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European Training Foundation

Centres of Vocational Excellence

An engine for vocational education and training development

AN INTERNATIONAL STUDY

ETF
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Foreword

Excellence in learning is the goal of all education and training systems both within and outside the European Union (EU). In the area of vocational training, excellence is traditionally contrasted with inclusiveness. However, there is a growing recognition in policy as well as in practice that these two goals have to go hand in hand. In this context the focus on centres of vocational excellence (CoVEs) in a number of important policy initiatives has created opportunities and expectations that, on the one hand, have contributed to the attractiveness and enrichment of vocational education and training (VET), but, on the other, risk raising unrealistic expectations.

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In this regard, the systemic work of the European Training Foundation (ETF), part of which is elaborated in this study, constitutes a down-to-earth approach to the understanding and analysis of the notion of vocational excellence in countries outside the EU. Ultimately, this study sees CoVEs as a commitment to and a process towards improvement.

The study researches CoVEs as an international phenomenon but also through their local specificities with the aim of understanding better the different missions and functions and the reasons that have led to their development. It is also interesting to consider the challenges and issues relating to their sustainability. Inevitably, the absence of a single all-inclusive definition of CoVEs has often raised questions about the status of the centres that were identified and examined. At this point in time the definition of the term and its scope and value are all up for debate. This study explores different perceptions and reveals some of the differences in policy, rhetoric and practice that underpin them.

We do not claim that this study has all the answers. In fact, we could argue that the study identifies many of the questions that need to be asked before embarking on the development of CoVEs. In this respect it is an important milestone in the exploration of a topic that has already attracted a great deal of attention from policymakers, providers and practitioners. This attention is backed up by the EU's intention to dedicate funds through the Erasmus+ programme and other instruments to support the development of both CoVEs and transnational CoVE platforms.

The ETF – as an agency of the EU helping EU neighbouring countries to reform their own education and training systems in the context of the EU's external relations policies – can be a valuable broker for partnerships between CoVEs from EU Member States and those from partner countries. To play this role and tap into the knowledge accumulated globally on this topic, in 2020 the ETF has launched an international network of CoVEs. The network will reinforce the position of the agency as a knowledge hub for policy and practice, as envisaged in the 2027 ETF strategy.

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This study is the result of collaborative work between all members of the ETF thematic team on CoVEs. The team was entrusted to research the developmental aspect of vocational excellence, perform a mapping exercise in partner countries, analyse findings and explore ideas for finding the right pathway to excellence.

Within the team, the work was coordinated by Georgios Zisimos. The chapters were drafted as follows: Chapter 1, Jose Manuel Galvin Arribas; Chapter 2, Georgios Zisimos and Stefan Thomas; Chapter 3, Georgios Zisimos, Stefan Thomas and Pirita Vuorinen; Chapter 4, Julian Stanley; and the Conclusions, Julian Stanley, with input from Stefan Thomas, Jose Manuel Galvin Arribas and Georgios Zisimos.

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Executive summary

'Excellence' is a contested term.

Often perceived as a controversial concept that highlights the gap between good and bad, excellence in education also relates to expectations in delivering high-quality education.

Vocational excellence usually refers to a high quality of training and education, but also to relevance to the world of work and to the attractiveness of the educational offer to learners and to employers. Vocational excellence may also imply an enlarged, more comprehensive and inclusive conceptualisation of skills provision – addressing innovation, pedagogy, social justice, lifelong learning, transversal skills, organisational and continuing professional learning and community needs. Sometimes, the term vocational excellence is instrumentalised in policy-making and serves as a euphemism for other reforms: rationalisation, restructuring of governance, cost reduction, heightened accountability or greater competition.

Centres of vocational excellence (CoVEs) are often represented as the institutions that embody vocational excellence. However, the purpose, structure and functions of CoVEs vary greatly from one context to another. Differences and similarities are often disguised by the use of specific terminologies, which may be lost in translation. CoVEs are assigned different roles in policy-making and

enjoy different levels of political commitment and prioritisation of resources. Quite often, CoVEs exist in isolation without partnerships with other education institutions at national and international level. Sometimes CoVEs are fundamentally skills providers – vocational schools or training centres – but sometimes they are coordination or development centres or networks rather than providers. The ETF paper 'Centres of Vocational Excellence – an engine for VET Development' tries to do justice to the contested understanding of vocational excellence, to the diversity of institutions that present themselves as CoVEs and to the varied and dynamic policy-making contexts in which CoVEs are developing. The research suggests that there are two kinds of driver for the development of CoVEs.

Firstly, there is the pressure to make skills provision more responsive to the changing needs of industry, which typically favours more specialist skills providers that are deeply and extensively tied to the world of work. And secondly, there is the need to improve the performance of the whole skills provider network, which places emphasis on coordination, cooperation and strategic development. This analysis confirms that different countries are using CoVEs to pursue different strategies and can help policy-makers to consider some of the choices and trade-offs they must confront. It also sharpens our focus on the challenge of how and under what conditions these strategies can be combined so that CoVEs can both deepen their engagement with the labour market and cooperate with other skills providers to form part of a comprehensive, inclusive, high-quality network. Further, the analysis encourages us to explore how the development and design of CoVEs can be linked to other elements of human capital development (HCD) strategy in a particular country, for example the development of lifelong learning or the emergence of smart specialisation.

This paper aims to discuss these questions by bringing together analyses of material collected from self-identifying CoVEs in three groups of countries: EU Member States, ETF partner countries and, more selectively, a number of other countries. It is based on the findings of the report prepared at the request of the European Commission in the Member States and the candidate countries, the ETF mapping exercise of CoVEs in partner countries, and desk

research and hands-on experience in countries. While the evidence collected is not always comprehensive or fully validated, it has made it possible to explore the diversity of institutions, functions and policy contexts.

The paper does not define exactly what CoVEs are because this term can mean different things in different contexts, especially in partner countries. Instead, it investigates what the countries perceive to be CoVEs and tries to identify and map their characteristics, understand their scope, look into the drivers behind them and identify possible links that connect them with an overall effect on VET systems. In the study, we explore how and why policy-makers are trying to bring about vocational excellence. At the same time, we critically examine the potential of CoVEs to embody institutional excellence and/or to transmit excellence to other skills providers through coordination or collaboration. This sharing is not always the main purpose of CoVEs: the ETF and European Commission mapping exercises reveal that in some countries the principal rationale is to develop the scope and performance of a single institution, usually by making it much more responsive to the needs of employers. However, in many countries coordination or collaboration is essential to the concept of CoVEs, which may be known as regional centres or sectoral hubs rather than CoVEs.

The paper draws attention to the policy-making context of CoVEs. In many countries, policy-makers are seeking to optimise and modernise VET systems and networks. The development of CoVEs offers itself as a policy tool that is, at once, internationally credible, popular with stakeholders, incremental, and relatively 'soft' from a regulatory and political perspective. Educational and training policy-makers are confronting a number of challenges and it is understandable that they wish to construct a vision of CoVEs that can, somehow, simultaneously address all of these challenges.

Skills needs are complex to measure and predict with precision, and are typically localised. The responsiveness of vocational education systems depends not only on top-down planning but also on having a diversity of providers that are motivated to meet and capable of meeting changing demands for skills. In some countries,

CoVEs are intended to meet this challenge: they are envisioned as VET institutions with extended or amplified functions that are capable of assuming wider and more diverse responsibilities for increasing the responsiveness and reputation of VET.

Policy-makers also claim that CoVEs can enhance lifelong learning and permeability, perhaps by combining initial and continuing vocational training or by enhancing links with universities or employers. Similarly, policy-makers are ready to promote CoVEs because they are expected to generate or transmit innovation, support start-ups, and promote technology-driven economic growth or regeneration.

The excellence embodied in CoVEs can help policy-makers to make VET more attractive and to combat prejudices that regard it as 'second best'. Sometimes, but not often, it is employers who initiate partnerships with skills providers in order to address current or anticipated skills needs. It is more common in ETF partner countries to find that policy-makers are trying to modernise their skills provider network and that the CoVE concept is harnessed to support this reform. In these cases, the concept of a CoVE can offer a compelling vision, can help to attract international funding and partnership and, perhaps, provided that the reform is seen to work, can help to gradually build consensus between those actors whose support is needed for success.

The ETF's analysis draws attention to the importance of governance and funding in the shaping and conceptualisation of CoVEs. Vocational excellence may be attributed to all or some of the following: higher funding, greater autonomy, better cooperation, more accountability, better leadership, better national planning, and more federation.

The establishment and development of CoVEs is sometimes driven by a policy decision to prioritise spending in a limited number of institutions in order to achieve a visible transformation, to take advantage of international funding or to try to mobilise investment from industry. In some countries, CoVEs provide the opportunity to establish alternative channels for funding, for example by bypassing municipal or local authorities, by setting up dedicated funding agencies or by establishing public-private partnerships (PPPs). It is important that policy-makers

consider the long-term implications of CoVE funding mechanisms and commitments and that social partners and other stakeholders are involved in setting up these systems. The mapping of CoVEs and other research into school improvement suggest that collaboration is often a key factor in the development or sharing of excellence. We have reviewed examples where there appear to be benefits for all or most participants from different kinds of cooperation. There is little evaluation or research that measures outputs of CoVEs in a rigorous manner, evaluates benefits in relation to costs or compares the net advantages of strategies involving CoVEs with those of other improvement strategies. Future investment in CoVEs would benefit from formative evaluation that is designed to inform and shape development. Decision-making and evaluation in relation to CoVEs should take into account the robust methodologies developed over many years by those working on School Effectiveness, Improvement, and Quality Assurance, which address the issue of school improvement more generally. The mapping of CoVEs also reveals that vocational schools acting individually or together can extend their performance, providing not only initial vocational education and training (IVET) but also enhanced services to their own students and their communities, as well as some services to other schools, employers, employees, unemployed people, etc. However, just because some vocational schools extend and enhance their offer, this does not mean that all schools should do so. Schools are not the only organisations capable of providing these additional services and they may not be the best qualified or most able. Taking on new functions usually implies new capabilities and investment, so there are costs as well as benefits.

The many examples profiled by the European Commission and the ETF in the two mapping studies confirm that CoVEs can be engines for VET development, though there have also been failures that demonstrate that CoVEs do not always deliver. The ETF's research suggests that success depends both on smart choices at the level of the national framework for CoVEs, for example in terms of structures and powers, and on good decision-making at institutional level, in terms of which functions or services are offered and how they are delivered. The policy objectives, the funding, the regulative

framework and current capability of existing institutions must be aligned.

There must be prioritisation, with decisions taken at appropriate levels: national, regional and institutional. Support, partnership and cooperation are essential if vocational excellence is, over time, to be accessed by all. This implies a shift from the development of individual vocational schools or CoVEs to the development of partnerships, clusters and networks of CoVEs (regional, national or transnational). The paper reveals many gaps in our knowledge: we are only at the beginning of understanding how CoVEs can and should be developed. Our research places emphasis on the agency of vocational schools – on the role that they can play in advancing vocational excellence, both by deepening and extending their relationship with employers and by cooperating and coordinating with other skills providers, including other schools, companies, universities and specialist development agencies. Where CoVEs are in development, policy-makers, school leaders and their partners have to define the regulatory framework and to agree objectives and responsibilities, leaving space for vocational schools to enhance, extend and innovate skills provision in cooperation with relevant partners. In the future, the ETF will seek to build a shared understanding of what actors need to know and what capabilities they wish to improve, and explore how, through a network, these needs can be met. The ETF's research confirms that there is an appetite for international networks and partnership.

Skills providers increasingly want to equip learners with skills that will enable them to work for inwardly investing companies or in international labour markets. Some specialised schools, for example maritime and aeronautical schools, have already obtained international accreditation, driven by the labour markets that they serve. International partnerships are also popular with teachers and learners – they offer great opportunities for learning. The ETF's planned network for CoVEs will complement other platforms and networks and will help both established and emerging CoVEs to access, share and absorb good practice.

Introduction

According to Winch and Gingell (2008), 'an emphasis on excellence in education is usually contrasted with an egalitarian approach'; they subsequently add that 'it is possible to aim sensibly for excellence and a concern for overall quality'. As Cooper (1980) argues, this issue is best considered not as a competition between excellence and quality, but rather as a question of providing an acceptable minimum for all while maintaining a wish for excellence for some.

The case for vocational excellence is discussed in this paper in relation to this notion of 'acceptable minimum' within a specific context. It is therefore possible to refer to good examples of excellence and not necessarily excellent examples of excellence. Indeed, this was the case when the ETF asked countries to identify good examples of vocational excellence. Moreover, there is no robust measurement for defining vocational excellence. There are, though, the thorny questions: What is vocational excellence, why is it important, and how is it developed and for whom?

It is this complexity of vocational excellence that this paper attempts to address. To this end, a wealth of information is used from countries outside the EU to show that vocational excellence functions not in a vacuum, but in relation to a context. It is this context that defines the parameters of what can be perceived as vocational excellence and CoVEs.

This paper aims to help readers understand the different types of CoVEs as developed in different contexts. For example, our material shows that many CoVEs function in isolation and were set up to satisfy the immediate needs of specific geographical areas/ regions in terms of skills for the local labour market. Some might argue that isolation, by default, is a sign of non-excellence, although others would disagree. One point we make in this paper is that there is no such thing as 'excellence by default'. Rather, it is perceived as a dynamic term that allows space for evolution and development. We are interested in identifying the drivers behind excellence, exploring the conditions in which it thrives, and also the conditions in which it stagnates. Indeed, excellence can decline if conditions do not allow it to grow. One thing is certain: this paper sees vocational excellence not as the end of the road but rather a developmental process towards quality and improvement.

Talking about vocational excellence means also talking about VET systems. Vocational excellence is 'housed' in CoVEs, but it can also exist outside formal VET systems. One does not necessarily imply the other. Therefore, one valid question to address in this paper is how quality and excellence are diffused from CoVEs to a whole VET system, and vice versa.

This paper is intended to offer a different perspective on vocational excellence. It aims to help our understanding of the phenomenon and its links with VET. Furthermore, it focuses on countries outside the EU with the aim of bringing forward perceptions of vocational excellence that are not yet fully realised in terms of partnerships and cooperation.

In this respect, this paper is ultimately aimed at educationists, VET experts and, where appropriate, policy-makers.

Chapter 1

Why set up centres of vocational excellence and innovation? Approaching key logics and rationales for shaping effective policies

VET is a complex policy area at the intersection of education, training, social, economic and labour market policies. It is expected to address the present and future skills demands of the economy, the needs of individuals for short to long-term employability and personal development, and the requirement of society for active and inclusive citizenship (ETF, 2013). Good VET should become an essential pillar for economic growth and social cohesion, and for contributing to making lifelong learning a reality[1]. In many countries the role of VET during the global economic crisis has been important in building resilience to address youth unemployment and sustainable growth. VET has the potential to contribute to closing skills gaps and reducing unemployment (Puckett et al., 2012). Indeed, VET can mitigate youth unemployment (Dolado, 2015).

This is illustrated by countries with strong traditions of using good VET as a vehicle to support employment strategies and socioeconomic and regional development (e.g. Australia, Germany, Sweden, Denmark, Canada, South Korea) and even by others that during the past decade have been reforming their VET systems in line with development goals (e.g. Czechia, Estonia, Poland, Singapore) (OECD, 2018).

Nowadays, the so-called Fourth Industrial Revolution ('Industry 4.0') is one of the key drivers for understanding the changing role of VET policies and systems, as it is shaping new content and forms of jobs, skills and occupational requirements. Emerging disruptive technologies are gaining ground in production chains and added-value networks[2].

[1] 'Good' VET is VET that 'responds to labour market, societal and individual needs; leads to nationally, or even internationally, recognised qualifications or credentials; provides access to decent jobs and sustainable employment; is attractive, inclusive and accessible for all citizens; and fosters capabilities that enable progression to further learning' (ETF/Watters, 2015).

[2] There is a great deal of literature on the Fourth Industrial Revolution. For a quick overview and a follow-up on recent trends, see, for instance, the World Economic Forum (WEF) website: www.weforum.org/agenda/archive/fourth-industrial-revolution

Automation, virtual intelligence, artificial intelligence (AI), big data and robotics are concepts that are already part of our lives and working environments. Globalisation, environmental sustainability challenges, demographic changes and increasing inequalities are key factors to be taken into account when looking at the future of jobs and skills in the context of the digitalisation of the economy worldwide[3].

Reskilling and upskilling the workforce is vital in the current digital era. In this context, reforming networks of public VET institutions is becoming a strategic task for governments and national agencies, in cooperation with private actors to respond to the current and future high-quality skills requirements of employers, industries and innovation ecosystems operating in national and regional labour markets. This can also help to increase the status of VET – and deservedly so.

This entails defining new roles and missions for VET establishments. VET schools should be capable of acting as hubs to introduce technological and digital innovations, boosting creativity and taking the lead on the way new curricula should be designed and delivered.

VET institutions and networks are expected to provide entrepreneurial and other key competences for lifelong learning. This can enable VET to become more attractive, responsive, inclusive and relevant. Overall, these issues progressively enhance vocational excellence as a key goal in VET policy reforms for many countries. This shapes the ambition to deliver high-quality skills within a lifelong learning perspective, promoting research and innovation. It is vital that VET school leadership is enhanced in order to contribute to the transfer of continuous capacity development into the heart of VET communities.

[3]Many parts of this section are based on ETF/Galvin Arribas (2018) and ETF/Galvin Arribas et al. (2020).

1.1

Kick-starting policy implementation: foundations for building vision and institutional approaches to setting up centres of vocational excellence

The relationship between VET and learning and the digital economy, regional socioeconomic development, productivity growth, competitiveness and employability (e.g. high-tech vocational skills for new in-demand occupations) are all crucial national rationales for investing in both attractiveness and excellence and for using CoVEs as institutional recipients.

According to ETF and international experience, in many countries, the main strategic directions, goals and objectives for reforming and optimising the quality of VET networks by setting up CoVEs are initially formulated within soft regulatory national strategic policy documents. Such documents open the way for further discussion of national legislation and other by-laws to regulate the status and type of CoVEs[4].

In such policy tools, optimisation of the VET system, including the rationalisation or restructuring of VET provider networks, is one of the principal issues to be tackled. The logic of decentralising VET policy-making (through deconcentration, delegation and devolution) has an influence, to a greater or lesser extent, at both vertical (involving regional and most local powers) and horizontal (allocating responsibilities for shaping PPPs and involving social partners) levels, as a way to implement policy reforms of VET network.

This transfer of power to the lowest levels is also a strong rationale for addressing the challenging decision on reforming the functions of VET networks. Granting autonomy (and accountability) to vocational schools can be the ultimate goal of such policy processes.

[4] This aspect is key for the decision-making process on setting up CoVEs.

The rationale for CoVEs is found – explicitly or implicitly – in the following types of normative and/or knowledge-oriented policy mechanisms:

- Government plans addressing priority actions in the education sector (e.g. Ireland, France);
- Guidelines and baseline surveys for optimising, rationalising and improving the efficiency and effectiveness of VET networks (e.g. Latvia, Albania);
- VET strategies and other concepts, visions and position papers (e.g. Albania, Georgia, Ukraine, Croatia, Azerbaijan, Sri Lanka);
- Industrial and sectoral pacts for economic development (e.g. Netherlands, Morocco).

At the same time, one of the main problems in the area of human capital development worldwide is not only the need to increase the quality of education, designing and delivering relevant qualifications (e.g. level 5)[5] and obtaining relevant learning outcomes, but also the obsolescence of teaching methods and learning methodologies. This is an additional consequence of digitalisation and the speed of technological change, which calls for the establishment of effective dialogue mechanisms among governments (at national and subnational/local levels), social partners, economic sectors and vocational institutions and their staff.

In this respect, there is a compelling need in many countries to deliver strategic and operational plans for the continuing training of teachers and for communities of trainers, as well as for designing new methods to empower vocational identities and the attitudes of students and learners. The pressing need to tackle these issues is demonstrated by, for example, high levels of dissatisfaction among many employer networks with the public vocational skills, competences, qualifications and learning outcomes among graduates in some key specialisations.

This also influences the decision of parents and learners on whether or not they choose vocational pathways.

In the area of VET, in particular for many developing countries, the need to solve systemic or structural issues (e.g. VET and skills governance, financing, efficiency, conditions and quality provision of VET networks, skills mismatch, etc.) might become a strong rationale for policy development on reforming networks of vocational institutions. Access to VET, which is declining or stagnating in many countries, is a key issue. VET networks are, in many cases, inefficient, outdated and not attractive to users (employers and students). Thus, increasing access to vocational education is also at stake, while reforming networks of VET institutions emerges as a key priority.

The demand for vocational skills is complex to predict with precision, and is typically localised. The responsiveness of vocational education systems depends not on top-down planning, but on having a diversity of providers that are motivated to meet the demand for skills (Booth and Snower, 1996; ADB, 2014). One way to overcome this challenge is to set up VET institutions with extended or amplified functions capable of assuming wider and more diverse responsibilities for increasing the responsiveness (and reputation) of VET. This is also a motivation for creating new VET institutions based on the excellence factor.

However, although developed countries also have similar dilemmas, the reforms addressing the excellence of VET institutions in these countries are often focused more on the permeability, diversification and flexibility of VET systems (e.g. widening pathways between VET and higher education)[6]. This is also because vocational routes are used to enhance the lifelong learning dimension, linked to the catalyst role of digital transformation and innovation to prepare graduates for the professions of the future.

[5] Qualifications at level 5, following the European Qualifications Framework (EQF), allow, for instance, access to higher education routes from vocational education. See Cedefop (2014a).

[6] For further reading on these issues, the recent Cedefop project 'Changing nature and role of vocational education and training (VET) in Europe' is recommended. See the complete reports at: www.cedefop.europa.eu/en/events-and-projects/projects/changing-nature-and-role-vocational-education-and-training-vet-europe

In such a context, other reasons for setting up CoVEs are linked to improving the overall performance of VET systems and addressing the lack of skilled personnel in some economic sectors and the surplus of graduates in other specialisations. The desire to create more relevant CVET programmes and the need to develop effective labour market intelligence mechanisms (e.g. forecasting skills, occupations) to match today's and tomorrow's skills are also strong arguments for rethinking the set-up of vocational school networks.

Further, the lack of funds, or simply of regular smart investments in VET, is often accompanied by inefficient mechanisms for budget allocation (e.g. outdated formula funding mechanisms), resulting in obsolete infrastructure, equipment, laboratories, etc. In many countries, multichannel financing should be considered (e.g. pooling local public fiscal policies to boost partnerships with private actors and VET schools). All this leads to a strong need for the effective involvement of employers in decision-making and financing, especially in ETF partner countries. These issues are further unpacked in Box 1.1.

Box 1.1 Key issues supporting rationales and policy options for setting up centres of vocational excellence

- Improving the efficiency and performance of networks of VET institutions, accompanied by the need to renew and invest in infrastructure, equipment, technologies, etc.
- Halting declining or stagnating enrolment (and completion) rates in VET institutions (demography of VET population)
- Improving the quality of VET provision, putting in place or updating quality assurance systems, and using labour market intelligence to effectively target skills supply versus demand (vocational skills matching labour market requirements)
- Addressing the low level of development or simply the absence of national policies facilitating dual education approaches and incentives to encourage private companies to develop work-based learning (WBL)
- Improving the effectiveness of VET governance and management at all levels to engage the lowest levels and social partners (private sector) in policy-making (multistakeholder cooperation), while increasing the autonomy of VET institutions
- Addressing growing gaps in the recruitment of quality teaching staff (e.g. masters of practical training)
- Reforming the (insufficient) public financing of VET and the inefficient funding schemes for pooling public VET funds, while creating opportunities for multichannel financing and cost-sharing mechanisms (use of tax systems)
- Tackling the underuse of vocational guidance and other counselling tools/measures to help in increasing the recognition and employability of VET graduates in the labour market
- Reforming the status and pathways of vocational education systems within a lifelong learning perspective (e.g. promoting efficient CVET systems, maximising the potential of qualifications at level 5 to connect with higher education)
- Introducing a culture of continuous improvement and innovation into the VET community
- Supporting the building of political consensus around the complex processes of rationalising and optimising VET networks
- Increasing the role of economic sectors, regions and local ecosystems for skills development to feed VET skills into local partnership principles and support socioeconomic and regional development
- Developing new methodological tools and resources, requiring the creation of network institutions to transfer accumulated knowledge to other VET institutions and the whole community

Source: ETF/Galvin Arribas et al. (2020)

At this point, the promotion of public–private cooperation in VET is a key aspect that should be highlighted. CoVEs are institutional recipients that allow the formation of multilevel PPPs for VET and skills development. In many cases, private stakeholders are governing board members, counsellors or investors in CoVE projects in cooperation with national, regional and local public powers. They are the key players creating the conditions for local partnerships operationalised within CoVEs. Work-based learning is a crucial component in this context, as employers can have a say, coordinate such approaches in the context of the CoVE's management, and supply services.

The principles for setting up centres within a system of VET and skills multilevel governance should be key preconditions for initiating policy thinking and dialogue. In practical terms, a central issue is how to structurally embed these institutions (in many cases PPP-based) within national and regional institutional settings and arrangements, and how to monitor their performance.

In this regard, three main levels can be distinguished within a national governance system that includes a system of learning and review, taking into account the diversity across ecosystems and centres (Heemskerk and Zeitlin, 2014)[7].

1. Regional-level governance: centres are part of specific ecosystems. An ecosystem is not necessarily geographically restricted. It might also cover an industrial sector and be distributed across the national territory. The dynamic of the centres should be aligned to activities in the region or economic sector. The smart specialisation approach could fit into this logic.

2. Network-level governance: the network level comprises the group of centres as a whole. Here, learning through peer review and the sharing of experience takes place among a network of institutions.

3. National-level governance: building vision, drafting legislation and putting in place an overarching system of monitoring and oversight.

Thus, the centre of vocational excellence is becoming a leading operational concept that plays a key role in understanding how both developed and developing countries are modernising and transforming the quality of their VET systems to strategically support social, economic and pedagogical changes and challenges. The ETF is aware that improving the status of VET for increased access would be a core driver for steering reforms from the multilevel governance perspective and enhancing the effectiveness and efficiency of VET institutional networks (see, for instance, ETF/Galvin Arribas and Papadakis, 2019).

These institutions also need to be granted substantial levels of autonomy aligned to effective accountability mechanisms. This will help to set clear criteria and rules to ensure the effectiveness of such multilevel partnerships and to contribute to ensuring that such effectiveness is embedded in national policy frameworks.

[7] This system, used in the Netherlands, is called experimentalist governance. In the EU it has strongly influenced both new modes of governance and multilevel governance approaches. For a more detailed overview of these issues, see Heemskerk and Zeitlin (2014).

1.2

Learning from policy practices on centres of vocational excellence

To some degree, partnerships between the private and the public spheres involving educational institutions (colleges, universities) are typical of CoVEs. Those partnerships are developed in order to target sectoral strategies while promoting regional socioeconomic development.

However, such processes are complex to implement and expertise is much needed. Experiential learning, otherwise known as learning by doing, and cooperation with peers and experts should be the optimal strategy for facilitating mutual learning on the establishment of CoVEs.

This is in line with EU principles on enhanced cooperation in VET, which over the past two decades has proved to be a vehicle for reforming VET policies and systems in EU Member States, fostering excellence, equity, quality and innovation (European Commission, 2010). The post-2020 future in Europe will involve excellent, inclusive and lifelong VET (European Commission, 2018a).

1.2.1 EU transnational policies and initiatives on CoVEs as operational platforms and networks

In recent years, relevant evidence can be found on initiatives to set up CoVEs. This issue is moving up national, European and international policy agendas on VET and skills within a lifelong learning perspective. For example, in May 2018 the European Commission proposed a strategic policy initiative for developing CoVEs to operate in a given local context, embedding them closely in local innovation ecosystems, while connecting them at European level (European Commission, 2018b).

Following this initiative, the first call for European CoVEs was launched in October 2018 within the Erasmus+ programme[8]. The call is made up of lots called 'Cooperation and Innovation for the Exchange of Good Practices' (KA2 bid), within sector skills alliances, and 'Networks of VET Providers' (KA3 bid). The first submission of project proposals closed in February 2019. The objective of this initiative is to foster upward convergence[9] and to streamline sectoral approaches to thematic social challenges in VET.

The projects are an opportunity to develop sector skills approaches through CoVEs (sector skills alliances/councils). This should be understood as European platforms aiming to establish world-class reference points for training in specific sectors both for initial training of young people and for continuous upskilling and reskilling of adults.

These will act as reference points for vocational training by bringing together CoVEs that share a common interest in specific sectors or trades (e.g. aeronautics, e-mobility, green technologies, ICT, healthcare) or innovative approaches to tackling societal challenges (e.g. integration of migrants, digitalisation, AI, Sustainable Development Goals, upskilling individuals with low qualification levels, etc.)[10].

These platforms will consist of transnational partnerships for the development and delivery of joint VET curricula and qualifications, with a strong focus on practical training in companies, mobility of learners and staff, and entrepreneurship. They will act as catalysts for business investment and will support European and regional innovation and smart specialisation strategies by ensuring a supply of high-quality skilled workers through flexible and timely provision of training for the skills needs of companies (European Commission, 2018c).

The project leaders should be existing institutions or organisations with a recognised formal role in VET. The initiative is not prescriptive and should be sufficiently flexible to reflect the diversity of VET systems across Europe. The partners might be IVET or CVET providers, tertiary education institutions (including universities of applied sciences and polytechnics), research institutions, science parks, companies, chambers and their associations, social partners, sector skills councils, national and regional authorities and development agencies, public employment services, etc.

[8] The initiative already piloted through Erasmus+ in the 2019 call supports up to five pilot projects. The future Erasmus programme 2021–2027 (subject to approval by the co-legislators) may provide substantial support for the initiative. It is envisaged that the Erasmus funding may be complemented by investments needed for infrastructure, which could be supported by other European funds (e.g. Structural and Investment Funds, InvestEU, etc.).

[9] This means connecting more advanced with less advanced VET systems in Europe.

[10] Annual work programme for the implementation of 'Erasmus+': the Union Programme for Education, Training, Youth and Sport 2019.

This initiative is a European Commission (Directorate-General for Employment, Social Affairs and Inclusion) milestone resulting from its efforts in promoting excellence and innovation in VET, with particular emphasis, from 2016 to the present, on European Vocational Skills Week[11]. This initiative is based on sharing and recognising good practice in VET, which can provide inspiration for good and excellent VET across EU Member States and beyond. In 2019 the awards focused on recognising experiences that promote and recognise VET excellence as a driver for modernising VET policies and systems. The examples of excellence are grouped into four award categories: Companies and learners, VET innovators, European funding for excellence, and European agencies[12].

[11] https://ec.europa.eu/social/vocational-skills-week/

[12] https://ec.europa.eu/social/vocational-skills-week/awards-vet-excellence-2019_en

Box 1.2 Examples of EU-funded CoVE projects

European Association of Institutes of Vocational Training (EVBB) European Trainers' Training for Excellence (ETTE project)

The ETTE project aims to lay the groundwork for mainstreaming CoVEs at conceptual and operational levels. ETTE's partnership will support CoVE networks and cooperation as a first step towards consolidating and spreading its model, along with the principles of VET quality and excellence, all over Europe. By focusing on trainers and practitioners, the project directly addresses VET professionals with a view to boosting synergies and transnational partnerships among them. The wider goal is to build up a systematic and cooperative framework to promote further training, lifelong learning, upskilling and reskilling within the VET sector.

More information: http://evbb.eu/project/ette/

Skillman: Transnational Platform for Skills in Advanced Manufacturing

Skillman is a worldwide transnational platform of CoVEs for the advanced manufacturing sector, established to introduce skills, competences and innovative curricula in the sector within VET. The alliance connects industry and training providers with civil society and provides support services that drive growth and effectiveness for its members. Skillman is a sector skills body launched in 2014. By 2018, it had more than 300 members. The Skillman partners have European outreach and expertise and a high level of competence in vocational skills anticipation in supply, training and qualification design. The organisation's fields of interests are European, national and regional/local.

More information: https://skillman.eu/

Further, this initiative provides a platform for developing projects in the manufacturing industry to address the gender gap and support female participation in VET routes: vhttps://skillman.eu/skillwoman/

1.2.2 EU Member States' policies and practices: CoVEs as leading network institutions

The European Commission decision on launching platforms of vocational excellence is, among other things, a clear indication of how national policies are informing trends in shaping the future of VET in Europe. Many Member States have for many years been trying to make VET more attractive and excellent, strategically establishing CoVEs as a widely acknowledged policy option.

The principles of European enhanced cooperation in VET, the employment crisis (affecting young people in particular) and the issue of skills mismatch are pushing forward many reforms to modernise VET policy frameworks. Such initiatives place significant emphasis on public–private cooperation at the provider level for empowering the socioeconomic role of vocational skills and innovation as key dimensions to contribute to national and regional economic growth plans[13].

For example, various government initiatives in the **Netherlands** – framed within investment plans on shortage sectors (2010), investment funds in higher education (2012) and regional investment funds for VET (2014) and the Technology Pact (2013) – have put PPPs in VET at the heart of supporting socioeconomic and regional development reforms in the country. In this respect, after the merging of VET schools and levels into a number of large Regional Training Centres in the late 1990s, the government of the Netherlands introduced Centres of Expertise in higher vocational education and Centres of Innovative Craftsmanship in middle VET.

These initiatives have been progressively evolving, for example into the development in the Netherlands of the Katapult community, a network of VET centres. These are public–private ventures in which secondary vocational education schools (career and technical education), universities of applied sciences (community colleges), companies, governments and researchers collaborate in order to produce future-proof professionals and schooling.

In recent years this community has grown substantially: currently, over 130 centres, more than 4,500 companies, around 50,000 students, almost 4,000 teachers and 83 secondary vocational education schools and universities of applied sciences are participating. Over the past five years, special curricula and reskilling programmes have been established, and knowledge networks transformed into effective communities and solutions to address regional socioeconomic challenges[14].

In **France** the Ministry of National Education and Youth has recently reinforced the role of VET institutions, addressing aspects of quality, excellence and networking to develop cross-disciplinary and multilevel partnerships with other education and training providers, industry and higher education.

The 'Campus des métiers et des qualifications' (Campus of Trades and Qualifications) label identifies, in a given territory, a network of actors working in partnership to develop a wide range of vocational, technological and general training relating to secondary education and vocational training, higher education, and initial or continuing training. These providers are focused on specific sectors corresponding to national or regional economic priorities.

The national criteria for obtaining or renewing the 'Campus' and 'Campus of Excellence' label were published in the national education bulletin (13 December 2018). This sets out the criteria for the new category of 'Excellence', which meets the same criteria as the basic Campus des métiers et des qualifications label, though with higher levels required on some of them[15].

[13] For brief and concise indications on key drivers of VET reforms in EU Member States, see: www.cedefop.europa.eu/en/news-types/articles

[14] More information: www.wijzijnkatapult.nl/default.aspx

[15] www.education.gouv.fr/cid79563/les-campus-des-metiers-et-des-qualifications.html

The **United Kingdom** (UK) also has a strong record, over more than a decade, of developing centres of excellence. The capacity of high-level specialised VET providers to react to the skills needed by labour markets (e.g. the Welsh centre aiming to fill skills gaps in the low-carbon economy[16]) and to address innovation, research, development and support to local business is aligned with the country's framework for smart specialisation (e.g. InnoTech in Northern Ireland[17]).

VET in **Spain** is quite decentralised. The regional dimension is a key driver for understanding how polices are shaped and delivered. One of the most recognised CoVEs is the Tknika centre in the Basque Country[18]. This institution is a hub for promoting innovation in VET to support responses to the digital revolution and the needs of enterprises to become more competitive in global markets.

Tknika is a reference point in the EU, for example on delivering new methodologies to support teachers and learners to develop excellent vocational attitudes and achieve sound learning outcomes. Innovation, creativity and entrepreneurship are key drivers of Tknika's activities in terms of transferring its developments to the VET provider network in the region.

The Autonomous Community of Aragon has a national reference centre called the Aragon Centre for Innovation in VET (CIFPA), which aims to promote technological innovation in the region's vocational training system. Its mission is to act as an independent point of reference for VET teachers and a link between companies, students and workers.

CIFPA is the national reference centre for commercial logistics and transportation management in the Aragon region, and as such is the key institution for channelling innovation in this sector. The centre focuses its efforts on innovation in vocational training and the creation of networks and partnerships between companies, students and workers in this sector[19].

Belgium (with a network of 24 centres de compétences[20]) and Denmark (with, for example, RWTH Aachen University) are relevant examples of leadership by sectoral organisations, regions and higher education providers to boost excellence in VET[21]. **Latvia** has optimised a network of VET institutions (2010–2015), focusing heavily on balancing sectoral and

regional approaches to set up vocational education competence centres[22]. In **Lithuania**[23] the focus is on the role of sectoral approaches, while **Estonia** has experience of focusing on regional multiprofile VET centres for promoting entrepreneurship and creativity for business development and management[24].

The experience of so-called industrial clusters responds to the logic of geographic concentration of specialised companies, developing high-added-value activities that might require a highly skilled, qualified and specialised workforce in different sectors (e.g. in the Tuscany region in **Italy** or Baden-Württemberg in **Germany**). These clusters connect companies with local institutions, technological suppliers and other research and development actors (e.g. technical vocational schools, universities). Such initiatives show how regional and sectoral approaches are balanced in terms of which clusters become learning networks, possibly through supply chains, where employers can learn from one another and might be able to share some of the training costs (see, for example, Cedefop (2012)).

In **Italy** there is a network of higher technical institutes (Istituti Tecnici Superiori – ITSs). Founded in 2010 as post-secondary non-university-level training institutions, ITSs are classified as 'high technology specialisation schools' that promote highly specialised education in order to offer students technical skills that are required on the labour market[25].

[16] http://gse.cat.org.uk/

[17] www.theinnotechcentre.com/

[18] www.tknika.eus/liferay/en/web/public/home

[19] https://cifpa.aragon.es/

[20] www.leforem.be/centres-de-competence/liste-des-centres.html; www.ifsb.lu/fr/

[21] www.rwth-aachen.de/cms/root/Die-RWTH/Jobs Ausbildung/Berufsausbildung/~epa/Berufsausbildungszentren/lidx/1/

[22] Cabinet order (6/1/2010), Guidelines for the Optimisation of the Network of Vocational Education Institutions 2010–2015 More information: www.cedefop.europa.eu/en/news-and-press/news/latvia-present-state-structural-reforms-vocational-education

[23] www.cedefop.europa.eu/en/news-and-press/news/lithuania-sectoral-practical-training-centres-officially-opened; http://vtvpmc.lt/index.php/en/

[24] http://icee-eu.eu/kuressaare-ametikool.html; www.ametikool.ee/

[25] More information: www.indire.it/en/progetto/its-higher-technical-institutes/

In **Croatia** a network of regional competence centres in priority sectors is under development; 25 vocational schools were selected for this role in 2018[26].

In countries, such as Germany, Austria and Switzerland, that have pure dual systems, there is a long tradition of raising the profile of VET linked to employers' role as policy implementers in the system. In **Germany** there are many examples of outstanding CoVEs led by Chambers of Commerce[27], while **Austria** is notable for its well-established regional clusters (60 clusters with more than 7,100 cluster members, 73% of which are small and medium-sized enterprises (SMEs))[28].

1.2.3 ETF partner counties: a growing movement towards setting up CoVEs

A number of ETF partner countries have embarked on VET network reforms as they progressively acknowledge excellence and innovation as drivers of change that will make VET more attractive and relevant.

Youth unemployment rates in many ETF partner countries remain very high, being traditionally higher than those for older age groups. This is linked to various types of skills mismatch. Unemployment is more acute for those who do not have upper secondary education.

However, the unemployment rates for the youngest cohorts holding tertiary qualifications are also higher than for those attaining the lowest qualification levels. The Western Balkans is one of the regions most affected by youth unemployment (e.g. Kosovo[29] 52.7%, Bosnia and Herzegovina 45.8%, Montenegro 31.7%) (see Figure 1.1).

[26] www.cedefop.europa.eu/da/news-and-press/news/croatia-establishing-network-regional-centres-competence

[27] www.bistech.de/

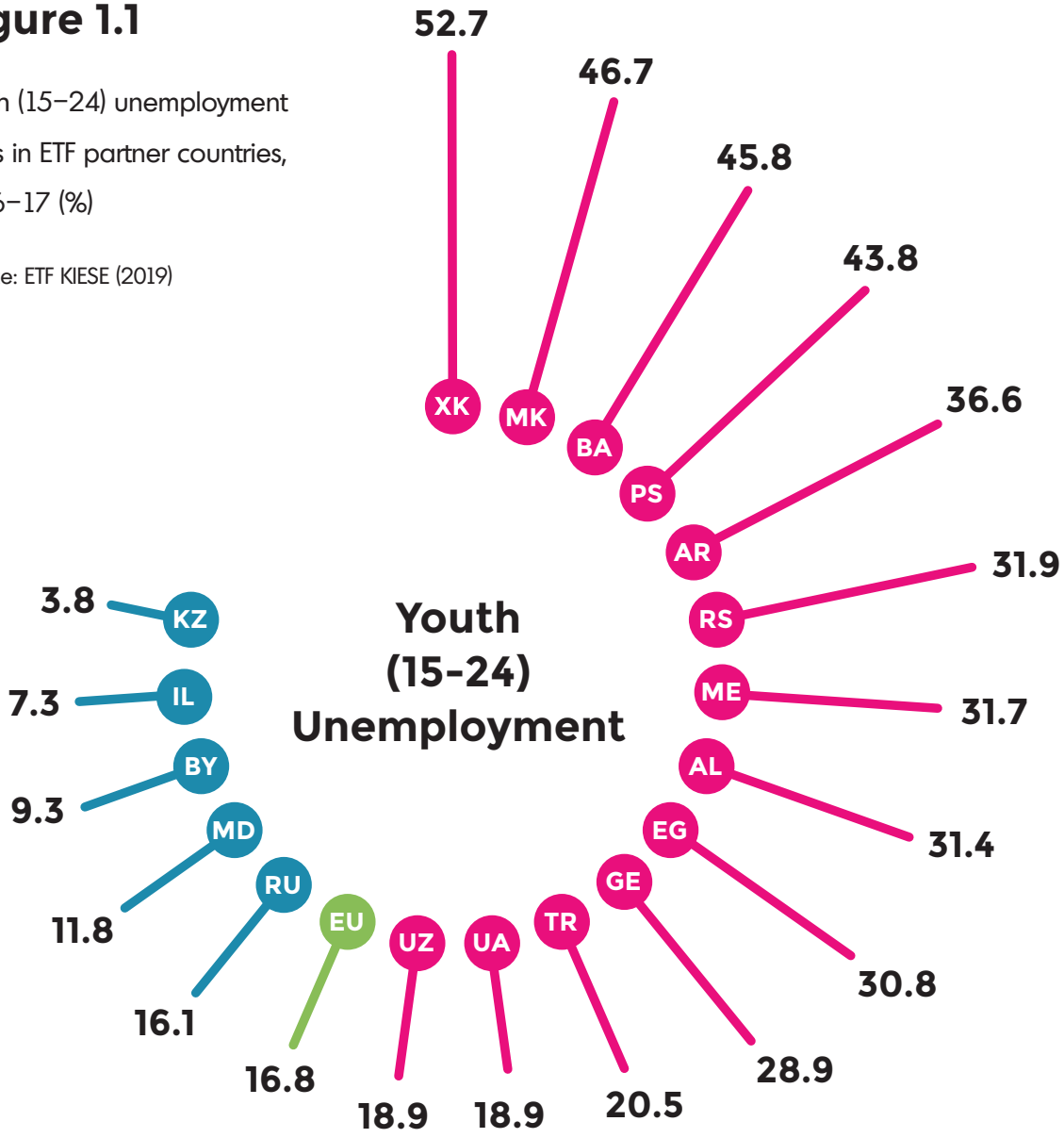
[28] www.bmdw.gv.at/WirtschaftsstandortInnovationInternationalisierung/ClusterplattformOesterreich/Seiten/default.aspx; www.clustercollaboration.eu/cluster-networks/austrian-cluster-platform

[29] This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence – hereinafter 'Kosovo'.

Figure 1.1

Youth (15–24) unemployment rates in ETF partner countries, 2016–17 (%)

Source: ETF KIESE (2019)

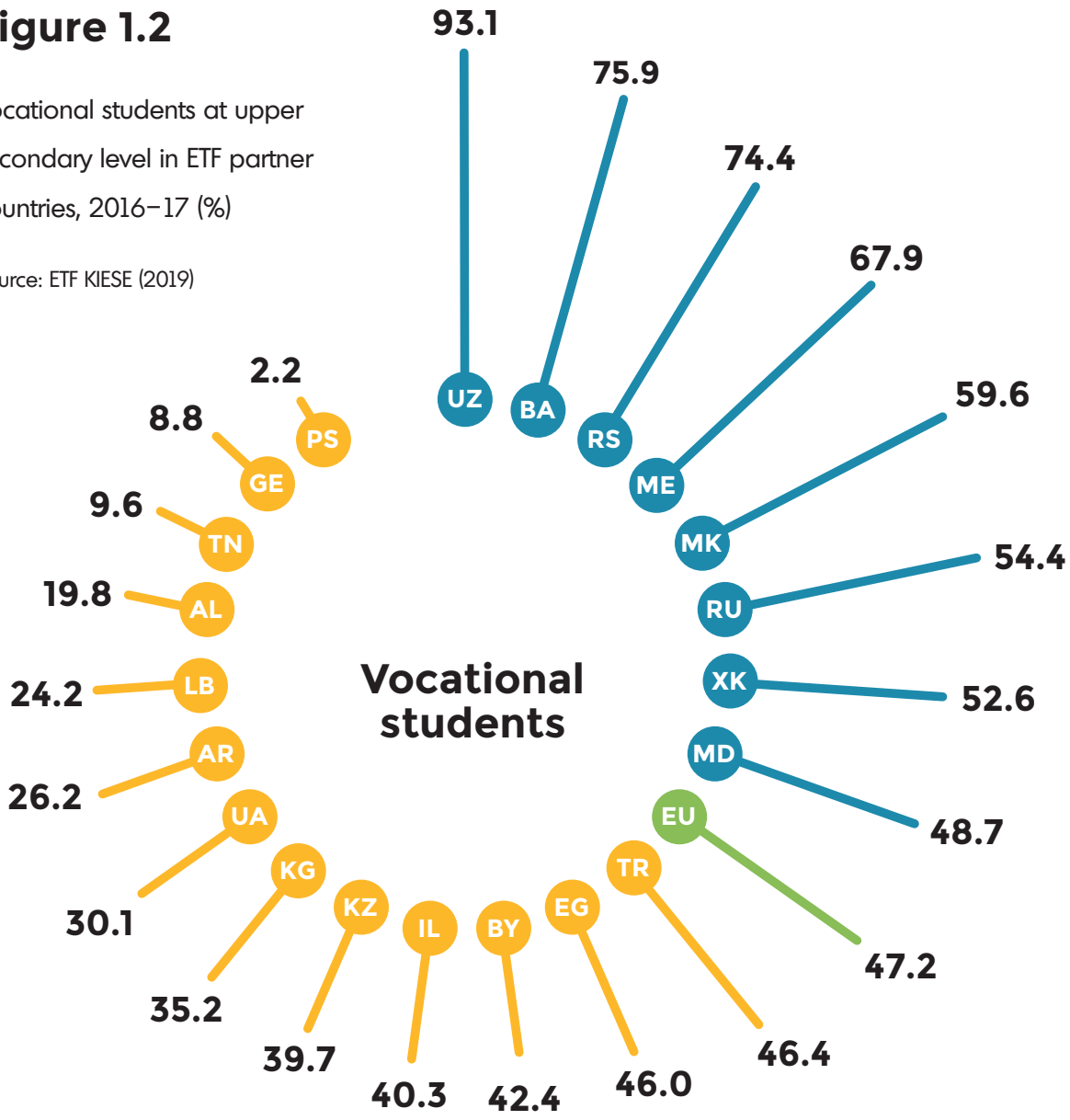


Furthermore, in many ETF partner countries, the stagnation or decline of VET enrolment is an issue. Access to VET varies across partner countries. VET programmes are sometimes chosen by students who have found it difficult to progress through lower levels of education and, as a result, they might be at greater risk of not completing upper secondary level. Underachievement in key competences is another matter of concern in ETF partner countries. As a result, public VET policies need to become more efficient in incentivising and attracting the private sector, which in many partner countries is not satisfied with the quality of skills. In this context, targeting reforms of VET school networks is a priority for optimising their performance and making them sustainable.

Figure 1.2

Vocational students at upper secondary level in ETF partner countries, 2016–17 (%)

Source: ETF KIESE (2019)



Such issues are strong arguments for policy-makers in many ETF partner countries to move towards reforms of VET institutions that address excellence and innovation in order to improve the cost-efficiency of VET networks that can deliver relevant skills, competences and qualifications in line with the needs of national and regional labour markets.

For example, Albania (VET Multifunctional Colleges), North Macedonia (Regional VET Centres), Armenia (Regional State Colleges), Morocco (Industrial VET Centres), Ukraine (Multifunctional VET Centres of Excellence), Moldova (Centres of Excellence in priority economic sectors), Turkey and Israel are partner countries that illustrate this trend. These country cases are further explained in Chapter 2 (mapping results for ETF partner countries).

1.3

What are centres of vocational excellence? Approaching operational concepts to clarify how to set them up

The previous sections provide a clear picture of what CoVEs are, or should be, and, most importantly, of the logics, rationales, foundations and orientations for the services they are requested to provide. The policy approaches to shaping institutional set-ups are mostly focused on promoting vocational excellence aligned to innovation, entrepreneurship, digital skills, hubs for technological developments, smart specialisation, regional development, sectoral economic strategies, formation of education and business partnerships, network organisations, etc.[30].

Experience shows that successful learning networks tend to build on open models of innovation. Excellence should depend not on the quality of one particular institution but on the active engagement of all actors in models that shape so-called ecosystems of innovation. VET excellence is about a broader perspective that relies on policy coordination (Shapiro, 2011). This issue can make a difference in the role to be played by CoVEs as key institutional drivers for implementing lifelong learning policies.

1.3.1 Acknowledging the concept and definition of CoVEs

Regarding nomenclature of different types of CoVEs, these institutions are known as industrial training institutes, industrial training centres, centres of expertise, regional VET centres, industry skills centres, innovation or innovative centres, or 'centres de compétences' (in French-speaking EU countries).

[30] Here, it is also worth mentioning the vision of the European Vocational Training Association (EVTA), within its 2015 'Quality Label' initiative. According to the EVTA vision, the VET Centre of Excellence is a place 'where professionally effective, socially relevant, methodologically advanced VET services' systematically take place. www.enaip.veneto.it/index.php/en/420-progetti-transnazionali/entrepreneurship-academy/7067-vet

Box 1.3 Shaping the key features and characteristics of CoVEs in the EU

- Ensuring the efficiency and performance of networks of VET institutions accompanied by renewal of and investment in infrastructure, equipment, technologies, etc.
- Providing individuals with labour-market-relevant skills, within a lifelong learning perspective; combining the provision of IVET qualifications with CVET offers (upskilling and reskilling)
- Developing joint VET curricula through platforms of VET providers in various countries, bringing the very best know-how from each partner and facilitating recognition (VET at EQF levels 2 to 8); these qualifications should contain a substantial common core element with a significant part of the curricula sharing the same learning outcomes (important for giving credit for experience abroad and for facilitating mobility)
- Building business-education partnerships for apprenticeships, internships, sharing of equipment, exchanges of staff and teachers between companies and VET centres, etc.
- Actively participating in knowledge triangles with universities, research centres and businesses, with the aim of being at the forefront of research and technological developments and allowing training curricula and qualifications to be rapidly updated
- Developing innovative teaching and training methodologies based on digital technologies (e.g. massive open online courses (MOOCs), simulators, etc.)
- Placing a strong focus on the continuing professional development (CPD) of teachers and trainers (both pedagogical and technical skills, and involvement in research projects among the platform of VET providers, etc.)
- Developing project-based learning that uses interdisciplinary approaches and enables VET learners from different fields of study (e.g. design, marketing, engineering) to solve real work problems/challenges
- Providing guidance services and the validation of non-formal and informal learning (VNFIL);
- Developing internationalisation strategies to foster transnational mobility of VET learners, teachers and trainers, with or without Erasmus+ support
- Providing business incubators to enable VET learners to develop entrepreneurship skills and projects
- Developing innovation hubs and technology diffusion centres that can share equipment and incentivise their staff to work with local SMEs to conduct research and development of products and services, with the involvement of VET learners; developing technology diffusion centres or virtual demonstration centres for new technologies
- Supporting regional investment projects by ensuring the timely provision of skills for companies investing locally
- Supporting regional development and smart specialisation strategies, working with other education and training institutions (e.g. universities and polytechnics) to provide a wide portfolio and a range of skill levels required by those strategies
- Making full use of EU financial instruments and funds to support infrastructure investments to modernise VET centres with advanced equipment (including simulators and other high-tech equipment)
- Developing sustainable financial models that combine public funding and income-generating activities for CoVEs

Source: European Commission (2018c)

VET traditions in the English-speaking world use the term 'excellence' as well as industry and/or industrial centres to refer to these institutions, whereas Nordic countries and those with dual system backgrounds also refer to the concept of centre of expertise, innovation or centres of innovative craftmanship (e.g. Netherlands). The concept of multifunctional, multisectoral and/or multiprofile centres is also used in some countries (Albania, Finland). 'Centre of research and innovation', and 'campus of excellence' are other possible names for CoVEs (European Commission, 2019).

Such conceptual diversity might explain the fact that there is no one definition of CoVEs that is recognised by the international community. However, the ETF experience shows that the term 'CoVE' usually refers to a network of partnership-based VET institutions that are established in different regions, while reflecting the national policy priorities of a given country.

These centres normally provide high-quality qualification levels (qualifications at level 5, on average) through VET and CVET programmes for the acquisition of highly specialised professions, which might even be connected to tertiary education routes. They have a strong focus on technological and innovative sectoral or multisectoral training and competence solutions for meeting the skills needs of industries, companies and individuals. (ETF/Galvin Arribas, 2018).

CoVEs can act as catalysts for business investment and can support national and regional innovation strategies by ensuring the supply of high-quality skilled workers through flexible and timely training provision to meet the skills needs of companies. The centres can be linked to universities with a view to jointly contributing to the provision of medium- and high-level skilled specialists. They contribute to the implementation of regional development and smart specialisation strategies, working with other education and training providers through the management of sustainable multichannel financial models that combine public and private funding and their own income-generating activities. In some cases, their facilities and infrastructures are offered as business services.

Overall, CoVEs can be conceived as strategic ambassadors for improved marketing of VET policies and systems based on the pillars of excellence and innovation, and can initiate (though they occasionally impede) optimisation and even rationalisation of VET provider networks. However, activating CoVE set-ups requires high levels of both human and financial capacity.

1.3.2 Identifying types of CoVEs: key policy options for activating institutional set-ups

Once a definition of CoVEs has been formulated, classifying them should be a relatively short exercise. However, it is, in fact, a complex task. The recent Ecorys mapping exercise (European Commission, 2019) demonstrates that it is not easy to distinguish broad types of CoVE. One key distinction is between CoVEs that are purpose-built and those that are designated entities within national/regional arrangements for vocational excellence. Another distinction is between CoVEs that are individual VET providers acting as CoVEs for a region (or subregion) and those acting for a sector. Nevertheless, according to the Ecorys mapping (European Commission, 2019), exceptions can be found even within these two classifications.

However, research and practice are not always aligned when policy-makers need to start policy dialogue and advisory processes to consider models of CoVE for implementation. In this respect, for the purposes of discussing policy options for activating intuitional set-ups and operationalising CoVEs based on modalities observed worldwide, it should be possible to formulate a broad taxonomy based on how institutional and logistical settings are constructed.

Taking into account the previous sections, ETF and international experience shows that selecting key operational aspects to target key characteristics and institutional scopes is strategically useful as an accompaniment to policy dialogue and reform processes for CoVEs.

To some extent, these aspects help to better identify the different types of CoVEs operating worldwide and how these models can frame policy options for CoVE institutional set-ups. These are listed on the opposite page:

- **Overall approach, at policy and system levels, to effective multilevel VET and skills governance (including evaluation and monitoring practices), financing and funding, including budgeting and VET costing practices;**
- **VET quality assurance;**
- **Nature and type of PPPs;**
- **Innovation and networking functions embedded in the excellence factor;**
- **Balance between regional approaches and sectoral versus multisectoral remits of CoVEs;**
- **Conditions of VET school networks aligned to the vision and plans of national (and regional/local) governments for optimising/rationalising vocational education institutions;**
- **Role of international donors in the strategic design and funding allocations for investment in VET centres or networks of excellence.**

These key policy areas should be carefully considered when setting up different types of CoVEs with a view to multifunctionality as a common feature, from an organic and managerial perspective.

Other important aspects for understanding the dynamics of CoVEs – such as teaching, training and learning, types and forms of curricula and qualifications, guidance, VNFIL practices, and the capacity for developing skills anticipation strategies – will inform the institutional scope. Hence, these could all serve as specific thematic areas to help in the classification of CoVE types.

CoVE typology is vital for understanding the importance of selecting an appropriate model (or models) for any country. The classification presented in Table 1.1 is not intended to fully cover or precisely distinguish all possible variations of the models, but it does clearly explain the key features and characteristics of different CoVE categories and also the roles they play within national VET systems.

Further, the typology introduces broad categories of CoVEs, which may not always fall under one single form or type. The taxonomy builds on an increasing number of examples worldwide (EU, ETF partner countries and international cases) of some of those selected and presented in this paper. Some countries might have more than one modality of implementation, as indicated in the table.

The table also provides a definition that can be implemented for operational purposes. In this respect, CoVEs are considered as: 'Partnership-based vocational education and training network organisations forming ecosystems of excellence and innovation for providing the high-level skilled specialists required in national and international labour markets and for contributing to the development of national and regional economies' (Galvin Arribas et al., 2019).

Table 1.1 Taxonomy of CoVEs

Implementation modalities	Key features and characteristics
Partnership-based VET network organisations forming ecosystems of excellence and innovation for providing the high-level skilled specialists required in national and international labour markets and for contributing to the development of national and regional economies	
A **CoVEs created as new and independent training providers**	These centres might be set up from scratch in a new urban or even rural area and be isolated and simply not connected to existing institutions. They could be in new buildings or existing ones, using suitable land for refurbishing renewed establishments, which might also be geographically connected to an industrial area. From the beginning, industry should be involved in financing or co-financing as a way of setting up these centres. Thus, intensive resource allocation is needed to kick-start the process. Early and quick involvement from industrial actors brings benefits in terms of effective public–private governance, as new centres are aligned with the goals of both employers and government policy.
B **CoVEs as independent training institutions created from an existing provider, which might deploy extended functions**	These centres are not set up from scratch. Rather, they are existing institutions that become centres of excellence. This option should be seen as a natural way to set up centres using resources within a network of existing institutions, including suitable land space for renewed establishments, which might also be geographically connected to an industrial area. At the same time, such centres can become a hub for a type of conditional network. This means that such institutions act as drivers of excellence and innovation for the VET network by contributing to methodological developments, research and capacity building of other institutions and the VET community as a whole at national, regional and inter-regional levels.

Institutional scope	International case studies	Other remarks*
Could be linked to an industrial or sectoral body or cluster. Sectoral-based organisational remit.	Morocco: industrial centres in the automotive and aeronautic sectors. Bangladesh: centres of excellence in different sectors (e.g. leather industry). Singapore: centre for innovative materials used in the construction sector.	Land owned by some VET schools closer to regional industrial clusters might be suitable for launching this type of CoVE project. The foundation of new types of institutions might be granted or incentivised for having CoVE status. International partnerships, approaches and standards for accreditation of training and skills might be strong benefits of this option.
Could become recipients of pooled regional resources in VET and sectoral or multisectoral skill priorities.	Moldova has regulated and legislated for VET centres of excellence, merging institutions targeting 11 sectors; institutions feed VET colleges operating in the same sector. Armenia has regulated the status of regional state VET institutions – one in each of the 10 regions and 2 in the capital, Yerevan – reorganised into Regional State Colleges; these are networked with VET colleges in the same region.	The strategic component can be balanced with regulatory or legal frameworks for redefining the role of VET in a given country. The combination of soft instruments (memorandums of understanding) and hard ones (framework regulations) may be beneficial in terms of effective dialogue for enhancing the capacity of social partnerships to implement such models.

Implementation modalities	Key features and characteristics
C **CoVEs as part of other training institutions**	This option might be another natural way of establishing centres, as the providers' facilities should already be available for improvement. This is appropriate in tertiary institutions or VET providers that are recognised as high-level performers. The new CoVE becomes a benchmark and an example of good practice in excellence/innovation, based on its high-level practice/performance, as it profits from the social and educational reputation held by the previous institution (cost-effectiveness).
D **CoVEs as network organisations for feeding excellence and innovation values into the VET community**	This could refer to leading institutions, organisations, agencies, etc., that coordinate networks of high-quality training providers to support their cooperation with a view to forging links with industry. Such institutions could be both providers and reference leaders on methodological developments, innovative learning practices, the introduction of new equipment, technologies, innovations, etc. Networking provides the opportunity to improve by sharing experience and performance based on partnerships with industrial actors for excellence and innovation. Networks of excellence can be highly valuable for aligning the rapid identification of the needs of industry with innovative solutions linked to national and regional government priorities. They can also have an international dimension.
E **CoVEs as multiprofile or multisectoral provider institutions**	Multisectoral education providers, acting as regional development hubs, offer high-level qualifications in occupations relating to two or more major economic sectors. Such VET providers contribute, inter alia, to diversifying VET provision, while avoiding any overlaps in the provision of the same specialities or profiles in different institutions, which can create inefficient competition between VET establishments.

Author: Galvin Arribas (2020).

Institutional scope	International case studies	Other remarks*
Can be granted such status after accreditation, assessment and/or quality assurance processes. Mostly sectoral remits.	Belarus: International Innovation Environment Park for renewable energy. Netherlands: Regional Education and Training Centres. Canada: Oil and Gas Centre. Vietnam: technology and machinery colleges. South Korea: Asia Pacific School of Logistics, Inha University.	Reputable colleges in which VET and higher education pathways coexist might be a good testing ground for this option. Industrial employer centres (led by employers) or centres belonging to ministries (e.g. social/ labour policies) might also be suitable for implementing this option. Enhancing and integrating innovation, research and excellence functions, alongside quality assurance processes, would be required to reach such status.
These institutions have a leading role in creating a culture of excellence and innovation in countries, regions and schools. They can offer a platform for both sectoral and multisectoral training and teaching and other innovative learning solutions, qualifications, etc.	Netherlands: Katapult Network; STC group (shipping, logistics, transport and processing industries). Spain: Tknika (Basque Country) and CIFPA (Aragon). Ukraine: i-HUB network of innovation and entrepreneurship. France: Campus des métiers et des qualifications (bringing together VET and higher education institutions). UK: National Skills Academy for Nuclear (NSAN). New Zealand: Vi Virtual Centre led by the Education Council.	Selection procedures and technical specifications should be carefully considered for identifying leading institutions. Networks might bring useful solutions when skills needs in sectors or related subsectors are different. Communication and vision-building capacities are key for implementation and success in networking to link industry and public stakeholder views.
Ensures a wide scope of institutional services in relation not only to young and adult learners but also to providing access in difficult geographical areas in some countries.	Finland: OMNIA is a multisectoral provider offering innovative learning environments and beneficial partnerships in national and international education development projects. Albania: multifunctional VET centres/ colleges established in a flexible way across regions.	This option might be suitable as a first step for rationalising large and costly VET public networks. Sectoral social partners and employers could be attracted to this way of reorganising a network from an intersectoral participation and cooperation perspective.

Notes: The typology introduces broad categories, as CoVEs might not always fall into one single category, form or type. The taxonomy builds on an increasing number of examples worldwide of those selected and presented in this ETF report. Some countries might have more than one modality of implementation. In any case, the issue of status versus type of institution might be discussed by countries. The most obvious way of clarifying the status versus type is when this is directly mentioned in national or regional legislation. However, in many of the cases presented in this taxonomy, this is not explicitly defined. Therefore, for some countries, it might not be technically correct to state that CoVEs are conceived as a particular status or type. Specifications and other specificities informing the processes of implementing international donor projects worldwide should also help to clarify such dilemmas. Some CoVEs assigned under type B above, such as those in Armenia (and even Moldova), could also be categorised as type E.

The taxonomy illustrates that the dynamics of some specific CoVEs can lead to a number of policy choices that are between, or a combination of, the regional and sectoral approaches. To complement the picture, the balance between the sectoral and regional remits of CoVEs can produce the following institutional combinations:

- **Regional sectoral (R-S):** specialising in one of the main economic sectors of the region and serving the skills/employment needs of this sector for the region;

- **Regional multiprofile (R-MP):** specialising in several of the main economic sectors of the region and serving the skills/employment needs of the region;

- **Inter-regional sectoral (IR-S):** specialising in one economic sector and serving the skills/employment needs of this sector for several regions or the entire country;

- **Inter-regional multiprofile (IR-MP):** specialising in more than one economic sector and serving the skills/employment needs of those sectors for several regions or the entire country.

However, whichever policy option countries might choose, the establishment of CoVEs needs to be based on a careful assessment of overall governance arrangements and financing capacities of the VET system, as well as on a thorough diagnosis of the VET network. The regulatory framework and legal status, founders, board composition, executive division of tasks, budget estimates and the costing of external and internal infrastructures of CoVEs are essential elements that must be addressed within the overall policy development process.

1.4

Excellence as an operational concept: granting CoVE status to vocational education institutions

Following the insights of the previous sections and the EU acquis communautaire in relation to education and training policies, the formation and implementation of the concept of VET excellence addresses the following set of thematic operators:

- **VET and skills multilevel governance:** This covers (regional) ecosystems/clusters, PPPs, institutional autonomy, smart specialisation, sustainable financing, sector councils/ alliances, performance-based and monitoring and evaluation approaches.
- **VET quality:** This refers to quality assurance frameworks, including on teachers, trainers and training processes. It also includes continuous improvement of VET standards.
- **VET relevance:** Sound qualifications, skills and competences are aligned. A multidisciplinary curricula is delivered and continuously updated in cooperation with industrial actors.
- **VET effectiveness:** The demand side of skills needs is a policy driver, supported by skills intelligence tools.
- **Employability:** Graduates and employers benefit from high-level vocational skills. Policy labs (incubators) support job creation and start-ups.
- **Flexibility:** All types of learning count as the VET system enables permeability to connect to all possible learning pathways.
- **Lifelong learning:** Comprehensive qualification frameworks are operational. Effective CVET policies operate and involve SMEs in HCD strategies.
- **VET image:** Parity of esteem is acknowledged, and VET is recognised as an optimal

option for learners and society. Career guidance systems help in this process and are an integral part of public VET services.

- **Innovation in VET:** The VET community enjoys a culture of innovation. VET generates value for individuals, society and employers. Innovation hubs are institutionalised.

1.4.1 How do VET institutions achieve excellence? Key ingredients and policy tools

Addressing the reform and rationalisation of VET institutional networks and the optimisation of VET establishments and VET provision are intense challenges for many policy-makers and other practitioners because users (students, parents, employees and employers) and providers are strongly affected by policy decision-making.

The ETF's experience suggests that addressing such reforms by making some institutions 'excellent' somehow mitigates the political sensitivity and expectations that are commonly found within VET communities in relation to the core dilemmas associated with closing, merging or creating new VET institutions. The taxonomy presented in this paper is a great help in informing such processes by identifying five possible policy options for implementing set-ups and possible ways of defining criteria for policy decisions on institutional remits.

Soft mechanisms with hard impact

ETF and international good practice suggests that decisions on the rationalisation and optimisation of VET school networks are best made with the coordinated participation of regional authorities, as they are in a good position to support decisions in the interest of the regional economy while balancing priorities and strategic sectors for the national economy. Applying multilevel governance approaches is vital. Regional VET departments and other regional and local bodies should work cooperatively with providers and employers from both the formal and informal sectors of the economy to contribute to guidelines for the optimisation of regional VET networks.

In this respect, it is always useful to start the reform process by conducting an assessment or evaluation of VET establishments in order to determine providers' level of quality and efficiency. This is particularly relevant for countries with large networks of providers. This assessment can include a feasibility analysis (cost-effectiveness-based) to rank VET providers; these providers should then be better prepared to become excellent. Assessment methodology can be further used to periodically monitor progress in the performance of VET providers and the effectiveness of measures taken during the process of supporting other VET providers to achieve excellence.

Another key outcome of this exercise is to produce an analytical framework, which should contain the main variables and key indicators to guide mapping for establishing CoVEs. This includes sectoral and occupational analysis and identification of CoVEs' key managerial and coordinated functions and the tasks necessary for cooperating with other institutions, local governments, employers, etc. The indicators needed are those covering regional geography and demography, socioeconomic and labour market dynamics, industrial clusters and those addressing VET issues in the region and within institutions (see mapping indicators, Annex 1).

The outcome should be a regulatory tool in the form of a rollover development plan to support VET institutions and public authorities in the management of this process. This plan could have a timescale of between one and five years.

In a second stage, this will all open the way for a discussion of how to regulate or legislate

CoVEs as flagship organisations or simply as a type of institution that deploys specific functions within VET systems.

Competitions: the issue of criteria and other indicators for managing CoVE projects

The above-mentioned processes and tools can also support policy-makers in establishing a competitive procedure among a network of VET providers to determine their capacity to become CoVEs. This can be formulated at national level and implemented at regional level. To better prepare the process, public authorities should ensure consultation with the VET community at all levels, including social partners, industrial/sectoral actors, etc. These stakeholders might also be involved in the evaluation process through the evaluation committee.

Institutions will need to apply for CoVE status. In general, each application should be considered and assessed as a separate case. However, in the initial stages, a certain level of financial resources might be expected to be allocated for establishing the first group of CoVEs, and an open call for applications could be published.

The selection criteria for evaluating projects or simply for the process of initiating the establishment of CoVEs should be very comprehensive and based on wide consensus within the VET community. There need to be indicators for scoring criteria (these might be called sources of verification, means, etc.) that, in turn, should have an associated weight within the total score (Annex 1).

Box 1.4 Example of project proposal template for selecting CoVEs

1. Title of the proposed CoVE

2. Type of centre: regional sectoral, regional multiprofile, inter-regional sectoral, inter-regional multiprofile

3. Institution(s) on the basis of which the CoVE will be organised

4. Founders, governing board (composition and functions), executive team

5. Indicative profiles and tasks of VET staff

6. Sector(s) of specialisation

7. Occupations/qualifications to be offered

8. Approach to quality assurance

9. Brief description of the region(s) to be covered

10. Institutions to be networked

11. Other partner organisations and key stakeholders

12. Justification of the project (ex-ante evaluation):

a. Relevance: e.g. selection of the centre type, sector(s) and qualifications to be offered, region(s) to be covered, networking institutions, partners, beneficiaries, clients, etc.;

b. Efficiency: e.g. any possible cost-benefit analysis, investments per graduate for the coming three–five years, diversified services, projected profit, taxable capacity; comparison with regular VET providers;

c. Effectiveness: e.g. estimated number of yearly enrolments by different types of courses and learners (formal and non-formal, initial and continuing VET, young people and adults) as a percentage of the total population of the relevant age groups, estimated job placement rate, etc.; comparison with regular VET providers;

d. Impact: e.g. intended impact on the socioeconomic situation in the region(s) and in the country, reduction of unemployment and poverty rates, migration, economic productivity, etc.; comparison with regular VET providers;

e. Sustainability: e.g. potential for development, possible future sources and levels of funding, income generation, continuing attractiveness of the centre (for both learners and employees).

13. Detailed costed action plan for establishment of the centre

14. Risk analysis

15. Package of required data and documents (according to the requirements of the terms of reference or the tender dossier)

Source: Galvin Arribas et al. (2019)

The criteria for being considered as a CoVE might cover several fields. In general, these refer to large blocks of CoVE capacities, such as management and financing; infrastructures and location; educational, pedagogical, methodological and curricular strategies; socioeconomic impact for supporting regional development; partnerships with industry, local authorities and international partners; competences of teachers, trainers and other staff; introduction of technological and innovative changes, etc.[32]. Furthermore, it is important to mention that, once CoVEs are operational, monitoring and evaluation should become a regular task for the public and private VET actors involved.

International donor and partner practices

International donor organisations are very active in setting up CoVEs and have substantial expertise. They normally launch projects to empower VET institutions in strategic regions and sectors, which might also be connected to smart specialisation approaches. They often operate in developing countries, as for many such countries, increasing competitiveness and productivity while providing opportunities for young people in the labour market are challenging issues[33]. Donor organisations also provide capacity tools for managing VET excellence[34].

[32] There are many examples, but a recent one is renewing the label of 'excellence' in France. The new excellence category includes a higher level of requirements. At least three excellence campuses are expected in each region by 2022. Excellence campuses address the issues faced by a specific economic sector at national level. They will have a specific location, in contrast to current campuses, some of which are run as local networks. Campuses of excellence will include infrastructures for educational purposes, business development and innovation, research, sports, cultural life, etc. See the criteria and conditions for competition at: www.education.gouv.fr/pid285/bulletin_officiel.html?cid_bo=136698

[33] GIZ is one of the key organisations operating in VET excellence. See, for instance, a project in Vietnam: www.giz.de/en/worldwide/18758.html

[34] For instance, the practices of Belgian and Luxembourg development agencies, see: www.vettoolbox.eu/drupal_files/public/2018-11/tools_handbook_training_manual_en_1.pdf

1.4.2 The contribution of WorldSkills competitions

WorldSkills and national competitions are not direct providers of excellence. The primary goal of skills competitions is not to boost VET institutions to become CoVEs. However, it is important to recognise that in recent years, such events have become benchmarks for promoting and assessing VET excellence. These competitions provide both a yardstick for high performance and an objective way of assessing vocational excellence. Interestingly, in recent years, excellence has been the focus of this platform.

Such competitions also provide an opportunity to better understand the factors that contribute to the development of vocational skills to a high standard. The students are at the centre of this experience as they are required to demonstrate a number of abilities and competences (e.g. social, cognitive and entrepreneurial) to indicate an appropriate vocational attitude in real job situations.

WorldSkills competitions measure excellence. Competitions are a way of globally promoting excellence in skills. This is becoming a kind of global hub of skills, bringing together educators, industry, national governments and international organisations. Some interesting examples of CoVEs from around the world are participating in these events[35].

[35] More information: https://worldskills.org/

Figure 1.3 Policy tools for steering policy processes: from VET school to CoVE

Chapter 2

Mapping centres of vocational excellence in EU Member States, ETF partner countries and non-EU countries

Chapter 1 presented the background to vocational excellence and its relationship with VET. It verified the complexity and controversy around the term 'vocational excellence', explored the rationale for establishing CoVEs, and highlighted the logic of a taxonomy of CoVEs based on the characteristics of the host context.

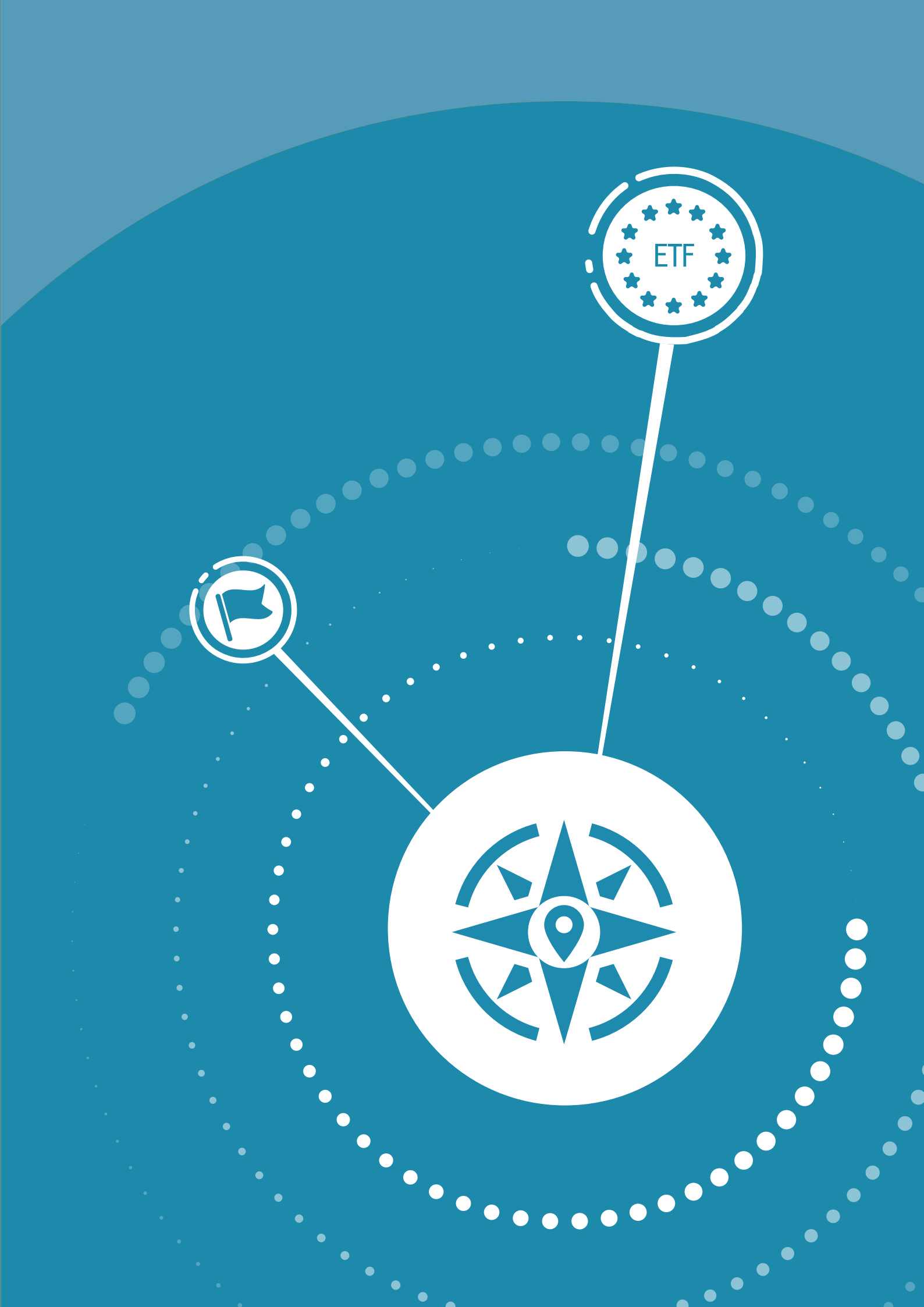
It is clear that a CoVE in one country can vary significantly from one in another. This is true even in cases where the CoVEs in the two countries focus on more or less the same actions. This can, in itself, be a good reason for partnership.

It is also the case that significant differences between these centres are associated with what can be called 'secondary characteristics', associated mainly with issues of sustainability and isolation. Therefore, this raises the question of whether a CoVE that delivers high-quality provision but functions in isolation can, in fact, be perceived or designated as a 'centre of vocational excellence'. In other words, it can be argued that it is not only actions that define vocational excellence, but also their interaction with these 'secondary characteristics'.

Chapter 2 explores this logic further and identifies examples of perceived excellence in two groups of countries:

1. EU Member States and ETF partner countries;
2. non-EU countries.

For the first group of countries, the chapter considers the findings of two mirror mapping studies performed by Ecorys (on behalf of the European Commission) and the ETF, respectively. For the non-EU countries, the chapter will mainly look into the vocational excellence practices led by international organisations.


ETF

2.1

Centres of vocational excellence in EU Member States and ETF partner countries

2.1.1 Aim of the mapping exercises

The overarching aim of both mapping exercises (Ecorys and ETF) was to identify examples of excellence in VET linked to wider strategies for innovation and economic and social development.

By the end of the exercise, the European Commission also aimed to gain an informed perspective on:

- What is understood by VET excellence in the context of the practice of regional social and economic development, innovation strategies, smart specialisation etc.;
- How excellence in VET in this context is being pursued throughout Europe.

2.1.2 Methodological considerations

The ETF performed a mirror mapping exercise in partner countries with the same aim. It was clear from the outset that perceptions of vocational excellence can differ depending on their contexts. Thus, the reference to 'examples of excellence' refers to the designation given by the country officials for the purpose of this exercise. In several ETF partner countries participating in the exercise, this designation is arbitrary.

The example of Ukraine and the provision inserted into the draft VET law highlights the importance of designation when it comes to a CoVE. At the same time, it demonstrates the importance given to CoVEs and the power game behind them. In Ukraine, vocational education institutions can obtain the status of 'centre of professional excellence'. The legal status of 'centre of professional excellence' is determined by the Cabinet of Ministers of Ukraine.

2.1.3 Geographical coverage

Ecorys mapping (European Commission, 2019) covered all EU 28 Member States, countries covered by the European Free Trade Agreement (EFTA) and candidate countries, while the ETF exercise covered partner countries within its mandate from the Eastern Partnership (EaP) and the Southern and Eastern Mediterranean (SEMED).

The Ecorys and ETF mapping exercises used the same template (see Annex 1).

The European Commission has put forward a concept of vocational excellence that is characterised by a holistic, learner-centred approach in which VET:

- Is an integrated part of the skills ecosystems, contributing to regional development, innovation and smart specialisation strategies;
- Is part of 'knowledge triangles', working closely with other education and training sectors, the scientific community and business;
- Enables learners to acquire both vocational and key competences through high-quality provision that is underpinned by quality assurance, builds innovative forms of partnership with the world of work, and is supported by CPD for teaching and training staff, innovative pedagogies, and mobility and internationalisation strategies.

2.1.4 Ecorys mapping study

This study presents a 'European' dimension of vocational excellence by supporting the development of CoVEs that operate in a given national, regional or local context and the creation of transnational platforms that either bring together existing CoVEs in different countries or expand the model by linking well-established CoVEs in one country with partners in other countries (chambers, VET centres, companies, etc.).

According to the study, VET excellence in Europe follows a two-strand typology.

1. CoVEs are purpose-built or designated entities as part of national/regional arrangements for vocational excellence. Such CoVEs have a strong connection to strategies for regional development, innovation and smart specialisation, or are explicit instruments of such strategies.

2. CoVEs are individual VET providers functioning as CoVEs for a region (or subregion) or sector. In such cases, added-value activities such as innovation hubs, business incubators, and research and development (R&D) projects are woven into the fabric of 'normal' VET provider activities. Typically, these CoVEs have an ongoing and evolving portfolio of activities based around projects (normally part-funded by the EU) to support innovation and the transnational mobility of staff and students.

CoVEs also vary in their coverage. Overwhelmingly, the focus is on economic sectors. CoVEs either have a single-sector focus or are multisectoral. The focus on economic sectors means that social issues are often neglected. There are, however, some examples of high-tech and high-innovation sectors focusing on social issues.

In terms of activities, it is typical for CoVEs to be active in developing and implementing innovative teaching and training methodologies, including those based on digital technologies (e.g. MOOCs, simulators, etc.) and project-based learning, as well as curricula that develop transversal as well as technical skills. It is also common for CoVEs to offer both IVET and CVET provision and to be based on lifelong learning principles.

There is a great deal of variation in higher-level VET programmes and pathways, partly reflecting variations in national legislation on what types of legally constituted bodies and organisations can provide what types of programme at what level. Notwithstanding this issue, collaborations with higher education are common, ranging from sharing facilities to offering joint qualifications.

Overall, it is less common for CoVEs to offer transnational joint VET curricula, CPD for teachers and trainers, and guidance and validation of prior learning services, although, with the exception of transnational joint curricula, these activities are important parts of the provision of some CoVEs. One reason why CPD and guidance and validation do not feature prominently is that they may be the responsibility of other stakeholders.

In terms of cooperation and partnerships, the study finds that the most rudimentary cooperation is in the form of the provision by businesses of placements for students, as in apprenticeships, but this blends into sharing equipment and expertise, which, in turn, blends into innovation and business incubation activities. Exchanges of equipment and expertise are likely to bring the greatest benefits when they are two-way, when VET is not simply the recipient of materials, equipment or staff time from businesses but engages in a reciprocal relationship.

Furthermore, innovation and business incubation have a different type of relationship to economic development, one that is arguably stronger, more proactive and more direct than VET provision in responding to business's skills needs. At the same time, these value-added activities require greater commitment and resources.

It is perhaps not surprising, then, that while business collaboration is common and institutionalised in some VET systems (e.g. the dual system), it is less likely for CoVEs to be involved as innovation hubs or business incubators, and less likely still for them to be involved in the creation and dissemination of new knowledge in partnership with other stakeholders, e.g. through joint R&D with universities, R&D units in companies, research bodies, etc.

In terms of new knowledge creation, while it seems that most CoVEs participate in this, they do so to widely varying degrees. One important question is whether this matters in terms of improving vocational excellence. The answer is that it might insofar as it would be beneficial for CoVEs to have automatic access to high-quality research facilities and access to opportunities to share expertise. This could be facilitated at both European and national levels.

International cooperation is common among CoVEs and is seen as an essential part of their activities, rather than a desirable add-on. CoVEs are often involved in multiple EU-funded mobility activities and development projects with an evolving stream of activity over many years, which entails participation in multiple international networks. In general, CoVEs are seeking to increase their international activities, and some CoVE networks are themselves international rather than national or regional networks. However, while international

engagement is ubiquitous, CoVEs' levels of engagement vary. Interestingly, international activities do not appear to be one of the activities that are coordinated at strategic level in national and regional networks. This is an area in which European support could help to add value.

In terms of governance and funding, CoVEs need to balance national and local needs. In some countries, CoVEs need to cover national sectoral priorities. While this ensures national coverage of sectors, it might arguably come at the expense of meeting subregional priorities, and, in any case, there could well be variability in levels of activity and 'performance' within national systems. Meanwhile, where there are no national or regional CoVE networks, and wider strategies provide a backdrop to CoVE activity, there is a risk of a very patchy landscape in terms of meeting sectoral needs when viewed across a country as a whole.

The study finds that CoVEs give little attention to social topics; this might be due partly to the fact that CoVEs are linked to strategies focused on economic priorities. Such strategies do not always sufficiently reflect social needs, probably because they are within the economic or employment domains rather than the social policy domain.

Another important finding is the extent to which partnerships form a central component of CoVE governance. Indeed, partnerships perform a vital function for CoVEs. They ensure shared ownership of goals and activities, and a common commitment to achieving them by pooling and sharing resources. CoVEs often form different partnerships for different purposes and activities, which can lead to quite a complex landscape of excellence. One important question that arises from this is the extent to which there is sharing within and across CoVEs. CoVE networks are coordinated to varying degrees and, as a result, sharing takes place across networks in different ways and to varying extents. Sharing is clearly a benefit of CoVE networks that is probably not available to individual providers acting as CoVEs.

With regard to funding, it is evident that core public funding for CoVEs is often supplemented with project funding and contributions from companies, either through the provision of staff, equipment and other infrastructure (in cash or 'in kind') or by paying for services. As the ETF mapping illustrates, this is also the case for CoVEs in ETF partner countries.

Furthermore, it is clear that CoVE networks are funded over and above mainstream VET provision to provide additional facilities and staffing. Evidently, such additional capacity is not available to individual providers functioning as CoVEs where there are no national or regionally supported networks. Individual organisations functioning as CoVEs have to build their own networks. European funding plays an important role, not merely by supplementing funds (or, in some cases, supporting core funding), but in terms of supporting innovation in VET.

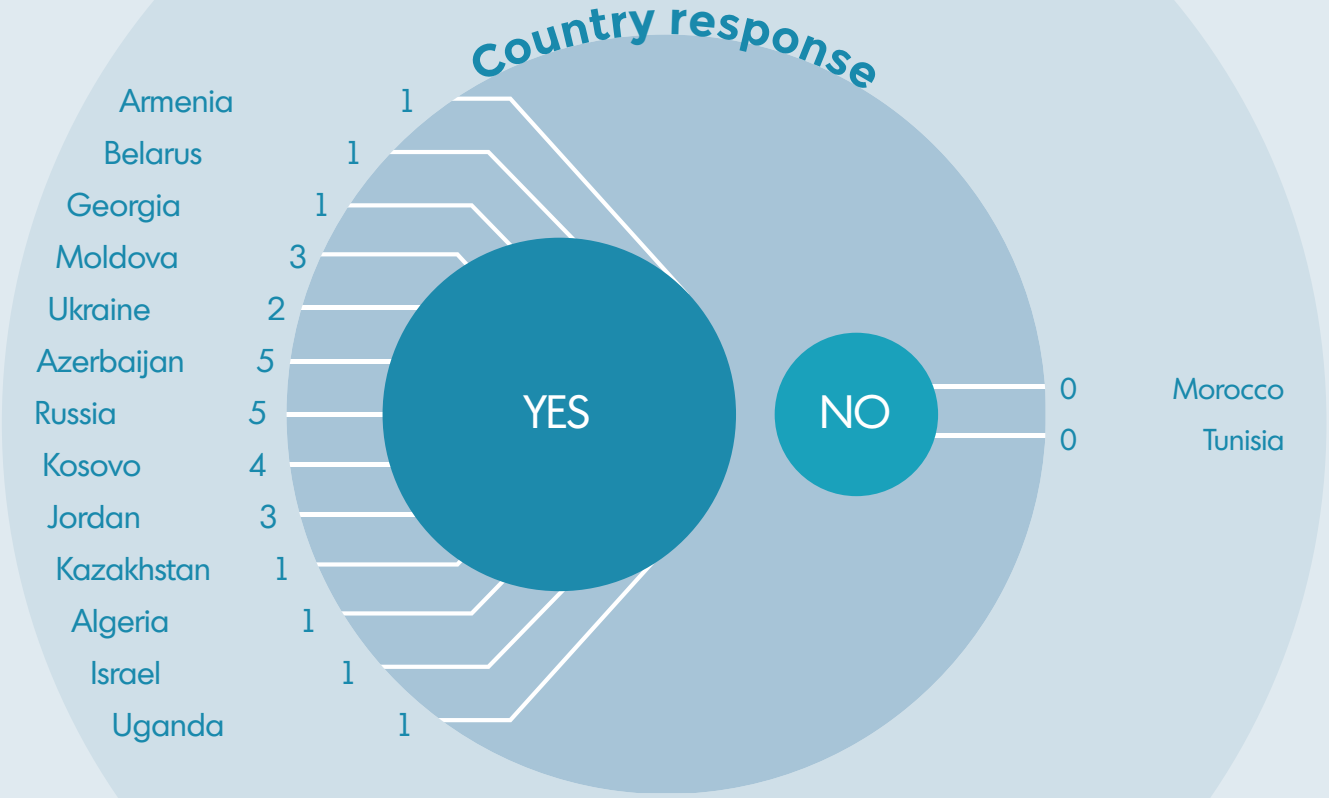
2.1.5 ETF mapping

The ETF mapping exercise presents a 'non-European'[36] dimension of vocational excellence with the aim of reflecting the realities of countries outside the EU. As previously mentioned, the template used for elements of a CoVE is the same in both mapping exercises. The request for information was sent to recipients at various hierarchical levels, in some cases the ministers responsible for VET and in others the directors in charge. The ETF asked for the template to be disseminated among CoVEs but also to other stakeholders, especially federations of employers or trade unions. This did not happen to the extent expected and, thus, most of the examples provided represent the 'official' view of the responsible ministries. Nevertheless, we recognise that good CoVEs do exist even if they are not on the radar of the public authorities.

Twelve countries from two regions (SEMED and EaP) were selected by the ETF for the first round of this exercise. The letters were sent in December 2018 and the countries were given one and half months to respond. As the exercise progressed, three more countries were added, namely Israel, Kazakhstan and Uganda. Eventually, out of the 15 countries, only 13 responded; Tunisia and Morocco did not submit an example. These 13 countries provided 29 examples of what they perceive to be CoVEs.

[36] The candidate countries were included in the Ecorys study.

Examples submitted per country



The overarching aim of the mapping in the selected partner countries was to identify examples of CoVEs. It is often assumed that these examples are linked to wider strategies relating to innovation and economic and social development. However, the exercise has not, so far, confirmed this assumption. It is clear from the examples received that most CoVEs function in isolation. In this case, isolation means that there are insufficient partnerships between CoVEs at international level. CoVEs from neighbouring countries do not have information and nor do they maintain contacts about each other's activities. It is within the scope of the ETF to disseminate such examples among partner countries to provoke direct exchanges, and perhaps partnerships, between them. It comes as no surprise that the exercise has already stirred some interest from these countries, who have asked for the dissemination of examples. Such dissemination aims to address this deficiency.

In Ukraine, Higher Vocational School #7 – which was established in 1979 to train workers from the Kremenchuk automobile plant and was merged with VET School #2 in 2006 to optimise the VET schools network – is a good example of a CoVE that has created partnerships at regional and international level. Higher Vocational School #7 in Kremenchuk and the training centre for builders in the city of Kaunas (Lithuania) has concluded a cooperation agreement. At the same time, the CoVE signed an agreement on cooperation with the company Henkel Bautechnik (Ukraine) within the framework of the Henkel Academy project.

The example of Ukraine shows that VET excellence is often used as a political tool to rationalise reforms. In such cases, the decentralisation of VET governance and the merging of VET schools is often presented in terms of excellence. However, the link between the two is not always justified.

The responses provided suggest that at least in the EaP region, the notion of excellence in VET is high on the education and VET agendas. However, it is clear that different perceptions of VET excellence exist in these countries. Among the four SEMED countries, despite a low response rate, there is a high level of activity in this domain. In Morocco, for example, the Delegated Management Institutes – which have been opened by the state, with management delegated to the private sector – cover key priority sectors including automobiles, aeronautics and renewable energies (one is open already and two are under construction) and are perceived as CoVEs. The textile sector is also covered.

Another good example is CNAM (Conservatoire national des arts et métiers) in Morocco, a centre dedicated to continuing training, with a mission to teach everybody, everywhere ('Il enseigne à tous et partout'). It offers training in several sectors, including transportation, logistics, health, social work, ICT, management and financing, covering 1 500 jobs in 250 sectors and subsectors.

The vast majority of centres across all the countries consulted are active in IVET and CVET. Their most common feature is to provide individuals in the labour market with relevant skills within a lifelong learning continuum. However, it is not always clear whether the skills they provide are based on regional or national needs.

An equally important feature of the examples is the belief that a CoVE must establish business–education partnerships. These partnerships have different focuses, often based on apprenticeships, internships and the sharing of equipment. This feature, although positive, could be called into question from the sustainability point of view, as these partnerships often involve companies that do not have a long history in the countries concerned. It also raises the question of the extent to which the sectors of activity can be niche sustainable areas for the region. This point is discussed in Chapter 3 when discussing smart specialisation strategies and the link with skills provision.

The Armenian Vayots Dzor Regional State College (the country has 12 such colleges, of which this is the best performing) is a good example of a business-education partnership. The CoVE has partnership agreements with 40 organisations, including sectoral companies, universities, non-governmental organisations (NGOs) and public organisations. It is active in the tourism, hospitality and wine-making sectors and has developed exchange programmes with CoVEs in Poland. The partnership with businesses guarantees a 70% employability rate for its graduates.

In Azerbaijan the Regional Industrial VET Competence Centre in Ganja focuses on sectors requiring skilled labour (industry) and runs projects co-funded by the EU and UNDP. This is a good example of a one-stop resource centre and flagship of high-quality VET. It aims to address the gaps in infrastructure and modernise the management approach; a model for 'mini-factories' will help to create an environment for small enterprises that produce goods for the regional market.

Another common feature in most examples is the belief that teachers and trainers are key elements of a CoVE. Thus, it appears to be a common expectation that a CoVE has innovative teaching and training methodologies, and invests in CPD for teachers and trainers. Most of the examples show that it is important to introduce joint VET curricula with other VET providers.

The Gabala State Vocational Education Centre in Azerbaijan is establishing dual-like VET pilots in tourism and agriculture in cooperation with GIZ. The CoVE is piloting dual technical and vocational education and training (TVET), labour-market-oriented curricula, practical learning methods, support for TVET policy development, teacher training and career development for career counsellors.

In Kazakhstan the non-commercial joint-stock company 'Holding Kasipkor' (methodological centre) focuses on industry, with many activities in engineering, but also on learners with special educational needs. The CoVE offers methodological support to educational and methodological entities, curriculum development, programmes for learners with special educational needs, the creation of educational material, including electronic content, CPD for pedagogical staff in engineering, and the promotion of innovation. This CoVE is active in WorldSkills competitions.

In Russia the Centres for Online Learning initiative, which is funded through a PPP, focuses on different sectors to develop, in partnership with employers, infrastructure for training teachers and education administrators, to promote best practice in online teaching and learning, and to monitor the progress of the digital environment in Russia.

In Moldova the ICT Centre of Excellence for Professional Education is a partnership promoting the quality and relevance of ICT vocational education. The partnership includes the Moldovan Association of Private ICT Companies (ATIC), Austrian Development Cooperation, the Government of Romania and the National Agency for Quality Assurance in Education and Research (ANACEC). The CoVE (8 colleges with 12 professional schools) represents a resource hub for teachers and an attractive education provider for students, in cooperation with the ICT sector. It is worth noting that 13 CoVEs have been announced in Moldova since the mapping exercise was carried out.

The mapping exercise revealed no examples of CoVEs that have international VET campuses/academies (except in Israel). The common trend appears to be that these CoVEs are not connected at an international level. Similarly, most of the respondents declared that their CoVEs do not act as innovation hubs, nor as technology diffusion centres. Furthermore, little emphasis appears to be placed on the creation and dissemination of new knowledge in partnership with other stakeholders in the functions of the examples provided. However, within the actions reported, there are instances of innovation and dissemination of new knowledge that are not listed as separate elements of excellence. The development or presence of business incubators to enable VET learners to develop their entrepreneurship skills and projects appears to be one of the least-developed elements of the examples provided.

The Amal Group (Annex 2) in Israel is an interesting case. It has two centres that share premises with a business incubator – 'We work' (Harod Valley) and Shevah Mofet (Tel Aviv) – which invite start-ups from the community to work and create free of charge and to spend time in the Entrepreneurship Centre as needed. The process is under way to disseminate the model of Entrepreneurship Centres to other countries, both in the EU and beyond. Interestingly, the Amal Group began to run an International Innovation Lab in collaboration with Education Cities. This lab enables participating teachers to learn, to plan and to implement innovative solutions to the challenges they face. The Innovation Lab also generates fascinating collaborations and mutual learning with similar groups from around the world, including schools from Denmark, Italy, Mexico, Brazil, England, New Zealand, the USA, Poland and Romania.

The funding of CoVEs is a challenge. Most of the centres presented rely on funding from the state budget and very few rely on private funds or on PPPs. In certain countries a significant number of international donors are involved in the centres. Overall, the use of EU financial instruments and funds scores low in most of the examples provided.

There is no specific CoVE-related designation. Different names are used in different countries, often suggesting a different understanding of excellence. In Russia the terms 'centres of competence' or 'centres of occupational excellence and workers' are used,

whereas in Ukraine the terms are 'centres of professional excellence'. In Moldova the term 'partnerships for quality and relevance' is used and in Azerbaijan, 'VET competence centres'. In Belarus, meanwhile, the term is 'centres of excellence', in Kosovo 'akademie' and in Algeria 'partnership for excellence' ('partenariat pour l'excellence').

2.1.6 Relevance of skills provided

Almost all of the examples supplied show that the primary aim is to provide people with labour-market-relevant skills within a lifelong learning continuum. Although the information is not conclusive, it is important to understand how the relevance of skills is achieved in each example. Here, 'relevance' refers to the degree to which the skills gained are useful to the labour market; it is also associated with the capacity of the vocational centre to forecast skills but also to adapt curricula to accommodate these skills in a socially, digitally and environmentally friendly way.

Table 2.1 Financing CoVEs

Country	EU funding	Other international donor funding
Algeria		
Armenia	EU investment in buildings, equipment, teacher training, curriculum development and didactic resources	
Azerbaijan	None EU Action Grant Co-funded by EU and UNDP EU-funded grant project	British Council Co-funded by EU and UNDP GIZ
Belarus		
Georgia		
Jordan	Initiative funded by EU, ETVET Fund Initiative funded by EU, ETVET Fund Initiative funded by EU, ETVET Fund	 USAID GIZ
Kazakhstan		
Kosovo		USAID, Enhancing Youth Employment GIZ World Bank LuxDev

Public funding	Other funding sources	PPP
State funding	Private company	Yes
Government funding approx. 90%	Student fees and services approx. 10%	
	Tourism industry representatives	Yes
State budget allocations	Funds from revenue-producing activities and other funds not prohibited by law	
Ministry of Education funding approx. 33%	m2 Real Estate (private company) funding approx. 67%	Yes
Yes	Private sector has expressed an interest in investing in the development of human resources	Yes
Yes		Yes
Yes		Yes
100% government funding	Private sector supports WorldSkills	
	Income-generating activities, grants and private investment from donors	Yes
Public funds		
	Private funding from chambers	

Country	EU funding	Other international donor funding
Moldova		Austrian Development Cooperation, Government of Romania, USAID, CE-WIN Austrian Development Cooperation USAID
Morocco		
Russia		
Tunisia		
Uganda	EU Emergency Trust Fund	Belgian Government, Irish Aid
Ukraine		

Note: Israel joined the mapping exercise at a later stage and therefore is not included in the table.

Public funding	Other funding sources	PPP
	Moldovan Association of Private ICT Companies	
Yes Yes		Yes Yes
Federal Programme for Education Development Yes Yes National Priority Project 'Digital environment in the Russian Federation'	Private companies Private companies Private companies Private companies	Yes Yes Yes Yes
Yes	Enabel (Belgian development agency)	Yes
State and regional funding State funding	Funds of legal entities and individuals Provision of services to citizens Monetary and material contributions from enterprises, institutions, organisations and individuals Rent of premises	Yes Yes

Table 2.2 Regions and sectors

Country	Region
Algeria	SEMED
Armenia	EaP
Azerbaijan	EaP
Belarus	EaP
Georgia	EaP

Centre/initiative	Sector(s
Partnership for excellence	Electrotechnics l'énergie de Rouïba ICT
Vayots Dzor Regional State College (the country has 12 such colleges, but this is performing the best)	Tourism/hospitality Wine-growing and wine-making
Access to Hospitality and Apprenticeship Scheme Programme at Baku State Vocational Education Centre for Tourism and Social Services	Tourism/hospitality
'Support to the establishment of Regional Industrial VET Competence Centre in Ganja', Ganja State Vocational Education Centre for Industry and Technologies	Industry (manufacturing)
Regional Industrial VET Competence Centre in Ganja	Focus on sectors requiring skilled labour (industry)
'Establishing dual-like VET pilots in tourism and agriculture in Gabala, Ismayilli and Gakh districts', Gabala State Vocational Education Centre	Agriculture Tourism
Regional VET Centre of Excellence in Lankaran Economic Region	Manufacturing Agriculture
El RIPO centre of excellence: training and professional development of employees	Automotive industry, mechanical engineering
'Construct2' PPP to meet labour market demands	Construction

Country	Region
Jordan	SEMED
Kosovo	SEET
Moldova	EaP
Morocco	SEMED

Centre/initiative	Sector(s
Pharmaceutical Centre of Excellence	Pharmaceutical manufacturing
Renewable Energy Centre of Excellence	Renewable energy
Water and Environment Centre of Excellence	Water and environment
Cacttus Education (first private level V professional VET school in ICT)	ICT
Training on Smart home – preparing students for WBL	ICT
European Computer Driving Licence (ECDL) for teachers	ICT
Chamber of Crafts in Ferizaj providing training through partners (abroad)	Health
'Partnerships for quality and relevance of ICT vocational education in Moldova', ICT Centre of Excellence for Professional Education	ICT
Centre for practical training of professionals in the Moldovan financial system	Finance
Centre for Excellence and Acceleration in Design and Technologies 'ZIPhouse'	Light industry (manufacturing of clothing and design)

Country	Region
Russia	EaP
Tunisia	SEMED
Ukraine	EaP

Note: Kazakhstan is not included in the table, because of a lack of information.

Centre/initiative	Sector(s
Centres of Competence	Various sectors
Centres for Enhancing Professional Mastery of Teachers	Education
Centres of Occupational Excellence and Workers' Occupations, also called 'Park of the Future'	WorldSkills professions
Centres of Competence for the National Engineering Initiative	Engineering
Centres for Online Learning	Different sectors
Higher Vocational Training School #7 (Kremenchuk, Poltavska oblast)	Machine building Construction ICT
Odessa Centre for Professional Excellence	Construction Agrotechnology ICT

2.2

Vocational excellence in non-EU countries

2.2.1 Sustainability of CoVEs: lessons learned from German development projects

GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit – German development cooperation) has been supporting the establishment of CoVEs in its partner countries for several decades. In 2012 four CoVEs (Technologiekompetenzzentren) were included in a meta-evaluation of German development projects[37] in the area of VET (Silvestrini and Stockmann, 2012, pp. 28–37):

- Indian–German Centre for Modern Technologies (IGIAT), India (2006–2010). The main beneficiaries of the centre were employees and entrepreneurs of SMEs who received training in modern technologies. The centre also offered training for jobseekers who had skill gaps relating to modern technologies. Further, it provided advisory services to SMEs.
- National Service for Industrial Training (SENAI), Brazil (2001–2004). SENAI operated several hundred centres for professional education and training and technological services that promote innovation in Brazilian industry. Beneficiaries were production managers, company instructors and young apprentices from SMEs in selected SENAI centres.
- Chinese–German Training Centre for Printing Technology (CDAD), China (1998–2004). CDAD offered initial and continuing VET. Beneficiaries were graduates from secondary schools and employees in the printing industry.
- Takoradi Technical Institute, Ghana (1997–2005). Beneficiaries were young people, in particular female graduates from secondary education, as well as workers and entrepreneurs from formal and informal sectors of the economy.

In the meta-evaluation, two of these initiatives, SENAI and CDAD, achieved the highest possible rating for sustainability, while no other VET development project was able to achieve such a rating. IGIAT achieved the second-highest rating for sustainability, together with only one other project. In contrast, the Takoradi Technical Institute was one of the projects that had a low degree of sustainability. Silvestrini and Stockmann point to several factors that made the difference between the most and least successful centres (2012, pp. 113–114):

- High degree of acceptance of the objectives and measures by the participating stakeholders;
- Strong capacities in terms of organisation and management;
- Stable political and economic environment;
- High demand for the services offered by the centre.

Unlike other VET development projects that were included in the meta-evaluation, none of the projects that supported a CoVE intended to have a broader impact on the VET system in the respective countries, that is, by aiming for systemic change. The authors of the evaluation suggest that the strong focus on a limited number of clear and realistic objectives contributed positively to the medium- to long-term sustainability.

[37] The meta-evaluation looked at 12 development projects that were implemented between 1997 and 2010.

2.2.2 Vietnam

In recent years, Germany has supported the establishment and further development of CoVEs, particularly in Vietnam. In 2011 the General Directorate of Vocational Training in Vietnam published a concept paper, 'Establishment of Centres of Excellence for Technical and Vocational Education and Training'. In it, the government articulated the expectation that future CoVEs would play a key role in responding to the increasing demand for highly skilled workers in Vietnam and also abroad. The paper set out two main functions for the new centres.

1. To provide high-quality employment-relevant initial and further training according to international standards. Meeting international standards would mean that employers in Vietnam (in particular foreign investors), in the ASEAN region or anywhere else in the world (such as in Europe, the USA, Japan or the Middle East) would recognise the qualifications acquired in a Vietnamese CoVE.

2. To provide additional functionalities for the Vietnamese TVET system.

It was pointed out that the successful implementation of both core functions would require the specialisation of the future CoVEs in one or more occupational fields, in line with the demands of the priority economic sectors of the country and the international labour market.

To achieve the objective of high-quality training provision and to gain access to the latest knowledge and technology, it was foreseen, from the outset, that the CoVEs would need to cooperate closely with Vietnamese and international enterprises and to actively engage in networks of high-quality TVET institutes in the ASEAN region and the rest of the world.

The concept paper paid great attention to the second function. The CoVEs were expected to lead reforms of the TVET system, for instance by documenting and sharing experiences. A national network of CoVEs was supposed to coordinate the new system-related tasks. In detail, the following additional functionalities were planned:

- Further training for TVET teachers and trainers in the occupational areas in which the CoVE specialises;
- Advisory services for management personnel of other TVET providers;
- Hub for national and international networks of TVET;
- Innovation, for instance cooperative training or new courses, and research in TVET;
- Assessment and certification centre;
- Information and resource centre for the General Directorate of Vocational Training, the Ministry of Labour, Invalids and Social Affairs, TVET institutes across the country and Vietnamese society at large.

Furthermore, the paper highlighted four requirements for public TVET institutes to become CoVEs:

1. Competent and motivated staff;
2. Close cooperation with business;
3. Professional management;
4. Financial and operational autonomy.

In addition, a detailed list of indicators was proposed that would allow for the implementation of the two functions to be monitored.

Three Vietnamese CoVEs have received substantial financial and technical support from Germany and have started to deliver services relating to the two functions.

The LILAMA 2 International Technology College invested heavily in its teachers and in 2018 a number of teachers were certified according to international standards. The teachers have now started to provide short-term training to teachers and instructors of other TVET institutes and to technical staff in businesses. The centre provides IVET programmes according to international standards in four areas: metal cutting–CNC, construction mechanics, industrial electronics and mechatronics. Some of the programmes are implemented through a cooperative approach.

The Vocational College of Machinery and Irrigation is being given support to become a CoVE for 'green' TVET. The centre is to offer initial and further training in line with the demands of a green and sustainable economy. Two initial training programmes will be developed, one for electronics technicians for energy and building technology, and one for mechanical technicians for sanitary, heating and climate technology. The programmes are to meet international standards and will be implemented partly through a cooperative approach. In addition, a basic module on environmental protection, energy and resource efficiency has already been developed in close cooperation with business. The module is flexible and can be integrated into any national vocational training programme. In the future, the centre will also serve as a regional hub for green TVET for Cambodia, Myanmar and Laos.

The Ho Chi Minh Vocational College of Technology, the Vietnam Water Supply and Sewerage Association and six wastewater companies were given support to develop and implement a cooperative training programme for sewage engineering technicians.

2.2.3 Bangladesh

In recent years the International Labour Organisation (ILO) has supported the setting up of three CoVEs in Bangladesh: the Centre of Excellence for Leather Skill Bangladesh Limited; the Centre of Excellence for Bangladesh Apparel Industry; and the Centre of Excellence Agro Food Skills Foundation. The centres have been supported by various donors, among them the Asian Development Bank, Canada, the EU, Germany, Sweden, Switzerland, the USA and the World Bank.

All three CoVEs follow a common approach. They are designed as industry-driven one-stop resource centres to support and strengthen the development of Bangladesh's workforce in a particular industry sector. Bangladesh has a population of around 165 million (2017) and in each of the three industrial sectors a large number of different approaches to skills development exist. One of the main objectives has therefore been to identify and promote successful practices in skills development and to link training providers with each other. The CoVEs also assist with the design of nationally recognised skills programmes to ensure that such programmes meet the needs of the respective industry. In addition, the centres deliver a number of national skills programmes as well as training on topics such as productivity improvement and quality control.

Other services include research, statistical and data services, support with accreditation and certification processes, development or review of industry policies and procedures, and assistance with processes relating to the recognition of prior learning. All services are available to government and employers' and workers' associations.

In contrast to the situation in many other industry-driven CoVEs, workers' associations are represented on the governing boards of the centres in Bangladesh, together with representatives from industry skills councils and government bodies.

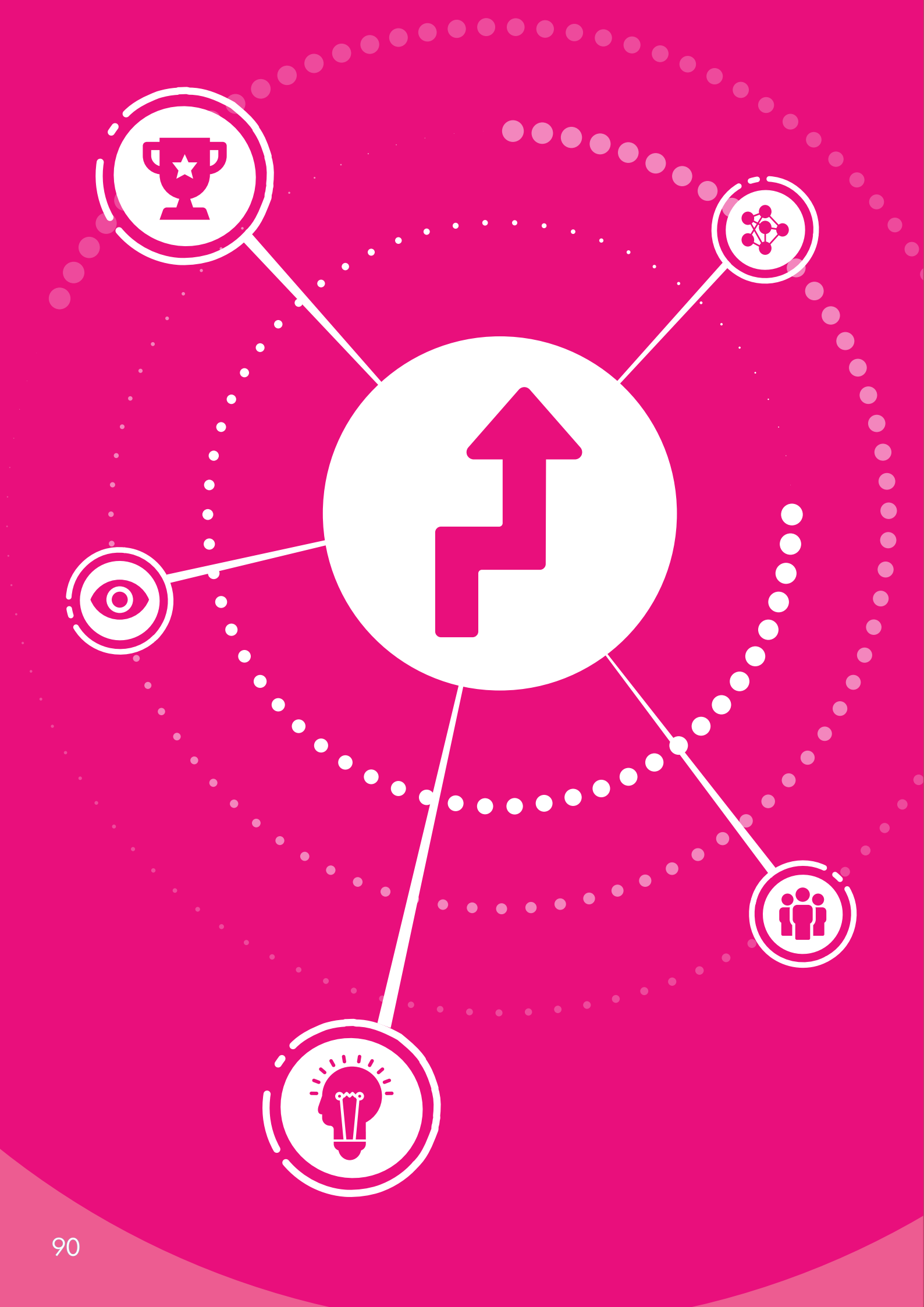
2.2.4 South Africa

The establishment of 13 Centres of Specialisation in South Africa has been directly linked to the government's National Development Plan in general and to its National Infrastructure Plan in particular. A paper from the Department of Higher Education and Training (DHET, 2016) defined the two main objectives of the Centres of Specialisation project:

1. To address the demand for the priority trades needed for the implementation of the government's development plans;
2. To strengthen the capacity of the public network of TVET colleges to deliver trade qualifications in close cooperation with employers and their organisations.

The Centres of Specialisation will be tasked with implementing a new type of apprenticeship programme in the 13 priority trades for which a high demand for intermediate technical skills had been identified. The centres are expected to become sites of good practice that other colleges can follow and to promote quality in the priority sectors. Further, they will become accredited trade test centres for priority trades. This approach is also expected to lead to increased economies of scale.

The Centres of Specialisation have been, or will be, set up within existing public TVET college campuses. The selection process has been managed by the Department of Higher Education and Training and sector organisations such as the Institute of Plumbing South Africa and the Retail Motor Industry Organisation. In the meantime, all 13 Centres of Specialisation have been identified.



Chapter 3

Drivers and challenges of centres of vocational excellence

Chapter 2 dealt with the perception of vocational excellence in different countries, both inside and outside the EU, as captured in the Ecorys and ETF mapping exercises, respectively. The chapter also presented useful information on the state of play of CoVEs in certain countries outside the EU and beyond the geographic mandate of the ETF.

It is clear that vocational excellence is a topic of political and technical interest in many countries around the world. Although the mapping exercises recorded only perceptions of vocational excellence, it is clear that these examples have a strong local/regional dimension and that they reflect primarily the needs of the local labour market. Nevertheless, and despite a high degree of convergence in the primary scope of the CoVEs, it is perhaps valid to assume that the drivers behind these examples are different in nature and different in rationalisation.

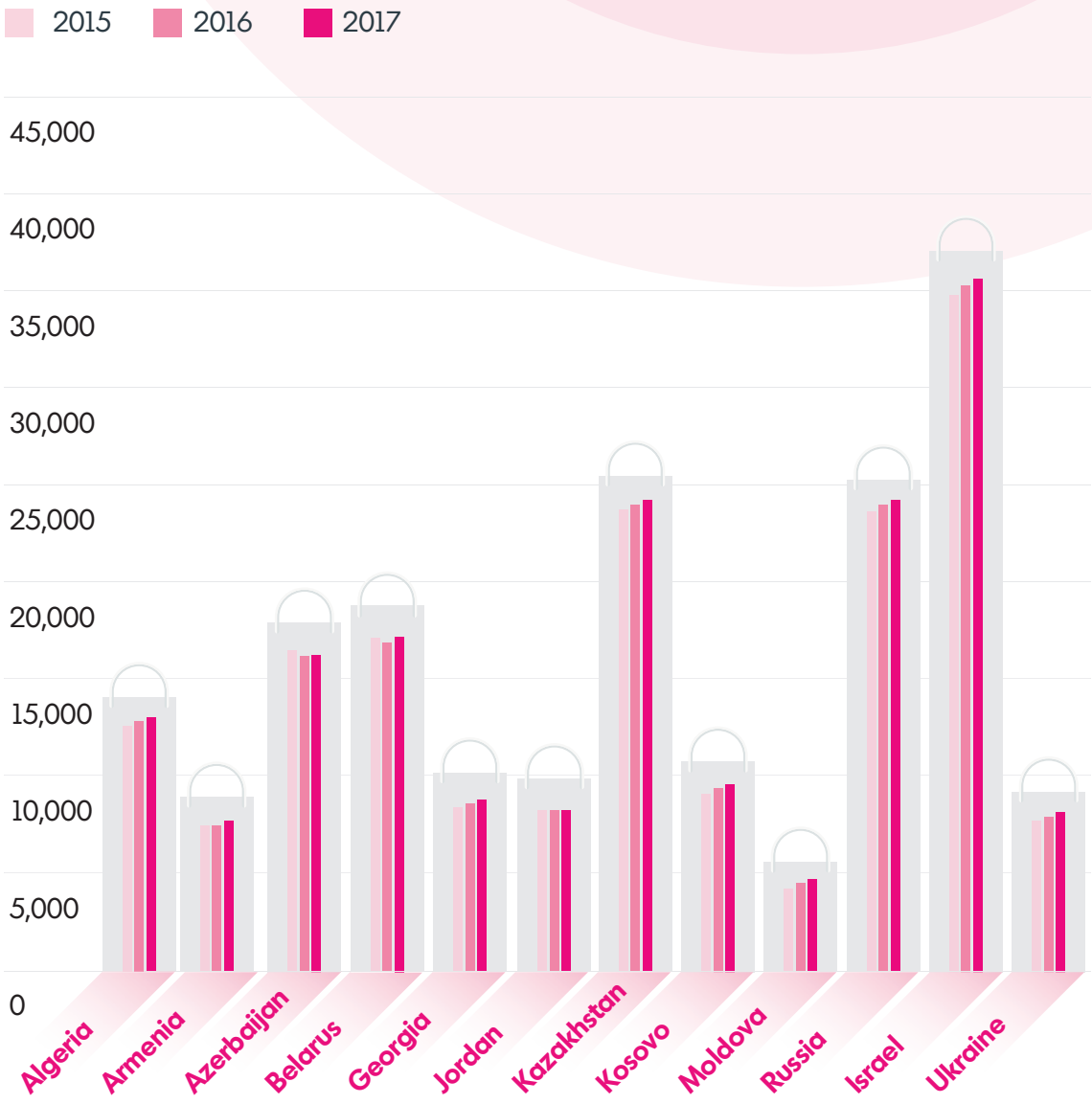
Chapter 3 identifies the reasons and drivers behind CoVEs and explains the impact of these factors on the various functionalities of the centres. In addition, this chapter examines the obstacles and challenges associated with developing CoVEs and considers how sustainability can be one of the thorniest issues to address. As the provision of skills at regional level is a major role for CoVEs, this chapter also investigates the link between smart specialisation strategies, innovation and the skills anticipation capacity of CoVEs.

3.1

Identifying the context

Most of the countries within the geographic coverage of the ETF that responded to the mapping exercise are middle-income countries, as illustrated in Figure 3.1.

Figure 3.1 GDP per capita, 2015–17 (purchasing power parity, USD)



As previously described in this paper, different CoVEs develop in different directions according to their respective contexts. The process of development can take different paths, which usual follow the aims of the drivers involved, i.e. the stakeholders promoting the CoVE. These drivers are the focus of this chapter.

The ETF's analysis draws attention to the importance of governance and funding in shaping and conceptualising CoVEs. Vocational excellence may be attributed to all or some of the following: higher funding, greater autonomy, better cooperation with businesses, more accountability, better leadership, better national planning, more federation.

The establishment and development of CoVEs is sometimes driven by a policy decision to prioritise spending in a limited number of institutions in order to achieve a visible transformation, to take advantage of international funding, or to try to mobilise investment on the part of industry. In some countries, CoVEs provide the opportunity to establish alternative channels for funding, for example by bypassing municipal or local authorities, by setting up dedicated funding agencies or by establishing PPPs. It is important that policy-makers consider the long-term implications of CoVE funding mechanisms and commitments and that social partners and other stakeholders are involved in setting up these systems.

The mapping of CoVEs and other research into school improvement suggest that collaboration is often a key factor in the development or sharing of excellence. We have reviewed examples where there appear to be benefits for all or most participants from different kinds of cooperation. There is little evaluation or research that measures outputs of CoVEs in a rigorous manner, evaluates benefits in relation to costs, or compares the net advantages of strategies involving CoVEs with those of other improvement strategies. Future investment in CoVEs would benefit from formative evaluation that is designed to inform and shape development. Decision-making and evaluation in relation to CoVEs should take into account the robust methodologies developed over many years by those working on School Effectiveness, Improvement, and Quality Assurance, which address the issue of school improvement more generally.

The mapping of CoVEs also reveals that vocational schools acting individually or together can extend their performance, providing not only IVET but also enhanced services to their own students and their communities, as well as some services to other schools, employers, employees, unemployed people, etc. However, just because some vocational schools extend and enhance their offer, this does not mean that all schools should do so. Schools are not the only organisations capable of providing these additional services and they may not be the best qualified or most able. Taking on new functions usually implies new capabilities and investment, so there are costs as well as benefits.

Overall, based on the information collected, CoVEs are created and developed on the basis of a 'wish list' of deliverables (referred to previously as rationales). There are six main points in this list:

- Skills provision to meet the needs of industry;
- Modernisation/rationalisation of provision;
- Attitudinal change;
- Networking;
- Promoting innovation;
- Attractiveness of the CoVE.

For each of these, there is a group of interested stakeholders who are the main drivers. The aims of the drivers often complement each other, making the decision to create a CoVE a rather complex one that needs to take into account different goals and satisfy a variety of stakeholders. It is clear that anyone involved in the creation of a CoVE needs to benefit in a tangible way. It is also clear that not all rationales behind the development of CoVEs are easy to justify. This is one of the reasons we often don't preach about new CoVEs but for better use and improvement of the existing ones.

In an ideal scenario, drivers that are aiming for different deliverables need to build alliances to strengthen their case. Therefore, networking activity often takes place before a CoVE is set up and once the CoVE is established. The two may have no commonalities.

When it comes to making decisions, it is clear that economic, educational and political factors fight for influence. For example, in relation to skills provision to meet the needs of industry, employers need to cooperate with local authorities while at the same time taking part in local social dialogue that includes all stakeholders. Generally, strengthening linkages with emerging regional and national skills brokerage models remains a challenge for employer-driven CoVEs.

CoVEs that have employers in the driving seat usually attract international organisations for funding and cooperation at local level. In this case, it is often expected that the state will come on board during the process rather than being involved from the very beginning. The plan here is usually to create not one but numerous CoVEs to address the needs of different sectors of industry. The benefits for employers are not limited to the provision of highly skilled staff, but also relate to the channelling of investment into new facilities and equipment.

A report by GHK Consulting (2004) on the impact of CoVEs identifies their ability to offer specifically tailored training, their reputation for quality, their reasonable prices, the availability of specialist staff, and the high-quality equipment and facilities as the main factors influencing employers' decisions to use CoVE provision. Interestingly, in the same report a few employers described the CoVE 'brand' as important in their decision to use them, suggesting that reputation has a greater influence on employer decision-making than CoVE status.

Providing skills to meet the needs of industry is the most commonly expected deliverable of a CoVE. In the examples collected, big industries are cooperating with CoVEs to ensure relevant curricula, train teaching staff, and provide places for WBL, usually through apprenticeships. Employers are the main drivers behind this deliverable.

When the driver is the state, perhaps the most relevant deliverable is the modernisation of provision, which also includes rationalisation of the whole VET system. In this case, the position is more political than economic or educational. This deliverable will not usually be attractive to employers, who need some sort of assurance that what is proposed by the CoVE will be effectively delivered. There is clearly a challenge for the state-driven CoVE to engage a wider range of employers.

This is also the case when the deliverable is to convert a CoVE into an agent of attitudinal change. This deliverable relies on good governance, funding, effective networking and high graduate employability to demonstrate the need for change. The driver in such cases is predominantly the state or governmental organisations active in the field of innovation, or tertiary institutions. A key success factor here is to maintain a strong focus on delivering quality. This, in turn, can attract employers. Furthermore, a well-structured and efficient CoVE can influence employers' attitudes towards VET and training in a positive way.

Networking can, in itself, be a reason to create a CoVE. This deliverable is based on the assumption that in a highly competitive global economy, institutions that excel in their domain are attractive partners on the global scene. Often these CoVEs are hoping to attract partnerships and, through that, to ensure funding for activities. The EU's Erasmus+ programme is a good example of the type of financial resources sought. Although this process may seem straightforward, the reality is more complicated, and such CoVEs are often facing sustainability issues. The drivers behind this idea are usually tertiary institutions, which see the CoVE as an add-on to their ongoing activities that could attract potential partners. Our work on the ground has shown that many CoVEs in partner countries often face difficulties in responding on time to calls for proposals from programmes such as Erasmus. Apart from the network that needs to be already in place for such transnational calls, there is also a need for internal institutional capacity to identify the calls and respond within tight deadlines. Language is often an additional burden for such CoVEs.

Promoting innovation is a key aim behind a CoVE – either as a recipient or as a developer of innovation. This is based on the perception that VET is part of the skills system that contributes to innovation and, thus, that vocational excellence is the appropriate framework to achieve it. The drivers behind this task are usually both employers and tertiary education or research institutions. PPPs are a common way of financing such CoVEs, which are usually based on flexible models that allow them to focus on sector-specific projects while at the same time seeking state support.

As previously mentioned, 'excellence' is an ambiguous term, but at the same time one that is attractive to many. This attractiveness of vocational excellence is, in itself, a motive to develop CoVEs. Different drivers use this approach to add a more popular appeal to changes in VET. In such cases the rhetoric on excellence predominates, and is often dissociated from practice and realities on the ground. Thus, VET schools, sometimes traditional ones, are often presented as CoVEs. Sustainability is a common challenge with this approach. Expectations are created that are not always fulfilled, in terms of neither time nor the delivery of skills.

3.2

From the New Public Management to the Network Governance approach

The conversion of regular vocational schools into CoVEs is often driven by the New Public Management method of governance, which emerged at the beginning of the 1990s. The approach claims to improve the efficiency and effectiveness of the public sector with management principles adapted from the private sector. Emphasis is usually given to:

- Competition between VET providers;
- Incentives for private provision;
- Greater power for employers and employers' organisations in the planning, delivery, assessment and monitoring of VET;
- The setting up of indicators at the central or regional government level;
- A limited role for government as regulator and evaluator of the VET system;
- More autonomy for public providers.

However, in the past decade the perspective of Network Governance emerged as the archetype of how to move from government to governance. In other words, this is shaped as a model collaboration between government organisations and societal actors (e.g. social partners) and reflects the displacement of government as the central actor and the move towards a focus on governance. This is often related to solving wicked problems and super wicked problems, which typically require cross-institutional action.

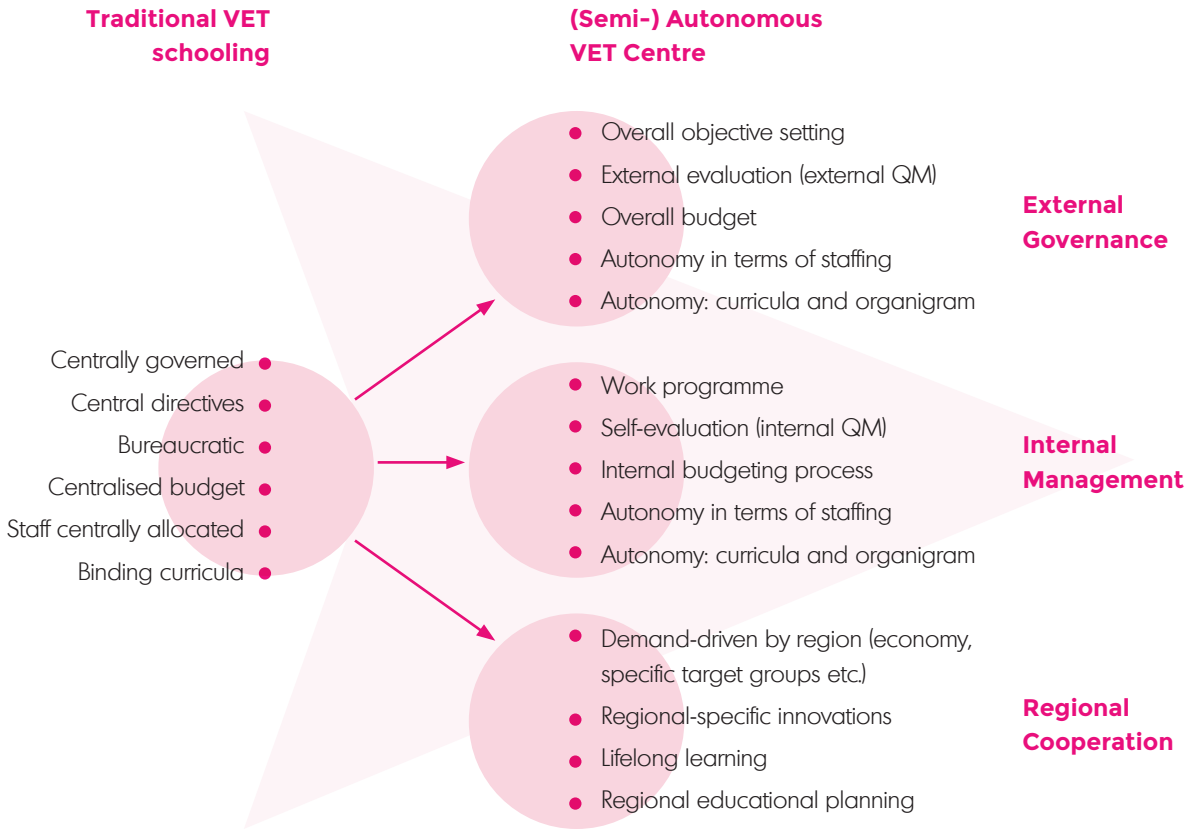
This is why civil servants have to operate in networks. PPPs and network management are typical prototypes of this perspective. It inherently involves interaction, finding mutually acceptable definitions of the problem and looking for joint solutions. As a result, other actors become guiding factors in the process. From this perspective, a 'good civil servant' is a networker who builds relations with other social actors to create and execute policies that are co-produced with others (Frankowski et al., 2018).

Greater autonomy for public vocational schools generally involves freeing them from centralised and bureaucratic control. Public vocational schools with a higher degree of autonomy are often managed by objectives and related indicators, and typically enjoy greater responsibility in managing human and financial resources. Furthermore, such schools are usually granted more discretion over the training programmes offered and the content of those programmes. Bureaucratic inspections are replaced by self-evaluation and external evaluation as the main quality management instruments. More autonomy is commonly also seen as a prerequisite for vocational schools to be able to act as local or regional players, for instance to respond in a flexible manner to emerging economic and social needs, and to be on a par with other training providers.

In summary, this is shaping VET reforms in many countries around the world in a way that is moving from the concept of *individual providers to VET network institutions.*

Figure 3.2

The shift from traditional VET schooling to greater autonomy



Source: ETF

3.3

Facilitating innovation through skills competitions

In many countries CoVEs are responsible for organising or hosting local or national skills competitions in their respective economic sectors. In addition, some centres are tasked with facilitating innovation through knowledge transfer from international skills competitions to national VET systems.

A recent research project by the Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA) in the UK looked at how four countries and regions – Shanghai, Singapore, Switzerland and Russia – have improved their VET systems by strategically integrating the use of WorldSkills competitions (RSA, 2019). In Russia WorldSkills standards have been used to drive changes to the VET system, for example by informing the development of national assessments, qualifications, and training for workers, educators and trainers. The Russian WorldSkills academy trains thousands of teachers each year using international benchmarks. In addition, some 185 regional centres have been created to promote key skills and competences. Regions can develop new WorldSkills competences specifically to address a key regional sector or industry (RSA, 2019, pp. 29–31).

In Singapore skills competitions are organised by the Institute of Technical Education (ITE) and the country's polytechnics. The ITE, which oversees three colleges, was established in 1992 as a post-secondary institution and currently offers courses for young adults, further education and training for adults, and industry-based training programmes. The ITE is also engaged in the development of national occupational skills certification and standards. WorldSkills Singapore is a key element in a broader government agenda on skills, the so-called FutureSkills movement, which aims to update citizens' skills and support lifelong learning to meet industry needs. Skills competitions are often used to 'future-proof' skills and respond to emerging or changing skills needs by establishing excellence in those areas.

The WorldSkills Singapore Council decides which skills will be prioritised in a competition and usually puts an emphasis on those that are required for the country's economic development. In this way, the country hopes to encourage individuals to acquire the relevant skills. For instance, new competitions have recently been introduced in cyber security, the Internet of Things and blockchain (RSA, 2019, pp. 32–36).

3.4

Leadership and collaboration

According to Hopkins (2011, p. 22), school-led collaboration is one of four drivers – along with personalised learning, professional teaching and accountability – that provide the core strategy for systemic improvement of education. Hopkins points out 'that there is no contradiction between strong, autonomous schools and strong networks', but that 'effective networks require strong leadership by participating principals and clear objectives that add significant value to individual schools' own efforts. It is becoming clear that networks support improvement and innovation by enabling schools to collaborate on building curriculum diversity, extended services and professional support to develop a vision of education that is shared and owned well beyond individual school gates' (Hopkins, 2011, p. 26). A systematic and strategic collaboration of schools would have several implications: (i) more resources for system leaders; (ii) partnership between all underperforming schools and a leading school; (iii) increased responsibility for neighbouring schools, for example by offering extended services; (iv) increased funding for students most at risk; and (v) a revision of the roles and responsibilities of the main stakeholders to allow for a higher degree of regional support (Hopkins, 2011, p. 27).

Collaboration and networks of schools can be found in various forms and CoVE can play an important role in them. The Government of North Macedonia is currently planning the establishment of three Regional VET Centres and related models of collaboration with other vocational schools in the respective regions. These models range from rather informal partnerships to formal federations.

For all the deliverables mentioned in the 'wish list' above, two drivers predominate: the state and employers. This blend of ownership and objectives for action is illustrated in Table 3.1.

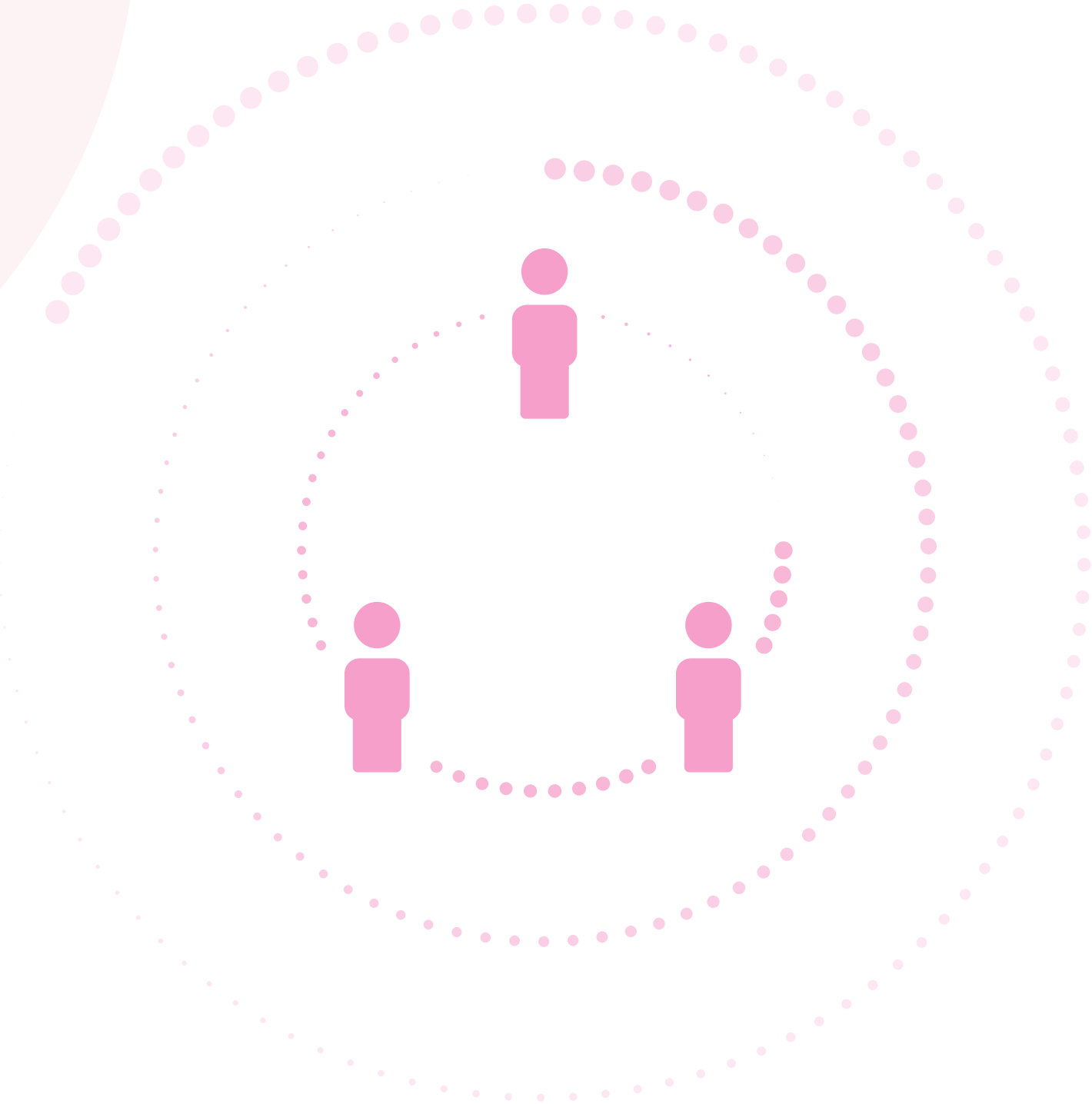


Table 3.1 Ownership and partnerships

Country	Ownership
Algeria	Ministry of Professional Education and Training Ministry of National Education
Armenia	An independent public VET institution acting under the jurisdiction of the Ministry of Education and Science
Azerbaijan	British Council Azerbaijan in partnership with Baku State Vocational Education Centre for Tourism and Social Services Funded by the EU and implemented by the UNDP UNDP project in a state VET centre GIZ project in a state VET centre UNDP project in a state VET centre

Partnerships	Objectives of actions
Schneider, Algerian Telecom and other companies	
Partnership agreements with 40 organisations, including sectoral companies, universities, NGOs and public organisations	Practical training development, career guidance, development of teaching/learning materials, educational and cultural exchange, economic development activities, etc.
Other partners are hotels that host apprenticeships	Implementing WBL and PPP in the tourism sector to increase employment and regional socioeconomic development
UNDP	Improving the quality of education to increase the attractiveness of VET in Ganja city and neighbouring regions; adjusting VET to the requirements of industry
UNDP is the lead organisation and works with the Ministry of Education, State Agency for Vocational Education and Ganja State VET Centre on Industry and Technology	A one-stop resource centre and flagship of high-quality VET; aiming to address the gaps in infrastructure and to modernise management approach; a model for 'mini-factories' will help to create an environment for small enterprises that produce goods for the regional market; piloting of VNFIL
GIZ in partnership with State Agency for Vocational Education, with financial support from the EU Other partners are state employment centres and hotels	Piloting of dual TVET; labour-market-oriented curricula; practical learning methods; support for TVET policy development; teacher training; career development for career counsellors
UNDP is the lead organisation and works with the Ministry of Education, State Agency for Vocational Education and Jalilabad State Vocational Education Centre	A one-stop resource centre and flagship of high-quality VET; focussing on practical skills development; VET awareness raising campaigns, especially breaking gender stereotypes; analysis of feasibility of future funding.

Country	Ownership
Belarus	Centre of Excellence, a subdivision of the College of Modern Technologies in Mechanical Engineering
Georgia	PPP
Jordan	Vocational Training Corporation
	Vocational Training Corporation
	Vocational Training Corporation

Partnerships	Objectives of actions
Partners include the Ministry of Labour and Social Protection; Ministry of Industry; Ministry of Transport and Communications; Ministry of Trade; Sectoral Council at the Ministry of Industry; Municipal Committee on Labour, Employment and Social Protection; private enterprises; higher education institutions; other social partners	Focus is on interaction between education and the economy; main task is training and retraining of qualified personnel to carry out the tasks of modernised production processes in industrial enterprises
Ministry of Education and Science and a leading development company, m2 Real Estate	Providing 600 qualified workers a year to meet the high demand for a knowledgeable, qualified workforce in the construction labour market
Jordanian Association of Pharmaceutical Manufacturers, ETVET and some social partners	Ensuring demand-driven training and education that supports labour market needs; intensive involvement of industry in development, training needs assessment, programme and centre design, curriculum development, training delivery and evaluation; industry involvement required in the governance, management and administration of centres and in provision of work experience
USAID, ETVET and some social partners	Changing the perception of VET through high levels of graduate employability; developing curricula according to labour market needs and international best practice
GIZ, ETVET and some social partners	Implementing demand-driven training in the sector to ensure the employment of graduates

Country	Ownership
Kosovo	Cacttus Education (private VET school) Vendor industrial partners (Cisco Netacad, Microsoft, CompTIA, Android Training Centre, Pearson VUE, etc.)
	Initiated and supported by GIZ
	National certifying authority for European Computer Driving Licence, ECDL Kosova
	Chamber of Crafts, Ferizaj
Moldova	Educational Centre Pro Didactica
	Ministry of Education, Culture and Research
	Technical University of Moldova
Morocco	

Partnerships	Objectives of actions
Donors: USAID, Enhancing Youth Employment (EYE); local companies; organisations such as STIKK and ICK; public institutions, etc.	'Partnership for Impact in ICT'; 'Women in Online Work'; workforce-building partnership for the export of ICT services in the EU; Banking Lab established through RBKO collaboration
Collaborating with various private companies, public institutions, universities	Preparing the workforce for employment in the private sector or self-employment by supporting incubation processes for start-ups
Ministry of Education, Science and Technology	Enhancing digital literacy skills of teachers through ECDL training and certification
Chamber of Crafts, Dortmund; Human Study e.V., Germany; Heimerer Akademie, Germany; Denti Company, Slovenia; Ottobock Adria, Croatia; Sheffield College, UK; Essilor group; local public institutions and private companies; NGOs	Management training, teacher and instructor training, study visits, exchange of experience, developing, updating, and internationalising occupational standards and curricula
ATIC; Austrian Development Cooperation; Government of Romania; ANACEC	ICT Centre of Excellence for Professional Education (8 colleges with 12 professional schools), a resource hub for teachers and an attractive education provider for students, in cooperation with the ICT sector
Donors: GRAWE Karrat; I.P.R. Callidus; IPCenter, Austria	Establishing a practice-oriented Continuous Education Centre for specialists from the Moldovan finance sector as part of the existing Centre of Excellence for Finance, established by the Ministry of Education, Culture and Research
Ministry of Education, Culture and Research; Technical University of Moldova; Employers' Association of Light Industry, Moldova (Apius)	Education and training in the field according to international standards; development of a creative and nurturing environment; acceleration and support for start-ups in the light industry branch; assistance in business development

Country	Ownership
Russia	Private corporations PPP PPP Engineering-educational institutions PPP
Tunisia	
Ukraine	Higher Vocational Training School #7, Kremenchuk (Poltavska oblast) CoVE under the Ministry of Education and Science

Note: Kazakhstan is not included in the table, because of a lack of information. Israel joined the mapping at a later stage and is not included either.

Partnerships	Objectives of actions
	Employers invest in the most advanced and forward-looking skills using own resources, including international inputs, experts and teachers
Employers, secondary VET schools/colleges, universities, science parks, social partners, national and regional authorities	Enhancing the labour market relevance of learners' skills and fostering their motivation for further studies and professional development
Employers, secondary VET schools/colleges, universities, science parks, social partners, national and regional authorities	Implementing VET system modernisation, including upskilling teachers and methodologists
Universities, leading research organisations, commercial companies	Eliminating technological barriers to international leadership; promoting and ensuring excellence and leadership of Russian companies globally
Employers, secondary VET schools/colleges, universities, science parks, social partners, national and regional authorities	Infrastructure for training teachers and education administrators and for promoting best practice in online teaching and learning and in monitoring the progress of the digital environment in Russia; plans to set up at least two competence centres for each area of overarching technologies
Sectoral companies and associations; regional employment centres; higher education institutions; GmBH 'Henkel Bautechnik (Ukraine)'	As the leading or only provider in selected occupations, contributing to occupational standards development, developing curricula, providing teacher training
Institute of Vocational Education at the National Academy of Pedagogical Sciences; Department of Education and Science of the Odessa Regional State Administration; teaching-methodical centre of VET in Odessa region; Odessa Employment Centre; Federation of Employers of Ukraine Social partnerships with leading companies including Henkel Bautechnik (Ukraine), Geberit, Knauf, Triora, Eskaro, Siniat, Estel	International projects: 'Professional education for the Ukrainian construction sector' (Germany), 'Public-private partnership for improvement of sanitary-technical education in Ukraine' (Switzerland)

3.5

Smart specialisation: connecting education and training systems to the broader drive for innovation, growth and competitiveness

3.5.1 What is smart specialisation?

Smart specialisation defines a process of diversification through local concentration of resources and competences in a certain number of new domains that require new resources, new technologies and new competences (Foray, 2015).

Smart specialisation strategies involve putting in place a process whereby such a dynamic of new speciality development, related to existing production structures, can be facilitated thanks to punctual and targeted government intervention in order to support in a preferential way the most promising new activities in terms of discovery, experimentation, potential spill over and structural changes (Ibid.).

3.5.2 The policy context for CoVEs in smart specialisation

Although VET has an important role to play in innovation and smart specialisation (the Copenhagen Process and the Riga Conclusions underscore the role of VET and skills in the European growth and jobs agenda), most EU member states currently focus on higher education covered, to some extent, in smart specialisation analysis ('mapping'), and only a handful (e.g. Finland) include VET and skills in their innovation clusters and strategies.

The EU places great emphasis on skills anticipation and more accurate matching capabilities. The Europe 2020 Strategy and, in particular, the Agenda for New Skills and Jobs, recognise that anticipation and matching approaches and methods can help develop a skilled workforce with the right mix of skills in response to labour market needs, in a way that promotes job quality and lifelong learning (ETF, 2016).

Strengthening Innovation in Europe's Regions: Towards resilient, inclusive and sustainable growth at territorial level (2017) was the first document dedicated to smart specialisation that strongly promoted the role of VET platforms of centres of vocational excellence (2018): Networks of VET institutions will be tasked to link their activities.

3.5.3 The role of CoVEs in smart specialisation

Cooperation is the key in smart specialisation. In the EU smart specialisation has changed cross-regional cooperation. The process of regions developing links and promoting business cooperation beyond regional and national borders has, in turn, changed how regions and businesses within their limits learn and innovate. Across ETF partner country regions there is a similar demand to support dialogue and facilitate partnerships between education and training providers and businesses. Smart specialisation is opening up opportunities, based on matching smart specialisation priorities, for regions to collaborate with EU and other regions in competitive priority areas. Targeting high-value-added activities in areas such as the digital or green economies as well as innovative technology and manufacturing processes in traditional sectors unlocks new training and mentoring pathways to support the move, by SMEs in particular, from low- to high-value-added activities.

In combination with smart specialisation, the autonomous trade preferences granted by the EU to all the Western Balkan countries until end of 2020 support collaboration. The current arrangement allows nearly all exports from the Western Balkans to enter the EU without customs duties or limits on quantities. In Moldova, Ukraine and Georgia, the Association Agreements with the EU determine the need to harmonise innovation policy instruments in line with EU standards and principles.

In addition, the Deep and Comprehensive Free Trade Area (DCFTA) is enabling SMEs from these three countries to benefit from liberalised trade in goods and services. All these measures open up new areas of interaction on innovation and skills development in priority areas for growth where regions have a competitive advantage in the global value chain, identified within smart specialisation analysis.

New activities sparked by smart specialisation, emerging industries and traditional sectors alike are affected by innovations and technological development and need competitive workers with modern skills that meet the requirements of high-tech and knowledge-intensive industries. All countries need to ensure (i) that skill shortages and mismatch do not inhibit growth; (ii) a workforce with a skills mix needed for innovation (e.g. soft skills, digital skills, entrepreneurship key competences); and (iii) flexible provision of lifelong learning to adapt to demographic changes and future skills needs and avoid job loss.

The VET system needs to monitor and predict future skills, develop lifelong learning, enhance the skills and competences for employability, improve the quality of retraining and advanced training services.

3.5.4 ETF partner countries working on smart specialisation

Western Balkans and Turkey

All countries in the Western Balkans and Turkey are engaged in developing smart specialisation strategies. These countries strive to better connect growth, competitiveness, innovation and the smart specialisation agenda with HCD goals. The vision for the region (Regional Cooperation Council) involves the gradual reconstruction and modernisation of the regional production model, the deepening of social cohesion based on the inherent regional potential, including the region's geostrategic position, and the mobilisation of existing and new social collectives.

In February 2017 Serbia opened Chapter 20 of its negotiation of the EU acquis (on enterprise and industrial policy). In April 2018 the European Commission recommended that Serbia should develop a comprehensive industrial policy based on EU principles and using the findings of the smart specialisation analysis. Serbia has also started developing a new sector-based industrial strategy; it should step up this work by enhancing its administrative capacity and taking into account the findings of its smart specialisation analysis.

In April 2018, the European Commission recommended that Montenegro include smart specialisation under Chapter 25 of its negotiation (on science and research) and develop

a Research and Innovation Strategy for Smart Specialisation (RIS3). Montenegro is currently preparing the strategy with the European Commission's support and has established an interministerial working group for this purpose, including business, academia and NGOs. At this stage, the main priority sectors are sustainable agriculture and energy, ICT, manufacturing, and health and wellbeing; tourism is a cross-cutting priority.

Albania, Kosovo and North Macedonia – where smart specialisation falls under Chapter 25 – and Bosnia and Herzegovina began implementing smart specialisation in 2018. The European Commission recommended that Kosovo should increase government spending on research and seek to stimulate investment from the private sector by using the findings of the RIS3 currently being developed. In North Macedonia preparations have only just begun for RIS3 and sector-specific scientific priorities. The recommendation is for RIS3 to be developed to underpin national research and innovation strategies and policies. In Albania the process of drafting RIS3 has started, led by the Ministry of Education, Sports and Youth.

Turkey is the only economy that has adopted a subnational (regional) approach to smart specialisation, with all the other countries taking a national approach. In Turkey the specialisation framework has been adapted into 'results-oriented programmes' that all regions must develop from 2019 onwards.

Eastern Partnership

The Association Agreements between the EU and Moldova, Ukraine and Georgia set out the need to adjust national practices of the innovation policy-making instruments in line with EU standards and principles. In Ukraine a national RIS3 is being developed by an interministerial working group under the supervision of the office of the prime minister. Ukraine is leading the implementation of smart specialisation at regional level.

Smart specialisation tools are currently used (Joint Research Centre, Directorate-General for European Neighbourhood Policy and Enlargement Negotiations, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs) to determine regional development priorities in three oblasts in Ukraine, where experts from the EU are finalising data analysis: Kharkiv, Odessa and Zaporizhzhya. Smart specialisation is being included in the State

Strategy for Regional Development 2020 and the new law on regionalisation. In Georgia smart specialisation is addressed in four regional development plans. Belarus and Tunisia are at the start of the process and have not yet completed the mapping of economic potential.

Southern Neighbourhood

The Horizon 2020 Policy Support Facility implemented an assessment to provide external advice and operational recommendations to the Tunisian authorities on possible reforms to be undertaken in the context of the ongoing restructuring of the national research and innovation system and to support the smart specialisation process. Follow-up activities were planned for Q1 2019 onwards.

3.5.5 ETF approach to analysing skills implication of smart specialisation strategies

In ETF partner countries the impact on skills of the drive for innovation is well understood. What is less well understood is how to anticipate skills needs and develop those skills that drive innovation. Many regions in ETF partner countries suffer from limited innovation assets and a low human capital base, especially at regional level. All SEET countries and four of the EaP countries (Ukraine, Moldova, Georgia and Belarus) are implementing smart specialisation, i.e. designing national and/or regional development strategies that focus on innovation and investment in areas of national and regional strength. This approach enables regions to connect to knowledge flows and collaborative networks both nationally and internationally to boost regional innovation.

In spite of human capital and skills having been recognised as framework conditions for innovation ecosystems, they are not fully reflected in the framework (tools and methodologies) that guide the design of smart specialisation strategies in the ETF partner countries. As labour market requirements change and the use of new technologies increases, in addition to leveraging existing labour, new skills and competences need to be developed through education and training systems to support the drive for innovation, growth and competitiveness. Therefore, SME training in promising or priority areas also need to reflect the prioritisation stemming from smart specialisation.

To document the foreseeable impact of economic prioritisation on skills demand, the ETF has developed a preliminary approach to explore skills data, at sub-sectoral and local/regional levels, and skills relatedness in a context of competitiveness and innovation.

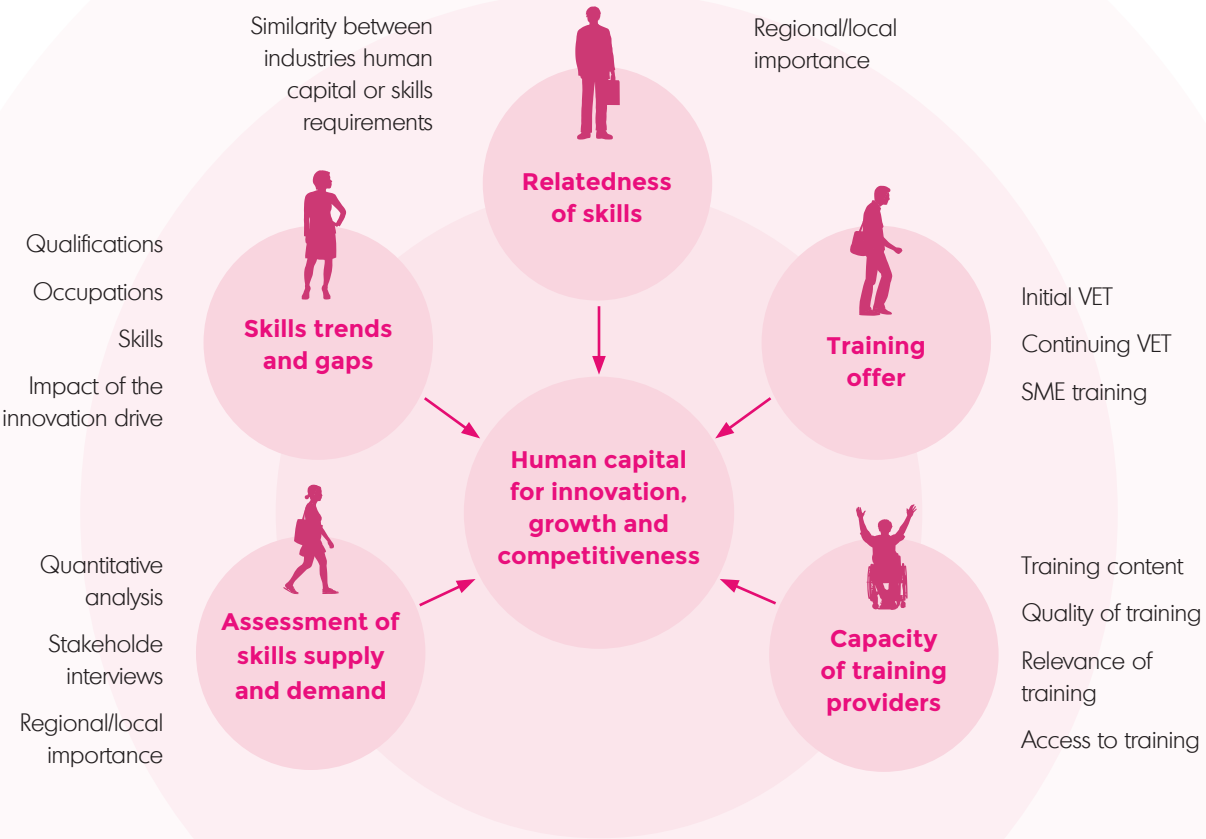
In 2019 the ETF selected two partner countries – Montenegro and Moldova – to pilot the new methodological approach at national level. The research relied on existing ETF tools and methodologies, the use of labour force surveys and other existing data sources and close interaction with these countries' stakeholders at central and sectoral levels. In 2020 the work has been expanded to the regional level in Ukraine, in the regions of Kharkiv and Zaporizhnya.

The research took into account the relevant policy setting in the area of VET and continuous education, and the institutional arrangements for engaging representatives of non-state actors in education and training (i.e. sectoral committees or similar collaborative formats), and relied on existing ETF tools and methodologies e.g. labour market analysis, skills mismatch analyses, the Small Business Act for Europe (SBA) or holistic analyses of VET systems, such as the Torino Process as well as the results of the smart specialisation process (mapping of economic potential and entrepreneurial discovery process).

The main goal was to analyse the implications for human capital development of innovation, growth and competitiveness in two priority areas chosen from those selected for smart specialisation. The analysis included the assessment of skills supply and demand, analysis of skills trends and gaps; relatedness of skills; mapping of training offer analysis and analysis of training providers' capacities to respond to emerging trends or new skills requirements.

Figure 3.3

Key elements of the methodological development



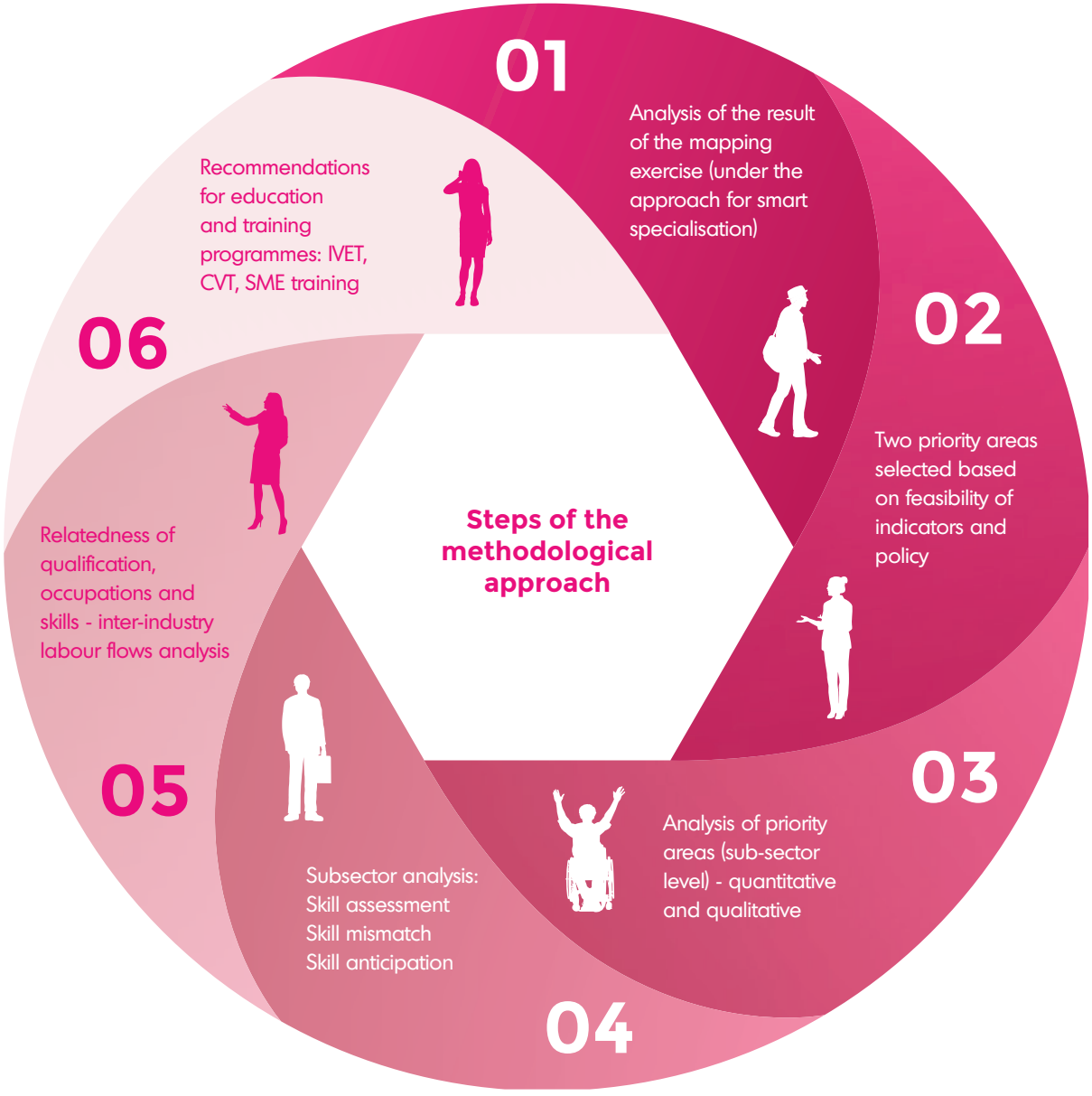
The analytical approach consists of three modules, namely:

- Analysis of two priority areas identified in the (draft) Smart Specialisation Strategy (specifically, in terms of employment, occupational, education profile etc.);
- Analysis of the relatedness of qualifications, occupations and skills (QOS) in the priority areas;
- Assessment of existing training offer and content, including the potential to respond to newer skills sets generated by the economic prioritisation.

The methodology combines secondary data analysis, qualitative interviews with relevant stakeholders and desk research of existing studies in the respective countries or internationally.

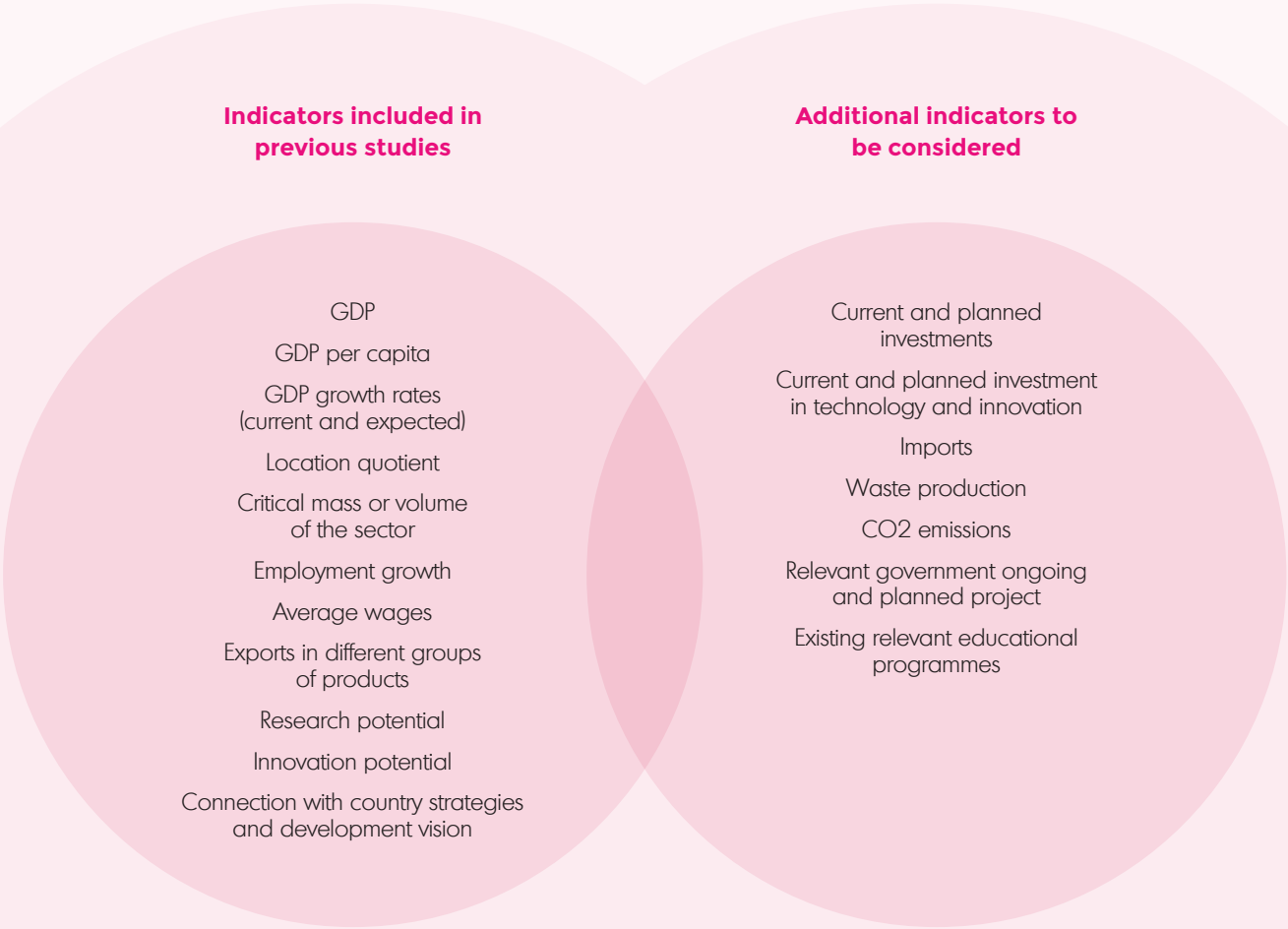
Figure 3.4

Steps of the methodological approach



During the preparatory phase of implementation, the research team carried out a screening of data availability and reliability. Data screening included both survey and administrative sources, managed by statistical offices, ministries or agencies in charge of education, employment, economy or other relevant fields. Table 3.2 exemplifies the key indicators taken into account in Montenegro.

Table 3.2 Overview of key indicators and information – Montenegro



3.5.6 Skills implications of smart specialisation in Moldova – preliminary findings

In 2016, the JRC Smart Specialisation Platform started a pilot project addressing the needs and gaps in research and innovation by supporting processes in three target countries: Moldova, Serbia and Ukraine.

In Moldova, to identify the local assets the mapping exercise focused on five regions: Municipality Chisinau, North, Centre, South, and T.A.U. For the mapping of economic potential, three main dimensions for smart specialisation and innovation policy were taken into consideration: economic, innovative and scientific potential. The role of human capital was limited and focused on higher education.

Building on the smart specialisation findings (mapping of economic potential and the Entrepreneurial Discovery Process), the ETF initiated an analysis of skills demand and supply in two of the selected priority areas for smart specialisation – energy and food processing – in order to inform the national strategic thinking about skills and competences required for the implementation of the smart specialisation strategy.

The analysis built on existing national data and tested the feasibility of the assessment of skills trends and gaps, relatedness of skills as well the capacities and potential of existing training offer at sub-sectoral and local levels.

The preliminary findings of the analysis reveal that despite the presence of a sufficient number of training providers with good potential and an adequate number of graduates in the food processing and energy sectors, skills imbalances are still present. Skills mismatches are characterised by both skills shortage and skills gaps. These hamper the performance of the companies as skills have an important role in enabling companies to raise the productivity and adapt to market demand. Skills also have an important role in enabling workers to seize the best available opportunities. Companies' skills demand is increasing as a consequence of trade, particularly in the field of food processing and technological change and the types of skills slightly vary between regions and companies.

Preliminary findings in IVET capacity

- TVET across all sectors is mostly supply-driven and limited to initial training.
- There is a low preference for agro-industrial, including food processing, field, trades and specialties among young people.
- The educational system, particularly the TVET sector, lacks drive for innovation, growth and competitiveness.
- Collaboration with economic agents is insufficient and not fully exploited.
- System level arrangements are less common but many TVET institutions have established bi-lateral arrangements with universities, and vice versa.

Preliminary findings in CVET capacity

- Data availability on CVET did not allow to assess the specificities in the selected priority areas: energy and food processing. What is clear is that the offer of CVET in both sectors is scarce, underdeveloped, fragmented and uncoordinated, being delivered by few different providers (TVET institutions/agencies) using different models and methodologies for delivery.
- Across all sectors, lifelong learning is getting little attention.
- Continuing training is ignored in the TVET system, by both providers and enterprises.
- There is a growing demand for continuing training due to massive emigration of workforce – especially young people. As a result, keeping older people active for longer is important, as well as ensuring that their skills do not become obsolete.

Skills needs – Energy priority area

- Skills gaps are characterised by inadequate professional/occupation-specific skills and a lack of key competences, insufficient motivation, critical and innovative thinking and low work deontology, particularly among young workers.
- Scarce knowledge of foreign languages is the biggest challenge for highly skilled workers.
- Limited analytical and problem-solving skills (key competences) and low motivation to learn new things represent the gaps for middle-skilled workers.
- Inability to find adequately qualified employees is stated by employers as the main cause of labour deficit.
- There is low vertical skill mismatch incidence with decreasing trend. On the other hand, there is a high rate of horizontal skill mismatch.
- There is a growing demand for technical and transversal skills.
- The growing renewable energy sector accelerates the change in skills demand and raises new expectations of TVET and higher education providers. These processes change the skills requirements within existing occupations, give the rise to new qualification and skills needs. Currently, none of the educational institutions offer any educational programme or course/module in this field.

Skills needs – Food processing priority area

- Skill gaps identified in the food processing sector encompass skills gaps in food health and hygiene, quality, production and marketing.
- Employers stress the lack of technical skills, poor

work ethics and motivation of young employees/ newly graduates.

- Personal characteristics, such as the interest in personal development, responsibility, ability to cope with change, positive work ethics and an interest in the job, are often identified as lacking. These personal attributes are regarded as important as they underpin the ability to perform the most basic tasks and acquire proficiency at any position/level.
- There is a demand for specific skills, such as the understanding of food hygiene and of quality standards, dexterity, machinery/technology operation and maintenance skills, health and safety.
- Traditional manual skills are less required.
- Machinery/technology operation skills have become more important as automation levels increase.
- The rising level of mechanisation/automation/ computerisation of the food processing operations requires specific professional skills to operate, regulate and ensure the maintenance of modern technique.
- The use of advanced equipment and machinery requires high level technical and IT skills.
- Some employers (SMEs) mentioned the need of 'multi-skilling'. A mix of skills is required to operate a machinery and carry out its maintenance or work in the processing/production section and, in addition, to have a customer service role, as processing, production and sales are most of the time integrated.
- There is also a growing demand in skills and knowledge regarding the organic food.

Solving the skill mismatch challenge lies in the hands of employers, education and training providers, the state and individuals. Building on the research findings, the analysis aims to provide a set of recommendations for policy-makers, but also for institutions and entities responsible for developing statistics on the labour market and skills to improve the existing IVET and CVET training content in priority areas in terms of qualifications/skills.

From the methodological point of view it is important to mention that data at sub-sectoral level is crucial for such analysis. The Moldovan experience shows that available statistics is not always sensitive enough to allow disaggregation by detailed NACE, ISCO and ISCED levels.

Moreover, further disaggregation of data at regional or local level often leads to unreliable results. Inter- and intra-sectoral transitions of the labour force are also difficult to spot using available statistics.

The methodology relies on a combined interpretation of data from multiple sources (data and information). Assessing value, relevance and comparability is necessary. In general, the taxonomy varies greatly in particular on aspects related to occupation, education, qualification, skills and competence.

Chapter 4

The transmission of excellence

This chapter explores the CoVE as an instrument for system reform and improvement. The analysis set out in Chapters 1 to 3 reveals that in many countries, both within and outside Europe, the establishment of CoVEs is intended, by diverse actors, not only to create a few better vocational schools but also to act as a means of general improvement, sometimes at a regional and sometimes at a national or even international level. This is the intention of the European Commission, which proposes to invest EUR 60 million in the development of international platforms of CoVEs because it anticipates that this will have a positive impact on European vocational education generally, increasing its attractiveness, status, quality, employment, innovation, research and international cooperation (European Commission, 2019a). The same theory of change is implicit in the reform programmes of several ETF partner countries (see Chapter 1). For example, in North Macedonia, Russia, Moldova and Ukraine, policy-makers intend regional vocational centres to raise the performance of all or at least some of the other vocational schools and training centres in their regions.

In Albania, for example, four alternative models for so-called multifunctional centres (MFCs) (vocational schools with expanded functionality) are envisaged. Three of these call for the integration of schools to create MFCs or for normal schools to become satellites of MFCs, and just one leaves the proposed MFCs in isolation (Galvin Arribas et al., 2019).

The focus of this chapter is not on how excellent vocational schools develop or on how they gain recognition, but on whether CoVEs (or regional vocational centres, or whatever term is used) can play a part in wider systemic reform, whether regional, national or transnational. The chapter will consider, firstly, why policy-makers are attracted to this reform strategy and, secondly, how the implied transmission or multiplication is theorised. The chapter draws on mappings of CoVEs to analyse the different ways in which such centres can transmit or share improvement (i.e. excellence) with schools or other skills providers. In conclusion, the chapter will examine what implications our knowledge of transmission mechanisms has for the design and realisation of CoVEs and what evidence is available on how, if at all, multiplication or transmission works in practice.

4.1

Why should schools be agents of change?

National educational reform is conventionally conceived as a top-down policy process: policy-makers establish policies and strategies, consulting with stakeholders, and then institute laws, norms, procedures and institutions and establish action plans and budgets that drive changes in behaviour among administrators, head teachers, teachers and learners. Anderson (2010) draws attention to failures in adoption and adaption and criticises the oversimplified approaches that work against the implementation of educational change. In contrast, the 'reform through centres of excellence' model builds on an alternative method of reform: New Public Management. This approach to public service provision favours decentralisation of decision-making and accountability. Reform of vocational education, following this rationale, should aim to make schools responsive to their economic environment and to make them innovative and self-improving. School leaders and teachers should be empowered and made more accountable. It follows that leadership, expertise and innovation should flow from within and between schools, and their partners, rather than from national or local governmental agencies that are at a distance from schools.

Hargreaves (2010) has developed an educational model that presents school federation and collaboration as a 'self-improving system' in which schools share their know-how and resources to address challenges, improve performance and innovate. According to this model, CoVEs will exemplify better practices and changed behaviours to other schools – a more convincing way of modelling change than, for example, publishing a national norm or a 'vision'. CoVEs should serve as embodied norms and their staff should be champions of reform. It is assumed that head teachers and teachers will be powerful influencers of other educational professionals, because they speak as fellow professionals and because they can offer their own improved practice as an argument for change.

CoVEs are also expected to provide additional expertise, know-how, information and services to other training providers, which will help to improve their performance (become excellent); examples include CPD for teachers, assessment tools, instructional materials and labour market intelligence. Most of these services could (and may already) be provided by other organisations, such as national methodological centres or private companies, or by each school independently. However, a case can be made for scaled-up provision across a group of schools, as this promises to combine economies of scale with the responsiveness that comes from keeping services close to users.

So far we have considered why policy-makers may believe that CoVEs are effective agents of systemic reform. However, there are also arguments that relate more to process than to the theory of change. As mentioned above, the 'reform through centres of excellence' model is attractive to some policy-makers because they believe that improvements can be achieved through quicker, simpler political processes, for example executive order rather than parliamentary legislation. Changing the status and functionality of one school in each region is easier to achieve than a national reform of schools, curricula or the role of teachers. Governments (and international development agencies) hope to initiate a reform process that will be gradual but, at the same time, will reveal demonstrable improvements almost immediately, such as new investments in buildings and new school status.

Increasing the agency of schools also has the benefit that it somewhat diminishes the prescriptiveness of national educational reform. Rather than seeking to set new norms and define improved practice for every school, for example by publishing detailed curricula and guidance, the country's Ministry of Education can leave space for school leaders and their teachers to make improvements that adapt curriculum frameworks to the needs of employers and learners. Making CoVEs the drivers of change in other schools gives some discretion to 'excellent' schools to set the pace, pressure and mode of improvement, and some discretion to other schools on how they collaborate with 'excellent' schools.

In Chapter 3 it was argued that the establishment of CoVEs, particularly in middle-income countries, usually depends on a combination of actors: national government, local government, employers, sector organisations, international donors and school leaders. Setting up CoVEs is sometimes an incremental process through which a group of policy-makers, donors, stakeholders and current providers negotiate the establishment of one or more institutions with a particular scope, and then another group emerges to establish other institutions, perhaps with a different scope. Viewed as a political process, this incremental approach may seem attractive or realistic as the political investment required is proportionate to the reform proposed and it is easier to generate agreement with a smaller number of actors focusing on a more limited number of projects.

4.2

Improvement through collaboration with employers

It is well known that excellent vocational training providers collaborate effectively and extensively with employers, and this is always regarded as a marker of excellence in VET provision. In this chapter, however, our focus is on transmission of excellence between schools or training providers, for example by means of networks or collaboration. One possible benefit from collaboration between schools is improved collaboration between schools and employers. This would provide a straightforward mechanism through which 'excellence' can be transmitted. It seems evident that an association or group of schools can benefit from economies of scale and better performance if they create or contract dedicated business–education liaison services, such as communications, health and safety compliance and site visits. There is also evidence that some businesses are more willing to engage in education if this kind of liaison service is offered.

The term 'CoVE' not only denotes schools or training providers that are excellent or that support excellence in others. It also refers to organisations that provide little or no training themselves but that support coordination, brokerage or some other complementary service, such as technological or methodological innovation (European Commission, 2019b). Such centres may be regional or sectoral hubs or network managers, they may be short or long term, and they may have a narrow or wide range of functions and powers. Such centres are agents of improvement not by virtue of being excellent schools but by virtue of their relationships, their capabilities and their culture.

In many countries, business–education liaison is assigned to a non-governmental or public–private organisation with legal, cultural and governance features that are fit for purpose. Such broker organisations necessarily serve multiple schools and employers; their activities may be limited to managing placements and visits, or may extend to project management and joint bidding for funding.

The Ecorys mapping (European Commission, 2019b) describes how the Regional Technology Centre Vlaams-Brabant in Belgium Flanders – in partnership with vocational schools, a number of technology companies and the sectoral body – developed a 'technology truck' that visited 25 schools in the course of a year to support learning about 'Industry 4.0'. It is difficult to see how a single school could have the capacity, the know-how and the funding to bring about this level of cooperation and, if it did, it is doubtful whether it would be willing to share the benefits with other (possibly competitor) schools.

4.3 Improvement through regional coordination

Larger businesses may be more ready to build partnerships with a group or association of schools than with one particular school, since this gives them access to more potential recruits and wider reputational benefits. In Italy, Sweden and Romania, for example, companies are engaged to work with schools through the relevant regional development agency. Such regional agencies are able to offer a variety of support services to businesses, disburse subsidies and funding, and, hence, exercise greater 'pull' on employers than one school or a group of schools could do.

In the Västra Götaland region of Sweden, the Regional Coordination Authority provides a package of services that complement vocational education, including research on labour market information, forecasts for demand and supply of skills, and development work for careers education. The Regional Coordination Authority works closely with skills providers, employers and government agencies. Provision of these services is not delegated to particular schools, but performed by specialists employed by the regional authority.

However, individual vocational schools might be better positioned to build links with local businesses and SMEs. Local employers may be alumni who are likely to employ school graduates and their families. It can be argued that engagement with SMEs should be the work of every vocational school. However, schools could be supported in this work by a

centre with expertise in business–education liaison, and such a centre could broker some kind of reciprocal sharing of the benefits between schools, for example with respect to specialist placements.

If, as in the case of Västra Götaland, it is the regional development agency that provides labour market information to vocational schools, this provides an opportunity to engage schools in the implementation of Smart Skills Strategic Priorities and other planning exercises. However, other school networks also engage with regional or local development authorities, for example the French sectoral Campus des métiers et des qualifications and the national Dutch network Katapult (European Commission, 2019b). The mapping studies suggest that some vocational schools participate in multiple networks coordinated through different centres, and that, to some degree, they can address skills priorities at different levels.

4.4

Improvement through sharing of resources

One of the most concrete and visible ways in which excellence can be transmitted is through the sharing of resources, including leadership, teachers, expertise, equipment and buildings. Sharing can be an efficient way of widening access to expensive modern equipment and optimising the use that is made of it. However, sharing may also be designed to support the blending of different functions, for example trainees engaging in research and researchers engaging in commercial innovation.

The Ecorys mapping (European Commission, 2019b) reports on the work of the High Technical Education Centre (HTEC) hosted by the Practical Training Centre in Krosno, Poland. Its well-equipped laboratories are accessed by students from schools and universities, and by industry. Similarly, the four laboratories run by CHILL in the Netherlands are shared by vocational schools, industry, entrepreneurs and universities.

Sharing between different organisations makes it more likely that tools and infrastructure serve multiple purposes: training, research, knowledge creation, diffusion and application.

Such sharing also presents challenges, for example in terms of travel and timetabling, with implications for curricula and modes of study. However, meeting the extra costs of mobility for relevant teachers and learners may well be more realistic than trying to equip every school to deliver all specialisms. It is worth noting that the principle that learning takes place at multiple sites is already accepted in dual systems, and perhaps it is not surprising that the sharing of equipment and teaching staff through intercompany training centres is a longstanding practice in Germany.

On a spectrum from low levels of cooperation through to full integration or merger, sharing selected services offers potential gains in terms of innovation and efficiency without the risks and costs of strong collaboration. In England, from 2011 the Efficiency and Innovation Fund funded two phases of 'shared services projects' through which vocational schools were supported to provide 'business' or 'back office' functions collectively. Successful projects demonstrated both cost savings and innovation, for example through collective modern provision of recruitment services, data storage, management and information services (Gadd, 2012). Shared services can provide vocational school networks with opportunities to modernise without merger or other forms of rationalisation. One advantage is that they enable a group of vocational schools to employ more specialist staff to run specialised services that might otherwise be operated less efficiently by a general administrator or even a teacher.

4.5

Improvement through demonstration

In some countries the terms 'lighthouse' (Slovakia) or 'beacon' (UK) are used to indicate that a particular school has been recognised as 'excellent' and that it is tasked with some kind of pathfinding or exemplification purpose. Slovakia is reported to be 'creating VET centres in cooperation with self-governing regions and respective sectoral assignees, identified from schools complying with quality requirements in terms of learning environment, equipment and staff to serve as a "lighthouse" school in a respective sector of the economy and region' (Vantuch and Jelinkova, 2018).

Smart Factories (Smarta Fabriker) is a project run by the Gothenburg Technical College that coordinates participating companies, academia, organisations and schools in the Västra Götaland region of Sweden. Through this project, regional smart specialisation priorities are communicated and demonstrated through the 'smart factory' that students have built and that serves as a base for workshops for teachers and students from schools and polytechnics as well as professionals from companies (European Commission, 2019b).

In Morocco the modernisation of skills provision has been shaped by strong industrial involvement resulting in Industrial Training Centres, operated by PPPs, with a mission to address the skills needs of the sector: initial, continuing and advanced. These centres have been established with private, public and donor funding over a number of years, depending on the readiness of partners and the availability of funds. The model is now well understood and Industrial Training Centres for the motor industry (with multiple campuses), textiles, the aero industry and other sectors have been able to make use of the same or adapted models of funding, governance and operation. In this way, an innovative training institution set up by one set of stakeholders has modelled similar solutions for others.

In order for a CoVE to act as a pathfinder, it needs to exhibit excellence. It makes sense to concentrate investment in buildings and equipment, staff development and enhanced functionalities in certain schools, which can then serve as multipliers for their sectors or regions. A recent ETF report claims that this is the case in Armenia.

'During the last five-six years, most of the resources foreseen for the VET system improvement, including those provided by the main donor organisations, were directed to the 12 Regional State Colleges, thanks to which these institutions were improved enormously in terms of both physical conditions (buildings and training equipment) and the human and methodological resources. Thus, the need to ensure the efficiency of VET reforms through centralisation of investments and concentration of results, and making them more targeted and visible, was addressed.'

(Galvin Arribas et al., 2019)

The same report proposes that one of the objectives of establishing regional VET centres in Ukraine should be to 'ensure higher efficiency, targetedness, impact and visibility of the VET reforms through centralisation of investments and concentration of results' (Galvin Arribas et al., 2019).

Concentrating investment in particular schools and regions fits well with the dominant funding model for school modernisation in some of the ETF partner countries, namely international donor funding. North Macedonia is currently developing Regional VET Centres, funded initially by EU Sector Support that is targeted at modernising three schools in three regions with the plan of further investment in other regions as other funds come on stream. At the level of policy, limited tranches of funding are construed as financing stages of system reform. In reality, some schools and regions receive more than others and compensatory investments do not always follow in the medium and long term. Political and funding cycles are much shorter than the developmental cycle needed to modernise and structure a national network of vocational schools and training centres.

On the one hand, if governments and donors concentrate resources on the best schools because they believe that this will produce the greatest return on investment and the most visible improvements, this will, at least in the short term, result in divergence in performance between schools and in fragmentation of the school network. An example of this is in Kosovo, where the five Centres of Competence have little to do with the rest of the VET network. On the other hand, resources for investment and modernisation will always be constrained and the strategy of concentrating resources in regional or sectoral centres is usually associated with a logic of transmission which, if implemented, should offset inequality.

4.6

Improvement through networks

The Ecorys mapping report (European Commission, 2019b) describes a number of well-established national networks through which vocational schools in various Member States share knowledge and practices and, to some degree, collaborate and undertake common projects. Some are national, while others are regional. Some involve mainly schools (the network of ITSs in Italy, the network of schools in Spain and Katapult in the Netherlands), while some include employers (Campus des métiers et des qualifications in France) and others are dedicated to other kinds of training providers, for example the Innovazione Apprendimento Lavoro (IAL network) in Italy. To avoid confusion, we should recognise these networks or associations for what they are – networks of schools or training providers. Their members may or may not be, or claim to be, recognised as CoVEs. Training providers and schools may be proud to belong to the network and value what it brings, but belonging to such a network could only contribute to rather than demonstrate excellence. Collaboration and sharing are not the monopoly of CoVEs, and nor are they necessary: a school may be designated a CoVE without being part of such a network.

However, analysis in the mapping report helps us to see that sometimes, though not always, there are distinct organisations that coordinate or host the networks, such as the sectoral vocational educational centres (Bildungszentren) run by German chambers and the 25 regional centres de compétence in Belgium Wallonia. It seems reasonable to describe these organisations as 'centres' because their coordinating responsibility gives them the role of transmitter, broker or service provider for member training providers, schools or training centres. In this case the centre is not itself a training provider but a distinct organisation or institution that coordinates networks and supports training providers. Elsewhere, for example in the case of the French Campus des métiers et des qualifications, the responsibility for coordination is assigned to a particular school, which is the lead organisation. However, this lead organisation does not always offer a physical centre for the network.

The rich diversity revealed by the mapping suggests that networks and associations of vocational schools and training providers can support different degrees of cooperation: sharing, loose collaboration, joint actions, and partial integrations. However, the coordination function may be assigned to a particular school, to a council or to a specialised coordinating centre.

4.7 Improvement through projects and innovation

Vocational schools can be encouraged to collaborate on projects, both with one another and with other organisations such as businesses and universities. Such collaboration offers some of the advantages that come from sharing and exchanging knowledge, experience, skills and equipment, without the costs and risks of sharing governance, assets and organisational change.

Freestanding CoVEs can serve as project managers and provide some continuity from project to project – sustaining relationships, building up know-how and transferring learning from one project to another. As freestanding agents dedicated to innovation, CoVEs can be more effective at bringing together actors and stakeholders from different sectors to focus on short-term projects.

Well-publicised examples of CoVEs that combine methodological and technological innovation are the Regional Technological Centres (RTCs) in Belgium Flanders and Tknika in the Basque Country in Spain. Created in 2004, the RTCs act as project brokers aligning education, innovative challenges and the labour market. Tknika, the Basque Centre for Research and Applied Innovation in VET in Spain, was set up by the regional government to run projects relating to innovation, quality, entrepreneurship, pedagogy, etc., with local VET providers, universities and companies.

InnoVET (Innovation in Vocational and Technical Training) is a methodological project that addresses 21st-century skills, transversal competences and teacher professional development in Belgium Flanders. Project management has been assigned to the Belgium Flanders RTCs, which are not themselves training providers. The centres, which cover all regions of Flanders, will engage 500 VET schools in this project but also businesses and higher education institutions.

Centres such as Tknika, the other regional innovation centres in Spain, and the RTCs are well known because of their track record and longevity. Short-term, project-based collaborations involving groups of schools at national level are relatively common in some countries, where project funding is routinely used to support innovation. Such collaborations may be coordinated by a lead school, by a group of schools or by a network. However, probably because these collaborations are short term and national, they are less well known internationally. The Ecorys mapping report mentions two networks of schools, each with a lead school, set up in Bulgaria to develop the curriculum, teaching materials and pedagogy underpinning two new profiles (European Commission, 2019b).

Collaboration through projects is perhaps one of the most common and popular forms of collaboration. It is voluntary, can be tailored to need and has relatively low entry and exit costs. There can be immediate and concrete benefits in terms of performance, as well as reputation and staff professional development. However, the project modality has well-known weaknesses, in particular issues of sustainability and the challenge of securing take-up outside the project participants.

4.8 Improvement through collaboration with schools

Chapman (2015) provides a review of the way that federations and collaborations have developed in general English schools. According to Ofsted, the inspection authority for England, some 400 schools 'federated' between 2002 and 2009 after the 2002 Education Act made it possible for schools to either create a single governing body ('hard federation') or delegate certain powers to one or more joint committees responsible to the governing bodies of participating schools ('soft federation'). Evidence from national inspections and evaluations found benefits for staff professional development and positive impacts on teaching and learning and on student attendance. Research into the impact on achievement of students is mixed: Lindsay (2007) finds no impact, while Chapman et al. (2009 and 2011) report a statistically significant positive impact in relation to a control group, particularly when high- and low-performing schools are partnered. Particular benefits for small rural schools are reported, a phenomenon that is attributed to the pooling of resources and leadership. Armstrong (2015), in a literature review, reports studies that showed improvements to staff professional development and careers, sharing good practice and innovation, reduction of headteacher workload, and organisational and financial efficiency.

English education policy is reported to have shifted in favour of a self-improving school-led system since 2010, with the encouragement of multi-academy trusts, teaching school alliances and other hybrid forms (Greatbatch and Tate, 2019). Since 2016 groups of secondary and primary schools have been permitted to voluntarily cluster into teaching school alliances. Each cluster is led by one or more teaching schools, of which there are around 800, judged 'excellent' according to formal external inspection. These teaching schools have the budget and the responsibility for initial and continuing professional education and professional support across the alliance. Research to date has shown improvements in professional practice in teachers and leaders across the cluster (Gu et al., 2015). However, the same research shows that pupil achievement is significantly higher in the teaching schools but not in the schools with which they are clustered. A meta-study of evidence from 38 empirical studies of school improvement networks in the USA finds that more than 50% showed improvement in the performance of teachers, better distributed leadership and effective use of data and evidence (Barletta et al., 2018).

The most recent literature review on collaboration in England cites research showing 'the importance of trust between schools and shared vision and values as conditions for the formation and effective operation of inter-school collaborations' (Greatbatch and Tate, 2019, p. 6). The US study also identifies a well-defined scope and trust as success factors and adds three others: adequate funding, buy-in, and effective processes for feedback on experimentation (Barletta et al., 2018).

4.9

Improvement through autonomy

As previously explained, at least some policy-makers assume that greater autonomy will 'free up' vocational schools to do more, more effectively and with new partners. In some countries, such as the Netherlands and the UK, most vocational schools have been permitted to re-establish themselves with new legal structures, which have given them greater self-governance, greater financial freedom (including the authority to borrow money and dispose of assets), and the authority to hire and fire staff. This is also part of the rationale behind the PPPs that own the Industrial Training Centres in Morocco.

In Moldova the Framework Regulation on the Organisation and Functioning of Centres of Excellence explicitly addresses autonomy. Centres of Excellence are entitled to:

- Contribute to the development of the VET system within their specific sector;
- Develop methodological and didactic materials for the other VET institutions within the sector;
- Coordinate and manage their own activities;
- Retrain managers and teaching staff from other VET institutions, etc.

In practice, the extent to which Moldovan vocational schools have been able to exercise these autonomies since 2013 has been modest, and additional resources have been very limited (a salary increment for some members of staff). Benefits for other schools have so far been even more limited.

4.10

Improvement through international collaboration

It would probably be difficult to find a decent vocational school in the EU that has never participated in some kind of international project. Such experience is less common among the ETF's partner countries, although it is not unusual among the better schools in the candidate countries. Much of this experience is due to Erasmus+. Opportunities should grow in the future as the budget of Erasmus+ aimed at professional learning and learners is expected to increase. Project evaluations and scheme evaluations for Erasmus+ document the benefits of international rather than national collaboration. There are particular benefits for learners and teachers from ETF partner countries, who can learn about new and diverse technologies, work practices, curricula and pedagogies. Local and national funding for innovation and bottom-up projects is often relatively low in the ETF's partner countries, so international projects offer one of the few opportunities for vocational teachers and learners to learn through self-directed practical innovation.

While participation in international collaboration may be fairly normal in most Member States, the capacity to initiate, plan, successfully bid for, coordinate and disseminate international projects is rarer. International project coordination depends partly on experience but also on networks, reputation, entrepreneurship and technical skills such as languages, accounting and communications.

Some freestanding regional centres, such as Tknika and the RTCs, and national networks such as Katapult in the Netherlands and Italy's ITS network, have developed the capacity to support bids for and to coordinate Erasmus+ projects. Member States and candidate countries, notably Turkey, have National Erasmus Agencies that help to publicise opportunities, build partnerships and advise on bids, thus making it possible for schools and businesses to lead and coordinate bids themselves. The European VET associations – such as the European Vocational Training Association (EVTA), European Forum of Technical and Vocational Education and Training (EfVET) and EVBB – initiate and coordinate their own Erasmus+-funded projects and they also provide networks through which organisations come together to generate bids and coordinate projects.

The EfVET conference, for example, provides a major marketplace for the brokers and institutional, commercial and national agencies and businesses that organise Erasmus mobility schemes for vocational learners.

WorldSkills is an international body that organises periodic skills competitions giving nations and schools a chance to compete on an international stage and make motivational and reputational gains. WorldSkills functions as an international CoVE in the sense that it coordinates international exchanges which help to recognise and motivate excellence among participants. The success of WorldSkills shows that 'collaboration' can take different forms: participants can benefit from competition as well as from common or cooperative co-working. Participation and success in WorldSkills are markers of excellence that, for some participants, lead to financial or career rewards. WorldSkills has been extraordinarily successful in creating a framework within which learners, schools and countries can interact globally, thus demonstrating that international collaboration can be instigated and grown by non-governmental international movements.

Conclusions

There is, perhaps, a risk of being dazzled by the brilliance of some large vocational schools, particularly higher-level vocational schools or universities of applied sciences, with their partnerships with business, their high-performing learners and teachers, their globalised offer, their cutting-edge technology and modern management, and their professional marketing, accounting and human resources. Should not every vocational school aim to be like one of these admirable institutions? Perhaps they should – but only if we can describe how regular vocational schools can actually make the journey from where they are to reach that level of perfection. Having said that, it is easy to see how this alluring side of vocational excellence can be attractive to politicians and how the rhetoric around excellence is often more impressive than the reality. It is also easy in this debate to lose sight of the learners and fail to address their real needs. Furthermore, it is clear that what makes CoVEs attractive to different stakeholders varies a lot. As we analyse in this study, finding a balance between the needs of the different drivers can help in reaching a consensus, which is crucial when a systemic impact on VET is needed.

In this study we have recognised the complexity of the term 'vocational excellence'. We have avoided presenting it as a panacea for VET development and attractiveness, while trying to identify good practices, especially those that function well in diverse contexts.

We have focused on the elements and drivers that need to be in place for vocational excellence to develop, while also addressing the potential of a CoVE to transmit or facilitate excellence through coordination or collaboration. Sharing is not always the main purpose of CoVEs: the ETF and Ecorys mapping exercises (ETF, 2019; European Commission, 2019) show that for some CoVEs, the rationale is to develop the performance of a single institution, usually by making it much more responsive to the needs of employers. However, in many countries, coordination or collaboration is part of the concept of CoVEs.

The mapping of CoVEs and other research into school improvement initiatives suggest that collaboration is often a key factor in the development or sharing of excellence.

We have reviewed examples where there appear to be benefits for all or most participants from different kinds of cooperation, such as:

- Sharing resources, e.g. staff, leadership, laboratories and instructional materials;
- Collaborating to engage and work with business and other non-educational actors;
- Collective provision of some services, such as professional development, procurement, data storage, careers advice and labour market data collection;
- Coordination and rationalisation of the training offer in order to optimise it and increase efficiency;
- Projects, such as the joint development of new materials or the application of new methodologies;
- Observation and learning from innovative or modern practice in other schools.

However, there is little evaluation or research that measures outputs of CoVEs in a rigorous manner, evaluates cost-benefit or added value of CoVEs compared to other improvement strategies. Future investment in CoVEs would benefit from formative evaluation that is designed to inform and shape development. Decision-making and evaluation in relation to CoVEs should take into account the robust methodologies developed over many years by researchers working on school effectiveness and improvement. When it comes to the ETF, these are all areas to be considered when planning a network of CoVEs.

Improving performance through collaboration

The argument here is not that collaboration and partnerships are the only ways to develop excellence, which could be endogenous or bilateral, but that collaboration can be a tool for sharing improvement. In particular, collaboration can help less well-performing schools improve and thus address inclusion and social justice as well as excellence. Furthermore, we have seen that collaboration can, under some circumstances, not only transmit excellence from one school to another, but also mutually generate improvement for all partners involved.

Collaboration can lead to cost savings through the sharing of services or equipment, but it can also lead to new provision if organisations find it feasible to offer a new service or product together. Moreover, collaboration can lead to the improvement and innovation of services or products, particularly when it brings together different kinds of organisations, such as businesses, universities, vocational schools and development agencies. Expertise, knowledge, practice and funding can be combined so that there is a blurring of functions, for example training/research, technology diffusion/ business start-up. This is where different drivers can work together to address a common goal (deliverable), as long as the benefits of achieving the goal are also shared.

The results of the mapping show that collaboration can be supported in a variety of ways, for example through networks, by specialised sectoral or regional broker agencies ('coordinating centres'), by more generalised agencies that, among other responsibilities, such as regional development work, also facilitate collaboration, and by

international organisations and donors. Alternatively, the task of leading collaboration can be assigned to a particular school – a CoVE – or rotated between schools.

Current evaluations suggest that collaboration works best when schools participate willingly and when it brings solutions to real problems. Successful collaboration depends on trust, common goals, adequate funding and distributed leadership. Collaboration can itself develop over time according to need and opportunity, and in the light of experience. Chapman (2015) describes how, over time, schools may develop their capacity to cooperate, starting from a loose 'association' of independent organisations and progressing through 'collaboration', where some goals, resources and governance are shared, through to strong integration: 'comprehensive collegiality'.

Escalating performance

The mapping of CoVEs reveals that vocational schools acting individually or together can escalate their performance, providing not only IVET but also enhanced services to their own students and their communities, as well as some services to other schools, employers, employees, unemployed people, etc. However, just because some schools extend and enhance their offer, this does not mean that all schools should do so. Schools are not the only organisations capable of providing these additional services and they may not be the best qualified or most able to do so. Taking on new functions usually implies new capabilities and investment, so there are costs as well as benefits. There is a danger that vocational schools become distracted from the core functions, expand into risky entrepreneurial ventures or develop expensive management structures. Provision of multiple services and products only makes sense if it brings net advantages, such as gains in efficiency, improvements in quality or greater benefit for clients, which together outweigh the costs of change.

Integrating new practices into institutions – organisational learning

The Ecorys mapping identifies integration as one of three success factors for CoVEs: 'There is great potential in CoVEs to achieve more than the sum of their parts, in particular, where CoVEs build reflexive relationships between activities and research' (European Commission, 2019). Integration is something that a CoVE may be able to support but which would be difficult for a ministry or an agency to help schools to do; hence, this capacity for integration is one of the distinctive advantages of CoVEs acting as a tool for reform. If a CoVE works reflexively with other schools, training centres, businesses and universities then it will adapt new methods, innovations and technologies so that they fit well with its own learners and teachers and with the employers that it serves. In this way a CoVE can function as a learning organisation and can consolidate a stream of initiatives and opportunities into a self-improving institution. If it can 'repay' its collaborators by offering feedback, interesting practices, useful knowledge and development opportunities, it can make sure the exchange is sufficiently worthwhile for them to continue to collaborate.

Breaking silos

Perhaps one of the most striking findings of the ETF mapping exercise is that many CoVEs function in isolation. Isolation in this case is seen as the absence of exposure to practices used in other CoVEs. This affects the capacity of a CoVE not only to influence others, but also to be influenced by them. Although such CoVEs serve the local needs of the labour market well, they do not go that extra mile to forge partnerships that can generate innovation and help further growth and development. Partnerships, though, are not made in a vacuum. The right policies need to be in place to allow for more freedom and autonomy, funding through better coordination of public and private sources is needed, and the engaged institutions need to have the capacity and mindset to support them. Smart specialisation strategies can deliver the framework at local level to identify niche areas and help prioritise resources. It is clear that some regions are moving in that direction.

Where this is happening, the CoVE can be the next step in anticipating and developing skills and addressing the innovation gap.

Finding the right pathway to excellence

It is one thing to have CoVEs and another to have excellence in VET. In fact, it would be ideal if the existence of a CoVE automatically led to excellence in the VET system. As mentioned above, setting up CoVEs might seem to offer a relatively quick and simple method of educational reform. However, it could prove to be something of a trap: so many opportunities for new services, potential customers, funders, partnerships and relationships could make it more difficult to focus on good practice that has solid results and that offers a good return on investment. Some schools and agencies are currently investing in multiple 'quality badges', self-publicising and marketing their achievements to gain recognition as being internationally excellent.

International organisations, such as the ETF and the European Commission, need to take care that they do not unintentionally stoke up this unproductive 'reputational competition' or endorse claims of excellence that cannot be evidenced.

Depending on the context, there is a range of additional services or functions – for learners, employers and other schools – that can complement vocational education. Furthermore, there are a number of ways in which these different services can be provided, for example by regional development agencies, specialist regional, sectoral or national methodological agencies, ministerial departments, elected local government or private companies, or through collaborations and partnerships in which schools or training centres themselves provide these services or create subordinate organisations to do so on their behalf.

A vocational school could set up an incubator or provide professional development for company trainers, but is this the best use of its resources, and is this what its clients and stakeholders need most? There is no simple answer – school leaders must decide, insofar as their education system gives them space to decide. This implies that there are decisions to be made by the leaders of training providers and also by the policy-makers who direct training systems.

Bringing change at the level of schools

At the level of schools and training providers, organisation leaders and stakeholders will want to build strategies for organisational improvement towards excellence, taking into account the following interrelated issues:

1. How can they improve core teaching and learning?
2. Which learners should they teach and what should they teach them?
3. How should they collaborate with employers?
4. Should they offer additional training, development or support services for employers?
5. How can they collaborate and cooperate with other schools and training providers and with universities and other educational institutions? What can they share? What projects can they undertake together? Are there some services that they can provide collectively or in partnership?
6. What institutional form best suits their mission and functionality, their collaboration, and their scale and vision? Do they have the right institutional form and powers that will permit them to develop into the future?
7. Which other institutions should be their partners, their clients and their providers? What kind of relationship should they have with these organisations?
8. How can they get the most out of their staff, students and resources?

Bringing change at systemic level

At a system level, policy-makers will want to think about how they bring about improvement, inclusion, equity and ultimately excellence throughout the national school network and how collaboration can contribute to this. The mapping and research suggest that the following issues will need to be addressed:

1. To what extent and according to what regulations should collaboration between schools and other training providers be permitted or encouraged, thus transforming their identity, governance, scope and legal form?
2. What kind of relationships should individual CoVEs or 'centres' (e.g. hubs, shared facilities, projects or other collaborative entities) develop with governmental and other public bodies with respect to regulation, funding and governance? How should additional networks interface with existing configurations in the school network?
3. How can the improvement of vocational schools and their collaboration be shaped and supported, drawing on international experience, research and evaluation, sharing national experience and feeding back from pilots?
4. How can CoVEs and collaboration be used to initiate, spread and drive modernisation, for example by empowering and recruiting effective change-makers and by coordinating action between all vital actors (including potential 'spoilers')?
5. What types of collaborative activity should be encouraged in different contexts: projects, sharing of practice, sharing of resources, competitions, shared services, etc.?

It is perhaps surprising to conclude a study with questions. It is a reminder of how much we still need to learn and of how complex the topic of CoVEs is. It is yet another indication that vocational excellence is a contested term and that it is closely bound up with the context in which it takes place. More than anything, it shows that further research and analysis are much needed.

The ETF is taking up the challenge to seek answers to these questions, working closely with many CoVEs in its partner countries. The ETF's Network for Excellence will help particular CoVEs to continue to pursue excellence, taking into account what other CoVEs are doing. It will provide CoVEs with opportunities to learn from one another, collaborate and set up partnerships. At the same time, it will ensure that what is learned about the diversity and development of CoVEs, their strengths and their weaknesses, is disseminated and distilled so that it can inform all stages of policy-making and implementation as needed.

ANNEXES

Annex 1. Template used for the ETF mapping exercise

<Insert country name>	
1A	**Name or title of example** (Note to researcher: Please highlight the manner in which the initiative is labelled, e.g. as an 'Innovation Hub' or 'Partnership for Excellence'. If they are not labelled under any particular title, or they are part of a wider initiative like 'Katapult' in the Netherlands, please briefly clarify the situation.)
	<Insert title of example in English and where possible in parenthesis in the local language>
1B	**How is the initiative labelled?** (Note to researcher: Please highlight the manner in which the initiative is labelled, e.g. as an 'Innovation Hub' or 'Partnership for Excellence'. If they are not labelled under any particular title, or they are part of a wider initiative like 'Katapult' in the Netherlands, please briefly clarify the situation.)
	<Insert explanation on the labelling of the initiative>
1C	**What is the lead organisation of this example and which partners do they work with?** (Note to researcher: Please take into account partnerships with any of the following organisations: initial and continuing VET providers, tertiary education institutions, including universities of applied sciences and polytechnics, research institutions, science parks, companies, chambers and their associations, social partners, national and regional authorities and development agencies, public employment services, etc.)
	<Insert name of the lead organisation in English and where possible in parenthesis in the local language. Also insert any partners involved in the example>
1D	**How is the initiative funded (e.g. through public funds, sectoral funds, private investment, income-generating activities)?**
	<Insert explanation on sources of funding>
1E	**Has EU support been used for this example? If so, please explain in what way.**
	<Yes/No. If 'Yes', explain what type of EU support was used and why>
2A	**Why is this a good example of vocational excellence linked systemically to innovation/ smart specialisation/regional development?** (Note to researcher: Include in your rationale how the example contributes to relevant national and/or regional strategy(ies))
	<Insert rationale behind selection here>

<Insert country name>	
2B	**Does this example contain the following elements? If yes, please explain how the example contributes to the various elements.** a. Supporting **regional development** and **smart specialisation strategies**, working together with other education and training institutions (e.g. universities and polytechnics) as well as companies to provide a wide portfolio and level of skills required to implement those strategies. b. Being drivers of **innovation in local ecosystems**, within a framework that includes public and private organisations, as well as the coordination and sharing of infrastructure and resources, aimed at providing the transversal and technical skills to support innovation, as well as innovative learning processes and products for both initial and continuing VET. c. Actively participating in knowledge triangles with universities, research centres and business, aimed at being at the forefront of research and technological developments, allowing the rapid update of training curricula and qualifications.
	<Yes/No. If 'Yes', insert explanation here>
3	**Does the example have a focus, e.g. on particular sectors or social issues? Which sector(s) or social issue(s)?** (Note to researcher: CoVEs may focus not just on economic sectors but also on social topics, e.g. migrant integration.)
	<Insert explanation here>
4	**Provide an overview description of the key features of vocational excellence in the example.** (Note to researcher: We need descriptions that (a) are far more detailed than those in the 'Explanatory Note' and (b) show why provision is different to 'normal' high-quality VET in general – the latter is important because the descriptions of some examples in the 'Explanatory Note', e.g. from Belgium and Croatia, do not do this very well; we need more depth, such as that provided in, for example, the examples from Spain/Basque Country, Denmark and Germany.)
	<Insert explanation here>

<Insert country name>

5	**Select from the following element(s) which are present in the example and describe how the example justifies the choice made.** 1. Providing people with labour-market-relevant skills, within a **lifelong learning** continuum approach; combining offers of **initial VET** qualifications with offers of **continuing training** (for upskilling and reskilling). 2. Providing **higher-level VET** programmes; developing **pathways** to higher-level programmes in conjunction with higher education institutions. 3. Establishing **business–education partnerships** for apprenticeships, internships, sharing of equipment, exchanges of staff and teachers between companies and VET centres, etc. 4. **Working together with local SMEs** by sharing equipment and creating incentives for staff to engage in applied research and development projects with the involvement of the VET learners, and by providing SMEs with technical support, tools, methodologies and training to improve their apprenticeship offer and upskilling/reskilling offer for adults. 5. Development, introduction or presence of **joint VET curricula** together with other VET providers and companies in various countries bringing the very best know-how from each partner and facilitating recognition. 6. Development, introduction or presence of **internationalisation strategies** to foster transnational mobility of VET learners as well as teachers and trainers, with or without Erasmus+ support. This could also include preparatory work to facilitate mobility, such as teaching programmes or courses on EU studies to better understand Europe's integration process and its place in a globalised world (e.g. inspired by the Jean Monnet actions). 7. Development, introduction or presence of **innovative teaching and training methodologies**, including those based on digital technologies (e.g. MOOCs, simulators, etc.). 8. Development, introduction or presence of innovative curricula and pedagogies focused not just on technical skills but also **transversal competences**, e.g. entrepreneurship. 9. Investing in the **CPD of teachers and trainers**, for both pedagogical and technical skills.
	‹Yes/No. If 'Yes', please provide a justification of how this element can be found in the example; if 'No', please delete the row›

<Insert country name>	
5	10. Development, introduction or presence of **project-based learning** that brings interdisciplinary approaches and VET learners from different fields of study (e.g. design, marketing, engineering) to solve real work problems/challenges. 11. Providing **guidance services**, as well as **validation** of prior learning. 12. Development, introduction or presence of **business incubators** for VET learners to develop their entrepreneurship skills and projects. 13. Acting as or supporting **innovation hubs** and **technology diffusion centres**, which might support companies of any size, while sharing equipment and creating incentives for staff to work together with local SMEs in applied research and development projects, with the involvement of VET learners 14. Supporting the attraction of **foreign investment projects** by ensuring timely provision of skills for companies investing locally. 15. Development, introduction or presence of **'International VET campus/academies'** for learners, teachers and trainers, leaders in VET institutions, and individuals considering future vocational study options. These could be focused on specific occupational fields or products. 16. Participating in national and international **skills competitions** aimed at increasing the attractiveness and excellence of VET. 17. Contributing to creation and dissemination of **new knowledge** in partnership with other stakeholders, e.g. through joint R&D with universities, R&D units in companies, research bodies, etc. 18. Making use of **EU financial instruments and funds** to support infrastructure investments to modernise VET centres with advanced equipment (including simulators and other high-tech equipment). 19. Developing **sustainable financial models** that combine public funding and income-generating activities for CoVEs.
	<Yes/No. If 'Yes', please provide a justification of how this element can be found in the example; if 'No', please delete the row>

Annex 2. Israel innovation hub Entrepreneurship Centres – centres of vocational excellence created as a new and independent training provider

The Amal Group is a leading player in the Israeli education system. A driving force in entrepreneurship, innovation and excellence, Amal is at the forefront of scientific and technological innovation. Each year tens of thousands of students in about 120 institutions all over the country enjoy equal opportunities to acquire the knowledge and skills needed to integrate into the employment world of tomorrow. Entrepreneurship Education, an innovative, unique and ground-breaking model in Israel, developed by the Amal Group in collaboration with the Ministry of Education, prepares young people for entrepreneurship in business and industry. Amal operates six Entrepreneurship Centres all over the country, each of them attended by about 100 students a year. The entrepreneurship programme gives students the tools for future success and the ability to solve real questions and problems that are taken from the real world, enabling them to integrate into a world of global employment.

Amal has always had connections with universities, colleges and institutions of higher education. For example, in the Entrepreneurship Centre in Be'er Sheva, there are connections with Be'er Sheva University and the Bezalel Academy of Art in Jerusalem. In the centre in Safed, there are connections with Tel Hai College and Ziv Hospital. In the centre in Hadera, there are connections with the Technion (Israel Institute of Technology). The centres also have very strong collaborations with companies: they work with international firms such as Cisco, Check Point, Apple, Google and Intel, as well as with local companies and local start-ups, which students can actually see as a career horizon. They also work with the National Cyber Headquarters and Israel Defense Forces. In addition, in each city they work in full cooperation with the local authority or the municipality, and build the training according to the needs of the region.

Through its innovative Entrepreneurship Centres, the Amal Network is providing its students with the tools for a better future.

ACRONYMS

AI	Artificial intelligence
ANACEC	National Agency for Quality Assurance in Education and Research (Moldova)
ASEAN	Association of Southeast Asian Nations
ATIC	Association of Private ICT Companies (Moldova)
CDAD	Chinese–German Training Centre for Printing Technology (China)
Cedefop	European Centre for the Development of Vocational Training
CIFPA	Centre for Innovation in VET of Aragon
CNAM	Conservatoire National des Arts et Métiers
CoVE	Centre of vocational excellence
CPD	Continuing professional development
CVET	Continuing vocational education and training
DCFTA	Deep and Comprehensive Free Trade Area
EaP	Eastern Partnership
ECDL	European Computer Driving Licence
EFTA	European Free Trade Agreement
EfVET	European Forum of Technical and Vocational Education and Training
EQF	European Qualifications Framework
ETF	European Training Foundation
ETTE	European Trainers' Training for Excellence
ETVET	Employment-Technical and Vocational Education and Training
EU	European Union
EVBB	European Association of Institutes of Vocational Training
EVTA	European Vocational Training Association
EYE	Enhancing Youth Employment
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German development agency)

HCD	Human capital development
ICT	Information and communication technologies
IGIAT	Indian–German Centre for Modern Technologies (India)
ILO	International Labour Organization
ITE	Institute of Technical Education (Singapore)
ITS	Istituto Tecnici Superiori (Italy)
IVET	Initial vocational education and training
MFC	Multifunctional centre (Albania)
MOOC	Massive open online course
NGO	Non-governmental organisation
OECD	Organisation for Economic Cooperation and Development
PPP	Public-private partnership
R&D	Research and development
RIS3	Research and Innovation Strategy for Smart Specialisation
RSA	Royal Society for the Encouragement of Arts, Manufactures and Commerce
RTC	Regional Technological Centre (Belgium)
SEET	South Eastern Europe and Turkey
SEMED	Southern and Eastern Mediterranean
SENAI	National Service for Industrial Training (Brazil)
SME	Small and medium-sized enterprise
TVET	Technical and vocational education and training
UK	United Kingdom
UNDP	United Nations Development Programme
USA	United States of America
USAID	United States Agency for International Development
VET	Vocational education and training
WBL	Work-based learning

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