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RESEARCH PAPER

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

Volume 4: changing patterns of enrolment in upper secondary initial vocational education and training (IVET) 1995-2015



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Please cite this publication as:

Cedefop (2018). *The changing nature and role of vocational education and training in Europe. Volume 4: changing patterns of enrolment in upper secondary initial vocational education and training (IVET) 1995-2015*. Luxembourg: Publications Office. Cedefop research paper; No 68. <http://data.europa.eu/doi/10.2801/45684>

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Luxembourg: Publications Office of the European Union, 2018

PDF	ISBN 978-92-896-2694-1	EPUB	ISBN 978-92-896-2695-8
	ISSN 1831-5860		ISSN 1831-5860
	doi:10.2801/45684		doi:10.2801/491024
	TI-BC-18-003-EN-N		TI-BC-18-003-EN-E

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Foreword

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

The purpose of the project is to improve our understanding of how vocational education and training (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 will analyse how vocationally oriented education and training has changed in the past two decades (1995-2015); based on these results it will investigate 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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Acknowledgements

This research paper was produced by Cedefop, Department for systems and institutions, under the supervision of Loukas Zahilas. The paper is part of the Cedefop project *The changing nature and role of VET in Europe*, coordinated by Jens Bjørnåvold.

The research was carried out by a consortium led by 3s Unternehmensberatung GmbH, represented and led by Dr Jorg Markowitch; the consortium includes the Danish Technological Institute, the Institute of Employment Research (University of Warwick), the Institute of International and Social Studies (Tallinn University) and Fondazione Giacomo Brodolini. The Federal Institute for Vocational Education and Training (BIBB) in Germany is supporting the project as a subcontractor.

The work was carried out under Cedefop's framework service contract
No 2015-FWC1 3/AO/DSIIJB/Changing_Role_of_VetJOO9/15

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Executive summary

This research paper is one in a series produced as part of the Cedefop project *The changing nature and role of vocational education and training (2016-18)*. It reports from the subproject *The changing role and nature of vocational education and training at upper secondary level*. The background to this research paper is an observation that enrolment in vocational education and training (VET) in Europe has been on the decline, accompanied by policy discourses questioning the attractiveness of VET as education pathway. From this background, the aim of the research was to identify and analyse patterns and trends in enrolment in upper secondary initial vocational education and training (IVET) in Europe during 1995-2015. The research was guided by four questions:

- (a) how has enrolment in and completion ⁽¹⁾ of initial VET at upper secondary level developed in the past two decades?
- (b) what proportion of upper-secondary students attends VET courses and how has this evolved?
- (c) which qualifications are delivered, which occupational areas are covered by VET, and how has this changed in the past two decades?
- (d) which are the main IVET delivery forms and how has this changed during the period?

The research combined descriptive statistical analysis of international data sets with analysis of national statistical data and qualitative information obtained in a survey of national VET experts. The survey tools were based on the delimitations used in international education statistics, notably the 2011 version of the ISCED (international standard classification of education) classification. These data were then the basis for an examination of time series data for enrolment in upper secondary education for the 20-year period.

The paper first presents the analysis of international data collected through the UNESCO-OECD-Eurostat (UOE) data collection; it discusses issues hampering cross-country comparability between these data as well as the scope for constructing consistent time series based on them. These issues are seen to stem partly from variations in the classification and reporting practices of national statistical offices. While all countries use ISCED, the study indicates that there

⁽¹⁾ In the course of the research, it turned out that national data on completion were of insufficient quality to allow the required analysis. A decision was therefore made to concentrate on enrolment data.

are different approaches to using the classification. For example, main concepts of the classification, such as the concept of 'an education programme', are interpreted very differently across countries to the detriment of comparability of data, and there are different approaches to classifying VET programmes for adults.

Further, changes in enrolment figures in many cases are merely results of administrative changes, such as reclassification of programmes to other ISCED levels, or changing their orientation from vocational to general or the opposite. On this point, the study concludes that the 'orientation' dimension of ISCED increasingly appears as insufficient to capture the rich picture of upper secondary education and training. This is witnessed by an increasing occurrence over the years of different forms of hybridisation, such as modularisation, bridging programmes, dual qualifications, and flexible pathways.

With respect to enrolment patterns across Europe, enrolment in VET in absolute terms, as well as VET's share in enrolment at upper secondary level, has declined between 1995 and 2015, on considering the aggregated figures for Europe. Such figures, however, conceal a sizeable variation in national trends. It becomes evident that, except for some of the countries with old apprenticeship systems, declining enrolment figures most often reflect a declining youth population. When corrected for development in the size of the youth population in each country, enrolment in VET at ISCED levels 3 and 4 has generally been quite stable, and, in many countries, more stable than comparable enrolment in general education. In several other countries, particularly those that joined the EU in 2004, enrolment in VET and in general education at ISCED levels 3 and 4 is decreasing, even when corrected for the underlying demography. This indicates that, in these countries, a smaller share of young people is enrolled in education at these levels.

Demography is found to be the main factor impacting on enrolment figures, when these figures are corrected for administrative changes. The effect of demographic changes in most cases clearly exceeds the effect of education reform. Only in a few cases did the research find that the effects of reform could be directly observed in the enrolment in VET in subsequent years. Reforms which had a direct observable effect on enrolment included those where non-formal programmes were included in the formal VET system and those with large-scale introduction of shorter or modular programmes. In both these cases, the increase in enrolment could be expected: including non-formal programmes in the formal VET system effectively means counting students who were previously not counted in the figures, while shortening programmes, in principle,

increases the resources available per year of study, enabling the VET system to enrol more students.

Based on a review of the portfolios of education programmes at ISCED levels 3 and 4 in European countries, the study finds evidence that the distinction between VET and general education has become less clear-cut during the period. There are increasing numbers of mixed pathways and programmes delivering dual qualifications. This development is interpreted as evidence that education systems are responsive to demands from labour markets and from society for broader competences and a more flexible way of combining knowledge and skills across previously separate domains.

Examination of national programme portfolios also indicates that a non-trivial share of VET programmes at ISCED level 3 are programmes targeting adults: these are either programmes offering full IVET qualifications to adults or programmes offering courses of shorter duration. This development is underpinned by increased use of competence-based qualifications, utilising validation and recognition of prior learning. This is interpreted as a sign of opening up of VET systems to cater for education and training needs in all phases of a life cycle.

Overall, the study concludes that the analysis of enrolment figures does not provide support to concerns about the fitness of VET for the future. Study evidence shows that demographic changes explain many cases of declining enrolment. The remaining fluctuations in enrolment in upper secondary IVET often reflect increased flexibility in national education systems, witnessed by blurring of borders between education sectors.

CHAPTER 1.

Introduction and objectives

This is a research paper in the set of studies commissioned by Cedefop as part of the project *The changing nature and role of VET* (2016-18). The project consists of six separate themes, one of which was to examine changes during the 20-year period from 1995 to 2015 in enrolment in and completion of initial vocational education and training (VET) at upper secondary level.

1.1. Background and state of research

In a seminal article from 1983, Aaron Benavot observed a worldwide decline in the enrolment in vocational education and training (VET). In western Europe, the share of upper secondary students enrolled in VET was found to drop from 31.3% in 1955 to 20.6% in 1975. However, during the same period, enrolment in upper secondary VET in eastern Europe was found to increase from 53.1% to 67.2%. As east European countries were ruled by communist regimes at the time, and hence belonged to an entirely different system, Benavot chose to disregard the increasing enrolment in VET in these countries, concluding that VET's importance globally was on the decrease and was set to become a phenomenon of the past. This development he saw as the result of a widespread ideological drive towards more egalitarian societies:

'The rise and fall of vocational education coincides with a shifting mandate for secondary schooling – a movement away from the production of differentiated workers that fit a differentiated economy into the production of more standardised citizenry in line with the egalitarian demands of nation-building and citizenship privileges' (Benavot, 1983, p. 74).

Today, Europe includes both the western Europe and the eastern Europe that Benavot knew then. If he had chosen to calculate the average enrolment shares for eastern and western Europe together, he would have found instead of a dramatic decline a quite stable development – even a slight increase – in VET's share of enrolment in upper secondary education from 42.2% in 1955 to 43.9% in 1975.

History has demonstrated that if egalitarian ideology ever had the power to overrule the demands of a differentiated economy, this was a passing phase. This is witnessed by the education policy discourse after 2000 with its recurring call for demand-driven education – in particular, demand-driven VET – and the

increasing focus of international bodies such as the EU, the OECD, Cedefop, and the ETF on the role of VET in supplying the right skills for the labour market, aided by skills anticipation (see for example European Commission (2012); OECD (2011); OECD (2017); Cedefop (2017b)).

This excursion to an earlier contribution to the body of theory on the role and importance of VET in the educational landscape is included here because it may teach us three lessons with relevance for an assessment of the changing role and nature of VET.

First, it points to the fact that the choice of a geographic basis for statistical calculations has significant implications for the results and, by implication, for assessment of strategic directions to be taken.

Second, it reminds us that history is non-linear. At any moment, major and unexpected disruptions may occur, changing the entire context of education as well as our thinking about its role.

Finally, it serves as a reminder that what appears at a given moment in time to be stable socioeconomic trends impacting enrolment in VET may change or even be reversed.

1.2. Recent concerns about the role of VET

Since the Copenhagen process was initiated in 2002, the EU and its Member States have had a shared focus on modernising national VET provision and improved coordination across Europe (McCoshan et al., 2008; Cedefop, 2015a). However, while policymakers at all levels have repeatedly emphasised the pivotal role of VET in supplying the right skills for growth (Eichhorst et al., 2012), there have also been signs of concern surrounding the attractiveness of VET, often linked to an observation of declining enrolment in upper secondary IVET. This is echoed in the vision of the Bruges communiqué (European ministers for vocational education and training et al., 2010), which states that ‘By 2020, European VET systems should be more attractive, relevant, career-oriented, innovative, accessible and flexible than in 2010’ (European ministers for vocational education and training et al., 2010). To move towards this vision or goal, the Bruges communiqué introduced specific priorities for VET; quantitative indicators were developed (Cedefop, 2015a). However, in 2016, the policy initiatives had not yet had the intended effect, since the *European education and training monitor* of that year observed that ‘for many young people and their parents, VET is still not as attractive as general education pathways’ (European Commission, 2016).

Declining enrolment in VET has been linked to a perceived lack of attractiveness of VET pathways in many countries as well as at European (and international) level. For example, the situation in Slovenia, according to one author, is characterised by a 'lack of interest among young people in this kind of education (IVET, ed.), and [...] great interest of young people in tertiary education' (Lovšin, 2014, p. 105). In Denmark, enrolment in VET as a share of young people enrolling in upper secondary education dropped from 30% in 2004 to 19% in 2014 (Danish Government, 2014), and this served as the main rationale for the latest Danish VET reform. In the *Text of agreement* by the political parties backing the reform, the reasons for the above-mentioned drop in enrolment was summed up as follows: 'The reputation of EUD (abbreviation of 'Erhvervsuddannelser' which is the Danish term for upper secondary IVET) is low. Today, the weaknesses overshadow the many strengths of EUD and the good reasons for choosing to enrol in an EUD programme' (The Danish Government, 2014).

This apparent weakness of VET has been observed across Europe and beyond; see for example Ruth and Grollmann (2009), who compare the situation with respect to IVET in Australia, Canada, Japan and the USA. They observe that 'the image and attractiveness of IVET is problematic in each of the countries. Without exception, IVET has a low status and is perceived as a track for the 'under achievers' and the 'losers' (Ruth and Grollmann, 2009, p. 48).

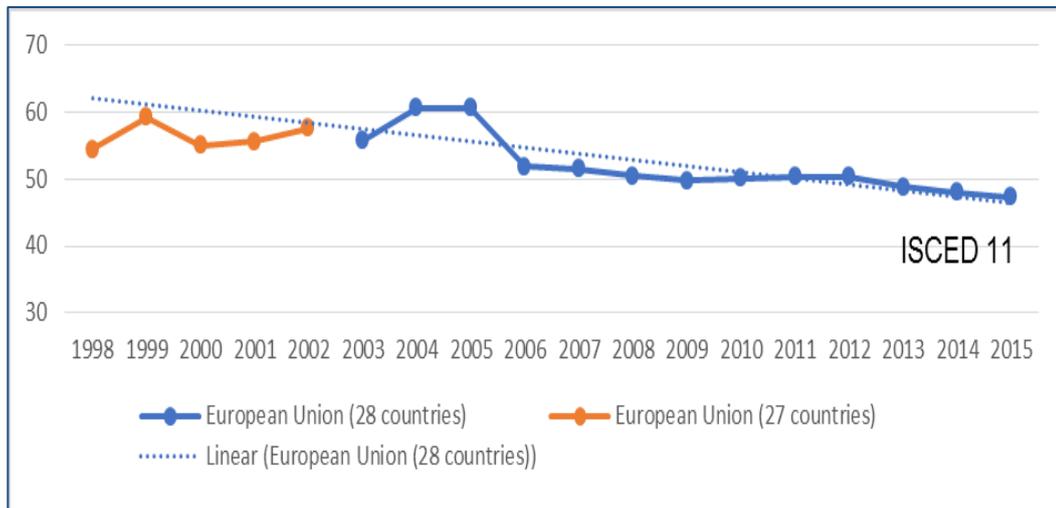
A special case is that of the Member States which joined the EU in 2004 and later; in these countries, economic transformation has played a decisive role in the attractiveness of VET. After accession to the EU, these countries experienced a stronger focus on services and a significant decline in demand for traditional VET qualifications. Hence, adults holding such qualifications have experienced difficulties in finding or maintaining employment, which has caused distrust in VET systems (West, 2013).

In the remaining countries, the low attractiveness of VET is explained by various factors: economic, as in lower salaries for VET graduates than for academic graduates; lack of political attention to the quality of VET provision; cultural perceptions of manual work as being of less value than cognitive work; and snobbery, as expressed by a UK scholar who used to be a teacher: 'In my own work as a sixth-form manager, I often found myself faced with a parent whose 16-year-old desperately wanted to take a course in building or catering or childcare – and would have done fantastically well at it – yet they would insist that 'no child of theirs' would do such a thing. As if reading books were inherently good and working with one's hands, or heart, were inherently bad' (McInerney, 2014).

The policy concern about the attractiveness of VET is seen in a wave of literature analysing challenges to the attractiveness of VET and providing suggestions on how to raise it (Cedefop, 2014; BIBB and UNESCO-Unevoc International Centre for Technical and Vocational Education and Training, 2014). At national level, many countries have launched initiatives to promote VET. For example, policy-makers observed that an increasing share of young people opted for other education tracks in the Netherlands; in response, the Dutch VET Association launched a website called *dit is MBO* (this is VET) to promote VET in 2011. The website and social media channels of *dit is MBO* report on the opportunities for young people and portray proud and passionate VET students.

At first glance, the statistical evidence would appear to support concerns about the future of VET. Figure 1 shows enrolments in upper secondary IVET in Europe as a share of total enrolment in upper secondary education from 1998 to 2015. The highest share (60.7%) was achieved in 2004 and 2005, and the lowest (47.3%) in 2009, and after 2005, the figures suggest an overall declining tendency.

Figure 1. **Enrolment in VET at upper secondary level (ISCED level 3) as a share of total enrolment in upper secondary education, 1998-2015, %**



Source: Eurostat ([educ_ipart_s] and [educ_uoe_enrs05]).

The figures underlying the graph are the result of adding for each year all figures for enrolment in upper secondary VET in EU countries and dividing this aggregated figure by the aggregated figure for all enrolments in upper secondary education. However, drawing inferences from figures at this level of aggregation can easily result in misinterpretation of the enrolment situation in Member States. The chart is based on data aggregated in two ways: First, data have been

aggregated across VET programmes in each country. Second, they have been aggregated across countries without any weighting.

Therefore, the graph raises more questions than it answers. For example: how large is the country variation underlying the aggregated figures? Is enrolment decreasing in absolute terms as well as in relative terms? Is the decreasing trend visible across all types of VET programme, or is enrolment in certain programme types decreasing more than others? To what extent can enrolment trends be linked to declining enrolment in VET programmes targeting specific occupations or sectors?

To answer these questions, and to analyse commonalities and differences between countries with respect to enrolment patterns, more detailed data are needed, allowing analysis of fluctuations and trends at the national level and at the level of individual VET programmes.

1.3. Research objective

In the context of these introductory observations, the aim of the research has been to identify and analyse patterns and trends in upper secondary IVET at country level and at the level of education programmes.

The research questions guiding the analyses were:

- (a) how has enrolment in initial VET at upper secondary level developed in the past two decades?
- (b) what proportion of upper-secondary students attends VET courses and how has it evolved?
- (c) which qualifications are delivered, which occupational areas are covered by VET and how has this changed in the past two decades?
- (d) which are the main delivery forms of IVET and how has this changed during the period?

To answer these questions, the research design combined the collection and analysis of quantitative, statistical data and qualitative information about changes in policies and provision of vocational education and training at national level. First, a review of the availability, scope and completeness of Eurostat country data on upper secondary education was carried out. Subsequently, a survey of national VET experts based on international terminology and classifications was used to obtain national statistical data and qualitative information about changes in the national portfolio of education programmes at upper secondary level. The methodology is described in detail in Chapter 2.

It soon became clear that research produced two quite different types of findings. In accordance with the research objectives, it provided answers (perhaps tentative) to the questions and new insights into the development of upper secondary IVET in European countries viewed through the lens of enrolment figures. In addition, however, the research identified several technical factors – related to classification and reporting – which together challenge the validity and comparability of international education data.

This paper presents and discusses both types of findings, as described in the following section.

1.4. Research paper structure

In Chapter 2 the overall methodology of the research is presented, and concepts with relevance for the theme are presented and briefly discussed. Special attention is paid to explaining the international standard classification of education (ISCED), as this classification is at the core of international education databases.

Statistical issues are discussed in Chapter 3, which considers factors that may lead to over- or underestimation of the importance of upper secondary IVET at national and European levels. This chapter may be skipped by readers whose interest is mainly in the concrete findings of the research.

These findings are discussed in Chapter 4. The chapter considers net changes in enrolment in upper secondary education over the 1995-2015 period at EU and country level. It looks at the significance of demographic changes for changes in enrolment figures and how this has played out differently in European countries. It considers the extent to which national VET programme portfolios have changed over the 20 years and discusses evidence of an emerging blurring of the borders between vocational and general education, and between initial and continuing vocational education.

Chapter 5 summarises the findings and presents preliminary conclusions with relevance for policy-makers and VET stakeholders.

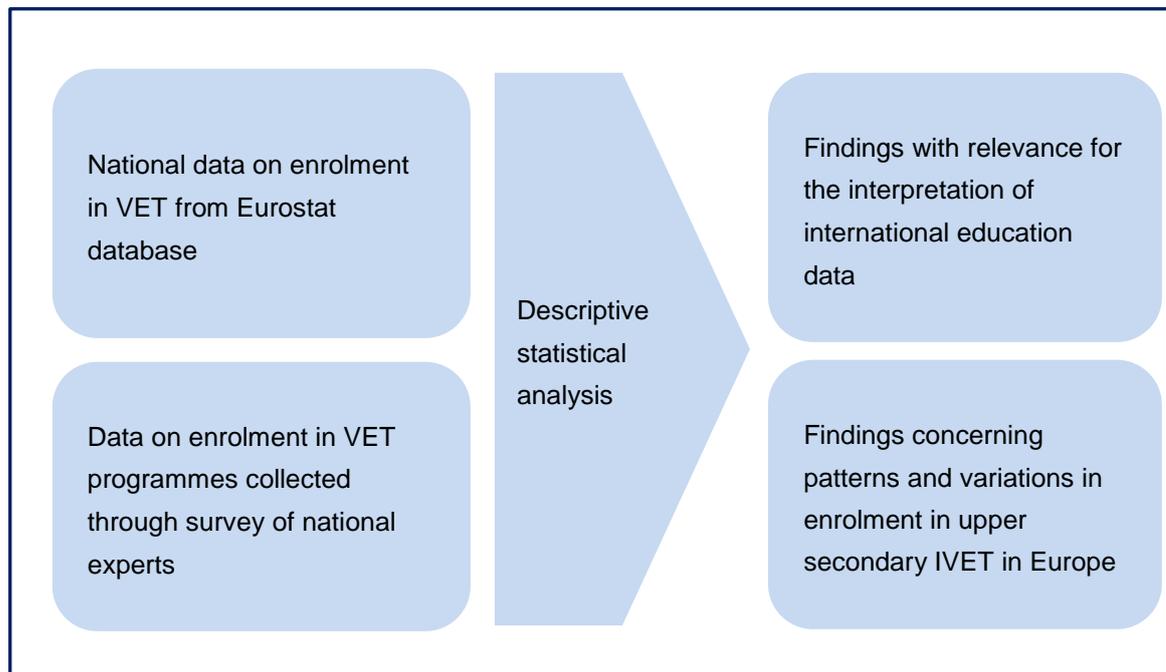
CHAPTER 2.

Approach and methodology

The main approach to this theme has been quantitative, using existing statistical data to describe and compare changing patterns in enrolment in upper secondary IVET. Analysis is at the macro level – enrolment patterns at European and national level – and the meso level – enrolment in VET programmes in each country. The analysis does not address micro level and qualitative phenomena such as changes in individual attitudes and preferences, or changes in pedagogical or didactical approaches. Understanding the importance of these factors in shaping the picture painted by the statistical data is an important task, but one which is outside the scope of the current theme.

The study was in two main parts: analysis of enrolment data from international databases; and collection and analysis of data from national education registers. The latter was collected in a survey of national experts.

Figure 2. **Research design and types of findings**



Source: Cedefop.

To understand the methodological challenges that the research has faced, an introduction to the main concepts and data sources, including the underlying classifications and terminologies, is called for.

2.1. Defining enrolment and completion

The research questions call for a description and analysis of the enrolment and completion in upper secondary VET. At a first glance, this seems quite straightforward, since enrolment and completion are well-defined statistical terms.

Box 1. Enrolment and completion: definitions

Enrolment: the total number of students following ('being enrolled in') an education programme in a specific year ⁽²⁾.

Completion: the number of students graduating from a specific programme in a specific year.

Compared to data availability and international comparability in other sectors and areas of society, the situation in education is quite favourable due to international collaboration in the field. Research began with data from international education databases which provide time series data at aggregated level for enrolment and completion at national level.

2.2. UOE international collaboration in education data collection

Education data have been collected and reported to Eurostat by most European countries for several decades. Consequently, it is possible to construct time series starting from 1998 for several education variables, including enrolment and completion figures, for most European countries. Before that date, data availability is patchy (Eurostat, 2016b), and the time series are often incomplete. Since 2000, comparable international data on education have been provided through a major international collaboration, the UNESCO-OECD-Eurostat resource known as the UOE data collection. The collaboration involves the UIS (UNESCO Institute for Statistics), the OECD's Statistical Office, and Eurostat. Each of these organisations regularly oversees education data collection in countries around the world according to a common methodology (Eurostat, 2016b).

⁽²⁾ The notion of a year is not unambiguous. In some countries, the unit used for reporting is the calendar year. In others, it is the school year (usually August-September until May-June).

Data are reported by national ministries responsible for education using the international standard classification of education, ISCED, which will be presented below in more detail. Of interest to the current theme, the UOE collection includes data on pupils and students enrolled in education programmes classified according to ISCED and graduates from these programmes (UNESCO et al., 2015).

2.3. The ISCED classification

ISCED is a taxonomy intended for classification of education programmes. It was developed by UNESCO in the mid-1970s (Eurostat, 2016a). In the context of this research, the relevant versions of ISCED are the second version, ISCED 1997, and its successor, ISCED 2011. Although both versions build on the same main concepts ('education programmes', 'levels of education', 'orientation', and 'fields of education') ISCED 2011 is significantly more detailed and complex than ISCED 1997. Further, ISCED 2011 introduces a clearer definition of 'qualification', which is linked to a concept of 'educational attainment'. ISCED 2011 is briefly presented below, noting points where it differs from ISCED 1997.

The education programme is the main unit of the ISCED classification. In ISCED 1997, an education programme was defined as: '...an array or sequence of educational activities which are organised to accomplish a pre-determined objective or a specified set of educational tasks. Objectives can, for example, be preparation for more advanced study, qualification for an occupation or range of occupations, or simply an increase in knowledge and understanding' (OECD, 1999, p. 12).

In ISCED 2011 the concept of an education programme was simplified, but also broadened. Now an education programme is defined as: '...a coherent set or sequence of educational activities or communication designed and organised to achieve pre-determined learning objectives or to accomplish a specific set of educational tasks over a sustained period' (OECD et al., 2015, p. 12).

The new definition appears to be broader than the original, including 'communication' in addition to 'educational activities', and replacing the description of possible objectives (preparation for further study, qualifying for an occupation, increasing knowledge) with the more generic 'learning objectives'. This leaves an education programme concept which is quite broad and open to interpretation. It raises questions both about content (what is an educational activity?) and about agency (who determines the learning objectives?). This vagueness probably stems from an intention that the data collection should embrace national specificities. However, it introduces a potential source of

uncertainty into analyses using data about education programmes that are based on the ISCED classification.

Education programmes are classified using three 'dimensions' (UNESCO-UIS, 2012). Using the three dimensions, an education programme can be assigned a three-digit code.

The first digit indicates the level of education or training. ISCED 2011 assigns programmes to one level of ten, from level 0 (subdivided into level 01 and level 02) to level 8: level 0 is early childhood education and level 8 is doctoral or equivalent level. ISCED 1997 had only seven levels. The increase is due to three changes: level 0 was split into two sublevels, a new level 4 (post-secondary, non-tertiary education) was introduced, and the number of levels in higher education was increased from two to three. The current theme has looked at level 3 (upper secondary education) and level 4 (post-secondary, non-tertiary education): the latter is included since some initial VET programmes, at least for some of the years, span these two levels. The international education statistics are organised according to ISCED 2011 levels.

The focus of the current study is on initial upper secondary vocational education and training. In ISCED 2011, 'Upper secondary education' is the heading or common term for level 3. The criteria for assigning an education programme to ISCED 2011 level 3 are shown in Box 2.

Box 2. Main criteria for classifying education programmes at ISCED 2011 level 3

Content: programmes which form the second/final stage of secondary education may be either general or vocational. Some allow direct access to ISCED level 4, and/or levels 5, 6 or 7.

Entry requirements: (§168) ISCED level 3 requires the completion of lower secondary education (ISCED level 2) or the ability to handle ISCED level 3 content through a combination of prior education as well as life and work experiences. A specific ISCED level 2 qualification or a specific level of achievement may be required to enter some or all ISCED level 3 programmes.

Cumulative duration since the beginning of ISCED level 1: (§164) ISCED level 3 begins after 8 to 11 years of education from the beginning of ISCED level 1. Pupils enter this level typically between ages 14 and 16. ISCED level 3 programmes usually end 12 or 13 years after the beginning of ISCED level 1 (or around age 17 or 18), with 12 years being the most widespread cumulative duration. However, exit from upper secondary education may range across education systems, usually from 11 to 13 years of education from the beginning of ISCED level 1.

Source: OECD et al. (2015).

In addition to content and entry requirements, cumulative duration since the beginning of primary education is among the criteria for assigning a level to a programme. This indicates a view of education as unbroken progression, starting when a child is first enrolled in primary education and ending with graduation. The relevance of this assumption for understanding, managing and developing today's education systems will be discussed later in this paper.

The second digit of the ISCED code indicates orientation. Education programmes between levels 2 and 5 are characterised by one of two types of orientation ⁽³⁾:

- (a) general (code 4);
- (b) vocational (code 5).

General programmes are those directed towards progression in the education system. Vocational programmes are directed towards a specific occupation or sectoral labour market. In the Eurostat database, information about orientation is given for lower secondary, upper secondary and post-secondary education programmes. The orientation dimension is needed when calculating the VET share of enrolments at any given level. However, in practice it can be difficult deciding which of these two codes to assign to an education programme.

The last digit of the ISCED code, indicating educational attainment, was introduced with ISCED 2011. This dimension allows a distinction between 'levels within levels' by introducing the concept of 'level completion' combined with a specification of whether a programme gives access to the next level. According to the ISCED guidelines, 'a programme leading to "partial level completion" is one which results in a qualification recognised by the relevant national education authorities which is awarded to successful completers of the programme at a specified point within the sequence of programmes but is not equivalent to the qualification conferred by successful completion of the full sequence' (OECD et al., 2015, p. 51).

Four combinations of completion and access are possible:

- (a) insufficient for level completion or partial level completion (code 1);
- (b) partial level completion (code 2);
- (c) level completion without direct access to next level (code 3);
- (d) level completion with direct access to higher levels (code 4) (OECD et al., 2015).

Educational attainment, whether partial or full, is witnessed by qualifications. ISCED 2011 defines a qualification thus: 'Within the context of ISCED, an

⁽³⁾ In higher education, the statistics differentiate between academic and professional.

educational qualification is the official confirmation, usually in the form of a document certifying the successful completion of an education programme or a stage of a programme' (OECD et al., 2015, p. 12).

This definition is similar to that adopted in the European qualifications framework (EQF) ⁽⁴⁾, indicating convergence with respect to the concepts used in European education policies and international statistics.

However, the attainment dimension is not visible in the international education databases, and national authorities' application of the attainment dimension when reporting data to the international data collection appears uneven, which introduces some uncertainty in data interpretation. This is particularly true for completion data, since national completion figures are linked to completed qualifications, not to a completed ISCED level. Hence, if sublevels exist within VET at ISCED level 3 in country A, the same student is reported every time a sublevel is completed. If these figures are then added, the resulting figure for completion of all VET programmes at level 3 will be overestimated. Also, this scenario will lead to underestimation of dropout figures, since the system offers students the opportunity to leave VET school with a (partial) qualification after a limited period. Conversely, if country B has only one or a few VET programmes at ISCED level three, and these programmes lead to level completion, dropouts will cause completion figures to be smaller, and the dropout rate will appear larger in country B than in country A.

Box 3 illustrates, using as an example an upper secondary VET programme, the construction of the three-digit ISCED codes.

Box 3. Example: interpreting an ISCED code

ISCED code '353' indicates an upper secondary programme (level 3 = code 3), having vocational orientation (orientation: vocational = code 5), which completes all the requirements for level 3, but does not give access to the next level (educational attainment, level completion without direct access to next level = code 3).

Using these parameters, any education and training programme can be assigned to the nine levels and their sublevels by considering their duration, the cumulative duration since start of schooling, an assessment of the complexity of

⁽⁴⁾ In the context of EQF, 'Qualifications are the formal outcome of an assessment and validation process by a competent authority and typically take the form of documents such as certificates or diplomas. They determine that an individual has achieved learning outcomes to given standards' (Council of the European Union, 2017, p. 1).

the curriculum, entry requirements, educational attainment, and access to upper levels. The ISCED 2011 manual (OECD et al., 2015) provides an extensive description of conditions that should be fulfilled to classify a programme at this level.

In addition to the three main dimensions, the ISCED classification offers the option to classify education programmes according to the field of education and training (revised in 2013 (UNESCO-UIS, 2014)). The field of education and training indicates the area of knowledge and skills addressed by a programme. This dimension has three levels of detail, resulting in 55 fields (ISCED 1997 had 25 fields). The field of education or training is not integrated into the ISCED code, but is intended as supplementary information. The three levels of detail associated with an education programme are:

- (a) broad field (eight fields, such as arts and humanities, information and communication technologies (ICT));
- (b) narrow field (a different number within each broad field; total 19 narrow fields, such as environment, social and behavioural sciences);
- (c) detailed field (a different number within each narrow field; total 55 detailed fields, such as physics, textiles (clothes, footwear and leather)).

The publicly accessible Eurostat data hold information about fields of education and training for level 3 and 4 programmes from 2013-16, but the data are patchy and, for most countries, the information is partly or wholly incomplete before 2015. Since the study period for this theme was defined as 1995-2015, and information about field of education and training has only been available for the past few years, and even then not in a consistent manner, the team decided against building any observations about changes in the occupational or sectoral destinations of VET programmes on Eurostat data.

2.4. The ISCED mappings

In 2007, an extraordinary survey of all countries participating in the UOE data collection was launched by UNESCO. The outcome was the 'ISCED mappings', an online repository of information about national education systems, mapped according to the ISCED dimensions described above, and giving supplementary information about each programme in the national education system ⁽⁵⁾. According to UNESCO, the purpose of the ISCED mappings is to: '[...] ensure a

⁽⁵⁾ The ISCED mappings are available online here: <http://uis.unesco.org/en/isced-mappings> [accessed 5 March 2018].

transparent process of coding national education programmes and related qualifications into comparable categories for use in international statistics by linking the classification criteria to the properties of the education programmes and their related qualifications' (UNESCO, 2017).

For each country, two mappings are, or will be, available: one, which maps the education system against ISCED 1997, and one which maps it against ISCED 2011. The information in the ISCED mappings is reported by the national authorities in each country.

The mappings have the physical form of large spreadsheets, one per country, that hold detailed qualitative and quantitative information about all education programmes in the country. Most of the mappings have been carried out in one of the years 2013-15.

Each education programme in the national education system has its own row in the spreadsheet. The columns hold information about ISCED codes according to both the old and new classification, title of the programme in the native language and in English, duration, starting age, qualifications, and enrolment (latest figure) ⁽⁶⁾. Figure 3 illustrates the structure of the mapping.

The organisation of the mappings according to education programmes is of interest for the research, since the concept of an education programme can be ambiguous, as the next section will illustrate.

⁽⁶⁾ The mappings can be downloaded from <http://uis.unesco.org/en/isced-mappings> (available for 1997 and 2011 for each country).

Figure 3. Excerpt from ISCED 2011 mapping, France

Country	School (academic) year	New programme (from school year) if any	Programme number (prog.<ISCED2011 level>.<number within level>)	Name of the programme in national language	Name of the programme in English	Formal education programme (Yes/No)	Minimum entry requirements (ISCED 2011 level at 3-digits level, and qualification name if possible)	Theoretical starting age	Theoretical duration of the programme	Theoretical cumulative years of education at the end of the programme, since the start of ISCED 1	Programme orientation (G-general, V-vocational)	Position in national degree structure (ISCED-2011 levels 6 and 7 only)
1	2	3	4	5	6	7	8	9	10	11	12	13
FR	2012/13		prog.3.1	Enseignement de second cycle professionnel du second degré conduisant au CAP ou équivalent	Vocational secondary education (2nd cycle) preparing for Certificat d'aptitude professionnelle (CAP)	Yes	244	15-16	2	11	V	a
FR	2012/13		prog.3.3	Enseignement de second cycle professionnel du second degré conduisant à une mention complémentaire ou équivalent	Vocational secondary education (2nd cycle) preparing for Mention complémentaire (MC)	Yes	353	17-18	1	12	V	a
FR	2012/13		prog.3.4	Enseignement de second cycle professionnel des écoles sanitaires et sociales conduisant aux diplômes d'auxiliaires de puériculture et	Vocational secondary education (2nd cycle) in health and social services institutions, preparing to qualifications of child care assistants and	Yes	353 or significant work experience	Few are aged 18-20, most are older.	1-1.5	12-12.5	V	a

Country	School (academic) year	New programme (from school year) if any	Programme number (prog.<ISCED2011 level>.<number within level>)	Name of the programme in national language	Name of the programme in English	Formal education programme (Yes/No)	Minimum entry requirements (ISCED 2011 level at 3-digits level, and qualification name if possible)	Theoretical starting age	Theoretical duration of the programme	Theoretical cumulative years of education at the end of the programme, since the start of ISCED 1	Programme orientation (G-general, V-vocational)	Position in national degree structure (ISCED-2011 levels 6 and 7 only)
1	2	3	4	5	6	7	8	9	10	11	12	13
				équivalents	equivalents							
FR	2012/13		prog.3.5	Enseignement de second cycle professionnel du second degré conduisant au brevet professionnel	Vocational secondary education (2nd cycle) preparing to Brevet Professionnel (BP)	Yes	353	18-22	2	13	V	a

NB: Only 13 out of the 26 columns are visible in the figure.
 Source: ISCED mappings (UNESCO, 2017).

2.5. Main study object: the VET programme

The research aimed to be able to collect and analyse enrolment and completion data at the level of individual VET programmes, rather than just at national level, to understand enrolment trends and variation better. It was envisaged that data about enrolment in upper secondary education at programme level should be collected from national education databases. As this would require access to national databases as well as insight into national VET systems, the survey was directed to national experts who were asked to provide time series for the years 1995-2015 for VET programmes as well as general education programmes at upper secondary level.

The main methodological challenge in this part of the study was defining what should be understood by 'a VET programme' this is not simple or straightforward, as the following example illustrates.

Box 4. Three, 111 or 158 upper secondary VET programmes in Denmark?

According to the website of Danish Ministry of Education, there are currently 111 VET programmes in Denmark (Danish Ministry of Education, 2017). Each of these programmes is situated within a vocational cluster. These clusters comprise programmes that target either a sector (e.g. building and construction) or a set of occupations within a common theme (e.g. animals, plants and nature). These 111 programmes all fall within the Act on Vocational Education and Training, but regulations also exist for each programme, detailing factors such as duration, learning outcomes, and assessment. The ministry website has no reference to the (small) number of sectoral VET programmes not falling within the Act on Vocational Education and Training.

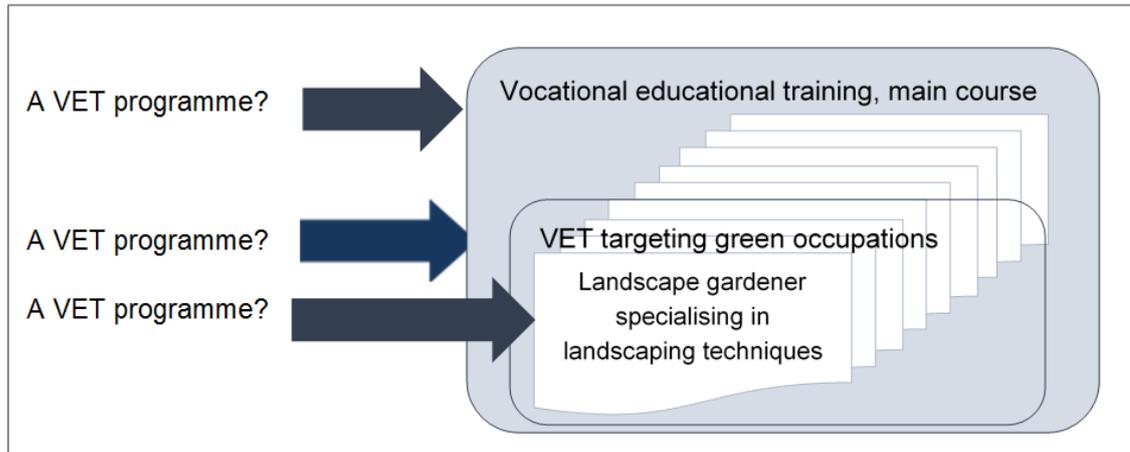
In contrast, in the ISCED mappings, the Danish Ministry of Education reports the existence of three VET programmes in Denmark: vocational educational training, main course; vocational educational training, others; and vocational educational training, main course (access to higher level). The first of these three programmes includes the 111 programmes mentioned above, the second has programmes provided by ministries other than the Ministry of Education, such as those within the police or the military, and the third has 47 VET programmes giving access to higher levels. These programmes are extended versions of 47 'ordinary' VET programmes; during long stretches of the education, the students are taught together.

Source: Danish Ministry of Education (2017), UNESCO (2017).

This situation is by no means peculiar to Denmark. Looking across Europe, the situation varies considerably with respect to the conception of VET (Cedefop, 2017a), and this variation is reflected in different principles for understanding

what constitutes 'a VET programme'. Using the Danish example again, the different principles are illustrated schematically in Figure 4.

Figure 4. **What is a VET programme?**



Source: Cedefop.

Further, enrolment data in national databases can be structured according to principles other than programmes, for example according to occupations or to institutional types. There was, therefore, a need to avoid the situation that each national expert responding to the survey would have to define what constitutes a VET programme in the country, based on available statistical classifications; this would further complicate the analysis, especially the potential for comparing data across countries and for checking them against the data reported to the UOE data collection. To avoid ambiguities resulting from different interpretations, it was decided to use the delimitations of programmes reported by national authorities to the ISCED 2011 mappings (UNESCO, 2017).

2.6. Indicators used in the analysis of national change

In analysing change in the enrolment in upper secondary VET over the years 1995-2015, three indicators are considered:

- (a) enrolment in VET (and general education), absolute numbers;
- (b) enrolment in VET (and general education), as a percentage of total enrolment in education at a given ISCED level;
- (c) enrolment in VET (and general education and in total upper secondary education), relative to the youth population in each age group (15 to 29).

Time series data for the first indicator can be obtained from publicly available Eurostat data for the years 1998-2012 ⁽⁷⁾; these data follow the ISCED 1997 classification. Another time series is available for the years 2013-16, following the ISCED 2011 classification ⁽⁸⁾. As discussed in more detail in Section 3.2, the orientation dimension was changed from ISCED 1997 to ISCED 2011, when the orientation 'pre-vocational' ceased to be used. This introduces a break in the time series, and consequently, the choice has been made to consider only the period 1998-2012 in analysing UOE data. Further, the analysis of country data indicates several sources of error for these figures, discussed at length in Chapter 3. The national data sets display other irregularities and breaks in classifications: these are considered for each country separately.

The VET share of total enrolments in upper secondary education is the most important indicator in the study, since it addresses the research questions directly. Again, Eurostat time series are available for 1998 to 2012 ⁽⁹⁾. The indicator is calculated by dividing total enrolment figures for programmes with ISCED 1997 level 3 and orientation V by total enrolment in programmes at ISCED 1997 level 3.

Enrolments in upper secondary education relative to the youth population aged 15 to 29 serve as a proxy for the propensity of young people to participate in upper secondary education. A proper measure of this propensity would demand longitudinal cohort studies but analysing change over time in the proportion between the youth population and the numbers enrolled in upper secondary education provides an indication of the propensity to participate in education.

2.7. Survey methodology

The ISCED mappings represent a 'snapshot' of the education system and so do not allow for identification of changes over time. Their usefulness for the study comes from the fact that they identify individual education programmes and so mirror each country's mapping of its education system to the ISCED classifications.

⁽⁷⁾ Eurostat [educ_ipart].

⁽⁸⁾ Eurostat [educ_uoe_enrs05].

⁽⁹⁾ Eurostat [educ_ipart_s].

Using these mappings as the basis of a common data collection tool and protocol allowed us to request that national experts record data in accordance with the definitions and delimitations used in the UOE data collection.

Following this decision, a survey design was developed for collecting annual figures for each of the years from 1995 to 2015 for national enrolment and completion per VET programme at ISCED levels 3 and 4 (for a detailed description of the survey design, see annex). It was expected that this approach would probably involve methodological challenges, including comparability issues and those related to national data availability.

2.8. Methodological challenges in collecting and analysing national data

Obtaining time series for national enrolment and completion was more difficult than foreseen. The main challenge was that the programme structure reported to the UOE data collection in most cases was not reflected in the structure of the national databases, where data were often found to be reported at a much lower level of aggregation. Also, in some countries, ISCED classifications were not used in the national reporting and, in most countries, data were not available online for the entire period, so they had to be obtained from statistical yearbooks.

It quickly became clear that, in many countries, completion data were not available at programme level. As a result, in all but a few it was not possible to construct reasonably complete time series for completion at programme level. Therefore, it was decided to omit the analysis of completion data and focus on enrolment data. Similarly, qualitative data on delivery of qualifications and occupational areas covered by VET turned out to be of variable quality, making valid comparative analysis infeasible. Therefore this information has been used as background and for illustration rather than being an integral part of the research.

The research also revealed that programme definitions changed over the years. The number and titles of programmes reported to the ISCED 2011 mappings often appeared totally different from those reported to the ISCED 1997 mappings.

Germany is an example. Here, most of the VET programmes at ISCED level 3 reported to the ISCED 1997 mapping were split into two, three, or four 'new' programmes when reporting to the ISCED 2011 mapping. Table 1 illustrates this administrative change by giving an example of how a programme was split according to duration and provision.

Table 1. **Examples of VET programmes at levels 3 and 4 in Germany, 2008 and 2012**

ISCED 1997 mapping – 2008		ISCED 2011 mapping – 2012	
Programme number	Programme name	Programme number	Programme name
3B.1	Basic vocational training programmes replacing first year in the dual system.	03.01 - 1	Basic vocational training year
		03.01 - 2	Basic vocational training year with consideration as first year in the dual system
		03.01 - 3	Basic vocational training at specialised vocational schools with consideration as first year in the dual system

Source: ISCED 1997 and 2011 mappings.

However, there is no evidence in the figures that this type of administrative change has had any impact on enrolment.

To address the challenges of data quality and completeness, three main quality measures were taken:

- (a) the inclusion of a brief qualitative questionnaire, where national experts were asked to provide information about the most important changes in VET (governance, system, provision, esteem) over the 20 years. In this way, changes in the data could be cross-checked with the narratives;
- (b) the addition of a column in the data sheet where national experts were invited to comment on the data, for example, if programmes had changed/merged/split/reclassified over the 20 years;
- (c) a separate quality assessment questionnaire, where national experts were invited to assess the quality and validity of the data reported based on their best knowledge of the national situation.

Although these measures contributed to better understanding of the data, and to explaining changes in the times series that initially looked inexplicable, it is still safe to say that the quality of the data is variable, and that care should be taken in the interpretation.

2.9. Presentation issues

As the survey covers 30 countries, it has been a separate challenge to present the results in a way that aids the reader in getting a clear picture of the changes described in tables and charts. Ordering the countries alphabetically or in EU protocol order was not found to serve this purpose well; nor were typologies

emphasising learning venue or governance model. Instead it was found that presenting the data in accordance with a geographic grouping of countries provided a good starting point for the discussion of the different evolutionary paths followed by IVET at national level.

The country groups are:

- (a) Baltic countries (Estonia, Latvia, Lithuania);
- (b) central European countries (Belgium, Germany, Luxembourg, the Netherlands, Austria, Slovenia);
- (c) Nordic countries (Denmark, Finland, Iceland, Norway, Sweden);
- (d) south-east European countries (Bulgaria, Croatia, Romania);
- (e) south Mediterranean countries (Greece, Cyprus, Malta);
- (f) Visegrád countries (the Czech Republic, Hungary, Poland, Slovakia);
- (g) west Mediterranean countries (Spain, France, Italy, Portugal);
- (h) western countries (Ireland, the United Kingdom).

This grouping, though based mainly on geopolitical proximity/similarity: '[...] fits relatively well with a range of typologies, which are generally used to cluster countries based on their different system settings in the various domains of economy (e.g. approach to capitalism), welfare, skills formation, employment and industrial relations systems' (Cedefop, 2015b, p. 57).

In the context of this research paper, the categorisation is used mainly as an ordering device, helping provide a clear picture of the changes, and should not be understood as a typology with an independent explanatory value.

CHAPTER 3.

Findings relevant to interpreting UOE data

In 2008, a study on the implementation of the Copenhagen process described the methodological challenges facing the study thus:

‘Undoubtedly, the most problematic issue in the study was data collection and comparison. International data sources, such as Eurostat and OECD, are of questionable reliability at more detailed levels – especially when comparing different tracks, owing to different ways in which countries classify their provision’ (McCoshan et al., 2008, p. 6).

This chapter discusses some critical features and characteristics of the ISCED classification and the UOE data collection with relevance to using analyses based on international education data in policy development.

ISCED is the global standard for classification of education and training programmes. Since statistics on enrolment, participation and completion are collected and stored nationally at programme level, it should be possible to achieve a true and precise picture of changes in these variables over time. However, the data collection and analysis undertaken in this theme illustrate that – at least in the case of upper secondary IVET – this is only partially feasible. Three types of issue can be identified:

- (a) general methodological issues facing the UOE data collection;
- (b) issues with specific relevance for VET;
- (c) issues related to systemic changes.

3.1. Inconsistencies in classification system use

In the ISCED 2011 mappings, all programmes have been assigned level and orientation according to ISCED 2011, regardless of when they were introduced. Consequently, by adding up, for each year, enrolment data for each programme at level 3 with the orientation V, it should be possible to arrive at a valid estimate of total enrolment in upper secondary VET for that year. Further, it is to be expected that this total would be the same as the UOE figure for total enrolment in upper secondary education with vocational orientation for the same year.

However, our research has revealed that this is far from always the case. In many countries, we have found significant inconsistencies between the UOE data, the data in the ISCED mappings, and the data stored in national databases. Table 2 and Table 3 illustrate this issue. The tables show figures for total

enrolment in upper secondary IVET in 2015 from three sources: UOE data from Eurostat, the ISCED 2011 mapping, and the national education databases for Denmark and France respectively.

Table 2. **Denmark: data discrepancies in enrolment figures, upper secondary IVET, 2015**

Programme in ISCED mapping for Denmark 2015	Enrolments according to:		
	UOE data (Eurostat [educ_uae_enrs04])	ISCED 2011 mapping for Denmark	Danish national education database
353.10 (*) – Vocational educational training, main course	-	56 000	37 941
353.20 (*) – Vocational educational training, others	-	1 000	-
354.10 (*) – Vocational educational training, main course (access to higher level)	-	20 000	-
IVET school-based Introduction year (not in ISCED mapping)	-	-	44 874
Total	132 370 (**)	77 000	82 815

(*) The codes are programme numbers as per the ISCED 2011 mapping. Upper secondary IVET in Denmark is implemented in these three programmes, according to the ISCED mappings. However, the mappings do not include the introduction year (school-based), which is not obligatory for adults, though for young people it is. As the table shows, at any time more than half the VET students are enrolled in this part of education.

(**) This figure was not calculated (Eurostat tables are not disaggregated to programme level).

Source: Cedefop, based on Eurostat [educ_uae_enrs04], (UNESCO, 2017)(Undervisningsministeriet (Danish Ministry of Education), 2017).

In Denmark, there is significant difference between the three figures for total enrolment. The figure in the UOE data set is 71% higher than the figure that results from adding up figures for all education programmes at ISCED level 3 with orientation V in the ISCED mapping.

Further, the programmes used in the ISCED mapping only match the programme definitions in the national database in one case (the main course of the main VET programme), and even for this programme, the figures from the two sources differ considerably.

Figures for enrolment reported to the ISCED mapping for Denmark also appear unusually ‘round’: they are rounded off to the nearest thousand, while this is not the case for the UOE data nor for the data in the national database.

In France, the figures from these three sources also differ considerably, though the difference between UOE data and ISCED mapping data is smaller,

and the difference between ISCED mapping data and data from national databases less dramatic (Table 3).

Table 3. **France: data discrepancies in enrolment figures, upper secondary IVET, 2015**

Programme in ISCED mapping for France 2015	Enrolments according to:		
	UOE data (Eurostat [educ_uae_enrs04])	ISCED 2011 mapping for France	French national education database
Vocational secondary education (2nd cycle) preparing for <i>Certificat d'aptitude professionnelle</i> (CAP)	-	311 400	274 058
Vocational secondary education (2nd cycle) preparing to <i>Mention complémentaire</i> (MC)	-	14 700	16 617
Vocational secondary education (2nd cycle) in health and social services institutions, preparing to qualifications of child care assistants and equivalents	-	55 400	32 359
Vocational secondary education (2nd cycle) preparing to <i>Brevet professionnel</i> (BP)	-	51 400	41 148
Vocational secondary education (2nd cycle) preparing to <i>Bac professionnel</i> or to an equivalent diploma	-	669 000	591 492
Vocational secondary education (2nd cycle) in health and care institutions preparing to qualifications of <i>Moniteur éducateur</i> (and equivalent)	-	7 700	-
Total	1 081 359 (*)	1 109 600	681 616

(*) This figure was not calculated: it is the figure for enrolments in upper secondary IVET 2015 found in the table named in the column heading (Eurostat tables are not disaggregated to programme level).

Sources: Cedefop, based on Eurostat [educ_uae_enrs04], (UNESCO, 2017; Éduscol, 2017).

For France, the programme definitions in the ISCED mapping match those in the national database, but the enrolment figures for 2015 differ considerably between the two sources; in four out of five instances, the national enrolment figure is noticeably smaller than the figure reported to ISCED.

It is not easy to trace the origins of these quite significant variations between the different sources or to make sure that the identified sources of variations between the figures account for the entire difference. In Denmark, at least some of the differences between the figures from the national database and the other two sources can be explained by differences in classification of programmes, as

the national Danish database does not use the ISCED classification. Instead, programmes are defined partly by the institutions providing the programmes, partly on the type of qualification delivered. This is also the case in France. Even though the national expert has managed to allocate enrolment figures in the national database to the ISCED programmes, this was not without problems. The French country expert commented: 'I had to compute a lot of data myself, because some of the proposed categories in the Excel table [the education programmes described in the ISCED 2011 mapping, ed.] do not correspond to the national categories in the French statistics'.

A particular difficulty exists where the national statistics are organised according to EQF level ⁽¹⁰⁾ rather than ISCED, which is the case in Malta. Here, there is one IVET programme at level 3. The UOE figure for enrolment in VET at level 3 in 2015 is 2 149: the ISCED mappings say 1 465, and the calculation based on national data sets results a figure of 2 170.

These examples illustrate that, despite the detailed guidance available for helping education stakeholders using ISCED to classify education programmes (OECD et al., 2015), and the guidelines for reporting to the UOE data collection (UNESCO et al., 2015), practices when reporting to the UOE data collection and to the ISCED mappings vary considerably across countries.

In most countries, the VET programmes were – and still are – delimited according to the legal framework governing them. In some countries, all or most IVET paths and target groups are governed through comprehensive framework legislation; this results in few programmes with a wide scope, within which different specific programmes can be developed, leading to specific occupational fields or targeted at specific types of students. In other countries, separate legislation is in place for different target groups (for example, second chance programmes have their own legislation) and/or for different occupational groups. Table 4 illustrates these different approaches by providing examples from three countries (Romania, Finland and the UK) of titles and descriptions of IVET programmes at level 3 that were reported in the ISCED mappings.

⁽¹⁰⁾ The EQF is structured according to learning outcomes rather than duration. See a description of the eight levels at:
<https://ec.europa.eu/ploteus/en/content/descriptors-page>

Table 4. **Three different approaches to designing VET programmes: IVET programmes at ISCED 1997 level 3, in Romania, Finland and UK, 2008**

	Romania	Finland	UK
No of programmes at level 3 with orientation V	1	3	8
Programme titles in English	Upper secondary vocational school	Upper secondary vocational programmes leading to initial vocational qualifications (including apprenticeship training programmes and special education programmes)	Work-based training for adults
		Upper secondary vocational programmes preparing for initial vocational qualifications taken as competence-based qualifications/skills examinations (including apprenticeship training programmes)	National vocational qualification (level 1)
		Upper secondary vocational programmes preparing for further vocational qualifications (including apprenticeship training programmes)	General national vocational qualification (intermediate level) National vocational qualification (level 2) Young apprenticeship Apprenticeship (*) Apprenticeship (*) General national vocational qualification (advanced level) Work-based training for adults

(*) The two UK programmes with the title *Apprenticeship* differ in the national language (also English). The name of the first is *Modern apprenticeship*, the name of the second *Modern (advance) apprenticeship*.

Source: ISCED 1997 mappings.

A review of programme descriptions in the ISCED 1997 mappings confirms the links between the national VET system and the labour market and cultural specificities of each country.

In several countries (including Iceland, Italy, Spain, Poland), separate programmes existed in 2008 that led to artistic occupations. In Iceland, two programmes at level 3 and two at level 4 were dedicated to marine engineering; in Ireland, there were two separate programme for the hospitality and culinary sector, one for fishery, and one for agriculture, horticulture, forestry and equestrian studies; and in Austria, there were three programmes in nursing and one in agriculture and forestry.

The review also showed that, in some countries, IVET programmes at level 3 were open to a wide target group (Denmark, Germany, Finland), while in others, access to programmes was limited according to age (Bulgaria). Some countries had IVET programmes designed to serve specific segments of the population according to their education entrance level (Lithuania) or social resources (Italy). Finally, in some countries, programmes were differentiated according to the level of qualification they delivered (Bulgaria, Malta, Lithuania).

3.2. **Reclassification of pre-vocational programmes between ISCED 1997 and ISCED 2011**

Some issues with potentially large impact on figures for enrolment are linked to the 'orientation' dimension in ISCED 1997 and ISCED 2011. The first of these issues concerns reclassification of programmes required by the transition from ISCED 1997 to ISCED 2011. In ISCED 1997, three different types of orientation were applicable for programmes at level 2 and 3: general (G), pre-vocational (P), and vocational (V). Box 5 shows the definition of pre-vocational education in ISCED 1997.

Box 5. **Pre-vocational education, ISCED 1997 definition**

'Education which is mainly designed to introduce participants to the world of work and to prepare them for entry into vocational or technical education programmes. Successful completion of such programmes does not yet lead to a labour-market-relevant vocational or technical qualification. For a programme to be considered as pre-vocational or pre-technical education, at least 25% of its content has to be vocational or technical. This minimum is necessary to ensure that the vocational subject or the technical subject is not only one among many others.'

Source: UNESCO-UIS, 2006.

With the introduction of ISCED 2011, the pre-vocational orientation no longer existed, so all education programmes were to be classified as either vocational or general according to the definitions in Box 6.

Box 6. Vocational and general education, ISCED 2011 definitions

Vocational education

‘Programmes that are designed for learners to acquire the knowledge, skills and competencies specific to a particular occupation, trade or class of occupations or trades. Vocational education may have work-based components. Successful completion of such programmes leads to labour market-relevant vocational qualifications acknowledged as occupationally oriented by the relevant national authorities and/or the labour market.’

General education

‘Programmes that are designed to develop learners’ general knowledge, skills and competencies, as well as literacy and numeracy skills, often to prepare students for more advanced education programmes at the same or higher ISCED levels and to lay the foundation for lifelong learning.’

Source: UNESCO-UIS, 2014.

Some, but not all, countries reported programmes at ISCED level 3 with orientation P to the ISCED 1997 mappings. With ISCED 2011, this option was no longer available, so the P-programmes had to be reclassified. Systematic tracking of what happened to programmes that were labelled P in the ISCED 1997 mappings has not been possible in the current theme but the examples shown in Table 5 illustrate that countries adopted quite different approaches to reclassification of programmes previously classified as pre-vocational.

Table 5. Examples of change of orientation: from P to V, G or another solution

Country	Programme name in national language	Programme name in English	Orientation, ISCED 1997 mappings	Orientation, ISCED 2011 mappings
Austria	<i>Haushaltungs-, Hauswirtschaftsschulen</i>	One-year and two-year home-economic schools	P	V
	<i>Polytechnische Schule</i>	Pre-vocational school	P	G
Denmark	<i>Håndarbejds- og husholdningsskoler</i>	Home economics and needlework	P	Out of scope of UOE (*)
	<i>TIF-kurser (værkstedskurser)</i>	Practical admittance courses for programmes at 5B	P	Out of scope of UOE (**)

Country	Programme name in national language	Programme name in English	Orientation, ISCED 1997 mappings	Orientation, ISCED 2011 mappings
Italy	<i>Conservatorio di musica – periodo medio</i>	Music Conservatory – intermediate course	P	V – these two programmes were merged into one
	<i>Accademia Nazionale di Danza – periodo medio</i>	National Dance Academy – intermediate course	P	
	<i>Istruzione Tecnica</i>	Technical Institute	P	V
	<i>Corsi serali presso le scuole secondarie di secondo grado (per adulti)</i>	Upper secondary education courses (for adults)	P	V and G – the programme has been split into a general and a vocational programme

(*) These programmes have been moved to the tab called 'qualifications out of scope of UOE', and hence are no longer reported to UOE data collection.

(**) These programmes are labelled P (pre-vocational), a category which does not exist in ISCED 1997.

Source: ISCED 1997 and ISCED 2011 mappings.

The table illustrates that different choices were taken on whether a programme was to be categorised as vocational or general, or in the case of Denmark, reclassified as 'qualification out of scope of UOE'. The examples of Austria and Denmark are illustrative, as these two countries appear to have approached the reclassification of similar-looking programmes (programmes within home economics) in two different ways: the Austrian programme has been classified as vocational, while the Danish programme has been reclassified as out of scope.

The rationales behind these decisions, though probably well-founded in national specificities and policies, are not immediately transparent. For statistical analysis, the different approaches introduce imprecision into the data sets. The total enrolment figure for upper secondary education is not influenced by a reclassification of single programmes from P to V or G. But, depending on the result of the reclassification, there will be a shift in the enrolment figures for vocational and general education which influences VET's share of enrolment at upper secondary level positively (if programmes are reclassified to V) or negatively (if programmes are reclassified to G). In cases where pre-vocational programmes are reclassified to 'qualifications out of scope of UOE', the overall figures for enrolment and completion in upper secondary education are reduced.

Hence, the reclassification prompted by the change in the orientation dimension in ISCED is a separate source of fluctuations in enrolment figures in the years following the transition to ISCED 2011.

3.3. Different approaches to deciding the scope of reporting

As the previous section indicates, countries differ in their approach to deciding whether a VET programme is within or out of the scope of the UOE data collection. The research has found that VET programmes at upper secondary level that do not lead to full level completion according to the ISCED 2011 definition of completion, are variously reported as ‘scope UOE’ – so that enrolment in these programmes is included in total figures for enrolment in VET – and as ‘qualifications out of scope of UOE’, in which case the enrolment is not included in the total enrolment figures. The outcome of this decision is particularly varied in the case of short or single-subject VET programmes for adults. In some countries, such as Belgium (Flemish Community), Norway (see example in Box 7), and Sweden, upper secondary VET courses for adults that do not lead to level completion are reported in the ISCED mapping as ‘scope UOE’ at level 3. Enrolment in such courses therefore contributes to the total enrolment figures for VET at level 3.

Box 7. Norway: folk high schools

In Norway, folk high schools are reported to the ISCED 2011 mapping as a vocational programme at level 3 within scope UOE. The schools offer a variety of non-traditional and non-academic programmes as well as some academic programmes. These courses do not grant degrees or conduct exams. They ‘provide credentials for further study’, but do not lead to an occupation or give access to studies at level 4.

Source: ISCED mappings 2011, Norway (UNESCO, 2017).

In other countries, such as Denmark, this type of non-formal course is reported as ‘qualifications out of scope of UOE’. In Austria, around 10% of all apprentices are in non-formal programmes preparing for *Berufsmatura*, a new dual qualification, but since these programmes are reported as being out of scope of UOE, such enrolments are not included in the overall enrolment figure.

While it is not clear whether this factor, taken across countries, over- or underestimates the enrolment figures for VET, it is true to say that variations in the national reporting practices concerning the scope introduces additional uncertainty in enrolment data, and complicates statistical comparison between countries.

3.4. Inconsistent classification of programmes with no clear orientation

Most countries have upper secondary education programmes that can unambiguously be classified as V (typically, upper secondary IVET-programmes in countries with long-standing VET systems and leading to traditional crafts or occupations) or G (typically, programmes preparing for university, and with such names as *Matura*, *Baccalaureate* or *Gymnasium*). However, the current research indicates that in many cases – and perhaps increasingly – there are types of programme that are difficult to classify as V or G because they combine general and vocational elements in different ways.

First, programmes delivering a ‘dual qualification’ are usually categorised as V.

Dual qualifications (both a vocational and a general qualification) have been known for several years (McCoshan et al., 2008), but appear to be gaining ground across Europe. According to survey, at least four countries launched programmes delivering dual qualifications during 1995-2015 ⁽¹¹⁾, thus enabling students to obtain both a vocational and a general qualification after three to four years of study (Table 6).

This type of programme is usually classified as V; Slovenia is an exception. Since graduates may just as well continue into higher education, the enrolment numbers from such programmes may lead to an overestimation of the future supply of skilled labour.

⁽¹¹⁾ There was no separate question about dual qualification in the survey. Dual qualifications are mentioned by the national experts from the three countries as a response to this question: ‘Has the modularisation of upper secondary IVET qualifications increased since 1995, enabling individual pathways? If so, how? When? What was the reason for the change? Please explain and give links to concrete evidence’. Countries other than the three mentioned here may have introduced dual qualifications during the 20-year period without it appearing in the survey responses.

Table 6. Programmes with dual qualifications introduced after 1995

Country	Description of programme	Orientation in ISCED 2011 mappings
Croatia	A 'state matriculation exam' has been introduced for all upper secondary students, including VET students, wishing to continue their studies.	V
Cyprus	Graduates from IVET have access to higher education in line with graduates from general education.	V
Denmark	In Denmark, the EUX (*) programme was introduced in 2014 combining IVET and general elements to provide students with dual qualifications. It is offered within the VET system, but gives the student the opportunity to obtain a general qualification at upper secondary level (<i>Studentereksamen or STX</i>) in addition to the occupational qualification.	V
Finland	In Finland, major reform in 1995 changed the status of vocational colleges, which were all by law transformed to polytechnics or universities of applied science. Upper secondary VET graduates have had access to higher education since 1998.	V
Slovenia	A 'vocational matura' gives access to higher education.	G

(*) EUX is not a proper abbreviation – 'EU' stands for Erhvervsuddannelser = vocational education, while the 'X' signals that the qualification gives access to higher education

Source: Survey of national experts, 2017.

Second, programmes with flexible pathways are variously classified as V or G, and the classification is sometimes changed. The research has found examples in Belgium, Latvia and Romania of the introduction of upper secondary programmes allowing students to follow – and switch between – individual pathways, leading either to a general or a vocational qualification. One example of a programme where the orientation dimension was changed during the 1995-2015 period is shown in Box 8.

Box 8. Changing orientation of a programme delivering a dual pathway

In Belgium (Flemish Community), the programme 'Regular secondary education – 3rd stage – 1st and 2nd year of the 3rd stage – KSO (artistic secondary education)' combines a broad general education with active arts practice. In the third stage, the specific training component can be narrowed down with a view to assisting ultimate career choice or the possible education pathways in higher education. In ISCED 1997 and in UOE 2013, 'KSO' was reported as vocational education, while in the ISCED 2011 mapping, it is classified as general education.

Source: Survey of national experts, 2017.

An additional source of statistical uncertainty stems from the understanding and use of the orientation dimension in ISCED. Although education programmes should be classified as either V (vocational) or G (general), in reporting to the ISCED 1997 mappings a few countries (Italy, Austria, Poland, Romania and Sweden) reported the orientation of certain programmes at levels 3 and 4 having a mixed orientation, V and G; this is not an option in ISCED 1997 or in ISCED 2011. Denmark and Italy reported programmes at levels 3 and 4 with orientation P (pre-vocational). Table 7 shows the programmes where the distinction between V and G apparently did not suffice.

Table 7. **IVET programmes at ISCED 1997 levels 3 and level 4 with G/V or P orientation, in Austria, Denmark, Sweden, Romania, Poland and Italy**

Country	Programme name in national language	Programme name in English	Orientation
Austria	<i>Externistenprogramme</i>	Provision outside the regular education system, leading to formal education certificates	G/V
Denmark (*)	<i>Håndarbejds- og husholdningsskoler (*)</i>	Home economics and needlework	P
	<i>TIF-kurser (værkstedskurser) (*)</i>	Practical admittance courses for programmes at 5B	P
Sweden	<i>Centrum för flexibelt lärande – Gymnasial vuxenutbildning</i>	National state school for adults – upper secondary adult education	G/V
Romania	<i>Invatamant liceal</i>	Upper secondary – high school	G/V
Poland	<i>Ogólnokształcąca szkoła baletowa</i>	Ballet school (**)	G/V
	<i>Ogólnokształcąca szkoła muzyczna II stopnia</i>	Second level music school (***)	G/V
	<i>Ogólnokształcąca szkoła sztuk pięknych</i>	School of Fine Arts	G/V
	<i>Liceum plastyczne</i>	School of Fine Arts	G/V
	<i>Technikum, liceum, szkoła równorzędna (dla dorosłych)</i>	Technical or equivalent secondary school (for adults)	G/V
	<i>Technikum, liceum, szkoła równorzędna (dla dorosłych) na podbudowie szkoły zasadniczej</i>	Technical or equivalent secondary school (for adults) based on the basic vocational school	G/V
	<i>Czteroletnie technikum (dla młodzieży)</i>	Technical secondary school (for youth)	G/V
	<i>Trzyletnie technikum uzupełniające (dla młodzieży)</i>	Supplementary technical secondary school (for youth)	G/V
<i>Czteroletnie technikum specjalne (dla młodzieży)</i>	Special technical secondary school (for youth)	G/V	

Country	Programme name in national language	Programme name in English	Orientation
	<i>Trzyletnie technikum uzupełniające specjalne (dla młodzieży)</i>	Supplementary special technical secondary school (for youth)	G/V
	<i>Czteroletnie technikum dla dorosłych</i>	Technical secondary school (for adults)	G/V
Italy	<i>Conservatorio di musica – periodo medio (*)</i>	Music Conservatory – intermediate course	P
	<i>Accademia Nazionale di Danza – periodo medio (*)</i>	National Dance Academy – intermediate course	P
	<i>Istruzione Tecnica (*)</i>	Technical Institute	P
	<i>Corsi serali presso le scuole secondarie di secondo grado (per adulti)</i>	Upper secondary education courses (for adults)	P

(*) These programmes are labelled P (pre-vocational), a category which does not exist in ISCED 1997.

(**) This programme spans levels 1, 2 and 3.

(***) This programme spans levels 2 and 3.

Source: ISCED 1997 mappings.

As the titles of the education programmes indicate, there are different reasons why they are reported with a mixed orientation:

- (a) in Poland, the technical secondary school programmes that were reported as G/V delivered an academic qualification, but also had a strong vocational/technical content;
- (b) in Italy and Poland, programmes of an artistic nature were reported as having a mixed orientation. Looking across Europe, most countries have education programmes at levels 3 and 4 leading to artistic occupations, but there is no common practice for characterising the orientation of such programmes. Some countries report them as vocational, others as general, and a few, as we see here, with mixed orientation;
- (c) in Sweden, Poland and Italy, the target group for a programme appeared to be an additional factor leading to reporting programmes as having a mixed orientation, since in all three countries, vocational courses for adults were reported as G/V;
- (d) in Austria, reporting a programme with mixed orientation appeared to be linked to the mode of provision: non-formal provision of curriculum leading to formal qualifications was reported as G/V.

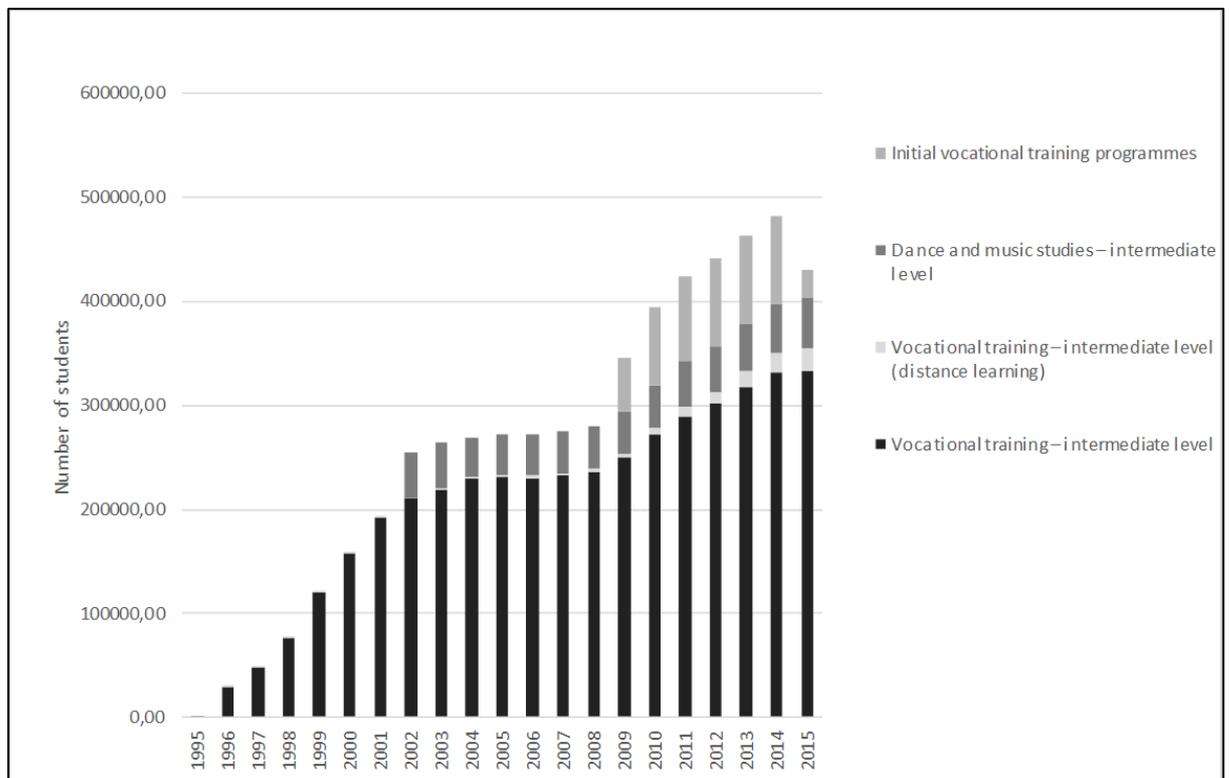
While these countries reported programmes with an orientation that, in principle, did not exist in ISCED 1997, only one country – Belgium – reported programmes with mixed orientation to the ISCED 2011 mappings. Whether such

programmes are reported with orientation V or G has implications for the enrolment figures.

3.5. Reclassification of programmes

Another issue is associated with other types of reclassification of programmes than the reclassification of pre-vocational programmes described in Section 3.2. A detailed analysis of programme descriptions in ISCED mappings combined with survey responses reveals that variations in the total number of enrolments in education programmes at level 3 in several cases are the result of reclassification of programmes, as illustrated by the example of Spain shown in Figure 5.

Figure 5. Enrolment in upper secondary VET in Spain, 1995-2015, by programme



Source: Survey of national experts, own calculations.

Enrolment data for the programme *Dance and music studies* are only available after 2001. According to the Spanish country expert, the programme existed prior to that date but was reclassified in 2002. Dance and music studies used to span three levels in the national qualification system, from ‘elementary’ to ‘higher’; only in 2002 was ‘Intermediate dance and music studies’ singled out. Before 2001, statistics on dance studies did not distinguish between different

levels, so it is not possible to provide data on ‘intermediate level’ studies for the years 1995-2001.

A slightly different example of reclassification took place in Bulgaria, where enrolment in one VET programme (VET programmes for second level of professional qualification) fell between 2010 and 2011 due to the cancellation of 13th grade and the transition of students to third degree programmes of professional qualification.

A third type of reclassification is seen in Austria. Here, nursing and health care training programmes were originally taught at nursing schools. However, in the past 10 years, they have been split into programmes at three levels, one being bachelor level.

Reclassifications may artificially move student populations from one statistical category to another – from one ISCED level to another – without any change in the actual numbers of students

3.6. Level 3 VET: full or partial qualifications, IVET or CVET

Another issue in the analysis and interpretation of Eurostat data stems from the diversity of programmes reported. The ISCED classification, with its emphasis on well-defined levels based on duration and completion is well suited to describing an education system based on progression through initial education. This is reflected most clearly in the age-related criteria for placing an education programme at a certain level. According to ISCED 2011, VET at level 3 is initial (youth) education starting at ages 14 to 16. However, programmes reported as being located at level 3 in the ISCED mappings are extremely diverse with respect to theoretical starting age, duration, and access to the next level. Some countries report short programmes for adults as VET at level 3, others classify them as ‘out of scope’.

The survey results also indicate an increasing tendency to introduce modularisation of IVET programmes. Increased modularisation between 1995 and 2015 is reported by 21 countries ⁽¹²⁾ evenly distributed across the country groups. Modularisation may enable disadvantaged students to access the programmes. In Italy, for example, completely individualised evening classes

⁽¹²⁾ Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Hungary, Italy, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovenia, Spain and the UK.

within VET programmes have been in place since 2014, with a reduced number of lessons (70% of the day-time curricula). In these programmes, students are divided into groups based on their prior knowledge/skill levels in a specific subject.

Modularisation allows not only for individual pathways through a specific programme, but also for (at least in principle) IVET modules to be taken individually, allowing adults to access only those specific parts of an IVET programme that are most relevant to their job or career. However, there is no indication in the data that increasing modularisation has led to an increase in the number programmes. This would be the result if such modules that may be followed individually, as part of continuing education, were coded individually according to the completion dimension of ISCED as 351 ('insufficient for level completion or partial level completion'). This could also place a significant administrative burden on ministries of education. From a statistical viewpoint, however, the trend towards modularisation makes it (even) more difficult to assess the reality behind the enrolment figures, since they may include young people who are full-time students for three to four years, side by side with adult students who may only be enrolled for one term or even shorter time.

Several countries have opened up their education programmes by widening the target group to include adults, and/or by providing them as flexible distance education. One example of this is the Spanish programme *Ciclos formativos de grado medio (distancia)* (vocational training, intermediate level (distance learning)), which has a theoretical starting age at 18 to 65. There are many other such examples: – research into apprenticeship for adults ⁽¹³⁾ indicates that, in most European countries, apprenticeship-based VET programmes at ISCED levels 3 or 4 are open to adults. A significant number of countries, including Denmark, Ireland, Spain, Finland and the UK, provide incentives for adults to participate ⁽¹⁴⁾.

An increasing number of countries have introduced or are introducing systems for validation and recognition of prior learning, allowing potential students who have not completed primary or lower secondary education to enter and participate in VET programmes. The Finnish approach is shown in Box 9.

⁽¹³⁾ *Apprenticeship for adults*, a study commissioned by Cedefop, to be completed in July 2018.

⁽¹⁴⁾ Data for enrolment in upper secondary VET by age are not available before 2013 in Eurostat or OECD, so the available information does not allow assessment of the effectiveness of these initiatives.

Box 9. Competence-based upper secondary IVET in Finland

In Finland, a competence-based qualification, 'Upper secondary vocational programmes preparing for initial vocational qualifications taken as competence-based qualifications/skills examinations (including apprenticeship training programmes)' was established in 1994. The eligibility age for the programme is 18 to 65. The duration of the programme varies depending on the education background and working life experience of the student. Completion of the programme is awarded with an initial vocational qualification.

Source: Survey of national experts.

3.7. Interpreting UOE enrolment figures for VET at ISCED level 3

This chapter has shown why enrolment numbers for upper secondary IVET should be interpreted with some care. In addition to issues of national practices in classifying education programmes and variation in the reporting practices of individual countries, there are variations in national approaches when applying the ISCED orientation dimension. Reclassification of programmes to higher or lower levels and modularisation can lead to sudden fluctuations in the statistical figures without underlying changes in the composition of the student population. Modularisation and opening up IVET to adults implies that enrolment data for upper secondary VET include a non-trivial share of adults participating in one or more modules in an upper secondary IVET programme as part of lifelong learning.

These challenges may increase, since most countries report on initiatives to make education and training more flexible, ensure access to both labour markets and higher levels of education, and introduce programmes based on recognition of prior learning.

The effect of each factor on enrolment figures for upper secondary IVET is summarised in Table 8.

Each factor, as well as the factors in combination, can introduce uncertainty in the enrolment figures in both directions – over- or underestimating enrolment. Changes in national administrative and reporting practices, such as reclassification of programmes, will also introduce fluctuations in figures that are not linked to attractiveness of VET or student preferences. In some countries enrolment figures for upper secondary VET (ISCED 2011 level 3) include adults participating in CVET.

Table 8. **Potential effect of different national approaches to classification and reporting to the UOE data collection**

Factor	Potential effect on enrolment figures for upper secondary IVET		
	Factor will lead to overestimation of enrolment	Factor will lead to under-estimation of enrolment	Neutral
Inconsistencies between national classification system and ISCED			X
Pre-vocational programmes in ISCED 1997 or short programmes in the CVET system classified as out of scope		X	
Short CVET programmes classified as VET level 3	X		
Programmes with mixed orientation classified as V	X		
Programmes with mixed orientation classified as G		X	
Reclassification of programmes to higher or lower level		X	
Classification of modules as full level 3 programmes	X		
Awarding IVET qualifications wholly or partly based on recognition of prior learning	X		

Source: Cedefop.

Taken together, these observations indicate that care should be exercised in the interpretation of the international figures. These figures cannot be used to forecast the future supply of skilled labour, since part of those enrolled (in dual or flexible programmes) will not enter the labour market directly, and adults in continuing training classified as upper secondary IVET, or in IVET modules, are already in the labour market.

CHAPTER 4.

Change in upper secondary IVET enrolment

An important impetus for this study was the observation – based on aggregated international figures – that the VET sector in Europe has been declining relative to general education over the past 20 years. To gain a clearer picture of how this might reflect realities, the following sections take a closer look at national data on enrolment and completion. The section considers data reported to the UOE data collection as well as the more detailed data provided in the survey undertaken for this study.

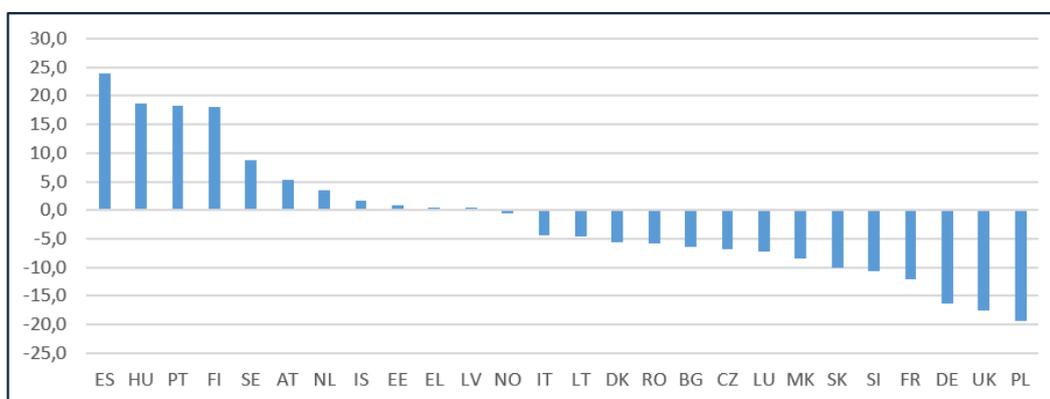
4.1. National variations in enrolment in upper secondary IVET

In 2015, 10.3 million young people were enrolled in VET in the EU-28 according to Eurostat. While accepting the issues that may impact the precision of the figures, enrolment figures were very unevenly distributed. Four countries (Germany, France, Italy, and the UK) between them accounted for more than half of the total enrolment in VET in Europe ⁽¹⁵⁾. Any major shift in the enrolment in VET in one or more of these four countries will strongly influence the aggregated enrolment figure. In small countries, or those with a small number of VET enrolments, levels can undergo dramatic changes without this being visible in the aggregated European figures. Therefore, the subsequent analysis considers changes in enrolment at country level, for country groups, and at programme level.

Figure 6 shows the change between 1998 and 2012 in VET's share of enrolment in upper secondary education for European countries.

⁽¹⁵⁾ In 2015, according to Eurostat [educ_uae_enrs04], the four countries together accounted for 53.5% of enrolment in VET in the EU-28, and each accounted for more than 10% of enrolment.

Figure 6. **Change from 1998 to 2012 in the VET share of enrolment in upper secondary education (ISCED level 3), percentage points**



NB: The figure omits countries, where Eurostat data were not available for both the years 1998 and 2012. The period is chosen in order that figures are comparable, since 1998 and 2012 are the first and last dates where data were reported according to ISCED 1997.

Source: Eurostat [educ_ipart_s], own calculations.

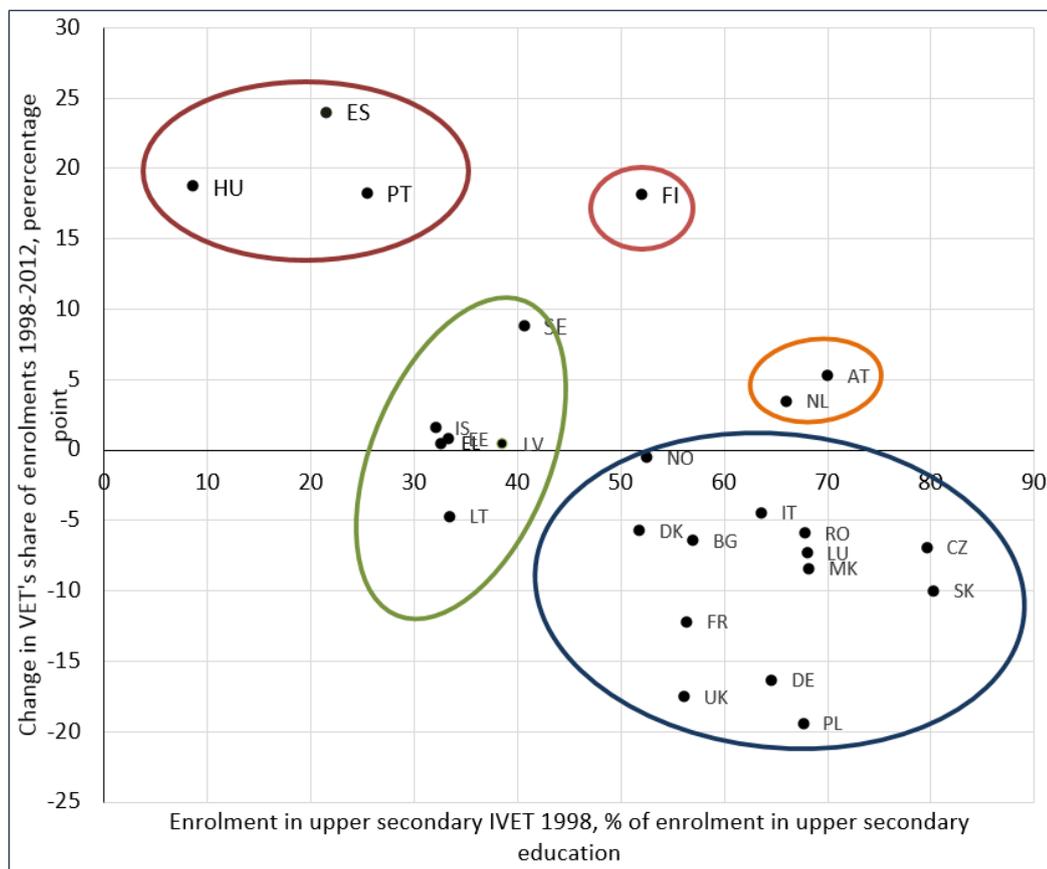
The relative change in VET's share of enrolments in upper secondary education has varied considerably, ranging from a reduction of 19 percentage points in Poland to an increase of 24 percentage points in Spain.

The starting point for these countries, however, differed significantly as illustrated by Figure 7, which shows VET's share of upper secondary education in 1998 and the change in that share between 1998 and 2012 for each country ⁽¹⁶⁾.

The figure indicates a reverse correlation – albeit not strong – between the share of upper secondary students enrolled in VET in 1998 and the change in that share: countries with a low starting point experienced significant positive changes, while countries with a high starting point, with a few exceptions, saw VET's share decrease. Considering the starting point, as well as the direction and size of the change, four groups of countries and an outlier can be loosely identified.

⁽¹⁶⁾ The start and end year is determined by data availability. In these years, ISCED 1997 was used, hence the data are comparable.

Figure 7. VET's share of enrolment in upper secondary education, 1998 to 2012



Source: Eurostat [educ_ipart_s], own calculations.

The first group includes three countries, where VET's initial share of enrolment in upper secondary education was below 30% (Spain, Hungary, and Portugal) ⁽¹⁷⁾. None of these had a strong tradition for (formal) vocational education and training prior to the 2000s. A closer analysis of times series data for the three countries shows Spain underwent the most rapid increase in the share between 1998 and 1999 (from 22% to 31% of enrolments) followed by a steady increase in the following years. In Hungary, a steady increase was interrupted by a sharp increase in 2003, from 13% to 24%. Portugal appears to be the only one of the three where the financial crisis in 2008 played a role for the tendency of young people to enrol in VET: the sharpest increase, from 31% to 38%, occurred between 2008 and 2009.

The second group includes six countries, among them the three Baltic countries. Estonia, Greece, Iceland, Lithuania, Latvia and Sweden all had a

⁽¹⁷⁾ Data from Eurostat [educ_ipart_s].

share of enrolments in VET from 30% to 50% in 1998. In four of these countries (Estonia, Greece, Iceland and Latvia), there has been a positive, but negligible growth in the share, while in Sweden has experienced substantial growth of eight percentage points. In Lithuania, the share has dropped about five percentage points. Times series data from the three Baltic countries reveal that VET's share of enrolments in all three countries has been slowly increasing after 2006: the overall reduction in the share in Lithuania is the result of a sharp fall in enrolments between 2000 and 2004.

In the third – large – group of countries, VET's share exceeded 50% in 1998. Among these countries, most experienced a drop in that share between 1998 and 2012. Poland, where VET's share of enrolments in upper secondary education in 1998 was 67.6%, experienced a drop of almost 20 percentage points to 48.2% in 2012. Other countries experiencing significant drops were Germany, France, and the UK, three countries with historically strong, but structurally fundamentally different, IVET systems. Several other countries in different parts of Europe with historically different VET policies and VET systems experienced a drop in the VET share of enrolments in upper secondary education between 0 and 10 percentage points.

The fourth group is the Netherlands and Austria. Both have an initial VET share of more than 50% but in 2012 this was larger than in 1998, in contrast to the other countries with large initial VET shares. The VET systems in these two countries differs considerably – the Austrian VET system is more like the German and Danish VET systems – and enrolments in both have been decreasing.

The outlier is Finland, where VET's share went from 52.0% in 1998 to 70.1% in 2012. The VET system is mainly school-based, but Finland has introduced a consistent competence-based approach, implying that VET qualifications can be obtained partly or wholly based on recognition of prior learning (Box 9). At least some of the variation between countries in VET's share of enrolment in upper secondary education may stem from different approaches to classifying and reporting enrolment in VET programmes, just as some of the fluctuations over time can be ascribed to reclassifications or changing reporting practices at country level. To understand better the changes taking place at country level, the following sections consider what can be learned from the national enrolment data delivered by the survey.

4.2. Net enrolment and completion changes between 1995 and 2015

The survey asked national experts to provide data (absolute figures) for enrolment and completion for all programmes described in the ISCED 2011 mapping for their respective countries. First, the net changes over the 20-year period was considered, to provide an overall picture of the changes and the degree to which countries had followed different trajectories with respect to enrolment in VET.

The picture turned out to be mixed. In absolute terms, enrolment in both VET and general education was less in 2015 than in 1995 in all the Baltic countries and the south-east European countries, while the remaining country groups have a less clear picture. Table 9 shows the countries arranged according to the direction of the net changes in absolute enrolment figures for VET (horizontal) and general education (vertical).

Table 9. **Overview of net changes in absolute enrolment figures in upper secondary education from 1995 to 2015**

General education \ VET	Increase	Decrease	No change or data for VET incomplete
Increase	Germany France The Netherlands Sweden United Kingdom	Denmark Italy Hungary Austria	Ireland
Decrease	Spain Cyprus	Bulgaria Greece Estonia Latvia Lithuania Romania Greece Poland	Malta
No change or data for general education incomplete	Luxembourg Portugal Finland	Belgium Croatia Slovenia	Czech Republic Iceland Norway Slovakia

Source: National enrolment data reported in survey of country experts, own calculations.

Five countries have seen a net increase in enrolment in upper secondary education – VET as well as general education – between 1995 and 2015.

The reverse can be said about the seven countries (in the middle of the table) where enrolment in upper secondary education (VET as well as general education) has declined in absolute terms. This group includes all the Baltic countries, the south-east European countries (except Croatia, where data are incomplete), and Germany, Greece and Poland.

In Denmark, Italy, Hungary and Austria, enrolment in VET declined, while enrolment in general upper secondary education increased. Two of these (Denmark and Austria) have dual VET systems with a long history, but share no similarities with the other two countries with respect to VET system or VET policy.

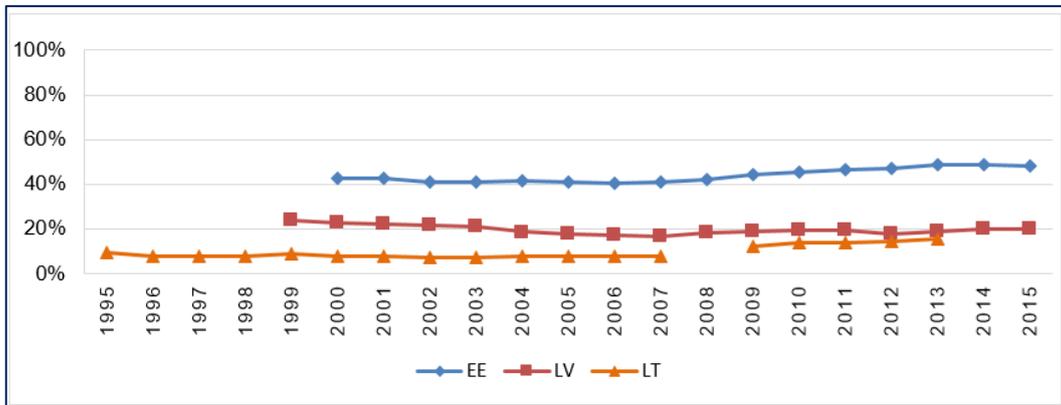
4.3. National changes in VET's share of enrolment in upper secondary education

This section discusses the development of VET's relative share of enrolments in all education programmes at ISCED levels 3 and 4. In this context, VET is defined as education programmes reported to the ISCED mappings with orientation V. The figures are presented by country group in a series of charts based on the figures for enrolment at programme level delivered by the survey⁽¹⁸⁾.

It should be remembered that the net development in absolute enrolment figures between 2008 and 2015 was negative in all three Baltic countries (Table 9). However, Figure 9 shows that the picture is different when considering the relative figures for VET's share of enrolment. In Latvia, VET's share fluctuated around 20% throughout the period, but increased in Estonia and Lithuania.

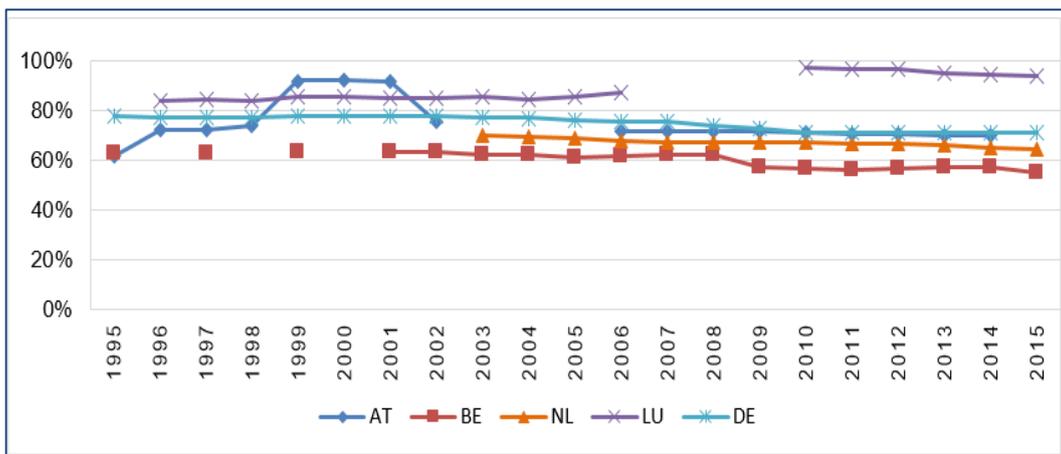
⁽¹⁸⁾ While the direction of changes shown in the graphs is generally valid, the vertical position of the graph lines (i.e. the exact figure for VET's share) should be interpreted with care. The background for this is that information in the national databases is linked to national programme definitions, which are different from the delimitation of programmes used for the ISCED mapping in many cases. Therefore, when the figures for some countries indicate that the share of VET in upper secondary education fluctuates, such as between 70% and 90%, this does not reflect the true situation.

Figure 8. **Baltic countries: enrolment in VET, % of enrolment in education programmes at ISCED levels 3 and 4**



Source: National statistics reported in survey of national experts.

Figure 9. **Central European countries: enrolment in VET, % of enrolment in education programmes at ISCED levels 3 and 4**



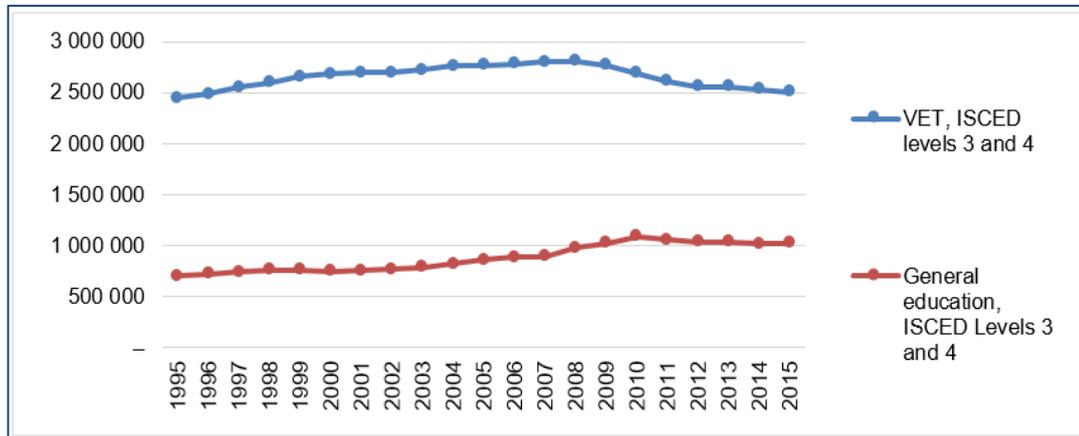
NB: Data for Slovenia omitted due to incomplete data sets.

Source: National statistics reported in survey of national experts.

In the central European countries, VET's share of enrolments in education at ISCED levels 3 and 4 (Figure 9) appears to have been consistently higher than in the Baltic countries throughout the period. Only in one country – Luxembourg – do the figures indicate an increase in VET's share. The example of Germany is illustrative, when it comes to assessing the relationship between absolute and relative enrolment figures: VET's share of enrolments decreased steadily over the 1995-2015 period despite the net increase in enrolments in VET. Hence, the net increase in enrolments in both VET and general education at ISCED levels 3

and 4 from 1995 to 2015 does not tell the full story. Figure 10 shows the enrolment numbers for all years between 1995 and 2015.

Figure 10. **Enrolment in education programmes at ISCED levels 3 and 4, Germany, absolute figures**



Source: National enrolment data reported in survey of country experts, own calculations.

The figure shows that enrolment in both VET and general education and VET increased steadily in absolute terms until around 2007, when enrolment in VET started decreasing, while enrolment in general education continued to grow. A more detailed analysis of the development of enrolment in VET is found in Box 10.

Box 10. **Germany: unpacking a reduction in enrolment in upper secondary education**

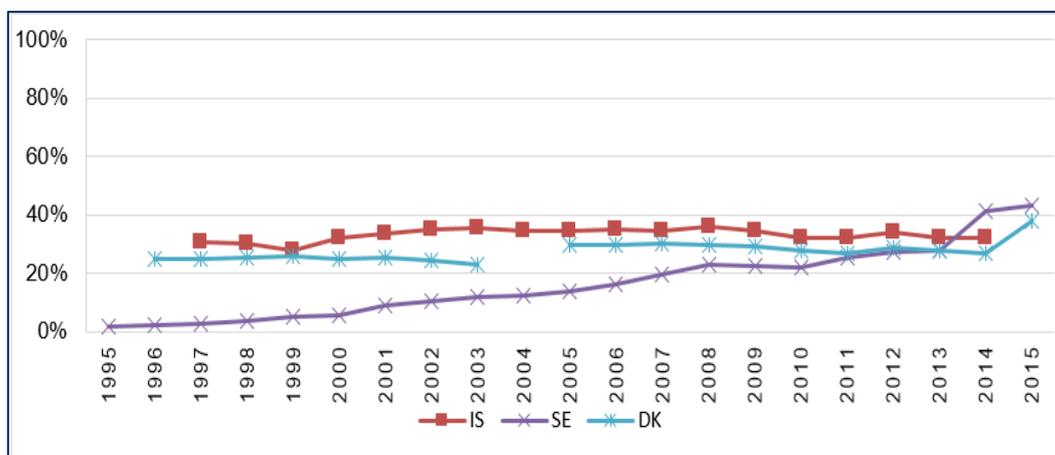
Since around 2010, there has been a reduction in enrolment in all upper secondary (ISCED level 3) education programmes in Germany, linked to a general downward demographic trend. Between 2000 and 2011 alone, the number of graduates from upper secondary general education fell by 50% (2000: 234.900; 2011: 100.900) (BIBB, 2017). At the same time, interest in pursuing higher education was increasing (BIBB, 2016). Combined with a tightened access to higher education from VET, this meant that enrolment figures in VET dropped more than those for general education. In 1994, 34% of the students entered higher education after completion of vocational education. This share had dropped to 22% in 2012 (Frank et al., 2015). The Federal Institute for Vocational Education and Training (BIBB) anticipated that in 2015 the recruitment basis for VET – general school leavers not in possession of a higher education entrance qualification – would continue falling (BIBB, 2015), exacerbated by difficulties recruiting suitable training companies for the apprenticeship system. In 2016, only 64.7% of all those interested in apprenticeship training could be enrolled due to a lack of training companies (BIBB, 2017).

As the German example in Box 10 indicates, demographic trends play an important role in influencing enrolment figures. The significance of this factor is discussed below, in Section 4.5.

As in Germany, VET's share also decreased in Belgium, the Netherlands and Austria, at least after 2000: data before this year are patchy or missing in all three countries. However, it is important to keep in mind that these trends may mask shifts at the programme level, increasing enrolment in some programmes and decreasing it in others. In Austria, for example, the development of the aggregated share of VET conceals a reduction in enrolment in apprenticeship-based VET, which is almost offset by an increase in the enrolment in school-based VET in the period.

In the Nordic countries (Figure 11), the picture is also mixed. In Denmark and Iceland, the trend was stable, even slightly increasing until 2009, followed by a slow decrease. In Denmark, the apparent increase in the figure between 2014 and 2015 is due to missing data for 2015 for a general education programme (higher preparatory examination, single subject), which in 2014 represented 40% of all enrolments at levels 3 and 4.

Figure 11. **Nordic countries: enrolment in VET, % of enrolment in education programmes at ISCED levels 3 and 4**



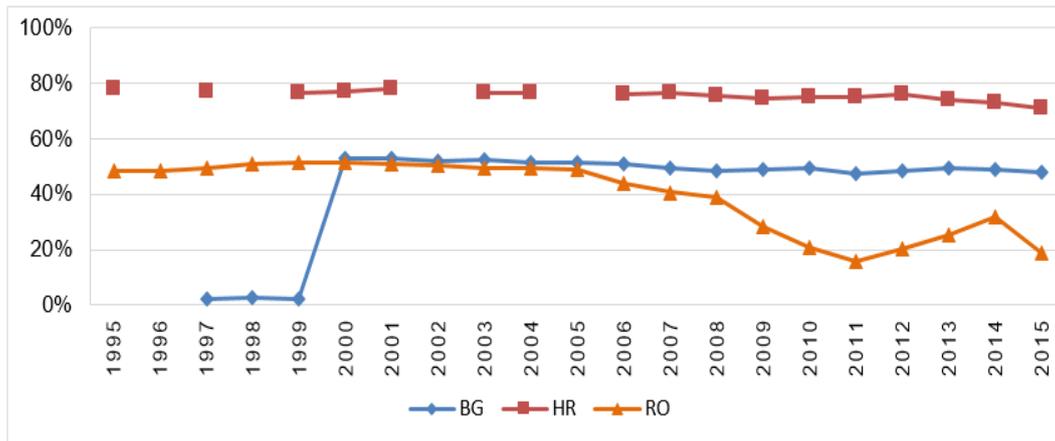
NB: Denmark: figures from 1995 and 2015 omitted due to data for a major GE programme missing. Data break between 2003 and 2005 due to redefinition of VET programmes. Finland and Norway have been omitted from the chart, as only data for VET have been made available.

Source: National statistics reported in survey of national experts.

In Sweden, in contrast, VET's share appears to have been steadily increasing. This does not necessarily reflect the true situation on the ground,

since it has been extremely difficult to construct valid time series based on Swedish education data ⁽¹⁹⁾.

Figure 12. **South-east European countries: enrolment in VET, % of enrolment in education programmes at ISCED levels 3 and 4**



Source: National statistics reported in survey of national experts.

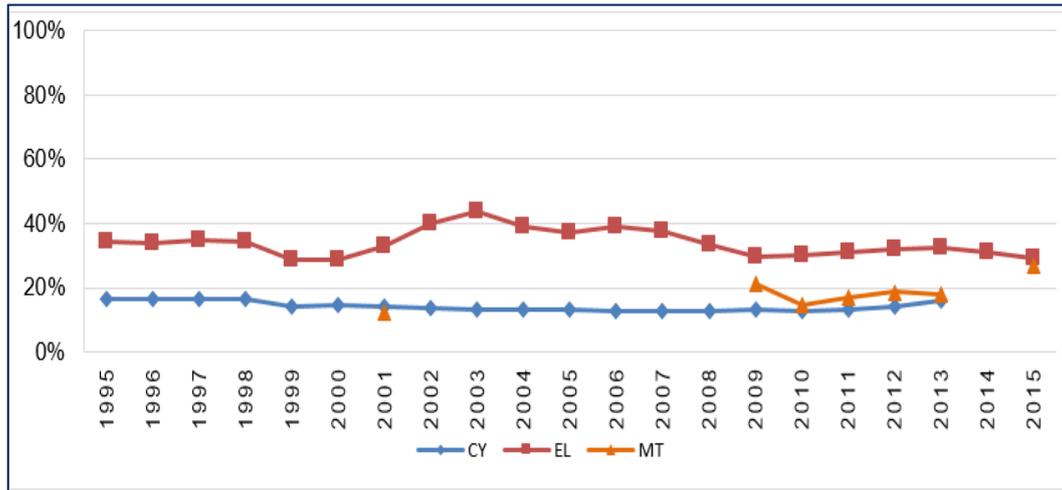
In the south-east European countries (Figure 12), the picture is even more mixed. In Bulgaria, the sudden jump in VET share from 1999 to 2000 is due to unavailability of data for the largest VET programmes before 2000. In addition, the apparent stability of the VET share of upper secondary education in Bulgaria conceals significant shifts between programmes. In 2002, the school-based VET programmes for second level of professional qualification, was extended to include an extra year (13th grade), which increased enrolments slightly. However, in 2011, the 13th grade was cancelled and students transferred to third degree programmes of professional qualification, which are also school-based, but where work-based elements have been included since 2015.

In Romania, the vocational schools (combined school- and work-based learning) and apprenticeship schools (work-based learning) coexisted until 2002. During this period, the VET share was increasing slightly. In 2003, a new vocational pathway for gymnasium graduates was introduced, and in the following years VET's share decreased every year until 2012; then a new vocational pathway for graduates of the ninth grade was introduced, lasting two years and giving access to three years of high-school, causing VET's share to

⁽¹⁹⁾ The Swedish national expert reports that Swedish education data are not categorised according to the programmes in the ISCED mappings and recording practices have changed several times resulting in breaks in data series.

increase again. However, a new three-year vocational pathway for gymnasium graduates was introduced in 2014 leading the share to drop again. This illustrates that the 'labelling' of programmes according to the orientation dimension of the ISCED classification can make it difficult to arrive at a true picture of the VET situation on the ground based solely on statistical data ⁽²⁰⁾.

Figure 13. **South-east Mediterranean countries: enrolment in VET, % of enrolment in education programmes at ISCED levels 3 and 4**



NB: Data for VET for Malta only available after 2009.

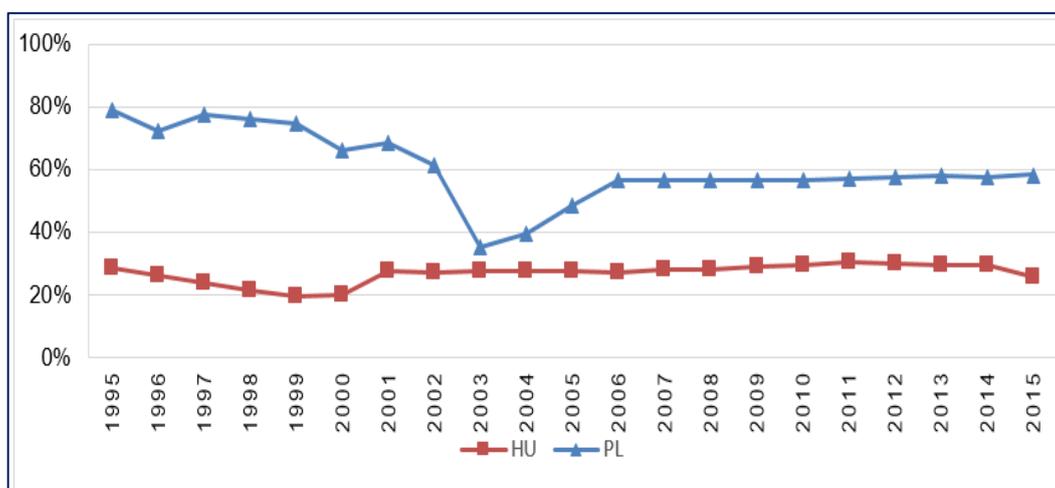
Source: National statistics reported in survey of national experts.

In the south-east Mediterranean country group (Figure 13), the VET share of enrolment in Cyprus has remained quite stable with only minor fluctuations. Greece has experienced more variation, with a maximum number in 2003. However, this variation is largely due to data availability issues ⁽²¹⁾. Malta does not store statistics centrally. Data were obtained from many different documents, and the data categories did not always match the ISCED definitions.

⁽²⁰⁾ This is explained in more detail in Chapter 2.

⁽²¹⁾ For example, there are no data available for second chance schools, which started operating in 2003. After 1999, there are no data for IEK, a level 4 programme at the Institute of Vocational Training, although descriptions in reports indicate increasing enrolment in this programme.

Figure 14. **Visegrád countries: enrolment in VET, % of enrolment in education programmes at ISCED levels 3 and 4**



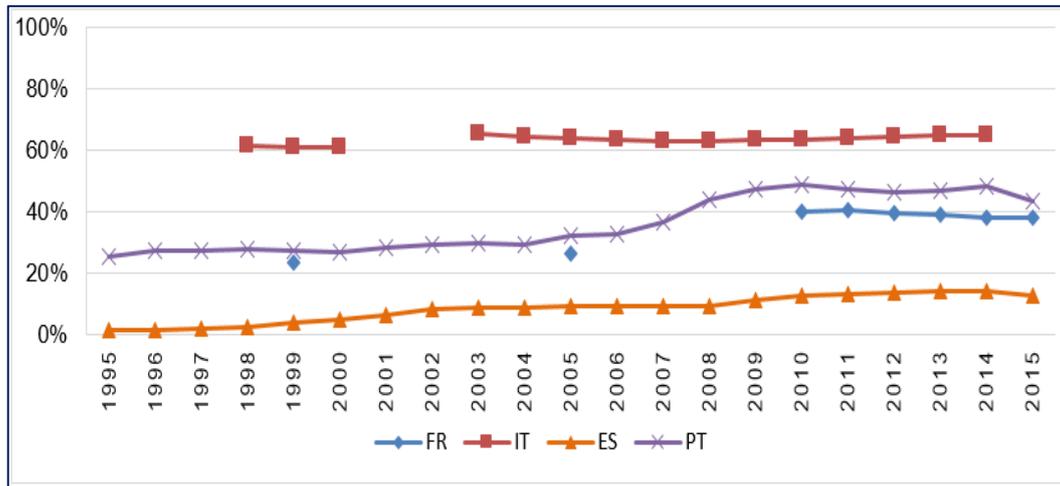
NB: Czech Republic: no enrolment data for upper secondary general education have been made available.
 Slovakia: missing survey response.

Source: National statistics reported in survey of national experts.

Among the Visegrád countries (Figure 14), the survey provided reasonably complete data series from Hungary and Poland. In the latter, fluctuations in the VET share of enrolments up to 2006 was mainly a product of fluctuations in general education enrolment caused mainly by reclassification of programmes and by breaks in time series. The duration of the main general education programme changed between three and four years a few times during 1995-2015, and at some times, included both a three-year and a four-year sub-programme. In Hungary, the share has been almost constant since 2001, only dropping a little in 2015. This reduction reflects a significant fall in enrolment in the main IVET programme from 100 032 in 2014 to 87 639 in 2015.

In the west Mediterranean countries (Figure 15), the VET share of enrolments in upper secondary education increased in Portugal and Spain, again with a small drop in 2015, while the share has been almost constant in Italy and slightly decreasing in France (since 2010).

Figure 15. **West Mediterranean countries: enrolment in VET, % of enrolment in education programmes at ISCED levels 3 and 4**



NB: For France, data for general secondary education were only available for 1999, 2005 and the years following 2010.

Source: National statistics reported in survey of national experts.

Enrolment numbers for Portugal clearly reflect the shift in political priorities over the two decades. According to the survey, since 1995 the Portuguese VET system has been regarded by policymakers with distrust, since it was associated with the technical teaching of the Portuguese dictatorial regime. The ensuing lack of investment in the Portuguese VET system led to reduced enrolment in VET courses. Enrolment in technological courses ⁽²²⁾ and apprenticeship courses ⁽²³⁾ decreased considerably, while the number of students attending main vocational courses ⁽²⁴⁾ increased steadily. To improve the situation, the *New opportunities initiative (Iniciativa novas oportunidades)* was launched in 2005 with the aim of extending vocational education to public secondary schools and expanding this offer at national level. New VET courses were launched, targeting both young people and adults. The growth in enrolments in VET at levels 3 and 4 can be seen as a direct result of a political effort to improve VET provision in Portugal.

In the western countries it has only been possible to construct a time series for the United Kingdom. The data indicate that VET's share has increased from 2002 onwards, most pronounced during 2008-11. The figures confirm that, overall, enrolment in education at levels 3 and 4 has increased, but enrolment in VET has increased at a faster pace than in general education.

⁽²²⁾ *Cursos tecnológicos.*

⁽²³⁾ *Cursos de aprendizagem.*

⁽²⁴⁾ *Cursos profissionais.*

The above walk-through of the development of the VET share of enrolments in upper secondary education in the eight country groups has illustrated that analysis of national figures for enrolment in upper secondary education does not suggest that there has been a general decline across Europe in the national importance of VET. The VET share of enrolments in upper secondary education varies considerably across Europe but, in most countries, it has remained stable. Many of the observed fluctuations in figures for total enrolment in upper secondary VET and VET's share in enrolment in upper secondary education have been explained by technical factors. In some instances, data for specific programmes have only been available for part of the period, causing fluctuations in figures. In other cases, entire programmes or parts of programmes have been reclassified with respect to level, orientation, or both.

In a few countries, however, there has been an observable decline in the VET share of enrolments, which cannot be explained solely by statistical or methodological factors. These countries all had a relatively high initial share of enrolments in VET; it is noted that countries with dual VET systems, and where the youth unemployment has been consistently low, fall into this category. This observation indicates that VET is following different trajectories in the European countries, and that sweeping conclusions based on aggregated enrolment figures or enrolment shares are best avoided. Instead, VET policies would benefit from considering more deeply the factors that have driven enrolment in VET at national level in the past and can be expected to influence it in the future. To illustrate the importance of situating the approach to VET policy in national specificities, the following section examines changes in VET enrolment at programme level in three different national situations.

4.4. Shifts in enrolment at programme level in three countries

This section discusses the nature of the shifts between different types of VET programmes, taking place between 1995 and 2015. It considers three countries chosen to represent different overall trends in enrolment in VET, as well as different types of VET system, geographical variations and country sizes:

- (a) Finland: while the survey did not provide information to construct a time series for the years from 1995 to 2015, the UOE data indicate considerable net growth in the share from 1998 to 2012, and the ISCED mappings indicate a significant increase in enrolment in VET between 2008 and 2015 exceeding that of most other countries;

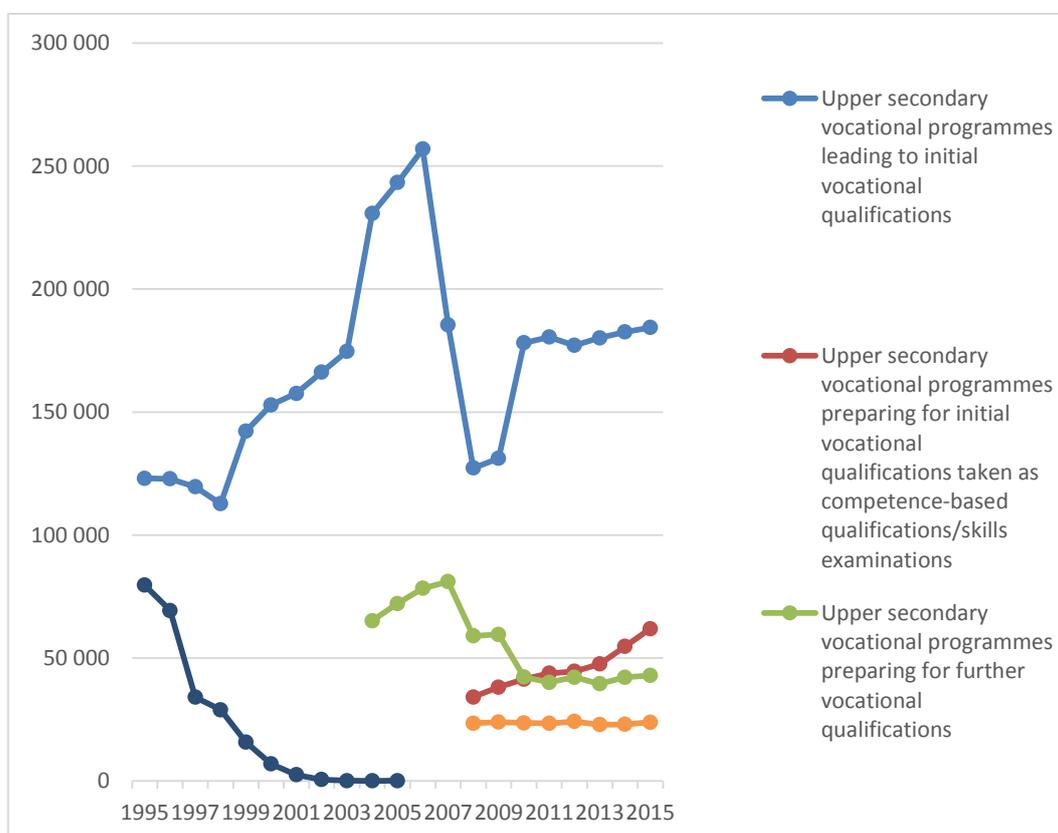
- (b) France: a large country, which has experienced a steady decline in VET's share of enrolments since 2008;
- (c) Cyprus: a small country. In the survey, it came out as the one where the VET share of enrolments in education at levels 3 and 4 was the most stable during the 20 years from 1995 to 2015.

Below, the developments at programme level in the three countries are described and analysed, and common traits and differences are identified.

Finland

Figure 16 shows enrolment figures per VET programme in Finland.

Figure 16. **Finland: enrolment in VET programmes at ISCED 2011 levels 3 and 4, absolute figures**



NB: It has not been possible to obtain time series data for upper secondary general education. Before 2010 data are only available for 'VET (level 3)', there is no distinction between programmes leading to initial, further, or special qualifications.

Source: National statistics reported in survey of national experts.

Enrolment in the main VET programme at ISCED level 3, 'Upper secondary vocational programmes leading to initial vocational qualifications' ⁽²⁵⁾ (blue line) dropped significantly between 2006 and 2008; almost 130 000 fewer students were enrolled in the programme in 2008 than in 2006. Part of this fall, however, is due to recording practices in Finnish education statistics. The programme preparing for further VET qualifications ⁽²⁶⁾ (green line) appears to have been initiated in 2004 but already existed in 1995. Until 2003, however, enrolments in all VET programmes at ISCED levels 3 and 4 were reported together; separating out the figures for the programme preparing for further VET qualifications led to a drop in the figure for the main VET programme. In a similar manner, enrolment in two other programmes (programme for initial vocational qualifications taken as competence-based qualifications/skills examinations ⁽²⁷⁾, and the programme preparing for specialist VET qualifications ⁽²⁸⁾) were included in the figures for the main VET programme until 2008. The enrolment figure for the main programme includes, for the entire period, enrolment in the continuing VET programme for adults at ISCED 2011 level 3 ⁽²⁹⁾. All these programmes existed prior to 1995.

These changing recording practices do not, however, fully explain the sharp drop ⁽³⁰⁾ in enrolment figures between 2006 and 2008. The national expert for Finland assesses that overall, the validity of data from before 2010 can be questioned, so the remaining analysis focuses on developments after this date.

After 2010, total enrolments in VET increased, the main reason being the increasing popularity of the programme allowing students to obtain a VET qualification based on recognition of their existing skills. This type of programme is particularly interesting to adults who want to obtain a qualification without having to sit through a full VET course, since it is based on recognition of existing knowledge and skills. While it is still early to draw firm conclusions on this basis, these developments may indicate a shift in the role of the Finnish VET system: from provision of initial VET qualifications to young people towards provision of qualifications to adults based on recognition of existing skills and prior learning.

⁽²⁵⁾ *Ammatillinen perustutkinto.*

⁽²⁶⁾ *Ammattitutkinto.*

⁽²⁷⁾ *Ammatillinen perustutkinto näyttötutkintona.*

⁽²⁸⁾ *Erikoisammattitutkinto.*

⁽²⁹⁾ *Lukion koko oppimäärän suorittamiseen tähtäävä koulutus aikuisopiskelijoille.*

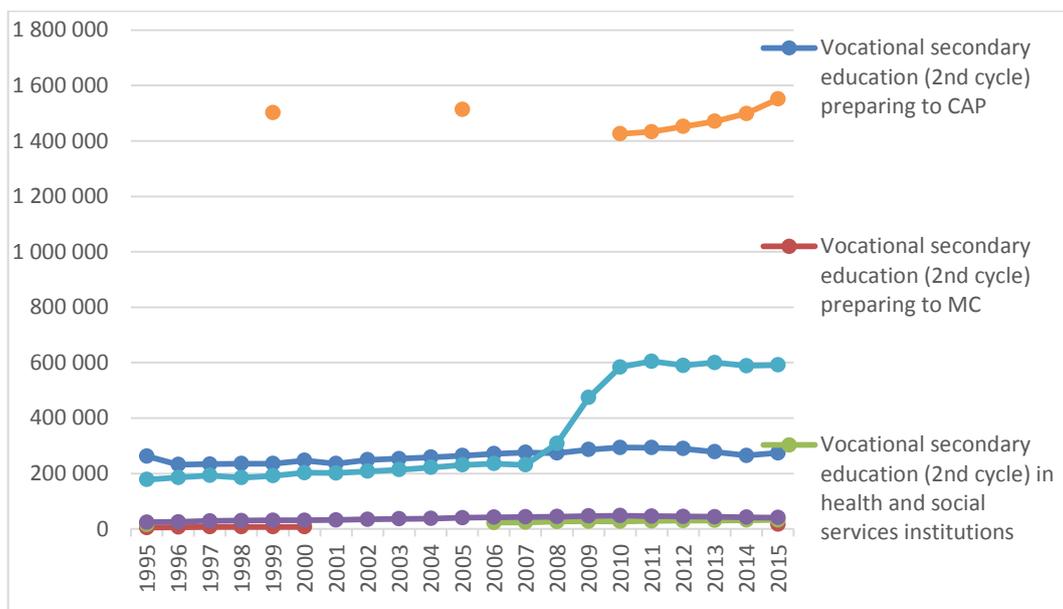
⁽³⁰⁾ In all, enrolments in VET at ISCED levels 3 and 4 in Finland dropped by 90 000 from 2006 to 2008.

France

Figure 17 shows the enrolment figures for education programmes at levels 3 and 4 in France. It illustrates that the fall in the VET share of enrolments after 2010 is due to a considerable increase in enrolment in general secondary education (orange line), since enrolment figures for the various VET programmes have been fairly stable during the same period.

The largest share of the enrolments in VET is found in two programmes at ISCED level 3: vocational secondary education (second cycle) preparing for CAP⁽³¹⁾ (dark blue line), where enrolment has been very stable over the years, and the vocational secondary education preparing for *Bac professionnel* or an equivalent diploma (light blue line). Judging by the figures, enrolment in the latter programme increased dramatically after 2008.

Figure 17. **France: enrolment in education programmes at levels 3 and 4, absolute figures**



Source: National statistics reported in survey of national experts.

The dramatic increase turns out to be the direct result of the programme being shortened from four to three years⁽³²⁾, which has increased the turnover of students. According to the survey, the increase in enrolment in these two

⁽³¹⁾ *Certificat d'aptitude professionnelle*.

⁽³²⁾ Before, two years were spent preparing for BEP (*brevet d'études professionnelles*) and two years preparing for the Bac pro itself. Now, students take the BEP at the end of the second year.

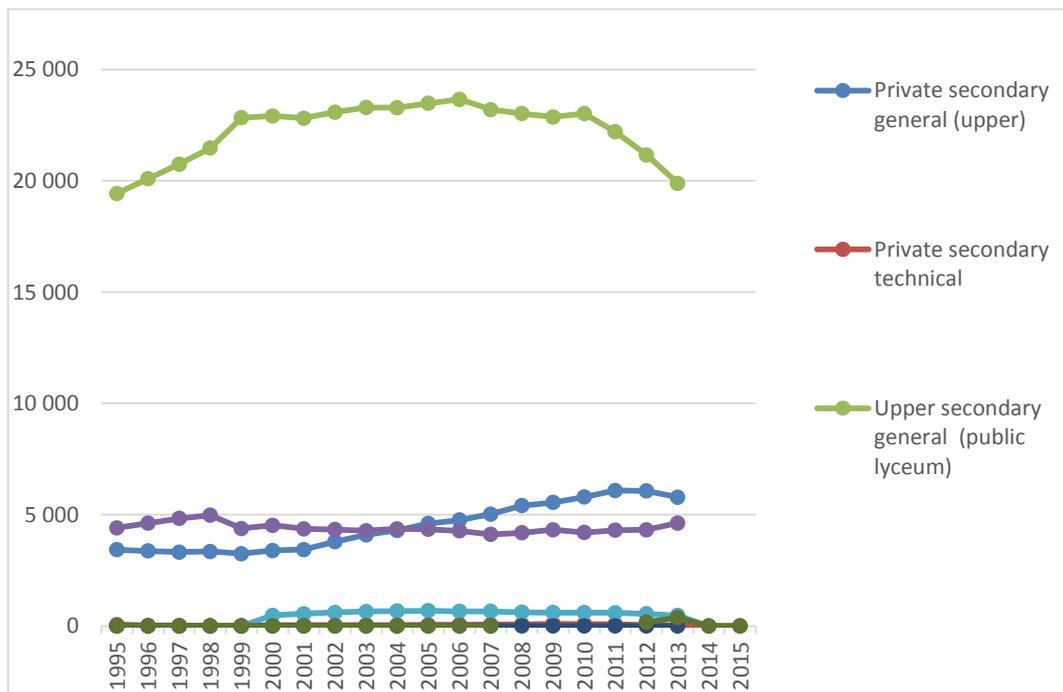
programmes mainly stems from increasing popularity of courses leading to occupations in trade and services.

Cyprus

Figure 18 illustrates the situation in Cyprus, where the VET share of enrolment has remained relatively stable.

Enrolment in VET programmes (upper secondary technical and vocational (public) – purple line and private secondary technical – red line, very low enrolment figures) has been stable, with enrolment in the public programme even increasing by a few thousand between 2000 and 2011. In general education, falling enrolment in public lyceum (green line) has partly been offset by an increase in enrolments in private general upper secondary education (blue line). Overall, the total number of enrolments at general education at levels 3 and 4 has fallen slightly since 2009.

Figure 18. **Cyprus: enrolment in education programmes at ISCED levels 3 and 4, absolute figures**



Source: National statistics reported in survey of national experts.

In all these three, otherwise very different countries, we see that absolute enrolment in VET has either remained stable or increased between 1995 and 2015. However, in France and Cyprus, we see VET's share of enrolments in upper secondary education change in opposite directions; this is not because of

changes in the enrolment figures for VET, but because of changes in the figures for general education.

This last observation leads consideration of changes in the size and education behaviour of the youth population, which are both important factors impacting on enrolment trends.

4.5. Effects of demographic change

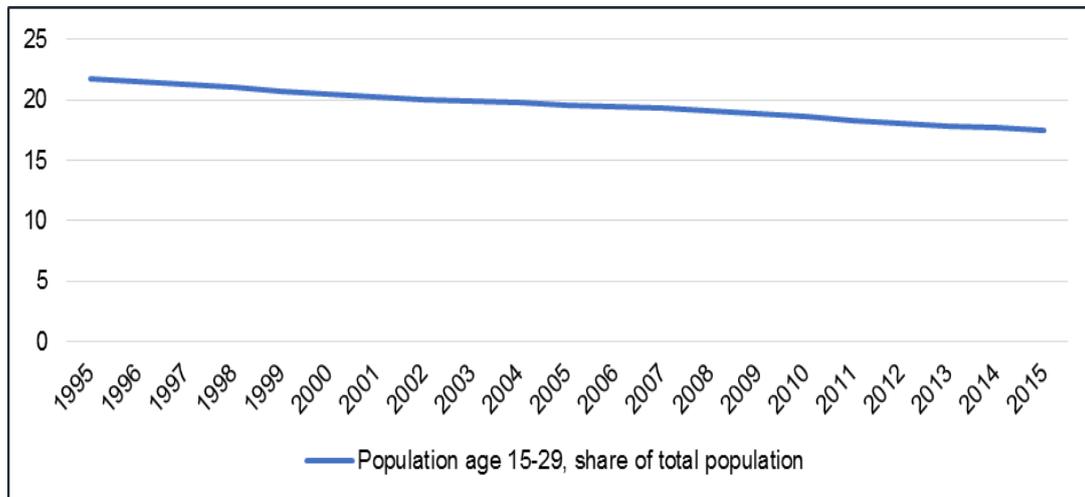
In seven countries – all three Baltic countries, Bulgaria, Greece, Poland and Romania (Table 9) – enrolment in VET as well as general education at levels 3 and 4 is seen to have declined in absolute terms between 1995 and 2015. A decreasing number of young people undertake upper secondary education in these countries. Two factors – on their own or in combination – may be responsible for this decline: Either the enrolment figures reflect demographic trends (declining youth population) or the propensity to enrol in upper secondary education has fallen (i.e. fewer of a youth cohort participate in upper secondary education). The following sections will consider these factors more closely, analysing the relationship between enrolment in VET at ISCED levels 3 and 4 and a theoretical base population of young people aged between 15 and 29 ⁽³³⁾.

In Europe as a whole, the share of young people in the population has fallen steadily, from 22% in 1995 to 18% in 2015 as shown in Figure 19.

The decline in the youth population, however, is not uniform across Europe. To get a better understanding of the relationship between demography and enrolment, changes at national level are considered below, where the development in demography and enrolment in each of the country groups is presented. The demographic trends are presented as index figures using 1995 as base to aid comparison across countries with different population sizes.

⁽³³⁾ The delimitation of the youth population is a matter for discussion. The argument for using the 15 to 29 age group as base population is developed in Section 2.6. Generally in the EU, young people are defined for statistical and research purposes as those aged between 15 and 25. However, if we consider potential IVET students, the survey responses indicate that, in many countries, a considerable share of VET students are older than 25. Therefore, the age class from 15 to and including 29 is selected as basis of the analysis.

Figure 19. **Young people aged 15 to 29, % of total population, EU-27**

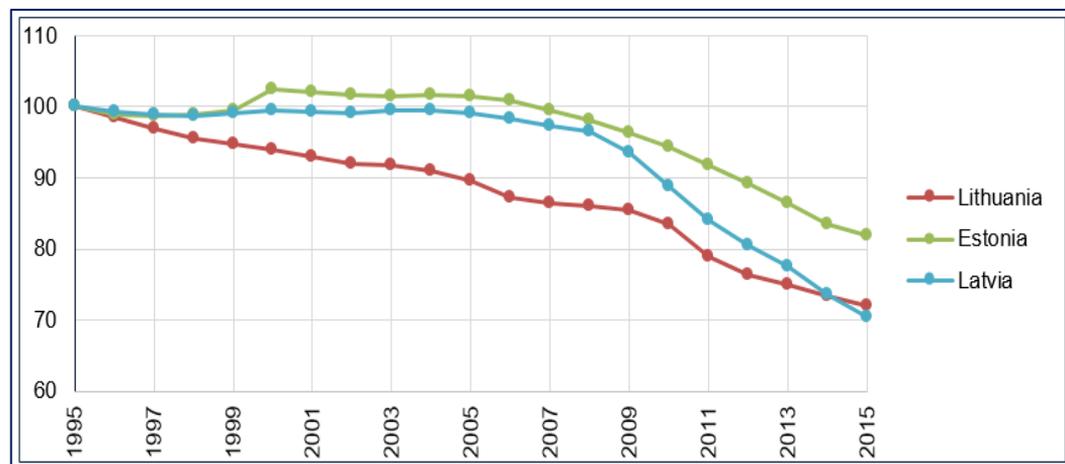


Source: Eurostat [demo_pjangroup].

Baltic countries

The three Baltic countries are small population-wise, all having a population of less than 3 million. Figure 20 shows the development of the youth population 1995-2015.

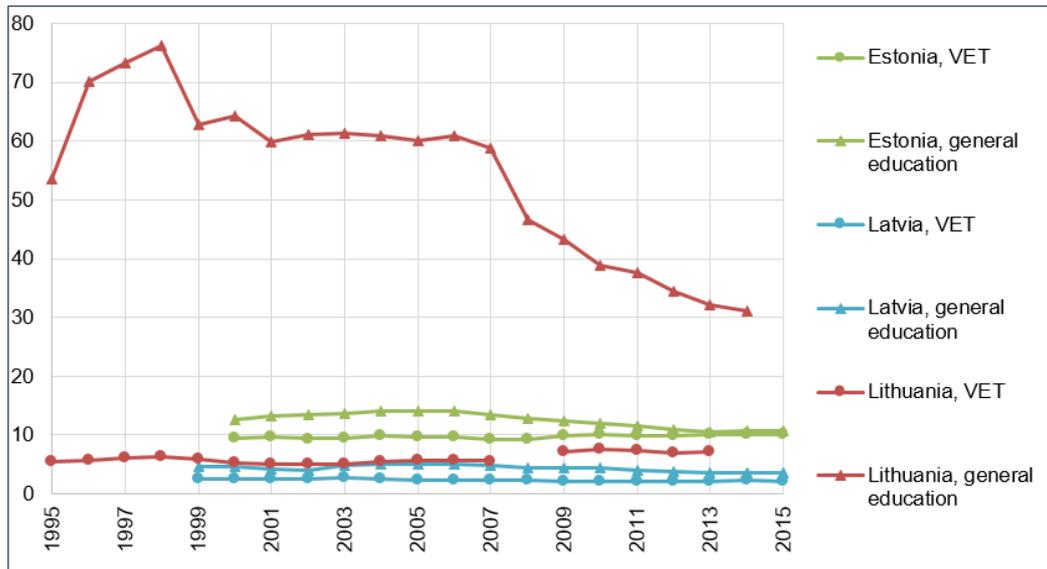
Figure 20. **Baltic countries, population aged 15 to 29, index (1995=100)**



Source: Eurostat [demo_pjangroup], own calculations.

The figures show that the youth population has declined considerably in all three countries. In 2015, Latvia and Lithuania only had 80% of the youth population of 1995, and Estonia had around 80%. Figure 21 shows the relationship between the enrolment figures and the base population.

Figure 21. **Baltic countries, enrolment in education at ISCED levels 3 and 4, % of population aged 15 to 29**



Source: Eurostat [demo_pjangroup] and survey of national experts, own calculations.

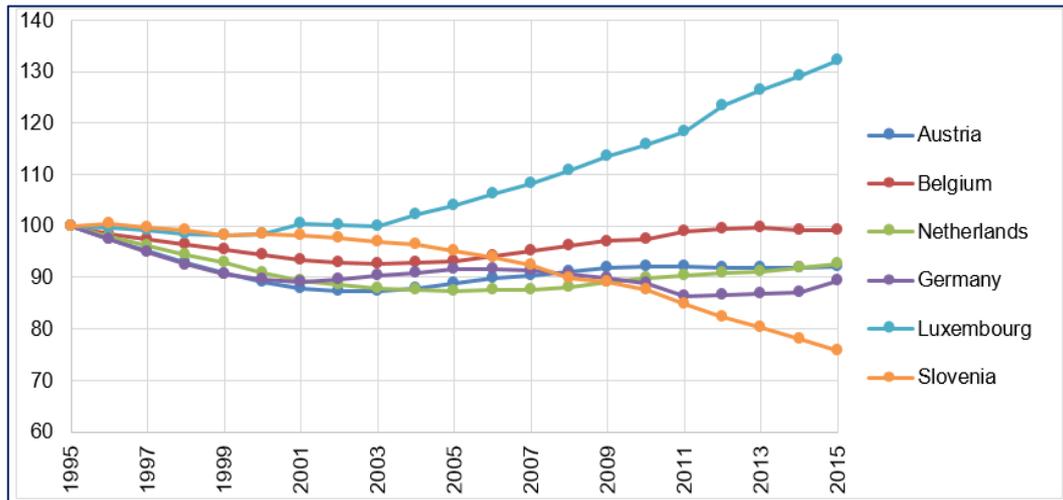
The graphs that in all three countries the share of the youth population enrolled in VET has been fairly stable – has even increased a little – while the share of young people enrolled in general education has declined. In Lithuania, the share enrolled in general education even declined, from over 50% in 1995 to around 30% in 2014. The (small) share of young Lithuanians who choose a vocational pathway has remained reasonably constant, which speaks positively of the attractiveness of VET in Lithuania. However, in a wider social perspective, the rapidly falling share of young people who appear to deselect upper secondary education altogether is cause for concern. Further studies of demographic and labour market data would be needed to ascertain whether the growing share of young people not enrolled in upper secondary education is unemployed, in education at other ISCED levels, or might have migrated.

Central European countries

The central European countries, while geographically close, differ considerably in many other ways, including size: while Luxembourg has a population of around 600 000, Germany has more than 80 million. Figure 22 shows the development of the youth population in the central European countries. Luxembourg, a city state, has experienced a growth in the youth population of more than 30% during the 20 years under review, while in the remaining central European countries, it has stagnated or declined. In Slovenia, the youth population fell by 24% between 1995 and 2015, a trend which resembles that of the Baltic countries; in the

central European countries that are also EU-15 Member States (Belgium, Germany, the Netherlands and Austria), the youth population declined until 2003, when it started growing again, although without recovering to the level of 1995.

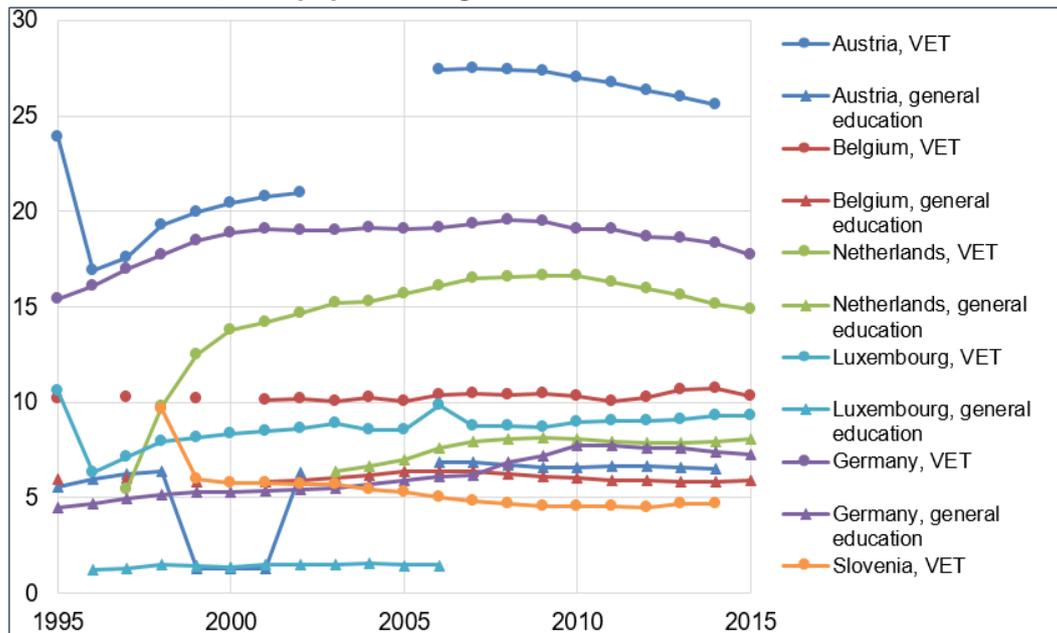
Figure 22. **Central European countries, population aged 15 to 29, index (1995=100)**



Source: Eurostat [demo_pjangroup], own calculations.

Figure 23 shows the relationship between the enrolment figures and the base population.

Figure 23. **Central European countries: enrolment in education at ISCED levels 3 and 4, % of population aged 15 to 29**



NB: Data for general education in Slovenia incomplete. Data for general education in Luxembourg only available up to 2006. Data break in Austria between 2002 and 2006.

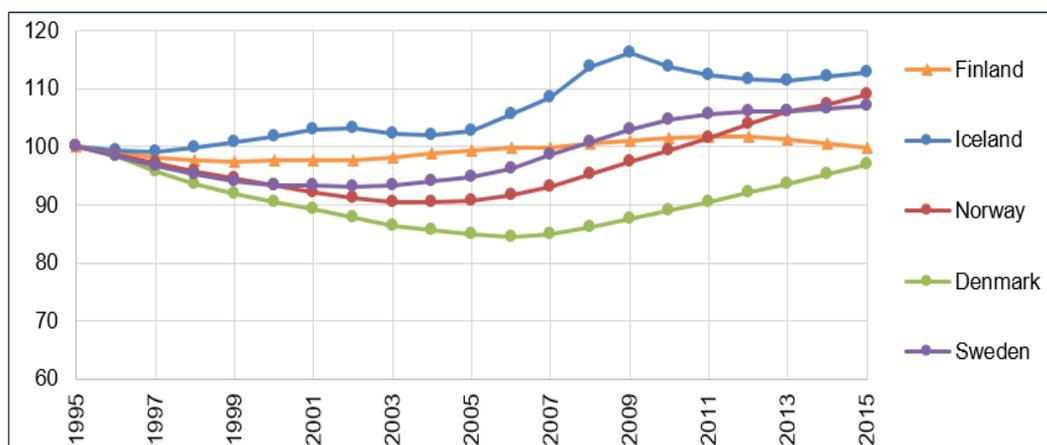
Source: Eurostat [demo_pjangroup] and survey of national experts, own calculations.

In Belgium, Luxembourg and Slovenia, the shares of the youth population enrolled in VET and in general education remained stable throughout the period. In Germany, the Netherlands and Austria, the share enrolled in general education also remained comparatively stable, with small increases in Germany and the Netherlands, while the share of young people enrolled in VET fluctuated considerably in all three countries. All three saw an increasing share enrolled in VET until the mid-2000s, after which there was a pronounced fall, which was not offset by growth in the share enrolled in general education. The share enrolled in VET, however, was larger in 2015 than in 1995 in all three countries. It appears that these countries since the mid-2000s have experienced a declining tendency to enrol in upper secondary education among young people. This may be the result of several interacting factors, and further investigation would be needed to ascertain the relative importance of these factors.

Nordic countries

The Nordic countries share more similarities than the central European countries, both with respect to population size and government. However, their VET systems are quite different. Figure 24 shows the development of the youth population in the five countries.

Figure 24. **Nordic countries, population aged 15 to 29, index (1995=100)**



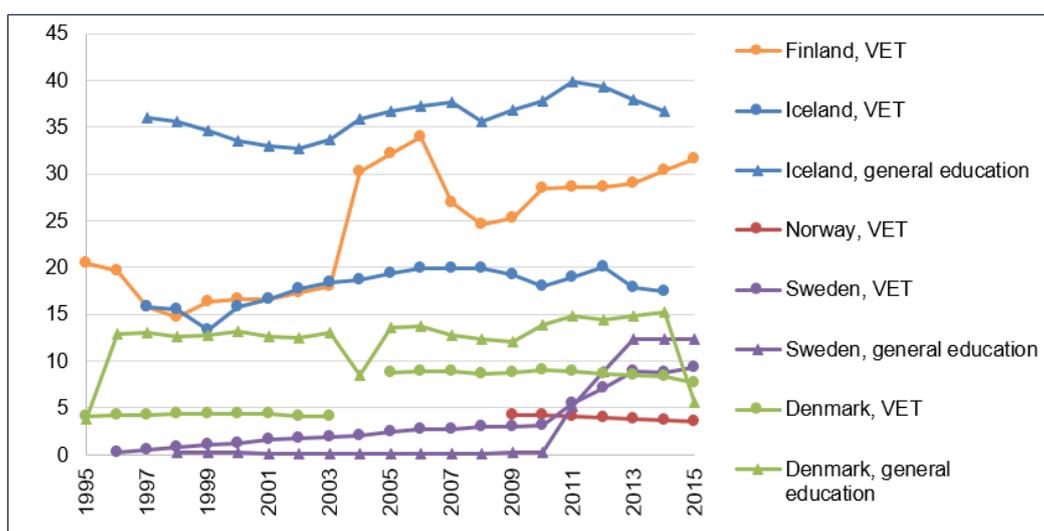
Source: Eurostat [demo_pjangroup], own calculations.

As in Germany, the Netherlands and Austria, the youth populations of the Denmark, Sweden, and Norway declined until approximately 2005, followed by an increase in subsequent years. In Iceland, the youth population grew until 2009, after which it declined, most probably as a reflection of the financial crisis that saw guest workers from other countries returning to their home country.

The share of young people enrolled in VET and general education in the Nordic countries is shown in Figure 25. There are significant fluctuations over time, most prominently in Finland, which saw large ups and downs in VET enrolment, but with an underlying increasing trend. This possibly reflected the changes in the provision of VET and the introduction of competence-based VET qualifications.

The Swedish figures show a significant increase in enrolment in both VET and general education after 2010. Some of the increase, however, is artificial, caused by changes in registration practices.

Figure 25. **Nordic countries: enrolment in VET and general education at ISCED levels 3 and 4, % of population aged 15 to 29**



NB: Data for general education in Finland missing. Sweden: data before 2010 are underestimated due to missing data for some programmes, both VET and general education programmes. Denmark: data break in 2004.

Source: Eurostat [demo_pjangroup] and survey of national experts, own calculations.

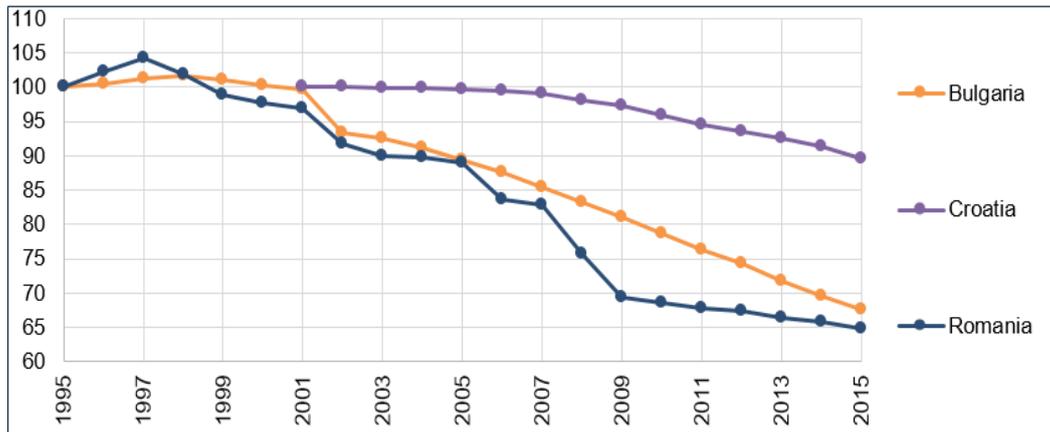
The time series for the Nordic countries are not entirely satisfactory, as explained in the note to the chart. However, with this reservation, the data indicate that both Sweden and Finland have experienced relative growth in the share of young people enrolled in VET. Despite declining enrolment shares in Iceland, Norway and Denmark after 2010, the share enrolled in VET in all three countries was larger in 2015 than in 1995.

South eastern European countries

Like the Baltic countries, the south-east European countries have experienced a decline in the youth population over the years, most pronounced in Romania and

Bulgaria which have both lost more than a third of their youth population between 1995 and 2015 (Figure 26).

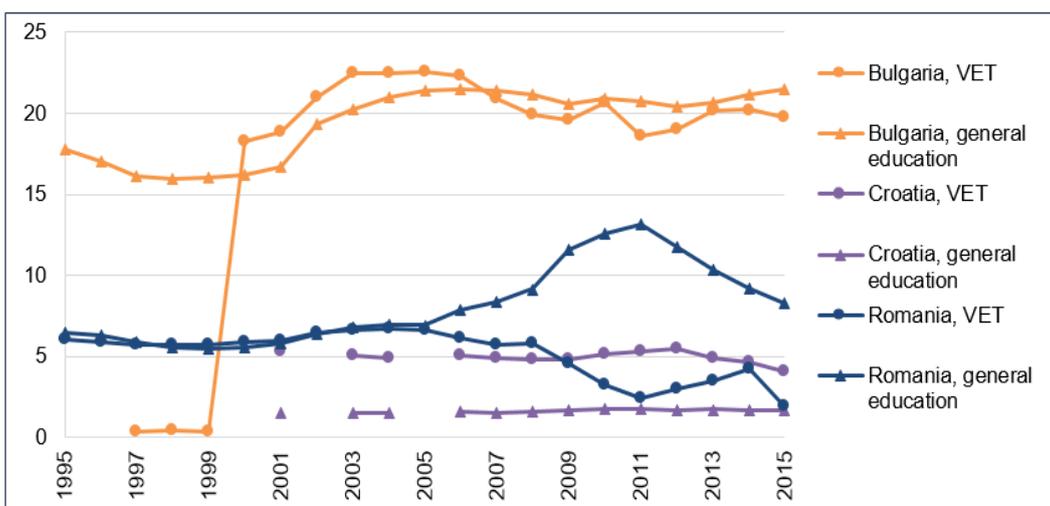
Figure 26. **South-east European countries, population aged 15 to 29, index (1995=100)**



Source: Eurostat [demo_pjangroup]-

Section 4.2 showed that the Bulgarian VET share of enrolment in upper secondary education has been stable since 2000. However, comparing the figures to the base population (Figure 27) more fluctuations become visible. The share of young people enrolled in both VET and general education grew until around 2005, followed by a slow decline until around 2010, when figures started growing again. The net result is slightly positive.

Figure 27. **South-east European countries: enrolment in VET and general education at ISCED levels 3 and 4, % of population aged 15 to 29**



NB: Bulgaria: data break 1999.

Source: National statistics reported in survey of national experts. Demographic data from Eurostat [demo_pjangroup]), own calculations.

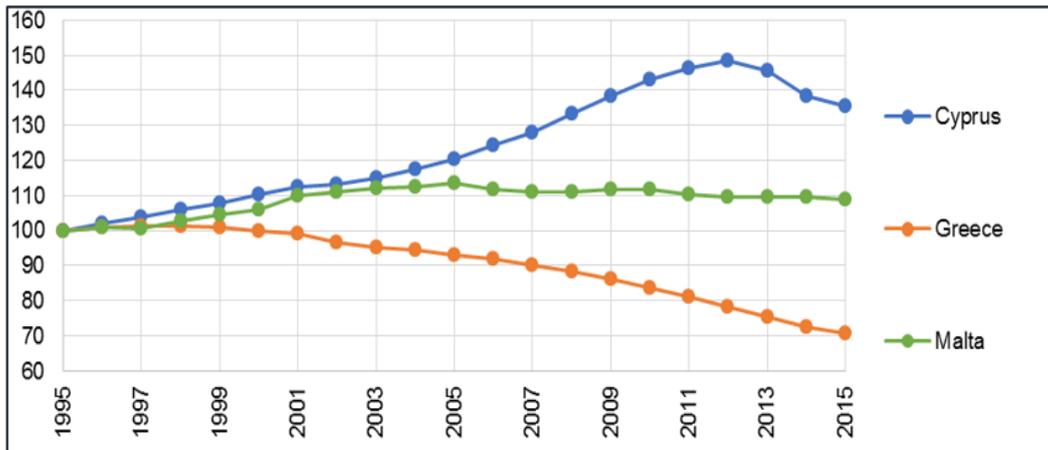
In Croatia, a small decline in the shares of the youth population enrolled in VET is not offset by growth in those enrolled in general education, signalling that increasing parts of this segment of the population are either unemployed, in employment or pursuing education at another level.

Changes have been more dramatic in Romania, reflecting major changes in the structure of provision. In 2003, vocational/apprenticeship schools were discontinued and replaced by a new vocationally oriented pathway within general education called the 'progressive high-school route', which explains the move away from VET and into general education. The intention was to support access to higher education for students enrolled in vocational education. As country level evidence shows, the progressive route was not a success: only a minority entered the labour market, and the academic performance of the students, witnessed by their graduation results, was poor. In 2009, a new change in the vocational education programme was initiated, making the first two years of high-school compulsory. Graduates of the two first years of high-school could now either continue to the last two years of high-school or enrol in a six-month vocational course delivered as work-based learning. In practice, this meant the termination of the vocational education programme, since almost all the students continued in high school; the enrolment shares for VET in 2009, 2010 and 2011 declined steadily, as there were no new enrolments during these years. In the 2012/13 school year, the vocational education programme was relaunched with entry points after the ninth grade as well as after the gymnasium. This move has led to increasing enrolment in VET every year since its initiation.

South Mediterranean countries

The south Mediterranean countries, which differ considerably in population size, have experienced divergent development of the youth population. In Cyprus, the number of young people increased by almost 40% during the period. In contrast, the Greek youth population declined by about a third, from almost 2.5 million in 1997 to 1.7 million in 2015, most probably as a combined result of falling birth rates and migration. Since 2010, the net migration rate in Greece has been negative and increasing every year, from -0.1 in 2010 to -4.1 in 2017.

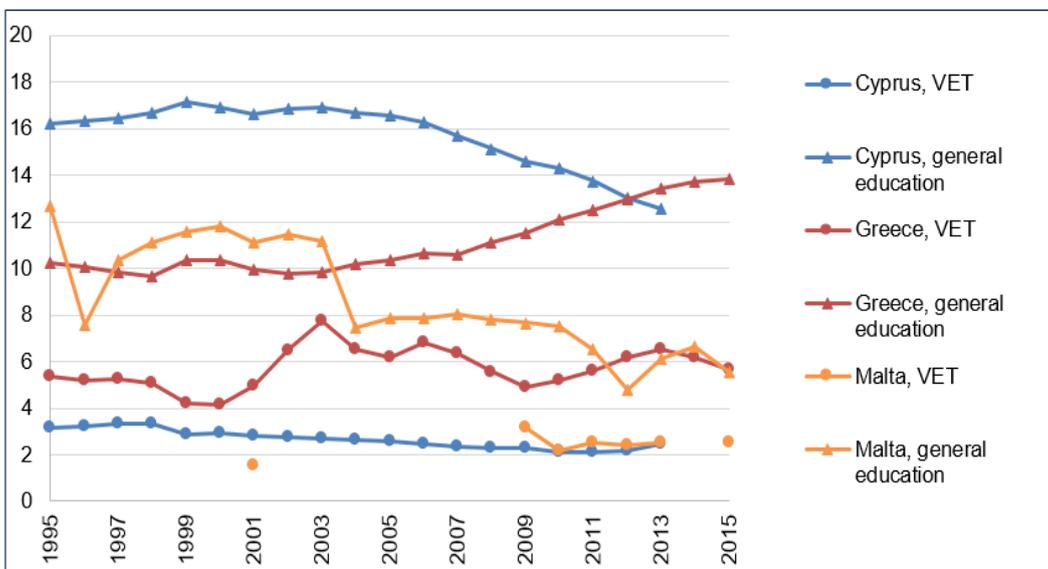
Figure 28. **South Mediterranean countries, population aged 15 to 29, index (1995=100)**



Source: Eurostat [demo_pjangroup], own calculations.

However, as Figure 29 suggests, the young people who did not leave Greece, have apparently opted for education instead. The share enrolled in general education increased significantly, as did the share enrolled in VET after 2010.

Figure 29. **South Mediterranean European countries: enrolment in IVET and general education at ISCED levels 3 and 4, % of population aged 15 to 29**



NB: Malta: data for VET incomplete.

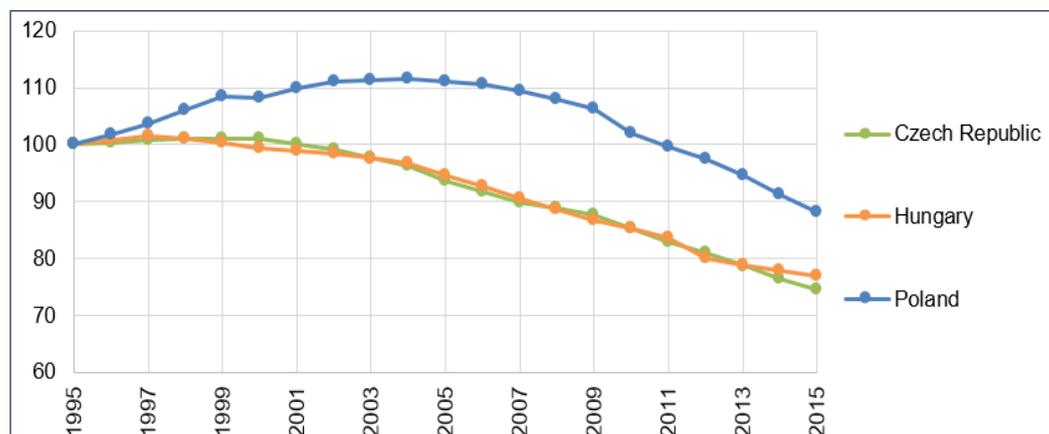
Source: Eurostat [demo_pjangroup], survey data, own calculations.

In contrast, young people now enrol in upper secondary less often than previously in Cyprus and Malta. In Cyprus, the share of the youth population enrolled in general education at levels 3 and 4 fell at a much higher rate than the share enrolled in VET. According to the survey, there was a strong public perception after the financial crisis that the employment prospects for VET graduates was much better than for tertiary education graduates, even though no tracer study data were available to substantiate this perception. Moreover, investment in the VET sector exceeded that in upper secondary general education. In Malta, enrolment in general education has declined, and it is difficult to draw firm conclusions about enrolment in VET due to missing data for most years.

Visegrád countries

The youth population has also been declining in the Visegrád countries, most pronounced in Poland where the youth population dropped by 21% from 2004 to 2015 after an initial period of increase. During this period, there was significant labour mobility to the western parts of Europe, and this is probably partly responsible for the significant decrease in the youth population.

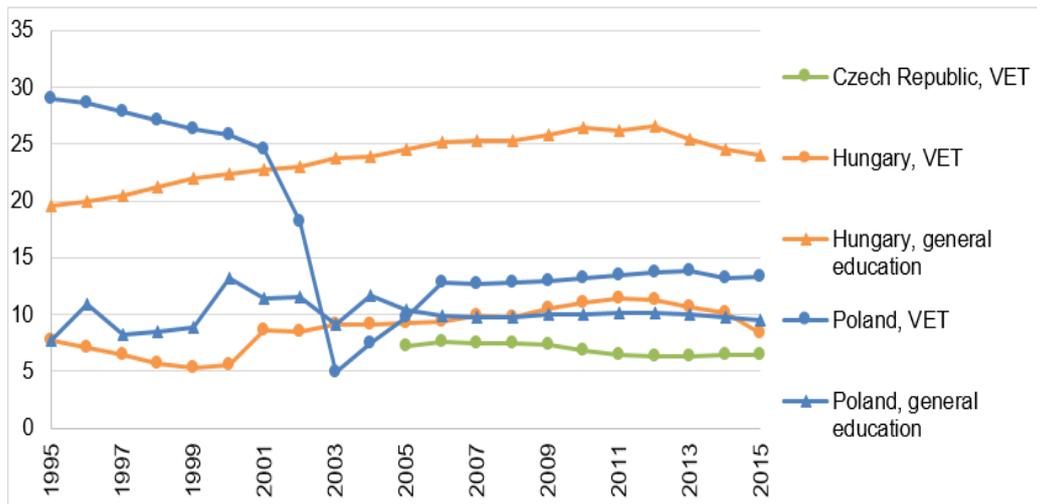
Figure 30. Visegrád countries, population aged 15 to 29, index (1995=100)



Source: Eurostat [demo_pjangroup], own calculations.

Hungary and Poland have followed almost identical trajectories in this respect. A steady decline in the youth population in both countries has resulted in a net loss of more than 20% in 2015 compared to 1995.

Figure 31. **Visegrád countries: enrolment in IVET and general education at ISCED levels 3 and 4, % of population aged 15 to 29**



Source: Eurostat [demo_pjangroup], survey data, own calculations.

The share of enrolments in VET in the Czech Republic has fallen but, due to missing data for general education, it cannot be ascertained whether this reflects a lower propensity to engage in education or a move towards general education⁽³⁴⁾. The situation in Poland before 2003 is difficult to assess, as VET programmes and general education programmes have been reported together for some years but, after 2003, the share of young people enrolling in both VET and general education has been quite stable.

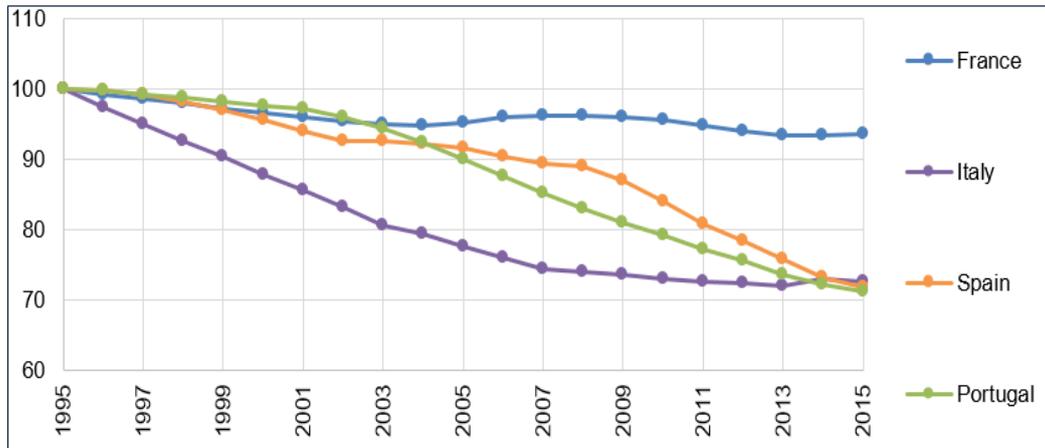
In Hungary, the shares of young people enrolled in education at ISCED levels 3 and 4 increased until 2012, followed by a decline, resulting in a slight growth in enrolment in general education and no net change in the enrolment share in VET between 1995 and 2015.

West Mediterranean countries

In the west Mediterranean countries, the youth population in France has declined slowly. In Italy, Spain and Portugal it was much steeper, particularly in Spain, where the reduction accelerated following the financial crisis in 2008, possibly because of emigration to other EU countries. The decline had started earlier in Portugal and Italy, and the net result in all three countries is almost identical: they lost almost a third of the population aged 15 to 29 (Figure 32).

⁽³⁴⁾ Data from the Czech Ministry of Education indicate that between 2003 and 2013, there was a slight move away from VET towards general education, with VET's share of enrolments dropping from 67.6%.

Figure 32. **West Mediterranean countries, population aged 15 to 29, index (1995=100)**

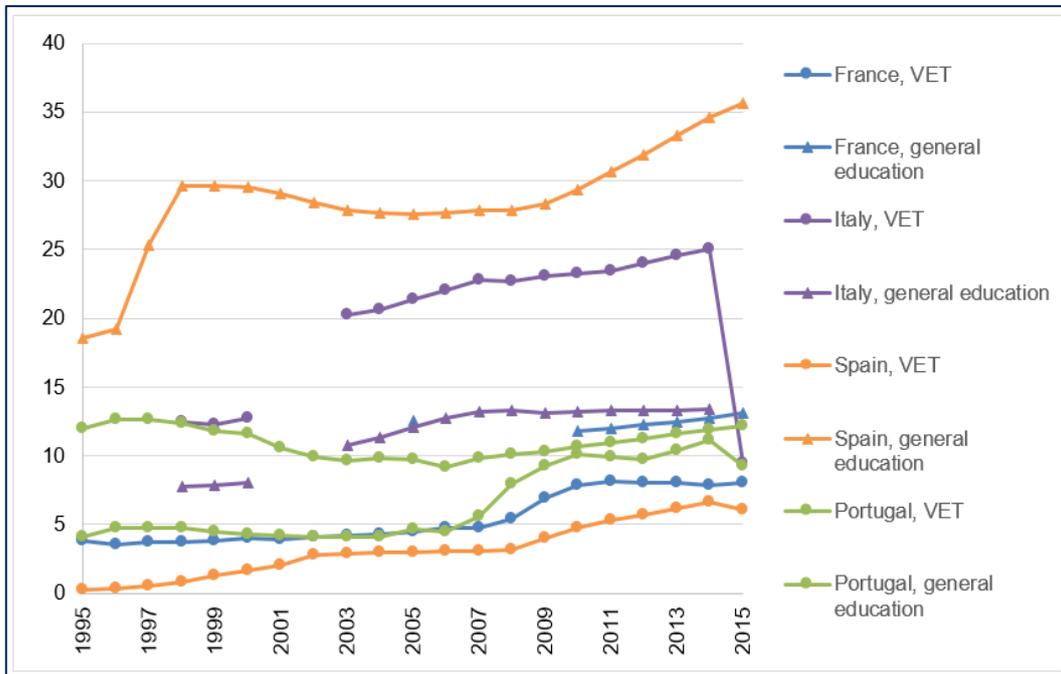


Source: Eurostat [demo_pjangroup], own calculations.

As in Greece, in the west Mediterranean countries there has been an increasing tendency among the youth population to enrol in education at levels 3 and 4, including in VET (Figure 33). Particularly in Spain, but also in France and Portugal, the share of enrolments in VET and in general education increased greatly after 2008. A possible explanation for the steep increase in the share of young people in Spain enrolled in education could be that those who left Spain following the financial crisis would not have enrolled in education, had they stayed. Those who chose to stay had a higher propensity to participate in education, thus raising the share of the remaining youth population enrolled in VET as well as general education.

In France and Portugal, where the youth population did not decline as much as in Spain, the increasing share of young people enrolling in education suggests that some young people who would previously have taken their chance in the labour market have chosen to enter or remain in education instead, in response to rising youth unemployment rates.

Figure 33. **West Mediterranean countries: enrolment in IVET and general education at ISCED levels 3 and 4, % of population aged 15 to 29**

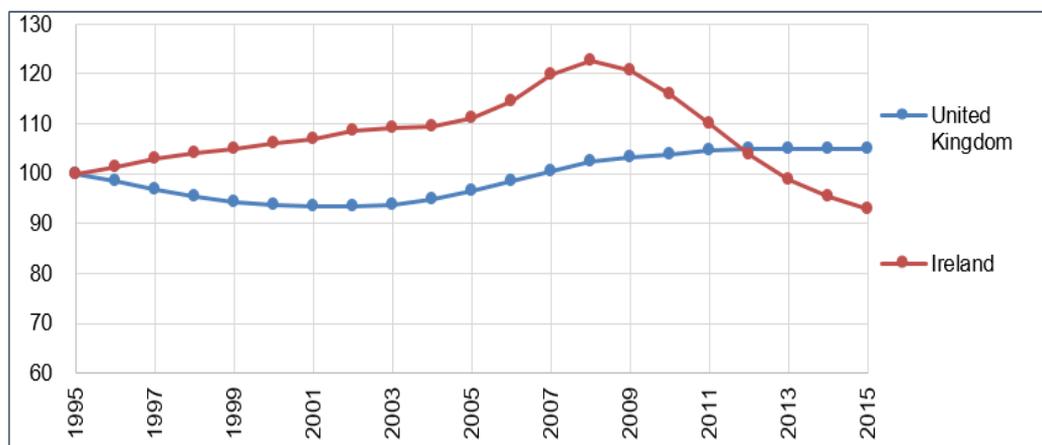


Source: Eurostat [demo_pjangroup], survey data, own calculations.

Western countries

In the UK, unlike most other countries, the youth population increased between 1995 and 2015; it remained quite stable in Ireland.

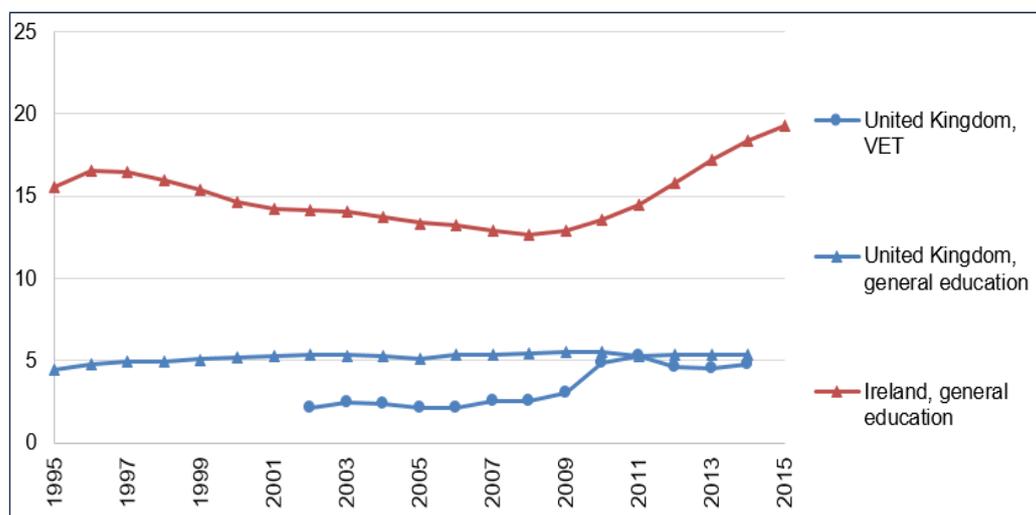
Figure 34. **Western countries, population aged 15 to 29, index (1995=100)**



Source: Eurostat [demo_pjangroup], own calculations.

In the UK, the share of young people enrolled in VET has increased, while enrolment in general education has been stable over the years (Figure 35).

Figure 35. **Western countries: enrolment in IVET and general education at ISCED levels 3 and 4, % of population aged 15 to 29**



NB: Ireland: data on enrolment in VET have not been available.

Source: Eurostat [demo_pjangroup], survey data, own calculations.

The increase in enrolment in VET follows the financial crisis and the introduction of a comprehensive range of apprenticeship programmes of different duration. Which of these factors has played the most important role cannot be determined based on the available information. For Ireland, only data on general education are available. These data indicate a slow reduction in the share of young people enrolled in general education at ISCED levels 3 and 4 up to the financial crisis, followed by strong growth in the years after.

Demographic changes and enrolment in education: summary

The previous sections have demonstrated that demographic changes need to be considered when assessing changes in enrolment in education. In most of Europe, falling enrolment figures (absolute) can be explained by a shrinking youth population. However, there is considerable variation in the proportion of enrolment to the base population, and how this has changed between 1995 and 2015.

In a few mainly smaller countries like Estonia, Latvia and Luxembourg – but also in Poland – absolute enrolment numbers have declined due to a declining youth population, but the ratio between enrolment and the base population has remained reasonably stable, and the relative shares of VET and general education have also not changed much.

In other countries with a falling youth population (Croatia, Cyprus, Lithuania, Malta and Romania), figures indicate a decreasing propensity among young people to enrol in education, either VET or general. In Lithuania, Malta and Romania, general education appears to have borne the brunt of the population

decline, while the share of young people enrolled in VET has been stable or slightly increasing. The link between this type of development and migration flows would deserve more in-depth study.

The opposite pattern is found in many of the large countries to the east and west of the Mediterranean Sea, as well as the UK. These countries have all experienced declining youth populations, but the proportion of enrolments in education to the youth population in these countries has grown, in particular following the financial crisis of 2008. In Greece, Spain, and France, the growth in the propensity to enrol in general education has exceeded the growth in the propensity to enrol in VET, while in Italy and the UK, the reverse was the case.

In the Nordic countries, where the youth populations have increased (except in Denmark, where there was a net fall of 4% despite a growing youth population after 2007), the picture is mixed. In net terms, all countries experienced a growing propensity of young people to enrol in education at ISCED levels 3 and 4, with the share enrolled in general education growing faster than that of VET.

When the absolute enrolment figures are related to a base population, a different general picture emerges. Variations in patterns can be linked to changing economic conditions, starting with the financial crisis in 2008 and its aftermath. The direction of the response to the financial crisis has been different in different countries, probably due to differences in the opportunities for young people to participate in employment and education in the years leading up to it. Linked to this, migration patterns appear to be instrumental in shaping enrolment trends at country level, depending on the direction and nature of the migration. In a few countries, enrolment trends directly reflect major reforms but the general economic conditions are the most important contributing factors in shaping the enrolment patterns.

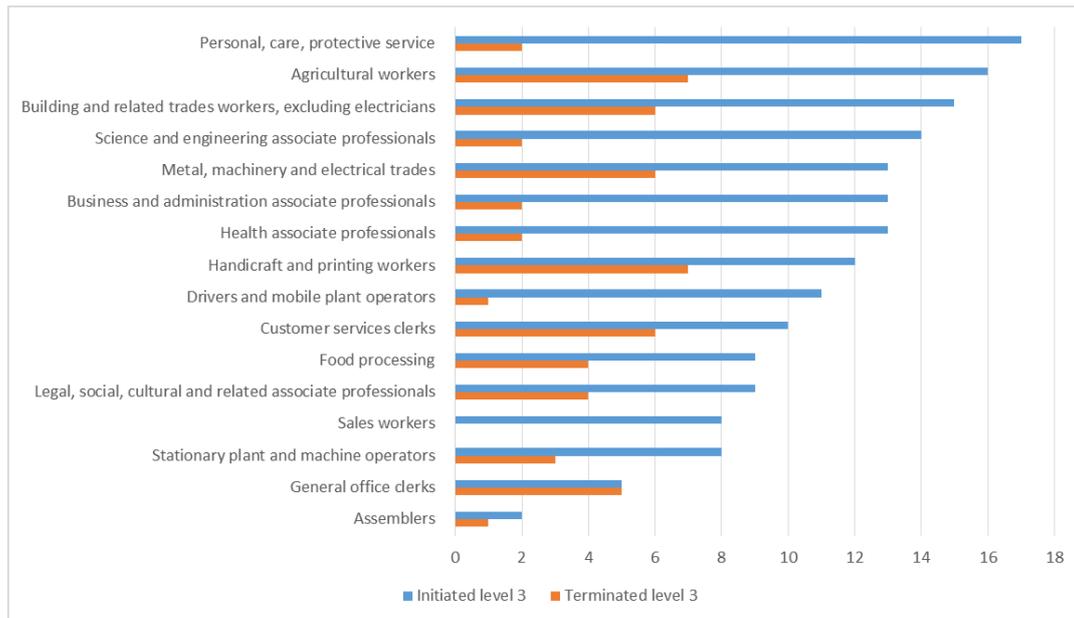
The analysis has not found a general tendency for the propensity of young people to enrol in VET at ISCED levels 3 or 4 to decline. Rather, in most countries, the proportion of enrolments in VET to the base population has been more stable than that of general education.

4.6. Changes in VET programme portfolios

The research set out to investigate (research question 4), 'Which qualifications are delivered, which occupational areas are covered by VET and how has this changed in the past two decades?'

While the data delivered by the survey cannot be considered to be of a quality that justifies firm conclusions (as discussed), analysis of the information about numbers of specific programmes initiated or terminated has been carried out (Figure 36).

Figure 36. **Number of countries where specific programmes were initiated or terminated by occupational group, VET at ISCED level 3**



Source: Survey of national experts.

A few tentative observations can be made.

First, the overall number of specific programmes appears to have increased over the 20-year period, since more countries have initiated than have terminated specific programmes, regardless of occupational field. This coincided with increasing occupational specialisation in most sectors, and so is not surprising.

Second, the occupational groups where most countries have initiated specific programmes include personal care and protective services, agricultural workers, building and related trades, and science and engineering. For the first two occupational groups, a possible hypothesis for the tendency to establish specific VET programmes could be increased demand for employees with qualifications in these fields. An alternative hypothesis (which appears intuitively more reasonable) would be that the specific programmes have replaced non-formal learning arrangements, though it appears more plausible that the increasing tendency to establish programmes in building and construction and in science and engineering is a direct result of increasing demand and specialisation.

To the bottom of the diagram, fewer countries have established or terminated specific programmes. The occupations where the least countries have changed their provision are general office clerks and assemblers, indicating more stable demand within these groups.

CHAPTER 5.

Conclusions

This study set out to document and analyse enrolment patterns in VET across Europe. In addition to findings that respond to the research questions, the research has yielded observations with direct relevance for the use of international education statistics. Accordingly, this chapter is divided into two sections, where the first considers consequences of the research findings for the use and interpretation of international education statistics and the second addresses the research questions.

5.1. Conclusions on international education statistics

Using the ISCED classification and UOE data as the basis for the survey has confirmed well-known challenges regarding the validity and comparability of international statistical data. The results also suggest that the scope of some of these challenges may be larger than has previously been acknowledged; this suggests flagging some of these issues with a view to future research into VET, specifically with comparative studies building on UOE data as the main source. Three points merit particular attention when analysing UOE data on VET.

5.1.1. Variations in reporting practice and potential data comparability

The analysis has identified considerable variations in national practices when reporting to the ISCED mappings. All international statistical data collection is methodologically challenged to achieve methodological consistency and comparability. The main tool in this respect is clear, unambiguous classification accompanied by easily understandable guidelines that enable the national statistical office to undertake the collection and recording of data at country level without having excessive assumptions and interpretations. Despite the availability of such tools for the UOE data collection, the study found that main concepts, such as 'an education programme', were interpreted differently in the countries to the detriment of comparability of data.

5.1.2. Enrolment figures respond to technical and administrative changes

The methods for classifying and recording data about education programmes have built-in risks of misrepresenting reality. Seemingly dramatic changes in enrolment figures can be explained as the result of reclassification of

programmes, as in moving programmes to another ISCED level, or changing orientation.

5.1.3. ISCED levels and upper secondary IVET

Variables defining an ISCED level of a programme are its duration (the duration of programme and cumulative duration of education since entering the education system), its completion (full or partial) and access to the next ISCED level.

However, in practice, there is variation in the way that countries apply (or do not apply) the code for completion to their programmes to the extent that some countries report programmes with partial completion as 'out of scope of UOE'. The study has found that national practices with respect to classification of CVET programmes at upper secondary level vary considerably. For future research aiming to establish the supply of labour market skills, the study indicates that UOE data for enrolment in VET at levels 3 and 4 are not a good basis for such assessment, since the figures in some countries include adults participating in continuing training.

5.1.4. ISCED orientation and hybridisation in upper secondary education

The research indicates that the 'orientation' dimension of ISCED is increasingly insufficient to capture the rich picture of upper secondary education and training. In most countries, the study has found programmes that may be termed 'core VET' or 'core general education'. The destination of such programmes is well-defined: the labour market in the case of 'core upper secondary IVET' and higher education in the case of 'core general upper secondary education'. But the study also finds several examples of programmes, where the content appears to contain both general and vocational elements, and where the destination is less clear-cut. This indicates that different forms of hybridisation are on the increase. Modularisation, bridging programmes, dual qualifications, and flexible pathways all make it more difficult to ascertain whether a programme should be assigned a G for general or a V for vocational. This research has revealed variable practices in this respect.

Consequently, caution should be exercised when using the UOE enrolment data for comparative research, since the comparability of the data can be questioned. Where comparable data are needed for research or policy, supplementing the UOE data with a review of the programme descriptions can be recommended, particularly the notes accompanying each programme description in the 2011 ISCED mappings. Such a review can aid assessment of whether enrolment figures for upper secondary VET in a specific country includes CVET programmes, and the extent to which there are mixed pathways or dual programmes confounding the picture.

For further revisions to ISCED classifications, it could be relevant to consider in more depth the significance of some of the issues raised in this paper. The distinction between VET and general education appears to be increasingly inadequate to capture the rich variety of types of upper secondary education programme.

5.2. Conclusions on VET enrolment changes in Europe

5.2.1. Stating that upper secondary IVET is declining is a simplification

The research has considered international and national data sources to analyse enrolment patterns across Europe. Aggregated to the European level, enrolment in VET in absolute terms has declined between 1995 and 2015, as has the VET share of enrolments in upper secondary education. These general conclusions, however, are only true at the aggregated level, and only when upper secondary education is viewed in isolation. Analysis of national figures has revealed a much more varied picture, with enrolment in VET increasing in some countries and decreasing in others, in absolute and relative terms. The overall decline is largely a result of declining enrolment in upper secondary IVET in large countries with a long tradition of providing VET through apprenticeship. Following the financial crisis, employer provision of apprenticeship places has decreased in some of these countries, leading young people to opt for general education. In most other countries, enrolment in VET, as well as VET's share in enrolment in upper secondary education, has been stable, at least when corrected for a declining youth population.

5.2.2. Declining enrolment figures reflect declining youth population

In most European countries, the youth population has shrunk between 1995 and 2015. The analysis has confirmed that, when corrected for the development in the size of the youth population in each country, enrolment in VET at ISCED levels 3 and 4 has generally been quite stable; in many countries it has been more stable than enrolment in general education at these levels. However, not all the decline in the enrolment in VET can be explained by a declining target population.

5.2.3. Some national falls in young people in upper secondary education

If enrolment in VET is declining, it might be expected that enrolment in general education would rise as a result. The analysis indicates that, in some countries

(including most that joined the EU in 2004) enrolment in VET as well as general education at ISCED levels 3 and 4 has apparently decreased, even when corrected for the underlying demography. This indicates that a still smaller share of young people is enrolled in education at these levels and appears to call for closer scrutiny, as it runs counter to the general observation that the educational attainment of European populations is increasing.

5.2.4. VET reforms may not always be reflected in increased enrolment

Only in a few cases has it been possible to link fluctuations in enrolment figures directly to VET reforms. Cases where significant changes in enrolment figures have been found to follow shortly after reform belong to one of the following types: those leading to non-formal programmes being included in the formal education system, resulting in increasing enrolment figures; and large-scale introduction of shorter or modular programmes, leading to increased enrolment figures. It has not been possible to establish a relationship between initiatives to raise the attractiveness of VET and enrolment figures, one reason being that few countries follow up such initiatives with impact studies or other types of evaluation.

5.2.5. Less clear-cut distinction between VET and general education

The review of the programme portfolios of European countries indicates that the borderline between VET and general education is becoming blurred, with increasing numbers of mixed pathways and introduction of more programmes delivering dual qualifications. These initiatives are not directly visible in enrolment figures, partly due to variations in national classification practices: in some countries, programmes with flexible pathways or leading to dual qualifications are classified as VET, in others as general education. This development can be interpreted as evidence of education systems responding to demands from labour markets and from society for broader competences and for more flexible way of combining knowledge and skills across previously separate domains, creating new skills profiles.

5.2.6. Less clear-cut distinction between IVET and CVET

Examination of national programme portfolios has shown that a non-trivial share of VET programmes at ISCED level 3 target adults: either offering full IVET qualifications to adults or courses of shorter duration. A few of these programmes are also mixed, offering courses in both vocational and general subjects. It might be expected for this blurring to continue, as more countries open IVET programmes to adults and/or include IVET in the provision of continuing training. Further, greater use of competence-based qualifications, utilising validation and

recognition of prior learning, will increasingly enable adults to obtain an IVET qualification.

5.3. Overall conclusion

By looking backwards, this study has provided insights into the mechanisms that have been at play in shaping enrolment in VET in the past. Judging by changes in enrolment and completion figures when corrected for demographic changes, and considering national variations in reporting practices and political/administrative changes, concerns about the fitness of VET for the future would seem unfounded. The study has found that, in many cases of declining enrolment, demographic changes explain most of the decline. The remaining fluctuations in enrolment in upper secondary IVET often reflect increased flexibility in national education systems, witnessed by the blurring borders between education sectors.

It is an open question, however, whether existing European VET systems will continue to be able to respond to emerging skill needs at a pace that matches the current changes in Europe's labour markets. To do so they will be required to deliver programmes or pathways that are sufficiently specialised to match demand, and yet strike a balance between specialised skills required in the labour market and key competences needed in ever more globalised and complex European societies.

List of abbreviations

CVET	continuing vocational education and training
ETF	European Training Foundation
EUROSTAT	the statistical office of the European Union
ISCO	international standard classification of occupations
ISCED	international standard classification of education
IVET	initial vocational education and training
OECD	Organisation for Economic Cooperation and Development
TVET	technical vocational education and training
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNESCO-UIS	UNESCO institute of statistics
UOE data	UNESCO-OECD-Eurostat joint data collection
VET	vocational education and training
WBL	work-based learning

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Annex

Survey design and methodology

The survey design was developed with a view to ensuring reliability, validity, and comparability of national data sets. The approach to ensuring this was to base the survey on an internationally standardised statistical classification (ISCED) and data collected in the UNESCO-UIS/OECD/Eurostat data collection (the UOE data collection) (UNESCO-UIS et al., 2015; Eurostat, 2016b), which was initiated in 1999.

By asking the national experts to report in accordance with the classifications used for the international data collection, we aimed to ensure a level of comparability between the national data. Also, we could avoid experts having to interpret concepts in the survey. Our expectation was that the more detailed data gathered and stored in national databases would conform with these standards and classifications.

On the other hand, we also expected that there would be, to various degrees, issues concerning data availability at national level due to the extensive length of the period under study. This also turned out to be the case, particularly with respect to data for completion. However, for most countries, it was possible to obtain data series sufficiently complete to discuss the trends in enrolment in VET.

Nevertheless, the responses from the national experts and their requests for clarification, as well as the subsequent data analysis, showed that questions can be raised on the relevance of the UOE data as a tool to assess the state of play of VET in a specific country or compare trends between countries despite seemingly unambiguous statistical definitions.

In the ISCED classification, upper secondary education is defined as education at ISCED level 3. Based on previous experience ⁽³⁵⁾, a tentative hypothesis was formulated to the effect that in a substantial share of European countries, VET programmes would be found spanning levels 3 and 4 still being considered 'upper secondary education' in the national context. Therefore, it was decided to include VET programmes at level 4 in the analysis.

⁽³⁵⁾ Work carried out in connection with analyses of learning outcomes in VET programmes and discussions with VET stakeholders and ministries in various forums.

The conceptual basis of the survey methodology

A unique Excel-based survey tool was developed for each country using the ISCED mapping for that country as a basis. All programmes below level 3 and above level 4 were removed from the spreadsheet. Columns for each year between 1995 and 2015 were added for the country experts to record enrolment and completion data for each of these years for each education programme at levels 3 and 4.

In addition to providing significant new knowledge about changes at programme level, the data collection and ensuing analysis raised questions concerning the suitability of these data for policy.

A unique Excel workbook was prepared for each country. The research team populated a worksheet in each country workbook with the data from the ISCED mapping related to IVET and general education programmes at ISCED levels 3 and 4. We added columns for each of the years 1995-2015 for enrolment figures and similar for completion figures. This allowed the country experts to enter all available national enrolment and completion figures at programme level. The following sheets were also added to the workbook:

- (a) a sheet inviting the expert to give summary information about changes in VET with respect to the following topics: governance; public esteem; access to higher education and/or to the labour market; modularisation; changes at lower levels of education influencing VET enrolment; balance between school-based and work-based learning; provision of apprenticeships.
- (b) one sheet for each VET programme at levels 3 to 4 asking the expert to identify changes in occupational groups targeted by the VET programme and describe these changes.

Country experts were asked to report whether new specific programmes had been created or existing specific programmes terminated targeting selected aggregated occupational groups according to the international standard classification of occupations (ISCO). The groups were defined by first leaving out occupational groups requiring higher education and then merging the remainder into 16 groups, see the table below.

Selected occupations

ISCO code	Occupation name
31, 35	Science and engineering associate professionals
32	Health associate professionals
33	Business and administration associate professionals
34	Legal, social, cultural and related associate professionals
41, 43, 44	General office clerks
42	Customer services clerks
51, 53, 54	Personal, care, protective service
52	Sales workers
61, 62, 63	Agricultural workers
71	Building and related trades workers, excluding electricians
72, 74	Metal, machinery and electrical trades
73	Handicraft and printing workers
75	Food processing
81	Stationary plant and machine operators
82	Assemblers
83	Drivers and mobile plant operators

A sheet asking the expert to provide an assessment of the quality of the available national data was also included.

The sheets in the workbook were locked to ensure that only cells that the experts were expected to fill in could be edited.

The workbook was designed to be self-explanatory but, to ensure that the experts were on equal footing, two instructional webinars were offered to all country experts.



CEDEFOP

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

Volume 4: changing patterns of enrolment in upper secondary initial vocational education and training (IVET) 1995-2015

This research paper is part of 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 identify and analyse patterns and trends in enrolment in upper secondary initial vocational education and training (IVET) in Europe over the period 1995 to 2015. The research produced findings on comparability of the international data as well as trends in enrolment in upper secondary IVET and its share of enrolment in upper secondary education. It found that, in countries where there has been a decline in VET enrolment, most of this is due to a declining youth population. It also found that many fluctuations in enrolment figures are artificial in the sense that they are the result of changing national classification and/or reporting practices. When correcting for these factors, findings show that the development of absolute enrolment in VET, as well as its share of enrolment in upper secondary education, has been quite stable in most countries.

5568EN - TI-BC-18-003-EN-N - doi:10.2801/45684



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