the youth cohort decreasing quite substantially. The logistics of delivering VET in such circumstances becomes challenging. Even in a country such as France with a relatively high fertility rate (though low in historical comparison) coupled with relatively low levels of emigration and relatively high levels of immigration, there is still only a relatively modest impact on the population VET might serve.

Over time – though to different degrees – VET providers are increasingly being pushed into a market environment. Their continued survival is dependent upon them being able to capture a sufficient market share to make the service they provide sustainable. This should not be over-stated and the difference between, for example, the UK and, say, Norway or Finland is substantial in this regard. But the notion of making the VET system responsive to the labour market implicitly implies, in some countries, that VET providers need to deliver something the market needs or face the consequences.

### Extending VET to higher levels

A common thread is that of IVET being extended to higher levels, beyond its upper secondary level heartland – this is part of the process of ensuring that VET is attractive to young people (i.e. it does not close off access to higher education), but also that of meeting the need for vocational skills at higher levels. Where there is less clarity is with respect to whether the VET stream: (a) becomes embedded within existing higher education institutions and structures; (b) develops along its own parallel track; or (c) embodies a mixture of both. There is a degree of policy experimentation taking place in some countries but not necessarily a common trend.

### The disappearing boundary between IVET and CVET

CVET has been, to a large extent, a private investment decision for, respectively, employers and individuals. Although this situation continues to prevail, it is noticeable that the division between IVET and CVET has become less well defined over time. This is mainly a consequence of labour markets becoming more flexible and people being expected to spend longer in them before retiring. This creates a concomitant need for the skills of the workforce to be replenished over time; a need which is not necessarily met by in-company CVET (especially in more flexible labour markets) but which can be fulfilled by various IVET programmes. In many respects this stems from the formalisation of CVET with the accreditation of non-formal learning and the use of national qualifications to accredit CVET.

## 7.5 Patterns of convergence and divergence

The national case studies were selected on the basis of their labour market performance and the relative importance of IVET. The countries fell into the following groups:

- weak economic and labour market performance, where IVET is of relatively less importance to be selected from: Italy, Estonia, and Greece;
- strong economic and labour market performance where VET is relatively important to be selected from: Germany, Norway, and the Netherlands;
- strong economic and labour market performance where IVET is or has been relatively less important: France and Poland.

England was also included because it represents an almost unique approach to the provision of VET given the reliance upon the use of markets to guide VET policy.

The selection also includes countries that have made the transition from centrally planned to market economies (Estonia and Poland) and those with differing institutional arrangements for the delivery of VET, including: <sup>(21)</sup>

- those with relatively centralised and co-ordinated systems of VET provision (e.g. Germany, Finland and Norway);
- those with relatively decentralised systems for VET policy and delivery (e.g. Netherlands, France and Italy);
- those with multiple agency involvement (e.g. Greece);
- market driven approach (e.g. England).

The key issue is the extent to which the type of system has some bearing on the provision of VET and direction of travel of VET policy since the early 1990s.

In general, there is a high degree of commonality in the direction of travel. What differs is the relative starting point (i.e. the extent to which the VET system was already established at the start of the 1990s) and the extent to which external shocks in the period between the early 1990s and 2016 have had an impact on the economy and labour market. The impacts are mediated through different institutional settings but the types of change introduced in response to external factors shows a degree of similarity. The resemblances rather than the differences are perhaps the interesting findings.

## 7.6 Questions and answers

To what extent are demographic developments influencing the need for and provision of VET?

The key demographic trends with which national VET systems have had to, and will increasingly need to address relate to:

- an ageing population;
- increasing longevity; and
- migration.

Many EU countries are faced with ageing population structures stemming from declining fertility rates. For VET systems this poses a number of challenges:

- being able to attract a critical mass of students to take the VET track through the education system. Given the declining youth cohort, there is increased competition from the general stream for students;
- being able to meet the skill and training needs of people who are likely to spend many more years in the labour market than their counterparts from a few decades ago as countries raise the age at which people become eligible for their state pensions;

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<sup>21</sup> See Annex A for details.

- meeting the skill needs that result from an ageing society – mainly those that relate to caring.

One can observe a number a number of initiatives including the emphasis placed on lifelong learning and blurring the distinction between CVET and IVET. This latter development is important in that many older people may well need to engage in something akin to a traditional IVET programme in order to avoid their skills becoming obsolescent and avoid entry to unemployment.

In some western European countries immigration has to some extent solved the problems posed by an ageing population. And because many immigrants are young and of child bearing age, this has – or will have – a positive impact on the size of the potential population of young people who might be persuaded to engage in IVET. To some extent migration has let some IVET systems partially off the hook in responding to the challenges of demographic change. But for the countries the immigrants are drawn from the implications are more abject. Countries such as Poland and Estonia have endured the emigration of many highly skilled young people which has accentuated the ageing of the population structure. Whilst these countries have sought to recruit people from third countries (typically those that border the EU), the extent to which this will solve their long-term skill needs is a moot point.

The more profound challenge which VET systems face in those countries where the ageing of the population is a particular problem (such as Estonia and Poland) is how to ensure that there is a critical mass of VET provision at a relatively high level. There is the danger economic development becomes strangled because of problems related to labour supply. A vicious spiral emerges where new skills are not in demand because the economic activities that would give rise to them are not taking place because employers have legitimate concerns about labour and skills supply. VET systems, in isolation, have not and cannot respond to this challenge in isolation. In the meantime, young people prefer to invest in general education that provide them entry to higher education and, from there, the possibility of migrating to countries with more dynamic labour markets (e.g. as observed in the case of Greece).

### To what extent are changes in the labour market, and notably occupational profiles, influencing VET?

The point has been made in the main body of the report that the impact of the fourth industrial revolution on the skill content of jobs appears to taking place much more quickly than that of the preceding three. This creates uncertainty for VET systems. The way in which that uncertainty is being managed is essentially through broadening the provision of VET programmes either through:

- incorporating more transferable, generic skills within programmes; and / or
- reducing the number of courses available (i.e. such that the range of occupations covered by any VET programme increases);
- increasing flexibility within courses.

Examples have been provided in the main body of the text from countries such as Finland and Norway where the number of courses or qualifications on offer has been reduced as the VET system endeavours to deliver provision that is relevant to both current and future labour market need. There is also evidence of flexibility with respect to what is delivered within a particular course or programme such that it is possible to provide a degree of individualisation within programmes designed to meet a particular learner's or employer's needs. Accordingly there are examples of optional courses being built into programme provision that can be effective in meeting local labour market demand (given that most courses are designed at the national level).

Occupational profiles can be useful in identifying the key skills that are required in an occupation or group of occupations but they need to be kept up to date. This is becoming increasingly difficult in an environment where new technologies are transforming the content of existing jobs and leading to the emergence of new jobs. To some extent the problems posed here are circumvented to a certain extent by the increasing preference for workplace based training in IVET (either in the form of apprenticeships or other programmes that have a significant amount of training time spent with an employer). If students are placed with the employer they are potentially confronted with changes taking place within their chosen occupation and how they will need to adapt to them. It also provides access to the latest technologies which some VET schools report cannot afford to invest in given cuts to public budgets.

[To what extent are changes in VET based on targeted labour market intelligence, for example on skills needs analysis at national/regional, sectoral or local level\)?](#)

The degree of fluidity attached to the changing demand for skills in the labour market has drawn increased attention to the need for labour market information and intelligence to be made available that will allow individuals and employers to make informed decisions about the skills in which they should invest. There is evidence of all countries making significant investments in their skills anticipation systems. The European Union has, in many countries, played an important role in funding and developing these systems especially in relation to identifying future skill needs. The aim is very to signal where there is current skill demand and how skill demand is likely to develop in the future (including replacement demands).

The importance attached to skills anticipation – especially at the local level given that this is where most people look to find jobs – reflects in part the increasing uncertainty which results as a consequence of relatively rapid developments in the external environment stemming from technical and demographic change. As noted above, some countries have sought to decentralise IVET provision so that there is scope to flex provision to local need. The availability of local skills intelligence is limited in some countries but is circumvented by developing institutions that bring key stakeholders together to consider local skill needs from both short-term and longer-term perspectives. It remains a significant challenge to ensure that labour market intelligence is well integrated into the process of updating and reforming VET system in response to the external environment.

## To what extent is the role and nature of VET influenced by changing policy priorities at national level?

In addressing the questions above, the perspective has been a generic one focusing on the common trends across countries, but there are country specificities to consider.

- **Countries are at different stages in the development of their VET systems.** The former eastern bloc countries have had to reinvent their VET systems in a relatively short space of time. In developing their VET systems they are, on the one hand, unencumbered by the past. They are starting with a clean sheet of paper in some respects. On the other hand they have had to develop their systems in a relatively short space of time and, as the case of Poland demonstrates, the extent to which policy makers have seen VET as a priority has varied over time. In west European countries the tradition of VET provision provides degree of path dependency. This is not a negative. It is simply a reflection that countries have, over many years, adopted differing approaches to the development of their VET systems – and wider system of employment – that influences approaches to VET reform and responding to the external environment.
- **The nature of the social contract.** There are to some extent differing ideological outlooks that affect the provision of VET and how it responds to the external environment. The most glaring example of this is the case of England. In England the VET system first and foremost can be seen as meeting an economic need. It is a system which used market mechanisms to ensure that skill demands are met. Essentially government sees its role of providing labour market intelligence to a wide variety of labour market actors to guide their investments in VET. The public funding system is then used to overcome market failures to ensure that training for which there is a demand, which might not otherwise be delivered, is met. This somewhat simplifies the true to state of affairs, but serves to illustrate the point. In other countries, there is a more corporatist, co-ordinated approach to deciding both the content and volume of provision. This can have a major impact on how VET systems respond to the external environment and the determination of the content of training, who should fund it, and how much should be provided.
- **National economic exigencies.** Finally there are various economic factors that need to be considered. Macroeconomic conditions vary between countries with some countries experiencing much sharper economic cycles than others. This inevitably has implications for the demand for VET and the capacity of public authorities to fund it. The economic factors that affect countries tend to be common ones given the degree of inter-connectivity between EU countries, but local conditions can have a significant bearing. The particularly sharp economic cycle that Finland has experienced over recent years has meant that the scale of the challenge its VET systems has had to meet and the resources available to deal with it makes it situation different to that of, say, Norway which has experienced more benign economic conditions. But as the report has highlighted there are many points of convergence in the way VET systems respond to external challenges.

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## Annex A: Information for an initial classification of IVET systems

Country	Scale	Organisation of VET system		Responsiveness of VET system	
	Participation levels (2011) <sup>22</sup>	Degree of centralisation / co-ordination	Stakeholders involved in the design and / or governance of VET	Challenges	Responses
Austria	75%	Coordinated by Federal, Lander, and social partners	All social partners involved	Achieving parity of esteem for VET	Improving quality of training content / provision
Bulgaria	51%	Divided between several ministries and local authorities	No	System slow to respond to change; multiple policy reforms; relatively high drop out from VET	Improved monitoring systems for gauging quality of provision
Belgium	73%	Though divided between three communities, considered to be co-ordinated	Yes	Drop-out from courses remains a problem despite high levels of participation	Making VET more workplace based (alternance) so that relevant to labour market needs
Croatia	71%	Centralised	Yes	Curricula seen to be not suited to needs of labour market; work-based training relatively low	Improvements to curricula via more sectoral focus; emphasis on increasing work-based learning.
Cyprus	13%	Centralised	Yes	Difficulty making curriculum relevant in the context of on-going economic crisis	Making the VET curriculum competence based; promoting apprenticeships; and more VET at an intermediate level

<sup>22</sup> The percentage of upper secondary students in the VET stream (2011)

<b>Country</b>	<b>Scale</b>	<b>Organisation of VET system</b>		<b>Responsiveness of VET system</b>	
Czech Republic	73%	Centralised	Employers mainly	Making VET more responsive to labour market needs to make it more attractive to young people and companies	Increasing apprenticeships and employer engagement in VET. Reforming VET qualifications
Denmark	54%	Centralised and co-ordinated	Yes, also including VET colleges / providers	Being able to provide sufficient training places in companies. Increasing quality of provision	Measures taken to increase employer participation.
Estonia	34%	Centralised / supported by national legislation	Yes	Making courses relevant to labour market needs / increasing participation levels	VET curricula are being reformed / improving skills of VET teachers
Finland	70%	Centralised	Yes	Making VET relevant to labour market needs / improving basic skills of young people at risk of exclusion	Modularisation of VET system took place some time ago / Youth Guarantee programme
France	44%	Decentralised – national and regional councils involved	Yes, strong role	Making VET more relevant to labour market needs and more attractive to young people and employers	Increasing role of regional councils to promote VET / emphasis in careers guidance on VET and apprenticeships
Germany	48%	Decentralised – Lander have responsibility for school based element of dual system	Social partnership is at core of dual system	Increasing participation of young people in dual system	Improved careers guidance / improving access for disadvantaged youth to dual system
Greece	34%	Multiple agencies involved in regulation of IVET	No	Increasing participation and the relevance of VET to the needs of employers / labour market	Reforms introduced to increase apprenticeships, improve careers guidance, and establish school-to-work programmes

Country	Scale	Organisation of VET system		Responsiveness of VET system	
Hungary	26%	Centralised since 2013	Employers	A lack of relevance of VET courses to needs of the labour market / low attractiveness of VET	More emphasis on skills anticipation / increasing co-operation between training providers and industry / tackling drop-out
Ireland	32%	Centralised	Yes	Making apprenticeships and VET more attractive to young people	Long had a system for aligning VET to labour market needs. Using apprenticeships as a means to make VET more attractive.
Italy	59%	Decentralised – regions have responsibility for VET but with some increased co-ordination of late	Yes – advisory role	Many reforms designed to make VET more relevant to labour market. Youth unemployment is the biggest challenge at present.	Increased emphasis on apprenticeships, and continued efforts to reduce youth unemployment
Latvia	39%	Centralised	No	Improving VET quality / relevance to needs of labour market / increasing attractiveness of VET	Modernising the VET infrastructure (equipment and programmes) and involving social partners in course design.
Lithuania	29%	Centralised	Only via representation on selected professional committees	Increasing attractiveness of IVET and increasing quality in apprenticeships	Increasing labour market relevance of courses, improved career advice, introducing quality standards in apprenticeships
Luxembourg	61%	Centralised	Yes	Tackle youth unemployment	Strengthening a variety of training measures. Recent reforms have included making VET modular and competence

Country	Scale	Organisation of VET system		Responsiveness of VET system	
					based.
Malta	39%	Centralised	Yes	Tackle youth unemployment, reduce early drop-out, and improve basic skills	Increasing apprenticeship provision via financial incentives to employers and individuals, including literacy as a priority in the Youth Guarantee
Netherlands	69%	Decentralised (many pathways and training provider relatively autonomous)	Yes	Simplification of the system / increasing the quality and effectiveness of VET	Reducing number of qualifications / stricter basic skills requirements in courses
Poland	49%	Decentralised (training providers have autonomy)	No	Increasing employer involvement in skills anticipation and their engagement with the VET system / developing guidance and counselling services	Government initiatives to engage employers / introduction of dual training system
Portugal	44%	Centralised	Yes (wide range of stakeholders)	Modernising provision by using new training methodologies and increasing range of courses / increasing attainment levels	Improving careers guidance and improving the apprenticeship offer
Romania	63%	Centralised	No	Ensuring that skills supply meets demands of economy /	Developing an improved vocational offer including a vocational baccalaureate
Slovakia	71%	Decentralised (multiple organisations involved at sectoral and regional levels)	No	Increasing attractiveness of VET	Supporting work-based learning, and partial introduction of dual training, is being prepared

Country	Scale	Organisation of VET system		Responsiveness of VET system	
Slovenia	65%	Centralised	Yes	Increasing the attractiveness of VET by making qualifications relevant to labour market needs	Apprenticeships being expanded
Spain	45%	Decentralised (regional autonomy)	Yes	Tackling youth unemployment, increasing attractiveness of VET, developing national qualifications framework	Further promotion of apprenticeships (first introduced in 2012), developing flexible pathways through IVET
Sweden	49%	Decentralised (balance between national and municipalities)	Yes	Bringing about a better match between skills and needs of the labour market	Increased investments in careers counselling for young people; development of apprenticeships
United Kingdom	36%	Centralised	No (employers to some extent)	Improving attractiveness of VET (especially to employers), bringing about better matching	Funding changes to incentivise employers to invest in apprenticeships / investments in careers guidance and labour market information
Iceland	34%	Centralised	Yes	A shortage of people with technical qualifications	Providing people with the means to study a course that suits them – e.g. people from countryside taking courses in Reykjavik
Norway	53%	Increasingly centralised (national and regional co-operation)	Yes	Encouraging young people to enter VET and complete VET	Some emphasis on apprenticeships as completion is more likely with this form of training, but apprenticeship places in short supply.

Source: Cedefop / ReferNet Spotlight on VET reports

