RESEARCH PAPER

The changing nature and role of vocational education and training in Europe

Volume 7: VET from a lifelong learning perspective: continuing VET concepts, providers and participants in Europe 1995-2015

CEDEFOP

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Foreword

This working paper forms part of the Cedefop project *The changing nature and role of vocational education and training (VET) in Europe*.

The purpose of the project is to improve our understanding of how VET is changing in the countries belonging to the European Union (as well as Iceland and Norway). Over a three-year period (2016-18) the project has analysed how vocationally oriented education and training has changed in the past two decades (1995-2015) and, based on these results, investigates the main challenges and opportunities facing the sector today and in the future. Work is divided into six separate but interlinked themes:

(a) the changing definition and conceptualisation of VET;
(b) the external drivers influencing VET developments;
(c) the role of traditional VET at upper secondary level;
(d) VET from a lifelong learning perspective;
(e) the role of VET at higher education levels;
(f) scenarios outlining alternative development paths for European VET in the 21st century.

The study takes as its starting point that vocationally oriented education and training is something more than the traditional VET delivered at upper secondary level (in the form of school-based education or training, apprenticeships, or combinations of these). The need for lifelong learning is driving diversification of VET, with new institutions and stakeholders involved. There is also expansion of VET to higher education areas, partly through reform of existing institutions, partly through the emergence of new institutions. This has been caused by factors internal to the education and training system as well as by external pressures linked to demographic, technological and economic changes.

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([1]) http://www.cedefop.europa.eu/en/events-and-projects/projects/changing-nature-and-role-vocational-education-and-training-vet-europe

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Executive summary

This paper acknowledges at the onset that, in most countries in Europe, initial and continuing vocational education and training are quite separate: initial VET (IVET) is usually part of a highly regulated school system, while continuing VET (CVET) is more heterogeneous. This distinction, and the different principles governing IVET and CVET, make it difficult to establish links between the two systems. This paper elaborates on the concept of VET as lifelong learning; it sees VET as being located in the continuum of an individual's lifelong education career, analysing the possibilities to enter and return to the education system for IVET or CVET programmes. As the paper aims to improve current knowledge about VET from the lifelong learning perspective, it concentrates more specifically on the linkage between IVET and CVET.

The paper first provides an overview of how CVET is understood across Europe, then of adult participation in learning in Europe since 1995; it discusses the main changes in provision of VET in enterprises and by types of training institution. By exploring adult learner participation in IVET and CVET and by carefully considering VET graduate permeability to higher education and to CVET across the European countries, the paper contributes to understanding patterns in VET participation in a novel way. This discussion is contextualised throughout the report with a new look at VET system types across European countries, enabling unique insights into the field. To embed the discussion further in the labour market context, three economic sectors are then explored in more detail, to capture the role that workplace and industry settings play in shaping VET and CVET participation in the field. The focus on carefully selected sectors – retail sales, information and communications technology (ICT) and metalwork and manufacturing – enables the paper to highlight the within-country diversity in VET architecture and CVET participation. However, comparing sectoral VET trends and practices across countries revealed important differences, related to the history and current developments in the field, and shaping the role that a specific economic sector plays for each country. The selection of countries for this exercise included Austria, Estonia, Italy, Norway Poland and UK-England, providing an excellent opportunity to understand better the diversity across European VET, with and without the specific sectoral context. To explore the field with new tools, an innovative combination of different methodological approaches was used for the analysis: comparative analysis of micro-level data across European countries and of country-level data collected from national VET experts were combined to reach a new level of insight.

The paper provides an overview of how CVET is conceptualised in various international policy documents and how it is referred to across countries. Despite the differences, four dimensions can be considered distinctive to any definition of CVET: they tend to reflect aims, target group, types of provision, and connection to education or labour market paths. These dimensions can be presented as a continuum between potential extremes: CVET can be a strictly work-related endeavour building on previous IVET in the field, which does not relate well to lifelong learning; it can cover more general learning, which makes it a good example for a lifelong learning supportive approach; or it can be something in between. This new understanding helps to realise better how and where the countries across Europe vary in terms of how CVET is conceptualised.

Key features that emerged from the CVET concepts can be seen as reflecting a continuum between two extremes. One of these points more consistently to an open understanding of lifelong learning, characterised as:

(a) CVET learning is acknowledged to have wider aims than simply being job-related;
(b) there is increasing diversity of providers, including IVET institutions;
(c) the target group for IVET is diverse and adult learners are acknowledged;
(d) there is easy access from IVET to higher education (vertical permeability);
(e) there is a good chance IVET graduates have access to CVET (horizontal permeability).

The statistical overview of trends in adult participation in lifelong learning indicates that, within the last, decade the change in the scale of CVET provision at European level seems quite minor, but is at least moving in a positive direction: a slightly greater incidence of firm-based non-formal education and training, and slightly increased average hours spent on CVET courses. Such a result seems out of step with the emphasis on developing the lifelong learning society, raising a question as to whether there is a saturation effect in place. The main tendency seems to be an increase in the number of adults in IVET. Many countries reported new VET pathways for adults, for example in Denmark, in Croatia (post-academic employment preparation at universities) and in Malta (on post-compulsory secondary level) or simply an increase in adult learners in existing VET programmes (in Estonia, Ireland and Finland). This often goes hand-in-hand with an increased emphasis on the accreditation of prior learning (in Finland, France, Norway) and is frequently related to the implementation of European lifelong learning policy. New pathways into higher education were frequently reported among major changes in VET over the past two decades. Issues of access to higher education through vocational qualifications are specifically addressed in countries that have long-standing traditions of VET:

Denmark, Germany, France, Austria and the UK. There has been an introduction of non-university higher education institutions (for example universities of applied sciences) with strong professional orientation

Participation by VET graduates in non-formal education (NFE) has improved over the past 20 years. A significant driver behind this positive trend has been wider and more diverse provision of learning offers, sometimes also tailored specifically to more vulnerable groups or according to the need for certain skills in the labour market. In some countries, mostly from central, eastern and southern Europe, the European Social Fund is mentioned as an important mechanism for providing more education and training offers. Other promoters of access to CVET have been college-preparatory modules or State examinations at the VET level, which qualify VET graduates for higher education and also provide better general lifelong learning skills. Some changes were identified in CVET providers across Europe in 1995-2015. The main provider of CVET was and continued to be employers, but the diversity of provision increased in most countries. Even though, in most countries, all types of provision expanded, there were some countries where some types of CVET provision declined significantly, and it deserves a closer look to see how that affected access to CVET.

The paper also contributes to a more nuanced, in-depth understanding of the role of CVET and IVET within the context of specific job and labour market situations in selected countries. In manufacturing of machinery and equipment, skill-formation seems to be formalised in all studied countries (Austria, Estonia, Italy, Norway, Poland, the UK), where formal education prepares different level specialists for the sector and the apprenticeship system is strong. Radical and deep changes have affected the ICT sector in the past 20 years, modifying technologies, processes and perspectives for individuals and organisations. Constant development and changes place strain on every country's education system. One effect of technological and market changes seems to be an increased demand for in-depth competence in ICT companies, which cannot solely be met through continuing education by suppliers or by in-company training, but seems to require adaption by the formal education system. The retail sector is characterised by internationalisation and increased competition. The past 20 years have seen structural changes, where smaller businesses have merged into larger chains. As large international players and e-commerce giants have increased the competitive pressure, there has developed, in CVET terms, a great difference between the high-level occupations (managers) and the lower-level (sales staff). There are clear signs that the formalisation of skills for lower-level and even medium-level specialists is quite low in all studied countries: sales education within the formal IVET system has marginal importance and medium-

level managerial positions can be achieved through training along internal career pathways. The differences in skill provision systems across sectors points to the developments of downward skilling and growing skills gaps, especially comparing workforces across sectors. There is, as yet, no efficient mechanism to counteract these new developments.

As there is a visible trend that CVET is increasingly understood as being integrated into the lifelong learning (LLL) perspective covered in LLL policies and strategies, it seems that there is no longer any clear distinction between IVET and CVET. Both tend to offer the same qualifications (for European qualifications framework (EQF) levels 3 to 8); national systems of validation of prior learning and qualification frameworks have helped to bring together the two systems. There are still differences between countries but, even more important, across sectors: there seems to be high European (or international) standards in skill provision in certain fields and occupations, while others are locally oriented. There are additional dangers of further compromising professional identity if jobs are only taught in the context of each workplace.

It seems that, within the general trends of decreasing distinctions between IVET and CVET and between national education systems, there are signs of unexpected widening of gaps. The role of national VET systems in bolstering inequalities in access to skills cannot be overstated. The experience of countries that have managed to open up their VET systems to more lifelong learning, as exemplified in this paper, might serve as a good starting point in understanding diversity and change.

CHAPTER 1.

Introduction

This paper aims to improve current knowledge about vocational education and training (VET) from the lifelong learning perspective, concentrating on the linkage between initial vocational education and training (IVET) and continuing vocational education and training (CVET). It discusses national conceptions of CVET, the providers of CVET, participation of IVET graduates in non-formal education (NFE) and participation of adults in education institutions providing VET in European Union Member States, Iceland and Norway. The paper describes how the provision of CVET by different types of provider has changed over the past two decades, discusses the main drivers of this change and speculates about possible future trends. It also contributes to a more nuanced, in-depth understanding of the role of CVET and IVET within the context of specific job and labour market situation by focusing the developments in three sector families (manufacturing, ICT and retail) in six countries.

CVET has become increasingly prominent in European policy over recent years. It is crucial to achieving the social and economic objectives of the EU. CVET is essential for economic competitiveness and innovation (Cedefop, 2014a). The Bruges communiqué emphasises the need to enable every individual to have easy access to lifelong learning pathways (European Commission, 2012b), raising questions about the interrelationship between IVET and CVET. However, it has not been clear to what extent CVET is currently explicitly and visibly linked to and building on IVET, and how this has changed over the past 20 years.

Regardless of the general shift towards lifelong learning across countries, IVET and CVET continue to be seen as separate in most (Bosch and Charest, 2010). IVET is usually part of the formal school system and, as such, highly regulated; CVET is much more heterogeneous, since it includes a wide range of courses ranging from short-term to long-term programmes, with and without credits or certification. This great variety of CVET makes it difficult to establish clear links between the two systems within any single country.

It also has to be taken into account that Europe's CVET landscape is marked by diversity and heterogeneity. Cedefop's policy handbook (Cedefop, 2014b), about access to and participation in CVET in Europe, indicates that such heterogeneity is due to certain special characteristics of CVET: it operates in specific (national and sectoral) contexts; it is intrinsically linked to (national and

sectoral) labour markets; and it is delivered by a wide range of (national) stakeholders and institutions within and outside formal education and training. The fragmented nature of CVET provision is a challenge in any country.

The main objective of this paper is to provide an overview of the major changes in CVET across the European countries ('the big picture') to understand better how national VET systems have been shaped over time, to suggest what developments are more likely to be specific to a given national or sectoral context, and which are more universal. Using the conceptual framework introduced for the project (Cedefop, 2017a), this report will explore the education system perspective when looking at the level of education, VET target group, and key providers; pedagogical-epistemological perspective, when discussing the learning sites, and didactical approach (for example, on-the-job training versus training facility, IVET versus CVET) as well as specificity of learning outcomes (for example, only beneficial to job context versus transferrable skills); and socioeconomic/labour market perspective, when discussing the purpose and links to occupational hierarchy (for example only job-related versus general aims, the role of social partners). This approach will be used to recognise, explain and understand changes in CVET and also to indicate processes of bridging as opposed to eliminating boundaries. The main research questions posed in this paper are:

(a) how is CVET understood in different European countries?
(b) to what extent do adult, and especially IVET graduates, participate in CVET in any national context? How has this changed since 1995?
(c) to what extent have adults attained vocational upper-secondary education in their adulthood? How has this changed since 1995?
(d) what type of institution are the main providers of CVET and what kind of changes have there been in the structure of the provision of CVET (for example types of providers, IVET providers offering CVET) across European countries, and across selected economic sectors?
(e) how has the size of the CVET sector changed in the past two decades?
(f) how do IVET providers contribute to CVET provision, and how has that changed during the past two decades?

Exploring the research questions in depth uses a combination of different methodological approaches: comparative analysis of micro-level data on individual learners across European countries; and comparative analysis of country-level qualitative data collected from national VET experts. After providing some details on the data used in Chapter 2, the paper engages in discussion of the national terms for CVET and an analysis of differences in national CVET conceptions. Chapter 4 is dedicated to an analysis of country differences in

participation of adults in lifelong learning and trends in participation. Chapter 5 analyses CVET from the lifelong learning perspective and its different features: the changes in provision of CVET, target group, vertical permeability and permeability of CVET for IVET graduates. Particular focus is laid on the main drivers of these changes and future developments. Chapter 6 concentrates on analysing the role of CVET and IVET in the skill formation system in three sector families (manufacturing, ICT, retail) in six countries. The concluding Chapter 7 takes a look into the possible futures of CVET.

CHAPTER 2.

Methods and data

This report is based on various data sources. The first source comprises questionnaires filled in by national VET experts in all European Union Member States plus Iceland and Norway. The questionnaire included open questions such as:

(a) how is CVET understood in your country?
(b) what type of institution are the main providers of CVET?
(c) how has the size of the CVET sector changed in the past two decades:
    (i) according to the number of students;
    (ii) according to the number of providers?
(d) how has the role of formal vocational education institutions (especially schools *vis-à-vis* other providers) in providing CVET in your country changed since 1995?
(e) is there evidence that VET graduate access to lifelong learning (LLL) (NFE) has improved since 1995?
(f) how has the share of adult learners in formal education institutions predominantly providing IVET changed since 1995?
(g) what are the most important drivers of this change?

The experts were provided with a country-data sheet which outlined selected background information. These country sheets included information from different data sources, most based on Eurostat. The experts were invited to rely on their expert opinion because it was expected that it would be difficult – too time-consuming, or sometimes just impossible – to gain full statistical information. Given the lack of properly comparable data, with this questionnaire it was attempted to collect additional information about the changes since the 1990s.

The timeframe we examined, 1995 to 2015, was the same as for the other parts of the project. The experts selected for this task were required to have in-depth knowledge about their country's VET system, to have followed the domestic policy discourse on VET for a considerable time and have experience of working comparatively. They came from universities, public and private research organisations and national agencies dealing with VET. Experts were also asked to consult peers to review their assessments. Cedefop's *VET in Europe* country reports were also consulted to complete the information collected.

Most country experts indicated that, unlike IVET, there are no national administrative data about CVET (for providers and participants), especially over a long time period. There are several problems:

(a) first, the CVET category is not clearly operationalised, or there are no legal definitions of it;
(b) second, CVET is governed by multiple public authorities leading to fragmented information;
(c) third, there is no clear categorisation of types of provider for data comparison;
(d) fourth, in some cases data are only available with regard to specific target groups;
(e) fifth, private companies do not provide statistics for non-formal education;
(f) sixth, the complexity of the CVET system in terms of roles and responsibilities, and diversity of training offers in some countries, makes it difficult to get reliable information about CVET.

The data sources are not fully reliable or comparable. As the Finnish expert indicated, the statistics do not give an accurate picture of the nature of CVET. Access to (well-protected) register data is required to obtain reliable data about participation in CVET and the education path of IVET graduates. Most European countries only have narrative descriptive data about CVET.

Another problem is that data collection and measurement in the EU labour force survey (LFS), adult education survey (AES) and CVET are far from uniform across time and space. There is quite a high risk that sharp increases or reductions in provision might be explained by changes in survey methodology rather than in real processes.

Our approach to analysing expert questionnaires was similar to that used by authors for analysis of VET concepts (see Cedefop, 2017b). We composed national pictures of CVET by using a standard set of components. As a result, we produced ‘identikit pictures’ (based on a limited set of components) for each country and then we looked for similarities among them.

The second main data source is case studies completed by national VET experts in six EU countries in regards to three sector families; these contribute to a more nuanced, in-depth understanding of the role of CVET in national skill-formation systems (see Appendix 10). These three sector families were:

(a) manufacturing of machinery and equipment (NACE rev 2 ([2]) subsection 28) as a more or less traditional VET sector, with different starting points and trends across countries;
(b) retail (NACE rev 2, section 47) representing the service sector, a growing sector across countries;
(c) computer and related activities (NACE rev 2, section 62 and 63) as a rather new sector, launched and developed over the 25 years under consideration in all the countries in question.

To analyse VET and CVET in each sector, experts were invited to include one occupational group of workers from each of the following three levels (Appendix 1):

(a) elementary occupations;
(b) specialist occupations;
(c) specialist occupations at higher level.

National experts were then asked to:

(a) describe briefly the selected three economic sectors in their country in the context of VET and lifelong learning, based on desktop research/outlining earlier studies, and compose an introductory section, highlighting key information and issues for each sector;
(b) compose a report describing and contrasting the findings of the three economic sectors in their country, commenting on these against the background of general developments in the country;
(c) prepare a comparative section of the report comparing the three sectors.

Having in mind the perspective of change over past 25 years, the main questions motivating the analysis were:

(a) what types of institution are the main providers of CVET and what kinds of changes have there been in the structure of its provision (for example, types of providers, IVET providers providing CVET, CVET providers providing IVET)?
    (i) how has the skill provision system (including both IVET and CVET) in a given sector changed in the past two decades?
    (ii) how do IVET providers contribute to CVET provision, and how has that changed over the period?
    (iii) what is the role of CVET and IVET in national skill formation systems in selected economic sectors?

([2]) http://ec.europa.eu/eurostat/web/nace-rev2/transition

(b) what is the role of companies and the private (non-education) sector in promoting and driving CVET? How does this differ by sectors across countries?

Experts were asked to represent the viewpoints of different stakeholders and social partners: employer representatives; employee representatives; representatives of IVET and CVET providers; and representatives of (local/regional/national) public administration. National experts developed case-study reports analysing the topics separately by the sectors, resulting in three sections by sectors and one comparative section.

Besides expert questionnaires, individual-level anonymised data from the 2014 European Union labour force survey (EU LFS) and data from Eurostat's continuing vocational training survey (CVTS) were used as background information.

Appendix 2 gives an overview of used data sources for analysing different topics.

CHAPTER 3.

The essence of continuing vocational education and training

Chapter 3 provides an overview of how CVET is conceptualised in various international level policy documents and how it is referred to across countries. The country-specific analysis relies on the survey among national experts, who use national documents for anchoring their claims, mirroring the self-descriptive national depiction. Since CVET is mostly described in the context of, by and for the education system, the strategy follows the education system focus in its explanatory approach than a pedagogical or socioeconomic approach. Without the ability to follow the concepts back to the 1990s, the diversity of the current conceptual understanding across countries will be established. Despite differences, four dimensions can be considered distinctive to any definition of CVET: they tend to reflect aims, target groups, types of provision, and connections to education or labour market paths. These dimensions can be presented as a continuum between potential extremes: for example CVET can be either a strictly work-related endeavour building on previous IVET in the field, which is not easily relatable to lifelong learning, or it can cover more general learning, which makes it a good example for an approach supporting lifelong learning. It can also be something between the two. Those dimensions will be outlined in Sections 3.1 to 3.4.

3.1. How is continuing VET understood?

CVET, as with vocational education and training in general, is often defined by its specific content or purpose of training (Bosch and Charest, 2010). The United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the International Labour Organization (ILO), for example, define VET as ’means of preparing for occupational fields and for effective participation in the world of work’ (UNEVOC, 2006, p. 1). The European adult learning glossary defines CVET as a training process or activity, which has as its primary objective the acquisition of new competences or the development and improvement of existing ones, and which is financed at least partly by the enterprises for their employees, who either have a working contract or who benefit directly from their work for the enterprise, such as unpaid family workers and casual workers. The training processes or activities must be planned in advance and must be organised or

supported with the special goal of learning (European Commission and NRDC, 2011). The Organisation for Economic Cooperation and Development (OECD) defines vocational education and training as education and training programmes designed for, and typically leading to, a particular job or type of job: 'Initial vocational education and training (IVET) includes programmes mainly designed for and used by young people at the beginning of their careers and commonly before entering the labour market. It includes many upper secondary and tertiary programmes. CVET is all other sorts of VET, including enterprise training of employees and training provided specifically for those who have lost their jobs' (OECD, 2010, p. 26). Typical definitions refer to professional or vocational development through education and training undertaken, typically, after one has completed initial vocational education and training.

These definitions of CVET do not mention the range of learning, such as communication skills, problem solving, planning, being literate and numerate, that are not occupationally specific and are applicable as well to life outside work (see also Billett, 2011). Failing to note these contributes to clear differentiation between CVET and the liberal adult education sector and demonstrates a lack of acknowledgement of the key competences.

Cedefop defines CVET as 'education or training after initial education and training – or after entry into working life aimed at helping individuals to improve or update their knowledge and/or skills; acquire new skills for a career move or retraining; continue their personal or professional development'; it adds that 'continuing education and training is part of lifelong learning and may encompass any kind of education (general, specialised or vocational, formal or non-formal, etc.)' (Cedefop, 2014c, p. 51). The Cedefop definition of CVET mentions other purposes (personal development) and is much broader than previously mentioned definitions. However, this definition also emphasises that CVET is crucial to the employability of individuals, thus failing to acknowledge that individuals could also use the professional skills they acquire in CVET outside of jobs and labour market. CVET is basically a part of adult learning oriented towards professional development, seldom also specifically targeting youth. The Cedefop report *CVET in Europe: the way ahead* (Cedefop, 2015a, p. 19) mentions that 'among all forms of adult learning, CVET is singled out by its particular orientation to professional development and meeting labour market needs.'

Table 1. **Examples of CVET definitions and associated dimensions**

Definition	Associated dimensions
Education or training after initial education and training – or after entry into working life – aimed at helping individuals to improve or update their knowledge and/or skills; acquire new skills for a career move or retrain; continue their personal or professional development, while continuing education and training is part of lifelong learning and may encompass any kind of education (general, specialised or vocational, formal or non-formal) (Cedefop, 2014).	• Stage in career most appropriate to this • Main focus • Types of education and training
A training process or activity which has as its primary objective the acquisition of new competences or the development and improvement of existing ones, and which is financed at least partly by the enterprises for their employees, who either have a working contract or who benefit directly from their work for the enterprise, such as unpaid family workers and casual workers. The training processes or activities must be planned in advance and must be organised or supported with the special goal of learning (European Commission and NRDC, 2011).	• Main focus • Source of funding • Target group
Initial vocational education and training (IVET) includes programmes mainly designed for and used by young people at the beginning of their careers and commonly before entering the labour market. It includes many upper secondary and tertiary programmes. CVET is all other sorts of VET, including enterprise training of employees and training provided specifically for those who have lost their jobs (OECD, 2010).	• Main focus • Target group

Source: Cedefop based on Cedefop, 2014c; European Commission and NRDC, 2011; OECD, 2010; UNEVOC, 2006.

However, besides the purpose and focus, Billett (2011) mentions other key and defining characteristics of VET. He indicates that there is considerable diversity of VET in terms of its purposes, institutions, participants and programmes. CVET definitions provided by international organisations adopt a functional view of CVET and emphasise only some dimensions mentioned by Billett.

The diversity of purposes is reflected in a diverse set of institutional arrangements as well as forms of provision (formal, non-formal, informal). Individuals who participate in CVET as learners are more diverse than students in formal education; they are at different stages in their careers and working lives.

CVET is often considered as a part of adult education only, meaning that its target group is adults; other target groups, such as the young and children, are mostly off the radar. This suggests that their lifewide learning experiences, for example via youth work, are not considered. Cedefop (Cedefop, 2014c, p.18) defines adult education as ‘general or vocational education provided for adults

after initial education and training for professional and/or personal purposes, and which aims to:

(a) provide general education for adults in topics of particular interest to them (for example in open universities);
(b) provide compensatory learning in basic skills which individuals may not have acquired earlier in their initial education or training (such as literacy, numeracy) and thus to;
(c) give access to qualifications not gained, for various reasons, in the initial education and training system;
(d) acquire, improve or update knowledge, skills or competences in a specific field: this is continuing education and training.'

It seems that adult education is often very close to, but not synonymous with continuing education and training.

It is mentioned that CVET is a main pillar of adult lifelong learning (Cedefop 2014b). The definition of lifelong learning refers to all learning activity undertaken throughout life, which results in improving knowledge, know-how, skills, competences and/or qualifications for personal, social and/or professional reasons (Cedefop, 2014c, p.77). This means that lifelong learning includes, besides job-related and/or occupation-specific education and training, also educating, training and supporting individuals' personal development. If, by definition, CVET encompasses education and training after initial education and training, then lifelong learning covers all learning activities throughout life.

3.2. Formal and non-formal education

Discussion of formal and non-formal education is of relevance if a distinction between IVET and CVET is sought, to enable better understanding of the limits of these concepts. European guidelines (Cedefop, 2014c) usually identify the educational process in any activity undertaken by people, in the various stages of life in a formal, non-formal or informal way. Forms of education can be distinguished according to the level of organisation and structure, conditions in which learning takes place, functionality and applicability of knowledge, skills and attitudes, and level of certification of learning outcomes.

Formal learning refers to learning that occurs in an organised and structured environment (such as in an education or training institution or on the job) and is explicitly designated as learning (in terms of objectives, time or resources). Formal learning is intentional from the learner's point of view and it typically leads

to certification. Formal education is usually organised as full-time education and is organised as a continuous process with defined stages (Cedefop, 2014c).

Non-formal learning is learning embedded in planned activities not explicitly designated as learning (in terms of learning objectives, learning time or learning support). It is characterised as a deliberate choice by the person. Non-formal education is any type of structured and organised learning which is institutionalised, intentional and planned by an education provider, but which does not lead to formal level of qualification recognised by the relevant national education authorities (Cedefop, 2014c).

This type of distinction (formal versus non-formal) is often made when discussing learning and education, especially from the lifelong learning point of view, but the distinction is largely administrative (related to learning provider/learning programme) and differs widely by countries. Previous analysis has indicated (Hefler, 2012) that there is a wide variety of diverse learning programmes identified as formal adult education in Europe, resulting in varying levels of diversification of formal learning programmes across countries. This enables classification of countries based on their broadly or narrowly diversified formal adult education systems. According to Hefler (2012) such diversification could come from two different sources. First, a broader range of institutions – including for-profit training providers – could become entitled to provide formal adult education. Second, a much broader range of educational activities could become entitled to be formal adult education. National qualification frameworks (NQF) are the most powerful mechanism marking the difference between formal and non-formal education and training.

Now indicated by the new national qualifications framework, countries have made explicit choices about which parts of education and training to include as formal and to designate as non-formal. This means that the terms formal/non-formal are, at least partly, relative terms mirroring a particular national position and choice. There is a growing trend among countries to open up their frameworks to include qualifications awarded in CVET, often outside formal qualification systems (Cedefop, 2018). Germany, Austria, Poland, Slovenia and Sweden, for example, have started developing criteria and procedures for including non-formal qualifications and certificates. The Netherlands has already included an important number of such qualifications in the NQF. The Swedish NQF is seen as a tool for opening up the qualifications awarded outside the public system, particularly in adult education and in the labour market (Grm and Bjørnåvold, 2017). It means also that the borderline between formal and non-formal education is changing. The NQFs promote better linking of various programmes and certificates, focusing more on the contents of the learning. As a

result, in some European countries the distinction between formal and non-formal education may become less relevant, especially when discussing IVET and CVET. This also poses new challenges when engaging in comparative analysis over time or across countries.

It is important that there is more than one way to define and conceptualise formal and non-formal education. In the analysis of CVET programmes across Europe that follows, we apply a narrow approach to formal education: we distinguish as formal education those programmes that lead to acquiring a degree, opening up an approach to the next international standard classification of education (ISCED) level. While it is possible that adult learners engage in formal education programmes that are designed for acquiring IVET, we suggest that the programmes would then be understood as CVET programmes. On the other hand, what would normally be designed as a training course for CVET purposes, such as a non-formal education programme, might serve as an IVET programme for a learner. Therefore, we also acknowledge learners' aims and goals and the relevance that each learning episode has in their life course in distinguishing a programme as CVET, rather than just classification of the programme based on providers.

3.3. National definitions of continuing VET

In many European countries, there is no specific term that would cover CVET in the wider sense as defined by Cedefop. Several country experts indicated that there is no official definition of CVET in their country (as in Malta and Finland) or the term CVET is not even broadly used (Estonia, the Netherlands, Norway, Slovakia, the UK). Instead, most countries refer to an implicit understanding of CVET. For CVET in Estonia, the terms used rather translate to continuous learning (*täiendõpe*) or re-training/learning (*ümberõpe*), without the explicit emphasis on vocational aspects. There is no established definition of CVET in Norway, only a general common understanding. Further education builds on former education, leads to a new full or partial formal qualification. Education to update former education – courses, seminars and other organised education which does not give a new formal qualification – is called 'education after'. In Ireland and the UK, the term CVET is not used at all.

In some countries, there seem to be different understandings of CVET and the use of this term in not consistent. In Luxembourg, there are broad and narrow understandings of CVET:

(a) narrow, if considering only further training in the context of an enterprise that is related to increasing competences or adapting to new regulations;

(b) broad, if including all the possibilities offered to the individual or enterprise. In this case CVET comes close to lifelong learning.

Despite these differences, country-specific definitions of CVET frequently refer to the set of same key dimensions, such as target group and aim:

(a) aims: in Bulgaria, CVET focuses on the improvement (update, upgrade or progression to the next degree) of the acquired professional qualification; in Greece, CVET complements, updates and upgrades knowledge, abilities and skills, gained from vocational education systems and initial vocational training or professional experience, for integration or reintegration in the labour market, ensuring employment and professional and personal development; in Lithuania, CVET is aimed at professional development, adjustment of skills and competences or requalification (acquisition of the new vocational or professional qualification); in Romania, CVET helps individuals to improve or update their professional competences; in Spain, CVET supports personal development and the upskilling and employability of the workforce;

(b) target group: in Belgium and Greece, CVET refers to persons in the labour market; in Bulgaria to employed and unemployed persons over 16 years old, who are no longer in formal education; in France to young people (over age 18) having left school for at least one year and not yet employed and to adults (over 18) either employed or unemployed; in Germany to various groups from unemployed people with no school leaving certificate or without vocational qualifications to executives; in Malta to workers (who had already qualified in VET) in industry at lower levels than university graduates; in Portugal to adults (over age 18);

(c) connection with education path and work entry: in Flanders, CVET follows having left the education system or after having had working experience; in Croatia, CVET refers to education and training that is carried out after initial regular formal education; in Germany, CVET is understood as the continuation or resumption of organised learning following an initial phase of education of varying scope; in Lithuania, CVET takes place after the acquisition of the first vocational and professional qualifications;

(d) types of CVET: in Austria, CVET covers employer-provided training, privately funded further education and training (formal or non-formal) and further education and training as an instrument of active labour market policies; in Czechia, CVET covers further formal education, non-formal education courses provided by schools, statutory training (non-formal education), training provided/organised by employers, retraining courses organised and financed by the Labour Office, non-formal vocational

education courses provided by private providers; in the Netherlands, CVET covers general adult education and vocationally oriented continuing training;

(e) providers: CVET in Germany is characterised by a pluralism of providers, and a largely market character. In some countries CVET is provided outside the formal school systems (Italy, Hungary). In Ireland, most CVET is privately provided by employers who collaborate with providers in further and higher education.

However, the public may understand CVET differently from official definitions. In Cyprus, there is a distinction between two different public understandings of CVET: first, formal education leading to a degree/certificate and job-related, contributing to professional development; second, adult further education, adult liberal education, and LLL that have a personal development emphasis not necessarily related to the labour market.

Despite this substantial diversity, in almost all European countries CVET is perceived as occupation-specific education and training aimed at the acquisition, maintenance and extension of professional knowledge and skills in order to adapt to social and technological requirements or advance professionally. In most countries it follows the completion of initial formal education or is carried out after entering the labour market, and addresses both employed and unemployed adults. CVET can be at different levels, including the same level as higher education degrees. It can be offered by public and private providers and can be funded by the government, employers and individuals.

3.4. Patterns of continuing VET conceptions

Notwithstanding the various conceptions of CVET found in Europe, three patterns can be differentiated (Table 2), with CVET understood as:

(a) job-related/occupation-specific non-formal education and training for adults;

(b) job-related/occupation-specific formal and non-formal education and training for adults;

(c) as (part) of further education and training or lifelong learning for adults.

The most common conception of CVET (found in 17 European countries) is education and training for adults that is job-related and both formal and non-formal (although within this group there are several differences). None of the other four types of conception is found in more than six countries.

3.4.1. Job-related non-formal education and training for adults

The aim of CVET here is to provide further education and training outside the formal education system. It is targeted at the employed and often also at the unemployed. CVET activities are aimed at upskilling and employability goals and involve training those in the labour market to complement, update or upgrade knowledge, abilities and skills, gained from the vocational education systems and initial vocational training, or professional experience. The purpose is integration or reintegration in the labour market, ensuring employment and professional and personal development. This conception is mainly illustrated in three southern Europe countries (Greece, Spain, Italy), in Luxembourg (narrow concept) as well as some east-European post-socialist countries (Estonia). For instance, in Spain the recent Act 30/2015 reforming vocational training for employment identifies the different programmes available in the CVET domain and the associated funding schemes:

(a) company training activities: training organised by companies for their employees, financed through discounts on what companies have to pay to social security;
(b) supply training activities: training schemes through open calls for proposals, such as sectoral and cross-sectoral training programmes for the employed and self-employed, including those working in the social economy;
(c) other training initiatives: including individual training leave, alternance training, civil servant training, and training in prisons.

Some European countries have narrow conceptions of CVET, defined as training for specific groups, for example VET professionals or workers who have already qualified in IVET. CVET in Iceland is understood as the further training of VET professionals, typically people with a journeyman or master of trade education in an industry. Even retraining of VET professionals in the health sector (such as assistance nurses) and police officers is not categorised as CVET but rather as regular upskilling. In Malta, CVET refers to workers (who had already graduated from IVET) in industry at lower levels who undertake further training as part of continuous professional training.

3.4.2. Job-related formal and non-formal education and training for adults

CVET is understood as education following the completion of initial education or as education carried out after entering the labour market. It entails formal, non-formal and in some cases also informal education. It is provided by employers, training centres, and formal education systems at various levels and covers different qualification levels. CVET is a measure for acquiring, maintaining and extending professional knowledge and skills. It is considered in opposition to the

liberal adult education. This CVET conception is narrower than the lifelong learning conception because it is targeted most often at people in the labour market and is designed to help people find or keep a job. It is the most common conception of CVET (found in 17 European countries). Typical examples are Czechia and the Netherlands. For instance, in the Netherlands, CVET is understood as a broad way for an adult to be involved in education and training (informal, non-formal, formal) which can be related directly to their job and can be at different levels, including qualifications at the same level as higher education degrees. In Czechia, formal CVET is understood as adult education at all levels of education leading to a specific level of qualifications (certificate of completion of upper secondary (ISCED 3C or 3A), tertiary professional (ISCED 5B) or tertiary education (ISCED 5A or 6)). Non-formal education is subdivided into further vocational education, leisure education and language learning.

3.4.3. CVET as (part) of further education and training or lifelong learning for adults

CVET includes not only job-related training and education but also adult liberal education that has a personal development emphasis not related to the labour market. CVET is offered by different organisations that deliver formal and non-formal education. Typical examples are Ireland and the UK. There is no single system in Ireland delivering either IVET or CVET but rather a range of organisations that deliver programmes both for young people who have just completed their compulsory education and for those who wish to upgrade their skills, having completed initial education and training. It is the status of the trainee that determines whether the education/training is initial or continuing rather than the system itself (Cedefop and FÁS, 2004). In the UK, public policy avoids making a distinction between IVET and CVET. Programmes are open to people of all ages, whether or not they are in employment and regardless of whether they are at the start or nearing the end of their careers. It means that the boundaries between IVET and CVET are blurring in Ireland and in the UK. In some countries CVET is understood as integrated into a lifelong learning perspective. For instance, in France, the link between IVET and CVET is most explicit in the system for recognising prior learning. The distinction is becoming less relevant because the same qualifications (for European qualifications framework (EQF) levels 3 to 8) can be obtained through an IVET or CVET path. CVET applies to those entering the world of work or already in work, both the young and adults. The objectives of CVET include (Cedefop, 2014d):

(a) promoting professional integration or reintegration;
(b) maintaining people in work;

(c) encouraging the development of skills and access to different levels of professional qualification;
(d) contributing to economic and cultural development and social progress.

Table 2. **Overview of different CVET conceptions prevalent in Europe**

No 1: CVET understood as job-related/occupation-specific non-formal education and training for adults Typical examples: Estonia, Spain, Italy	The aim of CVET is to provide job-related/occupation-specific further education and training outside the formal education system. It is targeted to employed and often also to unemployed adults. CVET activities are aimed at upskilling and increasing or securing workforce employability.
No 2: CVET understood as job-related/occupation-specific formal and non-formal education and training for adults Typical examples: Bulgaria, Czechia, Germany, the Netherlands, Austria, Portugal, Romania	CVET is understood as education for adults following the completion of initial education or as education carried out after entering the labour market. It entails formal, non-formal and in some cases also informal education. CVET is provided by employers, training centres, formal education, at various levels and covers different qualification levels. It is a measure for acquiring, maintaining and extending professional knowledge and skills. CVET is considered in opposition to the liberal adult education.
No 3: CVET understood as (part of) further education and training or lifelong learning for adults Typical examples: Finland, France, Ireland, the UK	CVET includes not only job-related training and education but also liberal adult education that has a personal development emphasis not related to the labour market. CVET is offered by different organisations that deliver formal and non-formal education. It is understood as integrated in a lifelong learning perspective.

Source: Cedefop, based on national VET expert questionnaire responses.

CHAPTER 4.

Adult participation in learning: trends since 1995

As the differences in the concept of CVET across countries have been established, a statistical overview of trends in adult participation in learning is useful. This provides a general background for understanding and illustrating institutional contexts and their impact, as one of the more relevant research questions would be about the specificity or universality, particularity or generality of the trends in adult learning. No statistical indicator on the spread of CVET, particularly on participation of all adults in formal, non-formal and informal CVET in EU Member States, is currently available (Cedefop, 2015a; p.24). Adult participation in learning is one of proxies used for CVET in the context of lifelong learning. The advantage of this *ET 2020* ([3]) benchmark indicator is its persistence in the labour force surveys, which for some EU-15 countries has been since 1992. Adult participation in learning (previously named lifelong learning) refers to the percentage among those aged 25 to 64 who stated that they received education or training during four weeks preceding the survey. This information relates to all (formal or non-formal) education or training whether or not relevant to the respondent's current or possible future job ([4]).

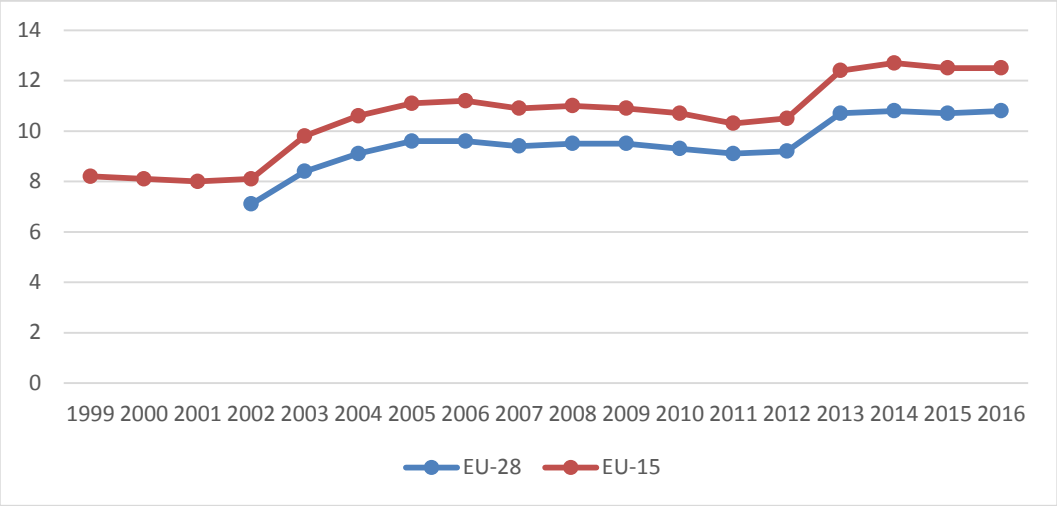
At the EU level, the benchmark seems stable with some slight increase occurring only between 2003 and 2005 (Figure 1). Some light growth that is seen between 2012 and 2013, attributed mainly to the methodological change in the French labour force survey. At the same time there are more country-specific

([3]) *ET 2020* is the strategic framework for European cooperation in education and training: https://ec.europa.eu/education/policies/european-policy-cooperation/et2020-framework_en

([4]) Different operational approaches to measurement of this indicator across countries are possible (Cedefop, 2015b, p.31). The value of this indicator varies considerably in some countries from year to year and mainly in the field of non-formal education (European Commission, 2017, p. 73). In some countries, sharp yearly variations might be also caused by methodological change; e.g. extensive revision of the LFS questionnaire was undertaken in France, which influenced even the increase in value of the all-EU indicator in 2013 compared with 2012 (Eurostat, 2017, p. 11). Portugal is another example of methodological change that moved the country's performance upwards. The opposite applies to the UK, where, due to adjustment of the data collection instrument, participation in adult learning appeared to be considerably lower in 2011 (European Commission, 2012a, p.49).

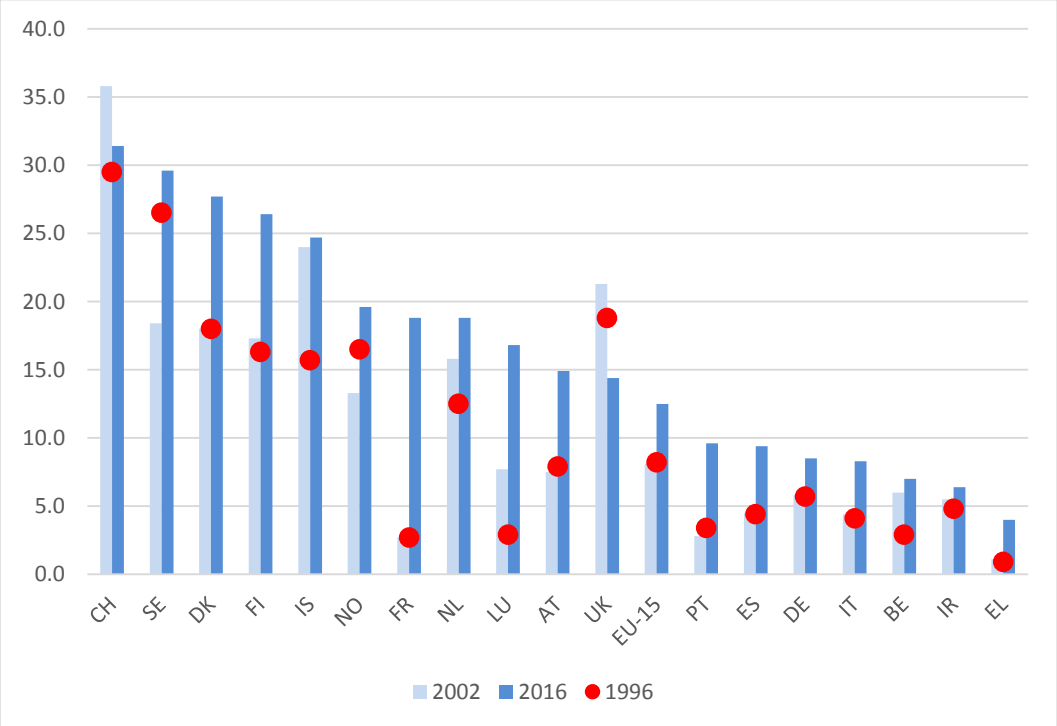
dynamics behind quite stable developments in adult participation in learning at EU-level.

Figure 1. **Adult participation in learning in EU-15 and EU-28, %**



Source: Eurostat, a (database indicator tsdsc440).

Figure 2. **Adult participation in learning in EU-15 countries in 1996 and 2016, %**



NB: Countries are presented in order of decreasing participation in 2016.
Source: Eurostat database indicator tsdsc440.

Figure 2 shows changes in participation in EU-15 countries between 1996 and 2016 ([5]).

We can see that:

(a) variation among older Member States is huge for all three points of time, so the EU-15 average tells very little about the level of adult participation in learning in European countries: none of countries were similar to this average European level (note that average EU-15 here is measured in 1999, not in 1996);

(b) if we explore change in participation in the period 1996-2016 (available only for EU-15), we can see that:
   (i) the initial level was very different in EU-15 countries;
   (ii) in all countries participation has increased, but to a different extent; only in the UK has participation decreased but this occurred due to the adjustment of the data collection instrument (footnote 4);
   (iii) the difference between best- and worst-performers was about the same in 2016 as in 1996 (only small improvements in both, shown in Table 3);
   (iv) the best and worst performers were mainly the same both in 1996 and 2016: the highest levels of participation were in Nordic countries and in the UK; low levels of participation were in southern Europe countries and in Belgium, Germany and Ireland;
   (v) a different degree of improvement might be seen within the group of continuously best-performers: participation increased only slightly in Sweden (and Norway), while markedly in Denmark and Finland (also Iceland);
   (vi) improvements were small among the worst performers; methodological changes in measurement are behind the significant improvements of major exceptions, France and Portugal (footnote 4);

(c) if we focus on change in participation during 2002-16 we can see that taking a different year as the basis for comparison in EU-28 – for example 2002

([5]) The period studied in this report is covered by data only for (the majority of) EU-15 countries; Finland, Germany, Norway and Sweden started to report from 1996. For new Member States, the period covered by data varies much more. Data on adult learning for new Member States are available from 2000: for Bulgaria, Poland, and Slovenia from 2001 and Czechia, Croatia, Latvia, and Slovakia from 2002. This is why we illustrate the major trend of change in adult participation in learning separately for EU-15 (period 1999-2016, Figure 1) and EU-28 (period 2002-16, Figure 2).

and not 1996 – will not influence the inferences about change in EU-15 (Table 3):

(i) for most countries, the difference between 2002 and 1996 is so small that it makes little change to the conclusions related to change between 1996-2016;

(ii) even some decrease in participation that occurred between 1996 and 2002 in Sweden (and Norway) did not change the relative status of these countries as good performers in terms of participation; adult participation has increased in long run in both countries;

(iii) some increase in participation in Belgium and the Netherlands (more clear compared to other countries) also did not change their relative position in terms of adult participation in learning;

(iv) only the conclusion for Luxembourg seems to be slightly impacted by the change of basic year of comparison: in 2002 this country was not such a poor performer as in 1996, so improvement between 1996 and 2002 was away from the group of poor performers to nearer the middle-range ones, while from 2002-16 it might be characterised as from middle-range performers towards above-average ones.

Table 3. **Magnitude of differences in adult participation in learning between European Union countries**

	1996		2002		2016	
	Value	Country	Value	Country	Value	Country
	EU-15					
Minimum,%	0.9	EL			4.0	EL
Maximum,%	26.5	SE			29.6	SE
Difference	25.6				25.6	
	EU-28					
Minimum,%			1.1	EL	1.2	RO
Maximum,%			21.3	UK	29.6	SE
Difference			20.2		28.4	

Source: Cedefop calculations.

Figure 3 shows changes in participation of EU-28 countries between years 2002 and 2016. We can see that:

(a) initial levels were very different in EU-28 countries, even more so compared to the EU-15, given that new Member States are clustered at the lower end of the scale;

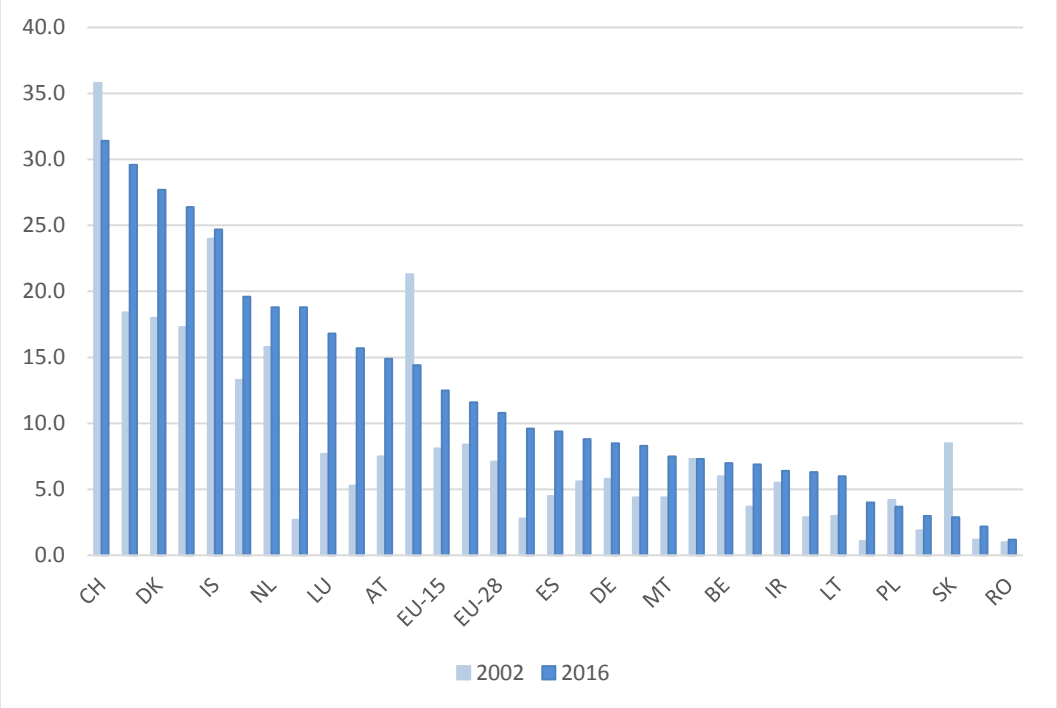
(b) in most countries participation has increased, the only exceptions in addition to the UK and Switzerland being Poland (minor difference) and Slovakia (with a remarkable fall from above average EU-28 performance to the one of

three worst). There was no change in the level of adult learning participation in Latvia between years 2002 and 2016;

(c) the difference between best and worst performing countries (slightly) increased between 2002 and 2016 (Table 3) among EU-28 countries: Greece, the worst performer of 2002, had slightly increased participation by 2016, while there were practically no improvements in Romania, which is the worst performer in 2016;

(d) differentiation in increase in participation among the worst performers is larger among EU-28 countries compared to EU-15 countries, but these improvements are rather small (especially compared with those of the best performers), so that these improvements were not large enough to let countries move away from the lower end of scale; apart from the above-mentioned methodology-induced change in France and Portugal, there was also a markedly increased change in participation in Estonia.

Figure 3. **Adult participation in learning in EU-28 countries in 2002 and 2016, %**



NB: Countries are presented in order of decreasing participation in 2016.
Source: Eurostat database indicator tsdsc440.

The overall trend (with minor exceptions) is the increase in adult participation in learning. The value of the indicator of adult participation in learning varies in individual countries much more from year to year than at the EU level. It holds true first of all for best performing countries, mainly due to an increase in

participation in non-formal education (European Commission, 2017, p. 73). At the opposite end of the spectrum – among poor performing countries – the increase is small; as a result, the ranking of countries according to the indicator of adult participation in learning has hardly changed. A sharp change in the value of indicator and, accordingly, in the ranking, tend to be associated more with changing methodology.

It is also important to take into account that this LFS indicator of adult learning captures participation over a period of only four weeks prior to the survey, while, for example, AES measures participation over a period of 12 months prior to the survey. This is why AES leads to considerably higher participation rates (Cedefop, 2015b) and probably to higher (compared to LFS) estimations of variability and changes.

CHAPTER 5.

Changes in continuing vocational education and training

Chapter 5 analyses changes in VET from the lifelong learning perspective. A previous report on this project (Cedefop, 2017c) presented a multi-perspective model of VET conceptions. This model was composed of essential features of VET as seen from three perspectives: an epistemological or pedagogical perspective, a socioeconomic or labour market perspective, and an education system perspective. Each of these perspectives emphasises different key features or components of VET (Appendix 2). This model was used as a starting point to analyse changes in CVET from a lifelong learning perspective. Following the education system perspective again, the focus was the key features that emerged from the CVET concepts. These dimensions can be seen as reflecting a continuum between two extremes, while one of these would be more consistent with the open understanding of lifelong learning:

(a) wider aims than only job-related;
(b) increasing diversity of providers, including IVET institutions;
(c) diverse target group for IVET, including acknowledging adult learners;
(d) easy access from IVET to higher education (vertical permeability);
(e) horizontal permeability of CVET system for IVET graduates.

5.1. The nature of change

The research questions taken up here, following the core dimensions of the concepts, are the following:

(a) aims: is there a trend towards understanding CVET as lifelong learning or not?
(b) diversity of providers: what type of institutions are the main providers of CVET and what kind of changes have there been in the structure of the provision of CVET (such as types of provider) across European countries? How do IVET providers contribute to CVET provision, and how has that changed during the past two decades?
(c) target group: are IVET programmes opened to adults? To what extent have adults undertaken vocational upper-secondary education in their adulthood? How has this changed since 1995?

(d) access to higher education (vertical permeability): to what extent do IVET graduates participate in higher education in any national context?
(e) horizontal permeability of CVET system for IVET graduates: to what extent do IVET graduates participate in higher education in any national context? How has this changed since 1995?

Table 4 summarises the main indicators used in this report to analyse CVET from a lifelong learning perspective.

Table 4. **Indicators for a more pronounced lifelong learning perspective**

Dimension	Perspective	What would indicate a more pronounced lifelong learning perspective	Indicators
Aim	Socioeconomic/ labour market and pedagogical/ epistemological	CVET understood as (part of) lifelong learning	Conception of CVET
Providers	Education system	Diversity of providers	Change of relative prominence in different types of CVET providers
	Pedagogical/ epistemological	Formal education institutions providing CVET Employers providing CVET	Change in relative role of IVET institutions in providing CVET Increase in the share of employers providing CVET
Target group	Education system	A dispersed age structure	Percentage of those who achieved a vocational upper-secondary education as an adult learner
Vertical permeability	Education system (and socioeconomic/ labour market)	Access to higher education through vocational education	Proportion of individuals with vocational secondary education continuing studies in higher education
Permeability of CVET system for IVET graduates	Education system (and socioeconomic/ labour market)	Linkage between IVET and CVET	Proportion of individuals with vocational secondary education continuing studies in NFE

Source: Cedefop.

CVET will more likely be interpreted as being part as lifelong learning with:
(a) wider aims for CVET than only job-related;

(b) increasing diversity of (types of) providers (including employers and IVET institutions);
(c) diverse target group for IVET (including acknowledging adult learners);
(d) connection to work/education path:
    (i) easy access from IVET to higher education (vertical permeability);
    (ii) horizontal permeability of CVET system for IVET graduates.

Sections 5.2 to 5.8 are dedicated to an analysis of the present situation of CVET from the lifelong learning perspective in different EU countries and how the situation has changed in the past 20 years.

5.2. Aims

In some European countries there is a close link between CVET and lifelong learning; in Croatia, CVET and lifelong learning are even understood as synonyms. In Luxembourg the broad definition of CVET is close to lifelong learning while in Flanders CVET has a narrower definition than lifelong learning. Lifelong learning would include all forms of learning, formal as well as non-formal, job-related or not, provided by education and training providers recognised by the government or by other organisations. CVET is mostly job-related.

There is a trend that CVET is increasingly understood as integrated into the lifelong learning perspective covered in LLL policies and strategies. In Finland, IVET and CVET provide the same qualifications. Those qualifications are obtained while working, either in apprenticeship training (IVET) or based on acquired skills demonstration (CVET). This means that instead of going to school, a person having acquired vocational skills throughout working life may earn a degree by demonstrating those skills. The acquired skills demonstration system provides a path for all to get a formal qualification based on the skills acquired in the working life; that could also be an IVET degree. The CVET system is developed so that is open to all kind of students and there is something for everyone. It may involve upgrading existing skills, changing professions or getting existing skills acknowledged.

In Italy, CVET is mostly identified with job-related training although within the framework of lifelong learning. In Greece, CVET is understood as a part of lifelong learning. As indicated in the Cedefop report *The changing nature and role of vocational education and training in Europe* (Cedefop, 2017c), in France VET is generally understood as part of lifelong learning; the same goes for CVET in France (Section 3.3). In 2011, the Austrian government launched the *Strategy LLL2020* which integrates all policy fields related to education issues in 10 lines

of action. The goals and measures stated in the strategy form the foundation for actions to be taken in policy processes leading to an environment that enables people to take part in lifelong learning over their whole life course, from preschool to the post-professional phase of life. CVET is an obvious characteristic of Austrian LLL policies. The Romanian LLL Strategy 2015-20 refers to CVET as a major component of lifelong learning. In Greece, since the enactment of Law 3879/2010 on Lifelong Learning, these two components of VET, initial and continuing vocational training, have been treated in the framework of the national holistic strategy on lifelong learning. Other countries such as Cyprus, Latvia, Portugal and Romania could equally well illustrate this trend. It seems only a matter of time until national reforms in these countries bring about a substantially different conception of CVET, as identified for France and Finland.

5.3. Diversity of provision

5.3.1. Different providers of CVET: statistical picture

Learning opportunities for adults can be offered by different types of provider, including formal education institutions, training establishments, and employers in the workplace. The more diverse the provision, the more likely it meets the demands and preferences of different target groups, and so the more supportive of lifelong learning the context. Therefore, the greater the variety of providers will be considered an indicator for a more pronounced lifelong learning perspective.

Data from the adult education survey conducted in 2007 (AES1) show that in the EU-28 non-formal education and training had been provided most often by employers (38% of such activities, Appendix 4). In 2016, this share was slightly lower (34%) ([6]). The second biggest providers in the EU-28 were non-formal education and training institutions (17% in 2007 and 18% in 2016), followed by formal education and training institutions (around 10% in 2007 and 8% in 2016) and commercial institutions where education and training is not the main activity (9% both in 2007 and in 2016). The changes between 2007 and 2016 are relatively minor at the EU level.

However, there are variations among the EU Member States and Norway in terms of both distribution between providers and its change from 2007 to 2016. Appendix 4 shows that, in 2007, employers were not among the most common providers in eight of 22 countries with available and comparable (in terms of

([6]) Eurostat, AES2 [trng_aes_170; all estimates] [accessed 22.1.2018]. Unfortunately, data of AES3 for EU-28 were not yet available.

scale of providers) data. In five new Member States (Estonia, Croatia, Lithuania, but especially in Poland and Slovenia) the highest share of non-formal learning and training was provided by non-formal education and training institutions: in Romania, provision by employers was about the same as that of non-formal education institutions. In France, non-commercial institutions where education and training was not the main activity, were the most common providers of NFE (59%), and in Finland they also provide quite a large share of NFE (30%, against employers 36%). In some countries (Spain, Italy, Cyprus) provision of NFE was quite diversified, with no main provider.

Almost 10 years later, in 2016 we can also see that the pattern of NFE provision varies by country, but there are even more (22 of 27) countries with available data where NFE was offered more often by employers rather than by other providers. Among 22 countries where comparison is possible, there is no clear trend of change in share of NFE provision by employer: in 11 countries this share was about the same in 2007 and 2016, in six countries it was lower in 2016 than in 2007, while in five countries it was higher than in 2007. In 2016, in Poland Slovenia and Lithuania the highest share of non-formal learning and training was provided by non-formal education and training institutions (just as in 2007). Czechia joined this group of countries, though Spain is no longer in the group. In most countries, NFE is offered by diverse providers and there is no dominant provider. While the share of provision for every provider is volatile, there are no big shifts in distribution. As background to this permanent diversity, there is quite a high risk that sharp increases or falls in provision might be explained by changes in survey methodology rather than in real processes, such as reduction in share of non-commercial institutions where education and training was not the main activity in France and Finland.

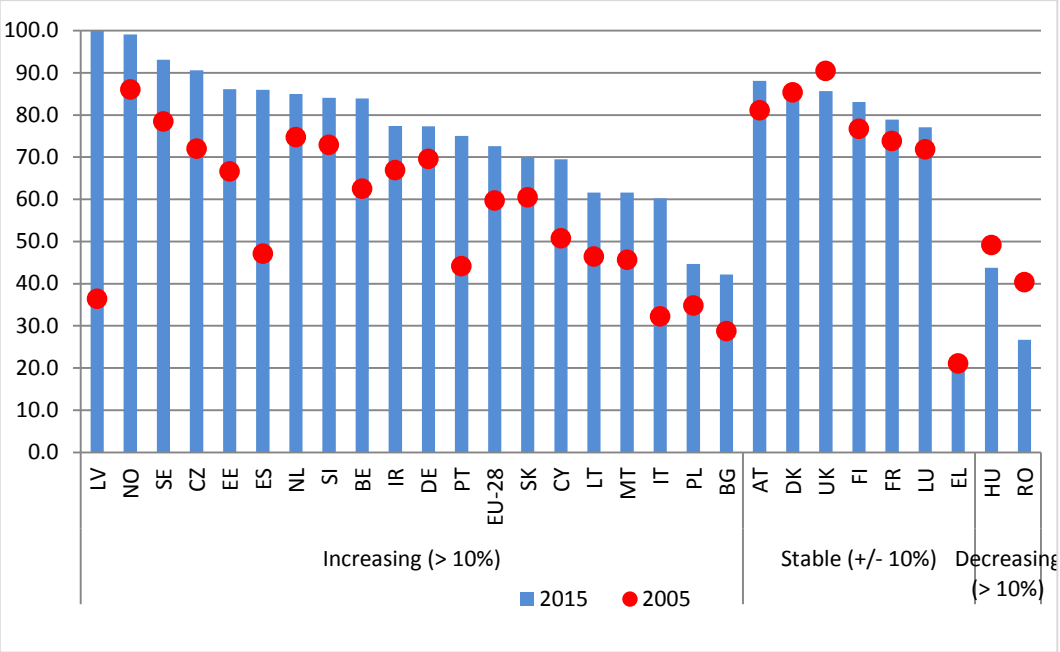
5.3.2. NFE provision by enterprises

Enterprise-provided training is seen as one of the main pillars of lifelong learning for adults across Europe (Cedefop, 2014b). This important area of adult education receives increasing attention from transnational organisations like the OECD or the EU (particularly in the *ET 2020* document). According to the continuing vocational training survey conducted in 2015 (CVTS5), almost three-quarters (72%) of all enterprises with 10 or more employees in the EU-28 provided some form of continuing vocational training in 2015. In 2005 there were 60% of such enterprises, which indicated increase in provision.

Figure 4 illustrates the differences in enterprise-provided training among the EU-28 Member States in 2015. These differences have fallen slightly mainly because there is limited room for further progress in countries with very high level

of training incidence. Significant increase is evident in the countries of southern Europe, but Latvia demonstrates the most striking shift (from poor to the highest value of indicator among the EU-28).

Figure 4. **Training incidence: enterprises providing any type of continuing vocational training in EU-28, 2005 and 2015, %**



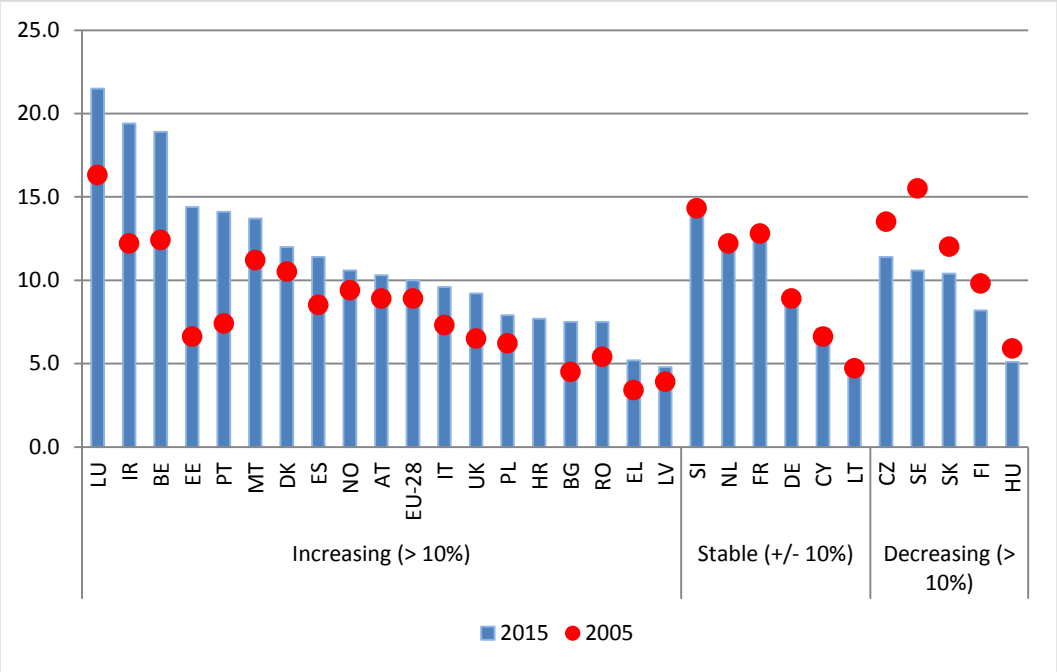
NB: Data from CVTS5 (2015) and CVTS3 (2005).
Source: Eurostat, b (database, indicator trng_cvt_01s).

Intensity of courses (the amount of training hours in courses in relation to hours worked) is another important indication of volume of firm-provided training, given that the duration of training varies very considerably over time and between countries and employers. It had been argued, for example, that intensity of training (length of training episodes) has been shortening in the UK, which might have negative consequences for LLL (Green et al., 2016).

CVTS data indicate that such shortening had not occurred at the EU-28 level: average hours spent in continuing vocational training courses by all employees have rather stagnated (Figure 5). Figure 5 also indicates the variation between countries, both in the intensity of training and in change of this indicator. Nevertheless, contrary to the results of Green and others (2016), the UK is not shown among countries with reduced course intensity. At the same time, our analysis is in line with the results of previous research, indicating that there is no clear trend in Europe (Markowitsch et al., 2013). But Figure 5 does not provide clear support for previous conclusions about the significant closing of the gap between the best and worst performers, especially due to the strong increase in

intensity of training course displayed by the east-European countries (Käpplinger, 2011).

Figure 5. **Intensity of training courses in EU-28, 2005 and 2015, %**



NB: Average hours spent in CVT courses by all employees, CVTS5 (2015) compared to CVTS3 (2005).
Source: Eurostat, c (database, indicator trng_cvt_23s).

Our major conclusion on CVET provision is that, at the EU-28 level change within past decade seems to be minor, but at least in a positive direction: slightly higher incidence of firm-based NFE, and slightly increased average hours spent in CVT courses. But developments are clearly country-specific and it is very difficult to reach conclusions about overall trends. Also, not only processes, but also data collection and measurement are far from uniform across time and space. This means that reality might be even more complex and diverse than available data let us suggest ([7]).

([7]) For example, limitations in comparability of CVTS data had been outlined for Portugal, Romania and the UK (Cedefop, 2015b). Portugal and the UK have time breaks in LFS time series as well.

5.3.3. Relative role by types of CVET provider: expert questionnaires ([8])

Section 5.3.3 gives an overview of the experts' estimated current relevance of each category of (potential) CVET provider. Their responses identify the employer as the most relevant type of CVET provider in Europe. Of 28 countries for which expert data was collected, 24 considered public-sector employers as a significant or very significant provider of CVET, and 21 agreed that private-sector employers are also dedicated providers of CVET for adults. In only three countries (Bulgaria, Iceland, and Ireland) did public-sector employers not appear as significant providers of learning opportunities. However, both Iceland and Ireland experts suggested that despite the general lesser significance of these providers, employers may still be important for providing certain groups of workers certain types of education and training. In five countries (Belgium, Ireland, Cyprus, Luxembourg, and Romania), it is private-sector employers that are considered less significant in CVET provision. Only in Poland did the expert suggest that employers are not investing in CVET provision. In all the other countries, experts found the role of employers crucial in securing access to learning.

In securing high-quality CVET, the role of non-formal education institutions also seems to be important across all European countries. In 10 countries private non-formal education institutions were considered as very significant CVET providers, while another 13 experts found them to be significant. Only Belgium and Norway show little relevance for private non-formal education institutions. Icelandic sees non-formal education providers as insignificant in providing CVET but this reflects the narrow definition applied in Iceland, whereby CVET concerns mainly those adults who have graduated from VET education in the first place.

Compared to private training institutions, the role of public ones is less relevant. Of all the 27 countries for which the data was received, just five experts consider these very relevant and another eight see them as relevant. As many as seven say they are not significant in CVET provision in their country while five claim this type of CVET provider is not operating in their country at all.

Based on the prominence of private and public non-formal education institutions, the countries could be divided into three groups (Table 5).

([8]) See Appendix 5 for conceptual clarifications.

Table 5. **Relevance of public and private non-formal education institutions in CVET provision across European countries**

Both public and private NFE institutions relevant	Private NFE institutions relevant, public less relevant	Neither public nor private NFE institution is relevant CVET provider
Austria, Croatia, Finland, France, Greece, Italy, Latvia, Lithuania, Luxemburg, Poland, Portugal, Slovakia, Spain	Czechia, Denmark, Germany, Estonia, Ireland, Cyprus, Hungary, Netherlands, Romania, Sweden, the UK	Belgium, Norway *(Bulgaria, Iceland)*

Source: National VET expert questionnaire responses.

There was no country where the expert found public providers were significant while private ones not.

The country experts agreed that formal education institutions are crucial as CVET providers: for 20 countries they suggested vocational schools are relevant or very relevant, while only for five countries (Italy, Poland, Romania, Sweden, and the United Kingdom) they appeared less significant (Table 6).

Higher-education institutions, both professional and universities, in contrast, were considered as relevant CVET providers to a lesser level: 14 and 17 experts, respectively, considered these significant for their given country, while another nine found them quite irrelevant. Answers were inconsistent for the other possible providers: several country experts mentioned that the relevance of the type of provider in CVET is not homogenous but differs across groups, for example based on economic sector or specific segment of learners. Altogether 13 country experts considered commercial institutions rather significant in developing CVET; 14 experts reflected that professional associations were relevant for CVET; and 16 experts concluded that public employment services make a great contribution to CVET. Some country experts (Estonia, Hungary and, Slovakia) also mentioned the important role of non-governmental organisations (NGOs), while others (Italy) had special centres established for vocational training. Those who did mention NGOs mostly pointed out their troubles with competitive project-based short-term funding, mediated by European Commission initiated programmes, and consequent problems with sustainability: EU support sometimes replaces national funding even in core functions.

Table 6. **Relevance of formal education institutions and non-formal education institutions for CVET across European countries**

		Non-formal education institutions	
		Both public and private NFE institutions relevant	Private NFE institutions relevant for CVET, public less relevant
Formal education institutions	Vocational schools, professional higher education and universities all relevant for CVET	Austria, Croatia, Finland, France, Greece, Latvia, Lithuania	Cyprus, Estonia, Norway*
	Either vocational schools or professional higher education institutions or universities less relevant for CVET	Luxembourg, Portugal, Slovakia, Spain	Belgium*, Denmark, Germany, Netherlands, Sweden**, the UK
	At least two of the three – vocational schools, professional higher education institutions and universities – less relevant for CVET	Italy***, Poland	Czechia***, Hungary***, Ireland (Bulgaria, Iceland), Romania***

NB: * Neither private nor public non-formal education providers considered relevant
** Vocational schools do not appear relevant
*** Universities do appear relevant for CVET
Source: National VET expert questionnaire responses.

5.3.4. How has the relevance of CVET providers changed since 1995?

This analysis explores changes in CVET provider roles since 1995, attempting also to outline some possible reasons ([9]).

Tracing the changes according to the type of CVET provider shows that, over the period under consideration, the relative importance of private and public employers contributing to CVET provision remained about the same in 19 and 21 countries, respectively, while their role has increased in eight and five countries, accordingly. Many CVET activities are organised by employers and/or carried out at workplaces, both for public and private organisations (this is the case for 26 and 27 countries, respectively). The only countries that report a reduction in the

([9]) As few data on CVET provision for most recent years were available to the team of experts, the plan to create any comparable data series that would cover the 25 years is not possible. However, some patterns can be identified from the estimations of the country experts. In this analysis, changes in relevance for 10 types of CVET provider over 25 years are explored.

role played by employers are Ireland and Poland. In Poland, the public employers were significant CVET providers in the 1995 while private employers were not. By 2015, both public and private employers have lost their role as CVET providers. The fact that the relevance of any type of provider cannot be indicated at national level due to various differences across sectors (or groups of employees) makes data collection and reporting difficult.

Looking at the other providers and changes in their relevance across Europe, we again see that the role that public and private non-formal learning institutions for CVET provision has either remained about the same (this holds true for 20 and 14 countries, respectively) and even increased in certain cases (for four and 12 countries, respectively). There have been only three countries (Estonia, Hungary and Finland) where the importance of non-formal public training institutions has decreased and only two countries (Estonia and Latvia) where the role of private ones has. The latter – significance of the private NFE institutions – has only somewhat decreased, suggesting promise for the future as the change can be attributed to the disproportionately large role that these CVET providers were playing at the beginning of the period.

The relevance of formal education institutions in most countries seems to have remained the same or even increased, while only a handful of countries have suffered reduced relevance of those institutions. The role of vocational schools has decreased in Czechia, Poland (from significant to not significant) and in Ireland (from very significant to significant), while in Slovakia the relative role of universities has diminished (from significant to not significant).

The only other type of provider where there were more diverse changes is the public employment services. Here, again, most countries noted stable relevance (18 countries) or an increase in its role (seven countries), while in three countries the role reduced compared to 1990s: Hungary, Finland, and Sweden. In all three countries the reason for this is the state of economic cycle, with a difficult labour market situation in the 1990s resulting in an important role for the public employment services in providing CVET. It is important to acknowledge that CVET is dependent not only on the operation of the VET system in a country, but also the state of economy and labour market.

Box 1. **The role of public employment services in Hungary**

The changes in the political regime in Hungary (1989) also induced changes in the economic and social system, and mass unemployment occurred. Actively dealing with the unemployment population was made a task to be performed by the State; a network of public employment service and regional labour force development centres was developed as a State institute. Therefore, the role of public employment services was very significant in the training of the unemployed in the 1990s. Approximately 30% of adults participated in raining organised and financed by the public employment service. Public employment service activity remained low during recent years, and only 3% of all adults participated in adult training organised and financed by the service in 2015.

Source: National VET expert questionnaire responses, Hungary.

The results indicate that in most countries two trends can be observed:

(a) diversity in providers has increased over time, introducing different types of provider;
(b) the relevance of various types of CVET providers has increased.

5.4. Diversity of target groups: adult learners in vocational education

Section 5.4 investigates to what extent adults (25- to 34 year-olds ([10])) have attained vocational upper-secondary education in their adulthood (i.e. after their 25th birthday) and, based on country expert questionnaires, how has this changed since 1995 and what are the most important drivers of this change. A dispersed age structure within VET could be one indicator for a more pronounced lifelong learning perspective.

The EU labour force survey 2014 indicates that, across all countries analysed, on average about 5% of persons aged 25 to 34 gained their vocational upper-secondary qualification, their highest education attainment, during adulthood, i.e. aged 25 or older. The range of respective rates varies from less than 1% up to 21% (Cedefop, 2017b). Results summarised in Table 7 show that in Denmark, Finland, Germany, the Netherlands, Norway, Portugal and Spain, 25 to 34 year-olds have higher than average rates in acquiring a VET qualification during adulthood.

([10]) EU LFS 2014 dataset includes information about programme orientation at upper-secondary level only for these age groups.

Table 7. **Attainment of vocational upper secondary education during adulthood, summary ([11])**

	Attainment of vocational education after the 25th birthday
Denmark	+ +
Netherlands	+ +
Norway	+ +
Finland	+ +
Portugal	+ +
Germany	+
Spain	+
United Kingdom	+
Austria	0
France	0
Luxembourg	0
Malta	0
Cyprus	–
Estonia	–
Belgium	–
Poland	–
Italy	–
Latvia	–
Lithuania	–
Slovenia	–
Bulgaria	– –
Czechia	– –
Greece	– –
Croatia	– –
Hungary	– –
Romania	– –
Sweden	– –
Slovakia	– –
Iceland	n.a.
Ireland	n.a.

Source: Cedefop calculations based on EU LFS 2014.

NB: 0 About average participation, relevant to the sample average (average participation is 3.6%)
– Below average participation
– – Low participation
+ Above average participation
+ + High participation
n.a. not available

([11]) Table is based on Cedefop, 2017d.

For countries with highest levels of VET attainment in adulthood – Finland, Germany, the Netherlands, Norway, Portugal – it was often mentioned in country expert questionnaires that the share of adult learners in formal education institutions predominantly providing IVET has remained stable since 1995. In some cases, this estimation is partly given based on adult learners' general participation in LLL, as in Germany. Denmark ([12]) and Spain note that participation of adults in formal IVET has gradually increased during the past 20 years. Together with Finland, these three countries an important driver in flexible learning opportunities tailored specifically for adult learners needs (such as distance education).

Box 2. **Adult apprenticeship schemes in EU countries**

One of the main drivers of increased adult learner participation in Denmark has been the introduction of the adult apprenticeship programme (*Voksenlærlingeordning*) in 1997. In Norway the scheme for experience-based trade certification (*Praksiskandidatordningen*) was established in 1952; this scheme permitted passing a craft examination based on practical work experience, without having attended school training and gone through the apprenticeship period that would normally be required. In Finland structural changes on the labour market are also emphasised, as these pushed more people towards retraining. A similar point is made for Spain, assuming that increase in IVET participation occurred particularly since the economic crisis in 2008, with learning being perceived as one possible access to new employment opportunities, sometimes also in new economic sectors.

Source: National VET expert questionnaire responses, Denmark.

France, Luxembourg, Malta and Austria are countries with an average level of VET attainment in adulthood. Of these, only Austria has seen a steady increase among adults in IVET, as employees find vocational schools more popular than general secondary schools. VET schools and colleges offer for adults specifically designed evening courses (no fees) which have had a stable share of participants during the recent decades. Further, participation rates for adults in dual apprenticeship programmes have increased in recent years due to new funding schemes (Hefler et al., 2017). Since 1994 important providers of CVET in Austria have been universities for applied sciences. Adults with occupational experience are explicitly invited to join full- or part-time programmes (the aim is to offer half of the programmes in part-time form).

([12]) Although in Denmark since 2008 the number of young people enrolled in formal IVET programmes has fallen.

It is assumed that in France and Luxembourg the share of adults in IVET has remained stable; no estimation is given for Malta. In Luxembourg there are several offers for adult learners (such as technical programmes at upper secondary level, health care, adult apprenticeships similar to the dual system) but, despite the increase in these possibilities, participation rates are limited. According to the country expert, hindrances to participation could include time constraints, fear of not succeeding, and lack of a suitable training offer.

Lower than average attainment of VET qualifications in adulthood is evident in Belgium, Bulgaria, Czechia, Estonia, Greece, Croatia, Italy, Cyprus, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia, Slovakia and Sweden.

Belgium, Estonia, Ireland, Italy and Lithuania estimate that, among IVET students, the rate of adult learners has increased. For instance, in Estonia schools trying to make up for the shrinking cohorts of young people are targeting adults. In addition, studies in VET have been at no charge (higher education programmes were chargeable until 2012/13). However, since 2007 the share of adults among IVET students has remained stable. Italy's positive trend in adults in IVET is supported by national policies giving increasingly more importance to adult education and training (including funds); training provision has also been broadened and diversified. For Lithuania it was noted that younger VET students attend more training programmes in engineering, while adults participate more in social services and healthcare programmes. In Belgium (Flanders) the increase in adults in IVET is perceived as a negative trend, because initial education should be completed at a younger age. Further, many adults returning to IVET do not complete their studies.

In several countries it was mentioned that adult participation in formal education institutions has particularly increased in universities of applied sciences or tertiary professional schools (Czechia, Ireland, France, Hungary, Austria, Romania, Finland and Sweden).

Country experts in Bulgaria, Czechia and Poland estimate that the share of adults in IVET has decreased. Part of the reason for this could be inflexible organisation of studies (Bulgaria, Czechia). In Bulgaria the effect of the economic crisis is also acknowledged, because this leads to cuts in funding for both schools and adult learners. In recent years, public debate in Bulgaria has focused on mismatch between employer demands for skills and VET curricula. Although IVET graduates with a m*aturita* certificate in Czechia are more likely to participate in LLL, from the perspective of adults it could be seen that higher standards of *maturita* study programmes discourage them from entering formal education. Country experts in both Bulgaria and Poland see negative public esteem of VET as the reason behind low adult participation rates.

Box 3. **'Knowledge lift' in Sweden**

In Sweden, the share of adults participating in IVET has fluctuated. One important driver of the change was measures taken in the 1990s, regarding adult learners in IVET when the policy *Knowledge lift* (*Kunskapslyftet*) was introduced. This incorporated a shift from active labour market policies to active education policies. The share of adult learners decreased somewhat after the policy measures ended, but, in 2009, a new State subsidy was introduced to encourage municipalities in offering IVET. The aim of the subsidy was to counteract workforce lack of vocational education and to reach residents that lacked upper secondary education or that needed supplementary vocational training. A State subsidy for adult apprenticeship education (*Lärlingsvux*) was introduced in 2013 to provide more adults with the opportunity of workplace-based education.

Source: National VET expert questionnaire responses, Sweden.

In Croatia, Hungary, Iceland, Romania and Slovakia the share of adults in IVET has remained stable over the past 20 years. In Hungary, adults could have been encouraged to participate more in VET since 2015 when training for obtaining a second vocational qualification became free of charge; until then only the first VET qualification was free. A second vocational qualification can only be obtained as an adult learner (only aged 25 and older). In Romania it is emphasised that low adult participation rates in VET reflect a small number of VET schools providing further education opportunities and there is no public funding for this: professional higher education institutions and universities are receiving funding. For Cyprus and Latvia there is no estimation on changes in adult participation in IVET.

However, the main tendency seems to be an increase in the number of adults in IVET. Many countries reported new VET pathways for adults, for example in Denmark (*Erhvervsuddannelse for voksne,* EUV), in Croatia (post-academic employment preparation at universities) and in Malta (on post-compulsory secondary level) or simply an increase in adult learners in existing VET programmes (in Estonia, Ireland and Finland). This often goes hand-in-hand with increased emphasis on the accreditation of prior learning (in France, Finland, Norway) and is frequently related to the implementation of European lifelong learning policy.

Table 8. **Continuing studies in higher education, vocational education graduates, age group 20-34, summary ([13])**

	Continuing studies in higher education, vocational education graduates
Slovenia	+ +
Romania	+ +
Bulgaria	+ +
Netherlands	+ +
Denmark	0
Portugal	0
Italy	0
Latvia	0
Czechia	0
Spain	0
Sweden	0
Croatia	0
Belgium	0
Poland	0
Slovakia	0
United Kingdom	–
Finland	–
Estonia	–
Malta	–
Greece	–
Austria	– –
France	– –
Luxembourg	– –
Cyprus	– –
Germany	– –
Lithuania	– –
Hungary	– –
Iceland	n.a.
Ireland	n.a.

Source: Cedefop based on EU LFS 2014.

NB: 0 About average participation, relevant to the sample average (average participation is 6.7%)
– Below average participation
– – Low participation
+ Above average participation
+ + High participation
n.a. not available

([13]) Table is based on Cedefop, 2017d.

5.5. Access to higher education (vertical permeability)

Table 8 summarises VET graduate participation rates in higher education in relation to sample average for 20 to 34 year-olds in 30 countries (data not available for Iceland and Ireland ([14])). Five countries, had above average participation rates in 2014, ranging from 23% in Slovenia to 13% in Bulgaria and the Netherlands (Cedefop, 2017d). In 12 countries higher education participation rates among vocational education graduates were below average (for example 1% or less in Germany and Hungary).

New pathways into higher education were frequently reported as major changes that took place in the past two decades. Issues of access to higher education through vocational qualifications are specifically addressed in countries that have long-standing traditions of VET: Denmark, Germany, France, Austria and the UK. German VET now gives access to higher education to vocationally qualified applicants like *Meister*, *Techniker* or *Fachwirt*, if they have proof of relevant occupational experience, pass an aptitude test or successfully complete a probationary year of studies. In many other countries, higher education institutions are already major providers of VET but even in countries where this is traditionally not the case (Germany, France) the importance of higher education institutions for VET is increasing. In the UK, advanced apprenticeships are being strongly promoted and more high-level training will probably be subsumed under the apprenticeship banner. Specific post-academic programmes intended to increase the labour market chances of graduates from traditional academic programmes are being introduced in Croatia. In Norway, changes over the past 20 years have allowed for more permeability between upper secondary and higher education. Some university colleges consequently accept applicants with an apprenticeship certificate or work practice, but without having passed the necessary exams in science, technology, engineering and mathematics (STEM) subjects in order to obtain general study competence. This is the so-called *y-veien*, meaning a vocational path to higher education, such as access to engineering education at EQF level 6 (Cedefop, 2019). While CVET and IVET students are following this path, it can be a general sign of blurring boundaries.

([14]) There are no data for Ireland according to the type of upper secondary education; Iceland has not participated in the AES surveys.

Box 4. **Permeability and the chance of upward mobility in Austria**

Permeability and the chance of upward mobility has been high on the Austrian policy agenda. While there is no national system of accreditation of prior learning, almost all qualifications (except higher education) can be acquired through external examination, without attending the respective education programme. University entrance exams for people without higher school leaving certificate have always existed, but were reformed in 1997 by the so-called *Berufsreifeprüfung* (vocational matriculation examination, BRP). The exam consists of four parts: German, maths, a foreign language and one vocational field. The number of students in preparatory courses for these exams has been increasing over the years and is currently more than 10 000. Almost half of these graduates took the exams as a starting point for their academic studies; most graduate stay employed at the same company after having taken the exam (Schneeberger et al., 2013, p. 29). Preparations for the exams are mainly offered by non-formal education providers of the social partners such as bfi (*Berufsförderungsinstitut*/Vienna Vocational Training Institute) or WIFI (*Wirtschaftsförderungsinstitut*/Institute for Economic Promotion) and the *Volkshochschulen* (centres for adult education). The preparation courses are not free of charge but there are scholarships available to ease the student financial burden; these differ between federal regions and rang from 30% to 100%. The larest proportion of people taking these exams – around 62% – is people who had earlier successfully finished an apprenticeship (Schneeberger et al., 2013, p. 30). Besides this new exam, people with a vocational qualification but no higher education entrance certificate can be admitted to university of applied sciences (UAS) programmes based on relevant professional experience. Several UAS offer preparation courses for these applicants specifically designed for access to study programmes in these institutions (Fleischer, 2017, p. 17). Another major improvement in terms of permeability was the more recently introduced option to prepare for the BRP during the apprenticeship (*Lehre mit Matura*).

Source: National VET expert questionnaire responses, Austria.

5.6. Horizontal permeability in continuing VET for initial VET graduates

Table 9 summarises VET graduate participation rates in relation to a sample average for 20 to 34 year-olds in 31 countries (data not available for Iceland and Ireland ([15])).

([15]) There are no data for Ireland according to the type of upper secondary education; Iceland has not participated in the AES surveys.

Table 9. **Participation of VET graduates in non-formal education and training, summary ([16])**

	20- to 34-year olds
Switzerland	+ +
Denmark	+ +
France	+ +
Sweden	+ +
United Kingdom	+ +
Luxembourg	+
Norway	+
Netherlands	+
Finland	+
Austria	0
Czechia	0
Portugal	0
Malta	0
Spain	0
Cyprus	–
Germany	–
Slovenia	–
Italy	–
Lithuania	–
Estonia	–
Belgium	– –
Bulgaria	– –
Latvia	– –
Greece	– –
Croatia	– –
Hungary	– –
Poland	– –
Romania	– –
Slovakia	– –
Ireland	n.a.
Iceland	n.a.

Source: Cedefop calculations based on AES 2011.

NB: 0 About average participation, relevant to the sample average (average is 8.2%)
– Below average participation
– – Low participation
+ Above average participation
+ + High participation
n.a. not available

([16]) Table is based on Cedefop, 2017d.

In countries with higher than average participation of 20 to 34 year-olds in NFE (Denmark, France, Sweden, Switzerland and the UK), country experts mostly stated that access by VET graduates to NFE has improved over the past 20 or 15 years. In Denmark it is acknowledged that participation in lifelong learning has increased significantly since the 1990s for adults with low, medium and higher education, also including VET graduates, although specific data for this group is not available. There have been several education system reforms (in 1999 and 2006) aimed at providing incentives for individuals to participate in LLL. The State Grant System for Adult Training (*VEU-godtgørelse*, VEU-allowance) was introduced, providing financial benefits for participating in CVET; this corresponds to the level of maximum unemployment benefit and replaced a former scheme. In Sweden there has been an overall increase since the mid-1990s in the share of employees receiving internal education and training (*personalutbildning*). The most significant increase in LLL participation has occurred among those with an upper secondary degree (VET graduates included) and not among those with higher education.

Box 5. **Drivers of improved access to LLL in Sweden**

One driver of the positive trend in Sweden is wider and more competitive provision of so-called supplementary education (*kompletterande utbildning*) which includes formal and non-formal education and training institutions. This is partly due to coordinated government efforts to offer financial support to supplementary education providers that offer courses where there is a national need; this may be due to, for example, problems with competence provision in certain industries. Another significant driver of improved access to LLL in Sweden is the increase in the overall effort to improve learning opportunities for all industries and professions through political initiatives such as the *Knowledge lift* (*Kunskapslyftet*) and efforts to strengthen LLL in all parts of society and the economy. A concrete measure was taken in 2011, when all upper secondary school VET programmes were required to offer college-preparatory modules. This policy change has improved VET graduate access to LLL covering further formal higher education. However, it is difficult for the country expert to assess how, or if at all, this affects VET graduate access to LLL through non-formal education.

Source: National VET expert questionnaire responses, Sweden.

Countries with average VET graduate participation in NFE in 2011 are Czechia, Spain, Malta, Austria and Portugal (Table 9). Relevant country experts mostly recognise that VET graduate access to NFE or LLL has improved to some extent during recent decades but there are no concrete data available.

Box 6. **VET graduate access to further learning in Austria**

It appears that VET graduate access to further learning Austria is dependent on the type of VET. Graduates from VET colleges, whose diplomas grant access to higher education, have better positions on the labour market and higher LLL participation rates. For others – VET schools, dual system combining employment and part-time schooling (apprenticeship) – LLL participation rates are lower and have not increased to the same extent as overall participation. More recently, VET school graduate (age 15 to 24) participation in NFE has also increased and is comparable to VET college graduate levels. This was achieved by widening further learning opportunities via introducing the vocational matriculation examination for apprentices (preparatory courses are free).

Source: National VET expert questionnaire responses, Austria.

Countries with lower than average VET graduate NFE participation are Belgium, Bulgaria, Germany, Estonia, Greece, Croatia, Hungary, Italy, Cyprus, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia (Table 10). Most of the countries here also assess that access of VET graduates to NFE/LLL has improved in the past 20 years. Yet some estimates are more critical.

Box 7. **VET graduate participation in LLL in Belgium**

In Belgium (Flanders), it is recognised that government has taken actions to promote participation in LLL and many initiatives are particularly targeting VET graduates, but those with higher levels of education make considerably more use of such initiatives. In Italy it is emphasised that for those with ISCED 3-4 qualifications (not just VET graduates in particular) participation in LLL has stalled or slightly even decreased. In general, LLL public funding in Italy is targeting employees or adults that are more vulnerable on the labour market.

Source: National VET expert questionnaire responses, Belgium.

According to country experts, better access for IVET graduates to NFE is mostly driven by greater provision of training offers, such as in Estonia, Greece, Croatia, Latvia, Lithuania, Hungary, and Poland.

The European Social Fund is frequently mentioned as an important mechanism behind improved access to NFE/LLL for VET graduates and often also for the unemployed and other vulnerable labour market groups; examples are Czechia, Estonia, Greece, Latvia, Lithuania, Hungary.

5.7. Country comparison

Table 10 summarises the results of previous analysis about vertical and horizontal permeability of VET in different countries. The permeability seems to be quite high in Denmark and the Netherlands.

In contrast, it is quite low in a range of eastern and southern Europe countries. The Baltic countries and Hungary, together with Malta and Cyprus, seem to have lowest permeability both vertically and horizontally, with IVET graduates less likely to continue studies in formal education or CVET. However, Croatia, Poland and Slovakia, together with Belgium, Greece and Italy fare better in terms of horizontal permeability, with IVET graduates finding easier access to CVET.

The only east-European countries where at least one dimension of permeability is high are Bulgaria, Romania and Slovenia. These have high horizontal permeability, and their vocational upper secondary graduates have continued their studies in higher education institutions more than average, but their participation in NFE is low.

Table 10. **Vertical and horizontal permeability of VET systems**

		Vertical permeability		
		High	**Medium**	**Low**
Horizontal permeability	**High**		The Netherlands	Bulgaria Romania Slovenia
	Medium	Denmark	Czechia Spain Portugal	Belgium Croatia Italy Greece Poland Slovakia
	Low	Finland France Luxembourg Sweden The UK	Austria Germany	Cyprus Estonia Hungary Latvia Lithuania Malta

Source: Cedefop.

The 'apprenticeship' countries Germany and Austria show relatively low chances for IVET graduates to continue in formal education compared to other countries, but medium chances to participate in CVET.

France, Luxembourg, Finland, Sweden and the UK show relatively high chances for IVET graduates to continue their formal education, but lower than

average likelihood to participate in non-formal education. This may be perhaps the most difficult feature to explain, as some of the countries in this group tend to promote lifelong learning in their VET concept. However, this may be where the answer also lies: if VET is seen as part of lifelong learning, or is general enough, both pull factors and push factors may be at work in getting IVET graduates to continue studies at higher level.

A summary overview of the countries by all dimensions is provided in Annex 6, where the conception of CVET, changes in CVET provision, IVET attainment as adult, vertical permeability and permeability to CVET are juxtaposed with the type of VET system in the country. It seems to be the case that there is diversity across the VET types, though patterns do emerge.

For example, countries with dominant school-based VET seem to have better permeability to CVET if the CVET provision is diverse and the concept of CVET is broader; otherwise the permeability to CVET is still lower than or at the average level. This suggests that diversity of provision may be necessary but is an insufficient measure to improve the chances to continue in CVET. However, the countries with school-based VET may have a good level of vertical permeability – continuing to formal education – if the provision of CVET is not diverse, share of adult IVET graduates is lower and chances for CVET are lower than average across countries; this could suggest that CVET and continuing studies after IVET in formal education may in those countries be substitutable, without any specific added (symbolic) value gained from either path.

Countries with dominant general education tend to demonstrate high diversity of provision by 2015, even if in the 1990s it was at low or medium level. Only where it was permanently high is there also a high level of CVET participation, together with average or below average level of vertical permeability. However, this tends to be accompanied by average or below average share of adult IVET graduates, suggesting there is a tendency for a compensatory mechanism seen in CVET.

Countries with a dual system see relatively high permeability of IVET graduates to CVET (but not that high vertical permeability), and they also bring more adults to IVET formal education programmes. The diversity of CVET provision is varied across the countries, but this does not seem to affect these trends.

Countries with a work-and-school-based VET system perform along the same lines as dual system countries.

The comparison of countries indicates a complex pattern across the six dimensions considered. While the indicators were chosen to reflect the level of support for lifelong learning, in some countries indicators changed in different

directions. This may mean that countries rely on different mechanisms to support VET as lifelong learning.

Countries with most consistent development towards a system that shows support to lifelong learning across all the indicators were:

(a) Finland, France, Norway: most persistent in opening VET to lifelong learning (Norway is also featured in the case study);
(b) Denmark, the Netherlands: second most persistent;
(c) Luxembourg, Sweden, the UK: third most persistent (UK is also featured in the case study).

Countries that showed less consistent development and so may experience difficulties in developing towards seeing VET as lifelong learning across all dimensions analysed were:

(a) Greece, Hungary: least engaged in opening VET to lifelong learning;
(b) Bulgaria, Poland, Romania: second least engaged (Poland is also featured in the case study);
(c) Estonia, Croatia, Latvia, Lithuania, Slovakia: third least engaged (Estonia is also featured in the case study).

In the latter groups of countries, there may be specific dimensions that are most likely contributing to conceptualising VET as lifelong learning, but this is not a rule across all the dimensions. It is important to notice two aspects here. First, the ranking is relative and not absolute, meaning that even the least engaged countries may have made significant progress in terms of constructing VET as lifelong learning, while even the most consistent lifelong learning geared systems still have a lot to gain. However, countries may have knowingly chosen to progress towards lifelong learning first in certain dimensions rather than others. It is quite possible that the choices countries make in this regard are dependent on the state of their economy and their social structure more generally. Still, the connection noted above with their VET system cannot be denied.

5.8. Conclusions

The pattern of developments varies substantially from country to country. However, some tendencies can be identified:

(a) at European level, the change in CVET provision seems to have been minor, though broadening the provision, with greater participation in the average number of hours spent in CVET courses and a slightly higher incidence of non-formal education based in companies;

(b) there has been diversification so that CVET is no longer focused on occupation-specific and job-related skills, but in many countries also includes training for key competences. There is a trend for IVET providers to provide CVET programmes and for IVET programmes to be opened up to adults;
(c) the range of different types of provider has increased (notably in Estonia, Croatia, Luxembourg, the Netherlands, Poland, Portugal and Sweden), although employers continue to be the most common providers;
(d) flexible learning opportunities, tailored specifically for adult learner needs, are also developing in many countries; in some countries the CVET target group is becoming more diversified and in some the number of adult learners in IVET has increased;
(e) routes from upper secondary VET to higher education have become more common. Upper secondary VET has become less concerned with preparing people for corresponding occupations and direct access to the labour market;
(f) many of these developments are resulting in a tendency to strengthen the links between education and training subsystems, reduce barriers to progression in education, training and learning and benefit individuals' lifelong learning careers.

CHAPTER 6.

Developments across three economic sectors

Chapter 6 contributes to a more nuanced in-depth understanding of the role of CVET and IVET in national skill systems, concentrating on three sector families (manufacturing of machinery and equipment, retail, computer and related activities) in six countries (Austria, Estonia, Italy, Norway, Poland, the UK). These countries represent three different types of CVET conceptions:

(a) Estonia and Italy belong to countries where CVET is understood as job-related/occupation-specific non-formal education and training for adults;
(b) in Austria, Norway and Poland CVET is understood as job-related/occupation-specific formal and non-formal education and training for adults;
(c) in the UK as (part) of further education and training for adults.

Three sectors studied were deliberately chosen as having different development trajectories and skill systems, historically aiming at different demographics for a workforce. Manufacturing of machinery and equipment is a traditional representative of production, its VET system at different starting points and trends across countries. The retail sector as part of trade and services is labour-intensive and can be considered a growing sector across countries. Computer and related activities is a fairly new and heterogeneous sector which is under constant development changes, and where the VET system had to develop rather in parallel across the countries. Conclusions are drawn on sector-specificities that are common across countries as well as country-specific aspects that determine the within-sector differences across countries.

6.1. Changes in three sectors from the 1990s

The manufacturing sector accounts for 16% of overall employment in the EU, with much of the fall in manufacturing employment taking place over the past 15 years. There are substantial country differences (Appendix 7). Employment in this sector is much lower in the UK and Norway than in the EU average. The fall has been substantial in these countries as well as in Italy and, to a lesser degree, in Austria and Estonia.

Employment in wholesale and retail trade has also fallen during these 15 years but to a significantly lesser extent. Country-specific differences are small: in six case study countries the employment in this sector is around 13 to 15% (Appendix 8).

Employment of ICT specialists has increased substantially during 10 years, especially in Austria, Estonia, and Norway. This rate remained lower in Italy and Poland compared to other four countries where it achieved around 4 to 5% (Appendix 9).

There are similarities between countries (Table 10):

(a) in manufacturing, new production technologies and materials have changed the sector. Industry 4.0 is expected to bring accelerated automation and robotisation of industrial production. As a result, the skills expected of workers are constantly changing as machines take over most structured tasks. The changes require interdisciplinary competences from workers (such as in IT);
(b) ICT has flourished. Constant development and changes pose challenges for countries' education systems. There has been a lack of qualified IT specialists, especially at the beginning of the 2000s. As the sector is under constant development, companies must provide training opportunities. Technological changes in the sector have increased demand for in-depth competences. There is increasing demand for certification;
(c) the retail sector is characterised by internationalisation and increased competition. In the past 20 years there have been structural changes, where smaller businesses have merged into larger chains. Large international players and e-commerce giants have increased competitive pressure. Bigger companies have more potential to train their workers due to greater flexibility and investment possibilities. There is a significant difference between high-level occupations (managers) and lower-level occupations (sales staff) in terms of CVET.

There are country-specific differences:

(a) in Estonia and Poland manufacturing struggled with significant changes in the 1990s. Production plants and large State-owned factories were closed. This was accompanied by the collapse of professional vocational or local vocational schools which offered training in manufacturing. During the socialist period quite well functioning IVET and CVET systems were practically destroyed. IVET was underfinanced with outdated equipment and has a low social esteem;
(b) in Norway, manufacturing is characterised by a tendency to split up previously integrated production chains by subcontracting work operations

and by contracting temporary workers. In the UK many employers in the sector are small and medium-sized enterprises (SMEs) operating outside the high-technology sector and serving local rather than international customers. They have less resource to develop skills and to attain access to professional development and training. In Italy, there is difficulty in finding suitable workers in the sector because of a lack of candidates and of inadequate preparedness of candidates. The external migration of Estonian and Polish skilled workers is perceived as a problem; in Estonia the manufacturing sector relies heavily on agency workers;

(c) in Austria and Norway, most companies in ICT outsource less complex programming work to low-cost countries. This means that ICT-related business in these countries is concentrated on development, marketing and sales of ICT products;

(d) in retail, the professionalisation of lower-level specialists has fallen in Estonia and Poland. In the other four countries it has remained at a low level.

Table 11. **Main changes in three sectors across the countries**

	Manufacturing	ICT	Retail
Austria	• Growing level of technological complexity • Machines take over less complex tasks • Need for interdisciplinary and broader basic knowledge	• Fast expansion • Outsourcing of software programming jobs to eastern Europe, India and China	• High fluctuation • Concentration of bigger stores, chains and franchise companies • Online shopping, delivery services • Increasing part-time work
Estonia	• Growing automatisation • Growing need for highly skilled workers • External migration of skilled workers	• Fast expansion • Extensive use of ICT in other sectors	• Fast expansion of sector and development of competition • Multinational companies • Innovative labour practices, low wages, demand for labour, de-professionalisation • Delivery and e-stores added to retail chains
Italy	• Introduction of new production technologies • Advent of new materials • Shortening the value of chain	• Big data • Internet of things and Industry 4.0 scheme • Cyber security • Mobile data availability and applications	• Global competition • Large international players, e-commerce giants • Development of new technologies

	Manufacturing	ICT	Retail
Norway	• Dependence on fluctuations in oil supply services • Subcontracting work operations, contracting temporary workers	• Rapid technological change • Outsourcing of less complex programming work to low-cost countries • Increased demand for in-depth competence	• Smaller businesses merged into larger chains • Higher degree of professionalisation • Web sales and automation
Poland	• Huge drop • Bankruptcies of large enterprises in the 1990s • Development of microenterprises • Emigration of specialists	• Fast expansion • Computerisation, digitalisation	• Rapid development • Privatisation • Internationalisation • Concentration • Innovation
UK	• Technical change is affecting the demand for skills with some evidence of a hollowing out of the employment structure • A long chain of SMEs in the sector where change is less in evidence	Increasing expectations from clients creating a demand for hybrid skills (technical skills plus soft skills)	• The introduction of online shopping • More emphasis on logistics/delivery • The closure of several major chains over recent years

Source: Cedefop, based on sectoral country reports (case studies).

6.2. Initial and continuing vocational education and training in three sectors

6.2.1. Manufacturing

There are clear similarities of skill formation systems in six studied countries. First, skill-formation seems to be formalised in manufacturing. The necessary level of education for engineers is a university degree; in Estonia more than 70% of engineers have an academic higher education. In Norway, the bachelor degree in engineering was formally established in 2003, but was more or less a continuation of the former engineering education and is now offered at many university colleges. There is a clear tendency to vocational drift in engineering education. Internships in enterprises and work placements are gaining ground with a view to strengthening the relevance of higher education in a labour market context. Applied higher education in Estonia gives a labour market advantage because of the better preparation as a result of a greater share of work

placements during studies. In Austria, engineers traditionally come from higher technical education institutes. This has not significantly changed over recent decades, although a greater variety of programmes is offered in the sector due to the establishment of universities of applied sciences. In the UK, employers' professional engineering needs are primarily filled via entry from higher education. Professional/associate professional engineers possess engineering degrees.

For medium-level specialists (supervisors) upper secondary education (technical or professional) or post-secondary vocational education is often a prerequisite but CVET is relevant for developing soft skills, mostly related to resources management (human as well as material). In this, experience developed in the field is also very relevant. A typical career for medium-level specialists in Austria is an apprenticeship, followed by a professional master degree after a couple of years of practical experience. Another recent option is the possibility of taking a higher school leaving exam in the setting of an apprenticeship programme. This change is part of the increasing permeability taking place in the Austrian school system. UK employers report that while many professional/associate professional engineering jobs require an engineering degree, employers often report that existing employees with the necessary aptitude will have the opportunity to take up professional positions within the company. This will often require them to gain an engineering degree, albeit with the company's support, and illustrates companies being particularly keen to retain skilled employees who are considered difficult to replace from the external labour market. Providing existing employees opportunities for further development is thought to enhance employee retention.

There seems to be more country-specific differences in skill formation systems for lower-level specialists such as welders and flame-cutters. The dominance of the apprenticeship system in Austria is especially apparent in manufacturing of machinery and equipment; foreman examinations are a typical career option. A technical upper secondary education diploma is the necessary level for supervisors, welders and flame-cutters In Italy but VET is also important because they have to obtain specific licences, internationally valid, for employment in such positions. However, welders and flame-cutters rely mostly on CVET since initial education and training does not provide technical and practical skills. The requirements for welders in Estonia are a vocational education and, depending on company needs, participation in further training. Work experience and European-level certifications are also considered important. Employers think that education cannot provide all necessary skills, so work experience is essential. Smaller companies prefer work experience to education

because they lack the time and human resources to provide the necessary training. In Norway, these groups are trained in the Technique and industrial production programme (TIP), leading to an apprenticeship certificate. In Poland, basic vocational schools are preparing lower-level specialists for manufacturing. Craft chambers, marginalised but still functioning, currently offer courses and exams for journeymen and craftsmen, including occupations in manufacturing of machinery and equipment.

Several country experts mentioned a shortage of engineers and especially skilled workers in manufacturing (Estonia, Italy, Norway). The reasons for scarcity differ. In Norway, many enterprises in the sector are integrated in the cluster of oil supply services, and scarcity of skilled workers has been most acute during periods of high oil and gas prices on international markets. Rapid market fluctuations can also lead to dismissals or temporary lay-offs: in such times the question is what to offer staff retained on company payrolls while waiting for a return to investment optimism and full order books (Ure, 2010). In Italy, according to the results of the latest Excelsior ([17]) survey, the sector is among those for which it is most difficult to find suitable candidates because of a combination of lack of candidates and inadequate preparedness of those available. An open labour market, and the free movement of labour has had a considerable influence on the Estonian metal and machine industry companies. The introduction of European-level certifications has increased workforce mobility. External migration of the Estonian skilled workforce is perceived as a problem because it is an attractive target group for the neighbouring countries (Finland, Norway, Sweden) and Germany. As a result, the sector relies heavily on agency workers from Latvia and Ukraine. Foreign workers are employed for project-based work.

6.2.2. ICT

The sector differs in many ways from the others discussed in this paper. It is diverse, described as the digital and creative sector. It has fewer formalised skill formation systems compared to manufacturing; constant development and changes pose challenges for school systems. One effect of technological and market changes seems to be an increased demand for in-depth competence in ICT companies, which cannot be met solely through continuing education by suppliers or by in-company training; it seems to require adaption by the formal education system, for example through incorporation of specific subjects within

([17]) Excelsior is an information system that provides forecasts on labour market trends and needs of companies.

initial higher education. A growing need for engineers with a master degree is the biggest change in ICT sector recruitment.

The majority of ICT jobs require higher education because of the importance of analytical thinking and independent decision-making skills. Broad knowledge and skills are expected from a qualified labour force. General skills such as international teamwork, orientation to clients' needs, the ability to lead projects and processes, a creative approach to problem-solving and the ability to see the whole will become increasingly important. Such general skills need to be combined with field specific skills. Broad application of ICT across different fields will require specialists in other fields to have good ICT skills.

Higher-level specialists are generally recruited from designated master programmes; the link between education and occupation may be weaker among lower- and medium-level specialists. In Austria, the establishment of universities of applied sciences influenced the sector the most. While higher federal technical colleges in that area still mainly focused on general school subjects, and university programmes did not offer enough practical skills, UAS opened up a much needed door to the labour market. As a consequence, higher federal technical colleges had to increase their qualities and focus to a greater extent on technical aspects and training. Establishment of UAS was ground-breaking for the ICT sector and also influenced provision in other sectors.

However, there is a lack of appropriate education supply in most countries studied (Estonia, Italy, Norway, Poland) which gives CVET a prominent task in skills updating. With the ICT sector under constant development, companies to must provide training opportunities. In some countries (Estonia, Austria), the selection of CVET is quite limited and developing more specific skills requires finding training opportunities outside the country. In all countries studied, this sector includes a large number of micro- and small enterprises and freelancers. While the larger companies provide a range of CVET via online training, on-the-job training, and mentoring, it is not clear to what extent those in the smallest enterprises or freelancers are able to update their skills.

The ICT sector has not developed strong ties to vocational upper secondary education. There are ICT programmes in Estonia at 18 vocational schools but the quality of the education in these schools is uneven. In Italy, the quality of technical upper secondary education has fallen in the past 20 years. Norway faces the rapid changes in ICT and weak ties between upper secondary education, apprentices and recruitment. The apprenticeship system in Austria has never really adapted to the sector, although new ICT occupations were created.

However, there is a clear trend towards increasing formalisation of skills in the sector. In the 1990s many would come into ICT work as autodidacts; it is now more common to take formal education in ICT before entering, especially for work as medium-level specialist. A typical situation is described in Poland. In the 1990s, anyone who, via formal education, non-formal education or just knowledge and skills gained within a hobby, could provide simple IT services had a job. Microenterprises were created by those who could and were employed by those who needed. This boom at the beginning of the 2000s ended. Development of this sector brought more quality onto the market. The sector has reached the point of fulfilment with low quality providers. After that it became more stable, developing slightly slower, but more quality-oriented and self-regulated by professional associations and certification institutions. In all countries studied, formal education now plays a larger role as entrance requirement for ICT work than it did two decades ago.

There is a shortage of ICT specialists in all countries studied: the number of graduates in Estonia is just over a half of annual needs. One reason for the lack of qualified workers seems to be the rejection of many applicants at universities because there is not enough space for them in the most popular places of study.

Box 8. **Skill formation for ICT in Norway**

ICT Norway (the interest group for the Norwegian ICT industry) has raised concern over vacancies and lack of qualified ICT workers available. A questionnaire among their members in 2017 showed 38% had had job advertisements without being able to recruit qualified personnel in the last 12 months. The result from the same question in 2015 was 33%. Among the employers unable to recruit, 42% had to turn down offers and assignments from potential customers. Sweden has faced similar difficulties; this led to closer cooperation between businesses in the sector and universities and university colleges. In Norway, however, this cooperation has traditionally not been strong at university level. IVET providers are not interested in closely following developments and changing their education with each trend in the industry; this has been criticised by ICT Norway as inadequate in adapting to the rapid changes in the sector. Among the members of ICT Norway, 60% listed lack of qualified personnel as among the sector's biggest challenges for growth ([18]).

Source: Cedefop, based on sectoral country report (case study), Norway.

6.2.3. Retail

The skill formation system in retail sector is rather informal but there are clear country differences.

([18]) https://www.ikt-norge.no/innsikt/

Entering with higher education from business schools is becoming more common in Austria but apprenticeship programmes are still a traditional pathway. The retail sector has never offered the professional master degree, so there are fewer chances of upgrading in a formal way. The possibility of taking a higher school leaving certificate has changed this but other career options are available within the sector. Many big companies, which are increasingly taking over the market, offer or even require their employees to take part in CVET programmes. Such training programmes mostly concern communication (with clients, in the team), critical situations (complaints, emergencies) and human resources management (job interviews, dismissal). These priorities meet the need for working together on solving problems in the sector.

In Italy, the necessary level of education for managers is a university degree but companies must then ensure the acquisition of the required practical skills and competences. For commercial-sales agents an upper secondary education diploma is generally considered useful but a Chamber of Commerce enabling exam must be passed before starting to work as an agent. Shop sales persons, shop sales assistants and cashiers need an upper secondary education as well (but also achieved in regional VET or through apprenticeship) since the career usually starts at a young age where the main requirements – sales skills, affability, precision and patience – are generally developed on the job.

In Norway, sales education is a marginal element in total recruitment for retail sales work; most are recruited from other backgrounds. To gain a position as a high-level specialist, such as general managers of business services or shop sales managers and marketing department managers, it is common to have a sales-related bachelor degree and a master degree suitable for the position, particularly from the Norwegian Business School (BI). More general programmes, not specifically targeted towards the retail trade, may also be relevant, both at BI and universities and university colleges. There are many possibilities to gain a position as commercial sales representatives or buyers, including being trained within the organisation. Formal IVET still plays a minor role in providing vocational skills for retail sales work. Despite the efforts in 1994 to establish formal vocational education in sales at upper secondary level (ISCED 3), retail sales rely mostly on in-company training in providing basic skills for lower- and medium-level positions. Higher managerial positions are more often combined with some formal managerial education, such as courses in higher education especially designed for managerial positions within retail sales. Students on such courses will usually have a work background in retail sales. This type of managerial education can be considered CVET for retail sales middle managers.

Other types of occupationally specific CVET (apart from management) are mostly provided as in-company training.

In Poland, the traditional VET system 25 years ago offered education of lower-level specialists: shop sales persons, shop sales assistants and cashiers. Education for these specialists occasionally took place in vocational schools. The rapid growth in services after the political transformation caused changes in salesperson education. There was no longer any preparation for sales for lower-levels, or even medium- and higher-level specialists for a short period. As the education market responded to the changes, certification again started to count, especially for medium- and higher-level specialists. Different types of sales training was (and still is) offered by private training companies, which are important suppliers of VET for medium-level professionals in the sector. In the 1990s, universities and other higher education institutions introduced regular study programmes for business administrators, as well as post graduate courses for relevant sales professionals. For lower-level specialists, who are mainly treated as low or unqualified staff, there is mostly no need to have a professional diploma in retail sales. For medium- and higher-level specialists the need exists, but not necessarily from formal education. Professionalisation of lower-level retail specialists has fallen.

In Estonia, the retail sector also saw loss of professionalisation over the period. While the VET system 25 years ago offered initial formal education for low-level sales personnel, both lower level and upper secondary levels, it was considered proper and necessary preparation to start working in the field. Higher-level specialists were hired among university graduates where special degrees were offered in retail economics and other related areas. Throughout a working career, CVET courses were available for both lower- and higher-level specialists, often organised by formal education institutions. Participation in CVET led to the next level of qualification according to the qualification system, which was firmly connected to higher pay and career chances. Sales personnel wages were not low and the occupation was considered both symbolically and economically valuable because of the possibility to access quality goods during periods of scarcity. Sector growth since the 1990s and changes in the stratification of post-socialist society brought changes in skill demand. Higher level education increased quickly, with new private universities and other higher education institutions taking up the opportunity to offer business, marketing, finance and other degrees for tuition fees. The introduction of part-time studies on weekday evenings enabled the employed to study on a more regularly. Also, provision of CVET diversified considerably, with more fee-based courses available (earlier, participation in IVET and CVET was for free). The need for more personnel at the

lower level, however, meant that more people were hired who did not have any formal education background in the field. CVET courses impose a high cost on the employer, as education and training remains mostly organised on-the-job. While VET provision for the retail sector is still available at upper secondary and post-secondary level, these programmes are less popular; most individuals are hired without them and there are even cases in which employers undermine the professional education offered by VET schools. Since the labour market still involves individuals educated in the field, the differences in the skill level are sharp across generations. Low costs in preparing the workforce have also brought down the relative wage levels of the sector. Compared to Poland, for example, the occurrence of numerically flexible and time-flexible contracts is still low, and compared to other sectors there is no less job security. However, part-time jobs or fulltime flexible shift contracts in retail are increasingly taken up by university students. Since both IVET and higher education (since 2013) are free of charge, it is easier to pursue formal education studies also while working. With lower job availability in other sectors, more individuals with university degrees are taking up jobs in the retail sector, starting on the lower level. The expectation for advancing from the shop floor to a higher level office position is to have higher education but this is not a rule; and many advance to higher positions via on-the-job training and CVET courses in the field. While IVET programmes are connected to the NQF, certification according to NQF levels is not expected. Companies have their own qualification ladders, not necessarily recognised by other companies in the field, leaving the workforce more vulnerable. There are more diverse educational backgrounds on the shop floor but also more diverse qualifications in higher-level jobs. Specialised IVET qualifications were offered less than 25 years ago but more general higher education degrees in business have become more common.

In the UK, it has been increasingly common for management to be qualified to degree level with most major retailers having graduate recruitment schemes. Higher education institutions have increasingly sought to meet the sector's needs given that it has been a major destination for graduates. Despite this, there are still opportunities for people to enter the business at a lower level of qualification and develop their careers within well-developed internal labour markets to enter management jobs; typically, any training will be accredited in some way. Skill needs are changing with the development of online stores such that there is more emphasis on the technical skills related to managing online operations and the concomitant demand for skills related to ICT and logistics.

It seems that the direction of changes of skill formation systems in retail have been country specific. However, there are clear signs that the formalisation

of skills for lower-level and even medium-level specialists is quite low in all countries studied: sales education within the formal IVET system has marginal importance and medium-level managerial positions can be also achieved through training along internal career pathways.

Appendix 10 presents has tables on skill formation systems in three sectors in six countries.

6.3. Consistency of skill formation systems

6.3.1. Austria

The general role and position of IVET and CVET has not substantially changed in the past 20 years in Austria. Nevertheless, the two sectors have come closer together, particularly due to measures which increased permeability between VET and CVET, but also between VET and higher education and CVET and higher education. The relevance of IVET programmes in Austria is generally still very high and their provision of qualifications strongly affects CVET provisions in the respective sectors.

For manufacturing as a classical apprenticeship sector in Austria, the relation between IVET and CVET has not changed much since 1995. Despite this, the numbers of apprenticeships having slightly gone down, the sector is still among the most popular choices for young men. A typical career for medium-level specialists in the manufacturing sector would be an apprenticeship, followed by a foreman examination after a couple of years of working in the field. An additional option occurring within recent years is the possibility of taking a higher school leaving exam during an apprenticeship programme. This new option is a prominent example of the increasing permeability of the Austrian school system. Engineers in manufacturing of machinery and equipment traditionally come from higher federal technical colleges. This has not significantly changed over the past few decades, although a larger variety of programmes is now available due to new offers by UAS.

Apprenticeship programmes are still a very traditional pathway for the retail sector, particularly among females. While the foreman examination has long been a possibility in manufacturing, the retail sector has never offered such an upskilling option. There are fewer chances for formal upskilling, but there are plenty of non-formal courses available at private training providers to become a retail specialist. Also, large companies, which are increasingly dominating the market, offer their employees CVET programmes or even require them to take part. The rising numbers of part-time workers and a high staff turnover have had

their influences on the sector. Women, who are the majority of employees in retail, are found from low-level workers to shop managers, but rarely above that level. Experts stated that this is improving, with more women aiming at higher positions. The option of taking a higher school leaving certificate while doing an apprenticeship has opened the door to an academic career, which was more difficult before. However, doing an apprenticeship and then working one's way up within a company is still a common career pathway. Workers in higher positions might as well finish a business college and then work in the field for some years. Medium-level specialists in retail in Austria usually have also finished an apprenticeship in their field, just as many lower-level specialists have. However, for low-level specialists without an IVET qualification, further career options are limited.

The ICT sector is exceptional in the sense that is has never quite fitted into the scheme of dual apprenticeship education in Austria. Apprenticeships in ICT are still rare, but can be found in the big banks, in sanitary or machinery firms and also trade companies. The classical starting point of a career of a software developer or other medium-level specialist in ICT, but also lower-level specialist (installer, servicer), is a certificate of a higher federal technical college. Higher-level specialists typically have finished a technical university or UAS in the field. CVET has an important role in preparing specialists for the sector, due to a strong labour market demand 25 years ago for specialists, which could not be met by existing relevant education programmes at universities and the higher federal technical colleges. Also, there was a lack of teachers with the necessary competences. This has now changed, with a large variety of programmes to choose from and an increasing number of graduates from higher education in computer and related activities. Nevertheless, there continue to be skill shortages in the ICT sector in Austria. This, in addition to lower costs of working hours in other parts of the world, is causing companies to outsource their activities to a larger extent.

No major change in the role of IVET and CVET can be claim. The strong role and tradition of the dual system ([19]) can be cited as one reason. But the diversity of provision of education and training has increased, and the permeability of the education and training system has improved.

([19]) In Austria, the social partners are responsible for dual education, the provision of apprenticeships, their organisation and modernisation. In sectors with a classic dual system dominance, social partners have a strong impact on education in the field.

6.3.2. Estonia

Labour markets in the sectors considered here are very different, and so are the skill formation systems. Further, the changes in these over the past 20 years have followed diverse logics.

The share of jobs in manufacturing and in sales has remained about the same since 1999, comprising about 20% and 13% of total employment, respectively. This indicates that most changes took place in the period before 1999: this applies to growth in the retail sector and the decline in manufacturing-sector jobs. Meanwhile, the share of ICT jobs doubled between 2005 and 2015, now comprising 4% of total employment; it is the smallest of the three sectors, but with the largest growth. Corresponding to these trends are changes in education. Workforce demand in ICT has been so great that employees have had no need to prove formal qualifications and their skills could be acquired via independent studies or CVET; they are also likely to have at least some experience in formal education at IVET or academic higher education. IVET can seen as a form of CVET in this respect, where skills are collected but not necessarily qualifications. There are now tendencies towards (re)introducing a more formal qualification framework in this field, partly as the sector is open to competition from abroad; the trend of further professionalisation could be emerging.

In retail sector, the role of IVET has diminished since the 1990s, concomitant with shortages of labour in the field and growing internal career paths within organisations. It is possible to start quite unskilled in lower-level jobs and work up the career ladder with the support of on-the-job training and CVET courses. This indicates de-professionalisation, especially compared to the time before the 1990s when IVET or a university degree in retail business was common. While retail-sector jobs are locally oriented, it is not uncommon to find individuals with low levels of Estonian language skills in the sector, even though this is regulated by law requiring a certain level of knowledge of the language. However, rather than any sign of being an internationally attractive labour market, this is an indicator that Russian-speaking Estonians are overrepresented in the low-paid jobs in the retail sector. There is a lack of IVET or university programmes with Russian as a mediating language, so it is unlikely that Russian-speaking Estonians would have education in the field. However, there are more individuals with higher education from other fields, so the workforce has very diverse qualifications. Even though there is the well-developed NQF for the sector, this remains unimportant for both employers and employees. Therefore, and given the increase in CVET provision in the field, CVET seems to be replacing IVET, underlining the pressure from employers to keep wage pressures low. In

manufacturing, it is likely that some IVET is still a precondition to hiring; especially for higher-level jobs, the skills cannot be acquired only on the job. CVET is available, but this is complementing, not replacing, IVET This is in contrast to the ICT sector, where formal IVET programmes are perhaps complementing CVET. In all three sectors, retraining rather than continuing training in the field is common, though least likely in ICT and most likely in the retail sector, as individuals with different educational and career backgrounds might aspire to take up the jobs. Growing gaps in upskilling for individuals in lower-level and higher-level jobs seem most likely in retail and least likely in ICT. The gender gap does not seem to be closing in any of the fields, with more women taking up retail jobs, more men following manufacturing and ICT; this is despite promotion of ICT education for girls and women. Since unemployment is currently very low in Estonia, it is most likely that economic sectors would hire a diverse workforce and support their skills formation internally. Common professional identity, therefore, is unlikely to have been formed in IVET, and company-level identities and loyalties might be developed. This is more difficult for retail because of its low pay and for ICT because of its high competitiveness.

6.3.3. Italy

In two sectors (manufacturing and retail) there is a clear-cut separation between initial training and continuous training, although there is an attempt to increase the link between the two through school-work alternance. Such separation is rooted in the fact that IVET is monolithic, composed only of the State school system while the CVET system is more articulated, made up of a large number of small providers. Due to these peculiarities, the two systems do not crossover since the players operate in only one of the two systems.

However, the boundaries between CVET and IVET are increasingly blurred in manufacturing due to the contribution of companies to the preparation of the future workforce: about 20% of the companies in this sector provide school-to-work alternance and it ranks third among the sectors after companies in the chemical, pharmaceutical, oil sector and companies active in the electronics sector.

The most significant specificity of retail is the higher relevance of training on soft skills development compared to technical skills; this applies to all occupational groups of this sector. A further element is the difference between high-level occupations (managers) and lower-level occupations – such as sales staff – in terms of continuity of training. While managers require being trained a regularly in a perspective of lifelong learning, to keep pace with rapid changes in the sector, training for sales staff is less frequent. Since retail in Italy is a low

added-value sector, this has consequences for both CVET (especially for the lower levels of specialisation) and also for IVET (rarely considered as a prerequisite for the employment in the sector). Traditionally the main way of updating and developing skills has been directly on-the-job and without any formal or non-formal training at all.

In the ICT sector in Italy, the continuous changes and innovations over the past 20 years apply throughout the sector with the caveats that:

(a) they do not influence, in the same manner, all the occupational groups considered in this analysis; software developers and ICT installers and servicers are more accustomed to a context where IVET and CVET are separate, while engineers are more used to participating in CVET even after lengthy initial education);
(b) the influence always occurs within a framework (which in Italy is cultural before institutional or organisational) for which IVET and CVET are two completely different histories in terms of rules, regulations, actors, reasons of participation, and participants' expectations.

6.3.4. Poland

Production, sales and ICT in Poland are very different when it comes to the development of the sector and training of professionals. The most traditional sector, the manufacturing of machinery and equipment, has been most affected by changes. In this sector, also, the education of professionals is most associated with the formal system.

The sales and ICT sectors are also supplied through the formal education market, but to a lesser extent. Vocational training in the sales industry is already at the level of basic vocational school (although the interest in this field is smaller than two decades ago). Education for the ICT industry under VET is a technical vocational school education. All sectors also benefit from less formal forms of education as part of vocational and qualification courses. The offer of these courses is wide and available in both State and private institutions. The recently introduced vocational qualification system allows individuals to obtain confirmation of professional qualifications or profession, after completing courses in the day or extramural system.

However, there is evidence of increasing consistency of the skill formation system over the past 20 years within all three sectors. It is seen within the offer of

non-formal State VET providers. A newly introduced solution ([20]) of dividing professions into qualifications, and enabling students to certify not only a whole profession but also single qualifications, is a first evidence. The other is provision of general education at each VET level, which lets graduates from VET schools continue education in general education and conversely general schools graduates to continue their education in CVET (which for them would be an initial form of VET education).

6.3.5. Norway

Two sectoral observations from the Norwegian cases could, in principle, comply with the assumption of convergence between CVET and IVET: the prevalence of young lower-level specialists in retail sales and the attraction of computer and related activities among young entrepreneurs in start-up firms. Both groups could be expected to comprise people with a short IVET trajectory who therefore would rapidly enrol in CVET courses for acquiring more formal education. However, available statistics do not confirm that these sectors score particularly high in terms of CVET. The ICT sector case indicates increasing formalisation of skills and higher demand for in-depth competence that cannot solely be met by in-company training or continuing education courses provided by suppliers. Formal education institutions are also asked to contribute to meeting this demand.

The manufacturing of machinery and equipment sector has structured and historically rooted IVET trajectories of short, medium and long duration. One change in the relationship between IVET and CVET over the past 20 years is the structuring of vocational colleges at EQF level 5. This can, for example, lead to more permeability for sheet-metal workers towards vocational technical colleges; and for manufacturing supervisors trained at EQF level 5 towards engineering education at EQF levels 6 and 7. Compared with other sectors, however, some career trajectories existed for these occupations prior to the 20-year period examined. Manufacturing of machinery and equipment stands out to some extent from other sectors, but more in terms of trajectories appreciated by employers than systematic exemption from parts of curricula when moving from step to step along this trajectory. Ranging from lower to high-level specialists, the sector does not seem to be trained in a manner suggesting that their IVET programmes are losing distinction, and that the body of knowledge of each programme should gradually converge with CVET.

([20]) Integrated qualification system introduced in 2015, Act of 22 December 2015 on the Integrated Qualifications System (*Dziennik Ustaw*, Journal of Laws of 2016, Item No 64).

However, the articulation between IVET and CVET in this sector works differently in integrated and dispersed production chains. This is particularly so in large firms that integrate all three occupations, either on the same site or spread around on several sites, though integrated in the same production chain. It is more likely that the three occupational groups can adhere to one single strategy for training existing staff (CVET) instead of hiring new specialists recently graduated from IVET. A similar pattern of coherence and coordination might not be found in production chains organised around a main contractor that assembles deliverables from a range of subcontractors. In integrated firms, a human resources department can be in charge of crafting a corporate policy for upskilling all staff categories to respond to long-term trends, such as Industry 4.0. In contrast, a main contractor at the head of a chain of subcontractors tends to take for granted that all subcontractors have sufficiently trained staff for doing the job. In such supply chains, the skills level among staff is often revealed during quality assurance and control, transposing CVET/IVET to control and evaluation as part of project management.

Overall, there is little evidence from the three compared sectors that they show particularly clear signs of convergence between IVET and CVET or could represent contrasting examples of this.

6.3.6. The UK

In the UK, at least since the 1980s, policy-makers have sought to create a strong external training market to satisfy the skills and training needs of employers and individuals alike. From a policy perspective, little if any distinction is made between IVET and CVET; for instance, it is not uncommon to find that apprentices are longstanding employees of the company that has enrolled them on an apprenticeship. They have been placed on the apprenticeship to fulfil employers' particular needs in relation to aspects such as reskilling, employee retention, and morale building. In this sense an ostensibly IVET programme is being used as a means of delivering CVET. While the policy of creating a strong external training market has, more or less, brought about a situation where all IVET is delivered through publicly funded and regulated programmes, it is less clear that it has achieved the same with respect to CVET. Some medium-sized and large companies in sectors such as manufacturing and ICT still have strong internal labour markets linked to the provision of CVET. Some of the training delivered within the internal labour markets may be linked to public programmes associated with IVET, such as engineers being enrolled on university courses by their employers as part of their professional development, but this is not always the case. In the retail sector, IVET (especially apprenticeships) is one of the

principal sources of CVET, but IVET as a form of CVET is perhaps less well-developed in the manufacturing and ICT sectors ([21]). In these sectors, beyond IVET, there is arguably more emphasis placed on informal training and learning-by-doing tailored to a particular employee's needs. In all three sectors there is a substantial tranche of employment in micro- and small-enterprises, and in the ICT sector many freelancers. It is not clear to what extent, if at all, the needs of employees in micro- and small enterprises, and those of freelancers are being met by CVET.

Table 12. **The role of CVET and IVET in skill formation systems by sectors by countries**

	Manufacturing	ICT	Retail
Austria	The relationship between IVET and CVET has largely remained the same	The lack of programmes in formal education, now increasing formalisation of skills. CVET has lost some ground to newly established and institutionalised IVET provisions at higher levels	The relationship between IVET and CVET has shifted slightly from IVET to CVET. Somewhat blurred boundaries but increasing demand for certification
Estonia	Some attempts to increase the link between CVET and IVET by introducing some short-term courses to be arranged within IVET schools. Schools well connected to employers, apprenticeships possible. IVET gives advantage over not having a degree	Short-term courses provided for the employed, good formal education programmes at secondary and higher VET schools and at university level. On the job learning, including certified courses online	Sales-related IVET not relevant for hiring on the shop floor. CVET courses mostly provided not by VET schools but training organisations

([21]) In 2017, 38% of employers who had recently enrolled an employee/apprentice on an apprenticeship in the UK said that they done so to train existing employees (excluding any who were recruited with the intention of placing them on an apprenticeship after a probationary period). Of these, 58% said that the purpose was to improve the skills of the employee only in their existing job (Department for Education, 2017).

	Manufacturing	ICT	Retail
Italy	IVET and CVET do not crossover: IVET is monolithic, composed only of the State school system while the CVET system is more articulated, made of a large number of small providers. Attempts to increase the link between CVET and IVET through school-work alternance	The growing importance of CVET but considering its very poor diffusion 20 years ago, the balance is still in favour of IVET	Clear-cut separation between IVET and CVET: the providers are specialised in one or the other. CVET is not developed at the optimal level due to the overwhelming presence of small and medium-sized companies, with a lower propensity to training
Norway	Mainly clear separation between IVET and CVET (structured and historically rooted IVET trajectories of short, medium and long duration); some signs of change (increased vertical permeability)	High permeability between IVET and CVET but increasing formalisation of skills	Formal IVET is playing a minor role for lower-level positions, managerial positions through internal career pathways and training but combined with some formal managerial education
Poland	Professional education for the labour force is offered mainly by the State providers: basic and technical vocational schools, technological universities and non-formal State institutions	Lifelong learning is not an option but a necessity. Various forms of CVET are most needed. They are provided by State and private institutions, usually the same ones that offer IVET	Important role of IVET and CVET in preparing specialists
UK	Some CVET is available to skilled adult workers through programmes such as foundation degrees, but there tends to be a general separation between the two types of training	Many employers provide CVET through a range of online and on-the-job provision, plus mentoring	Over many years it has been typical to use IVET programmes – especially apprenticeships – as a form of CVET. This is relatively common and perhaps will increase with the introduction of the apprenticeship levy employers will need to pay.

Source: Cedefop, based on sectoral country reports (case studies).

CHAPTER 7.

Main conclusions and future possibilities

The main objective of the paper was to produce an overview of the major changes in CVET in European countries (the big picture) to understand better how each country has reached where it is now. A combination of different methodological approaches was used: comparative analysis of micro-level data across European countries; and comparative analysis of country-level and sector-level data collected from national VET experts.

7.1. Continuing VET conceptions

The analysis of country expert questionnaires indicated that there are many dominant conceptions of CVET in European countries and the use of this term is not consistent, sometimes not even within countries. The aims of CVET seem to refer quite frequently to updating competences. However, within this variety, three patterns can be differentiated: CVET is understood as:

(a) job-related/occupation-specific non-formal education and training for adults;
(b) job-related/occupation-specific formal and non-formal education and training for adults;
(c) as (part) of further education and training or lifelong learning for adults.

Within this variety CVET often becomes an instrument of economic policy, reducing it to preparation for the labour market. In most European countries the conceptualisation of CVET is very much an economic one. Only in a few European countries does the CVET concept include, besides job-related training, liberal adult education and lifelong learning.

Another specific feature is that in most European countries CVET is interpreted as vocational education for adults: CVET often refers to education and training that is carried out after initial regular formal education. The target group of CVET comprises persons in the labour market, often defined by age: for example, in Bulgaria, persons over 16 years old, no longer in formal education. This means that CVET and IVET are clearly separated in these countries. However, in some countries the demarcation between IVET and CVET is not always so clear cut (for example in Ireland, France, Finland, and the UK).

Only in a few European countries is there a close link between CVET and lifelong learning policy and strategies. However, there is a trend that CVET is increasingly understood as being integrated in the lifelong learning perspective.

7.2. Adult participation in learning

Analysis of the EU LFS indicates that the overall trend (with minor exceptions) is an increase in adult participation in learning, though participation rates vary in individual countries much more from year to year than at the EU level. This holds true primarily for best-performing countries, notably and mainly due to the increase in participation in non-formal education. At the opposite end of the spectrum – among poor performing countries – increases have been very small. Ranking of countries according to the indicator of adult participation in learning has hardly changed. Sharp changes in the value of the indicator, and consequently in the ranking, tend to be more associated with changing methodology.

7.3. Changes in continuing VET from the lifelong learning perspective

7.3.1. Providers of CVET

Our major conclusion with regard to CVET provision is that, at the EU-28level, changes within the past decade seem to have been minor, but at least in a positive direction: slightly higher incidence of firm-based NFE and slightly increased average hours spent on CVET courses. But developments are clearly country-specific and it is very difficult to draw conclusions about overall trends.

Three kinds of conclusion can be taken from analysing change in regard to the types of provider across Europe in 1995-2015:

(a) the main provider of CVET was and continues to be, in most countries, the employer;
(b) the diversity of provision increased in most countries;
(c) even though in most countries all types of provision expanded, there were some where some types of provision of CVET declined significantly; closer examination should be carried out to see if and how that affected access to CVET;
(d) there is a trend for IVET providers to provide CVET programmes.

While it is difficult to connect the stability and change in CVET provision clearly to certain systemic and institutional national characteristics, a country's upper secondary education system seems to have some correlation with the level of change or stability in provision.

It seems that most of the changes could relate to the economic situation in the country; in some cases this can originate from structural transformations over the period of 1995-2015, but in others expresses adjustment to economic cycles.

7.3.2. Adult learners in vocational education

Across all countries analysed, an average of about 5% of 25 to 34 year-olds have obtained upper secondary vocational education at the age of 25 or more. VET systems are starting to be more flexible, with people increasingly able to be successful in learning throughout their lifetimes, but progress in this regard has been variable between countries and generally slow. Higher rates of achievement of upper secondary vocational education among younger adults are found mostly in countries where VET graduate participation in NFE is also higher. According to country expert questionnaires, changes in the share of adults in IVET over the past 20 years have been more diverse when compared to the participation of VET graduates in NFE that has generally improved. An important driver behind higher rates of adults in IVET is often more flexible study programmes: distance education, evening courses, part-time programmes and modularised studies). In some cases, validation of prior work experience (as in the scheme for experience-based trade certification in Norway) and free VET programmes are seen as having positive effects on adult participation in IVET. In Denmark and Iceland, specific training funds or allowances have been established, providing financial support for employees or adults in general.

7.3.3. Access to higher education (vertical permeability)

New pathways into higher education were frequently reported as major changes in the past two decades. Issues of access to higher education through vocational qualifications are specifically addressed in countries that have long-standing traditions of VET: Denmark, Germany, France, Austria and the UK. There has been an introduction of non-university higher education institutions (for example universities of applied sciences) with strong professional orientation.

7.3.4. Horizontal permeability of CVET for IVET graduates

On average in Europe, less than a tenth of 20 to 34 year-old VET graduates participate in NFE (AES 2011). However, regardless of the level of participation, country experts mostly acknowledged that participation by VET graduates in NFE has improved over the past 20 years, although many indicated that there is no specific statistical data to rely on.

A significant driver behind this perceived positive trend has often been wider and more diverse provision of learning offers, sometimes also tailored specifically to more vulnerable groups or according to the need for certain skills on the labour

market. In some countries, mostly from central, eastern and southern Europe, the European Social Fund is cited as an important mechanism for providing more education and training offers. Other promoters of access to NFE/LLL have been college-preparatory modules or VET level State examinations, which qualify VET graduates for higher education and provide better general lifelong learning skills.

7.3.5. Comparison of countries

Considering changes across all indicators mentioned, an attempt was made to illustrate the extent to which each country has been consistently performing in ways indicating more lifelong learning. The countries most steadily reflecting the lifelong learning tendencies in VET were Denmark, Finland, France, the Netherlands, and Norway. Countries that showed VET as lifelong learning only in certain aspects were Bulgaria, Greece, Hungary, Poland and Romania. This may reflect different political choices in countries or different outcomes of otherwise similar trends. However, eagerness to see VET as part of lifelong learning may also be closely connected to the type of VET system in the country.

While all the dimensions considered differ greatly across countries, some generalisations emerged according to the type of VET system the countries represent. For example, it can be suggested that diversity in CVET provision alone is an insufficient measure to widen permeability to CVET in countries where school-based VET dominates. If provision is diverse and the CVET concept broad, these countries show high permeability to CVET; otherwise they have rather high vertical permeability, suggesting complementarity between formal and non-formal learning.

Countries with general education dominant but quite low vertical permeability may show high CVET participation if there is consistently high diversity of provision. This suggests compensatory mechanisms of non-formal and formal learning.

Countries with a dual system, as well as those with a dominant work-and-school-based VET system, have low vertical permeability but high permeability to CVET. They manage to bring more adults to IVET formal programmes, suggesting more locking in the lower levels of education, but supporting progressing at the levels of qualification. The diversity of the CVET provision seems a less important factor for the trends, but this may depend on the relative measures we could rely on, due to lack of availability of other kinds of data.

7.4. National qualifications frameworks and validation of non-formal learning

The NQFs are the key instrument for strengthening the links between CVET and IVET, for reducing barriers to progression in education and training, and for moving towards lifelong learning. Country experts indicated that the NQFs will help individual learners to move horizontally and vertically, to combine education and training from different institutions and to develop their lifelong learning careers. There is a growing trend among countries to open up their frameworks to include qualifications awarded in CVET. However, quite substantial country differences remain. While NQFs have the potential to play a crucial role in carrying out policies that might lead to seeing VET as a lifelong learning system, the diversity across the NQFs has an impact on how efficiently and with which results these processes take place. Ireland, France, the Netherlands, Slovenia, Sweden and the UK have developed criteria and procedures for including qualifications awarded outside formal education and training. For example, in Sweden, the NQF came into force in 2016 with the development aim of establishing a comprehensive framework that could include qualifications from the formal education system as well as from other providers. In other countries (Germany, Italy, Austria) the NQFs are developed through a step-by-step approach initially only including vocational and higher education qualifications but progressing towards a comprehensive framework. This means that in these countries the NQFs promote better linking of various programmes and certificates. As a result, the distinction between CVET and IVET, as well as formal and non-formal education, becomes less relevant.

Validation of non-formal learning has a link to NQFs, in that they act as a reference point for identifying, documenting, assessing and recognising learning acquired in non-formal and informal settings (Cedefop, 2017b; Cedefop, 2018). In some countries, including France, Norway, Portugal and Finland, these arrangements may play a direct role in relation to CVET. They make it possible for people to access further education as adults, have their training periods shortened, and so may directly influence their learning progression.

7.5. Differences between three sectors

Three compared sectors (manufacturing, ICT and retail sales) have quite different skill formation systems. In the manufacturing of machinery and equipment, the skill formation system seems to be rather formalised in all studied countries (Austria, Estonia, Italy, Norway, Poland and the UK). Formal education

prepares different level specialists for the sector. The apprenticeship system is strong in this sector (Austria, Norway, Poland, also in Estonia, but to a lesser extent in Italy). There is increasing demand for certification. There is a scarcity of supply of engineers, especially skilled workers (Estonia, Italy, Norway) in manufacturing.

Radical changes affected the ICT sector over the past 20 years, modifying technologies, processes and perspectives for individuals and organisations. Constant development and change posed challenges to the countries' education systems. One effect of technological and market changes seems to be increased demand for in-depth competence in ICT companies, which cannot solely be met through continuing education by suppliers or by in-company training; it seems to require adaption by the formal education system. There is a shortage of ICT specialists in all countries studied. In the 1990s, many would come into ICT work as autodidacts; it is now more common to undertake formal education in ICT before entering, especially for work as a medium-level specialist. The manufacturing sector has an increasing demand for formalisation of ICT skills.

The retail sector is characterised by internationalisation and increased competition. The past 20 years have seen structural changes, where smaller businesses have merged into larger chains. Large international players and e-commerce giants have increased competitive pressures. Larger companies have more opportunity for training their workers due to greater flexibility and investment opportunities. There is a huge difference between high level of occupations (managers) and lower-level occupations (sales staff) in terms of CVET. It seems that the direction of changes in skill formation systems in retail sales has been country-specific. However, there are clear signs that the formalisation of skills for lower-level and even medium-level specialists is quite low in all countries studied: sales education within the formal IVET system has marginal importance and medium-level managerial positions can be achieved through training along internal career pathways.

7.6. Continuing VET from the lifelong learning perspective

There are developments in CVET conceptions that might lead to changes both at national level and internationally. There is a trend that CVET is increasingly understood as being integrated into the lifelong learning perspective covered in LLL policies and strategies.

There is no longer a clear distinction between IVET and CVET. Both tend to offer the same qualifications (for EQF levels 3 to 8). National systems of

validation of prior learning, together with qualification frameworks, have helped to bring together the two systems. However, there are clear differences between sectors and countries. There are more signs of moving to a lifelong learning direction in the ICT sector than in manufacturing and retail sales. The share of adults in IVET programmes has increased in all sectors, making it a tool for CVET, but there are also important differences. In manufacturing, IVET is still considered prominent, especially in higher-level jobs, while in retail it has lost some ground and been replaced, not accompanied by, on-the-job training and CVET. This leaves the workforce in the retail sector more likely to be without nationally (and internationally) recognised formal qualifications and only subject to internal career paths in the company. This may compromise their professional identity, while commitment to the manufacturing sector is also strengthened via IVET.

Many countries reported increasing diversification of CVET providers. Besides traditional providers, such as adult training centres, the formal education system is increasingly offering CVET. The core of the CVET system in Finland is part of the formal VET system; an important part of it is the open education available at vocational colleges and universities, including universities of applied sciences (UAS), which means that the education institute provides individual courses for anyone for a fee. These courses vary considerably but they are increasingly focused on a CVET type of learning: they provide vocational training which is not focused on any degree but provides additional skills needed in working life.

Another particular form of diversification can be observed regarding the forms of further education that CVET encompasses. CVET is no longer necessarily oriented primarily towards occupation-specific and job-related skills. In many countries it includes training for key competences (literacy, numeracy, ICT, foreign languages) as well as liberal adult education and community training.

Flexible learning opportunities tailored specifically for adult learner needs are developing in many countries. For example, VET schools and colleges in Austria are offering evening courses specially designed for adults. In Denmark, one of the main drivers of increased adult learner participation has been the introduction of the adult apprenticeship programme (*Voksenlærlingeordning*) in 1997.

In some countries, the CVET target group is becoming more diversified. Traditionally, CVET was provided to employed individuals over the age of 16 who were no longer in formal education. The target group has now broadened to include different sociodemographic groups.

7.7. Methodological challenges

When comparing countries, the separation of formal and non-formal education and training, and of CVET and IVET, is possible only to a limited extent because countries use different definitions and conceptions. Perhaps the EQF levels could be used as a reference point in future. Currently it is not possible to do this because the NQFs include VET qualifications offered outside formal education and training systems in only some countries. However, with the progressing, step-by-step inclusion of these qualifications into NFQs in European countries, the EQF has the potential for being increasingly used as a reference point regarding the qualification level across education and training systems (Cedefop, 2019).

Our analysis indicates that analysing IVET and CVET as a lifelong learning perspective should be considered, as opposed to looking at different education segments separately.

Abbreviations/Acronyms

AES	adult education survey
CKP	centres of practical education
CKU	centres for continuous education
CVET	continuing vocational education and training
CVTS	continuing vocational training survey
EQF	European qualifications framework
EU	European Union
EUV	*Erhvervsuddannelse for voksne* [adult VET]
Eurostat	statistical office of the European Union
HE	higher education
HEI	higher education institutions
ICT	Information and communications technology
ILO	International Labour Organization
ISCED	international standard classification of education
IVET	initial vocational education and training
LFS	labour force survey
LLL	lifelong learning
NFE	non-formal education
NGO	non-governmental organisation
NQF	national qualifications framework
OECD	Organisation for Economic Cooperation and Development
OHP	voluntary labour force
SME	small and medium-sized enterprise
STEM	science, technology, engineering and mathematics
UAS	university of applied sciences
UNESCO	United Nations Educational, Scientific and Cultural Organization
VET	vocational education and training

Country abbreviations

AT	Austria
BE	Belgium
BG	Bulgaria
CH	Switzerland
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom

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ANNEXES

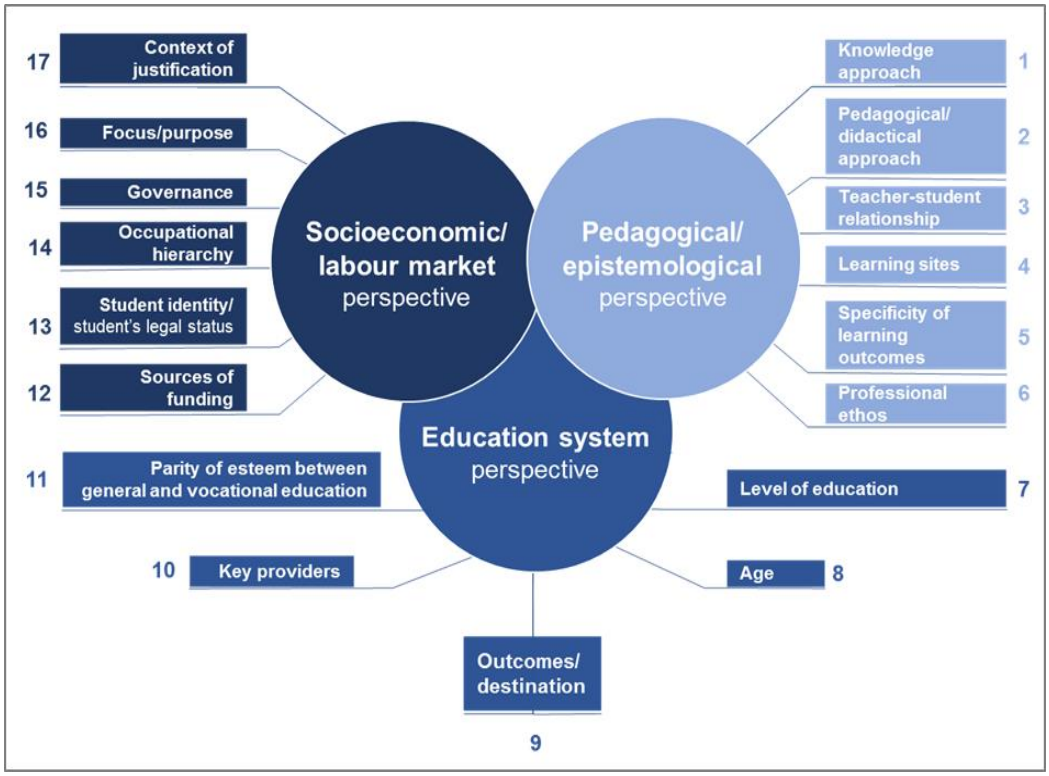
Appendix 1. **Occupational groups (ISCO 08) analysed**

	Higher-level specialists	Medium-level specialists	Lower-level specialists
Manufacturing of machinery and equipment (NACE rev2 = 28)	Engineers (2141, 2144…)	Manufacturing supervisors (3122)	Welders and flame cutters (7212)
Computer and related activities (NACE rev 2=62 and/or 63	Engineers (2152, 2153)	Software developers (2512, 2519, 2521, 2522)	Information and communications technology installers and servicers (7421, 7422)
Retail sales (NACE rev 2 = 47)	General managers of business services (1317), sales and marketing department managers (1221)	Commercial sales representatives (3322), buyers (3323)	Shop sales persons (5222), shop sales assistants (5223), cashiers (5230)

Appendix 2. **Data sources used in the report**

	Data source	Topic	Chapter
European layer (30 countries)	National expert questionnaires	National conceptions of CVET	Sections 3.2; 3.3
		Types of CVET provider	Sections 5.3.3; 5.3.4
	EU labour force surveys	Adult participation in learning	Chapter 4
		Adult learners in vocational education	Section 5.4
		Vertical permeability	Section 5.5
		Permeability of CVET system for IVET graduates	Section 5.6
	Adult education surveys 2007 and 2011	Providers of CVET	Section 5.3.1
	Continuous vocational training survey 2015 (CVTS5)	NFE provision by enterprises	Section 5.3.2
Economic sector layer (three sectors in six countries)	Eurostat	Employment in different sectors	Section 6.1
	Six sectoral case studies: Austria, Estonia, Italy, Norway, Poland, the UK	Changes in three sectors from the 1990s	Section 6.1
		The role of IVET and CVET in skill-formation systems in three sectors	Section 6.2
		Blurring boundaries between IVET and CVET	Section 6.3

Appendix 3. **A conceptual framework to characterise VET**



Source: Cedefop, 2017c.

Appendix 4. **Distribution of non-formal education and training by provider, %**

	2007					2016				
	Employer	Non-formal education and training institutions	Commercial institutions	Formal education and training institutions	Other	Employer	Non-formal education and training institutions	Commercial institutions	Formal education and training institutions	Other
EU-28	38	17	9	10	26	34	18	9	8	31
Austria	28	22	12	7	31	29	26	10	10	25
Belgium	42	7	9	15	26	34	12	12	11	31
Bulgaria	69	14	3	3	9	64	18	4	3	12
Croatia	22	24	13	16	23	31	20	10	12	27
Cyprus	27	19	10	5	38	29	14	13	5	38
Czechia	43	28	8	11	11	32	35	6	7	19
Denmark						32	16	9	18	25
Estonia	29	34	9	10	17	32	24	6	12	26
Finland	36	10	1	9	44	39	9	3	23	25
France	28	2	8	1	61	29	23	7	3	38
Germany	42	15	14	5	24	40	14	14	3	29
Greece	36	12	14	15	22	17	18	4	13	43
Hungary		32	4	7	55	2	13	4	4	77
Ireland										
Italy	28	9	8	13	43	33	18	9	12	28
Latvia	43	21	7	13	8	35	23	12	6	24
Lithuania	15	29	15	21	21	13	24	8	20	35
Luxembourg						28	22	6	13	31
Malta	5					35	16	10	16	22
Netherlands	39			38	23	36	22	15	4	23
Norway						35	12	10	8	34
Poland	21	50	6	13	10	23	50	8	8	11
Portugal	41	21	8	9	21	40	21	11	7	21
Romania	31	31	4	19	10	46	29	9	5	8
Slovakia	40	28	8	17	7	49	17	12	9	13
Slovenia	12	45	8	9	27	15	37	7	14	28
Spain	20	26	5	10	39	27	14	4	16	39
Sweden	46	15	17	4	18	33	5	22	10	30
United Kingdom	50	8		11	31	47	6	8	6	33

NB: AES data enables distinguishing non-profit associations, trade unions, employers' organisations, individuals among other providers of non-formal education and training; here we summarise the share of all these providers (plus rare cases of non-response), because the individual share is quite small. Cells are empty if data are unavailable or of low reliability.

Source: Eurostat, d (database indicator trng_aes_170).

Appendix 5. **Distinguishing CVET providers: conceptual clarification**

According to many country experts consulted in this study, the question of change since 1995 in the relative relevance of types of CVET provider is impossible to answer, since the data on CVET are not systematically collected, and that applies across the board of countries.

These issues emerged in some shape in almost every report. Countries have very different notions of what constitutes CVET, and, if any data are available, they may concern only locally relevant features of CVET but be of no value when comparisons across countries or over time are sought after. While data on provision of formal education in vocational schools, professional higher education institutes and universities are more likely to be gathered or at least be possible to gather, data on provision of training courses – classified here as non-formal education – are rarely even collected.

Even in provision of formal education, the role that schools and universities play in providing learning opportunities for continuous and further education, rather than initial education, remains often unclear. This has, again, to do with the difficulties in defining both what is vocational education and also what constitutes CVET. While individual respondents to population surveys can indicate if they did participate in learning activities (formal or non-formal), and those with previous education or work experience can be distinguished, in terms of learning provision there may be little possibility to determine if a certain programme is offered as IVET or CVET. The matters are further complicated in abandoning the classification of VET learners according to their socioeconomic status and employment and learning career to focus on the meanings that a specific learning episode might have for every learner. It is quite possible that the same learning programme, formal as well as non-formal, serves as IVET for some learners and CVET for the others.

The difficulties in obtaining data for this study were solved by focusing on gathering estimations of relative significance of various types of provider of CVET. By default, any learning provided by a (prospective) employer is referred to as CVET for the purposes of this study, suggesting the learner's connection to the labour market and assuming a lower relative level of attachment to formal education. It is still possible that the teaching provided by the employer would form only initial rather than continuous vocational education.

Any learning provided by non-formal education and training institutions, usually as shorter programmes and courses designed to develop certain skills, is also reasonably considered to belong within the sphere of CVET in this study. The premise here is that it is more often adults who have already left initial formal education (vocational or otherwise) – or at least administered a break in their

formal learning careers – that engage in this kind of professional learning. However, it would be possible for the courses provided by those institutions to be attended by someone without professional qualifications and employment experience who would intend this learning episode to be part of their initial education and training.

Formal education institutions also have several ways to contribute to providing CVET. They can become CVET providers by admitting experienced adult learners to degree programmes; this places them in the field of formal adult education, offering modular organisation and flexible participation opportunities for those for whom fulltime programmes would not be accessible, for example because of work or family life. They may also engage their resources, such as programmes, premises, teachers and instructors, relatively easily for the purposes of providing opportunities for non-formal learning. While most likely targeting mature students to engage in CVET, such learning opportunities may also be popular among those for who this would be part of their IVET experience.

This ambiguity is further developed when exploring CVET provision in various formal education institutions as in this study. We suggest that when an adult learner continues their learning career at a VET school, a professional higher education institution or at a university, this may be considered part of one's vocational education experience even if it were a general or academic programme. It would be justified to suppose that the learning episode is further related to developing skills and knowledge with (at least potentially) some relevance to labour market.

Apart from the three main actors in CVET provision – employers, non-formal education institutions and formal education institutions – some others might appear relevant. Commercial institutions that do not have education as their main line of activity may be interested in providing training related to their goods and services. Professional associations may provide learning opportunity to their members, but also to wider audiences. Public employment services may include provision of training opportunities that constitute CVET for at least some learners.

Appendix 6. **CVET from lifelong learning perspective, summary**

	Conception of CVET	Diversity of provision and % of employers providing CVET		Attainment of voc. education after the 25th birthday	Vertical permeability	Permeability of CVET for IVET graduates	Vocational education type
		diversity	% of employers				
AT	medium	high	high	average	low	~average	work/school
BE	medium	low	high	below average	average	low	school
BG	medium	low	low	low	high	low	school
CH	n.a.	n.a.	n.a.	~average	n.a.	high	dual
CY	broad/ medium	low-high	medium	below average	low	below average	general
CZ	medium	high	high	low	~average	~average	school
DE	medium	high	high	above average	low	below average	dual
DK	medium	medium	high	high	average	high	dual
EE	narrow	medium-high	high	below average	below average	low	general
EL	narrow	low to high	low	low	low	low	general
ES	narrow	medium to high	high	above average	~average	~average	general
FI	broad	high	high	high	below average	above average	school
FR	broad	high	high	average	below average	high	general
HR	medium	high	n.a.	low	average	low	school
HU	narrow	high	low	low	low	low	
IT	narrow	high	medium	below average	~average	below average	school
LT	medium	medium to high	medium	below average	low	low	general
LU	broad/ medium	high	high	average	low	high	school
LV	medium	high	high	below average	~average	low	general
MT	medium	n.a.	medium	average	below average	below average	school
NL	medium	medium to high	high	high	high	average	work/school
NO	medium	high	high	high	high	average	
PL	medium	medium to low	low	below average	below average	low	school
PT	medium	low to high	medium	high	~average	~average	general
RO	medium	low	low	low	high	low	school
SE	medium	high	high	low	below average	high	general
SI	medium	n.a.	high	below average	high	below average	school
SK	medium	high	medium	low	below average	low	school
UK	broad	low to medium	high	above average	below average	high	

NB: Data missing for Ireland and Iceland.
Source: Cedefop.

Appendix 7. **Employment in manufacturing, age group 15 to 64**

	Manufacturing					
	1999		2005		2015	
	thousand	% of total employment	thousand	% of total employment	thousand	% of total employment
European Union (current composition)	-	-	38 741	19	33 550	16
European Union (15 countries)	31 372	20	29 318	18	24 520	14
Austria	752	21	686	19	659	16
Belgium	737	19	724	17	586	13
Bulgaria	671*	24*	727	25	590	20
Croatia	310**	21**	283	19	263	17
Cyprus	37	14	39	12	27	8
Czechia	1 297	28	1 290	27	1 362	28
Denmark	511	19	438	16	322	12
Estonia	120	21	137	23	117	19
Finland	469	20	434	18	323	14
France	4 233	19	4 010	16	3 214	12
Germany	8 524	24	7 940	22	7 646	20
Greece	570	15	563	13	332	9
Hungary	931	25	871	23	898	22
Iceland	22	15	20	13	18	10
Ireland	289	19	269	14	231	12
Italy	4 827	24	4 738	22	4 059	19
Latvia	166	18	146	16	114	13
Lithuania	261	18	256	18	200	15
Luxembourg	21	12	17	9	12	5
Malta	33*	23*	29	19	23	13
Netherlands	1 095	15	1 049	13	778	10
Norway	303	14	262	12	220	9
Poland	2 850*	20*	2 820	20	3 077	20
Portugal	1 097	24	936	20	757	18
Romania	2 157	22	1 958	23	1 549	19
Slovakia	545	26	591	27	597	25
Slovenia	275	32	276	30	214	24
Spain	2 776	19	3 130	16	2 213	13
Sweden	752	19	653	15	494	11
Switzerland	613	16	583	15	559	13
United Kingdom	4 720	18	3 732	13	2 894	10

NB: Highlighted figures correspond to sector information from the case study countries.
* 2000 year
** 2002 year
Source: Eurostat.

Appendix 8. **Employment in wholesale and retail trade, age group 15 to 64**

	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods					
	1999		2005		2015	
	thousand	% of total employment	thousand	% of total employment	thousand	% of total employment
European Union (current composition)	-	-	29 968	14	30 241	14
European Union (15 countries)	22 770	15	24 233	15	23 987	14
Austria	595	16	578	16	589	15
Belgium	575	15	557	13	607	14
Bulgaria	401*	14*	443	15	510	17
Croatia	208**	14**	219	15	224	14
Cyprus	51	19	59	17	65	18
Czechia	636	14	608	13	605	12
Denmark	377	14	397	15	387	15
Estonia	83	15	79	13	81	13
Finland	287	12	297	13	277	12
France	2 986	13	3 321	13	3 336	13
Germany	5 088	14	5 158	14	5 508	14
Greece	675	17	783	18	652	18
Hungary	526	14	588	15	537	13
Iceland	20	14	22	14	23	13
Ireland	219	14	272	14	284	14
Italy	3 181	16	3 306	15	3 096	14
Latvia	138	15	146	16	126	15
Lithuania	208	14	223	16	222	17
Luxembourg	23	13	21	11	21	8
Malta	20*	14*	21	14	29	16
Netherlands	1 134	15	1 138	14	1 203	15
Norway	335	15	344	15	346	14
Poland	2 013*	14*	2 002	15	2 303	15
Portugal	675	15	728	15	671	16
Romania	911	9	965	11	1 147	14
Slovakia	262	12	269	12	296	12
Slovenia	109	13	112	12	111	12
Spain	2 357	16	2 879	15	2 894	16
Sweden	509	13	536	13	548	12
Switzerland	596	16	554	14	562	13
United Kingdom	4 089	16	4 260	15	3 914	13

NB: Highlighted figures correspond to sector information from the case study countries.
* 2000 year
** 2002 year
Source: Eurostat.

Appendix 9. **Employed ICT specialists, total**

	2005		2015	
	thousand	% of total employment	thousand	% of total employment
European Union (current composition)	5 558	3	7 734	4
European Union (15 countries)	4 600	3	6 509	4
Austria	110	3	167	4
Belgium	98	2	188	4
Bulgaria	31	1	70	2
Croatia	27	2	43	3
Cyprus	5	1	8	2
Czechia	154	3	185	4
Denmark	78	3	106	4
Estonia	14	2	29	4
Finland	125	5	158	7
France	569	2	950	4
Germany	807	2	1 466	4
Greece	40	1	44	1
Hungary	156	4	153	4
Iceland	5	3	7	4
Ireland	41	2	80	4
Italy	424	2	558	3
Latvia	15	2	19	2
Lithuania	22	2	28	2
Luxembourg	8	4	12	5
Malta	3	2	7	4
Netherlands	331	4	413	5
Norway	66	3	112	4
Poland	333	2	424	3
Portugal	66	1	104	2
Romania	104	1	161	2
Slovakia	64	3	68	3
Slovenia	33	4	33	4
Spain	310	2	427	2
Sweden	244	6	294	6
United Kingdom	1 350	5	1 542	5

NB: Highlighted figures correspond to sector information from the case study countries.
Source: Eurostat.

Appendix 10. **Skill formation system in different sectors**

Austria

	Manufacturing	ICT	Retail
Actual skill formation system (role of IVET and CVET)	**Engineers**: higher technical education institutions **Medium-level specialists:** apprenticeship, followed by a professional master after a couple of years of working in the field **Lower-level specialists:** apprenticeship	**Higher-level specialists:** technical university or university of applied sciences **Medium-level specialists**: technical education institute **Lower-level specialists:** technical education institute CVET programmes are mostly within the companies	**Higher-level specialists:** start their career taking an apprenticeship and working their way up within a company or finish a business college, graduates of business universities and universities of applied sciences **Medium-level specialists:** an apprenticeship **Lower-level specialists:** without education in the field
Last 20 years skill formation system development (role of IVET and CVET)	Manufacturing is a classic apprenticeship sector and this has not changed considerably since 1995	The establishment of universities of applied sciences	Higher level of education when entering the job has become more frequent

Source: Cedefop, based on sectoral country report (caste study), Austria.

Estonia

	Manufacturing	ICT	Retail
Actual skill formation system (role of IVET and CVET)	**Engineers**: initial education in higher VET or universities **Medium-level specialists:** common to advance from lower-level specialists, or may have the preparation from higher VET/university **Lower-level specialists:** often start from apprenticeships related to IVET programme or enter the company after some short-term CVET courses	**Engineers:** some higher education and university-level education common but not necessarily formal qualifications acquired for hiring Medium-level specialists: professional education or university background possible, but not necessarily formal qualifications required for hiring **Lower-level specialists:** may have some professional education or university background, but not necessarily formal qualifications acquired for hiring	**Higher-level specialists:** start their career at the lowest level and work their way up within a company; only certain expertise in the company level likely to be acquired from university graduates (in business, marketing, etc.) but this is not often needed **Medium-level specialists:** usually promoted via internal career paths, may or may not have formal qualifications **Lower-level specialists:** there are IVET programmes but graduates may still start at the lowest level of jobs. Most are hired without formal qualifications in the sector
Last 20 years skill formation system development (role of IVET and CVET)	Engineer education is promoted, there is less competition at entrance (both IVET and higher education programmes are for free). Scarcity of qualified labour means reliance on migrant workforce and also on the job training and CVET. Recognised qualifications still relevant, sometimes because of export-related certification systems	There has been good formal education available since the beginning of the period. Demand for workforce means many are employed without formal qualifications, but international competition for jobs means formal qualification may give an edge at higher level positions. Trends of professionalisation	De-professionalisation in lower-level jobs in the sense of decreasing relevance of IVET sector. Growing importance of CVET and internal career tracks. Lower demand for formal, nationally recognised qualifications

Source: Cedefop, based on sectoral country report (case study), Estonia.

Italy

	Manufacturing	ICT	Retail
Actual skill formation system (role of IVET and CVET)	**Engineers:** initial education in engineering universities. **Supervisors:** upper secondary education (technical or vocational) - compulsory prerequisite and CVET for developing soft-skills mostly related to resources management and direct experience in the role **Welders and flame cutters:** technical upper secondary education (also regional VET for them) and CVET (the compulsory licenses they have to achieve for performing the different types of welding/cutting)	**Engineers:** engineering universities and post-university courses (like masters). CVET is relevant, but not at the same level of initial education/training. **ICT installation services:** initial IVET (typically corresponding to upper secondary education diplomas) is the necessary skills' entry level and CVET is necessary because upper secondary education only partially supplies the needed skills	**Managers (buyers included):** initial education (basically in universities) and a residual combination of on-the-job experience and CVET, mainly for soft-skills or very specific professional skills/knowledge, in companies, universities or in sector-related training providers **Commercial sales representatives:** CVET and on-the-field experience are more relevant than IVET **Shop sales persons, assistants and cashiers:** on-the-job experience (quite frequently within apprenticeship schemes). CVET is relevant, but at the beginning of the career
Last 20 years skill formation system development (role of IVET and CVET)	**Engineers, welders and flame cutters:** the balance between initial education/training did not significantly change **Supervisors:** a reduction in the role/relevance of IVET occurred together with an increase in CVET (for soft skills) and on-the-job experience role	**Engineers:** no relevant changes in the balance between initial education/training (university degree and masters, or other equivalent courses just after the degree) and CVET (initial training remained largely more relevant) **Software developers:** basically the same as engineers **ICT installation services:** IVET role/relevance decreased while CVET role increased; the gradual increase of CVET specific supply	**Managers (buyers included) and shop-level occupations:** the role of CVET increased. **Commercial sales representatives:** the balance between IVET and CVET did not change so much except for the growing need for constantly updating knowledge about the new products/services

Source: Cedefop, based on sectoral country report (case study), Italy.

Norway

	Manufacturing	ICT	Retail
Actual skill formation system (role of IVET and CVET)	**Supervisors:** post-secondary vocational colleges **Welders and flame cutters:** vocational upper secondary education (the *TIP* programme, apprenticeship certificate)	**Engineers:** Master programmes **Software developers:** ICT installation services: IVET tracks in upper secondary education Private and public universities of applied sciences offering CVET as tertiary education In-house company training	**Managers:** formal managerial bachelor or master degree, internal career pathways **Commercial sales representatives:** open recruitment, formal IVET pays a minor role, in-company training **Shop sales persons, assistants and cashiers:** non-formal education requirements (even people without elementary school education), high level of internal training conducted by the big chains, weak ties to the formal education system
Last 20 years skill formation system development (role of IVET and CVET)	Higher permeability between upper secondary and higher education	Increasing formalisation of skills	First apprenticeship and vocational training programmes in retail sector established in 1994

Source: Cedefop, based on sectoral country report (case study), Norway.

Poland

	Manufacturing	ICT	Retail
Actual skill formation system (role of IVET and CVET)	**Engineers:** universities (technological, applied sciences) **Supervisors:** technical schools, post-secondary vocational schools, centres of practical education (CKP), centres for continuous education (CKU) **Welders and flame cutters:** basic vocational schools, CKP, CKU, voluntary labour force (OHP)	**Engineers:** universities (technological, applied sciences) **Software developers:** higher education institutions, post-secondary technical schools, CKP, CKU **ICT installation services:** technical vocational schools, CKP, CKU	**Managers:** higher education institutions **Commercial sales representatives:** technical schools, professional education from formal education institutions or CVET offered by private training companies or work experience **Shop sales persons, assistants and cashiers:** no need to have professional diploma, CKP, CKU, OHP
Last 20 years skill formation system development (role of IVET and CVET)	Marginalisation of basic vocational schools New forms of vocational school: profiled high schools Marginalisation of craft chambers offering courses for journeymen and craftsmen	Marginalisation of IVET in the 1990s At the beginning of the 2000s no formal qualification was required Fulfilment by low-quality providers Self-regulation by professional associations and certification institutions Wide offer of non-formal courses	In the 1990s no preparation for sales professions for a short period of time – professionalisation of lower-level specialists decreased Different types of sales training offered by private training companies for medium-level professionals Study programmes for business administration and postgraduate courses for professionals related directly to sales at universities in the 1990s

Source: Cedefop, based on sectoral country report (case study), Poland.

The UK

	Manufacturing	ICT	Retail
Actual skill formation system (role of IVET and CVET)	**Engineers:** not much has changed. Engineers are typically required to have degrees and then have access to ongoing professional development and training (sometimes via their professional associations if they are members) **Supervisors:** not much has changed. Employers use IVET (typically apprenticeships) to train staff who are identified as having the potential to fulfil a supervisory role or progress further to management/professional engineer via a range of CVET provision **Welders and flame cutters:** indication that automation has increasingly become a substitute for welders. Otherwise relatively little change	**Engineers:** typically qualified to degree level and then have access to a range of in-house CVET **Software developers:** as above **ICT installation services:** typically upon completion of upper secondary education (in VET or in general school system) supplemented by in-house training and sometimes via apprenticeship	**Managers:** increasingly recruited from university and then placed on graduate management schemes. But there are still opportunities for people to enter the sector at a low level and work their way up the occupational hierarchy via company provided/funded CVET **Commercial sales representatives:** no particular qualification necessary. People are recruited and then trained to fulfil the role. Often induction training can be sufficient, sometimes more CVET is required **Shop sales persons, assistants and cashiers:** as above. Often people recruited to these jobs have a relatively low level of qualification. Apprenticeships have been used as a form of CVET to develop the skills of these employees
Last 20 years skill formation system development (role of IVET and CVET)	In general, the skills formation systems have not changed a great deal because most of the major changes occurred during the 1980s and early 1990s. There is more emphasis now, perhaps, on meeting the needs of the labour market with reference to initial qualifications required – be it in the general or the VET system. This applies to all the occupations listed	As for manufacturing. It is worth mentioning that there are many initiatives related to ICT/digitalisation that seek to improve skills supply. This is especially so for initial entry	The same as for the other sectors, except to say that the expansion in the higher education sector has provided a supply of highly skilled and qualified individuals to work in management jobs

Source: Cedefop, based on sectoral country report (case study), the UK.

The changing nature and role of vocational education and training in Europe

Volume 7: VET from a lifelong learning perspective: continuing VET concepts, providers and participants in Europe 1995-2015

TThis research paper is one in a series produced as part of the Cedefop project *The changing nature and role of VET* (2016-18). The aim of the paper is to provide an overview of how CVET is conceptualised in various international level policy documents and how it is referred to across countries. It discusses national conceptions of CVET, the providers, participation by IVET graduates in non-formal education and training (NFE), and participation of adults in VET education institutions in European Union Member States, Iceland and Norway. The paper describes how the provision of CVET by different types of provider has changed over the past two decades, discussing the main drivers of this change and speculating about possible future trends. One of the main findings is that there are many dominant conceptions of CVET across Europe and the use of this term is not consistent, sometimes not even within countries.

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