CEDEFOP | European Centre for the Development of Vocational Training

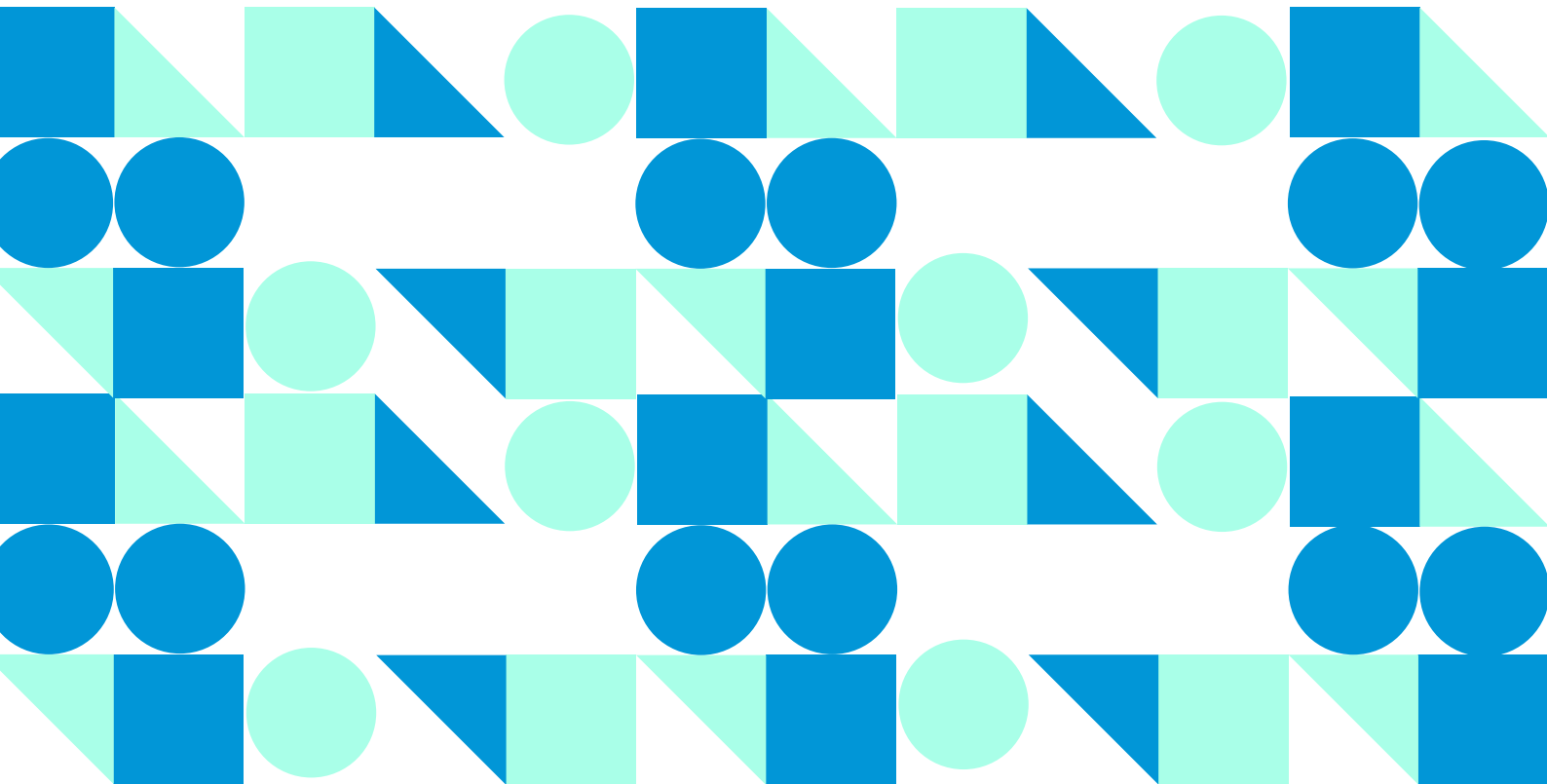
EN

1831-5860

Research paper

Microcredentials for labour market education and training

Microcredentials and evolving qualifications systems



Microcredentials for labour market education and training

Microcredentials and evolving qualifications systems

Luxembourg: Publications Office of the European Union, 2023

Please cite this publication as:
Cedefop (2023). *Microcredentials for labour market education and training: microcredentials and evolving qualifications systems*. Luxembourg: Publications Office. Cedefop research paper, No 89. http://data.europa.eu/doi/10.2801/566352

Luxembourg: Publications Office of the European Union, 2023

PDF ISBN 978-92-896-3577-6
ISSN 1831-5860
doi:10.2801/566352
TI-BC-23-001-EN-N

EPUB ISBN 978-92-896-3578-3
ISSN 1831-5860
doi:10.2801/464041
TI-BC-23-001-EN-E

The **European Centre for the Development of Vocational Training** (Cedefop) is the European Union's reference centre for vocational education and training, skills and qualifications. We provide information, research, analyses and evidence on vocational education and training, skills and qualifications for policy-making in the EU Member States.
Cedefop was originally established in 1975 by Council Regulation (EEC) No 337/75. This decision was repealed in 2019 by Regulation (EU) 2019/128 establishing Cedefop as a Union Agency with a renewed mandate.

Europe 123, Thessaloniki (Pylea), GREECE
Postal: Cedefop service post, 570 01 Thermi, GREECE
Tel. +30 2310490111, Fax +30 2310490020
Email: info@cedefop.europa.eu
www.cedefop.europa.eu

Jürgen Siebel, *Executive Director*
Nadine Nerguisian, *Chair of the Management Board*

Foreword

This publication was prepared as part of the Cedefop project *The role of microcredentials in facilitating learning for employment*. The purpose of this research is to gain a first understanding of the characteristics and added value of microcredentials, and their limitations, in supporting the learning careers of individuals in the 27 Member States of the EU as well as Iceland, Norway and the United Kingdom.

The research is divided into three separate but interlinked themes:

(a) mapping the current use of microcredentials for labour market oriented vocational and professional education and training;
(b) positioning the phenomenon of microcredentials in relation to the longer-term evolution of certification and qualifications systems;
(c) analysing the potential of microcredentials for end-users, notably individual learners and employees

This report focuses on the relationship between microcredentials and the evolving qualifications systems. Results of the research confirm that microcredentials are not intended to replace full qualifications or radically to change qualifications systems.

The publication examines whether microcredentials can be used as building blocks to be combined with qualifications and credentials from other institutions and sectors to support learners of all ages and in different situations. Findings show that discussions on this issue are at an initial stage of consideration in most countries.

The trend towards modularisation often acts as an enabling factor for microcredentials, while the research revealed that microcredentials could potentially play an important role in further promoting recognition of prior learning. However, approaches and policy developments vary substantially among European countries.

Building on a variety of research instruments, such as an online survey carried out among European VET providers, national authorities, employee and employer organisations, in-depth country case studies, and feedback collected by Cedefop's ReferNet network, the report offers an updated insight into the impact of microcredentials on the overall balance of qualifications and credentials systems.

Jürgen Siebel	Loukas Zahilas
Executive Director	Head of Department for VET and Qualifications

Acknowledgements

This publication was produced by Cedefop, under the supervision of Loukas Zahilas, Head of Department for VET and Qualifications.

The paper is part of the project *The role of microcredentials in facilitating learning for employment*, coordinated by Anastasia Pouliou and supported by Iraklis Pliakis and Jens Bjornavold, Cedefop experts. The research was carried out by a consortium led by PPMI Group (Lithuania) and is supervised by Greta Kirdulyte. The report is based on the contributions of Andrew McCoshan and Hanne Shapiro.

Contents

Tables, figures and boxes

Tables

Figures

Boxes

Executive summary

Microcredentials are a complex phenomenon, particularly with regard to their relationship to qualifications. In recent years, there has been an acceleration in the availability and use of microcredentials in the labour market, raising questions about their relationship to VET and to qualification systems. The proliferation of microcredentials of different types across various sectors, occupations, education sectors and levels and countries, along with variations between countries in the nature of qualification systems – which are undergoing change – make this a complex landscape to research and analyse. To date there has been a lack of data at EU level informing decision-making in this area. This report aims to be a first step towards filling some key gaps in the knowledge around these topics, addressing three main research questions.

(a) What are the objectives and roles, if any, of microcredentials in national qualifications and credentials systems?
    (i) Are microcredentials referred to in the overall policy discussions and strategy papers on national qualification system development?
    (ii) What are the main drivers behind introducing microcredentials?
(b) In what ways are microcredentials linked to national qualifications systems?
(c) What impacts are microcredentials having on qualification systems, and what opportunities and challenges do they present?

Microcredentials and qualifications in context

To address these questions, it is important to view microcredentials and qualifications within their social and economic context. Qualifications, as defined in national legislation and by the EQF, play an important role in society. They express what individuals know, understand and can do, and have a considerable influence on employment prospects and overall life chances. But qualifications also sit within a wider social, economic and historical context within which skills recognition takes place. Taking into account this broader perspective provides several helpful insights.

(a) The qualifications that are part of modern qualifications systems are just one way – albeit an important one – in which skills are recognised and documented. Today, a wide variety of credentials exist alongside them, some of which are long-standing. In this context, microcredentials can be seen as another means of recognising skills, though a distinctive and significant one which raises important questions for modern qualification systems.

(b) The value and currency of qualifications – and microcredentials – are economic and social attributes that are ascribed to them by their users (education institutions and enterprises (labour market)), and not simply inherent properties of the qualifications and microcredentials themselves, although these two factors can interact with each other. This is the reason why both qualifications and microcredentials can vary substantially in their value and currency, and why some microcredentials have come to play important roles in certain sectors (e.g. the global technology and financial sectors). Trust and transparency play key roles in value and currency.

(c) Qualifications can have a wide variety of functions. These range from the very broad, such as signalling to stakeholders about the skills an individual possesses, to the very specific, such as documenting learning outcomes. Their functions cover an enormous range of variables, including the nature of the relationship between VET and employment systems. Where this relationship is strong, formal qualifications tend to play a key role in labour market entry and career progression; where it is weaker, formal qualifications have less value and currency.

Microcredentials in current strategies and policies

Developments in microcredentials and their incorporation into national qualification systems vary substantially between European countries. In most countries, discussions about microcredentials are at an initial stage, with a focus on better defining and standardising their role within national qualifications systems. In cases where discussions are more advanced, these are stimulated by current or completed reforms that aim to allow wider opportunities in terms of learning pathways. In a few countries, like Estonia, and Spain, microcredentials or alternative credentials are referenced explicitly in legal documents, though the term microcredential is rarely included per se in strategic, legal or official documents.

Microcredentials are seen to be fit for purposes such as addressing the needs of the labour market, lifelong learning, upskilling and reskilling, recognising prior learning, and widening access to a greater variety of learners.

Stakeholders tend to position microcredentials on a continuum of qualifications/credentials, serving a supplementary and complementary function to other forms of qualifications. Microcredentials are gaining space within qualification systems on the basis that they offer certain advantages over traditional qualifications, principally their greater flexibility and their suitability for building sector- or occupation-specific skills (reskilling/upskilling) in order to respond to the

changing needs of industry. The definition boundaries between microcredentials and sectoral or professional skills certificates are fairly blurred; quality-assured and industry-recognised certificates may be considered a subcategory of microcredentials that enjoy higher visibility, recognition and trust.

Linking microcredentials and qualifications systems

In many countries, understanding of microcredentials is uneven, and the lack of nationally agreed definitions and approaches has led to questions: can existing qualifications and programmes within qualifications frameworks may be considered microcredentials and, if so, which types?

Modularisation is one of two key developments that pave the way for the incorporation of microcredentials into national qualification systems: the other is the development of mechanisms to validate non-formal or informal learning, see below. All European countries engage in some kind of modularisation which, while most common within adult education, is becoming increasingly prevalent in VET and HE. In some countries, the modularised offer shares the same characteristics as microcredentials, as defined by the European Commission. However, some stakeholders remain unsure whether existing modules or partial qualifications that share similar characteristics and functions to microcredentials can be, or should be considered to be, microcredentials.

Most European countries are working towards comprehensive national qualifications frameworks (NQFs), which include all levels and types of qualifications from formal education and training; some countries are opening their frameworks to qualifications from outside the formal domain. In parallel, the vast and rapid proliferation of microcredentials on a national and international scale has largely taken place outside the formal education sector. Among those countries that have opened up their systems in this way, there is an equal split between those in which it is unclear if non-formal qualifications can be considered microcredentials (because they have not yet been officially defined) and those, such as Poland and Slovenia, where some qualifications that are awarded outside the formal education and training system but are now incorporated into the NQF, may be considered microcredentials.

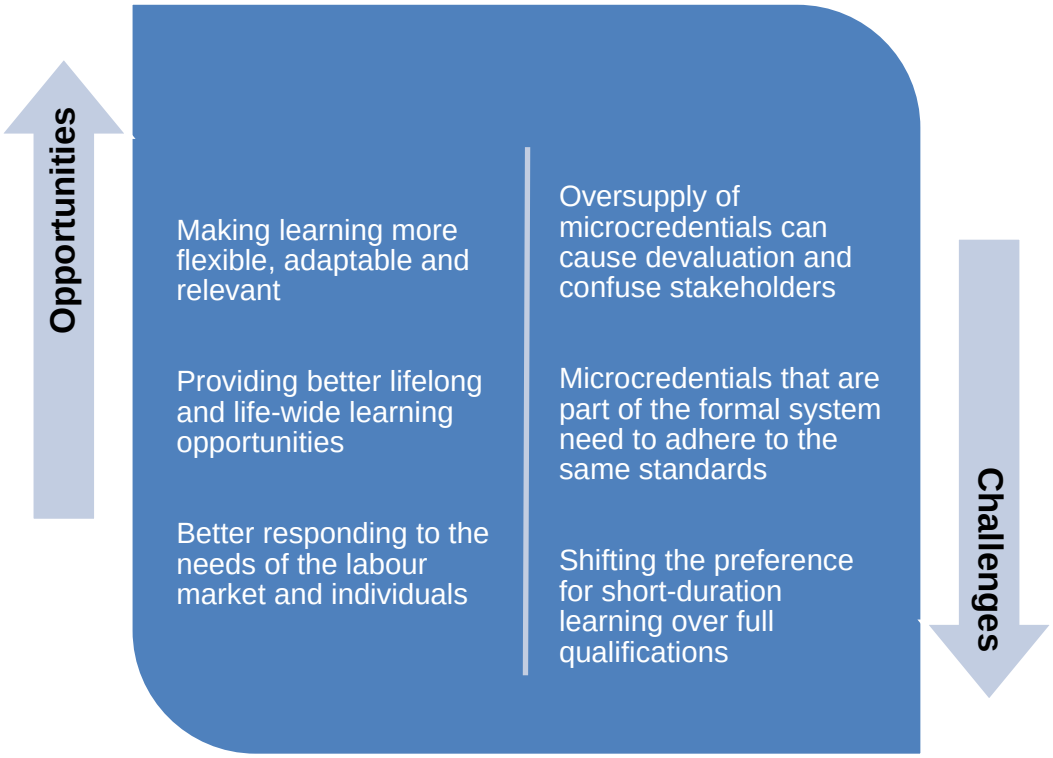
The use of credit systems as part of the modularisation of VET has the potential to enable the accumulation and combining of microcredentials, which is possible in 22 EU countries. However, the use of credit systems varies considerably across education institutions, countries and sectors, and labour market credentials are often non-credit bearing, which prevents learners from using them to progress educationally. The accumulation and combining of

microcredentials with credentials and qualifications from other institutions and sectors, although not frequent, is possible in few national contexts. High levels of trust are central to the success of accumulation and combining practices. This, in turn, depends on having in place respected and transparent processes: quality assurance; the definition of learning outcomes and assessment; the recognition of prior learning practices; and credit transfer systems. For this reason, accredited and quality-assured microcredentials are more likely to be accepted across institutions and sectors, which points to a need to establish a common terminology to describe microcredentials (e.g. learning outcomes, level, volume).

Due to their characteristics, microcredentials are well positioned to be an important tool in practices relating to the recognition of prior learning (RPL): they can be both tools to facilitate RPL and can be obtained through RPL. As a result of their (potential) role in RPL, microcredentials are seen by some stakeholders as functioning as partial qualifications, counting towards full qualifications and also enabling progression towards further education in VET and HE. Lack of adequate quality assurance mechanisms is one of the main factors hindering the proper utilisation of microcredentials in RPL.

In terms of the opportunities and challenges presented to qualification systems by microcredentials, it may be helpful to view them in relation to two sets of tensions inherent in qualifications: between flexibility and stability on the one hand, and between supply-led and demand-driven qualifications on the other. Microcredentials tend to be a flexible, demand-driven response to the need for skills in the labour market, but they can lack the same trust and recognition enjoyed by full qualifications. In terms of whether and how they might be accommodated within qualification systems, they can pose important questions about how to guarantee their value and currency without undermining both their own flexibility and the stability and dependability of established qualifications. Microcredentials are better able to reflect and respond to the changing needs of the labour market by providing short, quick, tailored skills development. However, these benefits can come at the expense of quality control and transparency regarding the trustworthiness of both the credential and the provider.

Figure 1. **Challenges and opportunities that microcredentials bring to national qualification systems**



Source: Cedefop.

The relationship between VET and employment systems, which shapes the overall functions of qualifications, has an effect on the status of microcredentials: countries with strong connections between VET and employment, deep involvement of social partners and collective agreements, tend to perceive microcredentials more as challenges to established qualification systems. In contrast, countries with weaker connections between VET and employment and more flexible and modularised qualifications systems, regard microcredentials as opportunities.

Conclusions

Policy-makers and stakeholders in VET are in the early stages of determining the most appropriate relationships between qualification systems and microcredentials. How this relationship is perceived depends on how microcredentials are defined. In this context, it is unsurprising that evidence has been found of the ways in which microcredentials can sit both within and outside formal qualification systems. Microcredentials have the potential to contribute to,

and perhaps accelerate, modularisation and recognition of prior learning (RPL): these two prominent developments were already taking place before the current interest in microcredentials. Both processes have the potential to enable microcredentials to make a valuable contribution to improving responsiveness and flexibility in the labour market for both learners and employers. Microcredentials may even send a clearer signal of certain specific knowledge, skills and competences, because they focus on a much narrower range of skills compared to full qualifications. At the same time, microcredentials may have the potential to destabilise qualification systems – especially if they are left outside them – by encouraging a shift away from holistic education to short-duration learning based around very small skill sets. This might have a range of undesirable effects, including discouraging learners from taking full qualifications and encouraging them to exit formal education system before receiving a diploma.

EU Member States are already attempting to balance the challenges and opportunities presented by microcredentials, implementing standardisation and regulation to ensure comparability while retaining the aspect of flexibility. The 2022 Council Recommendation provides a framework to guide Member States in this process. Evidence from this study shows that the main dimensions being considered currently include:

(a) defining microcredentials (even though a broad definition exists at EU level, countries are making more detailed decisions on what elements microcredentials need to possess);
(b) deciding where microcredentials could be most useful within their national qualification systems (e.g. formal, non-formal and/or informal learning; VET, HE and/or adult education);
(c) indicating the necessary conditions for the inclusion of microcredentials into national qualification systems;
(d) reviewing the laws and regulations relating to education and training;
(e) establishing a link between microcredentials and existing offers.

Since most countries have only recently begun to engage with microcredentials, it will be some time before a full picture emerges of the optimum relationship between microcredentials and qualifications systems.

CHAPTER 1.

Introduction

1.1. Scope of the study

The main objective of this report is to provide a background analysis of the current position of microcredentials in relation to the evolution of qualifications systems. Microcredentials cannot be analysed as an isolated phenomenon but need to be examined in this broader evolutionary context. Given that the significant pieces of research carried out so far have been limited in terms of exploring how microcredentials are linked to overall qualifications systems, a key purpose of this research is to produce evidence regarding:

(a) identifying the rationale for and objectives of microcredentials in relation to qualification systems;
(b) identifying the ways in which microcredentials are linked to national qualifications systems;
(c) identifying the impacts that microcredentials have on overall qualification systems by identifying the main opportunities and challenges they present for overall qualification systems.

Producing evidence on how microcredentials relate to evolving qualifications systems is necessary to understand how they relate to and/or differ from existing labour market-related certificates and qualifications, and what purposes they serve. This evidence will also reflect on how microcredentials are located within overall qualifications systems and will enhance understanding of whether they can be used as building blocks to be combined with other credentials and qualifications gained from other institutions and sectors. With growing interest and discussions, and various policy developments and initiatives emerging, it is important to understand what impacts microcredentials are having on national qualifications systems, and whether they represent a new way of recognising knowledge, skills and competences that potentially affects the role of traditional qualifications as we currently know them.

1.2. Defining and positioning microcredentials in discussions on qualification systems

The working definition of microcredentials proposed by the European Commission was initially used as a reference point in this study, followed by the definition which

was applied by the 2022 Council Recommendation ([1]). Consideration was also given to other definitions that were used or being formulated and discussed in national contexts, both officially by national authorities and various stakeholders, and less formally by certain organisations and labour market actors. During the research phase, consultations with diverse stakeholders have revealed a lack of common understanding on the conceptualisation of microcredentials.

According to the European Commission, the definition of microcredentials has been designed in a way that allows Member States to adapt it according to the needs and objectives of their national qualification systems, whether in formal, non-formal or informal settings or at different education levels. Stakeholder consultations (during the consultation phase of the study) have shown that microcredentials are viewed as being both part of formal education and training and operating outside of it in the labour market. For formal education and training, microcredentials were often seen as being equivalent to existing offers, related to partial qualifications and modules or as supplementary or even 'add-on' qualifications. In this respect, their use and value for end users is already seen as being established. It is also important how VET qualifications are valued and what currency they have in the specific national context. Microcredentials that operate outside formal education and training are seen as different types of certificates that provide very specialised and specific knowledge, skills and competences.

In most European countries examined, discussions surrounding microcredentials are at an initial stage. Policy discussions concerning microcredentials often focus on the role they can play in better defining and standardising the existing offer within the national qualifications systems. Countries are also looking into formulating their national approaches to microcredentials in terms of where they are most useful in their qualification systems, and what actions should be taken. Given the broad definition at European level and diverse national interpretations, it is crucial to examine the various purposes and functions of microcredentials. These are described in detail in Section 4.2.2 of this report. According to stakeholders interviewed in the study, microcredentials are seen as being fit for purposes such as upskilling and

([1]) Microcredential means the record of the learning outcomes that a learner has achieved following a small volume of learning. These learning outcomes will have been assessed against transparent and clearly defined criteria. Learning experiences leading to microcredentials are designed to provide the learner with specific knowledge, skills and competences that respond to societal, personal, cultural or labour market needs. Microcredentials are owned by the learner, can be shared and are portable. They may be stand-alone or combined into larger credentials. They are underpinned by quality assurance following agreed standards in the relevant sector or area of activity.

reskilling, addressing the needs of the labour market, recognising prior learning, and widening access to a greater variety of learners.

As highlighted by the Council Recommendation, microcredentials do not seek to replace traditional qualifications, but rather complement existing ones by providing added value to end users, to the labour market and to society in general. The Recommendation also touches on the fact that microcredentials may be designed and issued by a variety of providers in different learning settings, including formal, non-formal and informal (Council of the European Union, 2022). Given that the private sector offer sometimes lacks the quality assurance systems prevalent in the formal education sector, the issue of trust and transparency is crucial. In pursuit of this goal, the Council Recommendation (2022) provides a list of common European standard elements to describe microcredentials which can support interoperability and the easier exchange of data about them. These will be included in a European data model ([2]) that will be openly available to microcredentials providers. The use of these European standard elements to describe microcredentials can enable official validation and recognition. The Council further provides 10 principles to be used by national authorities and providers when designing and issuing microcredentials: these principles highlight key characteristics that can foster quality and trust ([3]). When mapping the existing examples of microcredentials in the manufacturing and retail sectors, the study relies on a similar set of characteristics.

([2]) The data model will be developed by the European Commission in consultation with the Member States and stakeholders.

([3]) They include quality, transparency, relevance, valid assessment, learning pathways, recognition, portability, being learner-centred, authentic, and providing information and guidance (Council of the European Union, 2022).

CHAPTER 2.

Research background and approach

2.1. Research background

In most European countries, national qualifications frameworks (NQFs) have become integral parts of national VET systems. NQFs have continuously evolved in order to remain relevant and add value for end users. In recent years, NQFs have also been opening to qualifications awarded outside formal education and training and have helped to validate non-formal and informal learning (Cedefop, 2019a). Inclusion in NQFs is intended to increase overall transparency regarding such qualifications, to clarify their relationship to formal qualifications, and to allow a greater diversity of learners to use them for the purposes of lifelong learning and career development.

While still important, traditional qualifications are becoming increasingly complemented by alternative credentials such as microcredentials (Oliver, 2021). Given the rapid changes in knowledge and technology, increasing socioeconomic demands, and greater focus on digital and green transitions, individuals need to acquire new skills and upgrade their competences continuously. One way to address this challenge is using microcredentials. Microcredentials are seen to be fit for purposes such as such as addressing the needs of the labour market, lifelong learning, upskilling and reskilling, recognising prior learning, and widening access to a greater variety of learners (Table 1).

Table 1. **Main drivers for including credentials into national qualification systems**

Lifelong learning	Upskilling and reskilling	Recognition of prior learning
The possibility of accumulating and combining credentials can facilitate and encourage lifelong learning. Over the course of their lives, individuals can progress through various learning pathways, including formal education as well as informal and non-formal training obtained through the workplace or life in general. Being able to assemble, verify and recognise these learning outcomes can encourage individuals to upgrade their skills, obtain new competences, pursue further education, and advance in their career paths.	One of the factors driving discussions regarding the position of credentials (and microcredentials) in national qualification systems is the need for upskilling and reskilling strategies. Due to rapid changes in the labour market and the pace of digitalisation, there is a clear demand for the flexibility to address technological, digital, social and environmental developments taking place globally. Case studies have revealed the pressing issue of skills mismatches and skills shortages among the working population.	Two main approaches can be taken to position credentials within the broader RPL system. First, we can look at microcredentials as an outcome of RPL. According to how microcredentials are defined and understood, receiving a partial qualification through RPL or a stand-alone professional or occupational qualification may be conceived as awarding a microcredential based on a learning outcome-based validation of a small volume of learning. The second approach is to look at microcredentials as a tool that can potentially facilitate the RPL process.

Source: Cedefop.

As consultations with national stakeholders reveal, while the term microcredential may be novel, the activities it encompasses may refer to long-standing practices. Microcredentials have existed for some time, both within the labour market and in formal VET. Companies and individuals have addressed – and continue to address – their skills needs outside the formal, state-managed system due to these needs not always being met by formal education and training. To ensure clarity and a common understanding of such practices, the European Commission has introduced a common definition for microcredentials. which is considered in this report ([4]).

While national qualification systems are the main tools used to recognise skills and assign value and currency to them, the labour market also plays a crucial role in complementing them. Microcredentials have emerged primarily within the private sector as a solution to skills needs and pathways to and within the labour market, rather than as a route to further learning; a wide variety fall outside of formal qualifications systems and operate solely in the labour market. However, this oversupply of microcredentials makes it challenging to keep track and ensure

([4]) A working definition of microcredentials emerged from a public consultation launched by the European Commission, which, in December 2021, proposed a Council Recommendation on a European approach to microcredentials for lifelong learning and employability which was adopted in 2022.

the quality of credentials and their providers. Trust and credibility play a crucial role in determining the currency of qualifications; the mere existence of microcredentials means they must have some degree of currency in the labour market for employees and employers. Nevertheless, there is a push by diverse stakeholders to establish some standards to safeguard transparency and quality and to include some microcredentials in national qualifications systems. Despite this, stakeholders surveyed in the study ([5]), believe that overregulation should be avoided to ensure flexibility and innovation, and that some microcredentials should be left to operate outside the formal system. For this reason, the study seeks to position microcredentials in relation to evolving qualifications and credentials systems, and to examine their impacts (in terms of both opportunities and challenges) on national qualification systems.

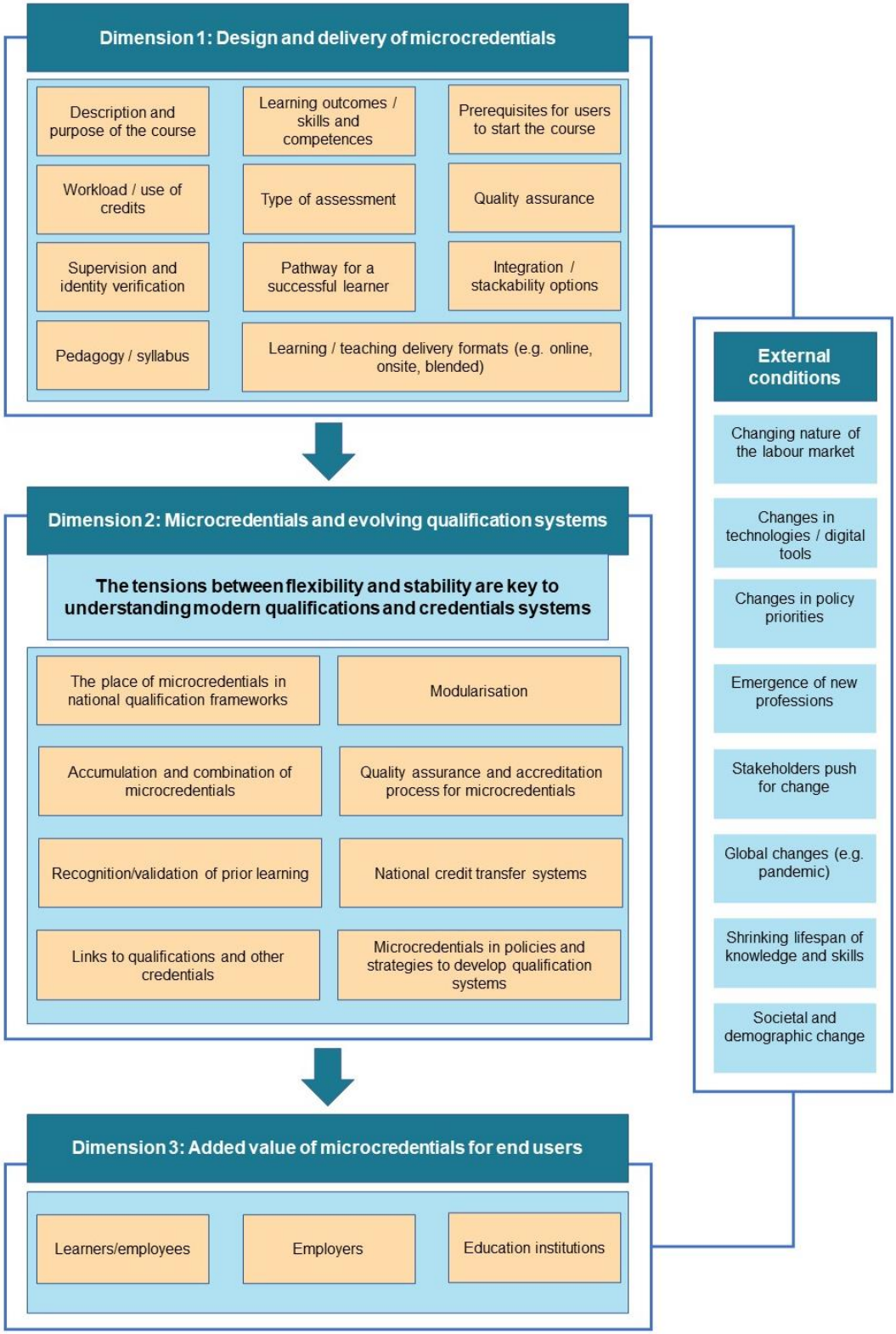
2.2. Analytical and methodological approach

The study was based on a model designed for the analysis of microcredentials in labour market-related education, training and learning. This model identifies three interconnected dimensions, as well as external conditions that affect these dimensions (Figure 2Figure **2**). This research primarily concentrates on the second dimension of the analytical model and covers the other two dimensions only briefly; the first dimension was covered in a previous study, mapping microcredentials (Cedefop, 2022c), while the third dimension will be covered in greater detail in the upcoming publication *Microcredentials: the user perspective* (Cedefop, forthcoming, b).

The second dimension of the model is concerned with the links between microcredentials and overall qualifications systems. Recognition is an important aspect of this: more specifically, ways to validate and recognise what has been learned through microcredentials. The links between microcredentials and qualification systems, and how they fit into existing approaches to the recognition of prior learning and options for the accumulation and combining of credentials, are important aspects.

([5]) Representatives of employer organisations in Germany, responding to Cedefop's stakeholder group survey conducted in July 2021.

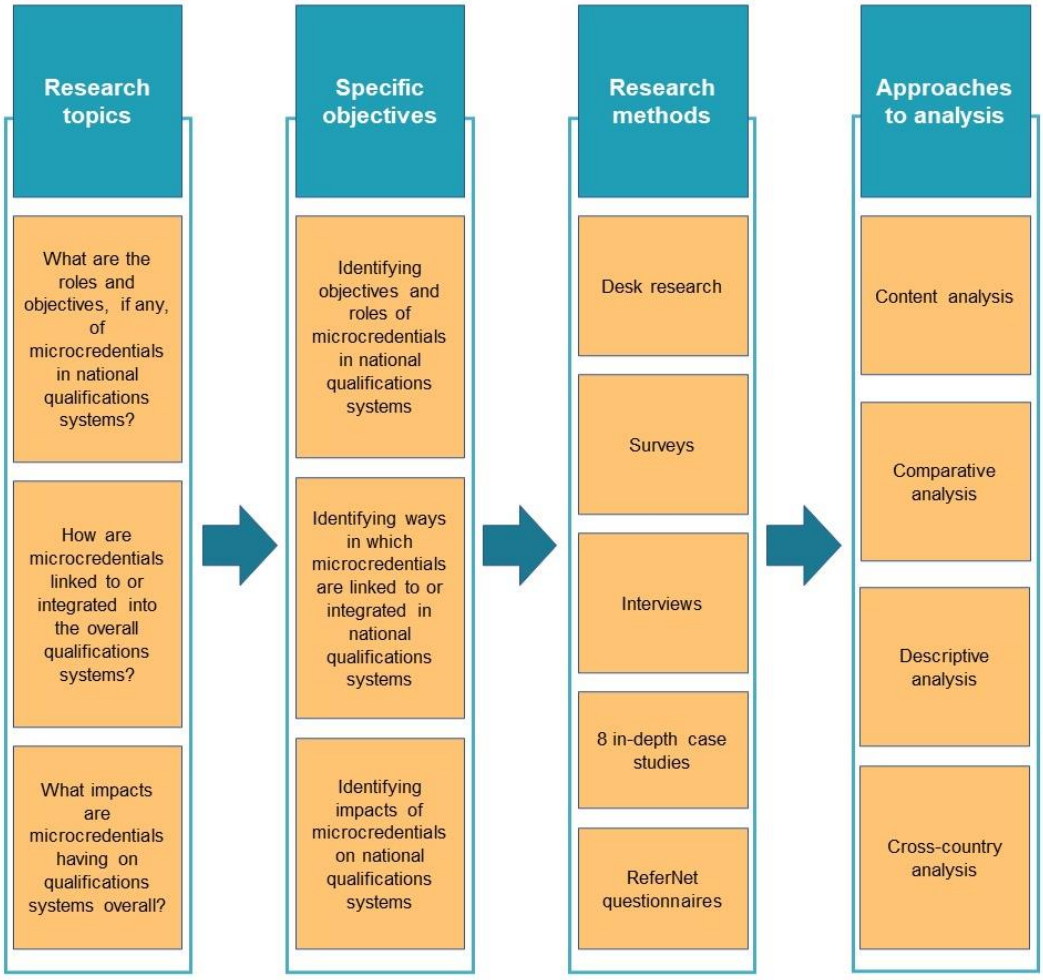
Figure 2. **Analytical model**



Source: Cedefop.

The methodological approach of this study was designed based on the analytical model (Figure 3). The research topics are covered by employing multiple research methods and approaches to analysis. The data collected through these mixed methods were subject to qualitative analysis. Content analysis was used to examine the collected data, and to identify the position of microcredentials and their links to overall qualifications systems. Content analysis and cross-country analyses helped to identify the main developments, uses and trends relating to microcredentials. Based on this, further comparative analysis was used to compare the position of microcredentials in relation to qualifications systems in different countries. Descriptive analysis was used on the survey data.

Figure 3. **Methodological approach used**



Source: Cedefop.

Evidence collected in the study comes from the following data collection methods:

(a) examples of microcredentials in the retail and manufacturing sectors;

(b) eight case studies providing in-depth analysis of the selected countries' use of microcredentials (Cedefop, forthcoming-c, d, e, f, g, h, i, j) ([6]). The countries analysed are Germany, Ireland, Spain, France, Netherlands, Poland, Slovenia and Finland. These represent different national contexts and education and training systems, which result in differing outcomes in relation to microcredentials ([7]);

(c) four surveys implemented across Europe. The surveys addressed four stakeholder groups: national authorities; education and training providers; employers and employer organisations; and employee organisations ([8]);

(d) interview programme comprising 143 interviews. These included in-depth interviews for the eight case study countries and supplementary interviews in countries that were not covered by the case study programme ([9]);

(e) ReferNet questionnaires (Cedefop, 2021a). The ReferNet network prepared country reports that provided contextual information on microcredentials in different national contexts ([10]);

([6]) It is planned to publish the case studies as separate documents.

([7]) The case studies were primarily based on desk research and interviews, as well as some information from the surveys conducted among the four stakeholder groups across Europe.

([8]) The surveys ran between 7 June and 12 July 2021. They were conducted using the in-house survey tool Alchemer. The link was also disseminated via the ePlatform for Adult Learning in Europe (EPALE) and various stakeholder organisations, including the European Vocational Training Association (EVTA) and the European University Continuing Education Network (EUCEN). Statistics for responses to the surveys are as follows: (a) national authorities – 74 responses in 22 countries; (b) VET providers – 187 responses in 26 countries; (c) employers and employer organisations – 37 responses in 22 countries; (d) employee organisations – 66 responses in 27 countries.

([9]) Interviews were conducted with stakeholders including national authorities, education and training providers, companies, employers and employer organisations, employee organisations, researchers, and other relevant actors. Interviews were carried out in 23 countries; the eight national case study countries, plus Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Greece, Hungary, Latvia, Lithuania, Luxembourg, Malta, North Macedonia and Sweden.

([10]) These reports were based on a questionnaire specifically drafted for the purpose of supporting this study. 26 country reports were produced by the ReferNet network: Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

(f) desk research and a literature review of existing documents available on the topic under analysis ([11]).

The use of a mixed-methods approach added value in the context of this study, as the concept of microcredentials is only beginning to materialise and the data available at a European level are in some cases limited.

To present a more nuanced in-depth understanding of the positioning of microcredentials within qualification systems, mapping was carried out of the issuing of microcredentials in the manufacturing and retail sectors. A total of 18 microcredentials in the manufacturing sector and 21 in the retail sector were identified (Annex 1). A range of microcredentials were identified at both national and European levels, issued by various types of providers, and operating within the formal education and training system as well as in the labour market. Even though the term microcredential is not always used, these examples can be considered microcredentials due to their characteristics and according to the stakeholders that participated in the consultation process.

Manufacturing and retail were chosen as two of the largest and most dominant sectors in the EU, which employ a large portion of the EU working population (Eurostat, 2022a and 2022b). These sectors possess different development trajectories and skills systems, and historically aim at different demographics for their workforces. Manufacturing has VET systems with different starting points and trends between countries. The retail sector, as part of trade and services, is labour-intensive and can be considered a growing sector across countries (Cedefop, 2019b).

The mapping exercise employed a template to identify comparable and relevant data ([12]). It revealed that, even though it is possible to identify many existing microcredentials, collecting data about their characteristics and position within the qualifications system remains a challenge. A more detailed description of microcredentials, and the learning activities that lead to them, is rarely indicated ([13]). To analyse existing practices in the context of this research, and in line with elements and definition specified in the Council Recommendation (2022), the following information was collected:

(a) a title;

(b) a provider or awarding body;

([11]) The literature review mainly considered national and regional documents; studies and monitoring reports and evaluations in the field of education and training; academic articles; and consultancy positioning papers.

([12]) Only those microcredentials for which sufficient data were available were included.

([13]) Where such information was missing, these dimensions were marked as ‘not specified’.

(c) learning outcomes (LOs);
(d) duration and pace;
(e) notional workload or credits;
(f) type of assessment;
(g) option to accumulate and combine;
(h) link to European qualifications framework (EQF) and national qualifications frameworks (NQF);
(i) link to occupational standards;
(j) mode of delivery;
(k) format of certification;
(l) prerequisites needed to start a learning activity;
(m) target group;
(n) country or region where available;
(o) purpose;
(p) costs and funding options;
(q) additional information where and if relevant.

This exercise allowed us to identify specific microcredentials and then to contextualise and situate them within the two sectors analysed and in national contexts.

CHAPTER 3.

Putting qualifications and microcredentials into context

This chapter attempts to put qualifications and microcredentials into context as they cannot be treated in isolation. The idea of a qualification is a complex phenomenon. On the one hand, it can be understood in technical terms, as often defined in national legislation and linked to an NQF/EQF level. On the other hand, a formal qualification sits within a wider social and economic context in which skills are recognised. The idea of a qualification can also be understood in much broader terms, in the sense that being qualified extends beyond a technical definition in order to consider the social and economic context surrounding it. This dual perspective is helpful to understand better the emerging role of microcredentials and provides a useful way of framing the analysis contained in this study. Each of these perspectives is considered in turn.

The first section of this chapter presents a short introduction to qualifications and microcredentials. This is followed by a presentation of qualifications and microcredentials in their wider context. The third section then presents a brief introduction to how microcredentials are used in the manufacturing and retail sectors.

3.1. Qualifications in the context of national qualification systems

Qualifications – the certificates and diplomas awarded following education, training and learning – are vital in modern societies. They affect our ability to get a job, practise a profession, pursue lifelong learning and move between countries ([14]). Qualifications can take various forms and are awarded after education, training and learning processes, both current and prior.

The EQF defines a qualification as 'the formal outcome of an assessment and validation process obtained when a competent body determines that an individual has achieved learning outcomes to given standards' ([15]). While qualifications and degrees from initial education and training play an important role in Europe, new

([14]) For more information on qualifications and credentials, see Cedefop's Qualifications and credentials web page.

([15]) ESCO website.

types of shorter learning activities leading to credentials (including digital badges, microcredentials, nano-credentials and others) are promoted as a complementary way of valuing learning, allowing individuals to collect learning experiences at their own pace and throughout their life. The Council Recommendation on a European approach to microcredentials for lifelong learning and employability (2022) defines a microcredential as 'the record of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes will have been assessed against transparent and clearly defined criteria'. The main difference emerging from these definitions is that microcredentials are awarded specifically after short learning activities. In both definitions, the focus is on the achievement of learning outcomes. The development of the EQF has encouraged a shift towards learning outcomes and made these the core aspect when defining qualifications. The shift from learning inputs (such as duration, location, programme or institution) to outputs opened new possibilities to cover knowledge, skills and competences acquired through other means, such as work-based learning and non-formal and informal education ([16]).

These definitions are useful in adopting a broad and adaptable approach to qualifications and microcredentials, which is then further shaped based on the various understandings and traditions that exist in national contexts. Differences emerge because approaches to the qualification process vary between countries and even between education levels, despite usually following five main principles (Cedefop, 2010):

(a) learning gained in different settings, including in the formal education, work or personal setting;
(b) assessment, which evaluates individuals' knowledge, skills and competences against predetermined criteria;
(c) validation, which confirms that a valid assessment procedure was followed, and that the outcomes were quality assured and can be trusted;
(d) certification, which provides evidence of individuals' achievements and value in the labour market and training;
(e) recognition, which – through recognition by third parties – provides individuals with access to a job, enables them to move to a new job, provides access to career progression, higher pay and increased social status.

Although these common elements exist in all countries, what they represent and entail in each national context differs. For example, there may be differences in setting assessment standards (informal standards based on trust in highly skilled and professionally trained teachers, versus tightly structured and defined

([16]) Skillstools website.

procedures) or learning settings (strictly defined, versus allowing the flexibility for awarding bodies to decide).

The concept of a qualification is further complicated due to different understandings and definitions of:

(a) full and partial qualifications;
(b) formal and non-formal qualifications;
(c) vocational, general and higher education qualifications;
(d) linear and modularised qualifications;
(e) knowledge, skills and competences.

According to ETF (2016), these differences show that some countries are shifting away from traditional definitions of qualifications and opening routes towards modern qualifications (Table 2). The idea of modern qualifications has emerged from a shift towards lifelong learning systems in which the previously unconnected pillars of general education, VET, HE and adult learning are more interconnected and fluid. Modern qualifications are more flexible in providing alternative pathways and flexibility, while adhering to the principles of modularisation and facilitating the validation of prior learning. These aspects will be discussed in the forthcoming chapters. Trends among the countries analysed to move towards modern qualifications in their national systems are characterised by including a broad range of qualifications, including microcredentials, in their NQFs, as well as by modularising their qualifications and improving validation mechanisms of prior learning practices.

The shift towards modern qualifications is a result of constant internal and external pressures on qualification systems. Internal pressures mainly relate to changing national policies and priorities, as well as the need to improve the existing system. External pressures relate to developments in the global economy and cooperation activities at EU level; the needs and requirements of various stakeholders, including learners and employers; and the emergence of international qualifications that are gaining value and trust among stakeholders (Cedefop, 2010; interview programme and case studies (Cedefop, forthcoming-c, d, e, f, g, h, i, j)).

Table 2. **Main characteristics of traditional and modern qualifications**

Traditional qualifications	Modern qualifications
Focused on initial training	Supporting lifelong learning
Determined by providers	Defined by stakeholders
Based on curriculum	Based on learning outcomes
Learning in a set context	Alternative pathways
Used for first job entry	Used for various purposes including job entry, changing jobs, further learning and career change
Focused on young learners	For all types of learners
Mainly vertical progression	Horizontal and vertical progression and mobility
Overseen by a single authority, often led by education ministries	Involve various institutions and stakeholders
Only full qualifications are recognised	Partial recognition (modularisation) is a key principle, including to facilitate the validation of non-formal and informal learning

Source: ETF (2016) Qualification systems: getting organised.

The findings of this study are that modern qualifications and microcredentials have several overlapping functions: they are used to promote lifelong learning, enable alternative learning pathways, provide different options for progression, and facilitate the partial recognition and validation of prior learning.

Of note, a wide variety of certificates and credentials, including microcredentials, can fall outside the formal qualifications system and operate solely in the labour market. Companies and individuals have addressed – and continue to address – their needs outside the formal, state-managed system. The provision of short learning activities in the labour market usually meets a variety of needs:

(a) specific professional development needs, which often come from well-established professional organisations (e.g. City & Guilds);
(b) *ad hoc* needs to close skills gaps and update skills. This constitutes a large private market, which is often not assessed and is based on certificates of attendance;
(c) internal company training and career development, which is usually organised by individual companies, both in-house and by private providers, with large companies often having their own training offers.

This brings us to the second aspect of the dual perspective on qualifications and microcredentials: a consideration of their broad functions, and the wider context of skills recognition.

3.2. Wider qualifications and microcredentials context

3.2.1. Social basis of skills recognition

The qualifications discussed in the preceding section are just one part – albeit a highly significant one – of a wider system in which skills are recognised and documented. Seen from this wider perspective, someone can be qualified in the sense of having completed a set of tasks successfully, as demonstrated through a test or examination, followed by the recognition of that success (e.g. in the form of a certificate). They can also be qualified by virtue of having shown the ability to carry out a job effectively (Cedefop, 2010). Hence, we can distinguish between qualifications as the formal processes for the assessment and validation of whether someone has achieved the learning outcomes of an education and training programme, and other forms of recognition. This corresponds to the situation found in many countries and many contexts, in which the term qualification is, for many stakeholders, restricted to the outcome of a programme within formal education and training systems. This may account for the comments often received during the interview programme that 'microcredentials are not qualifications'.

The dual perspective used in the study is helpful, as it considers the ways in which people have their skills recognised for various work tasks, and through which they secure career progression. It acknowledges that, however important they may be to labour market entry and employment, qualifications in the narrow, technical sense are by no means the only way in which skills are recognised in the labour market, and in society more generally. To illustrate, a holder's CV consists of a range of evidence of skills and competences possessed and is not just a record of formal qualifications. This manifests itself in the fact that, as shown in Cedefop (2022), there are both public and private spaces in which learning takes place and skills are recognised.

Though no standard definition of recognition exists, it is helpful to view it as a process in which 'third parties use the qualified status of an individual to offer progression into a new job, higher pay and/or increased social status' ([17]) (Cedefop, 2010, p. 34). Skills development and recognition are fundamentally social processes. Modern societies constructed qualifications systems through

([17]) It is also noted that recognition is formally defined in some countries as part of the qualification process.

nation states as they emerged and consolidated during the 19th and 20th centuries ([18]). Ways of recognising skills, with various degrees of formality and informality, have come and gone over the years because they serve a variety of social and economic purposes. In informal economies, which still account for most employment globally, skills development and recognition through an informal apprenticeship play a key role in some communities. In Europe, apprenticeships in Germany became part of the education and training system only in the 1960s. Numerous sectors and professions have solved the 'problem' of how to recognise skills by creating their own provision and recognition and career development processes, built around communities of practice. Seen in this context, microcredentials are just another development in the evolution of the ways in which societies recognise skills, albeit a distinctive and significant one that raises questions for modern qualification systems ([19]).

3.2.2. Multiple functions of qualifications

The social embeddedness of recognition processes holds as much for formal qualifications related to VET programmes as for recognition in less formal contexts in the labour market. Formal qualifications are 'deeply embedded in social and cultural understandings that are likely to have existed for generations and have evolved with social change over time' (Cedefop, 2010, p. 33). One consequence of this is that, as mentioned in Section 3.1., understandings of qualification vary between countries and sectors.

A corollary to this is that qualifications can perform several broad social and economic functions. Allen (2007) identifies three broad purposes of qualifications (systems):

(a) social reproduction, supporting demarcations in knowledge and skills, promoting explicit/implicit values;
(b) structuring pathways to employment and further learning, formalising progression routes and thus providing patterns of incentives for participation in education and training;
(c) shaping learning by affecting the nature, structure and content of learning programmes, which may be considered a 'backwash' effect.

([18]) As the Cedefop projects on the Changing Nature and Role of VET and the Future of VET have shown, historical and social perspectives such as these have a key role to play in developing our understanding of where VET has come from and where it might go in the future.

([19]) This provides VET with a perspective on microcredentials that is different from that of higher education.

These are useful categories, but they can be expanded further. For example, Cedefop (2010, pp. 196-200) identifies no fewer than 40 purposes and functions, from the very broad such as 'delivering public benefits', 'signalling' to other stakeholders about the skills someone possesses and 'affecting the identity of learners', to the very specific, e.g. 'documenting learning outcomes' and 'ensuring linkages of content of programmes (training) to work'. Further, the development of qualifications and qualification systems as policy tools is likely to have expanded the range of purposes which (it is hoped) qualifications (might) fulfil.

3.2.3. Value and currency of qualifications and other forms of recognition

Another perspective on the purpose of qualifications and other credentials ([20]) is to consider them in terms of their currency or value in the labour market or for further learning. There are three broad forms of currency (Cedefop, 2020a, p.22):

(a) as a means of accessing and progressing within employment;
(b) as a gateway to further learning;
(c) in the form of social value, which may come from the improved status or social mobility conferred by a qualification and/or credential.

The currency of qualifications is not fixed: there is enormous variation between countries, between sectors and occupations within individual countries, and between individual qualifications within the same sector. The reasons for such variation are complex but range from micro-level issues, such as the way in which individual qualifications have been designed, to macro issues relating to the broad function of qualifications in the labour market. Interactions can also occur between these levels. For example, qualifications may be designed poorly in terms of how knowledge and skills are described, which means they cannot function effectively in the labour market as a means of signalling the competences someone possesses, thus inhibiting access to certain occupations.

Trust and credibility play a role in determining the currency of qualifications. A qualification should enable its holder to 'prove competences, skills and experience' and give 'the recipient, the employer, a trusted basis on which to judge the qualified person's labour market value' (Cedefop, 2012, p. 19). However, there is great variation in how far qualifications are trusted and seen as credible, which underpins variations in currency. Trust and credibility are key among both employers and learners (potential VET graduates).

Perception also has its role to play in this: how individuals and employers perceive the currency of certain qualifications, irrespective of their actual value.

([20]) The term credentials is sometimes used to denote those courses and programmes, and associated assessment processes other than qualifications, which fall within qualifications frameworks.

This may be observed most markedly in the challenges many apprenticeships face in being regarded as a 'second choice' to general education tracks leading to university entrance, despite evidence of the greater lifetime earnings that accrue to apprentice graduates compared with their university-educated counterparts. In such circumstances, it may be the social value of a university education which triumphs over the exchange value of an apprenticeship. The issue of currency lies behind the attempts made over the last 20 years, at both European and Member State levels, to improve the quality and attractiveness of VET. The concept of currency is fundamental to policy and practice in relation to modern qualification systems.

Currency is also important in understanding microcredentials. The extent to which microcredentials exhibit the three types of currencies described above is an empirical question, but the first phase of the research findings (Cedefop, 2022c), showed that microcredentials can improve employability and be a way rapidly to address skill needs and gaps and encourage lifelong learning. Given their locus in the private sector, microcredentials are most likely to have value primarily in the labour market rather than as a route to further learning or in terms of social mobility; the cost of microcredentials as private goods means that they are likely to be a source of inequality rather than a solution. One reason that microcredentials have emerged in the private sector is as a solution to skills issues rather than in response to wider social issues or as a route to further learning; however, some microcredentials may come as a 'stackable' set with progression built in but without necessarily providing access to other types and levels of VET.

The potential shortcomings of the microcredentials that operate within the private space, and the existence of microcredentials themselves, means they must have some degree of currency in the labour market, either for individuals, employers or both; otherwise, they would fall into disuse. It is informative to consider why they have emerged outside – or alongside – the qualifications that are part of full VET programmes and those embedded in national qualification systems. Microcredentials may offer advantages over full qualifications that are part of state-managed qualification systems; they are evidence of practical, flexible, on-demand, and short learning experiences. For instance, some microcredentials have strong currency, being the principal route to occupational entry and progression in some sectors, such as the global technology sector.

3.2.4. User perspective

In considering currency and value, it is important to reflect the user's perspective on microcredentials. This is covered in depth in Cedefop (forthcoming, b), but we can note here that users face an important challenge in understanding the currency

of qualifications and microcredentials. One advantage of national qualifications systems – especially those with substantial social partner involvement – is that they are backed by the state, which acts as a kind of guarantor of quality and value; social partners are also central to helping ensure that qualifications are well-attuned to skills needs in the labour market.

Even the most robust qualifications systems are likely to include qualifications that vary in their currency and function. As Cedefop (2010, p. 42) has noted: 'qualifications sit in complex social, political and economic contexts; their real 'behaviour' will depend on this context.' It is not simply the technical aspects of qualification design that matter, but the wider social and economic milieu.

In this context, it is worth noting that clarity is important in ensuring trust and credibility. A qualification needs to send a signal to users that is as clear and unambiguous as possible, both in terms of its content (users need to be able to understand what lies behind the label of a certificate's title) and its relationship to occupations in the labour market. Where these aspects are blurred, the value of the qualification is diminished. Complexity in such a context is not good for users. As Cedefop (2010, p. 20) has pointed out: 'Problems can arise when the purposes and functions of a single qualification become numerous, diverse, and contradictory. The first casualty of this diversification is the perceptions of users of the validity of the qualification for their particular priorities.'

As the mapping of microcredentials by Cedefop (2022c) reveals, complexity is an issue for users in the unregulated microcredentials marketplace: they face complex choices between a range of products whose quality and currency in the labour market can be hard to discern. Some microcredentials will have greater currency than others, and the problem for users is knowing which is which.

Some microcredentials, such as several in the global technology sector, have strong currency because they have become the industry standard for occupational entry and progression; value here is largely derived from the companies that stand behind them and the community of practitioners and other companies who accept these microcredentials as having currency. The global technology sector has grown up with microcredentials as a key tool for skills development and recognition, so they are integral to the sector ([21]). By contrast, in sectors such as retailing and manufacturing, microcredentials are emerging into different existing contexts of how skills are developed and the role of short courses and qualifications for job entry, upskilling/reskilling and career progression (as discussed in Section 3.3).

([21]) As found in the case study on Ireland (Cedefop, forthcoming-f).

The global technology sector operates to specific, highly technical, conditions. Having international standards enables skills to be developed efficiently and effectively; microcredentials enable employers to keep pace with rapid technological changes by being able to update small sets of skills. Technology itself enables microcredentials to play a role as digital badges, accessible anywhere with the requisite laptop and money to cover the costs of the examination and the associated learning. In other cases, such conditions may not apply at all.

3.2.5. Labour market function of qualifications

In view of this project's focus on the role of microcredentials in facilitating learning for employment, it is important to consider the function of qualifications in the labour market. This is a complex topic but, broadly speaking, the role of qualifications is shaped by the ways in which businesses organise their work processes. This, in turn, affects how labour is utilised, and the function of qualifications. As discussed in Cedefop (2017, pp. 23-29) this gives rise to two broad types of national employment system. Drawing on work by Maurice et al. (1986), it is argued that national work systems can be understood as being dominated by either 'organisational' or 'occupational' space. Where organisational space dominates, businesses tend to organise work in their best individual interests, and there are few requirements for recruits – especially for lower skilled jobs – to possess particular VET qualifications; instead, most learning takes place on the job. Countries in which this model tends to dominate include France and the UK. In contrast, where occupational space dominates, firms 'organise work processes by exploiting broad and standardised vocational qualifications'. Within any given sector, workplaces and skill demands tend to be fairly similar and firms can draw on a large stock of vocationally qualified people. In this scenario, VET qualifications perform an important function for labour market entry. Countries in which this model dominates include Denmark, Germany, Netherlands and Austria, all of which are also countries with established apprenticeship systems.

This approach resonates strongly with other perspectives on the interface between VET systems and employment. Brown et al. (2001), for example, differentiate between the 'occupational' labour markets of Germany, in which occupations are defined in national ordinances and are the outcome of State and social partner negotiations, and the flexible labour markets of the UK, in which social dialogue is largely non-existent and the emphasis among employers is on company-specific training (to do the job in question) rather than to acquire broader

occupational skills ([22]). Such classifications also resonate with the much broader characterisation of entire economies as being either 'liberal market economies' or 'coordinated market economies' ([23]).

These conceptions are models of reality; constructions that help us to understand what can be empirically observed. A small group of countries are 'ideal types' that fit the model well, while most countries are difficult to fit into one category or the other. As Cedefop (2017, pp. 27), points out, many diverse, hybrid spaces exist. Further, it is likely that where flexible labour markets or organisational spaces dominate, greater variation will be found. For example, in the UK, large differences exist between sectors in how training is organised and in the level of reliance on formal VET qualifications.

Nonetheless, this perspective is useful, as it highlights the different roles performed by qualifications in different labour market contexts. Where there is a strong connection between occupations and VET qualifications (e.g. in occupational labour markets and coordinated market economies), there is likely to be less space for flexibility. In such cases, there is also much more emphasis on initial VET qualifications equipping workers with a full range of skills that will provide a solid basis for their careers, with a correspondingly smaller role for adult learning (Eurostat, 2019). Where the connection between employment and qualifications is weaker, flexible labour markets are accompanied by more flexible qualification systems, and also by higher rates of adult learning; in France and the UK, these rates are more than double than those in Germany.

Based on these conceptualisations, microcredentials can be considered to have greater value and currency in certain employment systems than in others. In flexible organisational labour markets/liberal market economies, workers have traditionally relied on learning on the job. Here, the growth of microcredentials offers new opportunities for learning and are, *a priori,* likely to have the potential for greater currency. The more flexible qualification systems in certain countries may be better able to accommodate microcredentials. Conversely, in occupational labour markets/coordinated market systems, microcredentials are likely, in general, to have lower currency, and it may be more challenging to accommodate them within qualification systems due to their stronger ties to occupations.

([22]) Brown et al. also identify 'internal' labour markets, found in Japan, for example, where there is an emphasis on 'jobs for life' within firms; and 'guided' labour markets as in Singapore, where State goals for economic development and skills development are considered too important to be left to 'market forces' as in the UK.

([23]) For an example, see chapter 7 in Cedefop and OECD (2022).

3.2.6. Position of microcredentials

An important insight from the analysis above is that there are multiple overlapping systems for recognising skills and giving value and currency to skills in the labour market; national qualification systems and their constituent qualifications are just one component – albeit a dominant one – within wider skills development systems. There are also broad differences regarding the functions of qualifications, according to the strength of the connection between (initial) VET systems and labour markets.

Viewed through these lenses, microcredentials can be seen as part of wider systems for skills development. The provision of short courses has always been part of these wider systems, through both publicly funded providers and private training companies, although research into private training markets is rare. As noted in Section 3.1, provision is known to take a variety of forms: training to meet specific professional development needs linked to membership of professional bodies; *ad hoc* needs relating to skills gaps; internal company training (perhaps linked to vendor certificates related to, for instance, proprietary manufacturing equipment); and career development. However, other evidence is scant as to the scale of this market, which provides the context within which microcredentials are emerging. Nonetheless, from the few data available, it is evident that the private training market for adults, in particular, can be significant, especially in some countries and for some sectors, IT and financial services to name a few (NIACE, 2009) ([24]).

At the same time, it is also important to note that while private training providers have played a major role in the provision of adult training in such markets, state-funded VET providers have also often played a role in, for example, providing short courses to meet the needs of local employers better. This is especially true in more flexible labour market and qualification systems, such as in Ireland and the UK.

Microcredentials seem to be evolving out of this wider context of skills development, in which short courses are already commonplace and national qualifications frameworks and quality assurance procedures play a major role ([25]).

([24]) Data from the UK suggest that the total of employers' training budgets (over GBP 18 billion in the late 2000s, quoted in NIACE, 2009) is several times greater than total government expenditure on adult further education and spending (then GBP 3-4 billion). While most spending by employers at that time went on internal training, between GBP 2.5-3 billion went on external training, supporting a mainly private sector training market (NIACE, ibid.)

([25]) This is also important because the literature on microcredentials has so far been dominated by the perspective of higher education, which is different. For example,

However, this context varies between sectors in terms of the strength of the connection between VET and occupations. This is likely to have shaped the role played by short courses in the past, which microcredentials may (increasingly) play in the future.

3.3. Qualifications and microcredentials in two example sectors

Manufacturing and retail are two of the largest sectors in the European Union, both in terms of their added value and their contribution to employment. Based on Eurostat (2022a; 2022b) data, in 2018, the manufacturing sector employed 29.9 million people, and distributive trades sector ([26]) – of which retail is a large part – employed 29.2 million people. However, at national level, the relative importance of these sectors in terms of employment varies. For example, manufacturing ranges from 11.9% of all employment in the Netherlands, to 35.1% in Czechia. Variation in retail is somewhat lower, ranging from 18.3% in Slovenia to 28.9% in Greece.

Characterising sectoral differences in relation to the qualifications landscape in Europe is a complicated task, due to the difficulty of generalising across countries and within sectors. Even within an individual firm in a given sector, a range of occupations can be found. In retail, for example, as well as retail assistants and store managers, people are employed in financial administration, logistics, warehousing, as bakers, etc. Nonetheless, certain observations can be made by taking retail and manufacturing as examples.

The retail sector is characterised by a large base of micro and small (often family) businesses, plus some large multi-national companies. The use of qualifications as a gateway to employment in the sector may be weaker than in manufacturing, where technical skill sets are more likely to be required. Opportunities for lifelong learning may also be more limited, due to a lack of time and resources, a well-known feature of micro and small businesses. In this context, microcredentials may be an attractive way for workers and self-employed business owners to upgrade their skills as they can certify learning in areas where formal qualifications are limited or do not yet exist (Cedefop, 2022b). In some countries,

universities are frequently their own awarding bodies and standard-setters, and have much less of a tradition of offering short courses leading to an award. There is also potentially less competition in the market for short courses.

([26]) NACE classifies retail trade, wholesale and repair of motor vehicles and motorcycles as distributive trades sector for which statistics are provided.

such as Lithuania and the UK, large companies tend to undertake their own training and career-development programmes in-house (Box 1), with cooperative efforts between companies to set occupational standards being weak compared with some parts of manufacturing (a profile which also partly reflects the UK's flexible labour market regime).

Box 1. **Maxima training programme**

One of the largest retailers in Lithuania has a School of Mastery for chefs, bakers, butchers and confectioners. The company has established employee training centres, at which newly employed individuals are prepared for their future position. The training programme lasts 2 months, and individuals have to complete practical tasks assigned by experienced senior colleagues. Maxima sets specific standards for the training of its employees. No costs are associated with the training, and employees receive a salary throughout the duration of the programme.

This initiative has come about as a result of a lack of candidates with the required skills for these positions: the company has taken on responsibility for providing potential employees with the skills they lack in relation to the specified position. At the same time, employees are fully introduced to the company's processes and culture, which reduces stress for newcomers, especially those who are not only changing workplace, but also their career pathway. Assessment (through practical assignments) is focused on the learner's ability to demonstrate job-specific skills at the end of the training.

Source: Maxima website.

It is difficult to generalise with respect to manufacturing, due to large variations exit between different sub-sectors in terms of the production processes and levels of technology used, and hence the skills required. However, there is likely to be a fairly strong connection within the sector between initial VET qualifications and entry to more technical occupations. In addition, the profile of company size within the manufacturing sector is different from that of retail, with far fewer micro and family businesses. Further, the use of vendor qualifications is a long-established feature of the sector, as a means of ensuring that technicians can operate machinery. Supply chains can exert a strong influence on skills development, with large companies driving product and process changes among suppliers, with consequent needs for upskilling. Some companies also organise company-specific training, depending on the types of machinery they operate (Box 2).

Box 2. **Machine training courses**

Venjakob, a family-run company based in Germany, provides tailored courses to businesses that need to train their employees in the use, maintenance and support systems for machinery. The tailored nature of these courses is crucial, as different companies use different machinery and require training options relevant to their internal work processes. Venjakob offers three types of courses: for operators (basic course); maintenance (advanced course); and application technology (professional course). Training takes place both in person and online (virtual training using VR glasses). After completing these courses, employees are issued with a certificate that qualifies them to operate the relevant machines and systems.

Source: Venjakob website.

Despite the difficulties in comprehensively characterising the qualifications landscapes in retail and manufacturing, there is evidence that these sectors have different development trajectories and skills systems and aim to recruit their workforce from different demographics (Cedefop, 2019b). Even though differences exist between these sectors in terms of their workforce, both have experienced changes (Table 3.) that will require adjustments to their workforces in terms of their knowledge, skills and competences.

Table 3. **Main changes taking place in the manufacturing and retail sectors**

Manufacturing	Retail
Introduction of new production technologies and growing level of technological complexity	Online trade (e-commerce, e-sales, digital marketing)
Advent of new materials	Technological transformation (smart shelves, robots, automation)
Growing automation and robotisation of industrial production through Industry 4.0	Expanding range of services (cash withdrawals, micro crediting, billing for services)
Digitalisation and shortening of value chains	Internationalisation and increased global competition
Growing need for interdisciplinary and broader basic knowledge	Growing need for a higher degree of professionalisation

Source: Prepared by Cedefop, based on desk research and ReferNet questionnaires (Cedefop, 2019; Eurostat, 2022; EuroCommerce; ReferNet questionnaire Greece, 2021; ReferNet questionnaire on Lithuania, 2021).

The developments currently taking place in manufacturing and retail suggest that employees in these sectors may need to adjust their knowledge, skills and competences to remain working within the relevant sector. For example, both manufacturing and retail are seeing the introduction of new technologies, materials and operational approaches (e.g. online sales and digital marketing) into their

practices. This means that employees will need to keep pace with these changes and learn how to use specific new technologies or machinery (Box 3 and Box 4).

Box 3. **Robotic process automation (RPA) fundamentals masterclass**

The RPA fundamentals online course is designed to introduce the background, purpose, suitability, impact and basic steps for adopting and implementing RPA to senior management, global business services, shared services centre operations, IT functional management, process leads, continuous process improvement teams, transformation office members and team members. For those with little or no previous knowledge of RPA, this course – delivered online via the Hackett Institute – provides an in-depth explanation and understanding of the terminologies, processes and strategies involved in robotic process automation. Functions such as auditability, scalability, operation, delivery and governance are all addressed in detail, and learners acquire clear and concise knowledge of the theory and practice behind RPA. This course is part-funded by Skillnet Ireland.

Source: Skillnet Ireland.

Box 4. **Certified e-commerce and social media expert (CESE) certificate**

The CESE certificate was created for people who wish to have their competences assessed by an independent body. The certificate gives learners the opportunity to document their competences in line with international standards. By issuing the CESE certificate, the WIFI certification body in Austria confirms that the owner is an expert in e-commerce and social media. Certificate holders possess extensive knowledge of new media. They are able to design, plan and commission marketing measures in coordination with their customers on social media. The certificate is valid for 3 years.

Source: WIFI website.

There is concern among Europeans about what emerging technologies might mean for their job security, with three-quarters of Europeans believing that the use of robots and artificial intelligence cause many jobs to disappear (Eurofound, 2019). While it is unlikely that most of the employees currently working in these sectors will be able to engage in full-time programmes, they will nevertheless be expected to gain new or higher skills (Eurofound, 2019). Here, certified short learning activities can be particularly useful; even at European level, we can see various kinds of relevant initiatives are emerging. The European Battery Alliance, which launched a new European Battery Academy to boost skills relevant to the fast-growing battery ecosystem in Europe, is one of the most significant European-level initiatives used to upskill employees in the sector (Box 5).

Box 5. **Upskilling initiative under the European Battery Alliance (EBA)**

In 2021, the EBA Academy, a training platform for jobs in the battery value chain, was created. The platform has more than 30 training courses, developed since 2018 in collaboration with leading European companies and organisations in the sector; it offers its services via local centres that specialise in training workers.

In addition to Spain, EIT InnoEnergy and the French Minister of Labour, Employment and Integration have signed a memorandum of understanding to launch the EBA Academy to reskill and upskill tens of thousands of workers for the French battery industry. As one of the leading actors under the European Battery Alliance, France – with three gigafactories under construction and expected to become operational by 2023 – has a growing need for specialised engineers and technicians. To fill this gap, EIT InnoEnergy, coordinating the industrial work under the EBA, will spearhead an education-sharing platform to dramatically reduce the costs of reskilling and upskilling. In France alone, the EBA Academy will train 150,000 people by 2025 to support the transitioning of jobs from the combustion engine to the electric vehicle industry.

It is estimated that by 2025, around 800,000 workers at European level will need to be trained to be able to operate all the industrial projects in the sector (already more than 70) that are being deployed in Europe. The EBA Academy platform is the solution to the challenge of training such a large volume of workers in such a short space of time.

Source: EIT InnoEnergy, 2021a and 2021b.

This overview of manufacturing and retail sectors indicates that they have different development trajectories and skills systems, and that historically they have aimed to recruit their workforce from different demographics. In manufacturing, VET systems in different countries have different starting points and follow differing trends. The retail sector – as part of trade and services – is labour-intensive and can be considered to be growing across countries (Cedefop, 2019b). These two sectors were deliberately chosen to reflect these differences and present the largest and most dominant sectors in the EU, which employ a large portion of the EU's working population (Eurostat, 2022a; 2022b). Due to their size and importance, they present a substantial need for upskilling and reskilling, which microcredentials seek to address.

CHAPTER 4.

General understanding of microcredentials in relation to qualification systems

4.1. Current position of microcredentials in strategies and policies

Key findings

- Concepts similar to microcredentials, as defined by the European Commission, are already prevalent in many European countries.
- A variety of different names exists, distinguishing credentials that certify a small learning experience or a demonstrated competence from full VET qualifications, including small competence units, certificate-courses, supplementary qualifications and 'module certificates'.
- Microcredentials are seen as being fit for purposes such as such as upskilling and reskilling, addressing the needs of the labour market, recognising prior learning, and widening access to a greater variety of learners.

The developments surrounding microcredentials and their further incorporation into national qualification systems vary greatly between European countries. The data collected present a comprehensive overview of the developments taking place at national level, regarding discussions and strategies to develop qualifications systems further. This section provides an overview of the different terms used in reference to microcredentials. It also indicates the individual national practices and documents that focus on microcredentials and/or equivalent concepts. The section concludes with a synthesis of the factors that drive discussions concerning the position of microcredentials in relation to qualification systems.

As microcredentials have recently gained Europe-wide attention in policy discussions, the focus mainly lies on the aim of better defining and standardising the existing offer of microcredentials within the national qualifications systems. This is the result of an understanding that concepts like microcredentials, as defined by the European Commission, are already prevalent in many European countries. Thus, the term microcredentials is not always explicitly used in strategic documents, but their intended function is often represented in specific documents or policy discussions.

The extent to which microcredentials are discussed at national policy level in various countries can be broken down into three categories:

(a) countries in which policy discussions are at an initial stage;
(b) countries in which more advanced discussions surrounding microcredentials are taking place at a policy level;
(c) countries in which microcredentials are referenced explicitly, and concrete legislation is either in the process of being passed or has already been put in place.

Table 4 presents the countries in which the discussions surrounding microcredentials and their place within the national qualification systems are at an initial stage. According to the data collected, these types of discussions can be driven by the activities taking place at European level, where a Council Recommendation on a European approach to microcredentials for lifelong learning and employment was recently adopted (Council of the European Union, 2022). Discussions can also be initiated through private/individual initiatives by various organisations that are eager to experiment with the concept of microcredentials, to understand their function and possible position within national qualification systems. However, in these countries, microcredentials are largely discussed implicitly by focusing on what similarities can be drawn with what the education domain currently has to offer.

Table 4. **Countries in which policy discussions surrounding microcredentials are at an initial stage**

Country	Type	Policy development status
Belgium-fl	Internal discussions	The Flemish policy domain does not yet apply the term microcredentials, nor has a delineated policy on the topic been adopted. However, exploratory steps towards the development of policies are taking place. The discussions surrounding microcredentials start by looking at what the education domain already offers. To move beyond the theoretical level and arrive at a concrete application of the concept of microcredentials, there is a goal to develop separate definitions and approaches for the various forms of learning (formal, non-formal and informal). For each of these forms of learning, different elements play a role when defining the concept of a microcredential and this needs to be addressed. In July 2021, the Flemish Education Council issued a position paper for consultations on microcredentials due to the important role they can play in lifelong learning provision in the European Union. The central question is how microcredentials can offer added value within lifelong learning, in addition to existing training courses offering full qualifications.

Country	Type	Policy development status
Belgium-fr	Internal discussions	The term microcredentials is not used by the public institutions, nor has a clearly delineated policy on the topic has been adopted. However, stakeholders representing the public education domain express concerns that the definition put forward by the European Commission is imprecise, which makes it hard to understand what exactly is meant by 'short learning experience'. Within the French-speaking Community of Belgium, parallels may be drawn between microcredentials and existing qualifications, based on certain commonalities.
Bulgaria	Internal discussions	Microcredentials have not been defined, nor recognised in Bulgarian legislation. The concept of microcredentials has been discussed in limited groups, mainly in relation to the education system, but no broader discussions have been initiated. Despite the lack of policy discussions on the topic, social partners in Bulgaria have begun to implement a total of seven projects aimed at developing and drafting digital skills and qualifications frameworks that would reflect these skills. As part of this project package, a separate plan has been made for a larger study on microcredentials and the further development of a pilot model to be discussed with other social partners and presented to the competent institutions.
Cyprus	Internal discussions	In Cyprus, the term microcredentials began to be used during discussions on the establishment of the European Education Area, and is gradually receiving greater attention. In particular, the concept has been discussed in the domains of vocational education and training, higher education and adult education as an approach to helping individuals widen their learning opportunities and strengthening lifelong learning through more flexible and modular learning pathways.
Czechia	Internal discussions	In Czechia, both the concept and purpose of microcredentials are the subject of discussions currently taking place internally within individual institutions (the Ministry of Education, Youth and Sport, the National Pedagogical Institute of the Czech Republic, the Czech National Agency for International Education and Research). Organisations representing employers are also actively expressing interest in this topic.
Denmark	Internal discussions	Currently, there are no policy developments on the inclusion of microcredentials in the Danish qualifications system. The Danish Accreditation Institution has published two reports ([27]) providing a general introduction to and presentation of the ideas behind microcredentials, as well as presenting the specific experiences with microcredentials of institutions of further and higher education.

([27]) Further information: Danish Accreditation Institution website.

Country	Type	Policy development status
France	Internal discussions, working groups, legislation ([28]).	The vocational education and training system in France is currently undergoing transformation, under which the potential for the uptake of microcredentials is high. The Ministry of Education and Culture has started a discussion on the concept, meaning and development of microcredentials. This discussion will include all sectors of education and training. At institutional level, the concept of microcredentials has been taken up by the organisation FUN MOOC (*France Université Numérique*) ([29]), which also participates in the European MOOC Consortium. In parallel, a newly created body, France compétences, which is responsible for managing the registration of qualifications in the national qualifications catalogue (RNCP and RS), is currently considering the acceptance of microcredentials and whether they can be integrated into the NQF.
Germany	Internal discussions	In Germany, the term microcredentials is not yet widely used or discussed. In higher education, it is more common to speak of certificate courses, i.e. short educational programmes that end with a certificate. More concrete discussions are taking place with reference to micro-degrees or badges which are closely linked to the development of massive open online courses (MOOCs) (German Rectors' Conference, 2020).
Greece	Internal discussions	No policy developments have yet taken place on including microcredentials into the national qualifications system. The concept of microcredentials has, however, been incrementally discussed among education and labour market experts as well as policy-makers. In Greece, microcredentials, while not formally recognised and included in the national qualification system, have been endorsed in continuing professional development as a strategy for upskilling and reskilling. The labour ministry and the Manpower Organisation (OAED) provides Employment and vocational training fund (LAEK) programmes ([30]) to enterprises, which organise training for their employees using subsidy funding from the OAED. Microcredentials are also offered by lifelong learning centres and vocational education and training institutions as well as enterprise learning centres and trade unions learning centres. However, these are not recognised as part of the formal qualifications system.

Source: Prepared by Cedefop, based on desk research, ReferNet questionnaires and interviews.

([28]) The policy developments taking place in France do not explicitly refer to microcredentials but focus instead on making the system more flexible and allowing for the broader inclusion of alternative credentials and qualifications within the national qualification system.

([29]) Following the law of July 2013 relating to higher education and research, the Ministry of Higher Education and Research opened the French Digital University (FUN).

([30]) LAEK programmes are remunerative, and employees from all companies can participate if the employer contribution of 0.24% has been paid.

The table that follows presents a list of countries in which more advanced discussions regarding microcredentials are taking place at a policy level. They are largely stimulated by ongoing or completed reforms that aim to make the national qualifications systems more flexible and allow wider opportunities in terms of learning pathways. Aside from internal discussions and setting up specific working groups, the countries listed below have also explored the concept of microcredentials by producing policy and position papers, offering project-based funding, and referencing microcredentials (implicitly and explicitly) in strategy documents.

Table 5. **Countries in which advanced policy discussions are taking place regarding microcredentials**

Country	Type	Policy development status
Netherlands	Internal discussions, working groups, position papers, project-based funding.	The policy discussions taking place in relation to microcredentials in the Netherlands focus more on higher education, although they do not neglect the importance of further exploring the applicability of microcredentials within the VET sector. Much has already been done to accelerate the debate regarding the possible use of microcredentials within Dutch education. The Netherlands has developed its own position paper in the context of public consultations by the European Commission on *Microcredentials for lifelong learning and employability* ([31]). It states that the pilot projects currently in place will follow a bottom-up approach and will respect the autonomy of both VET and higher education institutions, without giving the Dutch government a steering role. Nevertheless, it is believed that microcredentials should be seen in connection with the EQF, which would allow them formally to complement the curriculum without replacing full qualifications. Dutch policies on vocational education and training were revised during the previous term of government (2017-221). The policies put in place prioritising the flexibilisation of educational programmes and greater possibilities for lifelong learning. The Netherlands has already adapted its qualification structure to create more flexibility by developing basic student profiles and allowing individual parts of the programmes to be chosen. There is already a digitalisation programme to encourage experiments with edubadges ([32]) in

([31]) Position paper by the Netherlands in the context of the public consultation by the European Commission on *Microcredentials for lifelong learning and employability* (Parliamentary Paper No 28609458, 2021).

([32]) In the case of the VET sector in the Netherlands, MBO-Digital (platform of the VET Council for collaboration on digitisation in VET), with sponsorship from the Ministry of Education and MBO Raad (Secondary Vocational Education and Training Council), is experimenting with edubadges that allow VET students to showcase the knowledge they have acquired through formally accredited programmes, as well as via informal learning.

		the VET sector. This programme focuses on adult education for the purposes of reskilling and upskilling.
Poland	Internal discussions, working groups, strategy papers	In Poland, the *Integrated skills strategy 2030* has the status of a public policy. Although the strategy does not explicitly mention microcredentials, it makes clear reference to the improvement of systemic solutions to facilitate access to various forms of learning and enabling the recognition and certification of learning outcomes, regardless of how these outcomes were obtained. For example, it emphasises the need to develop and promote validation and certification, including the digitisation of staged accumulation and recognition of achievements. Along with a working group established within the Ministry of Education, plans have also been initiated to develop a repository or registry of microcredentials (understood as credentials other than qualifications) within the Integrated Qualifications System (IQS).
Slovakia	Internal discussions, strategy, action plan of the strategy	In November 2021, the Government of the Slovak Republic approved the *Strategy of lifelong learning and guidance for 2021-2030*. The aim of the strategy is to define forward-looking measures in education policies 'responding to the dynamically changing labour market, the nature of work in the context of the fourth industrial revolution and systemic changes in the field of education for all'. Thematic area 1.6 is specifically dedicated to 'increasing the flexibility of the qualification system with microcredentials'. The subsequent elaboration of the strategy is outlined in the form of action plans over three phases, each covering 3 years. In January 2022, the State Vocational Education Institute was entrusted with preparing an initial draft of the *Action plan for the strategy of lifelong learning and guidance for 2022-2024*. The action plan contains a roadmap of activities, based on the defined thematic areas of the strategy. The main activities include the creation of legislative conditions for the introduction of micro-certificates in practice, support for the creation and provision of micro-certificates by universities and education institutions and promoting the provision of microcredentials without restricting the acquisition of required qualifications.

Source: Prepared by Cedefop, based on desk research, ReferNet questionnaires and interviews.

Table 6 provides a list of countries in which microcredentials, or alternative credentials are referenced explicitly in legal documents, and in which legislation is either in the process of being passed or has already been put in place. In these countries, microcredentials or alternative credentials are discussed in terms of their position within the national qualification systems.

Table 6. **Countries in which legislation and regulations on microcredentials have been introduced**

Country	Type	Policy development status
Estonia	Internal discussions, working groups, studies, strategy papers, draft regulation	The topic (under the term nanodegree) was introduced in 2019 as a result of the developments taking place at European and global levels, as well as in connection with the preparation of Estonia's new *Education strategy 2021-2035*. In a vision paper on competitiveness, an expert group made proposals for the development of Estonian education, research, youth and language policy in the period 2021-35, with nanodegrees and module-based learning pathways being envisaged as suitable forms of more concentrated and short-term continuing training. To expand the concept of microcredentials beyond higher education and start regulating its uses, the Estonian Ministry of Education and Research has launched a regulatory process and proposed that the term micro-qualifications be used by all parties as a general, agreed-upon term. At the end of 2020, a thematic working group was convened: the Estonian Qualifications Authority was involved in the discussions, a concept paper on micro-qualifications was drafted, and the terms of reference for a study were prepared. The study, entitled *Possibilities for the introduction of micro-qualifications in the Estonian education system and qualifications system based on international practice* (Kivistik et al., 2021) was completed in May 2021. In the study's conclusions, it was suggested that Estonia should follow the example of New Zealand regarding its quality assurance system, and Ireland with regard to the integration of a micro-qualifications system into the national qualifications framework and a well-established database of available micro-qualifications. A programme called Training Credit, created in cooperation between companies and higher education institutions, serves as a good example of a micro-qualifications system in terms of its objectives, although with a limited number of providers and learners ([33]). The involvement of the State in the development of the micro-qualifications system is in line with Estonia's strategic goals, with micro-qualifications used as a lever to encourage the participation of low-qualified people in lifelong learning.

([33]) Further information: Ulemiste City website.

Country	Type	Policy development status
Ireland	Internal discussions, working groups, technical reports, strategy papers	In Ireland, a concrete reference to microcredentials can be found in the SOLAS ([34]) Strategy for 2020-24. The strategy, *Future FET: transforming learning*, refers to microcredentials as a means to facilitate pathways for lifelong learning and support recognition of prior learning processes (SOLAS, 2020). Here, microcredentials are framed as a further education and training (FET) resource for enterprises and employees, while also facilitating pathways for lifelong learning and supporting RPL processes. SOLAS intends to use the Innovation Fund projects to pilot three approaches with the national agency, Quality and Qualifications Ireland (QQI), allowing validation of new special-purpose awards comprising stackable, certificated modules offered by private providers in the further education and training domain. In addition, QQI has already developed a microcredential validation descriptor in the context of HE, which will be refined by QQI in consultation with the education and training boards (ETBs) and SOLAS. Also worth mentioning is the technical report published by QQI on the qualifications system (QQI, 2020). In the report, microcredentials are already referred to as qualifications that signify a small volume of learning, highly specific learning achievements, and emphasising the rise of the term in the context of digital badges. The Irish NQF is quite flexible and already allows for several different classes of awards, including minor and special purpose awards that can be considered microcredentials. In addition, the report commissioned by Skillnet, the National Agency for Workforce Learning in Ireland, has concluded that the NQF already gives Ireland a unique advantage in the adoption of microcredentials, and has an existing and well-suited mechanism for recognising microcredentials (Bernie et al., 2020).
Latvia	Internal discussions, working groups, legislation	Developments in Latvia regarding microcredentials or alternative credentials speak about the distinct parts of a full qualification. Amendments made by the VET Law of 2022, which was adopted in March 2022, state that every module completed shall be represented by a certificate, for independent use or for building up a qualification. This policy measure is anticipated to help the system to react better to skills demands in the labour market, as well as providing greater flexibility for individual learning pathways.

([34]) SOLAS is the Irish national agency responsible for Further Education and Training.

Country	Type	Policy development status
Spain	Internal discussions, working groups, legislation	In Spain, the Ministry of Education and VET recently passed an organic law on VET, which defines and regulates microcredentials as a part of the formal VET system. Under the new law, all training will be embedded into training pathways leading to accreditation, certification and qualifications. A new catalogue of competence standards will replace the current national qualifications catalogue and will enable micro-training and microcredentials. The new organic law allows for the creation of a new catalogue of vocational training offer which will include microcredentials. In addition, a new national register of vocational training and a register of accredited vocational competences acquired through non-formal or informal means, allow individuals to prove their accredited training.
United Kingdom (Scotland)	Internal discussions, working groups, strategy papers, project-based funding	In Scotland, a variety of discussions have emerged that focus explicitly on the introduction and uptake of microcredentials. The Scottish Funding Council (SFC) launched a consultation in 2020 to provide an opportunity for everyone interested in tertiary education and skills formation to participate in discussions on what the future of education should look like. The synthesis report on the various opinions expressed indicated that, for an integrated tertiary system, responsive digital infrastructure is needed that can support flexible entry points to education, along with stackable qualifications and microcredentials. As a next step, a project was launched to investigate further the practical need for microcredentials, identifying those sectors that would have the greatest impact on the post-pandemic recovery of the Scottish economy. The project, *Exploration of recognition for microcredentials*, was commissioned by the Scottish Credit and Qualifications Framework Partnership (SCQF) and funded by the European Commission (SCQF, 2021). The project concluded that the Scottish Funding Council (SFC), through the National Transition Training Fund, could potentially facilitate the introduction of microcredentials to support key sectors in which employment has been affected by the COVID-19 pandemic. As a result, in March 2021 the SFC announced additional university upskilling funding for microcredentials (SFC, 2021). The funding is intended to support skills training through microcredentials delivered via Scottish universities. In Scotland, the Scottish qualifications framework allows shorter-length programmes to be recognised and included within the framework, pointing to a high existing level of flexibility. In relation to the further uptake of microcredentials, as defined by the agreed European definition, the Scottish case provides for less significant fine-tuning compared with the frameworks of other countries across Europe.

Source: Prepared by Cedefop, based on desk research, ReferNet questionnaires and interviews.

The key factors driving discussions concerning the position of microcredentials in relation to qualification systems are multifaceted, and stem from the added value for stakeholders. The synthesis below derives from desk research, case studies (Cedefop, forthcoming-c, d, e, f, g, h, i, j) and the mapping of microcredentials. The reader should note that the factors identified here do not operate in silos, but complement each other, and are usually interlinked.

Upskilling and reskilling

One of the factors driving discussions concerning the position of microcredentials in the national qualification systems is the need for upskilling and reskilling strategies. Due to rapid changes in the labour market and the pace of digitalisation, there is a clear demand for flexibility to address the technological, digital, social and environmental developments taking place globally and the pressing issue of skills mismatches and skills shortages among the working population. Microcredentials could fill this gap by providing the means to match better the needs of the labour market and adapt better to the needs of individuals.

Box 6. **Industry certificates in Ireland**

To address skills mismatches and skills shortages in Ireland, SOLAS has concluded a national certification agreement with Certiport (a Pearson VUE business) on behalf of the further education and training sector, to access industry-recognised examinations and certification.

These certifications are issued as part of publicly funded FET programmes organised by ETBs. SOLAS funds programmes in which these industry certifications are either the only certification, or are combined with QQI qualifications, and learners are awarded digital badges as standard when they pass their exams. According to the most recent estimates, around 4,000 certifications of this nature are issued each year in FET, mostly in relation to Microsoft and Adobe subject domains.

Source: Case study on Ireland (Cedefop, forthcoming-d).

Labour market relevance

Research revealed there is a feeling of urgency about addressing skills needs in emerging sectors of the economy in which qualifications have not yet been formalised or are not available, due to the narrow and specific skills required to perform tasks in the labour market. Microcredentials offer a unique opportunity to acquire skills and competences that are not yet addressed by conventional certificates and/or diplomas, and to enable access to employment in emerging sectors, especially ICT.

Box 7. **Continuous education and skills development courses in Denmark**

In Denmark, the Danish AMU system (CVET primarily for people without a labour market qualification) provides continuing education and skills development courses to both skilled and unskilled workers. The system is aimed at those citizens with the lowest levels of education attainment.

Source: ReferNet questionnaire on Denmark, 2021.

Recognition of prior learning

Various stakeholders regard microcredentials as being suitable for stimulating lifelong learning and for the recognition and validation of knowledge acquired through informal and non-formal learning settings. Microcredentials, if standardised, would allow the simplification of procedures for the recognition of prior learning. This is in line with the latest developments in countries where initiatives regarding the validation of non-formal and informal learning are taking place (Box 8).

Box 8. **Validation and recognition practices in Austria and Czechia**

In Austria, the WIFI certification body assesses and certifies specific competences acquired through previous experience. For example, the E-commerce & social media expert certification provides a certificate to individuals with at least 2 years' experience in the field of e-commerce and social media, after they pass the certification exam. The certificate gives formal recognition of individuals' competences acquired through their professional experience.

In Czechia, the Ministry of Industry and Trade validates and recognises skills acquired through previous experience by issuing a certificate for 3D printer operators for industrial application. The certificate attests that the individual adheres to safety regulations and injury prevention when operating a 3D printer, and possesses knowledge and comprehension of basic 3D printing technologies.

Source: WIFI website and the National Register of Vocational Qualifications (NSK).

Trust and credibility of microcredentials

Discussions regarding the position of microcredentials in qualification systems are also driven by the need to increase the credibility and recognition of short training and education programmes offered outside formal education and training systems. While VET systems have been slow to respond to the skills urgently needed in the labour market, the private sector has become increasingly active in the provision of non-formal sectoral qualifications. Such qualifications are awarded by a wide range of bodies, organisations and companies, and address various purposes. These so-called sectoral qualifications are an important element within education and training and should be given appropriate weight and recognition.

Box 9. **European care certificate (ECC)**

The European Association of Service Providers for Persons with Disabilities (EASPD) provides a European care certificate (ECC). The ECC is a Europe-wide qualification covering the basic knowledge required for an individual to work in a health and social care setting. It is aimed at trainers, employers and staff in the sector. Although widely known across Europe, the certificate is only included in the UK's NQF, and explicitly refers to EQF Level 3.

Source: EASPD website.

Equal opportunities and wider access to a greater variety of learners

Microcredentials can target and reach individuals in vulnerable situations, including learners with limited opportunities and those from disadvantaged backgrounds. Microcredentials can provide access to those who have traditionally been discouraged from entering the education system due to time constrains or for other domestic reasons.

Box 10. **Project Moonlite**

An Erasmus+ cross-national project called Moonlite aims to improve educational offerings to refugees and migrants by boosting the use of MOOCs. The objective of the project is to harness the potential of MOOCs for refugees and migrants to build their language competences and entrepreneurial skills for employment, higher education and social inclusion.

Source: Moonlite project website.

Progression within employment

Microcredentials are widespread in teachers' education and professional development. Short learning activities leading to microcredentials serve as a tool to improve, monitor and account for the skills acquired by individuals in teaching positions.

Box 11. **Microcredentials in teachers' education and professional development in Poland**

In Poland, the procedure for the professional promotion of teachers is defined by education law governing the improvement of teachers' qualifications. One way in which specific new skills can be confirmed is through participation in courses and training leading to microcredentials. Education and training services leading to microcredentials in the school-based education sector are usually organised by teacher training institutions (supervised by the minister for education). One of the largest non-public providers of such training claims to provide training to over 90 000 teachers each year.

Source: Case study on Poland (Cedefop, forthcoming-h) and Librus Teacher Training Centre website.

4.2. Current understanding of microcredentials: characteristics, purpose and role

Key findings

- Stakeholders position microcredentials on a continuum of qualifications/credentials, serving a supplementary and complementary function to other forms of qualifications.
- In practice, the definitional boundaries between microcredentials and sectoral or professional skills certificates are blurred and, in some cases, non-existent.
- Quality-assured and industry-recognised certificates could be considered as a subcategory of microcredentials that enjoy higher visibility, recognition, and trust.

4.2.1. Characteristics of microcredentials, and links to other qualifications

4.2.1.1. *Microcredentials compared with traditional and formal qualifications*

Formal qualifications, which have existed for a long time, are the cornerstones of national qualifications systems, and continue to signal value to both learners and employers. However, they can have certain limitations, which have been highlighted by the emergence of microcredentials. They may be too supply-driven, and do not always correspond to the needs of learners and employers. For instance, during the hiring process, traditional qualifications are usually complemented with certificates and other forms of qualifications/credentials obtained outside the formal education system, better signalling job-relevant technical and soft skills. The role of qualifications also varies between countries and sectors. In rapidly changing sectors such as ICT, traditional qualifications are losing value and are increasingly being replaced by smaller, more specialised ones

that are better tailored to the specific needs of the job and can be acquired much more quickly to meet rapid developments in the sector.

There was strong agreement among the interview respondents ([35]) from different stakeholder groups that traditional qualifications do not always accurately identify and recognise individuals' existing skills and knowledge, and do not respond in a timely manner to the needs of the labour market. In this respect, microcredentials are considered to have a comparative advantage over traditional qualifications and certificates by better signalling individuals' skills and competences and responding quickly to the changing needs of the labour market. To address this deficiency of traditional qualifications, some countries are experimenting with alternative credentials, including microcredentials, while collaborating closely with the private sector. For instance, in Czechia, the Ministry of Education has established a partnership with IBM to pilot microcredentials aimed at improving IT and mathematical skills. The programme is jointly designed by IBM and schools and targets adult learners as well as those in upper-secondary and tertiary education.

Near-consensus existed among interview programme respondents that microcredentials will not diminish the labour market value of recognised qualifications soon. Interviewees from different stakeholder groups tended to agree that formal qualifications are still the most widely known and valued in the European labour market, while microcredentials are less so. Microcredentials can complement full qualifications/degrees and be recognised within traditional educational pathways; such views position them as one element in a broader system of qualifications and credentials. In this sense, microcredentials do not stand in opposition to traditional qualifications but are positioned on a continuum of qualifications/credentials, serving a supplementary and complementary function to other forms of qualifications. Further, microcredentials can push the national qualifications systems towards change. Since such systems – especially formal systems – are too rigid and slow to change, microcredentials can help to make them more flexible and better able to respond to the needs of the labour market. The modularisation of existing qualifications and programmes (discussed in Section 5.1) into stand-alone certificates (which could qualify as microcredentials) is one of the strategies used to enhance the flexibility and relevance of existing education programmes and qualifications, without having to change them entirely.

([35]) The interview programme analysed in this chapter included representatives of employers' organisations, employee organisations, VET providers and national authorities. The interviews covered the following countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Slovenia and Sweden.

One of the potential drawbacks of microcredentials, highlighted by the stakeholder group survey and the interview programme, is the fragmentation of knowledge. There is a potential risk that learners may simply pick and choose courses here and there, rather than pursuing a full degree. While individuals can obtain specific and job-relevant skills through microcredentials, they should also acquire a broader perspective on their respective occupational fields, as well as general knowledge, which can be obtained through a formal degree programme. However, this potential risk did not appear to be of great concern to other interviewees.

Most survey respondents from national authorities and VET providers, as well as employer and employee organisations, agreed that microcredentials offer advantages over traditional forms of qualification (Table 7). However, between 22% and 30% of survey respondents did not know or could not say whether microcredentials offered any advantages over traditional qualifications. This finding indicates that knowledge of microcredentials and their characteristics is not yet widespread among relevant stakeholders, especially VET providers.

Table 7. **Do microcredentials have any advantages over traditional forms of qualifications and other forms of competence recognition?**

Stakeholder group	Yes	No	Do not know / cannot answer
National authorities (n=74)	63%	15%	22%
VET providers (n=187)	54%	16%	30%
Employer organisations (n=37)	59%	14%	27%
Employee organisations (n=66)	50%	24%	26%

Source: Survey of stakeholders (n=364).

Research revealed potential advantages that microcredentials offer over traditional qualifications and degrees. The most prominent is the fact that they are flexible and provide a format well suited to upskilling and reskilling, enabling a speedier response to the needs of the labour market. In terms of their content, they were also seen as being more relevant to labour market needs. They were considered better suited to lifelong learning and to facilitating the recognition of employees' knowledge, skills and competences.

At present, discussions in many European countries regarding the place of microcredentials within the VET sector are at an early stage. However – and as evidenced in the interview programme and in the mapping of microcredentials in manufacturing and retail sectors – it is widely acknowledged that microcredentials

are increasing in number. There are increasing demands on the VET system to better adapt and respond more quickly to changes in the labour market, and to provide learners with the right skillsets. This has also been emphasised in the Bruges communiqué (European Commission, 2010), which called for the VET sector to respond better to changing labour market needs and continuously update VET content to keep up with these changes. The Osnabrück Declaration of 2020 also highlighted an increase in labour market demand for a different mix of skills and qualifications. Labour market and skills intelligence, along with research, were mentioned as the basis for informing the relevant VET stakeholders how to adapt VET offers to the changing needs of the labour market. In alignment with this, the European Economic and Social Committee (EESC, 2021) encouraged Member States to link microcredentials to employment policies as an important and complementary tool for the reskilling/upskilling of the workforce and to reducing skills mismatches in the labour market.

ReferNet questionnaires (Cedefop, 2021a) offer some important insights into the position of microcredentials in national qualifications systems, and their relationships and linkages with other forms of qualification. Conceptualising microcredentials as a generic/umbrella concept that describes, and has the potential to encompass, qualifications and certificates awarded after short learning experiences, followed by assessments against certain standards and quality criteria, several practices can be identified in different national contexts that fit this broad understanding (even if they are not referred to as such in their national contexts). Analysis of microcredential practices in national contexts (Table 9) points to two main categories.

The first category is microcredentials as a stand-alone offering. These offer independent value in the labour market, and are not developed or offered as part of a larger qualification. Examples of such microcredentials include:

(a) training specialities offered by the Spanish public employment service (SEPE), with over 4 000 subsidised training programmes for workers, ranging from 3 to 1 110 hours;
(b) certificate of skills (*Attestation de compétences*) issued for non-formal training that does not lead to a qualification registered in the French National directory of vocational qualification (RNCP) or the Specific directory (RS);
(c) akademija.lt, the education platform for professional IT education in Lithuania, which, since 2014, has offered formal training programmes worth 50 to 60 credits;
(d) training programmes provided by the employment service of Slovenia as non-accredited CVET programmes.

The second category comprises microcredentials offered as part of a larger educational unit or full qualification: these are offered as part of a larger qualification and relate to the modularisation of qualifications and programmes discussed in Section 5.1, and to accumulation practices discussed in Section 5.3). Examples of such microcredentials include:

(a) course units (*unité d'enseignement*) in Belgium's French-speaking Community, which exist as groups of courses, with each course unit leading to a pass certificate (*attestation de réussite*);
(b) certified modules in Czechia, offered within the context of the ESF project *Modernisation of VET (2017-20)*, which aims to modularise the educational programmes offered in IVET;
(c) add-on credentials to formal qualifications in Greece, which are not considered stand-alone formal qualifications. These aim to update and/or refresh the knowledge and skills acquired through a formal qualification;
(d) up-skilling courses (*profesionālās pilnveides programmas*) offered in Latvia, which are certified short-term training courses (units of learning outcomes) of up to 160 hours, and constitute part of a qualification;
(e) VET certificates in the Netherlands, which certify the achievement of the vocational components of a qualification.

Table 8 offers a broad (though not necessarily comprehensive or exhaustive) mapping of education and training practices that comply with the EU Council (2022) definition and characteristics of microcredentials. This mapping exercise, based on ReferNet questionnaires (Cedefop, 2021a), offers insights into the position of microcredentials in qualification systems and the form in which they appear in different national contexts.

Table 8. **Examples of microcredentials in national qualification systems and their links to other qualifications**

Country	Microcredentials in national qualification systems
Belgium-fl	In Flanders, examples of qualifications that fit the definition of microcredentials in formal and non-formal VET include vocational training courses (BKT), training offered by the Flemish Employment Services and Vocational Training Agency (VDAB), recognition of skills (EVC), and training under Flanders training leave.
Belgium-fr	In French-speaking Belgium, there are several offerings that align with the broad understanding of microcredentials. In VET, units of learning outcomes (ULOs) represent a coherent set of learning outcomes that can be assessed and validated. Validation certificates (*attestations de validation*) are awarded in IVET for training implemented under the certification by unit (CBU) system. Specific training outcomes certificates (CAFSs) are linked to vocational skills, which are not specific to any particular profession. Certificates of skills acquired in training (CECAFs) are composed of ULOs and are awarded by vocational training institutions. CECAFs, unlike CAFSs, are linked to

	professional frameworks and represent qualifications that enable their holders to enter the market. In adult education, course units (*unité d'enseignement*) exist as groups of courses, with each course unit leading to a pass certificate (*attestation de réussite*). A similar concept exists in higher education, where several credits are offered as a single course, a module of a higher education programme, or as a stand-alone certificate.
Bulgaria	In Bulgarian VET, a partial qualification in a profession can be awarded within the framework of the Vocational education and training Act (VETA). A partial qualification in a profession includes a group of professional competences along with general knowledge and skills. Within the context of the VETA, partial professional qualifications represent units of interrelated learning outcomes that can assessed or validated.
Croatia	In Croatia, under the new Adult education Act, short training programmes (*programi osposobljavanja*) (accessed from EQF/NQF level 1), professional development programmes (*programi usavršavanja*) (accessed from EQF/NQF level 1), and VET specialist development programmes (accessed from EQF/NQF level 4) are possible examples of microcredentials.
Cyprus	In both IVET and CVET, several programmes are offered by the Department of Secondary Technical and Vocational Education and Training (STVET) of the Ministry of Education, Culture, Sport and Youth (MoECSY) as modularised curricula. Private training providers also offer many courses of short duration, with some leading to the award of microcredentials. In higher education, the Centre for Lifelong Learning, Assessment and Development at the University of Cyprus offers microcredentials to professionals in alignment with the needs of employers and/or professional unions.
Czechia	In Czechia, certified modules are the closest in concept to microcredentials. These are offered within the context of the European Social Fund (ESF) project *Modernisation of VET (2017-20)*, which aims to modularise educational programmes offered in IVET. Another important initiative is the P-Tech/SkillsBuild platform, implemented under a partnership with IBM to offer short-term certified courses and piloted in five schools. In CVET, the vocational qualifications certificates of the National register of qualifications attest to the competences an individual may have acquired following a short learning experience. They can be awarded based on standardised examinations.
Denmark	The term microcredentials is used in the Danish higher education system, in contrast to the VET system, in which microcredentials do not enjoy the same level of popularity or trust. However, it is still possible for students to receive documentation for small parts of VET course modules (1-2 ECTS). In CVET, the Danish AMU (labour market training) system, which supports people with no labour market qualifications, offers a wide variety of modules, some of which are as short as 1 day or even few hours. Microcredentials exist in higher education and can form part of a larger educational unit.
Estonia	Under Estonia's amended Adult Education Act, micro-qualifications can be provided by higher education institutions and VET providers, and can be recognised through the national quality assessment mechanism. They can be part of a formal education programme, awarded on the basis of a professional examination, or acquired through the validation of prior learning. In higher education, the three biggest Estonian public universities (the University of Tartu, Tallinn University, and Tallinn University of Technology) introduced micro-degrees in 2021/22, targeting working adults. These can be accumulated, leading to a full degree programme. Examples of micro-degrees offered by the University of Tartu include Data analysis (24 ECTS), the Basics of software development and software project management (18 ECTS), and Modern geoinformatics (21 ECTS). Another good example of micro-qualifications in HE is the Training credit programme, developed under

	a partnership between companies and HEIs, which offers 100 training courses.
Finland	Several possible examples of microcredentials exist in the Finnish system. These include competence requirements that are smaller than a study module of a vocational qualification or degree. Competence requirements are important for improving employability and aim to deepen and supplement vocational competences. Other examples of microcredentials in Finland include permits, licences and qualifications (e.g. hygiene passport). Digital badges are also widely used in Finland, especially in the private sphere. One good example of digital badges is the Competitive skills project by Oulu University of Applied Sciences, which piloted a national digital open badge constellation for digital skills required in education and employment.
France	Possible examples of microcredentials in France include the Certificate of skills (*attestation de compétences*) issued for non-formal training that does not lead to a qualification registered in the National directory of vocational qualification (RNCP) or the Specific directory (RS); certificates of professional qualification (*certificat de qualification professionnelle*, CQP), which are offered by professional branches, but still do not meet the RNCP requirements; and certificates of professional skills (*certificat de compétences professionnelles*, CCP), which are also offered by professional branches to certify additional skills, but may not be registered in the RS.
Germany	Several offerings in Germany are consistent with the definition of microcredentials. Additional qualifications (*Zusatzqualifikationen*) are offered in the context of apprenticeships to supplement a particular vocational competence with additional skills and knowledge. Partial qualifications (*Teilqualifikationen*) in adult education target low-qualified and unskilled people over 25, allowing them to earn vocational qualifications. In HE, certificate courses *(Zertifikatskurse*) are short programmes that end with a certificate; some of these certificates can only be awarded after an examination.
Greece	In Greece, microcredentials are offered as add-on credentials to formal qualifications: they are not considered stand-alone formal qualifications by national education authorities. The purpose of these supplementary qualifications is to update and/or refresh the knowledge and skills acquired through a formal qualification. Special-purpose qualifications are awarded based on a coherent set of learning outcomes that are part of a larger group of learning outcomes defining a qualification level. Providers of microcredentials in Greece include the lifelong learning centres of HEIs, VET institutes, enterprise learning centres (e.g. Vodafone academy), trade union training centres, and institutes of vocational training (IEK).
Hungary	Several short-term vocational training options in Hungary fit the description of microcredentials; these include partial qualifications, add-on qualifications, job-specific training, and specialisation training. These types of training deliver units of learning, after which a certificate of completion is awarded, but do not constitute stand-alone qualifications. However, it still possible to obtain a vocational qualification by passing a qualifying examination at an accredited examination centre. In higher education, individuals with tertiary degrees can be admitted to universities to study a course or module of a programme that is offered. The credits earned following the completion of the course or module may count towards higher education studies. Some Hungarian HEIs (e.g. Eötvös Loránd University) issue achievement badges that may be considered microcredentials.
Italy	In the Italian VET sector, micro-qualifications (single units of one or more competences) are widespread and can be referenced to the NQF/EQF. They are regulated by legislative Decree No 13 of 16 January 2013, which established the National System for the Certification of Competences (NSCC). Micro-qualifications represent short-term pathways.

Latvia	An example of microcredentials in Latvia is upskilling courses (*profesionālās pilnveides programmas*), which are certified short-term training courses (units of learning outcomes) that are up to 160 hours and constitute part of a qualification (but do not lead to one). Another example is the online learning platform Open minded, developed by the University of Latvia, which is accessible by and offers courses to all learners (and companies) regardless of their qualifications. Open minded enables them to study at their preferred pace and time. A certificate can be obtained after completing the course.
Lithuania	In Lithuania, vocational training programmes are modular, allowing the student to receive a certificate of completion for one module of a training programme. Another good example of microcredentials in VET is Akademija.IT, an education platform for professional IT education. Since 2014, this platform, which is the product of a partnership between IT companies and VET providers, has offered formal training programmes worth 50 to 60 credits. In adult education, the Labour Market Exchange office offers a broad range of short-term training for jobseekers to aid labour market entry. In higher education, Kaunas University of Technology (KTU) (a member of the Consortium of Innovative European Universities, ECIU), offers micro-modules based on sets of learning outcomes, which can be recognised as part of a study programme.
Malta	The Malta Further and Higher Education Authority (MFHEA) differentiates between qualifications and awards. Awards, which can represent good examples of microcredentials, are accredited programmes/courses that do not fulfil the qualification workload requirements (number of credits) for the corresponding Malta qualifications framework (MQF) level. Awards can be as small as one credit (25 hours of learning) and can take up to 1 year of full-time course enrolment. They also have MQF level-rated learning outcomes. Awards are very popular in the Maltese VET sector and are used in the labour market for the purposes of upskilling/reskilling. Examples of these awards are the more than 70 courses/awards offered to educators and VET teachers by the Institute for Education.
Netherlands	Microcredentials in the Dutch VET system are comparable in content and form to optional subjects in VET (*keuzedelen*), which are linked to EQF levels 3 and 4, and involve 240 study hours. VET certificates are yet another possible example of microcredentials, which certify the achievement of the vocational components of a qualification. They also have independent value in the labour market. In higher education, a pilot project began in 2021 with the participation of 22 universities of applied science and 10 research universities. This offers microcredentials that range between three and 30 EC (one EC is equivalent to 28 study hours). Edubadges is the digital certificates platform for the Dutch education community. Edubadges enable teachers to award students or workers with evidence of knowledge and skills they have acquired.
Norway	In Norway, micro-topics (*mikroemner*) and microcredentials (*mini-kvalifikasjoner,* which translates as mini-qualifications) are similar in concept to the broad definition of microcredentials. Micro-topics certify short courses that are part of a more extensive course. Microcredentials are commonly used in modular industry programmes, which aim to improve the development of competences within selected industries (10 industries have been included so far). These modular industry programmes include courses and short programmes that can be as small as 2.5 credits.
Poland	In Poland, any education and training provider in the market can issue microcredentials, with no governing regulation in place. What are described as *market qualifications* can correspond to the definition of microcredentials, and some of these can be even added under the integrated qualifications system. These market qualifications certify specific professional competences, but not a particular level of education. Examples of these

	qualifications include summer/winter school certificates, language proficiency certificates, open university certificates, continuing education/skills improvement courses, certificates of pedagogical qualifications, digital open badges, certificates of additional vocational skills (*dodatkowe umiejętności zawodowe*) and others. Most of these qualifications are offered by HEIs, and are used for labour market purposes.
Portugal	Microcredentials are used in Portugal within the context of the national qualifications system (SNQ). Two training offers correspond to the definition of microcredentials. The first, training units of short duration (*Unidades de Formação de Curta Duração*, UFCD), are included in the national catalogue of qualifications (*Catalogo Nacional de Qualificações*, CNQ). Each UFCD corresponds to a competence unit (UC) and represents a structured set of learning objectives with a pedagogical sequence. The second type comprises, short-duration training that is not included in the CNQ. Such training can be smaller in workload than UFCDs and may be developed/designed in a different way from the CNQ approach. Nevertheless, such training is in high demand by companies (especially SMEs) and is provided by vocational training centres in response to labour market needs.
Romania	Microcredentials are not common in Romania and are mostly discussed within the context of CVET and higher education. The closest example in Romania to the concept of microcredentials is the recognition/validation of competences achieved in non-formal/informal settings, which is carried out through the National Authority for Qualifications.
Slovakia	Current legislation in Slovakia allows certificates to be issued that are similar in nature to microcredentials, e.g. the plasma cutting certificate awarded to car repairers after 16 hours of training. There are also other examples of sectoral qualifications and types of training, offered within the IT sector, which can be seen as microcredentials. Two schemes within labour market training also offer short courses that can be seen as microcredentials. Some accredited educational programmes and their modules registered in the further education platform (ISDV), maintained by the education ministry, also fit the definition of microcredentials.
Slovenia	A wide array of short educational and VET training programmes in Slovenia correspond to the general characteristics of microcredentials. Examples of these include supplementary qualifications, CVET short programmes (EQF levels 4-5), study programmes for further training (EQF levels 6-8), the training programmes offered by competence centres (based on the Slovenian smart specialisation strategy), training programmes provided by adult learning centres, training programmes provided by the employment service of Slovenia, and non-accredited CVET programmes.
Spain	The new VET law in Spain classifies formal vocational training from grade A (micro-training) to grades D and E (degrees and specialisation courses). In this context, instances of micro-training (which can be considered microcredentials) represent partial accreditations of competences that can be accumulated. The Spanish VET system, meanwhile, is modular. This allows learners to take a certain module, regardless of grade, which can be considered a microcredential. In adult education, the State public employment service (SEPE) offers more than 4 000 training specialities (subsidised training for workers, employed or not) ranging from 3 to 1 110 hours. A training speciality equips individuals with a set of professional competences that respond to particular work activities. In higher education, short programmes (units, modules, etc.) are common (e.g. in HE, microcredentials acknowledged by the university system of Catalonia and can form part of a larger degree.
Sweden	Short qualifications, in the form of modules, are well established in the Swedish formal education system. Each module covers around 4% of a

	formal upper secondary VET diploma. These modules can be accumulated into a VET diploma. Other forms of short qualification (i.e. microcredentials) are courses/programmes in liberal adult education, short higher vocational education (HVE) courses, and courses offered in the private sector. In addition, formal education providers can offer short VET courses/programmes on demand (tailored to the needs of the client). However, such short courses do not lead to formal qualifications.

NB: The microcredentials presented in the table include education and training practices that comply with the broad definition of microcredentials and share the same characteristics. The examples are mostly focused on formal learning (offered or regulated by the state). The list does not include examples from Austria and Luxembourg, due to a lack, or limited availability, of data.

Source: Prepared by Cedefop, based on ReferNet questionnaires.

Analysis of the examples presented in Table 8 shows the relationships of microcredentials to traditional qualifications. They tend to be designed around sets of coherent and interrelated learning outcomes, which in many cases correspond to part of a professional/occupational profile or a degree/qualification (e.g. units of learning outcomes or ULOs in Flanders). These are not offered as a replacement for full qualifications, but rather as add-ons or supplementary credentials/qualifications that complement existing competences with updated (or refreshed) ones. This again affirms a view of the qualifications landscape as a continuum in which microcredentials are positioned alongside, and in coherence with, other forms of credentials including full qualifications. This is reflected in the complex linkages between microcredentials and traditional qualifications. Cases exist in which a microcredential forms part of a traditional qualification, as in Sweden's short qualifications. A microcredential might not be offered as part of a traditional qualification, but it can eventually lead to one through the recognition and validation of prior learning (e.g. Malta's awards). In addition, a microcredential may not be part of a qualification, and does not necessarily lead to one, but it aligns with a set of learning outcomes that are covered by a full qualification (e.g. training units of short duration or UFCD in Portugal). Finally, a microcredential might represent a completely independent credential but supplement/complement and be coherent with a particular qualification in terms of its scope and related learning outcomes (e.g. the courses offered in Latvia via the Open minded online learning platform).

4.2.1.2. *Microcredentials compared with sectoral and professional skills certificates*

The mapping exercise in the manufacturing and retail sectors, as well as the ReferNet questionnaires (Cedefop, 2021a), included several examples of sectoral and professional skills certificates (e.g. the International welding practitioner (IWP) certificate that is offered internationally, and the E-commerce & social media expert certificate offered in Austria) that could be considered as microcredentials. The

main distinctive characteristic of these certificates is that they are awarded by well-recognised companies, certification bodies or professional/industrial associations. They are awarded following an assessment/examination process, in alignment with specific professional or industrial standards, to attest the ability of the holder to perform a specific task or occupation. The examination or assessment process can be carried out by a third party other than the professional/industrial body that sets the standards, though it is not necessarily the case that the assessment is undertaken upon completion of a learning/training programme. In many cases, such assessment is a stand-alone process that a professional in a particular occupation can undergo to become certified, as with 3D printer operator for the industrial applications certificate offered in Czechia. Such certificates are widely accepted and trusted by employers and professional/industrial bodies, since they are designed in response to a set of professional or industrial standards. In some cases, it may be even mandatory to obtain such a certificate in order to be permitted to carry out specific activities (e.g. the Working on an ammonia (NH3) installation safely certificate offered in France).

Sectoral and professional skills certificates can be awarded upon completion of an assessment of the relevant professional competences, which in some cases can happen within a few hours. However, other sectoral and professional skills certificates may require months of learning and/or training and preparation (OECD, 2020). In many cases, these learning and/or training activities are delivered by one entity, while the independent assessment is done by other parties. In some, the certificates earned may be valid for a limited amount of time (from 1 to a few years) and the examination/assessment process must be repeated for the purposes of recertification (Gallagher & Maxwell, 2019). This is also consistent with the outputs of the mapping exercise. For example, the CNC specialist certificate (Austria) is only valid for 3 years and can be renewed after attending refresher seminars and offering proof of practice. Similarly, the International welding consultant certificate (Finland) is only valid for 5 years.

This kind of certification differs from, and is less regulated than, an occupational licence. Licences are usually awarded by a licensing agency, most commonly a government one, to give the holder the right (permission) to practice in a specific occupational field. Most licences are time-limited and can be renewed or revoked. Obtaining a licence requires an individual to meet predetermined criteria that may include a combination of degrees, certifications, certificates and work experience (Workcred, 2020). A licence gives legal authority to practice a particular profession and can be understood as a form of mandatory (or non-optional) certification (IC&RC, 2021). Licences are more common in regulated professions: to work as a pharmacist in Austria, an individual must complete a 5-

year Master of pharmacy programme, gain 1 year of practical experience, and pass an exam set by the Austrian Chamber of Pharmacists, to become licensed to work as a community or hospital pharmacist) (EPhEU, 2022). Earning qualifications and validating prior experience are considered steps towards earning a licence.

In practice, the seemingly distinct boundaries that exist between these concepts can become blurred or, in some cases, non-existent. Confusion surrounding the definition of microcredentials is a major factor. Microcredentials may be understood differently by different employers and policy-makers, and can refer to both academic certificates and professional/industrial certificates, short courses, digital badges, boot camps, and certification programmes (Oliver, 2021). This confusion was evident in the interview programme, with different respondents having different assumptions about the meaning of microcredentials and how they differ from the sectoral and professional skills certificates that already exist in their national contexts. For example, interviewees from Belgium (national authorities), Estonia (national authorities) and Finland (VET providers) considered sectoral and professional skills certificates as no different from microcredentials. National authority representatives from Croatia believed the microcredentials should be differentiated from existing sectoral and professional skills certificates. Slovakian representatives mentioned that there is no need to ‘re-brand’ a well-functioning procedure that leads to a certificate that is well-accepted by the labour market.

Such confusion can impact the utilisation of existing microcredentials and professional certificates. When asked about the ‘barriers that hinder the uptake of microcredentials’, 74% of respondents representing national authorities considered ‘the lack of transparent and commonly agreed definition of microcredentials’ to be among the main factors.

Resemblance to microcredentials is most prominent when sectoral and professional skills certificates are awarded upon completion of an education and/or training programme. In such a case, a professional certificate can check all the boxes required to be labelled a microcredential, according to the European definition. Another common feature that adds to the confusion is that both microcredentials (in the broad definition of the concept) and sectoral and professional skills certificates focus on labour market-related topics through relatively short learning experiences (OECD, 2020). Thus, sectoral or professional skills certificates can qualify for the label of microcredentials. The 2022 Council Recommendation’s definition of microcredentials refers to sectoral and

professional skills certificates, or at least those that fulfil the definition, being classified as microcredentials ([36]).

However, when asking respondents to the survey of employers and organisations representing employers whether the organisation or company offers any of the small or alternative credentials described in the survey, only 8% chose microcredentials, while 16% and 11% chose professional certificates and vendor-specific certificates, respectively. This indicates that some of these organisations do not define their offerings of sectoral and professional skills certificates as microcredentials.

Quality-assured and industry-recognised microcredentials are widely trusted by employers and professionals alike. However, it is usually difficult for learners and professionals to access reliable information regarding the quality of a microcredential and/or its provider (Hudak and Camilleri, 2018). In the survey of employers and employer organisations, 60% of respondents indicated 'the lack of transparency in how assessment is documented' as one of the main reasons for their companies and organisations not to trust microcredentials. Given that not all microcredentials enjoy the same level of trust and quality assurance practices as sectoral and professional skills certificates, it is also possible to conceptualise quality-assured and industry-recognised certificates as a subcategory of microcredentials that enjoys higher visibility, recognition and trust. This has already been done by several national and regional entities, international organisations, and related EU-funded projects. For example, in the desk research conducted by the European project Microbol ([37]), professional/industrial certificates were classified as a subcategory of microcredentials. The same is true of DigitalEurope's recommendations for a European approach to microcredentials ([38]), which include professional/industrial certificates among the various formats.

To build a better understanding of the relationship between microcredentials and sectoral and professional skills certificates, it is important to make the distinction between those sectoral and professional skills certificates that are awarded upon completion of an organised, labour market-related learning activity followed by some form of assessment, and those which can be awarded by a specific employer or an industrial body/association based solely on the completion of a performance-based assessment (whether oral, written, or practical) of industry-defined competences or standards (Brown and Kurzweil, 2017).

([36]) 'Microcredential means the record of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes will have been assessed against transparent and clearly defined criteria.'

([37]) MICROBOL project.

([38]) DIGITALEUROPE's recommendations for a European approach to microcredentials.

Examples of the first type, based on the mapping of microcredentials in the manufacturing and retail sectors, include: manufacturing operations for the medical device/pharma industry (life sciences manufacturing operations), offered in Ireland; the qualification in additive manufacturing offered in Portugal; and the quality management system and welding coordination offered in Denmark. Examples of sectoral and professional skills certificates that are awarded solely on the basis of passing a competence-based assessment/exam include the 3D printer operator for industrial applications certificate offered in Czechia, and the certified e-commerce and social media expert certificate offered in Austria. The Project Management Institute's project management professional (PMP) certificate, the International English language testing system (IELTS), and the test of English as a foreign language (TOEFL) are also good examples of professional certificates that are awarded following competence-based assessments.

It is easier to conceive the first type as a subcategory of microcredentials since they require the completion of an organised learning activity. However, the question that needs to be addressed by national and regional regulators is whether to consider as microcredentials those sectoral and professional skills certificates that are awarded following assessment/examination, without engagement in any structured/organised learning or training activities. The other question to be addressed is to what extent microcredentials should be regulated, standardised, or formalised to mimic the nature of existing industry-recognised certifications. Microcredentials are generally favoured due to their flexible nature. In the survey of employers and employer organisations, 73% of participants indicated that microcredentials are favoured over traditional forms of qualifications, as their flexibility is more suited to the upskilling and reskilling of employees. Among other groups of stakeholders, the corresponding percentages were 89% (national and regional authorities); 76% (employees and employee organisations); and 75% (VET providers). Interview respondents from Belgium, Bulgaria, Czechia, Denmark, Estonia, Croatia, Cyprus, and Finland also emphasised the evident flexibility of microcredentials as one of their most attractive features. However, this raises an important flag: that heading towards the further standardisation of microcredentials (perhaps to resemble the rigid requirements of certain industry-recognised certifications) could ruin the whole idea of microcredentials, rendering them less attractive to learners and professionals. It is conceivable that over-regulating and formalising microcredentials could eventually turn them into rigid industrial certifications.

4.2.1.3. *Characteristics of microcredentials in retail and manufacturing*

The mapping of microcredentials in the retail and manufacturing sectors offers a good indication of how they (or the various forms of qualifications that fit the broad understanding and characteristics of microcredentials) look in practice, in terms of their characteristics and features (Table 9). This is particularly useful for gaining a deeper understanding of the diverse landscape of microcredential offerings, and to differentiate them from traditional and full qualifications.

Table 9. **Main characteristics of microcredentials in the manufacturing and retail sectors identified through the mapping process**

Sector	Title of microcredential	Location	Workload	Link to ECTS or ECVET specified	Mode of delivery	Learning outcomes specified	Prerequisites
Manufacturing	Safety procedures in medical processes	France	12 modules, 17 days	NO	In person/online	YES	NO
Manufacturing	Quality management system and welding coordination	Denmark	22.5 hours, 3 days	NO	In person	YES	YES
Manufacturing	GMP and GDP certification	Germany/Europe	NS	NO	In person/online	NO	NS
Manufacturing	International welding engineer (IWE)	International (41 countries)	448 hours	ECVET	In person/blended/online	YES	YES
Manufacturing	International welding practitioner (IWP)	International (41 countries)	150 hours	ECVET	In person/blended	YES	YES
Manufacturing	Qualification in additive manufacturing	France, Germany, Italy, Portugal, Spain, Turkey and UK,	60-70 hours	NO	Online/blended	YES	YES
Manufacturing	Machine training courses	Germany	NS	NO	In person/online (VR)	NO	NS
Manufacturing	CNC specialist certificate	Austria	1 month (full-time)	NO	In person	NO	YES
Manufacturing	VET Award in process manufacturing	Malta	125 hours	ECVET	In person	YES	YES
Manufacturing	3D printer operator for industrial applications	Czechia	NS	NO	In person	NO	NS
Manufacturing	Industrial health and safety advisor	UK-England	Up to 16 weeks	NO	NS	NO	NO
Manufacturing	International welding consultant	Finland	249 hours	NO	In person	NO	YES
Manufacturing	Robotic Process Automation Fundamentals Masterclass	Ireland	NS	NO	Online	YES	NO

Sector	Title of microcredential	Location	Workload	Link to ECTS or ECVET specified	Mode of delivery	Learning outcomes specified	Prerequisites
Manufacturing	Working on an Ammonia (NH3) installation safely	France	3 days	NO	In person	NO	NO
Manufacturing	MAG welding with an electrode wire	Poland	157 hours	NO	In person	NO	NO
Manufacturing	Introduction to foundry technology	Sweden	3 days	NO	In person	NO	NO
Manufacturing	Manufacturing operations for medical device/pharma industry (life sciences manufacturing operations)	Ireland	52 weeks, full-time	NO	In person	YES	YES
Manufacturing	Supply chain manager – operational level	Greece	90 hours	ECVET	Online	NO	NO
Retail	Common food hygiene	Denmark	3 days	NO	Online	YES	NO
Retail	Award in retail	Malta	1 year full-time	ECVET	In person	YES	YES
Retail	Sales for store employees	Norway	12 hours	NO	In person/online	NO	NS
Retail	Profitability of marketing and sales organisation in the luxury goods sector	France	NS	NO	NS	YES	YES
Retail	Award in retail operations	Malta	3 months (part-time)	ECTS	In person/online	YES	NO
Retail	Drugstore employee (DM druggist)	Slovenia	380 hours over 2 years period	NO	NS	YES	YES
Retail	Fashion retail transformation	France, Global	10 hours	NO	Online	YES	YES
Retail	International e-commerce	Sweden	1 day	NO	Online	NO	NO
Retail	Diploma course in retail management	Global	NS	NO	Online	NO	NO

Sector	Title of microcredential	Location	Workload	Link to ECTS or ECVET specified	Mode of delivery	Learning outcomes specified	Prerequisites
Retail	Customer relationship management using CRM systems	Poland	150 hours	NO	NS	YES	NO
Retail	Award in credit for retail banking	Malta	5 months	ECTS	NS	YES	NO
Retail	IKI training programme	Lithuania	1-3 days	NO	In person	NO	NO
Retail	MAXIMA training programme	Lithuania	2 months	NO	In person	NO	NO
Retail	Certified E-commerce & social media expert	Austria	NS	NO	NS	NO	YES
Retail	Merchant unit manager (MUM) title	France	9 months	ECTS	In person/online	YES	YES
Retail	Understanding retail operations	UK	122 hours	NO	Online	YES	YES
Retail	Specialist in retail sales	Germany	18 months	NO	In person	YES	YES
Retail	Practical sales / merchandise knowledge	Germany	5 hours	NO	In person/online	YES	NO
Retail	Digital marketing	Global	10 hours	NO	Online	YES	NS
Retail	Non-formal vocational training programme in electronic cash registers and cash register systems management	Lithuania	90 hours	NO	NS	YES	NO
Retail	Marketing and sales techniques	Greece/global	6 months	ECVET	Online	YES	YES

NB: NS means that this information was not specified and cannot be verified.

Source: Prepared by Cedefop, based on the mapping of microcredentials in the manufacturing and retail sectors.

The first common feature of the mapped microcredentials – and one that is relatively unique to this type of credential – can be identified from their titles. Such microcredentials represent highly targeted/specialised types of training that are designed around specific occupational/professional profiles (e.g. International welding practitioner (IWP), international), or an even narrower and much more specialised element of an occupational profile (e.g. MAG welding with an electrode wire, Poland). Their scope also reflects the attention given to new and emerging topics and technologies: CNC operation, 3D printing, robotics and e-commerce are examples of areas of focus that are addressed in alignment with new developments in the labour market and in industry. Topics range from introductory training (e.g. Introduction to foundry technology, Sweden) to highly specialised (e.g. CNC specialist certificate, Austria).

The locations in which these microcredentials are offered highlight the international/global nature of some of them. While most are offered locally, eight are accessible across several countries, across Europe, or internationally (e.g. Qualification in additive manufacturing, Fashion retail transformation). Digital learning is an important enabling factor for many microcredentials in crossing national boundaries.

The diversity in duration is visible when analysing the workload required (in terms of hours and/or credits). Those mapped range from as few as 5 hours of training (e.g. practical sales/merchandise knowledge, Germany) to 448 hours (e.g. International welding engineer (IWE), international). More specialised microcredentials (especially those with practical training components such as various welding microcredentials, Life sciences manufacturing operations, Merchant unit manager (MUM)) tend to be more demanding in terms of workload than introductory and foundational microcredentials (e.g. Digital marketing, VET award in process manufacturing, International e-commerce). With only a few exceptions, the workload of the majority of these microcredentials is not measured in ECVET or ECTS credits, or at least, not advertised as such. Out of 39 microcredentials, only six were measured in ECVET and three in ECTS. Linking microcredentials to the ECTS or ECVET systems can increase transferability and potential for accumulation and wider recognition.

Analysis of the mode of delivery indicates the presence not only of digital learning but also of in-person training in these microcredentials. Out of 39 microcredentials, 13 are offered in person (in classrooms and/or training workshops) and nine online. This is more common in the manufacturing sector than in the retail sector, which is to be expected in the cases where the training involves practical exercises and assignments that require the learner to be present. However, there are microcredentials with a strong practical training component that are offered in a hybrid format combining both online and in-person training (e.g. the Qualification in additive manufacturing, international). One training provider

even uses virtual reality to offer practical training (Machine training courses, Germany).

While being linked to clearly defined learning outcomes is one of the essential features of microcredentials, only 23 out of the 39 mapped microcredentials explicitly linked their offerings to an associated set of learning outcomes. For the remaining ones, learning outcomes were either not mentioned at all, or were presented in the form of content description (e.g. the titles of the training topics/sections to be covered) rather than being detailed as the true outcomes of the learning experience. One factor at play here is the different terminologies sometimes used by formal VET providers and other non-formal providers in the labour market. Orr et al. (2020) highlighted the different terminologies used by the two systems (formal education providers and the labour market) to describe learner achievements, and how arriving at a common terminology and standards could enable the use of microcredentials. Linking microcredentials to clearly defined learning outcomes can support their integration into qualifications frameworks and affirm their strong relationship to the relevant occupational profiles and qualifications.

These microcredentials also varied with regards to the prerequisites needed to start the learning activity. Those which specify prerequisites (e.g. a secondary school certificate, previous work experience, computer skills) are generally – although not exclusively – ones that offer highly specialised training and demand relatively high workloads (e.g. drugstore employee, DM Druggist, Slovenia).

4.2.2. Purposes and roles of microcredentials

In alignment with the factors driving the emergence and uptake of microcredentials, the previous analysis in manufacturing and retail sectors highlights some of their most common purposes referred to in descriptions, either explicitly or implicitly. The two most common purposes of microcredentials are:

(a) enhancing or building sector/occupation-specific skills (reskilling/upskilling);
(b) responding to the changing and emerging needs of the labour market and industry.

These two objectives were mentioned in almost all the microcredentials identified; other purposes/functions were also repeatedly indicated in the descriptions. It is apparent that they play an important role in preparing the workforce to meet industry standards in managing systems and operating equipment. Related to this is the role that they play as a certifying tool to validate and confirm the professional competences needed to carry out certain professional activities regulated by industry bodies or professional associations. Microcredentials may also be a prerequisite for membership of a professional/industrial association.

Table 10. **Purposes of mapped microcredentials in the retail and manufacturing sectors**

Purpose and function	Examples of microcredentials
Training in specific systems and/or operation of equipment in compliance with industry standards	• Quality management system and welding coordination; • GMP and GDP certification; • International welding engineer (IWE); • International welding practitioner (IWP); • Machine training courses; • VET award in process manufacturing; • Manufacturing operations for medical device/pharma industry (life sciences manufacturing operations); • Customer relationship management using CRM systems.
Receiving an industry-recognised certificate or a qualification to carry out specific professional activities	• GMP and GDP certification; • Qualification in additive manufacturing; • International welding engineer (IWE); • International welding practitioner (IWP); • International welding consultant; • Working on an ammonia (NH3) installation safely.
Validation of previously acquired knowledge, skills and competences	• International welding engineer (IWE); • International welding practitioner (IWP); • 3D printer operator for industrial applications; • Certified E-commerce & social media expert.
Gaining introductory/foundational knowledge and understating of a particular sector or occupation	• RPA fundamentals masterclass (robotic process automation); • Introduction to foundry technology; • Supply chain manager – operational level; • Understanding Retail Operations.
Changing career paths by becoming qualified in a different area	• Qualification in additive manufacturing; • Industrial health and safety advisor; • Sales for store employees; • MAXIMA training programme.
Filling skills gaps and vacancies in local areas	• Industrial health and safety advisor.
Becoming a member of a professional/industrial body	• GMP and GDP certification.
In-company training	• Qualification in additive manufacturing.

Source: Cedefop, based on the mapping of microcredentials in the manufacturing and retail sectors.

In addition to highly targeted/specialised types of training, microcredentials can also provide learners and professionals with the introductory knowledge they need to become acquainted with new sectors and occupations and to aid their entry into the labour market. This relates to yet another important function, which is to help professionals to switch careers and improve their professional profiles in new and emerging occupational fields. Employers can also use microcredentials in the form of in-company training to build or hone employee skills.

Microcredentials are also a tool for the validation and recognition of prior learning. As discussed in Section 5.4, they can be used within the framework of RPL to support obtaining a full formal qualification.

While microcredentials are expected to support professionals in navigating the labour market and combatting unemployment, they also appear to contribute to the strengthening of the labour market at local level by offering targeted training to fill vacancies and skills gaps.

Analysis of the purposes highlighted by the mapped microcredentials (as well as the stakeholder group survey and interview programme) indicates three main areas in which they play an important role. These are lifelong learning, the recognition of prior learning, and employability/career development.

Lifelong learning

Microcredentials offer an effective way to upskill workers throughout the course of their lives; they compare favourably with traditional qualifications, which fail to meet the lifelong learning needs of diverse learners (Oliver, 2021). Microcredentials could also help to advance equity in education by making learning accessible and affordable to vulnerable communities, supporting the United Nations sustainable development goal 4 on quality education (Oliver, 2021). As highlighted by the interview programme ([39]), microcredentials have a social inclusion function for those who have had bad schooling experiences, enabling them to have a second chance to engage in reskilling/upskilling activities.

Microcredentials have also emerged in alignment with the evolution of qualifications and credentials systems in Europe towards being more flexible and open to diverse learning experiences. European countries are increasingly improving their policies, regulations and practices in areas such as learning outcomes, qualifications frameworks, the modularisation and accumulation of qualifications, and the validation and recognition of non-formal and informal learning. However, practices still vary between different national contexts. There is also greater emphasis on flexible and personalised learning in which learners can pursue their interests and needs and undertake learning at any place and time (Cedefop, 2010). These socioeconomic pressures and changes in the education and employment landscape have created the need for flexible and responsive short learning experiences such as offered by microcredentials. The insights from the interview programme align with this notion, while affirming that microcredentials would allow more flexible and personalised learning pathways depending on individuals' needs and career aspirations. Further, they offer greater effectiveness and efficiency of learning by giving learners the opportunity to save time by choosing those courses and modules that are most applicable to them, instead of

([39]) Interview, respondents representing a national authority, Belgium, 2021.

enrolling in a full degree programme. In this context, microcredentials can be seen as special-purpose awards ([40]) that offer focused, targeted and specialised training.

When looking at the value microcredentials offer in supporting lifelong learning, there are two main aspects to consider. First, they can be developed and offered as a learning tool that aims to deepen the individual's knowledge, skills and competences in a certain occupational area. This is especially the case when awarded based on, or associated with, a structured/organised learning activity followed by an assessment/examination process (e.g. when they include classroom-based or remote training modules). This is already the case in countries such as Latvia, where upskilling courses (*profesionālās pilnveides programmas*), are offered. These are certified short-term training courses or units of learning outcomes that form part of a qualification (but do not lead to one). Another example is special-purpose qualifications offered in Greece. A special-purpose qualification represents a coherent set of learning outcomes that are part of a larger group of learning outcomes that define a qualification level. The providers of such microcredentials include the lifelong learning centres of HEIs. In Cyprus, the Centre for Lifelong Learning, Assessment and Development at the University of Cyprus offers microcredentials to professionals that align with the needs of employers and/or professional unions.

Microcredentials can be seen as a tool that 'certifies or attests to' learning outcomes that have already been achieved and acquired, without engagement in any structured/organised learning (e.g. based on work experience). This relates to the role that they play in the validation and recognition of non-formal and informal learning. An example is the recognition of skills certificate (EVC) awarded in Belgium. In Czechia, the vocational qualification certificates of the National Register of Qualifications also attest to the competences that an individual may have acquired following a short learning experience. These can be awarded based on standardised examinations within the context of CVET.

Employability and career development

As the nature of work is constantly changing, so is the need for learning to remain competitive in the labour market. This was traditionally the responsibility of large firms to invest in the training and professional development of their employees, who in return gave the company their lifelong allegiance (Barabas and Schmidt, 2016). Now, in the rapidly changing labour market, employees seek cost-effective, short-term, flexible and tailored learning to upskill or reskill and improve their labour market competitiveness. They also need to demonstrate their skills

([40]) Special-purpose award is a term that is already used in Ireland and Greece (in Greece, they are described as special-purpose qualifications).

and achievements to potential employers during the hiring process. This creates a demand for customised 'lifelong learning' experiences such as microcredentials (Barabas and Schmidt, 2016). Interviewees from Finland (employers' organisations and VET providers), Denmark (employers' organisations), and Ireland (VET providers) indicated that the development and offer of microcredentials enables better collaboration between the formal education sector and industry. Microcredentials also possess the added value of addressing skills needs in emerging sectors of the economy where qualifications are not yet formalised.

Analysis of the mapped microcredentials highlights two important functions in the career development process. First, they can offer introductory knowledge on specific sectors and occupations that will allow learners/professionals to become acquainted with new occupational areas and specialities, and to continue deepening their knowledge and competences in those areas. Second, in alignment with the first function, they allow experienced workers/professionals to obtain qualifications in new sectors and occupations that will enable them to change careers and improve their labour market outcomes without having to study for a full degree programme. Table 15. offers examples of microcredentials that serve both functions.

Analysis of the ReferNet questionnaires (Cedefop, 2021a) offers several examples of how microcredentials are used in different national contexts to increase the employability of both the employed and unemployed, low-skilled and high-skilled (Table 11).

Table 11. **Examples of certificates/qualifications linked to microcredentials for employability**

Country	Examples
Belgium-fl	Certificates of skills acquired in training (CECAFs), offered in Flanders, consist of units of learning outcomes. They are awarded by vocational training institutions, are linked to professional frameworks, and represent qualifications that enable their holders to enter the labour market.
Bulgaria	Partial qualifications awarded within the framework of the Vocational education and training Act (VETA) include a group of professional competences along with general knowledge and skills. These aim to make the individual's knowledge and competences visible in the labour market.
Denmark	The Danish AMU (labour market training) system supports people with no labour market qualifications by offering a wide variety of short modules.
Finland	Digital badges, which are offered by the Competitive skills project of Oulu University of Applied Sciences, equip learners with the digital skills needed in education and employment.
Germany	Partial qualifications (*Teilqualifikationen*) in adult education target low-qualified and unskilled individuals over the ages of 25 and allow them to earn vocational qualifications to improve their labour market competitiveness.
Lithuania	The Lithuanian Labour Market Exchange office offers a broad range of short-term training for jobseekers to aid entry into the labour market.
Spain	The State public employment service (SEPE) offers more than 4 000 training specialities (subsidised training for workers, whether employed or not), ranging from 3 to 1 110 hours.

Source: Cedefop, based on ReferNet questionnaires.

Microcredentials can allow more effective and efficient validation and recognition of prior learning, which have traditionally been based on extensive assessment process and can take months to be finalised. The inclusion of microcredentials in national qualifications frameworks could further assist in increasing the visibility and recognition of individuals' competences acquired in informal and/or non-formal settings. The role of microcredentials in the validation and recognition of prior learning is discussed in detail in Section 5.4.

CHAPTER 5.

Microcredential links to qualification systems

5.1. Modularisation of qualifications and programmes, and the link to microcredentials

Key findings

- Modularisation is often at the centre of discussions about microcredentials at national level and is attributed with the capacity to include microcredentials in national qualification systems.
- In 22 countries, national stakeholders consider microcredentials to be linked to modularisation.

Qualification systems in European countries are heterogeneous, differing in terms of their integration, coherence and openness. They need to ensure that they provide learners with opportunities that are fit for purpose, as well as offering them sufficient opportunities throughout their personal and professional lives. With these purposes at the core of the development of qualification systems, one of the major changes being implemented across countries is the modularisation of vocational education and training programmes, which essentially tries to make learning more flexible and personalised.

These developments also impact the way in which microcredentials are linked to qualification systems and frameworks. The modularisation of VET systems could ease their inclusion into overall national qualification systems across the countries analysed. Characteristics of modules and partial qualifications are often linked to microcredentials by stakeholders consulted (Table 12). Many countries are currently considering a review of their existing offer and the way in which it links to microcredentials, based on the characteristics identified in the European definition of microcredentials. The overview shows that:

(a) 22 countries ([41]) identify some links between microcredentials and the existing modularised learning offer ([42]);

([41]) Belgium-fl, Belgium-fr, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Spain and Sweden.

([42]) It is important to note that in some of the countries listed here, there is no universal agreement as to whether microcredentials and the modularised learning offer can be considered equivalent. In these countries, different stakeholder groups provide their own opinions, and these sometimes differ from those of other stakeholder groups. This

(b) eight countries ([43]) do not identify any links between microcredentials and the modularised learning offer ([44]).

The main reason why microcredentials are considered equivalent to modules and partial qualifications is that they share the same characteristics and closely match the European Commission's definition. Most countries have seen the modularisation of various qualifications across different education sectors. An overview of national contexts in terms of modularisation shows that all countries engage in some kind of modularisation; this is most common in adult education but is also increasingly prevalent in VET and HE. Traditional VET programmes that are designed for and lead to a specific qualification are being replaced by modular programmes that use sectoral standards, are expressed in learning outcomes, and are grouped into smaller units. The modularisation of vocational education and training programmes has the same aims attributed to the use of microcredentials: to strengthen the links between training and the world of work and to allow education and training provision to respond better to the demands of employers and other stakeholders (Cedefop, 2015). Modular qualifications are easier to update and to incorporate the rapid changes happening in the labour market due to the factors such as digitalisation or external factors such as the global pandemic. Modularisation is also seen as a way of providing greater flexibility to individual learners, enabling them to follow more personalised and flexible learning pathways. The main purposes and objectives of microcredentials reiterate the goals of modularised learning.

is further explained in the table summarising national practices, which identifies specific countries in which opinions are divided. Differing opinions may also exist in other countries not identified in our research, due to the scope of the consultation process. However, the table is largely informed by ReferNet reports, which include the position of national authorities and other important stakeholders engaged in education and training.

([43]) Austria, Belgium-de, France, Greece, Iceland, Luxembourg, Romania and Slovenia.

([44]) This also includes countries (or regions of specific countries) for which no information about the possible links between modularisation and microcredentials is available.

Table 12. **Overview of the modularisation of national qualification systems**

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Austria	Yes	IVET / adult education	Options exist to combine training modules in apprenticeships. The acquisition of partial qualifications is restricted to selected competences of an in-company curriculum.	According to the Federal Ministry of Education, microcredentials are not linked to the training modules in apprenticeships. There is no national definition on microcredentials, but microcredentials are related and connected to the private education sector, where national authorities have no competence.
Belgium-fl	Yes	Adult education	Higher vocational education programmes are organised on a modular basis. Adult education courses are offered with modular organisation: the subject matter is offered in modules.	The Flemish policy domain does not apply the term microcredentials but some of the offer at different levels of education could fit within a broad definition. In higher education, it is possible to enrol in just one course from a bachelor or master programme, on the basis of a credit contract. The adult education offer is entirely modularised, which allows learners to enrol in just one module instead of finishing the entire programme.
Belgium-fr	Yes	HE / adult education	The adult education system offers partial qualifications. Regional public employment and/or vocational training services organise vocational training for the unemployed and employees in a modular way.	Depending on the type of institution, parallels may be drawn between existing 'qualifications' and microcredentials based on certain commonalities, but these never fully correspond to the definition put forward by the Commission. For example, in adult education (*Enseignement de Promotion Sociale*), training is organised on a modular basis: courses are grouped into course units (*unité d'enseignement*). Each course unit leads to a specific pass certificate attesting to its successful completion (*attestation de réussite*). Enrolment and successful completion are based on the completion of course units.

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Bulgaria	Yes	VET / adult education	A specific framework exists for initial vocational training programmes that lead to the acquisition of a partial qualification in a profession (Programme D). Such training programmes have been offered by training providers who are also able to validate VET competences acquired in a formal or informal way, as long as they correspond to the learning outcomes in the State education standards (or State education requirements up to 2016) for obtaining partial qualification in a profession. Partial qualifications may be offered by VET schools for VET students, and by VET centres for adult learners.	Even though the term microcredentials is not mentioned in Bulgarian legislation, partial qualifications in a profession are used in Bulgaria, and could fit within the definition. A partial qualification 'is a separate work activity within a profession for which vocational training can be organised'. It includes 'a set of professional competences and general knowledge and skills'.
Croatia	Yes	VET / HE / adult education	Independent modules are available in higher education. Partial qualifications are available at levels 2 to 7. A precondition for acquiring partial qualifications is a minimum of 10 respective HROO (credits in the Croatian credit system for general education), ECVET or ECTS credits.	The term microcredentials (*mikrokvalifikacija*) was introduced in the context of formal adult education programmes in the new Adult education Act of 2021. According to the proposed definition, short training programmes accrue units of learning outcomes (micro-qualifications) and/or qualifications at EQF/NQF levels 2-4 and can be accessed from EQF/NQF level 1. Professional development programmes entail the attainment of units of learning outcomes (micro-qualifications) and/or qualifications at EQF/NQF level 4, accessed from the same level. VET specialist development programmes entail the attainment of units of learning outcomes (micro-qualifications) and/or qualifications at EQF/NQF level 5, accessed from EQF/NQF level 4.

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Cyprus	Yes	CVET	In the Cypriot system of vocational qualifications, non-formal and informal learning can be validated and lead to a partial qualification. The labour ministry offers short modular programmes for employees in technical occupations and management through the Cyprus Productivity Centre. Through the development of modularised curricula, based on ECVET units of learning outcomes, the department of STVET has linked the courses offered in the context of the apprenticeship system (EQF Level 3) with courses offered by the evening schools of technical and vocational education, which operate as second-chance schools	The term unit of learning outcomes is used to reflect those national practices that can be referred to as microcredentials.
Czechia	Yes	HE / adult education	Partial qualifications based on learning outcomes are developed and used in adult and higher education.	The concept of microcredentials exists in the Czech Republic in the form of vocational qualifications defined by the National register of qualifications (NSK), with standardised examinations. Certificates of the NSK vocational qualifications document the competences that holders may have acquired even over a short period of time or through a short learning experience. Competences are assessed during the examination by means of approved, transparent and publicly available evaluation standards.
Denmark	Yes	Adult education	The Danish AMU system (CVET primarily for people without a labour market qualification) has long worked with modules, including some of very short duration (e.g. 1 day or a number of hours).	Danish AMU courses are considered by some interviewees to be equivalent to microcredentials, while others believe that the AMU system can be used to further the idea of microcredentials. According to the latter group, the modularisation of the AMU system could be used as a platform for the development of microcredentials.

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Estonia	Yes	VET	All VET curricula have a modular structure and in general upper-secondary schools for adults a course system is used. Learners can choose single courses based on their needs. Partial qualifications can be obtained on completion of adult education courses. These can be foreign language skills, a course in a subject, final paper, or partial profession.	Even though adult learners have already had access to modularised learning through modularised VET curricula, the introduction of micro-qualification programmes would provide a more structured opportunity to acquire specific competences or pass specific modules from full programmes. It is expected that this will also make the offer more visible and accessible to more people.
Finland	Yes	VET / HE	Studies in general and upper-secondary VET are based on individual study plans, which comprise both compulsory and optional study modules. Studying at the workplace is also part of VET, which is either based on apprenticeships or on training agreements. Studying at the workplace can cover an entire degree, a module or a smaller part of studies. In higher education, studies are organised into study units or modules. In most fields, study units form larger modules at three levels: basic or introductory, subject or intermediate, and advanced.	The Ministry of Education and Culture categorises microcredentials as a complementary term that helps in classification. Microcredentials are viewed as a new way to understand existing structures, rather than as something new. For example, competence requirements, which are parts of full VET qualifications, could relate to microcredentials. They are smaller in scale than a study module or degree, but are important for employment and consist of deepening or supplementing vocational competences.
France	Yes	VET	The French vocational qualifications framework meets the challenges of modularity (gradual acquisition of diplomas and vocational qualification) and flexibility (certificates and accreditations certifying additional skills). In 2019, it became mandatory for all RNCP vocational qualifications to be structured into skill sets or blocks of competences (*blocs de compétences*). Individuals can also obtain partial qualifications through the validation of prior learning.	Even though blocks of competences share some similar characteristics with microcredentials, they are not precisely consistent with all the characteristics proposed by the European Commission as they are not intended to constitute autonomous partial qualifications linked to a level. Dividing competences into blocks instead allows for preparation and gradual access to full qualifications.

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Germany	Yes	VET	Introductory training for young people enables them to acquire modular qualifications towards a recognised occupation. Partial qualifications are educational offers addressing the low-qualified and unskilled over 25, which allow learners to gain vocational qualifications through successive, systematic qualifications based on the dual training regulations. Step by step, jobseekers and employees can obtain a vocational qualification through partial qualifications, module by module. Each training occupation is broken down into five to eight modules, each lasting 2 to 6 months.	The EU definition of microcredentials can be met by certain well-established formats in IVET and CVET in Germany, but these are not labelled as microcredentials. The notion of a short learning experience is interpreted flexibly by different stakeholders, so there is little agreement between stakeholders. The partial qualifications described in the previous column are sometimes considered equivalent to microcredentials.
Hungary	Yes	Adult education	Add-on vocational qualifications (available through adult education and outside the formal education system) can be obtained by those who have already obtained a vocational qualification; they typically include only qualification-specific modules and entitle the holder to perform a new job that requires a higher level of expertise	Add-on vocational qualifications can be considered equivalent to microcredentials. This is the only offer that allows modular learning.
Ireland	Yes	CVET / HE	Modular courses are available in further and higher education. Each module is stand-alone, but they are all accredited, which means that they can be built up to a full qualification. The modules can be at any level of the NFQ, and include ways for non-traditional learners to engage with higher education	The modular nature of the qualifications system already accommodates free-standing qualifications and qualifications as small as five credits; credentials smaller than this can be used as steppingstones into qualifications on the NFQ by being aggregated and used in recognition of prior learning. They share the same characteristics as microcredentials but are not branded as such. VET providers also offer a wide range of stand-alone modules, and there are discussions to improve this offer by introducing the concept of microcredentials, adding new, bespoke, enterprise-focused microcredentials to existing ones.

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Italy	Yes	VET / HE	Regions and autonomous provinces are responsible for vocational training, which is organised in one or more regional repositories and addressed to young people and adults. In addition to existing qualifications, the regional offer foresees micro-qualifications whose individual units or competences can be separately certified and included within regional repositories and in the national repository. At university level, open badges and digital badges are used.	Micro-qualifications whose individual units or competences can be separately certified and included within regional repositories and in the national repository are considered to be equivalent to microcredentials.
Latvia	Yes	VET / HE	In 2017, amendments to the Vocational education law set up the legal framework for the modularisation of vocational education programmes. Such programmes lead to qualifications at EQF levels 2-4, and their professional content consists of a set of modules. The new amendment to the Vocational education law adopted in 2022 seeks to strengthen the implementation of modularisation in practice and envisages that every completed module shall be represented by a certificate for independent use as well as the building of a qualification.	Microcredentials are equivalent to part of a professional qualification in Latvia, which can be acquired as a result of the acquisition of a separate module, a set of modules, and a professional development programme. Modules or a set of modules should provide a set of learning outcomes that can be applied in the labour market.
Lithuania	Yes	VET / HE	Since 2019, all formal IVET programmes consist of mandatory and elective modules defined in terms of learning credits that align with Lithuania qualifications framework level descriptors and in accordance with ECVET principles. Formal VET programmes for adults consist of the same mandatory modules as in IVET.	Module certificates, which are issued after a person has completed a module of a VET programme, are considered equivalent to microcredentials by some stakeholders due to their shared characteristics. However, other stakeholders regard microcredentials as being similar to other existing short-term training courses such as non-formal courses by VET institutions, public employment services and private training companies.

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Malta	Yes	VET / adult education	Awards lead to partial qualifications. Accredited programmes (courses) with level-rated learning outcomes that do not meet the requirements of a qualification, in terms of credits offered, lead to awards. The distinction was introduced to help learners and employers to understand better the different types of certifications and their role in recruitment and career advancement.	Awards that lead to partial qualifications share the characteristics of microcredentials. The official differentiation is between qualifications, which are full programmes, and awards, which refer to any programme that does not meet the workload requirements of qualifications at the corresponding Malta qualifications framework level. An award can start from one credit, which is equivalent to 25 hours of learning.
Netherlands	Yes	CVET	Since 2016, in upper-secondary VET, qualifications have been clustered for greater transparency and functionality. Definitions of qualifications have been broadened, with a general part (language, numeracy, citizenship and career management skills), a basic vocational part applicable for all occupations in the qualification, several profile modules (specific for the profile within the qualification), and optional modules. Currently, the qualifications framework includes 179 qualifications, 491 profiles (specialisations within a qualification), and almost 1 000 optional modules. Broader definitions of qualifications and optional modules are expected to give VET colleges more leeway to adapt curricula to labour market needs. Companies and education institutions jointly develop optional modules to respond quickly to innovations or emerging needs within their region. Regions will also be afforded some leeway to draft optional modules themselves to respond to regional needs and/or help learners to progress through the education and training system.	According to VET stakeholders, microcredentials in VET are comparable in terms of content and form with optional subjects in VET (*keuzedelen*), which have a weight of 240 study hours at EQF level 3 and 4. Another option is to relate microcredentials to VET certificates, which relate to some optional subjects. Certificates are an instrument to stimulate lifelong learning. They refer to the achievement of vocational components of a qualification that independently have labour market significance.

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Norway	Yes	VET	Modular industry programmes exist at NQF levels 4, 5.1 and 5.2. In terms of awarding credits or partial qualifications after validation in primary and upper secondary education and training, the education act permits candidates to achieve a partial certificate qualification, called a certificate of competence (*kompetansebevis*) at any level through validation. These certificates serve as stand-alone evidence of competences and can be used, for example, to support a job application or participation in further education courses. These partial certificates of competence are recognised on the labour market, as a documentation of parts of the demands of a trade.	Even though the term *microcredentials* is not used, the existing offer, which shares the main characteristics of microcredentials, is used for VET in modular industry programmes at NQF levels 4, 5.1 and 5.2. The programmes have been created to increase participation in competence development within selected industries. Ten industries are included so far, and tripartite cooperation occurs between the State and social partners. The modular industry programmes consist of courses and short study programmes, starting at 2.5 credits.
Poland	Yes	VET / HE	VET schools have autonomy in developing their teaching programmes, based on VET core curricula, and in choosing either subject-centred or modular programmes, which can be easily modified, depending on labour market needs. Partial qualifications also exist in Poland. These include market qualifications; regulated qualifications; qualifications awarded after completing postgraduate studies; qualifications awarded after completing other forms of education at a university, Polish Academy of Sciences institutes and research institutes; as well as qualifications distinguished within the professions included in the classification of vocational education professions.	Market qualifications are non-regulated qualifications awarded by the private sector. It is possible to achieve many market qualifications in under 200 hours. According to the implementation schedule of the integrated qualifications system (IQS), the goal is to include in the register 200 non-regulated qualifications (market qualifications) by 2023.

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Portugal	Yes	CVET / adult education	The main lifelong learning programmes include education and training programmes for adults (*cursos educação e formação de adultos*, EFA), certified modular training, and the recognition of prior learning (RVCC). Certified modular training (*formações modulares certificadas*) was launched in 2008, targeting individuals who are at least 18 years old. Continuous training of trainers is based on several standards of competences, organised in a modular structure path of flexible length. There are also training units of short duration (*unidades de formação de curta duração*, UFCD). These consist of a structured set of learning objectives and training contents with a pedagogical sequence. Each UFCD is associated with, and responds to, a competence unit (UC) already defined for the qualification, in its technological/professional training component.	Despite the current lack of an established relationship between microcredentials and other qualifications and credentials currently included in the formal system, some existing offers share similar characteristics to microcredentials and can be considered as such. UFCD are considered to be equivalent to microcredentials by some stakeholders, who emphasise their short duration. UFCD are described as different sets of training paths for the different qualification standards that lead to a profession. These training standards are organised into UFCD, with the successful completion of a UFCD leading to the awards of 2.25 or 4.5 credit points for 25 or 50 hours of training.

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Slovakia	Yes	VET / adult education	Accredited programmes or their modules are registered in the Information system of further education (ISDV). The education institution (including adult learning providers) can decide whether to accredit the programme as a whole, or by module (although all modules have the same accreditation number). Learners can complete either the full programme or just the individual modules they need. Further education for adults in Slovakia allows learners to obtain partial or full qualifications. 39 qualifications are registered within ISDV. This relates to the acquisition of a qualification in a profession that is different from the person's original qualification acquired during school education. After passing the examination regulated by the LLL act they are entitled to start a business regulated by the trade licensing act. 338 qualifications from the NQS register were selected to pilot procedures leading to the validation of prior learning amid qualification standards set by NSQ.	According to the accreditation requirements of the education ministry, accredited programmes and their modules are designed as independent educational units. From this point of view, these modules could meet the criteria for awarding microcredentials.
Spain	Yes	VET / HE / adult education	The VET law in Spain establishes a completely new system of formal vocational training. This consists of grades (A, B, C, D and E) spanning a continuum from micro-training (grade A) to degrees and specialisation courses (grades D and E), based on learning progression and obtaining an accreditation, certification or degree. Micro-training modules are partial and cumulative, and lead to a partial accreditation of competence.	Partial accreditations of competence can be considered microcredentials. These may include one or more elements of competence from a professional module covered by the modular catalogue of vocational training and linked to the national catalogue of occupational standards. These instances of micro-training will be an integral part of grade B credentials. Similarly, grade B training can be considered part of grade C (professional certificates). From a broader perspective, given that the Spanish VET system is modular, all its modules could be regarded as microcredentials.

Country	Use of modules and partial qualifications	Domain	Extent of modularisation	Linking modularisation to microcredentials
Sweden	Yes	VET / adult education	Upper-secondary education is modularised. In formal education, there are 12 broad upper-secondary VET programmes of 3 years' duration, and 2 500 upper-secondary credits that lead to a formal upper-secondary VET diploma. These programmes are modularised and consist of courses, most of which comprise 100 upper-secondary credits or 4% of the full qualification. Adults in municipal adult education study the same courses as young people but build their individual programmes according to their own needs. An adult can study one or several courses and, if they accumulate 2 400 credits though municipal adult education or validation, the student receives a VET diploma equivalent to that of an upper-secondary school student.	Even though the term microcredentials is not used and no official offer exists entitled microcredentials, an equivalent offer has long been established in the form of modules of formal education, as courses or programmes in liberal adult education, as short or flexible HVE courses, and in private sector education.

Source: Prepared by Cedefop, based on desk research, case studies and ReferNet questionnaires.

The evidence summarised in Table 12 shows that, in many national contexts, microcredentials can be considered equivalent to some existing modules or partial qualifications. Even though microcredentials are already embedded in formal education and training systems under modularised offers, some stakeholders are not sure whether those existing modules or partial qualifications that share similar characteristics and functions can or should be considered microcredentials. The main reason for this is a lack of commonly agreed definition or understandings in the national contexts of what microcredentials are. The European Commission's definition is broad, allowing different interpretations of what microcredentials entail and whether all the elements suggested by the Commission's definition need to be considered when talking about them. For example, responses to the Belgian Flemish ReferNet questionnaire (Cedefop, 2021a) highlighted the fact that the Commission's definition is broad and theoretical in nature, which makes it applicable to different offers at all educational levels, except for the informal learning domain. This is because it refers to learning outcomes and assessment based on clear standards – elements that are traditionally missing in informal learning unless formalised via recognition of prior learning.

Even though some of the current modularised offers in the formal education and training sector are considered equivalent to microcredentials, Flemish authorities are interested in expanding beyond that and coming to a concrete application of the concept of microcredentials in lifelong learning and, more specifically, informal learning. Different definitions of and approaches to microcredentials need to be developed for the various forms of learning, i.e. formal, non-formal and informal. In France, for example, the existing offer does not fully correspond with the characteristics of microcredentials specified in the Commission's definition. Respondents to the French ReferNet questionnaire (Cedefop, 2021a) emphasise that blocks of competences do not fully comply with the proposed characteristics of microcredentials in the sense that they are not intended to constitute autonomous partial qualifications. Austrian national authorities interpret microcredentials as being related to and connected with the private education sector, over which national authorities have no competence. Steering and regulating this market is currently not under consideration, which means that microcredentials, according to this interpretation, operate only in the private space ([45]).

([45]) Interview, Austria, 2021.

5.2. Opening up qualifications frameworks to microcredentials

Key findings

- Countries are increasingly opening their national qualifications frameworks up to qualifications and credentials awarded outside formal education and training.
- Countries that have opened their qualifications frameworks up to qualifications from outside the formal education and training system include Austria, Denmark, France, Netherlands, Poland, Slovenia, Sweden and the UK (Scotland).
- Even though qualifications from outside the formal education and training system are being introduced into NQFs and linked to levels, it is not clear in some countries whether any of these qualifications can be considered microcredentials, because the relationship between microcredentials and other credentials has not yet been officially defined in most countries. This is the case in Belgium, Czechia, Denmark, Netherlands and United Kingdom.

National qualification systems encompass all activities in a country's education and training system that lead to the recognition of knowledge, skills and competences through the issuing of a qualification. Qualifications frameworks in European countries are heterogeneous, differing in terms of their integration, coherence and openness. In recent years, NQFs have begun to capture qualifications awarded outside formal education and training, and those helping to validate non-formal and informal learning. They are becoming genuine maps for lifelong and life-wide learning and guidance (Cedefop, 2019a; Cedefop, 2020d). These developments impact the way in which microcredentials link to qualification systems and frameworks; data indicate that, in many countries, stakeholders perceive some of the existing offer as microcredentials, for instance modules that are already part of formal education and training (Section 5.1.), and credentials offered outside of it.

Countries that have opened up their frameworks to qualifications from outside the formal education and training system include Austria, Belgium, Czechia, Denmark, France, Netherlands, Poland, Slovenia, Sweden and the UK (Scotland) (Table 14). Some established frameworks, for example in France and the UK, have already had in place procedures allowing 'non-formal' qualifications to be included in the frameworks. Even though qualifications from outside the formal education and training system are being introduced into NQFs and linked to levels, it is not always clear whether these qualifications can be considered microcredentials Still, there are interesting examples of microcredentials from the retail and manufacturing sectors, which appear to be linked to NQFs (Table 14). In Austria, for example, non-government regulated qualifications acquired through non-formal learning have been linked to levels since 2020, but the interview programme

suggests that Austrian authorities do not consider these qualifications to be microcredentials. Currently, no national definition of microcredentials exists in Austria, but it is assumed that they are related and connected to the private education sector, over which national authorities have no competence.

In Poland, market and craft trades qualifications are considered equivalent to microcredentials, while an increasing number of such qualifications are being included in the integrated qualifications system (IQS), leading to a growing interest in obtaining such qualifications. According to the implementation schedule of IQS, the goal is to include in the register 200 non-regulated qualifications (market qualifications) by 2023. A mid-term target, to include 40 qualifications by end 2018, has been achieved. As of March 2021, 119 such qualifications have already been included in the register and 217 have been proposed for inclusion; they are at various stages of formal and substantive evaluation (Cedefop, 2021d). In France, several open badges have already been registered in the specific directory (RS), which records certifications and authorisations that do not target identified jobs but correspond either to additional professional skills, cross-functional skills, or skills resulting from a legal obligation to carry out a professional activity. Slovenian national authorities mentioned supplementary qualifications, introduced in 2016 by the Slovenian qualifications framework (SQF) law, as comparable to microcredentials (Cedefop, forthcoming-i). They supplement an individual's competence at the level attained and in a specific professional field, and are tied to labour market needs, with an emphasis on upskilling or reskilling, and based on some existing qualification. They focus only on the precise needs of employers and are not intended to acknowledge transversal or general skills (Table 13).

Table 13. **Supplementary qualification DM druggist (Drugstore employee)**

Name of qualification	DM druggist (Drugstore employee)
Type of qualification	Supplementary qualification
Duration	The entire syllabus consists of 380 hours taught over 2 years. Each year is divided into two semesters (1st and 2nd semester).
Admission requirements	The candidate must have completed at least upper-secondary vocational school.
Qualification level	SQF/EQF 4

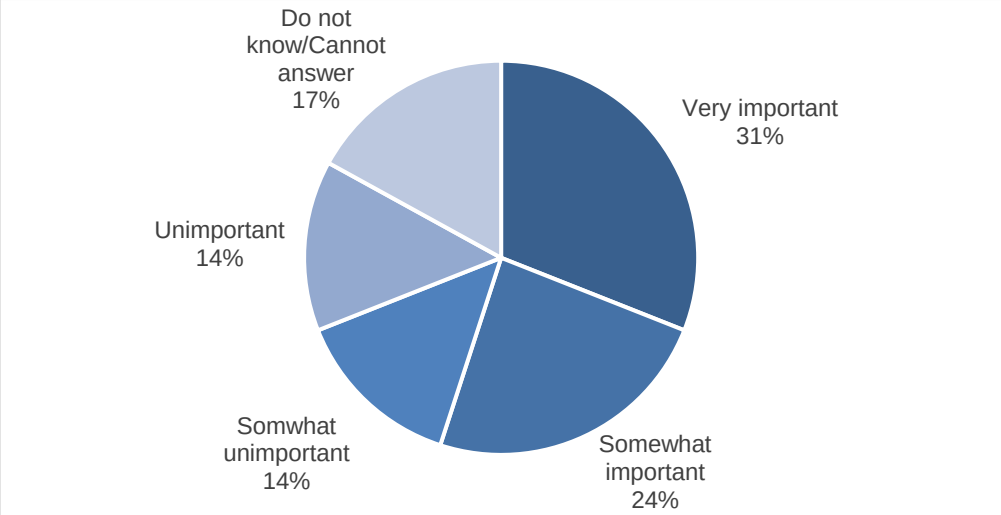
Source: ReferNet questionnaire on Slovenia, 2021.

In Sweden, qualifications outside the formal education system can be referred to the SeQF after a review and quality control by the National Agency for Higher Vocational Education (MYH). A pilot is underway in 2022 to explore parallel

mechanisms to SeQF referencing, possibly with fast tracks for accredited providers, to legitimise microcredentials and give them a 'national stamp of approval'. Thus, microcredentials would be nationally quality-controlled credentials for short durations of learning, possibly referred to the national qualifications framework. Only full qualifications can be placed in the SeQF, but there is no limit to how small a qualification may be, so there exists a possibility to introduce microcredentials. The pilot is also exploring mechanisms to standardise the definitions and descriptions of open badges such as diplomas or other certificates, and to include these into the framework to increase transparency and recognisability (Cedefop, 2021a).

The inclusion of qualifications awarded outside the formal education and training system (including microcredentials) is important, as it can provide such qualifications with a quality label and make them trustworthy in the eyes of stakeholders, especially in systems where social partners are familiar with the purpose and functioning of the qualifications framework. Most employer representatives (55%) who participated in the survey confirmed that it is important to them that microcredentials are referenced to and/or integrated into the national qualification system or framework (see Figure 4).

Figure 4. **'To the best of your knowledge, how important is to employers in your sector that microcredentials are references to and/or integrated into the national qualifications system or framework?'**

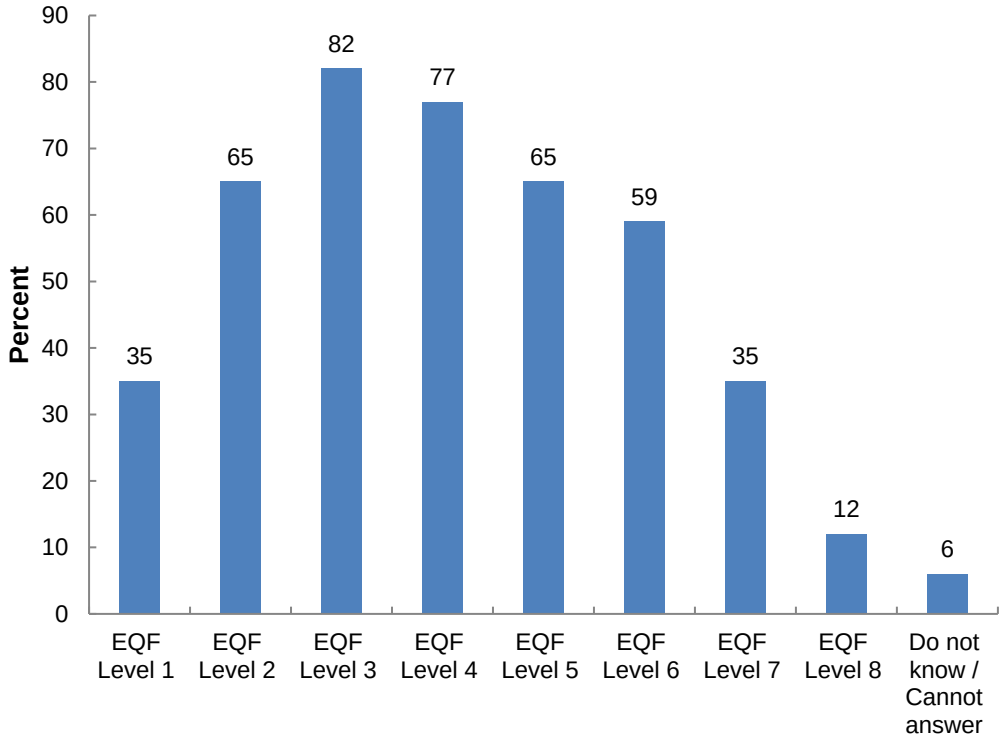


Source: Survey of stakeholders representing employers (n=29)

Since many of the stakeholders consulted consider microcredentials to be equivalent to modules or partial qualifications due to their shared characteristics, the overview of national contexts and mapping exercise shows that microcredentials can be included into qualification systems and frameworks as modules or partial qualifications (Section 5.1); in some countries they can be qualifications awarded outside the regulated system (Table 14).

The study also explored at what levels of EQF or NQF they can be included. The survey of national authorities suggests that most microcredentials in their national contexts are linked to EQF levels 2 to 5 (Figure 5). Those identified during the mapping process were also analysed: 19 out of 40 identified in the manufacturing and retail sectors are linked to EQF or NQF levels, with most being linked to levels 2 to 5 (Table 14).

Figure 5. **EQF levels attributed to microcredentials at the national level**



NB: Respondents were allowed multiple choice answers.
Source: Survey of stakeholders representing VET providers (n=74).

Table 14. **Linking microcredentials in the manufacturing and retail sectors to qualification systems and frameworks**

Sector	Title of microcredential	Country	Assessment carried out	Linked to NQF/EQF	EQF/NQF level	Linked to occupational standards
Manufacturing	Safety procedures in medical processes	France	YES	NO	Level not attributed	YES
Manufacturing	Quality management system and welding coordination	Denmark	YES	NS	NS	YES
Manufacturing	GMP and GDP certification	Germany/Europe	NO	NS	NS	NS
Manufacturing	International welding engineer (IWE)	International (41 countries)	YES	YES	Level 7	YES
Manufacturing	International welding practitioner (IWP)	International (41 countries)	YES	YES	Level 4	YES
Manufacturing	Qualification in additive manufacturing	Germany, France, Italy, Spain, UK, Portugal and Turkey	YES	YES	Levels 4-6	YES
Manufacturing	Machine training courses	Germany	NO	NS	NS	YES
Manufacturing	CNC specialist certificate	Austria	YES	NS	NS	YES
Manufacturing	VET award in process manufacturing	Malta	YES	YES	Level 2	NS
Manufacturing	3D printer operator for industrial applications	Czechia	YES	YES	Level 4	YES
Manufacturing	Industrial health and safety advisor	United Kingdom	NS	YES	Level 3	NS
Manufacturing	International welding consultant	Finland	NS	NS	NS	YES
Manufacturing	Robotic process automation fundamentals masterclass	Ireland	YES	NS	NS	NS
Manufacturing	Working on an ammonia (NH3) installation safely	France	NS	NS	NS	YES

Sector	Title of microcredential	Country	Assessment carried out	Linked to NQF/EQF	EQF/NQF level	Linked to occupational standards
Manufacturing	MAG welding with an electrode wire	Poland	NS	YES	Level 3	NS
Manufacturing	Introduction to foundry technology	Sweden	NS	NS	NS	NS
Manufacturing	Manufacturing operations for medical device/pharma industry (Life sciences manufacturing operations)	Ireland	YES	YES	Level 5	NS
Manufacturing	Supply chain manager – operational level	Greece	YES	NS	NS	YES
Retail	Common food hygiene	Denmark	YES	NS	NS	NS
Retail	Award in retail	Malta	NS	YES	Level 1	NS
Retail	Sales for store employees	Norway	NS	NS	NS	NS
Retail	Profitability of marketing and sales organisation in the luxury goods sector	France	YES	YES	Level not specified	YES
Retail	Award in retail operations	Malta	YES	YES	Level 3	NS
Retail	Drugstore employee (DM Druggist)	Slovenia	YES	YES	Level 4	NS
Retail	Fashion retail transformation	France, Global	YES	NS	NS	NS
Retail	International e-commerce	Sweden	NO	NS	NS	NS
Retail	Diploma course in retail management	Global	YES	NS	NS	NS
Retail	Customer relationship management using CRM systems	Poland	YES	YES	Level 4	NS

Sector	Title of microcredential	Country	Assessment carried out	Linked to NQF/EQF	EQF/NQF level	Linked to occupational standards
Retail	Award in credit for retail banking	Malta	NS	YES	Level 5	YES
Retail	IKI training programme	Lithuania	YES	NS	NS	NO
Retail	MAXIMA training programme	Lithuania	YES	NS	NS	NO
Retail	Certified e-commerce and social media expert	Austria	YES	NS	NS	NS
Retail	Merchant unit manager (MUM) title	France	YES	YES	Level 5	NS
Retail	Understanding retail operations	United Kingdom	YES	YES	Level 2	NS
Retail	Specialist in retail sales	Germany	YES	NS	NS	YES
Retail	Practical sales / merchandise knowledge	Germany	NS	NS	NS	NS
Retail	Digital marketing	Global	YES	NS	NS	NS
Retail	Non-formal vocational training programme in electronic cash registers and cash register systems management	Lithuania	YES	NO ([46])	Level not attributed	YES
Retail	Marketing and sales techniques	Greece/global	YES	NS	NS	NS

NB: YES means that a specific microcredential fulfils the condition;
NO means that a specific microcredential does not fulfil the condition;
NS means that this information was not specified and cannot be verified.

Source: Prepared by Cedefop, based on the desk research and ReferNet questionnaires.

([46]) Participants in non-formal adult education have the right to receive an assessment of the knowledge they have acquired through non-formal adult education, and a state-recognised document of the completion of education or a certain part (module) of the regulated programme.

5.3. Accumulation and combining: the link to microcredentials

Key findings

- The modularisation of VET aids the accumulation and combination of microcredentials.
- Labour market credentials are often non-credit bearing, which discourages learners from progressing further in their educational pathways.
- The accumulation and combination of microcredentials with credentials and qualifications from different institutions and sectors is possible in some national contexts. Accumulation across institutions and sectors related to accredited and quality-assured microcredentials is easier, due to higher trust and transferability.
- The main preconditions for accumulation include clear and transparent quality assurance processes, the assessment of learning outcomes, recognition of prior learning practices, well-functioning credit transfer systems, links to EQF/NQF levels, and the use of common terminology to describe microcredentials (e.g. LOs, level, volume, etc).

5.3.1. Accumulating and combining microcredentials: importance and methods

Traditional qualifications are increasingly being complemented by other supplementary qualifications and credentials, including microcredentials (OECD, 2020). Given the rapid changes in knowledge and technology and increasing economic and societal demands, individuals need to acquire new skills and upgrade their competences continuously. One way to address this challenge is through the accumulation and combining of different types of learning throughout life, especially through certified learning.

First, accumulating and combining microcredentials provides learners with flexible learning pathways. They can obtain new knowledge, acquire new skills, and upgrade their competences at anytime, anywhere, at any length, from any provider, using both paid or free options, and engage in any form of learning that best suits their needs. The accumulation and combination of microcredentials refers to individuals' ability to assemble or stack several traditional and non-traditional qualifications and credentials to build up a larger credential or full qualification, as well as to recognise their existing achievements and obtain an accurate assessment of their knowledge, skills and competences (Williamson and Pittinsky, 2016). The more credentials learners accumulate, the more they

increase the labour market employability and access to better jobs and higher salaries.

Second, as the interview programme and ReferNet questionnaires (Cedefop, 2021a) highlight, combining microcredentials promotes a culture of lifelong learning in which individuals can combine learning obtained from different parts of their life (professional, personal, social), from different points in their life (student, young professional or expert), and from different institutions and sectors (VET, HE and the labour market). The ability to assemble, verify and recognise these learning outcomes can enable individuals to upgrade their skills, obtain new competences, pursue further education, and advance in their career paths.

Third, accumulation and combination of microcredentials fosters continuous upskilling and reskilling in the labour market. This enables learners and employees to adapt and respond to changes in the labour market and in society in general: this includes rapid shifts in technology, digitalisation and greening. It helps adults and the working-age population to improve their qualifications and professional skills throughout their careers. For example, in Bulgaria, partial qualifications ([47]) are mainly used to improve learners' skills and competences or to help them acquire further knowledge and skills related to their respective profession or job function (Cedefop, 2021a).

Williamson and Pittinsky (2016) suggest three ways of accumulating and combining credentials that are seen as most useful. These include vertical, horizontal, and value added, each of which is summarised in Box 12, Box 13 and Box 14.

Box 12. **Vertical accumulation and combination**

Vertical accumulation refers to a traditional way of stacking credentials in a hierarchy in which credentials are built on top of each other, enabling learners to progress towards a higher qualification; an example is a student progressing from secondary to post-secondary and on to tertiary education. Here, the emphasis is on level, with the learner progressing from a lower to a higher level of qualification. This type of accumulation and combining is largely driven by the credentials gap: the difference between the educational level of the workers currently employed compared with the level employers demand of their new hires. According to Burning Glass (2014), hiring practices and requirements have changed, given that an increasing number of jobs that were historically filled by non-degree holders now require degrees.

Source: Williamson, J. and Pittinsky, M. (2016). Making credentials matter. Inside Higher Ed.

([47]) According to the Bulgarian ReferNet questionnaire (Cedefop, 2021a), partial qualifications can be considered microcredentials due to their similar characteristics.

Box 13. **Horizontal accumulation and combination**

Horizontal accumulation concentrates less on the level of the credential, and more on the learner's expertise in the subject matter. This enables learners to broaden their topic-specific expertise by earning microcredentials in related fields that jointly prepare them for a specific type of job. Unlike in vertical accumulation and combination, there is no explicit ranking or prerequisites, although credentials can still build on each other. Horizontal accumulation and combination are particularly visible in the IT sector, where individuals earn non-degree certificates and certifications horizontally across professional fields. For instance, IT professionals can obtain CompTIA, Microsoft and Cisco certificates with the aim of broadening their skills across the field.

Source: Williamson, J. and Pittinsky, M. (2016). Making credentials matter. Inside Higher Ed.

Box 14. **Value-added accumulation and combination**

Value-added accumulation involves both vertical and horizontal concepts of accumulation and combination. It occurs when an individual adds an area of expertise to an existing qualification, preparing for a specific type of job. For example, a business professional with an associate or bachelor degree may obtain the Project management professional certification. This is an industry-recognised certification for project managers, aimed at those who wish to be more effective at managing both people and projects.

Source: Williamson, J. and Pittinsky, M. (2016). Making credentials matter. Inside Higher Ed.

To elaborate further, vertical accumulation and combination often involves credit-bearing credentials that lead towards a larger or full qualification (for examples, see Box 15, Box 16, Box 17 and Box 18).

Box 15. **Vertical accumulation and combination in Lithuania**

The VET system in Lithuania is fully modularised, with a microcredential mostly referring to an individual module certificate of a specific VET programme. Learners can obtain a certificate for completing an individual module. All learners have several options regarding the use of these certificates. They can:

- use it as a stand-alone certificate;
- complete several modules to receive several module certificates to show a specific level of competences;
- with time, they can complete all of the modules in a programme, and receive a full qualification.

Source: Interview programme, Lithuania, 2021.

Box 16. **Vertical accumulation and combination in Estonia**

Estonia has launched a programme of training credits that offers over 100 free training modules provided by the largest universities in Estonia to the community of Ülemiste City, a business park in Tallinn. This has been achieved through cooperation between companies and higher education institutions. It is an in-service training platform in which companies support the in-service training of their employees, and where, in the future, the training courses offered can be accumulated to form micro-qualifications. Employees at companies in Ülemiste City can receive a training credit, which entitles them to participate in paid and free courses (free places for State-funded in-service training).

Source: Talent City Estonia website.

Box 17. **Vertical accumulation and combination in Spain**

In Spain, the Organic Law on VET, approved in March 2022, established a new vocational training system organised into a continuum of five levels (A, B, C, D, E), with each level building on the previous one. Depending on the scope and duration of the training, it will progress from micro-training (grade A) to training modules (grade B), vocational certificates (*certificados de profesionalidad*, grade C), VET qualifications (initial, intermediate or higher VET, grade D) and specialisation courses (grade E). Training at grade A is the basic unit within the system and leads to a partial accreditation of competence (a microcredential). Successful completion of a training module will lead to a B-grade accreditation. It is expected that microcredentials can be accumulated and combined with other microcredentials or qualifications, both from outside the formal education system (grades A, B and C) and inside the formal education system (grades D and E). Given this arrangement, the accumulation and combining of microcredentials acquired through non-formal training within the employment system may be also possible.

Source: Case study on Spain (Cedefop, forthcoming-j) and ReferNet questionnaire on Spain, 2021.

Horizontal accumulation and combination involves both credit and non-credit bearing credentials, which are often stand-alone and do not necessarily lead to a full qualification (for examples, see Box 19 and Box 20).

Box 18. **Horizontal accumulation in Greece**

In Greece, individual learners can pay to enrol in short courses hosted by universities which focus on specialised and market-relevant skills in fintech, digital transformation, artificial intelligence or machine learning. Although participants receive a certificate that is not a formally recognised qualification, these certificates are widely recognised in the labour market. By enrolling in specific courses, learners can obtain new skills in related areas and build their competences horizontally.

Source: Interview programme, Greece, 2021.

Box 19. **Horizontal accumulation and combination in Sweden**

In Sweden, partial qualifications are established in the form of modules in formal education, as courses or programmes in adult education, or as short courses in the domain of higher vocational education. Individuals can combine those modules and courses that are most relevant to their chosen career paths. The option also exists to accumulate them into a full qualification, for those learners that decide to pursue it.

Source: Interview programme, Sweden, 2021.

Value-added accumulation and combination comprises features of both vertical and horizontal stacking (see Box 21, Box 22, Box 23 and Box 24).

Box 20. **Added-value accumulation and combination in Finland**

In Finland, teachers and civil servants can obtain digital badges on completing a short online course and passing a test. Participants can add these badges to their personal files. This is an example of added-value accumulation, in which individuals add an area of expertise to an existing qualification and can develop skills in both new areas and in areas in which they already possess a full qualification.

Source: Interview programme, Finland, 2021.

Box 21. **Added-value accumulation and combination in Latvia**

Latvia's vocational education law, approved in March 2022, makes it possible to issue module certificates that can be used independently or stacked to make a full qualification. The certificate for acquiring part of a professional qualification in VET holds a similar value to a microcredential. This enables learners to build their skills vertically and gain a full qualification and/or use modules separately to collect diverse and possibly unrelated skills and competences.

Source: Interview programme, Latvia, 2021.

These practices refer to different options for the accumulation and combination of microcredentials. Vertical accumulation, for example, is largely available in cases where national systems are modularised, and programmes are divided into smaller pieces of learning, all of which are certified. Modularisation can strengthen the links between training and the world of work, as well as making education and training more relevant and responsive to the needs of the employer, encouraging greater mobility in education and training, and providing learners with individualised learning paths (Cedefop, 2015). The use of modules and partial qualifications, which are often identified as being equivalent to microcredentials by the national stakeholders who participated in the consultation process, is common in most EU countries, although to varying extents (Section 5.1). In this regard, the modularisation of VET aids the accumulation and combining of microcredentials.

The collected data show that the accumulation of smaller units to make up a larger or full qualification is possible in most EU countries (especially in relation to formal qualifications). To illustrate this, accumulation is:

(a) possible in 22 countries ([48]);
(b) not possible in seven countries ([49]);
(c) information is not available for one country ([50]).

However, vertical accumulation is difficult when it comes to qualifications and credentials from different institutions and especially different sectors. Accumulating and combining within a single institution is an easier option, as it is then up to the institution to decide its processes (if the national context allows it). According to the findings of the interview programme, most countries make case-by-case decisions whether to recognise previously earned certificates and previously

([48]) Belgium-fl, Belgium-fr, Bulgaria, Cyprus, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

([49]) Austria, Croatia, Czechia, Greece, Luxembourg, Netherlands and Norway.

([50]) Romania.

gained learning experience, and to count them towards further education, employment or a larger/full qualification (Interview programme, 2021). There is little comparability of accumulation between sectors; requirements for knowledge, skills and competences are very different. The horizontal option for accumulating and combining is easier to implement in both public and private sectors. A wide variety of options are available for individuals in different occupations to seek additional and supplementary knowledge, skills and competences. These are particularly relevant for individuals working in sectors which are undergoing rapid change (e.g. ICT) or where continuous improvement is required and the level of qualifications needs to be updated (e.g. education, medicine, public service).

The lack of quality assurance, a common terminology used to describe learning outcomes, and a common credit system, make it difficult to compare and recognise microcredentials issued by different institutions, sectors and countries. Of the 30 countries analysed, combining microcredentials with qualifications and credentials from other institutions and sectors is possible in eight and, except for Denmark, combination is possible within the formal education system; this can be within VET schools alone, within HEIs, or within all education providers. Countries such as Denmark, Finland, Netherlands, Norway and Sweden intend to include in their NQFs certificates and diplomas, delivered by enterprises or in certain sectors, which are not currently regarded as formal qualifications (Section 5.2). This is an important development, as it enables individual learners to see how learning outcomes from different contexts – public and private – are related, and how they can be combined.

Box 22. **Combining microcredentials based on labour market needs in Sweden**

Yrkeskartan (the vocation map) is a validation initiative from the retail sector organisation in Sweden. It is based on competence profiles, which can be combined according to labour market needs. It maps routes to different career paths in the retail sector, including educational pathways with transversal competences, the skills needed for a particular job role, and skills from other sectors that could be useful in retail.

Source: Yrkeskartan website.

Box 23. **Using industry certificates to access further education in Norway**

In Norway, as part of RPL, industry certificates can be used to access further education. Modular industry programmes are available at levels NQF 4, 5.1 and 5.2. The education act permits candidates to achieve a partial certificate qualification, called a certificate of competence (*kompetansebevis*) at any level through validation. The certificates can serve as stand-alone evidence of competences, and can be used to support a job application or participation in further education courses. These partial certificates of competence are recognised in the labour market as documentation of parts of the demands of a trade. It is also possible to access education through validation: the individual must be able to show (through documentation or other means) that they possess the required skills and competences to enter a certain level of education and training.

Source: Interview programme, Norway, and ReferNet questionnaire on Norway, 2021.

Box 24. **Common microcredential framework for European online course platforms**

Gradeo in France is a distance learning platform developed as part of the Erasmus+ EMC-LM (EMC for the Labour Market) project of the European MOOC Consortium (EMC). It brings together European academic online course platforms. The project has established a common microcredential framework. This makes it possible to develop and/or consolidate professional skills in various fields through short, recognised and quality online courses. At the end of the training, learners can obtain a certificate of achievement as well as a certificate validating the recognition of the skills acquired, issued by their partner organisations. Gradeo makes it possible for learners to combine training courses from different partner institutions and obtain a diploma or professional certification.

Source: Gradeo distance learning system website.

As summarised in Table 11, most examples of microcredentials in the manufacturing and retail sectors, offered by either public or private sector providers, are stand-alone certificates. In the manufacturing sector, five examples of 19 allow the accumulation of microcredentials towards a larger or full qualification (one in the public sector; four in the private sector) while one example enabled accumulation through the RPL process. In the retail sector, eight out of 21 examples allow the accumulation of microcredentials, while two examples support the RPL process. However, the number of examples analysed here is too small to make generalisations or draw meaningful conclusions.

Table 15. **Options for accumulation and combination, and the use of credits and notional workload, for microcredentials identified during the mapping process**

Sector	Title of microcredential	Country	Option to accumulate and combine	Notional workload/credits
Manufacturing	Safety procedures in medical processes	France	Stand-alone	12 modules over 17 days
Manufacturing	Quality management system and welding coordination	Denmark	Stand-alone	3 days, total of 22.5 hours
Manufacturing	GMP and GDP certification	Germany/Europe	Accumulating three certificates of participation or attending three courses can result in GMP and GDP certification	Not specified
Manufacturing	International welding engineer (IWE)	International (41 countries)	• Successful completion of one module qualifies the learner for participation in the next. • Learners with existing knowledge and proven skills can join a higher level, provided that they demonstrate a capability (practically and theoretically) to meet the entry requirements. • The modules in this qualification are interdependent and lead to the full qualification.	• Teaching hours = 448 • Workload hours ([51]) = 836 • ECVET points = 75
Manufacturing	International welding practitioner (IWP)	International (41 countries)	• Successful completion of one module qualifies the learner for participation in the next. • Learners with existing knowledge and proven skills can join a higher level, provided they demonstrate a capability (practically and theoretically) to meet the entry requirements; • The modules in this qualification are interdependent and lead to the full qualification.	• Teaching hours = 150 • Workload hours ([52]) = 247 • ECVET points = 8

([51]) Workload is the minimum duration of the teaching hours for the standard route, plus the hours the student needs for self-study.

([52]) Idem.

Sector	Title of microcredential	Country	Option to accumulate and combine	Notional workload/credits
Manufacturing	Qualification in additive manufacturing	France, Germany, Italy, Spain, Portugal, Turkey and UK	Modular and cumulative system based on competence units. Modules can be stand-alone or lead to a certificate	
Manufacturing	Machine training courses	Germany	Not specified	Not specified
Manufacturing	CNC specialist certificate	Austria	Stand-alone	140 teaching units
Manufacturing	VET award in process manufacturing	Malta	Stand-alone	125 hours or 6 ECVET
Manufacturing	3D printer operator for industrial applications	Czechia	Recognition of prior learning	N/A
Manufacturing	Industrial health and safety advisor	United Kingdom	Qualification is awarded upon completion of all five required certificates	Up to 16 weeks
Manufacturing	International welding consultant	Finland	Stand-alone	249 hours
Manufacturing	RPA fundamentals masterclass (robotic process automation)	Ireland	Stand-alone	Not specified
Manufacturing	Working on an ammonia (NH3) installation safely	France	Stand-alone	3 days
Manufacturing	MAG welding with an electrode wire	Poland	Stand-alone	157 hours
Manufacturing	Introduction to foundry technology	Sweden	Stand-alone	3 days
Manufacturing	Manufacturing operations for medical device/pharma industry (Life sciences manufacturing operations)	Ireland	Stand-alone	52 weeks
Manufacturing	Supply chain manager – operational level	Greece	Stand-alone	90 hours or 3.6 ECVET
Retail	Common food hygiene	Denmark	Stand-alone	3 days
Retail	Award in retail	Malta	Composed of smaller stand-alone units that combined can lead to a full qualification	30 ECVET

Sector	Title of microcredential	Country	Option to accumulate and combine	Notional workload/credits
Retail	Sales for store employees	Norway	Stand-alone	12 hours
Retail	Profitability of marketing and sales organisation in the luxury goods sector	France	Stand-alone but combined with another three certificates (four in total) can lead to a full qualification	Not specified
Retail	Award in retail operations	Malta	Stand-alone	4 ECTS
Retail	Drugstore employee (DM Druggist)	Slovenia	Stand-alone supplementary qualification	380 hours
Retail	Fashion retail transformation	France, Global	Part of a full qualification	10 hours
Retail	International e-commerce	Sweden	Stand-alone	1 day
Retail	Diploma course in retail management	Global	Stand-alone	116 lectures
Retail	Customer relationship management using CRM systems	Poland	Part of a full qualification	150 hours
Retail	Award in credit for retail banking	Malta	Part of a full qualification	9 ECTS
Retail	IKI training programme	Lithuania	Stand-alone	1 to 3 days
Retail	MAXIMA training programme	Lithuania	Stand-alone	2 months
Retail	Certified e-commerce and social media expert	Austria	Recognition of prior learning	N/A
Retail	Merchant unit manager (MUM) title	France	Stand-alone	9 months or 120 ECTS
Retail	Understanding retail operations	United Kingdom	Progression to other qualifications at Level 2 and 3 are possible for successful learners	8 to 12 weeks or 122 hours
Retail	Specialist in retail sales	Germany	Can be combined into a qualification	6 blocks of seminars of 2 weeks each within 18 months
Retail	Practical sales / merchandise knowledge	Germany	Stand-alone	5 hours
Retail	Digital marketing	Global	Stand-alone	10 hours

Sector	Title of microcredential	Country	Option to accumulate and combine	Notional workload/credits
Retail	Non-formal vocational training programme in electronic cash registers and cash register systems management	Lithuania	Possible, if a learner receives an assessment of the knowledge acquired in a system of non-formal adult education and a state-recognised document of completion of education or a certain part (module) of the regulated programme	90 academic hours or 5 credits
Retail	Marketing and sales techniques	Greece/global	Stand-alone	6 months or 9-10 ECVET points

Source: Prepared by Cedefop using desk research, case studies, interviews and ReferNet questionnaires.

.

5.3.2. Role of credit-based systems for accumulating and combining microcredentials

Credit systems play a crucial role in accumulating and combining microcredentials. They promote transparency by making content comparable across institutions and sectors, and contribute to mutual trust.

The use of units of learning outcomes provides a strong basis for developing microcredentials, individual learning accounts and European vocational core profiles. The last of these initiatives can facilitate the mobility of learners and workers, the automatic recognition of qualifications, and the development of joint VET curricula, qualifications and microcredentials (Cedefop, 2021a). Therefore, having a common and/or widely accepted credit system for VET makes it easier to accumulate and transfer microcredentials and to combine them with qualifications and credentials from other providers and sectors.

The European credit system for VET (ECVET) contributed significantly to implementing learning outcomes and improving the quality of mobility experiences in some countries. However, it achieved only limited success in promoting the use of credit points to transfer assessed learning outcomes. The major challenges to this were due to the different approaches taken by Member States in implementing ECVET, and the differences in qualifications/VET systems, regulations, the existence of credit systems and different national priorities. There has also been a lack of synergy and consistency with other EU instruments such as the EQF, Europass, and VNIL (European Commission, 2021a). While ECVET is no longer applied, its main objectives and principles (e.g. units of learning outcomes) have been enshrined in the new Council Recommendation, and will continue to be a priority in European VET policy (European Commission, 2021a).

The use of credits in VET is not uniform and consistent across Europe. To illustrate this, out of the 30 analysed countries:

(a) 20 use a credit system that is compatible with the principles of ECVET;
(b) five countries use a national credit system;
(c) two countries use ECTS;
(d) three countries do not use any credit system in VET, or a system is currently under development (Annex 2).

Below are several examples illustrating the diversity across Europe in the use of credit systems in VET.

Box 25. **Use of different credit systems in the Netherlands**

In the Netherlands, there is a debate about what type of credit systems to use for microcredentials. This is because vocational education uses a different credit system from HE (ECTS). At the same time, accredited microcredentials exist as part of an accredited diploma, and there are non-accredited types of training. The challenge is how to provide microcredentials to non-accredited learning, because there is no standardisation of such certifications.

Source: Interview programme, Netherlands, 2021.

Box 26. **Example of market qualifications in Poland**

In Poland, market qualifications confirm specific professional skills. Some market qualifications are small enough to be considered microcredentials. The integrated qualifications system allows credits to be collected and recognised. The provisions of the IQS act provide the basis for building a system for collecting and recognising microcredentials in Poland. The VET reform of 2012 has implemented most of the principles of ECVET.

Source: ReferNet questionnaire on Poland, 2021.

Box 27. **Example of micro-topics in Norway**

In Norway, microcredentials or micro-topics are offered as independent units by academic and vocational institutions, primarily for further education. Micro-topics are used with reference to short courses as part of a more extensive course, but also as independent courses with an exam. However, it is not possible to stack or put together several micro-topics to form a programme and to receive a diploma. Micro-topics are linked to the Bologna process, with equivalent ECTS. Norway also uses ECVET as a project tool for cross-border mobility in VET ([53]).

Source: ReferNet questionnaire on Norway, 2021.

([53]) NQF Country Report, Norway 2020.

Box 28. **Example of credits in Malta**

Qualifications included in the Maltese NQF (MQF) are quantified in workload hours known as credits. Credits can be labelled either as ECTS or ECVET (the latter for VET qualifications allocated to levels 1 to 4), depending on the orientation of the programme, whereby 1 ECTS/ECVET is equivalent to 25 hours of total learning. For each level of the MQF, there is a minimum number of credits required to establish whether a programme is to be considered a qualification or an award. While the term qualification refers to a programme of study which meets both the level of learning and the number of credits required (such as 60-120 credits for a VET level 5 programme), the term award refers to a programme of study which fulfils the level of learning but not the required number of credits to be considered a full qualification.

Source: NCFHE (2016).

Private sector providers of microcredentials rarely use credit systems, and instead often indicate the volume of work in hours. The examples of microcredentials summarised in Table 15 in Section 5.3.1 reveal the extent of diversity among different providers, sectors and countries. Most microcredentials in the manufacturing and retail sectors, delivered by either public or private sector providers, indicate the workload in hours (or in days, weeks or months). Only four microcredentials in the manufacturing sector and seven in the retail sector specified the workload in credits (i.e. ECTS, ECVET or other). However, it is important to note that the number of examples analysed is too small to make generalisations or draw meaningful conclusions.

5.3.3. Prerequisites for the effective accumulation and combining of microcredentials

For microcredentials to be effectively accumulated and combined, there needs to be trust in them as well as in their providers. Educational qualifications gain public trust through strong quality assurance. However, microcredentials are often unaccredited (Ralston, 2021), excluded from formal quality assurance mechanisms (Duklas, 2020), or lack transparency regarding standards (Resei, Friedl et al., 2019). Trusted providers and increased transparency are important for ensuring trust in the value of microcredentials and promoting their accumulation and widespread uptake. One possible solution is to create a common register of trusted issuers and mutual recognition at a European level, to ensure that microcredentials do not exist in silos or become *ad-hoc* badges (Brown, Nic Giolla Mhichil et al., 2021), but instead become building blocks for lifelong learning.

According to DigitalEurope (2021), to drive the successful uptake of microcredentials and allow effective accumulation, it is essential to have:

(a) clear definition that elaborates the content and quality of learning, options for storing (digital or physical) and usage modalities;
(b) clear differentiation between traditional degrees and microcredentials obtained upon completion of a learning programme;
(c) quality assurance, which can be achieved by having an EU register of trusted issuers, open to non-formal education providers such as industry;
(d) cross-platform portability of microcredentials;
(e) financial support to leverage content from various microcredential providers;
(f) European digital credentials infrastructure (EDCI) to store, validate and share digital credentials;
(g) minimum standards, in order not to limit innovation and flexibility in microcredentials;
(h) trust and confidence in the quality of the credential and its provider;
(i) openness to diverse issuers outside the formal sector, including private sector and international providers.

To accumulate and combine microcredentials effectively, it is important to address issues such as quality assurance, credits and recognition. In particular, microcredentials issued by providers other than education institutions should be quality-assured and recognised, and possibly included in the national qualifications framework (Cedefop, 2021a). If microcredentials are developed in accordance with quality-assured procedures, this would ensure transferability between education institutions and the labour market, as well as the mobility of the workforce between countries (Cedefop, 2021a). One of the reasons that countries do not currently include microcredentials in their national qualifications frameworks is the issue of quality assurance, as underlined by stakeholders from Denmark, Norway, Poland, Spain and Sweden. Country-specific examples on the topic are provided in the boxes below.

Box 29. **Quality assurance in Norway**

It is important for the Norwegian Ministry of Education and Research to develop and implement microcredentials in a way that creates transparency and trust, and thus makes it easier to validate the learning outcomes of short learning experiences, both nationally and across borders. Quality assurance, credits and recognition are central points of this discussion. One major challenge for microcredentials relates to qualifications issued by providers other than educational institutions, and how these should be quality-assured and recognised, and possibly included in the NQF.

Source: ReferNet questionnaire on Norway, 2021.

Box 30. **Integrated Qualification System (IQS), Poland**

A more systemic approach to microcredentials in Poland must happen within the Integrated qualification system (IQS). This is an open system, thanks to the inclusion of market qualifications. In Poland, the focus in the IQS is on quality assurance. This is important but can present a barrier in the case of microcredentials. At the same, the IQS cannot be seen as a place for all types of credentials, because adding market qualifications to the system requires a considerable amount of work and resources. Many microcredentials are therefore too small or cannot be included in IQS for formal or operational reasons.

Source: Case study on Poland (Cedefop, forthcoming-f).

Box 31. **Pilot project in Sweden**

Qualifications gained outside the formal education system can be referred to the SeQF (Swedish NQF), after review and quality control by the National Agency for Higher Vocational Education. A pilot project explores parallel mechanisms with fast tracks for accredited providers to legitimise microcredentials and give them a 'national stamp of approval.' Thus, microcredentials could become nationally quality-controlled credentials for short durations of learning, possibly referred to the national qualifications framework. So far, only full qualifications can be placed in the SeQF, but there is no limit to how small a qualification may be.

Source: ReferNet questionnaire on Sweden, 2021.

To enable stackability and increase in exchange value, microcredentials should be comparable with each other, have the same parameters, and include the same information (e.g. duration, credits, learning outcomes). This makes it easier for education providers or employers to interpret and understand what a specific microcredential represents in terms of what the learner has learned and is able to do, to count toward further education or employment. For example, learners finishing various short IT courses provided by the Code Academy ([54]) receive certificates that are barely comparable with each other, due to a lack of common parameters (Cedefop, 2021a). Another issue is related to the credibility, validation and recognition of this kind of learning (Cedefop, 2021a). To accumulate microcredentials across institutions and sectors it is important to decide how to link

([54]) Code Academy is a Lithuanian online learning platform that provides programming courses with live lecturers. It has two specific target groups: students who are interested in building a career in technology, and companies in the educational technology space that are interested in improving the competences of their employees and discovering new talents.

them to levels, and at what level they will be accepted, accumulated and stacked ([55]).

The stacking of microcredentials can promote international mobility. This would require the safe and certified digitalisation of microcredentials, as well as the use of learning outcomes. It will also require the development of an appropriate IT infrastructure (e.g. using blockchain) and the introduction of a unified quality assurance system. The portability of microcredentials could be ensured if legal harmonisation in relation to microcredentials is carried out at national and EU levels and adapted to the European Commission's initiatives relating to the digital learning certificate and individual learning accounts. This will allow the unification of labour market processes at EU level; increase participation in adult learning; enable the comparison, recognition and portability of training at EU level; and allow the validation of previously acquired knowledge (Cedefop, 2021a). Countries such as Poland and Slovakia are experimenting with creating a register of accredited microcredentials (Box 32 and Box 33).

Box 32. **Badge+ project in Poland to create a register of microcredentials**

In Poland, the Educational Research Institute (IBE) is implementing the project *Odznaka+* (Badge+), which aims to create a register of microcredentials that can lead to market qualifications. It is an IT infrastructure for storing, issuing and managing digital microcredentials using the open badges standard. It aims to help to digitise the process of credit accumulation and recognition as part of the integrated qualification system (IQS). Using this tool, each certifying authority (CA) will be able to create and award digital and publicly verifiable badges. Information on CAs and market qualifications will be automatically loaded from the qualifications register. The platform will enable end users to create a modern and fully editable portfolio of their existing skills by gathering learning experiences and achievements gained, using digital badges. It will also create an open register for microcredentials that are either too small or cannot be included in the IQS for formal or operational reasons. The inclusion of microcredentials in the register will be based on meeting certain formal requirements. However, this will be much easier than including market qualifications in the IQS.

Source: Case study on Poland (Cedefop, forthcoming-f).

([55]) Interview, Estonia, 2021.

Box 33. **Slovakian register of accredited programmes and their individual modules**

The information system of further education (ISDV) in Slovakia ([56]) serves as a register of accredited programmes and their individual modules. Education institutions can decide whether to accredit a programme as a whole, or by modules. Learners have the choice of either completing the full programme or only those modules they need. According to the accreditation requirements of the Education Ministry, modules are designed as independent educational units. Some of these training courses meet the criteria for microcredentials as they lead to the acquisition of clearly identifiable competences. As of 22 November 2021, 3 902 accredited programmes and their modules were registered in the ISDV. Education providers that are interested in accreditation are advised to follow qualification standards of qualifications of the national qualification system register that contains 1 000 qualifications. The lifelong learning and counselling strategy adopted in 2021 envisages that short courses regulated in accordance with the Slovak qualifications framework can result in inclusion of respective qualification into the national qualification system register as micro-qualifications.

Source: ReferNet questionnaire on Slovakia, 2021.

Learning outcomes that are clear, verified and assessed allow for the effective accumulation of microcredentials. This view was shared by various stakeholders in the interview programme and in the ReferNet questionnaires (Cedefop, 2021a). The learning outcomes of microcredentials should accurately describe what a learner can do (Cedefop, 2021a). If different sectors used the same definitions for learning outcomes, it would be easier to communicate these outcomes across sectors and organisations. In the retail sector in Sweden, for example, working tasks are defined, and are then accumulated to define vocational roles. It is considered important to indicate the volume or workload (e.g. using credits for learning outcomes). Such microcredentials could be also linked to NQF levels, which further enables their effective accumulation (Cedefop, 2021a).

There is growing interest and need for accumulation of learning acquired via formal initial and continuing vocational education and training, as well as non-formal or informal learning. However, this requires institutional and technical conditions for effective accumulation to be addressed, as well as tackling of barriers that inhibit the accumulation of microcredentials across institutions, sectors and countries. The major challenge relates to the issue of trust and transparency. Addressing this requires robust quality assurance systems, the use of common terminology to describe microcredentials, and common credit systems that can make microcredentials comparable regardless of their providers. Developing a pathway to recognise non-credit bearing microcredentials and

([56]) The Information System of Further Education (ISDV).

credentials issued by industry stakeholders would help to address the issues of trust and transparency.

5.4. Recognition of prior learning and microcredentials links

Key findings

- The characteristics of microcredentials position them as an important tool for improved recognition of prior learning (RPL).
- There are two main approaches to positioning microcredentials within the broader RPL system: microcredentials as outcomes of the RPL process, and microcredentials as tools to facilitate the RPL process.
- Through recognition of prior learning, microcredentials can lead to full qualifications, partial qualifications, access/admission to further education in VET and HE, and to shortening the duration of education and training programmes.
- The lack of adequate quality assurance mechanisms is one of the main factors hindering the proper utilisation of microcredentials in RPL.

5.4.1. Use of microcredentials for validating and recognising prior learning

Recognition of prior learning (RPL) helps individuals to acquire formal qualifications based on their knowledge and competences. The advantages of this are manifold, and include improved employability, mobility and social inclusion. The analysis of RPL practices and policies in various EU Member States shows that most allow individuals to obtain partial (e.g. Germany, Spain and Cyprus) and/or full qualifications (e.g. Luxembourg and Norway). This is most specifically the case within the context of IVET and CVET, following an assessment process that is usually based on standards like those used in formal education. In addition, most of these validation arrangements are linked to NQFs (e.g. in Belgium-fl, Ireland and Latvia). In this context, the characteristics of microcredentials position them as an important tool for enhanced prior learning assessment practices.

Where microcredentials are based on clearly defined learning outcomes, this makes it possible to align them with the other forms of qualifications including formal qualifications awarded through RPL. This argument was largely supported by respondents in the interview programme ([57]). In such systems, the completion

([57]) The interview programme analysed in this chapter included representatives of employer organisations, employee organisations, VET providers and national authorities. The interviews covered the following countries: Austria, Belgium, Bulgaria,

of individual modules that fit the broad understanding of microcredentials ([58]) is followed by the issue of a certificate proving the learning outcomes achieved (e.g. in Estonia, Lithuania and Sweden). From the learner's perspective, this means that an individual may complete one module without having to be enrolled in a full programme. If, however, the learner later decides to complete the whole programme, the institution can give an exemption for the module that has already been completed. Since some courses offered in adult education follow the same curriculum as modules within formal VET programmes, if a decision is made to enrol in a formal VET programme, the individual can be given exemptions for those modules completed outside the formal setting, given that the learning outcomes are similar. For example, countries such as Spain, Denmark, and Belgium-fl grant admission to and exemptions from (parts of) educational programmes based on prior learning. This highlights the important social function played by microcredentials, which allow early school leavers to return to school to complete full qualifications as intended.

To gain a deeper understanding of the roles that microcredentials play in RPL, it is important to analyse actual practices in different European countries. Table 16 offers examples of how microcredentials are used within the context of RPL.

Table 16. **Microcredentials in the recognition and validation of non-formal and informal learning**

Country	Relationship of microcredentials to RPL practices
Austria	With various RPL acts and regulations in place, almost all qualifications, except for higher education degrees, can be obtained through RPL. In dual VET, exceptional admission to the apprenticeship examination (*Außerordentlicher Zugang zur Lehrabschlussprüfung)* can be granted to people without formal training, upon submitting evidence of having already acquired the relevant skills and knowledge, including through courses. Microcredentials have a role to play here in offering such proofs of prior learning achievements.
Belgium-fl	In Flanders, the term EVC *erkennen van verworven competenties* (recognition of acquired competences) is used to refer to the validation of non-formal and informal learning The procedure for the recognition of previously acquired competences (EVCs) in Belgium can be initiated upon submission of a proof of experience, which is a document that shows that the individual has demonstrated certain competence(s) as

Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Slovenia and Sweden.

([58]) The broad understanding of microcredentials refers to the definition adopted in the Council Recommendation of 16 June 2022 on a European approach to microcredentials for lifelong learning and employability, which allows a wide range of short learning experiences to be classified as microcredentials.

	indicated by a test centre that is recognised by the Flemish government. The outcome of the RPL process is a certificate of professional qualification and gaining admission to an education and training programme (also gaining exemptions from parts of the study programme). Within this process, it is possible to obtain a partial qualification that does not cover all the competences and skills under the full professional qualification. This partial qualification is considered an official qualification. It is also possible to obtain proof of competence, which is even smaller in scope than the partial qualification. Both the partial qualification and the proof of competence have characteristics related to microcredentials. In addition, a single integrated quality assurance framework for professional qualifications at all levels has been developed ([59]), which links validation processes to the Flemish qualifications framework (FQF).
Belgium-fr	In French-speaking Belgium, the validation of competences in the CVET sector leads to a *titre de compétence* (skills certificate) that can be used to access the labour market and/or further vocational/adult training. The recognised skills certificates can qualify as microcredentials. In adult education, EPS (education for social advancement) offers courses for adult learners in the form of short modules. Through recognition of prior learning, certain modules can be waived within the pedagogical file that defines the learner's personal study pathways, so RPL can aid in obtaining microcredentials. The recognition and validation of non-formal and informal learning is also linked to the NQF.
Bulgaria	Providers of IVET in Bulgaria can award partial qualifications, programme D, which qualify as microcredentials, through the validation of VET competences that correspond to the learning outcomes in the State Educational Standards. The certificate for a partial qualification in a profession obtained through RPL is identical to that issued as a result of completing a training programme in the formal VET system. However, in both IVET and CVET, the RPL process can be lengthy and complicated.
Cyprus	In VET, a system of vocational qualifications (SVQ) allows for the validation of non-formal and informal learning, leading to full or partial qualifications (which can qualify as microcredentials). The use of microcredentials in RPL, however, is still dependent on individual institutional practices. For example, in obtaining the European Computer Driving Licence (ECDL), which qualifies as a microcredential, some institutions may exempt the learner from some of the required 240 ETCs through RPL. Other institutions may not do so. Competence-based hiring is also gaining ground in Cyprus, which means that employers increasingly acknowledge competences acquired through informal and non-formal learning. Therefore, microcredentials can play an important role in making these competences visible to employers.
Czechia	The validation of non-formal and informal learning (VNFIL) system in Czechia primarily addresses the CVET sector and operates in parallel to the formal education and training sector. Microcredentials exist in Czechia as vocational qualifications defined by the National Register of Qualifications (NSK). Acquiring a microcredential requires the learner to pass a standardised examination/assessment of competences; the certificate obtained documents the competences acquired. These

([59]) Decree and decision on quality assurance for professional qualifications based on a common quality framework.

	include competences acquired over a short period of time (short learning experiences).
Denmark	In Denmark, a legal framework for the recognition of prior learning has been in place since 2007, allowing most qualifications in the Danish NQF to be obtained through RPL. Microcredentials can be used in Denmark in the context of RPL as proof of having acquired a set of competences or learning outcomes. It is also possible through the RPL process to obtain an RKV (prior learning assessment) certificate, which qualifies as a microcredential, and constitutes a small part of a whole AMU certificate. The RKV certificate can be also used for admission to education programmes and to shorten the length of the education course.
Estonia	In Estonia, micro-qualifications can be obtained through RPL. VET providers and higher education institutions can use RPL to issue micro-qualifications. Microcredentials can also be used as proofs of experience/competences in the RPL process, to support obtaining a full VET qualification.
Finland	There are well-established arrangements for the validation of non-formal and informal learning in Finland across all sectors of education. Both VET and UASs (universities of applied sciences) allow for the validation/recognition of prior learning and the personalisation of studies. However, only formal education providers in VET and HE can award formal certificates/qualifications through the validation process. Non-formal providers offer their own certificates, some of which may qualify as microcredentials, in alignment with the competences defined in formal national qualifications. These certificates can be validated by formal providers.
France	The French VAE system (validation of experiential learning outcomes) allows the validation/recognition of prior learning to obtain a part of a qualification registered in the national register of vocational and professional qualifications (RNCP), without undertaking formal training. This part of a qualification is obtained in the form of an 'attestation of competences', which documents the learning units validated, or as a booklet that comprises competence or specialisation certificates and details the blocks of competences acquired. CVET certificates that are registered in the RNCP can also be obtained through VAE (such as those offered by the Ministry of Labour or chambers of commerce). In higher education, MOOCs can count towards a whole or part of a diploma through the validation of higher education studies (*validation des études supérieures* or VES), which is a different process from VAE.
Germany	Education institutions and VET providers in Germany have the final say in deciding whether or they will validate/recognise prior learning. In practice, microcredentials issued by different VET providers can be recognised as prior learning and combined with other certificates into a full qualification. Certified/accredited courses (microcredentials) obtained as non-formal certificates, as well as informally acquired competences, can both be recognised in the regulated VET and further education systems. Another example of the use of microcredentials in RPL is the ICT-based large-scale assessment project MySKILLS, implemented by the German public employment service in cooperation with Bertelsmann Stiftung. This project carries out digital assessments of competences gained at work. It supports those who have many years of experience but no documentary proof of their competences.
Hungary	RPL practices in Hungary are limited in scope and fragmented, with education institutions independently setting up their own internal RPL practices. However, VET regulations allow for exemption from certain

	training requirements/courses based on previously acquired and certified competences. Microcredentials have a role to play in this regard, offering certified proof. Certain professional certificates have traditionally been acquired through the validation/recognition of prior learning such as the European Computer Driving Licence examination and foreign language proficiency examinations. Those certificates may also qualify as microcredentials.
Ireland	Recognition of prior learning in Ireland can grant an individual partial or full qualifications (linked to the NQF) and/or access to formal education programmes. The modular nature of the Irish qualifications system allows qualifications of five credits or fewer (which would qualify as microcredentials) to be aggregated and used in the RPL process as stepping stones into qualifications in the national framework of qualifications (NFQ).
Italy	The Italian validation system is a comprehensive national system that covers competences described in the national repository of education, training and vocational qualifications across all sectors of education. In Italy, it is possible for qualifications that consist of a single competence which aggregate competences, and which are registered in the national directory, to be obtained through the validation and certification of competences acquired in formal, non-formal and informal learning settings. These qualifications (which are described in the Italian system as micro-qualifications) qualify as microcredentials.
Lithuania	The implementation of RPL in Lithuania is largely decentralised at the level of training providers. However, there is centralised assessment of competences, in which it is possible receive a certificate for a single module through the RPL process, without having to study it. In VET, individuals can apply for the assessment of competences through the appropriate VET provider to formalise acquired learning outcomes relevant to EQF qualifications at level I-V. The applicant must submit documented evidence of the learning outcomes acquired outside formal education. Microcredentials have a role to play here in providing the required evidence. Another example of the role microcredentials play in the RPL process is the strategic partnership project Trusted badge systems, implemented by the Lithuanian Association of Non-Formal Education (LANE) in cooperation with partners. The project (carried out between 2015 and 2017) aimed to improve cooperation between non-governmental organisations and companies towards the better recognition of competences through the open badges tool.
Luxembourg	The process known as the validation of prior experiential learning or *validation des acquis de l'expérience* (VAE) has been operational since 2010. Within VAE, officially accredited microcredentials can be recognised as prior learning and count towards a full qualification (but not a partial one). If the learner/professional is still missing certain competences covered under the full qualification, they receive a 'half validation', meaning that they are given time to acquire the missing competences and submit the relevant certification/proof to acquire the full qualification. In higher education, only parts of qualifications (modules) at levels 6 to 8 can be acquired through VAE. These partial qualifications/modules can also qualify as microcredentials.
Malta	Prior formal, non-formal and informal learning in Malta can be formalised in an accredited award or microcredential. However, it is a difficult and long process to pass the quality assessment. In the building and construction sector, new legislation mandates that every worker should possess either a formal qualification relevant to the sector, or a

	sectoral skills card, which can be obtained by passing a validation assessment.
Netherlands	Since 1998, a national system for the recognition of prior learning, *erkenning van verworven competentie* (EVC), has been in place. A new national policy on validation was adopted in 2016 with dual focus linking RPL to both the labour market and the education system. A formal RPL process leads to the award of a certificate of experience (*ervaringscertificaat*), a certificate of professional competence (*vakbekwaamheidsbewijs*), or a certificate of generic and transversal competences (*competentiebewijs*). These certificates could qualify as microcredentials. In VET, it is also possible to receive a partial formal qualification through the EVC process, which can also qualify as a microcredential. Open badges can be obtained based on the validation of informal learning. Edubadges (digital certificates) are also awarded in recognition of the knowledge and competences acquired in a formal learning setting.
Norway	Norwegian legislation and practice acknowledge all forms of prior learning: formal, non-formal and informal. When it comes to the recognition/validation of prior learning, it does not matter what the source of learning is. In IVET, the outcome of the RPL process can either be a full qualification or a 'certificate of competence', which qualifies as a microcredential. MOOCs, which are awarded by HEIs as part of their own provisions for degree programmes, can count towards formal qualifications.
Poland	The Polish integrated skills strategy 2030 (ISS 2030) provides the basis for the development of microcredentials, the validation/recognition of prior learning, and the digitisation of recognition and accumulation procedures. Examples of certificates that qualify as microcredentials, and which can be recognised as prior learning, include open university certificates and certificates of completion of postgraduate studies, both delivered by HEIs.
Portugal	RPL in Portugal is part of the comprehensive national system for the recognition, validation and certification of competences (*reconhecimento, validação e certificação de competências*, RVCC) that was introduced in 2001. Within the RVCC, microcredentials, in the form of UFCD (training units of short duration or *unidades de formação de curta duração'*) and UC (competence units) can be acquired and certified in a variety of learning contexts (formal, non-formal, and informal).
Slovenia	Microcredentials can be recognised as prior learning. In practice, however, not many people would choose this option, as following the RPL procedures usually takes a considerable time: it can be easier for learners/professionals to obtain the desired qualification by participating in a formal programme.
Spain	In 2021, Spain consolidated and incorporated its national procedures for the validation of non-formal and informal learning into the new organic law on education, and the organic law on universities. In IVET and CVET, it is possible to receive exemptions from (part of) educational programmes through the validation of competences acquired outside the formal sector. The process can lead to the award of a partial IVET qualification or an occupational certificate (which can qualify as microcredentials). Another example of the use of microcredentials in RPL is in public calls for the recognition of professional competences in a certain occupation, which can be organised by education and labour authorities. For example, the company Fagor Ederlan from Tafalla, Navarra, publicly called for the

	initiation of a recognition procedure that would enable its employees to receive occupational certificates, qualifying as microcredentials, in metal melting and casting.
Sweden	Several validation activities and initiatives have been introduced in Sweden since the 1990s, most notably after 2012. In VET, a pilot began, just before the pandemic, for the development of short courses in the higher VET system. While higher VET programmes normally run for around for 2 years, these new short courses range between 2 weeks and 1 year. Some of these short courses, which may qualify as microcredentials, can only be obtained through the RPL process. In the retail sector, the vocation map (*yrkeskartan)* initiative aims to visualise the vocations and career opportunities in the sector, with each vocational role having an educational pathway that details the competences needed. Within this initiative, partial qualifications can be recognised and combined.

Source: Cedefop, based on the European Inventory on Validation (2020), Cedefop national qualifications frameworks (NQFs) online tool – NQF country reports (2020), ReferNet questionnaires, case studies, and interview programme.

Analysis of the national practices detailed in Table 16 highlights two main approaches to positioning microcredentials within broader RPL systems. First, microcredentials can be seen as outcomes of the RPL process. The receipt/award of a partial qualification or stand-alone skills certificate based on recognition of prior learning can be conceived as the award of a microcredential using the learning outcome-based validation of a small volume of learning. Examples exist of microcredentials (even if the term microcredentials itself is not used by the service provider or the awarding body) that are awarded following assessment/examination, without the need to engage in any structured/organised classroom-based or remote learning activity. Passing the assessment process or exam using knowledge, skills and competences acquired in non-formal and informal settings can result in the individual receiving a microcredential that relates to specific learning outcomes (i.e. a microcredential as an outcome of RPL).

The second approach is to look at microcredentials as a tool in the RPL process. In order to recognise and validate a prior learning achievement, an individual is subject to an assessment/examination process to ensure that the relevant learning outcomes have been achieved and/or the occupational standards have been met. When the desired qualification is larger than a microcredential (e.g. a full formal VET qualification), and when part (or all) of the prior learning achieved is documented and certified by microcredential(s), then microcredentials have the potential to support and/or shorten the validation towards the desired qualification.

Various scenarios exist for the use of microcredentials within the context of RPL under this second approach:

(a) microcredentials can be used to obtain a partial qualification (e.g. as in Germany, Ireland, Spain, Cyprus and Netherlands);

(b) microcredentials can be used to obtain a full formal qualification: this also relates to whether it would be possible to accumulate/stack a number of microcredentials towards a larger qualification or not (e.g. as in Estonia, Ireland, Luxembourg and Norway, see Section 5.3);
(c) microcredentials can be used to gain access to an education programme (including making the transition from VET to higher education). In such cases, the use of RPL for the purpose of meeting the preconditions for the education programme can be supported through the submission of relevant microcredential(s) (e.g. as in Belgium-fr and Ireland);
(d) microcredentials can be used to gain exemption from part(s) of an education programme and/or shorten the duration of study, by offering proof, through the relevant microcredential(s), that some of the intended learning outcomes have already been achieved through prior learning (e.g. as in Belgium-fl, Denmark and Spain);
(e) microcredentials can be used to gain exemption from part(s) of a professional qualification, where some of the intended learning outcomes (or occupational standards) have already been achieved/met through prior learning (e.g. as in Belgium-fl and France).

Even though there was general agreement in the interview programme that microcredentials would help to simplify the recognition and validation of prior learning, the lack of adequate quality assurance mechanisms was highlighted as a hindering factor by several national authority representatives interviewed (from Belgium, Denmark, Estonia, Greece, France, Latvia and Slovenia) and VET providers (from Germany and the Netherlands). If short learning experiences leading to microcredentials are accredited and quality-assured, this would allow for the smooth, or even automatic, recognition of prior learning. However, some individuals may present certificates from providers that are little known to the relevant validation bodies. In such cases, even if a rigorous assessment of the competences acquired has taken place before the issue of the microcredential, the individual's knowledge, skills and competences will still need to be assessed again, simply because the provider of the microcredential is unknown or not accredited.
In alignment with the mapping of microcredentials in RPL, there are two ways to increase their quality assurance. This could be tackled either at the level of the learning activity and/or its assessment process, or at the level of the awarding body. The relevant quality assurance agency can take the necessary measures towards ensuring that specific microcredentials awarded in the market are accredited and/or quality-assured, which would make it easier for both individuals and RPL bodies to use them with confidence in the RPL process. The second possible approach is to accredit providers, so that microcredentials awarded by a

specific accredited and quality-assured education and training provider would automatically signal value to the relevant RPL stakeholders. In relation to this discussion, the European Commission has highlighted that the development of microcredentials can build on the existing EU and European Higher Education Area (EHEA) transparency and quality assurance tools, one of which is the recognition of prior learning and validation of non-formal and informal learning (European Commission, 2020b).

5.5. Microcredentials opportunities and challenges for qualification systems

Key findings

- The impact of microcredentials on qualifications systems depends on key tensions between flexibility and stability of qualifications and credential systems.
- Microcredentials provide flexibility to end users, which is sometimes lacking from traditional qualifications according to the stakeholder consultations. However, microcredentials which operate outside the formal system may not always enjoy the same trust and recognition as full qualifications.
- The main perceived opportunities for qualifications systems presented by microcredentials relate to their flexibility and faster responsiveness to labour market needs, as well as support for lifelong learning.
- The main perceived challenges to qualifications systems posed by microcredentials relate to difficulties in achieving a balance between holistic education and skills-focused learning.

To understand the role of microcredentials, it is important to consider them within the broader context of evolving qualifications systems in Europe. Cedefop's 2010 study on *Changing qualifications in Europe* summarised key tensions characterising this evolution, which remain valid today. The study described tension between the flexibility and stability of qualifications and credential systems. On the one hand, there is a desire to maintain stable and dependable qualifications that enjoy trust, currency and wide social recognition of learners' qualifications. On the other hand, there is a need for flexible learning pathways that meet the needs of diverse learners and allow them to build up knowledge at their own pace and to their own specifications (Cedefop, 2010). While microcredentials provide such flexibility – which may sometimes be missing in traditional qualifications – they can lack the level of trust and recognition enjoyed by full qualifications.

Tension also exists between supply-led and demand-driven qualifications. The goal of a supply-led qualifications system is to uphold and protect standards and ensure the transparency and predictability of qualifications. However, such

systems tend to be rigid and slow to respond to changing socioeconomic needs. A demand-led system, meanwhile, is more responsive to the emerging needs of diverse stakeholders, including the labour market. Here, the focus is on developing an effective workforce equipped with the knowledge and skills necessary for an increasingly complex and fast-paced working environment (Cedefop, 2010). Microcredentials are better able to reflect and respond to the changing needs of the labour market by providing short, quick and tailored skills development. However, these benefits come at the expense of quality control and transparency regarding the trustworthiness of the credential and its provider.

The opportunities and challenges presented by microcredentials contribute on both sides of these tensions. Microcredentials provide an opportunity for stable and dependable qualifications to become more flexible and meet the needs of diverse stakeholders. At the same time, they present a challenge to stable and dependable qualifications systems by undermining the role of holistic education in favour of short, skills-based learning that tries to meet the ever-changing needs of the labour market. Microcredentials also challenge the standards and quality set by supply-led qualifications systems due to a plethora of choice, which makes it difficult to track and ensure the credibility of both the credential and its provider. Both the opportunities and challenges presented to qualifications systems by microcredentials, and their relationship to these tensions, are further described in the Sections below (Table 17). The data used stem from desk research, interviews, case studies (Cedefop, forthcoming c, d, e, f, g, h, i, j) and ReferNet questionnaires (Cedefop, 2021a).

Table 17. **Main opportunities and challenges for qualifications systems (QS) presented by microcredentials**

Opportunities offered to the QS	Challenges posed to the QS
Microcredentials can push qualifications systems to become more flexible, adaptable and responsive to labour market needs and to pay attention to quality assurance.	Microcredentials shift preferences towards short duration learning programmes over full qualifications.
Microcredentials allow learners, at a more granular level than a whole programme, to combine competences in ways that match the development of hybrid job profiles (e.g. combining trade skills and e-business/digital skills).	Too much modularity encourages early exits from training with only partial mastery of the occupation.
Employers are increasingly reluctant to bear the costs of an adult employee taking a full degree if they only require specific competences and/or to stack competences and have them documented as they go along.	Employers favour a quick way of getting ‘skilled’ workers over workers with full qualifications.

Opportunities offered to the QS	Challenges posed to the QS
They provide a fast track for acquiring skills and knowledge that are specific, new and emerging, sometimes in exceptional cases such as those relevant to the COVID-19 crisis.	Short-duration training may not provide enough human capital development, or may have an impact on labour market outcomes, unless it is the result of good identification of training needs.
Diverse stakeholders can offer microcredentials either in-house or at an institution in cooperation with formal education and training providers and corporate experts.	Many short training programmes lack evaluation criteria, or these are not transparent.
Microcredentials enable the acquisition of learning content that is student-bound, digital, portable and interdependent.	No robust mechanism is in place to track and guarantee the quality and trust of microcredentials and their providers.
Microcredentials can be used to validate prior knowledge and make visible the skills that people acquire through non-formal and informal training.	In the absence of an appropriate quality assurance framework, credible certification is not possible.
The short duration of microcredentials allows the reconciliation of training, work and personal life, and the acquisition of new professional skills in a short period of time.	Having many overlapping credentials offered in the market is leading to confusion among end users as to their value.
Microcredentials foster lifelong learning, the development of employability skills, high responsiveness to the needs of the labour market and of learners, and engagement in further training.	Microcredentials shift the responsibility for continuing education and up/reskilling from employers to employees.
Microcredentials can lower barriers to education (e.g. time, money, location), reduce early school dropouts and encourage learners to continue on to formal/further education.	Microcredentials are not given same trust and long-term recognition of skills and competences as full qualifications. They also have a shorter period of validity, as skills become obsolete and/or new skills needs emerge.
Microcredentials can be obtained through online, in-person or mixed learning courses, and can be digitalised using blockchain technology, making them more portable.	Microcredentials create an administrative burden and require considerable resources to map, track and quality assure them.

Source: Cedefop, based on desk research, interviews, case studies and ReferNet questionnaires.

5.5.1. Microcredentials opportunities for qualifications systems

Initial concerns that microcredentials might replace traditional qualifications are not perceived by various stakeholder groups as possible outcomes. The prevailing belief among the diverse stakeholders consulted through the interview programme, case studies (Cedefop, forthcoming-c, d, e, f, g, h, i, j) and ReferNet questionnaires (Cedefop, 2021a), is that microcredentials complement and supplement existing qualifications. However, microcredentials also add to the tensions characterising the evolution of qualifications systems. Microcredentials are associated with flexible and demand-driven qualifications which can push traditional systems to open and respond better to changing socioeconomic needs. The main

opportunities for qualifications systems presented by microcredentials relate to the purposes, discussed in detail in Section 4.2.2.

The most shared expectation of microcredentials is that they will make formal qualifications and VET systems more flexible, adaptable and responsive to labour market needs. Microcredentials can help to reform traditional qualifications by bridging the gap between what is offered by formal education, and what is needed in the labour market ([60]). Given their complementary role, microcredentials can address the shortcomings of supply-led qualifications systems by involving diverse providers who are better able to offer up-to-date qualifications and credentials.

Supply driven mainstream education tends to be old-fashioned, rigid and inflexible. Learners prefer microcredentials because they feel empowered to choose what they want to learn and then put it into action. Therefore, many young people seek opportunities to learn robotics and programming outside of mainstream education, because schools do not provide the type of programming they need ([61]). Credentials appeal to younger generations because they exist in a digital format and can easily be stored in a professional portfolio. Microcredentials can include information on various elements that are of relevance to employers (e.g. the individual competences acquired), and this contributes to their transparency, validity, stackability and recognisability (Cedefop, 2021a). The process of validating qualifications is usually too slow and cumbersome compared with the speed at which skills change. Knowledge and skills go out of date quickly, and it is challenging for qualifications systems to address this. At the same time, some skills needs are too small and too specific to be included into an NQF.

Microcredentials are perceived as providing a fast track for acquiring specific skills and knowledge that are either missing or newly emerging**.** The value of traditional degrees is decreasing, especially in fast-changing industries such as ICT, while demand for microcredentials is increasing. Microcredentials relate to new skills that traditional systems are (or will be) unable to provide as quickly, neither via initial VET nor through retraining provided by employment services – even though the demand for such skills is increasing rapidly (Cedefop, 2021a). The expectation is that microcredentials in the context of the labour market and VET would consider the dynamics of industry, in which the speed and agility of response are pressing issues ([62]).

Microcredentials are also believed to provide measures that target specific groups such as adults. These are typically involved in reskilling and upskilling

([60]) Interview, Hungary, 2021.

([61]) Interview, Cyprus, 2021.

([62]) Interview, Denmark, 2021.

pathways within active labour market policies (Cedefop, 2021a); they may have only limited time to attend a full qualification programme due to their work commitments, or they may be unfamiliar with, or did not have a good experience with, full-time schooling. Through modular VET systems, in which modules are associated with microcredentials, working-age learners can engage in and accumulate learning in smaller chunks at their convenience, without the need to go back to school full-time (Interview Denmark, 2021). For example, in Cyprus, the Department of Secondary Technical and Vocational Education and Training has developed new modularised curricula for initial and continuing VET and apprenticeship systems. The courses offered under the apprenticeship system (EQF level 3) are linked with courses offered at the evening schools of technical and vocational education, which operate as second-chance schools. Graduates can attend these evening schools and have education and training acquired in apprenticeship programmes recognised and transferred. This allows participants to complete formal upper-secondary VET and receive their qualification (a school-leaving certificate at EQF level 4) in 2 years, instead of the usual 3 (Cedefop, 2021a).

While traditional qualifications still enjoy high currency and trust among end users, microcredentials provide a better way accurately to identify, recognise and signal what individuals know and can do. In Croatia, there is a lack of qualified and non-qualified workers, so the country tries to attract labour from abroad. Microcredentials provide a way to gauge workers' skills and capabilities, including those that they do not even know they have. Having a microcredential to recognise their existing skills is a much more useful instrument than putting them through school to complete a full programme ([63]).

Microcredentials are also seen as promoting equity and inclusiveness in qualifications systems by making education more accessible and affordable. According to the European Students' Union, microcredentials can provide recognition for prior and non-formal learning, especially for people with lower socioeconomic backgrounds. However, these have to be accompanied by other policies to support people without academic degrees. Flexibility in organising personalised learning paths can also help to reduce early leaving from education and training (Cedefop, 2021a). Microcredentials can serve as a stimulus to continue and/or return to formal education and obtain a full qualification. In cases where students decide not to complete a qualification, they can still obtain evidence of their learning for those modules that they have completed. For example, adult education in the French-speaking Community of Belgium is organised on a

([63]) Interview, Croatia, 2021.

modular basis. Courses are grouped into course units (*unité d'enseignement*), each leading to a specific pass certificate (*attestation de réussite*). To obtain a qualification for a specific section, participants must accumulate certificates attesting to the successful completion of these course units (Cedefop, 2021a). According to the Maltese accreditation authority, awards ([64]) are promoted and encouraged in Malta to target early school leavers, as they form flexible units of learning that allow individuals to further their studies and progress to higher education (Cedefop, 2021a). In Czechia, there are plans to combine initial vocational education and training with further education in the national registry of qualifications, in order to prevent early school leaving and dropouts ([65]).

Microcredentials can aid qualifications systems in promoting lifelong and life-wide learning, enabling individuals to learn throughout their lifetime. Individuals can engage in continuous learning to acquire and upgrade their skills and competences in different fields and for different purposes such as employability, personal development, active ageing in the digital age, or active citizenship (Cedefop, 2021a). Microcredentials also enable the recognition of prior learning, especially informal and non-formal learning. This can lower barriers to participation in education and training, such as a lack of time or financial resources. By validating and certifying learners' experiences, microcredentials can help to make lifelong learning a reality for all (interview, Hungary, 2021).

For a future in which people participate in learning in a continuous way, it is important to decide what constitutes additional foundational skills, knowledge and competence beyond compulsory education (interview, Danish Employers' Confederation, 2021). The accumulation and combination of modular learning can enable individuals to transition between different learning environments while also promoting greater collaboration among different institutions and sectors. For example, in Cyprus the Ministry of Education, Culture, Sport and Youth, in cooperation with the Ministry of Justice and Public Order, has established an Evening School of Technical and Vocational Education on the premises of the Central Prison in Nicosia. The goal of this is to help prisoners obtain a qualification at upper-secondary level and to reintegrate into society. The programme is modular, allowing prisoners to choose modules according to their capabilities and the restrictions on their schedule (Cedefop, 2021a).

([64]) Awards are equivalent to microcredentials, as indicated in the ReferNet questionnaire (Cedefop, 2021a).

([65]) Interview, Czechia, 2021.

5.5.2. Main challenges to qualifications systems posed by microcredentials

The tensions between flexibility and stability, as well as between supply- and demand-driven education, are also applicable when considering the challenges posed by microcredentials to qualifications systems. Microcredentials may challenge stable and dependable qualifications by shifting the focus from holistic education to short, skills-based learning that prioritises the changing needs of the labour market. They may also challenge the standards and quality set by supply-led qualifications systems, given the excess of choice and the difficulty of ensuring the credibility of both credential and provider.

Concerns also exist that accumulation through modular systems might encourage learners to leave the education system with only partial qualifications, instead of completing a full qualification (66). Stakeholders and ReferNet questionnaires (Cedefop, 2021a) from Belgium and Bulgaria highlighted this as a concern in their countries, as learners exit the education system with only a partial mastery of an occupation – i.e. the more flexible a system is, the fewer people go on to complete a VET qualification (Cedefop, 2021a). In Spain, the modular VET system creates a tendency for providers to concentrate on those modules that do not involve specialised (i.e. material or human) resources, and are easy to deliver. It would therefore be necessary to establish a mechanism to correct possible market deviations (Cedefop, 2021a).

A widely shared concern among European stakeholders is achieving a balance between the holistic education provided by full qualifications, and the skills-focused learning provided by microcredentials. For instance, trade unions are concerned that microcredentials might undermine the holistic approach to education, the quality and recognition of employee training, and collective agreements. They believe that education is a public good, and hence should prepare students to become democratic citizens and employees with social skills, and not just short-term skills that are relevant to the labour market. Qualifications are also subject to collective agreements and are closely related to salaries (Joint ETUC-ETUCE Position, 2020). As one interview respondent from Luxembourg related, offering microcredentials widely might embolden employers to take advantage of employees, who will be underpaid precisely because they do not possess full qualifications. This opinion was shared by other stakeholders during the interview programme and in the ReferNet questionnaires (Cedefop, 2021a).

Some Member States are reluctant to open their qualifications systems to include microcredentials. In Hungary, for example, the new Vocational education

(66) These fears were raised by several countries including Belgium, Denmark, Finland, Germany, Hungary, Luxembourg, Netherlands, Spain and Norway in both the interview programme and in ReferNet questionnaires.

and training Act enacted in January 2020 does not allow for the attainment of vocational qualifications in basic professions, either in IVET and in CVET, through modular or small learning units. Modular learning is only practised in adult education, where learners can enrol in add-on qualification courses and competence development training. This reservation also applies to microcredentials, which Hungary is hesitant to use as part of full-time school-based VET. It is feared that students will not obtain a vocational qualification, because microcredentials would already certify what they think they need – even if these credentials are not a substitute for state-recognised vocational qualification (Cedefop, 2021a). According to the German case study (Cedefop, forthcoming-c), the Federal Ministry of Education and Research (BMBF) stresses the need to ensure that microcredentials and the modularisation of learning programmes do not conflict with the acquisition of academic or vocational qualifications. Hence, the VET act provides further options for acquiring a vocational qualification through upskilling. For instance, learners can participate in upskilling or reskilling courses to acquire a full vocational qualification through the acquisition of partial qualifications that build on existing skills, following the completion of a final examination.

Similarly, some stakeholders representing trade unions and national authorities fear that microcredentials might shift the demand for workforce away from 'people with qualifications' to 'skilled people'. Some stakeholders see this as a possible downside of microcredentials, if they are used too extensively and replace full qualifications. However, there is overall agreement that microcredentials do not seek to replace full qualifications. Nevertheless, this creates a tension between different types of stakeholders and how they see and approach the situation. For example, employers prefer to have access to sufficiently well-trained staff who can start immediately, rather than waiting for those with full qualifications ([67]). Companies consider an advantage of microcredentials that they offer short, targeted learning and can address new and emerging skills needs driven by the digital and green transitions. For instance, there is an emerging trend in Hungary in which employers favour workers with certain technical, special (e.g. plumbing) or vocational skills over those with university degrees.

Microcredentials shift the responsibility for further learning from companies to employees. The European Trade Union Confederation (ETUC) ([68]) highlighted that

([67]) These fears were raised by respondents from several countries including Belgium, Denmark, Finland, Germany, Hungary, Luxembourg, Netherlands, Spain and Norway in both the interview programme and the ReferNet questionnaires.

([68]) During the conference on microcredentials organised by Cedefop.

workers should not be left to meet their training needs alone. According to them, microcredentials can add value to workers and complement their upskilling and reskilling efforts when they are formulated with clear learning outcomes and are quality assured. Requirements for full qualifications are related to collective bargaining and salary negotiations, but these aspects are not yet clear when it comes to microcredentials. Learners need to know what tangible benefits enrolment in learning activities leading to microcredentials bring to them (e.g. salary increase, better jobs, promotion or improved working conditions).

There are also worries of fragmentation of the qualifications systems, leading to the proliferation of 'unregulated' microcredentials and potentially fake certifications. The number of microcredentials available in the market, particularly those provided outside the formal education system, is enormous. Most are not regulated, quality-assured or linked to qualifications frameworks (Cedefop, 2021a). Such an oversupply can cause devaluation, confuse learners, and diminish trust among end users. It also raises an important question of who is responsible for ensuring quality: the public sector, education providers, learners/employees, employers, or the market, where the demand for certain credential assumes their trust and quality. The question of quality is also relevant to the recognition of learning from non-formal and informal education (Interview, Netherlands, 2021). According to the European Students' Union (ESU) ([69]), students are afraid that quality standards will disappear from microcredentials, pointing to a need for them to follow similar quality assurance to that used for degree programmes. One way to address this challenge is by ensuring the quality of the provider instead of each microcredential, which would make the quality assurance process easier to manage.

Some countries (e.g. Austria) do not see the need to control all the offer available in the market. Some national authorities emphasised that it might take a long time to approve and include programmes in NQFs (e.g. in Poland), and that there is no need for the government to control what happens in the labour market, as that it is not their competence (e.g. Austria). These arguments relate to the overall openness of qualifications systems and go far beyond the topic of microcredentials. While the diversity of choice poses some challenges, offers from well-regarded providers (as described below) are perceived as more trustworthy in terms of their quality and standards. Even in cases when they are not referenced to NQF/EQF levels, microcredentials still signal some value to employers and other stakeholders. If a provider is trusted, inclusion does not present a major issue (as is the case with vendor certificates such as those by IBM, Google, Microsoft and

([69]) During the conference on microcredentials organised by Cedefop.

others). The value of a microcredential depends on the status and credibility of the body that stands behind it. Hence, the perceived negative effect and oversupply of microcredentials depends on whether they are accredited, quality-assured and offered by trusted providers from both the public and private sectors.

Microcredentials are not intended to replace full qualifications or radically change qualifications systems. As with most of what happens in different national qualifications systems, there are both positive and negative aspects. Compared with traditional qualifications, microcredentials offer certain advantages as they are flexible, responsive, short and tailored, and learner-centred. However, these same features, perceived as opportunities for qualifications systems by some stakeholders, are perceived as challenges by others. Those who regard microcredentials as opportunities believe that they can influence qualifications systems to become more flexible, modular, stackable, responsive to the labour market needs, accessible to diverse learners and open to diverse providers including industry and international providers. They can equalise the playing field for the provision of education and training, making education systems more responsive to socioeconomic changes. They can also encourage traditional qualifications to open up to new ideas and approaches, promoting greater collaboration among diverse actors. Those who regard microcredentials as challenges stress the lack of common standards, quality assurance and control, as well as clear assessment and recognition processes. They are concerned that the oversupply of microcredentials turns the education and training market into a crowded and noisy space and creates confusion among end users regarding their value. Some fear that microcredentials might shift the dynamics of qualifications by encouraging learners to pursue partial qualifications instead of full ones. Learners should benefit from a holistic learning experience while also having the opportunity to engage in smaller and tailored learning as their needs change. The impact of microcredentials on qualifications systems needs to be examined in the broader context, considering national differences as well as differences between diverse stakeholders including national authorities, VET providers, trade unions, employers, and learners/employees.

CHAPTER 6. Conclusions

6.1. Microcredentials within and outside formal systems

Qualification systems are changing rapidly across Europe and beyond, with the aim of increasing their flexibility and allowing learners to accumulate learning taking place in different settings. The shift to learning outcomes, the introduction of qualifications frameworks, the emergence of arrangements for validating non-formal and informal learning, and the movement towards more demand-driven qualifications systems are all about creating more flexibility by opening to a wider range of individual learning outcomes and experiences. In this context, alternative credentials and microcredentials have come under the spotlight; their main feature is flexibility in delivery and pace that allows individuals to build their skills portfolio by adding different types of credentials.

Microcredentials cannot be analysed as an isolated phenomenon but need to be positioned in relation to this evolution of qualifications and credentials systems. Understanding how microcredentials support learners of all ages and in different situations, requires a wider perspective. They operate both within formal qualification systems (for instance, in many countries partial qualifications, module certificates and supplementary qualifications are perceived as microcredentials) and outside (e.g. market qualifications, sectoral and professional certificates). The relationship between microcredentials and the evolving national qualifications systems is largely dependent on how microcredentials are defined and/or perceived by various stakeholders in their national context. Those microcredentials that sit within the formal qualification system can even be included in the qualifications framework and attributed NQF/EQF levels. Microcredentials that sit outside the formal system can have links to the qualifications frameworks only where NQFs are open to qualifications operating outside formal education and training). The latter can also be issued based on attendance, apart from being assessment-based according to agreed standards.

Overall, national qualifications systems exhibit different characteristics, but the majority have experienced some kind of modularisation in various domains of education, including VET, adult education and HE and pathway-independent learning approaches. Changes have also encouraged interconnectedness between these education domains to support lifelong learning and provide more flexible pathways. Modularisation provides opportunities for microcredentials to operate as integral parts of formal qualification systems. Structuring into units or

modules also helps to address the training needs of groups with specific challenges, such as the low skilled or the unemployed. Modules, partial qualifications and other types of qualifications that are smaller than a full one are often perceived as microcredentials in most of the countries analysed. The main reason why such qualifications are considered equivalent to microcredentials is that they have similar characteristics to those proposed in the definition of microcredentials proposed by the European Commission and adopted in the Council Recommendation (Council of the European Union, 2022).

The growth of microcredentials has brought different shapes, sizes, names, duration, assessment methods and delivery modes; employers and individuals can find it difficult to understand the quality and value of the learning experience compared to formal qualifications due to lack of transparency. As the vast and rapid proliferation of microcredentials on both a national and international scale has largely taken place outside the formal education sector, there are growing concerns over their quality, transparency of provision, and interoperability with this sector. If these elements are in place, they could support equity of access to higher education, modular progression, transferability and labour market mobility. In recent years, the NQFs in certain countries have included qualifications and credentials that are awarded outside of formal education and training and helping to validate non-formal and informal learning. The inclusion of such qualifications in NQFs is expected to increase their overall transparency, to clarify their relationship with formal qualifications, and to allow a greater diversity of learners to make better use of them for lifelong learning and career development.

6.2. Opportunities and challenges for national qualification systems

The impact of microcredentials on qualifications systems largely depends on whether they sit inside or outside of them. This is closely related to the changing roles of – and persisting tensions within – qualifications systems. To remain relevant, qualifications systems across Europe have evolved over the years. For example, the shift towards learning outcomes, the development of national qualifications frameworks, and the opening of qualifications frameworks to learning outside of formal education, have made qualifications systems more adaptive and flexible. Qualifications are also changing in nature, due to modularisation or the introduction of supplemental and add-on elements. Policy-makers are faced with achieving a balance between flexible and stable qualifications systems. Microcredentials can positively influence such systems by making them more flexible, adaptable and relevant to the needs of end users, including learners and

employers, and by promoting lifelong and life-wide learning that allows individuals to collect and combine smaller units of learning throughout their lifespan. They can also provide a way to offer broader recognition of knowledge, skills and competences, rather than being a new form of skill recognition themselves. They can send a clearer signal of certain specific knowledge, skills and competences because their focus is much narrower than that of full qualifications.

The main challenges posed by microcredentials are of moving away from full qualifications, and an overreliance on qualifications that are divided into small chunks. This risks shifting the focus away from holistic education and towards short, skills-based learning, and might discourage learners from engaging in full qualifications or encourage them to exit the formal education system before receiving a diploma. Employers often prefer having access to staff with very specific knowledge, skills and competences, who can start working immediately, rather than investing in training new hires. Demand can be higher for workers with basic skills who can carry out specific tasks, even if they do not possess a full qualification. However, as confirmed by the study findings, microcredentials do not aim to replace traditional full qualifications.

Overall, the diversity and number of microcredential offerings have expanded in recent years but it remains to be seen to what extent they are innovative, or they could represent the results of reframing or repackaging what already exists (such as units, components of qualifications, small credentials, skills certificates, offered outside the formal system).

6.3. Current state of play, and future considerations

The findings of this study suggest that developments in microcredentials are at different stages in different national contexts. In most countries, however, they are still at an initial stage. The Council Recommendation (2022) is expected to provide guidance to Member States on what microcredentials are and in what ways they can be approached and used in national qualification systems. Stakeholder consultations show that many countries are currently engaged in internal discussions, seeking to establish approaches and frameworks for how microcredentials can best serve their national qualification systems. The main dimensions being considered include:

(a) establishing a link between microcredentials and the existing offer;
(b) defining microcredentials (even though the broad EU-level definition exists, countries are going into greater depth to decide what elements microcredentials need to possess);

(c) deciding where microcredentials could be most useful in their national qualification systems (e.g. in formal, non-formal and/or informal learning, VET, HE and/or adult education);
(d) indicating the necessary conditions for the inclusion of microcredentials into national qualification systems;
(e) reviewing the laws and regulations relating to education and training.

In national developments, countries are seeking the right balance between standardisation and over-regulation, while trying to ensure some level of comparability and retaining the aspect of flexibility. Whatever position adopted in relation to challenges and demands, it can be expected that the promotion of microcredentials and the aspects linked to them (such as increased flexibility, portability and stackability) can lead to new processes and developments that have an impact on the overall qualifications and credential system in a country (either as incremental or disruptive changes). Given that most countries have only recently begun to engage with microcredentials, it will be some time before a full picture emerges of how they fit in the national qualifications systems and whether the role of traditional qualifications as we know them today will be reduced.

Acronyms

ADG	*Arbeitsamt der Deutschsprachigen Gemeinschaft*; public employment and training service (Germany)
AMU	*Arbejdsmarkedsuddannelser*; Adult Vocational Training (Denmark)
BIBB	*Bundesinstitut fuer Berufsbildung*, Federal Institute for Vocational Training in Germany
BKT	Belgian vocational training courses
BQF	Bulgarian qualifications framework
CAFs	specific training outcomes certificates
Ca	Certifying authority
CBU	certification by unit
CECAFs	certificates of skills acquired in training
CESE	Certified E-commerce & social media expert
CNC	computer numeric controlled
CNQ	*Catalogo Nacional de Qualificações*, Catalogue of Qualifications (Portugal)
CQP	*Certificat de qualification professionnelle*, certificates of professional qualification (France)
CRM	customer relationship management
CVET	continuing vocational education and training
EASPD	European Association of Service Providers for Persons with Disabilities
EBA	European Battery Alliance
ECC	European care certificate
ECDL	European computer driving licence
ECIU	Consortium of Innovative European Universities
ECTS	European credit transfer and accumulation system
ECVET	The European credit system for VET
EDCI	European Digital Credentials Infrastructure
EESC	European Economic and Social Committee
EFA	*Cursos educação e formação de adultos*, education and training programmes for adults (Portugal)
EHEA	European higher education area
EIT	European Institute of Innovation and Technology
EMC	European MOOC Consortium
EMC-LM	European MOOC Consortium for the Labour Market
EPALE	Electronic platform for adult learning in Europe
EQF	European qualifications framework

ESCO	European skills, competences, qualifications and occupations
ESF	European Social Fund
ETBs	education and training boards
ETF	European Training Fund
EU	European Union
EUCEN	European University Continuing Education Network
EVC	*Erkenning van Verworven Competentie*: validation of prior learning (Belgium-fl)
EVTA	European Vocational Training Association
FET	further education and training
FQF	Flemish qualifications framework
GDP	good distribution practice
GMP	good manufacturing practice
HE	higher education
HEIs	higher education institutions
HROO	credits in the Croatian credit system for general education
HuRVQ	Hungarian Register of Vocational Qualifications
HVE	higher vocational education
IBE	Educational Research Institute
ICT	information and communications technology
IEK	institutes of vocational training
IELTS	International English language testing system
IQS	Integrated qualifications system
ISCED	International standard classification of education
ISDV	Information system of further education
ISS	Integrated skills strategy
IT	information technology
IVET	initial vocational education and training
IWE	international welding engineer
IWP	international welding practitioner
KTU	Kaunas University of Technology
KYSATS	Cyprus Council for the Recognition of Higher Education Qualifications
LAEK	Employment and Vocational Training Fund
LANE	Lithuanian Association of Non-Formal Education
Los	learning outcomes
LQF	Latvian qualifications framework
MAG	metal active gas
MFHEA	Malta Further and Higher Education Authority
MOOCs	massive open online courses

MoECSY	Ministry of Education, Culture, Sport and Youth, Cyprus
MQF	Malta qualifications framework
NACE	Statistical classification of economic activities in the European Community
NQA	National Centre for Accreditation
NQF	national qualifications framework
NS	not specified
NSCC	National system for the certification of competences
NSK	National register of qualifications
OAED	Ministry of Employment and Manpower Organisation
OECD	Organisation for Economic Co-operation and Development
PMP	project management professional
QDG	*Qualifikationsrahmen der Deutschsprachigen Gemeinschaft,* qualifications framework of the German-speaking Community (Belgium)
QQI	Quality and Qualifications Ireland
RNCP	National register of vocational and professional qualifications
RPL	recognition of prior learning
RS	national qualifications catalogue
RVCC	*Econhecimento, Validação e Certificação de Competências*, the recognition, validation and certification of competences (Portugal)
SCQF	Scottish Credit and Qualifications Framework Partnership
SEPE	public employment service
SFC	Scottish Funding Council
SFMQ	French-speaking service for professions and qualifications
SMEs	small and medium-sized enterprises
SNQ	national qualifications system
SOK	system for verifying qualifications
SQF	Slovenian qualifications framework
SVQ	system of vocational qualifications
STVET	Department of Secondary Technical and Vocational Education and Training
TOEFL	test of English as a foreign language
UASs	universities of applied sciences
UC	competence unit
UFCD	*Unidades de Formação de Curta Duração*, training units of short duration (Portugal)
ULOs	units of learning outcomes
UNESCO	United Nations Educational, Scientific and Cultural Organization
VAE	*Validation des acquis de l'expérience*, validation of prior experiential learning (France)

VDAB	Flemish Employment Services and Vocational Training Agency
VES	validation of higher education studies
VET	vocational education and training
VETA	Vocational education and training Act
VNFIL	validation of non-formal and informal learning
VPL	validation of prior learning
VR	virtual reality
WIFI	Salzburg Economic Development Institute

References

[accessed 28.11.2022]

AEC (2018). *Romania national overview*. https://aec-music.eu/members/national-overviews/romania

AEQES (2020). *L'enseignement superieur en Federation Wallonie-Bruxelles* [Higher education in the Wallonia-Brussels Federation]. Agence pour l'Evaluation de la Qualite l'Enseignement superieur. http://www.ineps-mlz.be/Files/Other/qualite/1%20Syllabus20202021WEB.pdf

Allen, R. (2007). *Understanding the impact of certification practices: towards a systems framework*. Annual conference of the Australian Curriculum Assessment and Certification Authorities.

Australia. Government (2022). *National microcredentials framework*. Department of Education, Skills and Employment. https://www.dese.gov.au/higher-education-publications/resources/national-microcredentials-framework

Barabas, C. and Schmidt, J.P. (2016). *Transforming chaos into clarity: the promises and challenges of digital credentialing*. Roosevelt Institute. http://philippschmidt.org/articles/2016-08-The-Promises-and-Challenges-of-Digital-Credentialing.pdf

Beirne, E., Nic Giolla Mhichíl, M., and Brown, M. (2020). *Micro-credentials: an evolving ecosystem*. Dublin: City University. https://icbe.ie/wp-content/uploads/2020/12/Micro-Credentials-Insight-Paper_Aug2020-compressed.pdf

Blazevic, O. (2021). *Micro-credentials in 2020: how can they benefit you?* https://www.training.com.au/ed/how-micro-credentials-can-benefit-you/?ab=62-uv3WsQzOJER-XbX9nvA.1&utm_referrer=https%3A%2F%2Fwww.google.com%2F

Brown, J. and Kurzweil, M. (2017). *The complex universe of alternative postsecondary credentials and pathways*. American Academy of Arts and Sciences. https://www.amacad.org/sites/default/files/publication/downloads/CFUE_Alternative-Pathways.pdf

Brown, M. et al. (2021). *Paving the road for the micro-credentials movement*. ECIU University. https://www.eciu.org/news/paving-the-road-for-the-micro-credentials-movement

Brown, P.; Green, A. and Lauder, H. (2001). *High skills: globalization, competitiveness, and skill formation.* Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780199244188.001.0001

Burning Glass Technologies (2014). *Moving the goalposts: how demand for a bachelor's degree is reshaping the workforce*. https://www.burning-glass.com/wp-content/uploads/Moving_the_Goalposts.pdf

Carnevale, A.P.; Rose, S.J.; and Hanson, A.R. (2012). *Certificates gateway to gainful employment and college degrees*. Georgetown University Centre on Education and the Workforce. https://cew.georgetown.edu/wp-content/uploads/2014/11/Certificates.ExecutiveSummary.071712.pdf

Cedefop (2010). *Changing qualifications: a review of qualifications policies and practices*. Luxembourg: Publications Office. Cedefop reference series, No 84. http://dx.doi.org/10.2801/37095

Cedefop (2012). *International qualifications*. Luxembourg: Publications Office. http://dx.doi.org/10.2801/8721

Cedefop (2015). *The role of modularisation and unitisation in vocational education and training*. Luxembourg: Publications Office. Cedefop working paper, No 26. http://dx.doi.org/10.2801/38475

Cedefop (2017). *The changing nature and role of vocational education and training in Europe: volume 1: conceptions of vocational education and training*. Luxembourg: Publications Office. Cedefop research paper, No 63. http://dx.doi.org/10.2801/532605

Cedefop (2018a). *European cooperation in VET: one process, many stops: Developments in vocational education and training policy 2015-17*. Luxembourg: Publications Office. Cedefop reference series, No 110. https://www.cedefop.europa.eu/files/3079_en.pdf

Cedefop (2018b). *Insights into skill shortages and skill mismatch: learning from Cedefop's European skills and jobs survey*. Luxembourg: Publications Office. Cedefop reference series, No 106. http://www.cedefop.europa.eu/en/publications-and-resources/publications/3075

Cedefop (2019a). *Overview of national qualifications framework developments in Europe 2019*. Cedefop. http://dx.doi.org/10.2801/827112

Cedefop (2019b). *The changing nature and role of vocational education and training in Europe: volume 7: VET from a lifelong learning perspective: continuing VET concepts, providers and participants in Europe 1995-2015*. Luxembourg: Publications Office. Cedefop research paper, No 74. http://dx.doi.org/10.2801/357

Cedefop (2020a). *European Inventory on validation of non-formal and informal learning (2018 Update): country reports*. https://www.cedefop.europa.eu/en/projects/validation-non-formal-and-informal-learning/european-inventory#Country

Cedefop (2020b). *European qualifications framework: initial vocational education and training: focus on qualifications at levels 3 and 4*. Luxembourg: Publications Office. Cedefop research paper, No 77. https://www.cedefop.europa.eu/files/5577_en.pdf

Cedefop (2020c). *National qualifications frameworks (NQFs) online tool*. https://www.cedefop.europa.eu/en/tools/nqfs-online-tool/

Cedefop (2020d). NQF developments 2019. *Cedefop briefing note,* September 2020. https://www.cedefop.europa.eu/files/9150_en.pdf

Cedefop (2020e). *Vocational education and training in Europe, 1995-2035: scenarios for European vocational education and training in the 21st century*. Luxembourg: Publications Office. Cedefop reference series, No 114. https://www.cedefop.europa.eu/files/3083_en.pdf

Cedefop (2021a). *Questionnaire 'microcredentials for labour market education and training': deliverable 3b*. Circular 2021-08 [from Cedefop to ReferNet partners]. RB(2021)01171. [unpublished].

Cedefop (2021b). *Spotlight on VET: 2020 compilation: vocational education and training systems in Europe*. Luxembourg: Publications Office. https://www.cedefop.europa.eu/files/4189_en.pdf

Cedefop (2021c). *Vocational education and training in Portugal: short description*. Luxembourg: Publications Office. http://dx.doi.org/10.2801/380337

Cedefop (2021d). European inventory on NQF 2020: Poland. https://www.cedefop.europa.eu/en/country-reports/poland-european-inventory-nqf-2020

Cedefop (2022a). *Comparing vocational education and training qualifications: towards methodologies for analysing and comparing learning outcomes*. Luxembourg: Publications Office. Cedefop reference series, No 121. http://dx.doi.org/10.2801/939766

Cedefop (2022b). Are microcredentials becoming a big deal? *Cedefop briefing note*, June 2022. https://www.cedefop.europa.eu/en/publications/9171

Cedefop (2022c). *Microcredentials for labour market education and training: first look at mapping microcredentials in European labour-market-related education, training and learning: take-up, characteristics and functions.* Luxembourg: Publications Office. Cedefop research paper, No 87. http://data.europa.eu/doi/10.2801/351271

Cedefop (forthcoming-b). *Microcredentials: the user perspective*.

Cedefop (forthcoming-c). *Mapping microcredentials for labour market education and training: case study Finland*.

Cedefop (forthcoming-d). *Mapping microcredentials for labour market education and training: case study France*.

Cedefop (forthcoming-e). *Mapping microcredentials for labour market education and training: case study Germany*.

Cedefop (forthcoming-f). *Mapping microcredentials for labour market education and training: case study Ireland*.

Cedefop (forthcoming-g). *Mapping microcredentials for labour market education and training: case study Netherlands.*

Cedefop (forthcoming-h). *Mapping microcredentials for labour market education and training: case study Poland*.

Cedefop (forthcoming-i). *Mapping microcredentials for labour market education and training: case study Slovenia*.

Cedefop (forthcoming-j). *Mapping microcredentials for labour market education and training: case study Spain*.

Cedefop and OECD. (2022). *Apprenticeships for greener economies and societies*. Luxembourg: Publications Office. Cedefop reference series, No 122. http://dx.doi.org/10.2801/628930

Coordination Point for Polish and European qualifications framework (2022). *Polish qualifications framework (PQF) and European qualifications framework (EQF)*. https://prk.men.gov.pl/en/1en/

Council of the European Union (2022). Council Recommendation of 16 June 2022 on a European approach to micro-credentials for lifelong learning and employability. *Official Journal of the European Union, C 243, 27.6.2022, p. 10–25*. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0627(02)

DigitalEurope (2021). *Digital Europe's recommendations for a European approach to micro-credentials*. https://www.digitaleurope.org/resources/digitaleuropes-recommendations-for-a-european-approach-to-micro-credentials/

Downes, S. (2021). *A conversation starter: towards a common definition of micro-credentials (commentary)*. https://www.downes.ca/post/72748

Duklas, J. (2020). *Micro-credentials: trends in credit transfer and credentialing*. Vancouver: BCCAT BC Council on Admissions and Transfer. https://www.bccat.ca/pubs/Reports/MicroCredentials2020.pdf

EESC – European Economic and Social Committee (2021). *Opinion: learning and employability package*. SOC/708-EESC-2021. https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/learning-and-employability-package

EIT InnoEnergy (2021a). *Spain to implement the first EBA academy programme*. https://www.eba250.com/spain-to-implement-the-first-eba250-academy-programme/

EIT InnoEnergy (2021b). *Thousands of workers to be upskilled in France to keep the pace with the battery revolution*. https://www.eba250.com/thousands-of-workers-to-be-upskilled-in-france-to-keep-the-pace-with-the-battery-revolution/

EPhEU – European Association of Employed Community Pharmacists in Europe (2022). *Pharmacy and Pharmacists in Austria*. https://epheu.eu/austria-more-about-pharmacy/

ETF – European Training Foundation (2016). *Qualification systems: Getting organised*: draft for conference November 2016.https://www.etf.europa.eu/sites/default/files/m/89E0B0EEF0F8C468C12580580029F2CD_Qualification%20systems_toolkit.pdf

ETUC and ETUCE (2020). *Joint ETUC-ETUCE position on micro-credentials in VET and tertiary education*. https://www.etuc.org/en/document/joint-etuc-etuce-position-micro-credentials-vet-and-tertiary-education

EuroCommerce (2022). *Jobs and skills*. https://www.eurocommerce.eu/policy-areas/jobs-skills.aspx

Eurofound (2019). *Future of manufacturing: company initiatives to align apprenticeships to advanced manufacturing.* Luxembourg: Publications Office. Eurofound research report. http://eurofound.link/fomeef18007

European Commission (2010). *The Bruges communiqué on enhanced European cooperation in vocational education and training for the period 2011-2020*. Belgian Presidency, education and training, 7 December 2010. https://education.ec.europa.eu/sites/default/files/document-library-docs/bruges-communique.pdf

European Commission (2018). *Commission staff working document: accompanying the document: proposal for a Council Recommendation on key competences for lifelong learning*. Brussels, 17.1.2018, SWD(2018) 14 final. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018SC0014&from=EN

European Commission (2020a). *A European approach to micro-credentials: output of the micro-credentials higher education consultation group: final report*. Luxembourg: Publications Office. http://dx.doi.org/10.2766/50302

European Commission (2020b). *Towards a European approach to micro credentials: a study of practices and commonalities in offering micro-credentials in European higher education*. Luxembourg: Publications Office. http://dx.doi.org/10.2766/7338

European Commission (2021a). *Adult education and training in Europe: building inclusive pathways to skills and qualifications*. Luxembourg: Publications Office. http://dx.doi.org/10.2797/788535

European Commission (2021b). *The European credit system for vocational education and training*. Luxembourg: Publications Office. http://dx.doi.org/10.2767/298513

Eurostat (2019). 11.1% of adults participate in lifelong learning. *Eurostat news*, 17.5.2019. https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190517-1

Eurostat (2022a). *Distributive trade statistics: NACE Rev. 2. Statistics explained*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Distributive_trade_statistics_-_NACE_Rev._2

Eurostat (2022b). *Manufacturing statistics: NACE Rev. 2: Statistics explained*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Manufacturing_statistics_-_NACE_Rev._2

Eurydice (2022). *National Education systems*. https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en

Federal Republic of Germany (2021). *Contribution of the Federal Republic of Germany in the context of the public consultation by the European Commission on the initiative 'A European approach to micro-credentials for lifelong learning and employability'.*

Fisher, R.M. and Leder, H. (2022). An assessment of micro-credentials in New Zealand vocational education. *International Journal of Training Research*, Vol. 1, No 16. http://dx.doi.org/10.1080/14480220.2021.2018018

France Compétences (2021). *FAQ*. https://www.francecompetences.fr/international-en/qa/faq/?lang=en

Gallagher, S. and Maxwell, N.L. (2019). *Community colleges and the new era of work and learning*. Mathematica Policy Research. Working paper 66. https://files.eric.ed.gov/fulltext/ED594041.pdf

German Rectors' Conference (2020). *Micro-degrees and badges as formats of supplementary digital credentials: recommendation by the 29th general assembly of the German rectors´ conference (HRK)*. https://www.hrk.de/fileadmin/redaktion/hrk/02-Dokumente/02-01-Beschluesse/Empfehlung_Micro-Degrees_und_Badges_HRK_MV_24112020_EN.pdf

Hrvatski, S. (2021). *Proposal for Adult Education Act: first reading: legislative proposal No 168*. Croatian Parliament. https://www.sabor.hr/sites/default/files/uploads/sabor/2021-07-23/155501/PZ_168.pdf

Hudak, I.R. and Camilleri, A.F. (2018). *The micro-credential users' guide*. The MicroHe Consortium. https://microcredentials.eu/wp-content/uploads/sites/20/2021/05/D3_3_MicroHE-Users-Guide-1.pdf

IC&RC (2021). *Licensure vs. certification*. International Certification and Reciprocity Consortium. https://internationalcredentialing.org/lic-cert

ICDE (2019). *Report of the ICDE working group on the present and future of alternative digital credentials (ADCs)*. ICDE Working Group. https://www.icde.org/knowledge-hub/2019/4/10/the-present-and-future-of-alternative-digital-credentials

James, R.; French, S. and Kelly, P. (2017). *Visions for Australian tertiary education*. Melbourne Centre for the Study of Higher Education. https://melbourne-cshe.unimelb.edu.au/__data/assets/pdf_file/0006/2263137/MCSHE-Visions-for-Aust-Ter-Ed-web2.pdf

Kässi, O. and Lehdonvirta, V. (2022). Do microcredentials help new workers enter the market? Evidence from an online labor platform. *Journal of Human Resources*, 0519-10226R3. http://dx.doi.org/10.3368/jhr.0519-10226r3

Kivistik, K. et al. (2021). *Mikrokvalifikatsioonide kasutuselevõtmise võimalused eesti haridus- ja kutsesüsteemis rahvusvahelisele praktikale toetudes* [Possibilities of introducing micro-qualifications into the Estonian education and vocational system based on international practice].

https://www.hm.ee/sites/default/files/aruanne_mikrokvalifikatsioonid_2021.pdf

Kováčová, K. (2021). *Stratégia celoživotného vzdelávania a poradenstva na roky 2021-2030 schválená vládou SR.* [Lifelong education and counseling strategy for the years 2021-2030 approved by the Slovak government]. https://siov.sk/strategia-celozivotneho-vzdelavania-a-poradenstva-na-roky-2021-2030-schvalena-vladou-sr/

Maurice, M.; Sellier, F. and Silvestre, J.-J. (1986). *The social foundations of industrial power: a comparison of France and Germany*. Cambridge, MA: MIT Press.

Marcus, J. (2021). *Urgency of getting people back to work gives new momentum to "microcredentials."* https://hechingerreport.org/more-students-start-earning-stackable-credentials-on-their-way-to-degrees/

McGreal, R. and Olcott, D. (2022). A strategic reset: micro-credentials for higher education leaders. *Smart Learning Environments*, Vol. 9, No 1. http://dx.doi.org/10.1186/s40561-022-00190-1

MFHEA (2016). *Referencing report: Referencing the Malta qualifications framework (MQF) to the European qualifications framework (EQF)*. National Commission for Further and Higher Education Malta. https://mfhea.mt/wp-content/uploads/2021/08/Referencing-Report-2016.pdf

Microbol (2021). *Working group on qualifications framework and ECTS: output document and recommendations*. Microbol.

MicroHE (2022). *European micro-credential terminology*. https://microcredentials.eu/terminology/

Ministry of Education and Science – Bulgaria (2006). *Vocational education and training act*. ILO. https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/53686/92144/F515287165/BGR53686.pdf

Ministry of Education and Science – Latvia (2020). *Noteikumi par valsts profesionālās vidējās izglītības standartu un valsts arodizglītības standartu* [Regulations on the state vocational secondary education standard and the state vocational education standard]. Cabinet of Ministers. https://likumi.lv/ta/id/315146-noteikumi-par-valsts-profesionalas-videjas-izglitibas-standartu-un-valsts-arodizglitibas-standartu

Ministry of the Interior and Kingdom Relations (2021). *Position paper by the Netherlands in the context of the public consultation of the European Commission on 'Micro-credentials for lifelong learning and employability'*. https://open-pilot.overheid.nl/repository/ronl-44276b30-c94b-4901-8497-868b9c394c4d/1/pdf/position-paper-by-the-netherlands-microcredentials-euconsultation.pdf

NCFHE (2016). *Referencing the Malta qualifications framework (MQF) to the European qualifications framework (EQF) and the qualifications framework of the European Higher Education Area (QF/EHEA).* 4th rev. ed.

https://ncfhe.gov.mt/en/Documents/Referencing%20Report/Referencing%20Report%202016.pdf

NIACE (2009). *The private training market in the UK: inquiry into the future of lifelong learning. Sector paper 2*. https://learningandwork.org.uk/wp-content/uploads/2021/01/The-private-training-market-in-the-UK-Sector-Paper-2.pdf

OECD (2005). *The role of national qualifications systems in promoting lifelong learning: report from thematic group 1: the development and use of 'qualification frameworks' as a means of reforming and managing qualifications systems*. OECD. https://www.oecd.org/education/skills-beyond-school/33977045.pdf

OECD (2020). *The emergence of alternative credentials*. Paris: OECD Publishing. Working Papers No 216. https://doi.org/10.1787/19939019

Oliver, B. (2021). *A conversation starter: towards a common definition of micro-credentials*. UNESCO. https://www.edubrief.com.au/uploads/4/5/0/5/45053363/draft_unesco_report_microcredentials_13_sept_21.pdf

Orr, D.; Pupinis, M. and Kirdulytė, G. (2020). *Towards a European approach to micro credentials: a study of practices and commonalities in offering micro-credentials in European higher education: NESET report*. Luxembourg: Publications Office of the European Union. NC-03-20-553-EN-N. https://nesetweb.eu/wp-content/uploads/2020/12/NESET_AR2-2020_Full-Report.pdf

QQI (2020). *Technical Paper on Qualifications System*. Dublin: QQI. https://www.qqi.ie/sites/default/files/2021-10/technical-paper-on-the-qualifications-system.pdf

Ralston, S.J. (2021). Higher education's Microcredentialing craze: a postdigital-Deweyan critique. *Postdigital Science and Education*, Vol. *3,* No 1, pp. 83-101. http://dx.doi.org/10.1007/s42438-020-00121-8

Resei, C. et al. (2019). *Micro-credentials in EU and global*. CORSHIP. https://www.corship.eu/wp-content/uploads/2019/07/Corship-R1.1c_micro-credentials.pdf

Scottish Funding Council (2021). *Additional university upskilling funding for micro-credentials in 2020-21*. Scottish Funding Council. SFC/AN/06/2021. http://www.sfc.ac.uk/web/FILES/announcements_sfcan062021/SFC_AN_06_2021_HE_Upskilling_funding_2020_21.pdf

SCQF (2021). *Exploration of recognition for micro-credentials project group report*. Scottish credit and qualifications framework. https://scqf.org.uk/media/eumcksg2/micro-credentials-report-final-190321.pdf

SOLAS (2020). *Future FET: transforming learning: The national further education and training (FET) strategy*. SOLAS. https://www.solas.ie/f/70398/x/64d0718c9e/solas_fet_strategy_web.pdf

SQF (2021). *Slovenian qualifications framework: for better transparency and accessibility of qualifications in Slovenia and EU*. Ministry of Education, Science and Sport. https://www.nok.si/sites/www.nok.si/files/documents/sokbrosura_strokovna_155x295_eng_potrditev2.pdf

Tacconi, G. et al. (2021). Development of pedagogical competencies of the vocational teachers in Italy and Lithuania: Implications of competence-based VET curriculum reforms. *European Journal of Training and Development*, Vol. 45, No 6/7, pp. 526-546. http://dx.doi.org/10.1108/ejtd-03-2020-0041

Williamson, J. and Pittinsky, M. (2016). *Making credentials matter*. https://www.insidehighered.com/views/2016/05/23/understanding-differences-what-credentials-are-being-stacked-and-why-essay

Workcred (2020). *Understanding certifications*. Workcred Inc. https://workcred.org/Documents/Understanding-Certifications-Report-Dec-2020.pdf

Annex 1
Microcredentials identified through the mapping exercise

Microcredentials identified through the mapping exercise

Sector	Title of microcredential	Country
Manufacturing	Safety procedures in medical processes	France
Manufacturing	Quality management system and welding coordination	Denmark
Manufacturing	GMP and GDP certification	Germany (and Europe-wide)
Manufacturing	International welding engineer (IWE)	41 European and non-European countries
Manufacturing	International welding practitioner (IWP)	41 European and non-European countries
Manufacturing	Qualification in additive manufacturing	Offered by different providers in seven countries: France, Germany, Italy, Spain, Portugal, Turkey and the UK
Manufacturing	Machine training courses	Germany (Europe-wide)
Manufacturing	CNC specialist certificate	Austria
Manufacturing	VET award in process manufacturing	Malta
Manufacturing	3D printer operator for industrial applications	Czechia
Manufacturing	Industrial health and safety advisor	UK (England)
Manufacturing	International welding consultant	Finland
Manufacturing	Robotic process automation fundamentals masterclass	Ireland
Manufacturing	Working on an ammonia (NH3) installation safely	France
Manufacturing	MAG welding with an electrode wire	Poland
Manufacturing	Introduction to foundry technology	Sweden
Manufacturing	Manufacturing operations for medical device/pharma industry (life sciences manufacturing operations)	Ireland
Manufacturing	Supply chain manager – operational level	Greece
Retail	Common food hygiene	Denmark
Retail	Award in retail	Malta
Retail	Sales for store employees	Norway
Retail	Profitability of marketing and sales organisation in the luxury goods sector	France
Retail	Award in retail operations	Malta

Sector	Title of microcredential	Country
Retail	Drugstore employee (DM Druggist)	Slovenia
Retail	Fashion retail transformation	France (and global-wide)
Retail	International e-commerce	Sweden
Retail	Diploma course in retail management	Global
Retail	Customer relationship management using CRM systems	Poland
Retail	Award in credit for retail banking	Malta
Retail	IKI training programme	Lithuania
Retail	MAXIMA training programme	Lithuania
Retail	Certified E-commerce & social media expert	Austria
Retail	Merchant unit manager title	France
Retail	Understanding retail operations	United Kingdom
Retail	Specialist in retail sales	Germany
Retail	Practical sales / merchandise knowledge	Germany
Retail	Digital marketing	Global
Retail	Non-formal vocational training programme in electronic cash registers and cash register systems management	Lithuania
Retail	Marketing and sales techniques	Greece (and global)

NB: Even though the term microcredential is not always used, these examples can be considered microcredentials due to their characteristics and according to the stakeholders that participated in the consultation process.

Source: Prepared by Cedefop, based on desk research, case studies, ReferNet questionnaires and interviews.

Annex 2
Use of credits in VET systems

Use of credits in VET systems in Europe

Country	Use of credit systems in VET
Austria	Credits are awarded for Dual Vocational Education and Training, including apprenticeships.
Belgium-fl	Information not available.
Belgium-fr	Credit system is linked to/compatible with ECVET principles.
Bulgaria	ECVET principles were used to design recent VET qualifications consisting of ULO, but a credit system has not yet been fully established.
Croatia	Credit system is linked to/compatible with ECVET principles.
Cyprus	Credit system is linked to/compatible with ECVET principles.
Czechia	Credit system is only used in HE. A credit system for VET is being developed.
Denmark	Credit system is linked to/compatible with ECVET principles. ECVET is used to recognise international mobility programmes in VET.
Estonia	Credit system is linked to/compatible with ECVET principles.
Finland	Credit system is linked to/compatible with ECVET principles.
France	Credit system is linked to/compatible with ECVET principles. ECTS is used for micro-accreditations in HE and vocationally oriented training modules.
Germany	Credit points are not used in the dual VET system, but some vocational schools award a 'diploma supplement', which contains credit points in accordance with the ECTS.
Greece	Upper-secondary vocational programmes (EPAL) offer specialties for which the curriculum is designed in accordance with the principles of ECVET.
Hungary	There are plans to link microcredentials to ECTS.
Iceland	Credit system is linked to/compatible with ECVET principles.
Ireland	Two credit systems used, ECTS in HE, and a credit system in further education and training (FET).
Italy	Credit system is used in VET.
Latvia	Credit system is used in VET.
Lithuania	Credit system is used in VET.
Luxembourg	Credit system is linked to/compatible with ECVET principles.
Malta	Credit system is linked to/compatible with ECVET principles.
Netherlands	Credit system is linked to/compatible with ECVET principles.
Norway	Microcredentials are linked to ECTS. Credits are not available at upper-secondary level. ECVET is used to recognise international mobility programmes in VET.

Country	Use of credit systems in VET
Poland	Microcredentials delivered by HEI are linked to ECTS. Credit system in VET is linked to/compatible with ECVET principles.
Portugal	Credit system is linked to/compatible with some of the principles of ECVET.
Romania	Credit system in IVET is linked to/compatible with ECVET principles.
Slovakia	Does not use credit systems.
Slovenia	Credit system is linked to/compatible with ECVET principles. Credits are used for full qualifications, but not for supplementary qualifications.
Spain	Credit system is linked to/compatible with some of the principles of ECVET.
Sweden	Credit system in upper-secondary VET is linked to/compatible with ECVET principles.
United Kingdom	The UK (England, Wales and Northern Ireland) uses a credit system that is in line with ECVET principles.

Source: Cedefop, based on desk research, case studies, interviews and ReferNet questionnaire.

Microcredentials for labour market education and training

Microcredentials and evolving qualifications systems

This study examines the emerging relationship between microcredentials and qualification systems. Information gathered through an online survey among European VET providers, national authorities, employee and employer organisations was complemented by in-depth country case studies and interviews with Cedefop's ReferNet network. Questions of whether and how microcredentials should be related to established qualification systems are at an early stage of consideration in most countries; the focus is on better defining and standardising their role within national qualifications systems. Existing trends towards modularisation and the recognition of prior learning provide potential avenues for realising the benefits of microcredentials in terms of flexibility and responsiveness, while also ensuring their quality for learners and employers. There is still significant debate over how to deal with microcredentials, and how to avoid potential negative effects, such as encouraging a shift away from holistic education towards short-duration learning based around reduced skill sets.

5589 EN - TI-BC-23-001-EN-N - doi:10.2801/566352

CEDEFOP | European Centre for the Development of Vocational Training

Europe 123, Thessaloniki (Pylea), GREECE
Postal: Cedefop service post, 570 01 Thermi, GREECE
Tel. +30 2310490111, Fax +30 2310490020
Email: info@cedefop.europa.eu

www.cedefop.europa.eu

Publications Office of the European Union