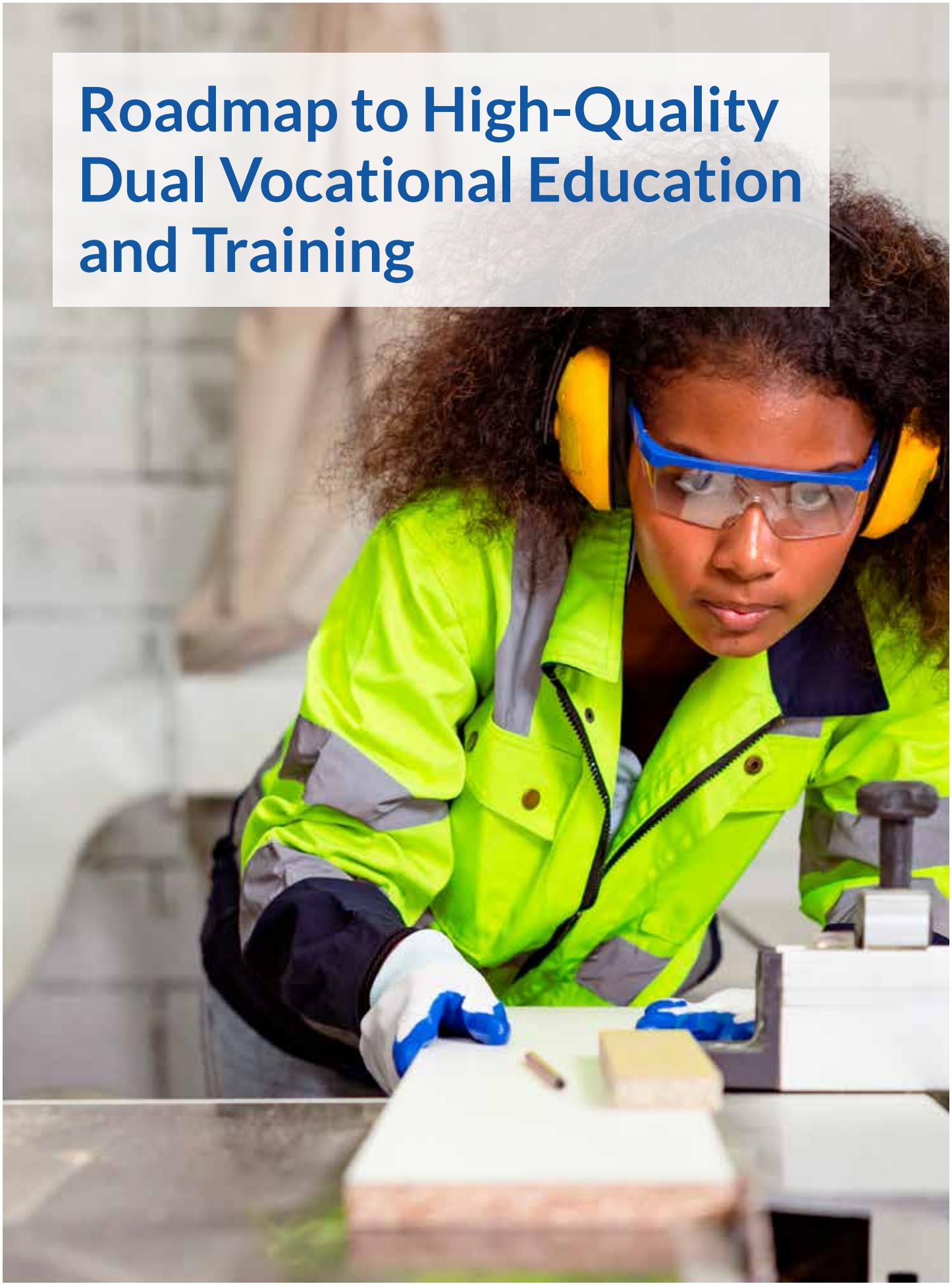
Roadmap to High-Quality Dual Vocational Education and Training



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Roadmap to High-Quality Dual Vocational Education and Training

Prof. Dr. Dieter Euler

BertelsmannStiftung

Contents

Foreword

For years, dual education systems have held high esteem on the global stage. China, for instance, is currently poised to establish the world's largest vocational training system and views Germany's dual system as an example to follow (see South China Morning Post on May 16, 2023). Similarly, in England, the German model is held in high regard, particularly with regard to vocational education challenges (see The Irish Times on April 22, 2023). Germany's policy goals also extend to sub-Saharan countries, with plans to introduce the dual education system there (see FAZ on April 11, 2023). Even within the United States, dual vocational education and training is gaining traction, which is due in large part to the active involvement of German corporations (see Handelsblatt on November 7, 2022). This trend demonstrates that the seamless integration of vocational education and hands-on training continues to be a successful formula for cultivating skilled labor.

A decade has passed since Professor Dr. Dieter Euler authored an oft-cited study for the Bertelsmann Stiftung in 2013, in which he explored the potential transfer of Germany's dual education system to other countries.[1] Back then, the prevailing discourse assumed that such a transfer could prove effective if the German model were replicated as a whole. However, the practical adoption of such systems often looked quite different from the German model due to variations in local conditions, education policies, economic environments, and institutional frameworks.

Based on a unique analytical logic, Dieter Euler's approach introduced a groundbreaking perspective. Rather than advocating for a direct replication, he identified 11 distinct components of the dual vocational education system that can be examined individually. His approach included posing questions such as: How is the dual system financed? How can theoretical learning be effectively combined with practical training? How are examinations conducted? He thereby illustrated what it might look like to transfer individual components and how to go about substituting specific elements. His methodology, which acknowledged the fact that other countries have vocational education and training systems in place that already feature some form of a dual approach that is just as valuable as the German model, helped render the German system applicable to other international contexts.

Since its introduction ten years ago, this "component-driven approach" has gained traction: A number of organizations, including the OECD, have also put forth frameworks that break down dual education systems into structural modules (e.g., ILO, European Commission). At the same time, Prof. Euler himself has continued to test and expand on his approach.

It was in this context that the idea grew to publish a revised version of the original study in order to communicate the updated conceptual framework while also providing the professional community the opportunity to share their practical experience with implementing dual education systems. This edition thus follows the originally cited eleven elements. However, they are now grouped into four stages of implementation, which allows for a

1 Euler, Dieter (2013): Germany's Dual Vocational Training System: a Model for Other Countries? Gütersloh: Bertelsmann Stiftung.

much more differentiated analysis in comparison to the initial version. This results in a matrix that is illustrated through a range of practical examples and serves two main purposes: First and foremost, it facilitates the design of reforms. Second, the matrix offers the systematic means to scrutinize existing reform processes from historical and substantive viewpoints. This is vividly demonstrated through two comprehensive case studies examining vocational education reforms in Albania and Spain.

“Change is a journey, not a blueprint.” This is the quote that introduced the inaugural edition of our guide to adopting the dual education system ten years ago. The statement remains relevant in today’s context as those aiming to incorporate a dual approach into their education system must take into account their local conditions while tailoring implementation efforts to their own educational, social and economic goals. In other words, while the dual education model in German-speaking countries undoubtedly offers inspiration, it cannot be copied in a strict sense.

The present study aims to provide decision-makers in politics, public administrations, and academia in reform-minded countries with insights that can facilitate a process of mutual collaboration and learning. We would like to extend our deepest appreciation for Prof. Dr. Dieter Euler for presenting his extensive experience in international reform efforts with such clarity and in ways that facilitate their applicability in diverse institutional and cultural contexts.

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1 | Contextual factors: Vocational education and training as part of the education and employment system

"He who generalizes, generally lies!" – this quote, attributed to William Blake, might well be applied to any effort to describe and analyze vocational education and training (VET) systems. The diversity of such systems can be seen in the range of different objectives and institutional arrangements they display, and especially in the way they are embedded within broader education and employment systems.

Yet despite the significant variations, different systems also show considerable similarities. In nearly all education systems, social background and educational success are closely linked. While socially privileged groups in society are disproportionately represented in areas that require higher-level educational qualifications, and which consequently offer better opportunities, students from disadvantaged social groups often leave the education system earlier and with lower-level qualifications. As a result, they end up in jobs that are considered less attractive in terms of earnings, security, status and level of aspiration. For many people, origin thus plays a role in determining the future.

Within this hierarchy, academic education is regarded as the royal road to income and advancement, while VET is seen largely as an option providing entry into lower-status occupational activities, promising a livelihood but little more. Particularly in developing and emerging countries with large informal economies, formal and informal vocational training paths often exist side by side. "According to the ILO, in 2016, "75% of young workers worldwide were engaged in informal employment, and in sub-Saharan Africa and Southern Asia the figure was close to 96% of employed youth" (ILO 2022, 22). The status hierarchy also contains another subsidiary level. This encompasses all those without any academic or vocational qualifications, who enter the employment system as unskilled or low-skilled workers, and are often exposed to precarious working conditions and disproportionately high levels of unemployment.

From this outline, it is clear that VET programs tend to be embedded in systems that accord higher status to traditional academic achievements, while themselves offering entry into comparatively lower-status economic sectors. Moreover, such programs are also closely aligned with the local employment system. However, international comparison shows that these mechanisms of alignment are in fact very different. From the VET perspective, the important question is whether there is a demand for skilled workers in the employment system or in individual sectors of the economy that can be met either by university graduates or those who have completed a VET program. In this regard, labor-market qualification structures differ between countries. One type is characterized by highly polarized structures, with highly skilled academically trained workers counterposed by unskilled and semi-skilled workers. This contrasts with structures in which there is a significant middle range of (systematically vocationally trained) skilled workers between the two poles. Given this fact, we can conclude that high-quality VET programs correspond with the demand for skilled workers within the employment system.

However, status hierarchies do more than just divide the various sectors of the education system. Even within VET systems themselves – as within the broader employment system – there is often a high

degree of differentiation and segmentation. For example, having a diploma from a general education school has a significant influence on a candidate's chances of accessing VET. In this context, Germany's National Report on Education refers to "occupational segmentation according to educational qualifications and training areas" (AGBB 2016, 109 ff.). Within the upper segment (business, IT and media occupations), which accounts for around 20% of trainees, the majority of participants are young people with a university entrance qualification (Gymnasium). For the second segment (e.g., mechatronics technicians, office managers), which is roughly the same size, access requires completion of at least the intermediate level of secondary school (Realschule). Young people who have completed only the lower level of secondary school (Hauptschule) have access to VET only within the next two segments, often in occupations with comparatively low status (e.g., the hotel and catering sector, the food trades, or the construction sector).

2 | International comparative perspective: Ideal and real types of vocational training and education

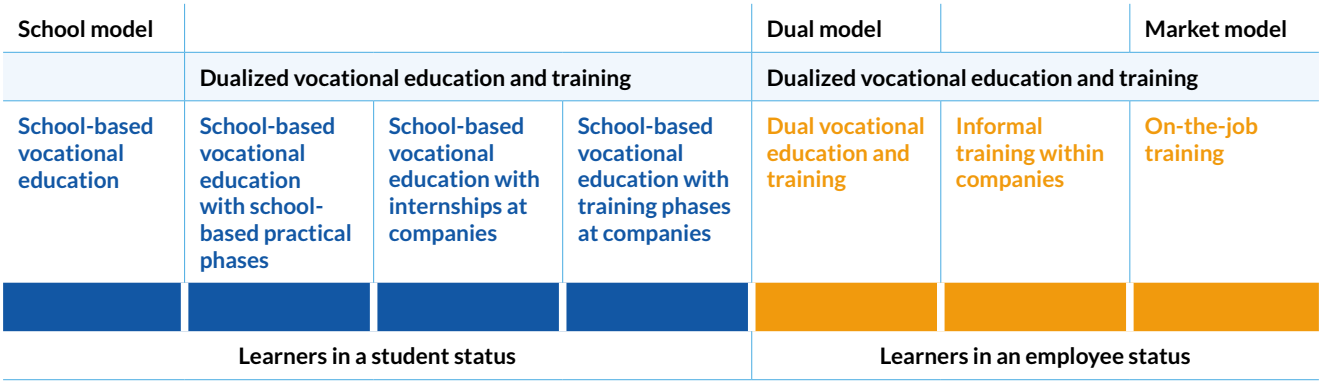
Transitions from compulsory schooling into the employment system vary both across and within countries. Accordingly, the scope, extent and importance of VET also vary from country to country. On the one hand, these differences are shaped by each system's specific historical development. For example, the dual system in Europe's German-speaking countries is based on traditions that date back to the medieval guild system, and which still make industry's involvement in training young workers seem natural today. On the other hand, national VET cultures also affect the design of VET programs. For example, if the business community regards education as being primarily a state responsibility, then VET tends to be provided primarily in state schools. Starting from this basic definition, it is understandable that in many countries, companies criticize the quality of school-based VET programs, but do not see themselves as responsible for initiating change (EULER 2018a, 4). A country's VET system is the result of a historical and cultural process. It does not emerge from the drawing board as a perfectly rational construction, but instead takes shape gradually "as the result of a national social and cultural history" (DEIßINGER 1997, 2).

In broad terms, VET systems can be categorized with reference to the governance systems or organizational principles that direct their activities. Following GREINERT (1999; 2005), we distinguish here between the three ***ideal types*** of 1) market control, 2) state control and 3) cooperative control.

- In the market model, the supply of VET is regulated by the market. Offers are made either directly by companies or through other typically private-sector providers. VET activities are primarily focused on directly meeting companies' needs. In this pure ideal type, there are no overarching training standards, and no generally recognized examinations and certificates. Costs are borne by the market entities – companies and employees. General and vocational education remain strictly separate. This model is primarily found in the Anglo-Saxon countries (e.g., the United States, Canada, the United Kingdom, Australia and New Zealand). One variant can be encountered in Japan. There, large enterprises in particular offer training focused on meeting company needs via forms of job rotation and training periods offered by in-house training centers. In effect, this constitutes a labor market internal to the companies themselves (BUSEMEYER & TRAMPUSCH 2012).

- In the case of state control (the "school model"), VET is provided through (mostly state-run) vocational schools. The curriculum is primarily geared toward teaching the theory relevant within a given vocational area, with reference to practical work contexts often remaining marginal. A VET program is based on curriculum and ends with trainees receiving defined diplomas or certifications. The VET system is funded by the state. These school-based certification programs are often associated with general education or even university courses of study. France and Sweden are seen as examples of this model (BUSEMEYER & TRAMPUSCH 2012). In developing and emerging countries, one key rationale underlying this model is the social inclusion of groups who lack access to higher education.

FIGURE 1 **Vocational education and training models with transitions**



Source: See EULER 2018a; DCdVET 2022

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- The cooperative or dual model anchors VET both in companies and in vocational schools, supplemented if necessary by vocational training centers serving multiple firms as an additional learning site. The training company is the primary learning environment; it makes decisions on which trainees to accept and enters into training contracts with them. The education and training provided in the various learning environments combines general and vocational content, and is intended to develop a set of skills that goes beyond the training company's specific needs. In this sense, the training is underpinned by a broader conception of "education" and "occupation" that is intended to give graduates flexibility and mobility in the labor market. The curricula are developed cooperatively by the state and the social partners (employers and unions). Financing comes both from the state (primarily expenses for vocational schools) and the business sector (primarily expenses associated with in-company training and pay for trainees). The qualifications granted at the end of such programs are recognized by the state. Due to the involvement of the social partners, as well as the delegation of state tasks to intermediary institutions such as chambers, one variant of this model is also referred to as the corporatist model. The German-speaking countries of Germany, Switzerland and Austria, as well as the Netherlands and Denmark, are all cited as examples of this model (BUSEMEYER & TRAMPUSCH 2012).

The GREINERT typology is still comparatively coarse-grained, however. The following overview first distinguishes between the three ideal types outlined by GREINERT, then expands these to include intermediate categories and assigns these to a legal status. The intermediate categories can be interpreted using the umbrella term of ***"dualized vocational education and training,"*** and can be seen as possible transitions and paths of development toward a dual model. They capture the numerous variants of realization in which practical and theoretical learning phases are combined within frameworks of "learning about work" or "learning at work."

Instances of the ***school model***, with learners in the status of students, can also include phases of practical learning to varying degrees. To a limited extent, theory-based learning phases are supplemented by practical phases that take place in school workshops, via simulations (e.g., business games, training firms, learning offices) or in the context of company internships. Practical phases within the school-based education model create more robust connections to real-world firms if they are supplemented by in-company training phases that are harmonized with the curriculum.

The ***market model*** can take the form of on-the-job training or an "informal apprenticeship." While on-the-job training involves informal learning that lacks a formal structure, informal apprenticeships have the specific aim of teaching the skills of a particular trade or profession. In many developing

FIGURE 2 **Determining characteristics and expressions of formal and informal vocational training**

Determining characteristics	Formal VET – Dual model	Informal VET
Training contract	In writing between enterprise, apprentice, and if applicable, the school or training center	Verbal or in writing between enterprise, the apprentice, and if applicable, the apprentice's parents
Legal basis	Detailed corpus of institutional and legal arrangements	None; social norms, traditions and cultural values often play a moderating role
Skill profile	Broad profile of practical and theoretical skills relevant to carrying out a profession	Skill profile consists primarily of practical skills relevant to performing work tasks at the training enterprise
Learning sites, curricula	Training takes place within the enterprise, and is supplemented by courses at schools/training centers, based on formal curricula/ training plans	Training takes place exclusively within the enterprise, to some extent based on informal training plans
Expenditures/funding	Enterprise invests time, wages and equipment; apprentices carry out productive activities; state finances equipment and teaching staff	Enterprise invests time, equipment, possibly wages; apprentices carry out productive activities and may pay fees
Pay for apprentices	Enterprise pays wages and makes social insurance contributions	Typically none; some enterprises pay reduced wages, and provide support in case of illness or accident
Duration	Usually fixed minimum duration	Duration usually specified, but end of training period may be fixed by enterprise
Qualification received/ credentials	Standardized exams and qualification certification	Usually non-standardized review process, generally no certification received

Source: Adapted from ILO 2012, 12; ILO 2022, 73

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and emerging countries, business activities and VET are largely carried out in the informal sector (see ILO 2012; EULER 2017a). While academic education and formal VET are primarily the domains of the socioeconomically better-off segments of the population, informal training provided within firms or other economic entities constitutes a possible entry point for members of strata that would otherwise remain excluded from post-school education. In the context of informal VET, an occupation's practical skills are generally transferred from experienced employees to members of the younger generation, typically within small firms. "Apprentices … learn technical skills from master craftspersons and practitioners at the workplace and are inducted into a business culture and a business network which makes it easier for them to find jobs or start businesses. … The training investment is shared between the master craftsperson and the apprentice, providing access to training even for poor young people" (ILO 2012, III). Informal VET is based on an agreement, usually verbal, between the owner of the enterprise and the trainee or the trainee's parents. Many of the relevant precepts are based on traditions that have previously been handed down in this way, and which are implemented under specified conditions within comparatively small communities such as guilds, craft groups or professional associations. In contrast, formal or modern forms of VET are based on state-devised guidelines. These govern the training content, the training conditions, and the degrees or qualifications granted, for example. Informal and formal forms of VET can be ordered and distinguished by means of core characteristics. The following overview lists the most important determining characteristics as well as their possible forms of expression.

Ideal types are conceptual images used to depict and order reality in a way that accentuates or emphasizes particular characteristics. They can also play an aspirational role, with the aim of shaping existing circumstances to better resemble the ideal types. By contrast, ***real types*** – in this case, the VET systems

that actually exist in individual countries – are more complex. For example, while real VET systems may include characteristics belonging to the various ideal types, these can manifest in different ways. Moreover, real systems often represent a mixture of different ideal types. The following examples illustrate this issue in three facets.

(1) Heterogeneous expression of homonymous types of VET.

Two examples can be used to illustrate this case. First, Switzerland and Germany are generally described as having prototypical dual education systems. In fact, the two systems do have much in common. At the same time, they differ significantly from one another with regard to certain components. In Germany, for example, the designated authorities and industry chambers responsible for implementation perform key vocational training tasks, including quality assurance with respect to training facilities and trainers, consulting on training issues, and the conduct of final examinations. In Switzerland, these tasks are carried out by other institutions. Moreover, in Switzerland, training results are tested in modular steps over a period of time. All learning sites are involved in this process, with the vocational school handling about 50% of examination responsibilities. In Germany, a final examination is usually held at the end of the apprenticeship, and is conducted by the relevant chamber's examination board. Vocational schools issue a certificate independently of this final examination, but grades have no significance with regard to success on the examination. Second, various governments in England have attempted to establish apprenticeships. "Apprenticeships in England are paid jobs that incorporate on- and off-the-job learning and lead to a nationally recognized qualification at National Vocational Qualification (NVQ) level 2 or above" (LANNING 2011, 7). In addition, the country has introduced "adult apprenticeships" for individuals older than 24 (FULLER & UNWIN 2011, 31 f.), a model that comprised about 40% of all apprenticeships in 2014 (KUCZERA & FIELD 2018, 14). A close look at the different apprenticeship variants in England reveals disparate qualification levels and a broad spectrum of other characteristics. At one end, the continuum includes "those apprenticeships that include full-time employment, good quality, on-the-job training and a knowledge-based qualification of sufficient rigor to provide a platform for progression to further and higher study" (FULLER & UNWIN 2011, 34). This contrasts with apprenticeships that provide regular employment, but only "a restricted diet of largely job-specific training" (FULLER & UNWIN 2011, 35).

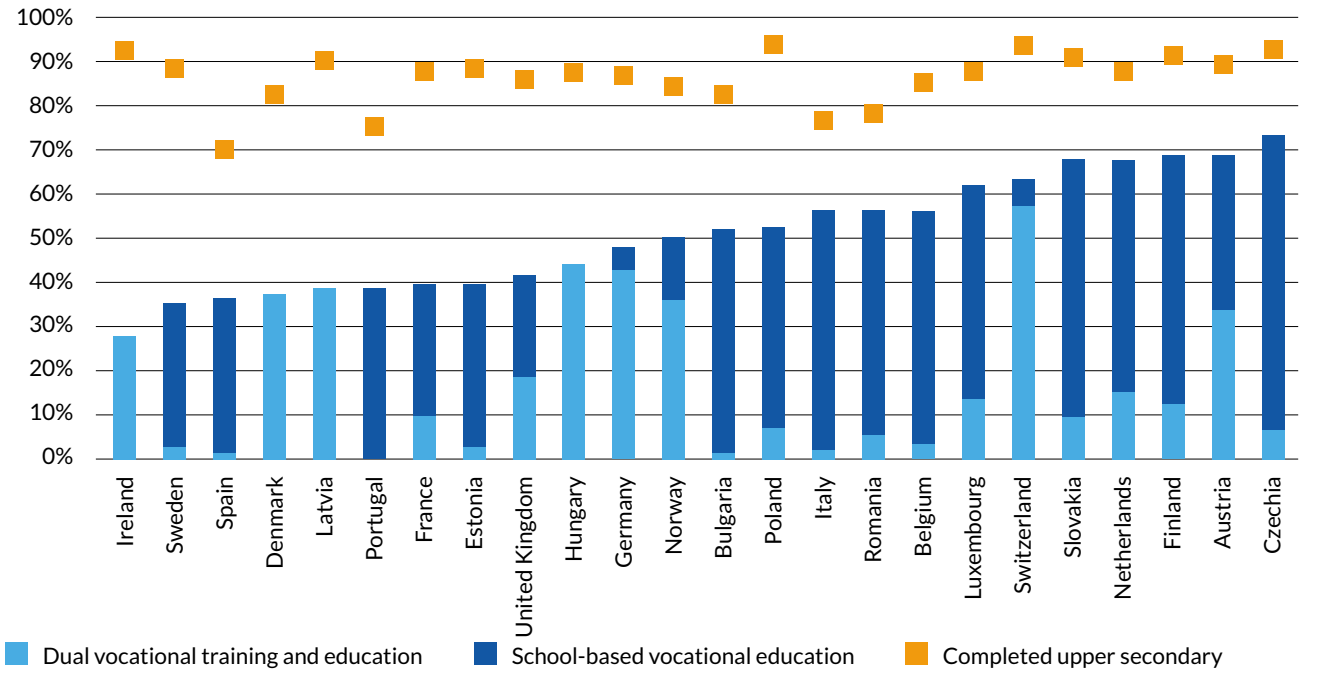
(2) Heterogeneous expression of individual elements within the VET types.

A second facet captures the fact that comparable elements may exist across different VET systems, but can be qualitatively very different. For example, EULER (2018c) examined the skill profiles of teaching and training personnel in five ASEAN countries (Thailand, Laos, Cambodia, Vietnam and Myanmar). The study identified significant differences among teaching and management staff at vocational schools and among companies' internal training personnel with regard to job entry requirements, quality standards, the duration and content of technical and pedagogical preparation, the degree to which academic institutions were involved, and the presence of continuing education offerings. Another example relates to the share of training time spent in the various learning environments. For instance, a comparison of school curricula in Switzerland showed that the amount of school-based instruction varies between vocational occupations, ranging from 320 to 600 hours per training year. This means the theory-based training content differs significantly in scope across these areas of focus (KRIESI et al. 2022, 22, 24).

(3) Different types of VET in a country show heterogeneous linkages.

Finally, a country's real VET system types do not merely represent the specific manifestation of an ideal type, but rather represent a mix of different ideal types. In the Netherlands, for example, all vocational training and continuing education programs can be completed either full time at school or on a dual basis, with full-time school-based programs accounting for around two-thirds of all such programs. "The curricular foundations are the same,

FIGURE 3 **Share of learners in dual or school-based VET among all upper secondary learners in Europe in 2019**



Source: KRIESI et al. 2022, 6

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and the final qualifications granted are equivalent. Both paths are designed alternately, meaning that they contain both theoretical and practical learning phases, albeit with different weightings... After completion... both variants have a high level of recognition, but the full-time school-based variant is traditionally preferred by companies" (BUSSE & FROMMBERGER 2019, 59). A different mix of models can be found in Austria (SCHLÖGL et al. 2019). There, individuals entering business-related professions are largely trained in a school context, while those embarking on traditional industrial or craftsperson careers take part in dual training and education programs. In this respect, Switzerland offers a good example of the diversity of linkages within a country. The dual model dominates in the German-speaking part of the country, while the school model has a significantly higher share in the Italian- and French-speaking part of the country. At the extremes, this means that in the canton of Appenzell, more than 80% of 15- to 18-year-old learners complete dual VET, compared with only about 20% in the canton of Geneva (KRIESI et al. 2022, 16).

The following overview shows the shares represented by each of the two types of VET – dual and school-based – among all learners at the upper secondary level. It also documents the proportion of persons between 25 and 34 years old who have completed at least upper secondary education.

The system constellations show further heterogeneity at the linguistic level. For example, while the term "apprenticeship" is sometimes used in a national context (for example, with the English variants sketched above), it is also used internationally to refer to a broad spectrum of different educational programs (see CEDEFOP 2018). "In some contexts, apprenticeships are understood as: a format of training with distinct elements, most notably the combination of learning at the workplace and learning at school, while in others they are understood as: a system type synonymous with terms such as 'dual-track VET'" (KEHL et al. 2021, 4). Accordingly, the variants and meanings of the term "apprenticeship" vary from country to country, with "dual apprenticeship," "formal apprenticeship," "quality apprenticeship," "informal

apprenticeship," "traditional apprenticeship" and "alternation" all widely used to refer to a mode of vocational training organization in which school- and enterprise-based learning environments function in parallel in a certain way. Moreover, there is no clear demarcation between "apprenticeship" and terms such as "internship" or "traineeship" (ILO 2017, 7). In addition to "apprenticeship," the term "work-based learning" (WBL) is widely used, placing a focus on the organization at which the learning is taking place. KIS (2016, 7) defines WBL as "learning that takes place through some combination of observing, undertaking and reflecting on productive work in real workplaces." She further distinguishes between "structured work-based learning schemes" (as a combination of on- and off-the-job learning phases that are legally regulated and lead to a qualification), "work placements" (as practical supplements to formal, often school-based forms of VET), and "informal and non-formal work-based learning" (as forms of learning without an explicitly defined goal, and for which no formal qualification is granted). In order to fully grasp the various aspects of a term's meaning, we generally need to establish the context in which it is applied.

3 | Dual vocational education and training: the difficult pursuit of policy transfer

The desire to determine the "best" training model may seem an obvious pursuit, but there is no clear answer to this question, and for several reasons. As mentioned earlier, employment and VET systems are closely interconnected. For instance, dual VET, which aims to cultivate skilled workers, would be relevant only in sectors where the organizational structure relies on such workers. It would be disheartening for graduates if they were unable to apply and leverage their acquired qualifications after completing their training. Additionally, the companies that provide training would incur expenses for their services without receiving a return on their investment.

However, even more significant are normative questions regarding VET. These questions include: What should the purpose of VET be? Is it primarily for adapting to the specific qualification needs of companies, preparing for a broader range of occupations, or contributing to personal development? How narrow or broad should VET be in its orientation? Should it focus mainly on short-term vocational qualification needs or encompass a more broadly defined occupational field? When developing training curricula, how can we achieve a balance between general and vocational education, as well as present and future relevance? How connected should vocational and academic education be with each other? Should they remain separate, be in competition, or be integrated together?

Regardless of their origin, national VET systems serve as a means to achieve specific goals, which can vary from country to country. Consequently, there is no universally "best" system. Instead, national VET systems can be discussed and assessed in terms of how effective they are in attaining desired goals. It is only once specific goals have been determined that the design of the means acquire a justifiable direction and form. Conversely, every real VET system is subject to a more or less explicit goal-setting. The goals articulated in legal frameworks or government-issued announcements may be interpreted and prioritized differently by various stakeholders. Furthermore, these goals can sometimes be in tension with each other. However, the fundamental connection between goals and means remains essential when designing VET systems.

The "dual vocational education and training" approach, as implemented particularly in German-speaking Europe, is recommended by organizations such as the EU (EUR-Lex 2018), ILO (2017), OECD (2018), WORLD BANK (2016), and CEDEFOP (2018) as a VET system that purportedly contributes to achieving many countries' economic and societal goals. It is presented as an alternative to academic routes into work and a profession.

The possible motives for transferring the VET system to other countries are diverse. They can be attributed to the following policy areas:

- Development policy aims to contribute, for example, to poverty reduction, youth unemployment, the education of disadvantaged populations, and a strengthened economy in recipient countries (SDC 2017, 6; DEUTSCHER BUNDESTAG 2013).

- Foreign policy aims to contribute to the stabilization of geopolitically important countries

and regions (DEZA 2017, 6 f.). In countries with which a nation has "difficult" diplomatic relations, VET can serve as a non-ideological policy area that maintains the "thread of contact" between states.

- Foreign economic policy aims to support companies from one's own country with production sites and/or trade relationships in other countries by training qualified personnel (EULER 2013b, 11; GERMAN BUNDESTAG 2013, 6; MEHROTRA et al. 2014; FONTDEVILA et al. 2022, 586).

- Education export policy aims to provide educational companies from one's own country with a platform to commercially distribute their advisory services in other countries (see GERMAN BUNDESTAG 2013, 6; MAURER 2018, 10).

But what are the potential performance advantages of a dual VET system that could compel potential recipient countries to adopt this system in their own system of VET? Four key advantages are highlighted below:

- Integration of theory and practice: Dual VET excels in integrating theory and practice, combining exemplary and systematic learning. By incorporating both general and vocational education, training programs establish a solid theoretical foundation and practical relevance. Occupation-oriented vocational education supplies the labor market with professionals possessing practical skills and adaptability to technological advancements and changing work environments.

- Business-sector involvement: Dual VET necessitates the active participation of the business sector in training design and governance. Unlike school-based programs that are driven primarily by supply-side considerations, dual programs are developed in collaboration with businesses and thus prioritize demand and real-world needs. This enhances the training's relevance for companies and boosts graduates' employability.

- Financial and economic benefits: Dual programs offer financial advantages from both a governmental and business perspective. Compared to school-based education, dual training significantly reduces costs for the government due to the involvement of workplace training phases. Moreover, the metrics show that learners progressively become productive during their training, generating returns for companies (SCHMID 2019).

- Sociopolitical and pedagogical advantages: Beyond economic arguments, dual programs offer sociopolitical and pedagogical benefits. They provide opportunities for disadvantaged youth, those deemed to be practically oriented, and those disengaged from traditional schooling to transition into qualified employment. Dual VET can also compensate for gaps in prior education within the VET context. In addition to ensuring skilled labor, it plays a vital role in the social integration of young people entering the workforce.

When considering the benefits outlined above, it is important to acknowledge that they represent potentials. The extent to which these potentials are actualized depends on how they manifest in practice. Empirically, even in countries with a high proportion of dual training programs, the exploitation of potentials or the quality of training processes varies to some extent.

The perceived performance potential of dual VET is a significant factor driving increased interest in exploring the transferability of this model within the framework of international development cooperation (KEHL et al. 2021, 6-10). However, despite widespread acclaim, dual VET has only been selectively adopted in a few countries. This irony has led to the description of the "dual system" as an "export hit without market demand" (EULER 2013b).

Clearly, there are no simple and quick means of transferring VET systems to other countries. Transfer processes require specific conditions at both the individual and systemic levels. At the individual level, transfer occurs as a learning process in which individuals acquire knowledge and skills with the support of teachers or other individuals. Learners typically connect new knowledge with their existing

knowledge. Conversely, educators' offerings will reach learners only if they perceive them as relevant and desirable. Transfer processes at the systemic level can be understood in a similar manner. The specific concepts of a country's VET system function as "offers" to a potential recipient country, which examines their relevance and compatibility within its specific social, economic and cultural conditions. Successful experiences from one country can ideally serve as a resource for developing tailored, demand-driven measures in other countries.

However, even if a VET system like dual training is relevant and compatible with a potential recipient country, transfer processes do not occur through direct replication. Building on GESSLER'S framework (2017), three forms of transfer can be distinguished:

- Disseminative transfer: This form involves adding new elements that complement or (partially) replace existing ones. For example, a country may introduce new occupational profiles by incorporating curricula from another country.

- Adaptive transfer: In this form, new elements are adopted and adjusted to suit the existing conditions. For instance, work-based learning approaches can be integrated into a school-based VET system and adapted to the existing framework within cooperating companies.

- Transformative transfer: This form entails absorbing and assimilating new elements that act as catalysts for transforming an existing system and fostering innovation. For example, adopting the principle of social partnership between the state and the business sector can lead to the establishment of consultative and decision-making bodies that bring about significant changes.

A country seeking to reform its VET system and draw lessons from other countries focuses initially on areas within its own system that require significant reform. The potential performance advantages of dual VET make it an attractive option, especially when aiming to provide training for qualified professionals at an intermediate skill level. Considering their own goals and existing conditions, the country undergoing the transfer process evaluates which elements can be integrated into their existing structures, potentially with adjustments, modifications, and expansions. They also analyze experiences from different countries and may discover that combining approaches from various countries aligns best with their desired reform processes. For instance, instead of establishing a complex chamber system like that found in Germany, they may adopt the Swiss model of designing examination and certification tasks that are relevant to the learning environment. They may also realize that a training program can be modular, incorporating intermediate qualifications, rather than following a rigid three-year program. In essence, the transfer question involves assessing individual elements, comparing experiences from different countries, and adopting and adapting those elements that align most effectively with their own goals, structures and cultures.

It is important to note that the processes of VET reform in a country do not necessarily have to result in the development of a dual(ized) VET system. Nevertheless, the following considerations focus specifically on the development of a dual(ized) VET system, taking into account different forms of transfer. The guiding question is: ***What steps can be taken to introduce or develop a dual(ized) VET system?***

4 | From analysis to design: Stages in implementing a locally adapted policy-transfer process

In this chapter, the key question outlined above is taken up from a specific action-focused point of view, and is translated into individual steps. We thus look back to the analyses contained in the previous chapters, while additionally adding a design perspective. Three observations will guide this process:

- In this section, we take the ***perspective*** of an actor responsible for crafting and implementing strategies for reforming a national VET system. The assumed goal of such activities is to bring an existing VET system closer to the dual ideal type.

- The ***focus of the design process*** is not the dual(ized) VET system in its entirety. Rather, the development process will examine and prioritize the system's individual components. To this end, it will be necessary to identify and describe the basic components of a dual(ized) VET system in more detail.

- The ***design process*** itself can take different forms, and may change its scope depending on the individual component. For example, school-based VET courses can be dualized through the addition of practical learning and work phases in companies. This reform step could initially be limited to certain industries, regions or company sizes, and the duration of such company work periods could initially be relatively short. It follows that the transfer does not necessarily have to aim at achieving an ideal type of dual VET, but can instead be directed at achieving intermediate stages that depend on the specific policy and business environment, and on the goals set more generally within the specific VET system. The degree to which these intermediate stages resemble the ideal type may vary. This follows from the assumption that in the real world, policymakers in many countries and individual economic sectors may not aspire to a (high) ideal. However, they may wish to assess the extent to which approximating it is possible, and seek to identify the means for doing so.

The approach outlined here leads to the following key questions:

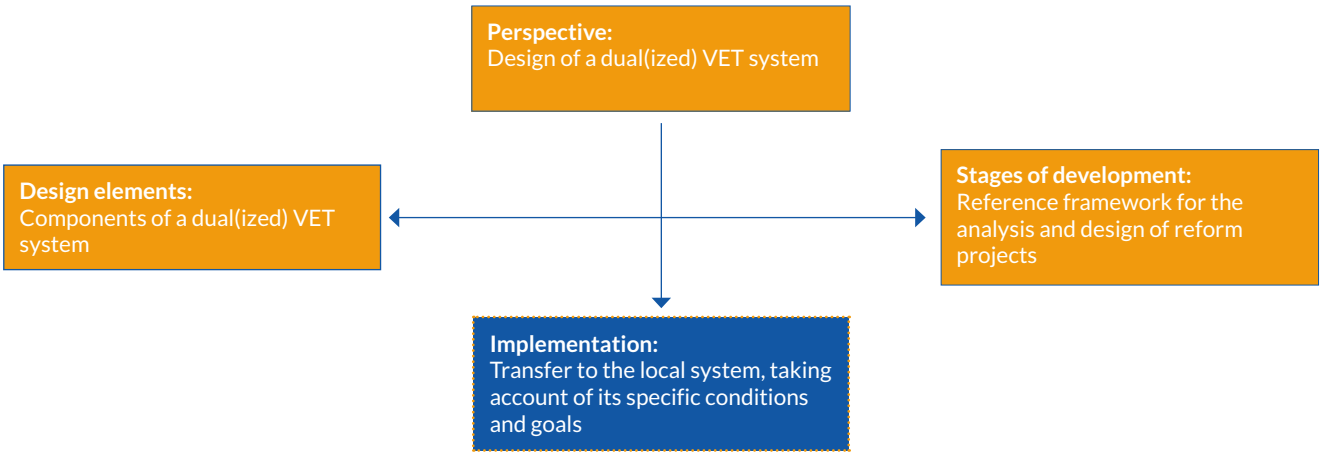
1. What components or design elements are of fundamental importance in creating a dual(ized) VET system?

2. How can the individual components and design elements be given concrete form, and then assigned to different stages of development in a reference framework with high- and low-threshold implementation variants?

3. How can the reference framework for the transfer of knowledge and practical experience be applied to the development of dual(ized) VET systems?

Figure 4 illustrates the conceptual relations guiding such activity:

FIGURE 4 **Design of a dual(ized) VET system**



Source: Own representation

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The process outlined here creates a reference framework for the conception, planning and implementation of change initiatives focused on designing dual(ized) forms of VET. Moreover, based on the theoretical considerations relating to transfer plans discussed in Chapter 3, we also propose possible approaches for designing the policy-transfer activities themselves.

5 | Design elements: Components of a dual(ized) VET system

5.1 | Selected reference points in the literature

The approach we discuss here, of designing a VET system transfer using the components relevant to dual(ized) VET, requires a number of careful choices. Before introducing and justifying the design elements we will later explore in-depth, we will provide an overview of relevant components as proposed in a number of relevant sources.

Specifically, we will present eight different approaches. These include characterizations published by global and supranational organizations (UNESCO, the ILO, the European Union, ASEAN), as well as structures developed by authors from the three European countries most closely associated with the dual VET model.

As with the definitions of "apprenticeship" (see Chapter 2), this selection reveals a broad spectrum of specifications and accentuations. The following descriptions represent different orientations (goals, principles, measures/interventions). Moreover, they document different program formats, and themselves employ different levels of abstraction.

Particularly in the case of the five structures proposed by the international organizations, the original sources contain no substantiating evidence. We nonetheless include them here based on their evident plausibility and clear relevance. We will refrain from discussing and evaluating the individual proposals in detail. However, they serve to illustrate the range of possible reference points, as well as the commonalities between different structural proposals.

FIGURE 5 **Alternative structures for describing dual(ized) VET systems**

UNESCO (2012)	EULER (2013a, 8 f.)	BLIEM, PETANOVITSCH & SCHMID (2014, 11)	ILO – INTERNATIONAL LABOUR ORGANIZATION (2017, 21)
Seven fields of VET policy transformation: 1. Enhancing relevance of VET 2. Expanding access and improving quality and equity 3. Adapting qualifications and developing occupational pathways 4. Improving the evidence base 5. Strengthening governance and expanding partnerships 6. Increasing investment in VET and diversifying financing 7. Advocating for VET	Eleven core elements of Germany's dual system: 1. Addressing economic, social, and individual goals 2. Broad competence profiles 3. Alternating learning sites, aligning theory and practice 4. Public-private partnership 5. Joint funding 6. Complementary VET offerings of schools, etc. 7. Quality standards 8. Professional teaching personnel 9. Balance between standardization and flexibility 10. Solid evidence for decision-making and design 11. Social acceptance	Seven core dimensions of a modern dual apprentice training system: 1. Social partners as carriers of the apprenticeship 2. Vocations are more than jobs 3. An apprenticeship is also beneficial for the company 4. Quality is the responsibility of all stakeholders 5. An apprenticeship adjusts to changing qualification requirements 6. An apprenticeship is an attractive training path for young people 7. Lean administration and clear, transparent processes	Six building blocks of quality apprenticeship systems: 1. Meaningful social dialogue 2. Robust regulatory framework 3. Clear roles and responsibilities 4. Equitable funding arrangements 5. Strong labour market relevance 6. Inclusiveness

EUROPEAN COMMISSION (2017, 12 ff.)	COUNCIL OF EUROPEAN UNION (EUR-Lex 2018, 4–5)	MAURER (2018, 6)	ASEAN (2021, 51 ff.)
Six systemic building blocks in VET reform programmes: 1. Governance structure 2. Funding system 3. Information systems for strategic planning 4. Labor market-oriented qualifications and curricula 5. Training partnership with private sector 6. Quality of provision and quality assurance	14 criteria for quality and effective apprenticeships: 1. Written agreement 2. Learning outcomes 3. Pedagogical support 4. Workplace component 5. Pay and/or compensation 6. Social protection 7. Work, health, and safety conditions 8. Regulatory framework 9. Involvement of social partners 10. Support for companies 11. Flexible pathways and mobility 12. Career guidance and awareness raising 13. Transparency 14. Quality assurance and tracking of apprentices	Six key features of the dual VET model: 1. Work-based learning 2. Complementary school- or center-based vocational learning 3. Occupational profiles and related curricula 4. Engagement of business sector in curriculum development 5. Apprenticeship contracts defining mutual rights and obligations 6. Formal assessment process, partly in the workplace with representatives of the business sector	Six areas of Human Resources Development (HRD) intervention: 1. Promote lifelong learning culture 2. Adopt inclusive approach 3. Strengthen enabling structures 4. Modernize HRD/lifelong learning programmes 5. Professionalize teaching personnel 6. Promote engagement of business sector in HRD

5.2 | Key points: Design elements relevant to a transfer of VET structures

The eight examples outlined above document the variety of characteristics used to define dual(ized) VET. At this point, the individual proposals, consisting largely of an enumeration of individual VET elements, can still be regarded as additive relative to one other. As a next step, we will address the substance of the proposals, bundling them into the form of 11 core components deemed to be essential. The following 11 components serve as potential areas of action with regard to designing a VET system transfer.

No.	Component	Chapter
1	Policy scope: VET as a means of achieving economic, social and individual goals	5.2.1
2	Overarching objective: Developing skills that will remain relevant in future workplaces	5.2.2
3	Dual principle: Learning alternates between school and company environments	5.2.3
4	Partnership culture: Cooperation between state and business-sector actors	5.2.4
5	Professionalization of VET staff: Setting the pace of development	5.2.5
6	Quality development: Codification and review of standards	5.2.6
7	Participatory governance: Building the institutional and legal framework	5.2.7
8	VET financing: Balancing costs and benefits	5.2.8
9	Flexible VET structures: Dealing with rapid change and diversity	5.2.9
10	Evidence-based design: Creating a solid foundation for decisions and design choices	5.2.10
11	Perceived value: VET in the struggle for reputation, appeal and acceptance	5.2.11

We will begin by explaining and justifying these individual components, and then illustrate them using examples. We will also take a deeper look at challenges that can either promote or hinder the transfer process. Finally, we will propose a series of development stages offering various realization options. These also represent potential stages of a policy-transfer process that allows for progressive approximation of an ideal type. There may be some overlap between the various components, since they range across different levels of abstraction. For example, issues related to funding or business-sector involvement can also be understood as aspects of system governance.

5.2.1 Policy scope: VET as a means of achieving economic, social and individual goals

VET is not an end in itself. Rather, it is a means of achieving defined goals. The scale of the goals being pursued, as well as their specific formulations, vary from country to country. While the economic goal of producing skilled workers is almost universally associated with VET systems, social, individual-level and other goals are frequently mentioned but are generally not specifically defined.

Formulating goals

Germany's VET system offers one example in which goals are comprehensively specified and thematically distinguished. There, policymakers have articulated an overarching conception of the education system in which the "goals are expressed through the dimensions of individual self-regulatory capacity, human resources, and societal participation and equality of opportunity" (AGBB 2022, 1). Collectively, the three dimensions reflect the interests of society, the business sector and individuals. These dimensions are given specific form within the VET framework as follows:

- The economic dimension refers to VET's role in ensuring a high level of macroeconomic, business and individual productivity. From the perspective of the national economy as a whole, the focus is on developing human resources by ensuring that there is a sufficient quantity of skilled workers, and that their skills can meet the workplace's changing needs. The business-level goal is to make sure companies have an adequate supply of qualified workers. At the individual level, the goal is to ensure that individuals are employable and able to earn a living. Also important from an economic perspective is the efficiency of the VET program itself.

- The social dimension addresses VET's contribution to the social integration of the younger generation, both in the workplace and in society at large. VET programs should be designed to prevent any social exclusion, and to integrate young people into the training and employment environments as smoothly as possible.

- The individual dimension relates to VET's role in developing the skills individuals need to meet challenges both on-the-job and in other aspects of their life. VET should give people the opportunity to shape their own lives, thereby developing their full potential and increasing their self-efficacy and motivation to learn.

The broader the VET system's policy scope, the greater its potential impact within a society. In this way, VET can enhance its own legitimacy via its capacity to help realize economic, societal and individual goals. This is particularly relevant in contexts where higher education is seen as the measure of all things, and where VET has a less stellar reputation.

Countries differ not only with regard to the scope of their goals, but also formally and factually in the priority they place on each of the dimensions described above. Even if the three dimensions are formally identified as being of equal importance, the political power wielded by specific interest groups will often determine the relative importance of specific goals in cases of conflict.

Economic dimension

The economic dimension, which relates to developing a skilled workforce in the middle-skill segment, lies at the core of any VET system. The development of skilled workers at different qualification levels is an indispensable prerequisite for the functioning of individual companies and the national economy more broadly. However, as a complement to this basic VET function, an additional possible objective is to promote innovation in the economy (BACKES-GELLNER & PFISTER 2019). Here, the primary focus is on so-called incremental innovations – the small, everyday process optimizations that are not produced by great inventors, but are rather the result of thoughtful problem-solving by people who implement and test new processes and products on a daily basis. Such incremental innovations appear especially where well-trained skilled workers not only execute predefined tasks, but are also able to identify problems and generate innovative solutions in a process of steady improvement.

Social dimension

One weakness of the dual system of VET is seen to be its dependence on the provision of in-company training positions. If cyclical or structural factors prevent companies from offering enough appealing training places, this leads to imbalances within the VET market, and creates the risk that socially disadvantaged young people in particular will be prevented from entering training programs that provide them with needed skills. In almost all countries, this risk is expressed in the fact that some school-leavers are unable to access VET, or can do so only after a period of waiting. In developing and emerging countries, this means that many of these young people are pushed into precarious employment in the informal economy. But as Germany's example illustrates, this situation can prove very challenging even in developed economies.

As in many countries, social background and educational success are closely linked in Germany. This is partially documented in the measurement of basic skills at the end of primary school, in the PISA tests taken by 15-year-old students at the secondary level, and in the social characteristics of young people who finish the compulsory education period without obtaining any kind of school-leaving certificate. Many of these young people then seek to enter VET. Given the assumption that VET plays a role in integrating young people into the labor market and into society more generally, and thus helps prevent social exclusion, policies guiding young people who wish to engage in VET toward completion of a VET program would be desirable.

These circumstances justify the call to specifically promote the inclusion of disadvantaged groups within VET programs. Such groups are defined by social characteristics such as particular school-leaving histories, gender, disabilities, socioeconomic family

circumstances, rural residences, migration or refugee backgrounds, or ethnic origins (ILO 2017, 93 ff.).

These various characteristics affect individuals' opportunities in different ways in different countries. Accordingly, target groups will differ, as will approaches to the social integration of people from disadvantaged groups. The following measures to promote inclusive or integrative VET have been widely used:

- State-subsidized VET positions that lead to a qualification, if necessary supplemented by complementary support services (EULER & SEEBER 2023, 37 ff.).
- Subsidies for in-company VET positions for young people with special support needs, or when training activities are particularly costly (OECD 2018, 13).
- Modular structuring of the educational path, offering the option of flexible training-program durations and the attainment of partial qualifications (DORNMAYR 2019, 4; OECD 2018, 112).
- VET offerings producing lower-level qualifications, but which nonetheless lead to certification and allow participants to go on to higher-level programs (e.g., tiered training programs in Switzerland and Germany) (OECD 2018, 111 f.).
- Scholarships or other forms of assistance for youth with financial support needs (DANG 2021, 20).

Individual dimension

In part due to its role in social integration, VET is often seen as something (only) for young people with poor educational qualifications. That is, for anyone who doesn't make it to university, there is always VET! By contrast, countervailing examples reveal a wide variety of training offerings at different qualification levels, which in some cases are pursued even by learners with comparatively high-level educational attainments. Moreover, in many countries, VET programs offer integrated phases of general education in addition to teaching vocational skills. In many cases, general school-leaving certificates can be upgraded or university entrance qualifications acquired within the VET framework (EULER 2022a). In this context, VET is just one stage in the shaping of a personal educational pathway.

VET also has a fundamental role to play in developing the individual personality. Questions regarding the educational potency of VET have been raised since the beginnings of school-based vocational education. As the "father of the German vocational school" (DEIßINGER 2019, 296), GEORG KERSCHENSTEINER regarded the vocational school as an institution that not only prepared young people for work and occupations, but also educated them (in between school and military service) to become good citizens. In his work-school pedagogy, he portrayed work as an aspect of personality development (SLOANE 2022, 3). KERSCHENSTEINER'S functionalist approach of placing VET in the service of upholding the state order contrasts with the perspective held by BLANKERTZ, who, with his slogan "education in the medium of the occupation," drew on neo-humanist educational theories and postulated that every form of education, including VET, must aim at the development of the personality (BLANKERTZ 1963, 167). The debate over VET's potential to contribute to the development of the personality, a well-rounded education and the formation of personal identity continues to this day (KUTSCHA 2011).

From the lines of discussion sketched here, it could be surmised that VET has a ***potentia***l for individual development that goes beyond imparting a vocational skill profile. From both the theoretical and VET-policy perspective, this potential is largely normatively postulated. At the same time, it is clear that a person's occupation or specific job does not per se lead to the fulfillment of such potential. Rather, the extent to which such potential is realized during VET depends on the specifics of the VET program's design.

Development stages

Figure 6 below describes four stages of development representing a gradual increase in the scope of the policy goals realizable through the VET system.

Figure 6 **Stepwise increase in the scope of the policy goals being addressed through the VET system**

1	FOCUS ON THE ECONOMIC DIMENSION: The primary goal of VET is to supply the national economy and companies with qualified skilled workers. This is done by imparting the job-specific skills needed to meet the current and future demand for skills.
2	FOCUS ON SOCIAL INTEGRATION VIA COMPANY INCENTIVES: VET aims to help young people integrate economically into the workforce, as well as into society more broadly. Businesses are given incentives to provide disadvantaged young people with apprenticeships, and encouraged to invest special effort in their training.
3	FOCUS ON SOCIAL INTEGRATION VIA STATE-SUPPORTED TRAINING POSITIONS: In the absence of sufficient in-company training positions, state-subsidized VET positions are offered to disadvantaged young people, enabling them to acquire a recognized VET qualification.
4	FOCUS ON PERSONALITY DEVELOPMENT: Within the context of VET programs, a wide range of educational courses are offered to people with different educational backgrounds, combining vocational and general educational skill sets. This diversity of educational pathways offers the potential to use VET as an important stage in shaping the individual educational path.

5.2.2 Overaching objective: Developing skills that will remain relevant in future workplaces

One essential characteristic of the German, Austrian and Swiss dual VET systems is their ability to prepare participants for skilled work. In this regard, the desired skill profile for apprentices is not defined by the narrow functional requirements of a specific company workplace, but rather by learners' ability to act flexibly within a broadly defined work environment with changing requirements and task priorities.

With this broad orientation, VET seeks to prepare people for an as-yet-unknown future. As the pace of technological and economic change accelerates, the demands being placed on people's skill sets are also changing. This trend can be vividly illustrated with the help of a few comparative figures (HARRIS 2001). It took 44 years for 25% of the U.S. population to begin to use the automobile, for example. The telephone saw a similar adoption rate after 26 years, while the personal computer took 15 years to reach this point. For use of the internet, the comparable figure was just seven years.

The more closely something learned is tied to a specific practical activity, the faster that knowledge can become obsolete. Accordingly, employees who learn only to carry out narrowly predefined tasks will have a difficult time adapting to the demands of the future. Given these realities, the objective underlying the dual VET system offers a good way to prepare people for the unpredictable.

These efforts to build skills for the uncertain working environments of the future are justified with reference to two key advantages. First, companies have employees at their disposal who can be flexibly deployed and who can adapt autonomously to changing work requirements. Second, from the individual's perspective, training of this kind facilitates mobility, improving the ability to switch companies or find new employment after being laid off. Such mobility is also significant in view of the fact that in Germany, only about 72% of trainees are given permanent positions after completing their dual VET programs, with a significantly lower share seen in some individual sectors and company sizes (AGBB 2022, 189 and Table E5-9web). In Switzerland, two-thirds of VET graduates change employers within the first year after training (SKBF 2023, 146). The broader and more future-oriented the skills profile, the easier training-program graduates will find it to secure other employment if they are not hired by their training companies, or if they wish to change companies or occupations.

The focus on developing a skill set that will remain useful in the future does not mean that a given occupational field's current requirements are given short shrift during the training process. Rather, a balance is sought between teaching the skills relevant to a company's present-day operations and imparting future-oriented skills enabling self-determined learning and adaptability to changing requirements. "Occupational profiles need to be narrow enough (e.g., subject-specific and company-relevant) to allow them to define a professional identity, while at same time being broad enough (e.g., teaching general and transferable skills) to allow for broad deployment/change/reorientation/upskilling/reskilling outside the training company" (BLIEM et al. 2014, 16). Germany's Vocational Training Act expresses this balance as follows: "Initial training, through a systematic training

program, must impart the vocational skills, knowledge and abilities (occupational competence) necessary to engage in a form of skilled occupational activity in a changing working world. It must also enable trainees to acquire the necessary occupational experience" (§ 1 Para. 3 BBiG 2020).

The link thus established between present-focused and future-oriented work skills is closely tied to the vocational principle, especially in Germany. In this regard, the concept of vocation is rooted in the context of a labor market organized along occupational lines. VET programs are based on the category of vocational competence, or the capacity to carry out vocational tasks. This in turn refers to the knowledge, the specific skills and the mindset needed to meet the demands of a broadly defined occupational field. Consequently, VET in Germany is closely tied to the organization of the labor and employment system.

In addition to the technical dimension, the vocational principle is often associated with the claim that VET fosters a specific attitude toward the trainee's future occupation, leading to the development of professional identity (BLIEM et al. 2014, 15). However, this socializing effect of VET programs is questioned from two perspectives:

- From a sociological perspective, it has been argued since the 1980s that changes in the role of work in society and the upheavals in the employment system have led to an erosion in the relevance of the vocation concept. For example, employment relationships that fall outside the traditional definition of "occupation" are becoming more common (see, for example, discussions of job mentality or the gig economy); employed persons frequently change the focus of their work activities over the course of their lives; perforated trajectories with alternating phases of employment and unemployment are on the rise at the bottom of the skills pyramid; and companies are making distinctions between their core and peripheral workforces. "Given these harbingers of systemic change in the labor society, the occupation-based programming of the educational system is increasingly becoming an anachronism" (BECK 1986, 242). Some conclude that the relevance of occupation-structured work as an invariant pattern of employment is dissolving, and that in its place, "a multitude of different activities that change over time and in their content" is emerging (GEIßLER & ORTHEY 1996, 71). "The rationale underlying vocational education and training... is becoming increasingly exhausted..." (GEIßLER 1994, 647). The result is an evolution "from work as occupation to work as career" (GEIßLER 1994, 653).

- From the pedagogical perspective, with reference to theories of personality and identity, certain sources argue that the development of an identity requires activity on the part of the individual, and does not merely "happen" due to presence in an occupational environment. Such activity may be provided with external support and guidance, or may be self-determined on the basis of categories subjectively deemed relevant by the individual. THOLE (2021) shows that in the case of VET in the retail sector in Germany, vocational identity work is neither integrated into the curricula nor supported within the various learning environments. The findings indicate that simply working in a company setting is not itself enough to foster the development of a vocational identity (after all, entering a library does not directly translate into the acquisition of knowledge). Moreover, studies such as THOLE'S in the retail sector document the fact that the dual VET system does not systematically promote the development of vocational identity.

In the international VET discussion, the interdisciplinary aspect of training aimed at preparing for future demands is often invoked using terms such as "future skills," "transversal skills" or "21st century skills." Under these headings, lists of skills are defined that are intended to form the basis of future-oriented educational plans and curricula. As an example, we sketch here the results of a meta-analysis that condenses the somewhat inflationary lists of capacities and skills into three types, with a total of 16 competencies.

The focus on future requirements means that interdisciplinary competencies of this nature are integrated into VET programs' curricula, didactics and

examinations to varying degrees. What challenges does VET face if, in addition to developing skills useful today, it must also impart future-related and/or interdisciplinary skills? From a ***didactic perspective***, two aspects are relevant here.

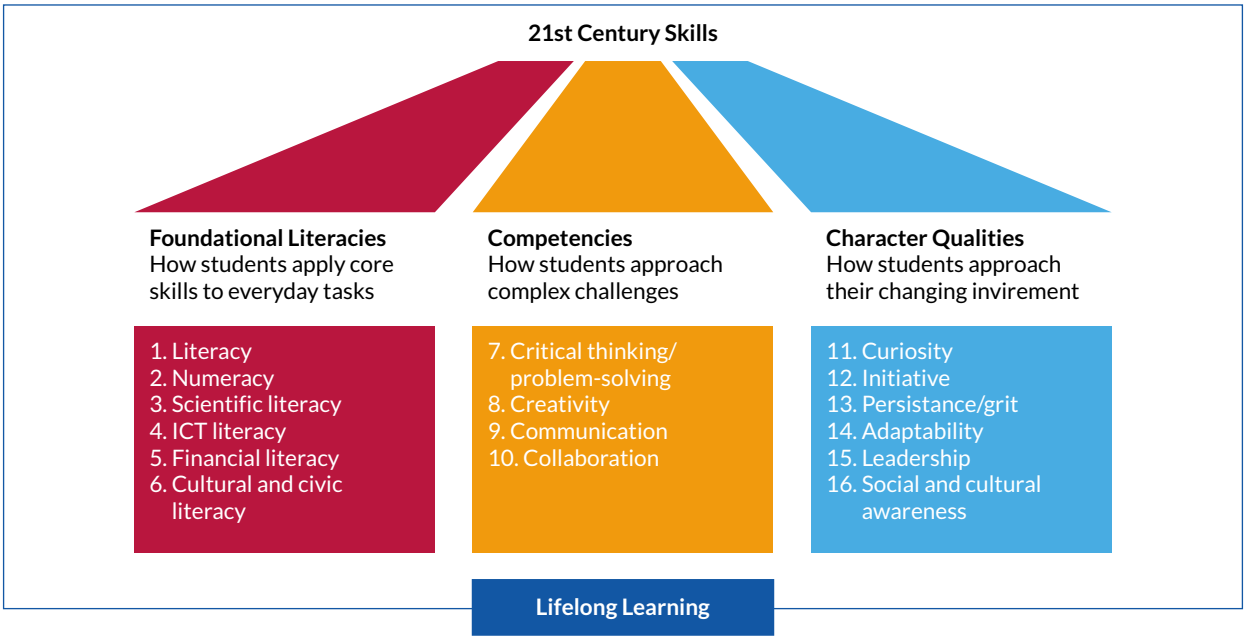
- On the one hand, the VET focus switches from teaching a full set of occupation-specific content to following the principle of exemplary learning. If learning content becomes quickly outdated, then learning processes should not aim to build up comprehensive encyclopedic knowledge. Rather, they should draw on exemplary content, using exercises that guide learners into independently acquiring and structuring information and using it to solve relevant problems.

- On the other hand, interdisciplinary skills must be tied to subject-specific skills in the design of learning processes. For example, lessons addressing knowledge specific to a job or sector could include the use of digital media to research content (digital competencies), while also asking trainees to plan and reflect on their own learning processes (self-guided learning competencies).

Analogous to the didactic design of the learning processes, the task of composing ***examinations*** respectively assessing sector-related skills and interdisciplinary competencies also presents challenges. From an organizational point of view, the question of whether such examinations should be carried out periodically throughout the VET process, or as a whole at the end of the program, remains relevant. For examinations assessing interdisciplinary competencies, administrators must decide which learning sites will be involved in conducting the exams, or whether these will be conducted instead by an external institution. With respect to the examiners themselves, conflicting principles argue that teachers are best suited to test their own students, and that teachers should never test their students.

The didactic and examination-related challenges each have consequences with regard to the qualifications required of the ***teaching and examination staff***. It should also be noted that complex skill profiles will increase the educational demands on the learners. This will in turn mean that different learners will ***require different amounts of time*** to acquire the skills, depending on their various backgrounds.

FIGURE 7 **Overview of the "future skills" spectrum**



Source: WEF & BCG 2015, 3

What steps are needed to ensure a VET system trains its participants for future working environments in this way?

The following overview describes four stages of development that begin by keeping a strong focus on present-day vocational skill demands, and end with an integrated VET curriculum that imparts specific sectoral and interdisciplinary skills, as well as competencies geared for the present and the future.

FIGURE 8 **Stages of development in training for future work environments in dual(ized) VET systems**

1	FOCUS ON SECTOR-SPECIFIC SKILLS: VET curriculum mostly focused on the development of vocational skills that meet present-day demands.
2	SELECTIVE EXPANSION TO INCLUDE INTERDISCIPLINARY COMPETENCIES: VET curriculum primarily focused on the development of vocational skills that meet present-day demands. However, few individual units addressing interdisciplinary skills and/or future challenges are added.
3	SECTOR-SPECIFIC SKILLS AND INTERDISCIPLINARY COMPETENCIES ADDRESSED IN SEPARATE UNITS: VET curriculum has a high proportion of units that combine specific vocational and interdisciplinary competencies, while also preparing trainees to meet future challenges. At the same time, individual units remain largely focused on meeting current job- and sector-specific requirements. Teaching and examination staff are divided between the different levels of focus.
4	CURRICULUM CONSISTENTLY ADDRESSES SECTOR-SPECIFIC SKILLS AND INTERDISCIPLINARY COMPETENCIES IN INTEGRATED UNITS: In addition to imparting job- and sector-specific vocational skills, the VET curriculum consistently aims to develop interdisciplinary competencies, and prepares trainees to meet future challenges in their occupational fields. Teaching and testing staff take an integrative approach in all units.

5.2.3 Dual principle: Learning alternates between school and company environments

School and company learning environments each offer specific learning potentials. While in-company training allows for holistic learning in real-world situations, non-workplace learning environments offer the potential for in-depth reflection and the ability to tailor lessons to learners' individual needs. Combining school and in-company environments offers a unique opportunity to merge theory and practice, while allowing students to learn in real-life situations and gain a foothold in a real-world company and work culture. In this regard, the "dual principle" refers to a synthesis of doing and thinking, action and reflection, and casuistic and systematic learning. This combination offers a framework well suited for developing vocational competencies that are relevant to the labor market but are not narrowly company-specific.

It should be noted that learning in the school environment can also be practice-based, while workplace lessons can be based in theory. This reminder counters the widespread and problematic notion that practical skills are taught only in the workplace, and theory in schools. For example, many vocational schools strive to teach theory in a practice-oriented manner, while in companies, the "know-why" or theoretical basis of the practical processes is explained in parallel with the "know-how" of work processes. However, it is generally true that the different learning environments do take different approaches to their theoretical and practical content. For instance, schools as a rule do not bring students into real-world situations in actual company workplaces, but rather offer didactically prepared simulations of practical situations. Conversely, company environments typically offer no overarching theoretical context, and experiences there are not generally interpreted within a systematic theoretical framework.

An alternating learning model can in principle involve different combinations of the various learning sites, with different amounts of time spent at each. Learning environments can be distinguished both inter- and intra-institutionally. For example, classrooms, practice firms and school-based teaching workshops are possible learning environments within the school as institution; similarly, a construction site, office or firm-based vocational training workshop are possible learning environments within the company as institution.

The use of alternating learning sites does not in itself say anything about learning formats, their quality, the overall duration of training, the time spent learning in the various locations or the availability of company-based learning resources.

The various VET ***formats*** that draw on this alternating model can be low- or high-threshold, particularly with regard to companies' participation. Low-threshold forms are generally variants of "learning about work," in which school-based VET courses are enriched by experiences such as short visits to companies or guest lectures by experts from companies. These variants can be enhanced by practical internships entailing various degrees of structure and varying degrees of systematic reflection on these experiences. High-threshold forms, on the other hand, are structured in-company training phases ("learning at work") that are planned as part of the VET curriculum, with their content forming a part of learners' exams.

The ***quality*** of the alternating learning model depends on how each of these learning modes is implemented. For example, alternation and plurality can also lead to compartmentalized and disconnected learning sites, fragmented learning content, and learning difficulties for the trainees. One key quality indicator for in-company vocational training is the amount of productive learning time provided. A common objection to forms of dual(ized) training is that trainees are too often assigned to tasks that do not help them to develop new skills, and do not force them to apply newly developed skills to perform complex tasks (OECD 2018, 92 f.). Thus, vocational training can be deemed to be of high quality if it follows defined curricular specifications, entrusts learners with a broad range of challenging tasks, exposes them to different experiences through forms of rotation or collaborative training, and uses appropriate methods to promote reflection on the experience gained (e.g., through training certificates or portfolios).

The ***overall duration of training*** as well as the ***relative shares of time spent*** in the various learning environments vary between VET programs both within and across countries. For example, dual VET programs in Germany and Switzerland last between two and four years, with the company-based component varying between three and four days per week, depending on the theoretical component (KRIESI et al. 2022, pp. 22, 24). In other countries, the company-based share in alternating VET programs is lower, for example around 40% to 60% in Portugal, Poland, Norway, Slovenia and Latvia (OECD 2020, 317). In Spain, the company-based share was initially at least 20 %, but was increased (in the dualized pathway) to at least 25%-35 % in 2022 with the VET reform.

The ***availability of company-provided learning resources*** is an indispensable prerequisite and at the same time a major challenge. In countries without a tradition of business-sector involvement in the management and conduct of VET, engaging companies in the delivery of VET is a key task. When communicating with companies, it can be helpful to emphasize the distinction between low-threshold and high-threshold forms of participation, as the various formats are associated with different levels of commitment and investment. But even in countries with established in-company vocational training cultures, maintaining companies' commitment to the training process is an ongoing struggle. This can be seen, for example, in Germany's declining numbers of companies offering apprenticeships (BIBB 2022, 183 ff.).

In seeking to "dualize" existing programs, the focus for school-based VET is on integrating practical phases into the coursework, while the primary aim for on-the-job VET is on expanding reflection on the content presented during the training process. As examples from different countries show, this can be done in different ways:

- In some West African countries (e.g., Benin), informal apprenticeships have evolved into semi-formal apprenticeships through the use of written agreements between companies and learners, and as small business associations take on tasks such as monitoring training quality and working conditions, conducting examinations, and issuing certificates (ILO 2022, 72, 79).

- In Kenya, the National Industrial Training Authority offers a course for master craftspeople in which trainees can acquire didactic and vocational skills (Hofmann et al. 2022).

- In Bangladesh, a code of conduct for VET in the informal economy has been introduced, setting minimum standards with regard to wages, training conditions and training durations, among other aspects (ILO 2022, 75).

- In India, a framework for the recognition of informally acquired vocational skills has been introduced, enabling skills acquired through informal apprenticeships to be validated (ILO 2022, 76).

- In Niger, project initiatives have focused on strengthening business associations, with the aim of encouraging them to take a bigger role in the development of informal apprenticeships (ILO 2022, 75).

What steps are useful in introducing forms of learning that alternate between school and company learning environments, and how can these be implemented with a high level of quality? A policy transfer of this kind can start from one of two points of departure, depending on which VET model is already dominant in the economic sector in which the transfer is to take place. In an environment initially dominated by school-based VET, the following developmental stages could constitute a pathway toward dual(ized) VET:

FIGURE 9 **Stages of development from school-based VET to an alternating VET structure**

1	PRACTICE AS A SUBJECT OF INSTRUCTION: School-based VET makes reference to practical activities in its coursework, but does so without involving practitioners.
2	PRACTICAL ACTIVITIES INTERMITTENTLY INCORPORATED INTO INSTRUCTION: School-based VET enables learners to gain periodic insights into real-world practice by incorporating practical activities into lessons (e.g., in the form of company visits or presentations by practitioners).
3	COORDINATED PRACTICAL PHASES WITHIN THE VET PROGRAM: School-based VET programs additionally provide practical phases (internships) of varying scope; these are coordinated with the curriculum content, and learners reflect on and evaluate their experiences within the school environment
4	ALTERNATING VET STRUCTURES WITH EXTENSIVE PRACTICAL PHASES: Practical components comprise at least 40% of the VET program. They are closely aligned with the school-based curriculum, are monitored in terms of quality, and their content is included in final examinations.

In an environment initially dominated by on-the-job training, the following developmental stages could constitute a pathway toward dual(ized) VET:

FIGURE 10 **Stages of development from informal training to an alternating VET structure**

1	ENHANCEMENT OF INFORMAL TRAINING: In addition to the demonstration of practical work processes, (informal) on-the-job training offers phases of in-depth explanation and instruction.
2	PLANNING AND STRUCTURING OF IN-COMPANY TRAINING: In-company training is based on a plan that details the work practices to be taught over a specific period of time, and additionally provides for their explanation.
3	ENHANCEMENTS THROUGH "OFF-THE-JOB" LEARNING PHASES: Within the context of in-company VET programs, learners are given the opportunity to acquire new knowledge and skills relating to work-relevant processes with an "off-the-job" training provider at least one day per week.
4	ALTERNATING VET STRUCTURE: Informal VET or in-company training evolves into dual(ized) VET as training content from both the company and the training provider is consolidated into a stable curriculum. This additionally allows trainees to be examined and certified on the basis of their performance.

5.2.4 Partnership culture: Cooperation between state and business-sector actors

Dual VET requires the involvement of the business sector and individual companies. For the purposes of this discussion, the business sector can be seen as all companies organized under private law within an economy or country. These are by definition profit-seeking enterprises. Another category includes state-owned or public enterprises, which are owned by state institutions but often also act according to economic criteria (e.g., productivity, efficiency, profitability) (EULER 2018a, 5). In countries with a pronounced informal economy, such firms may coexist with forms such as subsistence businesses and micro-producers (EULER 2018a, 6). Thus, the specifics of business sector and company relations within the context of VET system design will vary depending on the country and economic sector.

Many countries do not have a tradition or culture of company participation in VET activities. Like education in general schools or universities, VET is primarily understood as a state responsibility. At the same time, within market-based economic systems, companies cannot be forced to take part. Rather, they must be convinced that participation is in their interest as well.

But even from the state's perspective, it is not per se clear why responsibilities for VET (and thus influence over policy) should be handed over to the private sector. Moreover, state responsibility is not necessarily centrally concentrated, but may be distributed among different levels within a federal structure. This in turn may imply complex responsibility structures and decision-making processes that complicate the functioning of public-private partnerships.[2]

The business sector and individual companies may offer a wide range of objections to involvement in dual VET, such as the following:

- Staff recruitment within companies involves a considered choice between available alternatives. Thus, some argue, positions requiring qualified skilled workers can also be filled by graduates of the school system (if necessary, with a subsequent trainee phase in the company). Positions at a lower skill level may be filled by individuals who have completed short-term courses or periods of on-the-job training at the company itself. Accordingly, dual(ized) VET must be closely aligned with companies' skill requirements, and be seen as superior to competing recruitment channels. Cost-benefit criteria play a key role here (EULER 2018a, 33).

- There is a risk that learners will leave the company after finishing their training, or that other companies will woo the newly qualified workers away (so-called poaching, an example of the free-rider effect). In such a case, the investments made have generated little benefit for the training company.

- In countries where VET has a comparatively poor reputation, higher-performing secondary school graduates tend to aspire to university attendance. Companies then fear they will find themselves stuck with the lower-performing or "difficult" young people, whose training requires special effort and thus investment.

- For some companies, the duration of several years for qualified VET represents too much unpredictability. Their need for skilled workers arises over shorter time frames; moreover, enterprise planning over periods of several years appears to them to be too uncertain, especially in volatile political and economic times.

- Trade associations and other membership-based business organizations have only a limited ability to influence businesses. Accordingly, associations may with good reason call for greater involvement by their member companies in VET, but implementation requires the companies' agreement and active steps.

The starting points for the development of partnership-based cooperation between the state and the business sector will vary depending on the circumstances. In countries or economic sectors with school-based VET, activities will tend to focus on expanding school-based learning phases to include periods of in-company practical training. In contrast, in areas dominated by on-the-job training, shifts toward dual(ized) training will tend to involve standardizing in-company training practices and supplementing them with systematic school-based learning experiences (EULER 2018b, 9). The following overview provides a reference framework that, beginning from these two opposing starting points, identifies ten possible action areas for business-sector engagement:

The areas of engagement starting from an initially dominant school-based environment embody the process of establishing, developing, implementing and certifying a dual VET program. Each area will entail different characteristics, organizational forms and challenges (see EULER 2018b, 14 ff.; EMMENEGGER et al. 2018, 10 f.; GIZ 2017; CEDEFOP 2021). Analogously, the areas of engagement associated with an on-the-job training environment carry their own specific characteristics and challenges (see EULER 2018b, 24 ff.; GEWER 2021, 12 f.).

Companies can engage in the individual areas with varying intensity and in different forms. For example, they can do so intermittently or continuously, at an informal level or as members of formal bodies. Accordingly, the degree of responsibility assumed

2 "A public-private partnership (PPP or 3P or P3) is usually a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance" (GIZ 2017, 5).

by companies can vary. Low-threshold forms of cooperation include information exchange, consultation, participation in public meetings and the provision of advice. More ambitious forms include variants in which enterprises actively carry out tasks or engage in long-term collaboration in a project, committee, advisory board or working group.

Business-sector participation can also be institutionalized through committees or more complex organizational forms. The most far-reaching realization is found in corporatist governance models, under which non-governmental organizations take on certain responsibilities for managing the VET system. In Germany, for example, tasks relating to the implementation and monitoring of dual VET are assigned to so-called "responsible agencies" (usually business chambers) that perform these tasks on behalf of the state. Employers and employees organizations, as well as representatives of the vocational schools have seats on the responsible agencies' committees. Institutions that include business-sector participation can operate at the national, regional and local levels, and may have a cross-sectoral or sector-specific focus. The following examples may help illustrate the variety of organizational forms:

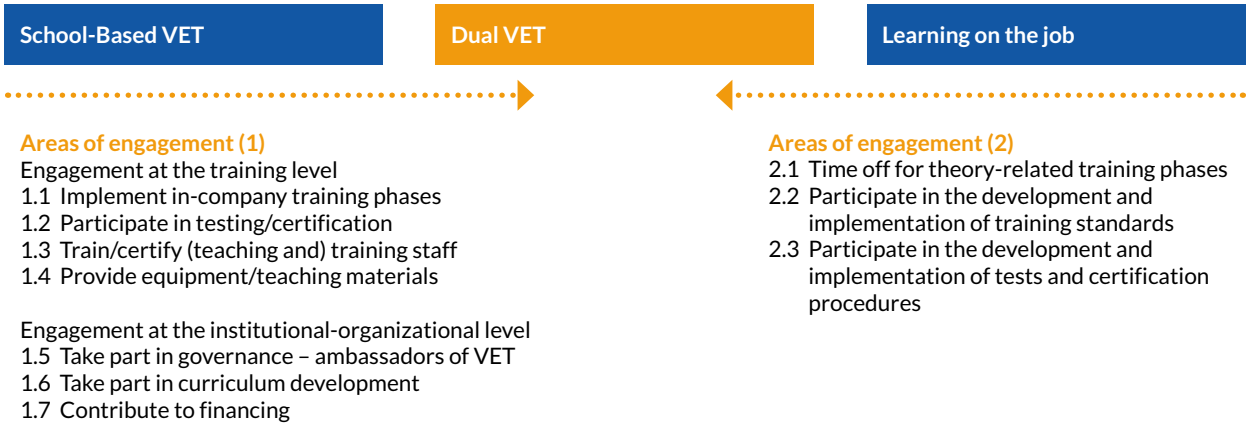
- In some countries, national agencies perform core VET-system tasks with the participation of the business sector. Examples here include Germany's Federal Institute for Vocational Education and Training, in whose "main committee" key stakeholders from government and industry regularly discuss VET issues and make decisions. Comparable roles are played in the Philippines by the Technical Education and Skills Development Authority (TESDA) (UY 2021), and in Ghana by the Council for Technical and Vocational Education and Training (COTVET) (BUSEMEYER 2015, 35) (see FROMMBERGER 2015, 23 f.; ILO 2017, 25 f. with further examples). In India, sector skills councils with industry participation are responsible for developing VET curricular standards, among other duties (ILO 2022, 59, 88). In Vietnam, this task is performed by industry advisory boards (ILO 2022, 98).

- Committees, alliances and networks for the discussion and management of VET challenges are formed on a permanent or temporary basis at the national and regional levels, with representation from government and industry stakeholders.

- In some countries, corporatist institutions exist at the sectoral level (example: "Sector Education and Training Authorities" (SETA) in South Africa; see BUSEMEYER 2015, 39 f.).

- At the local or regional level, steering committees in vocational schools or regional education centers, for example, can facilitate the participation of business-sector stakeholders (ILO 2017, 56 ff.).

FIGURE 11 **Reference framework with action areas for business-sector participation in a dual VET system**



Source: EULER 2018b, 10

Given the large number of possible institutions and organizational bodies, there is also a risk that interest structures in countries with a pronounced corporatist and federalist structure may ultimately become so complex that they undermine the system's ability to innovate. In the German VET system, for example, diverging interests between individual stakeholder groups (e.g., individual trade unions, sectors, business chambers, and large and medium-sized enterprises) have sometimes slowed innovation projects. One example was the planned introduction of a modular structure, using distinct training units, into the dual VET system (EULER & SEVERING 2007a; EULER & SEVERING 2007b). In that case, the lines of conflict separated the employers' association (pro), the business chamber organization (against), the metalworkers' union (against), the education union (pro) and the employment agency (pro). The risk in complex participation structures is that they will hamper the development of an active problem-solving attitude toward far-reaching, structural innovation ideas. Instead, a veto attitude or culture of negotiation emerges, resulting in the mutual servicing of the parties' parochial interests rather than a focus on an overriding goal or the common good.

Policy transfer, in turn, can start from two different points, depending on whether the business sector's involvement comes in a context dominated by school-based VET or on-the-job training. In the first case, the following stages of development can serve as a guide:

FIGURE 12 **Stages of business-sector and company participation in the shift from on-the-job training to dual(ized) VET**

1	TRAILBLAZING ENTERPRISES: A relatively small number of companies are involved to a limited extent in the implementation of in-company training phases, and/or support the development of dual(ized) VET offerings within other action areas.
2	SELECTIVE IMPLEMENTATION IN INDIVIDUAL SECTORS: In individual sectors of the economy, dual(ized) VET becomes an increasingly widespread option for companies seeking to recruit qualified skilled workers.
3	SUSTAINABLE IMPLEMENTATION: Companies' participation within the individual action areas, both at the institutional-organizational and training levels, is both ongoing and sustainable
4	INSTITUTIONALIZED SOCIAL PARTNERSHIP: Cooperation between the state and the business sector is institutionalized within mutually agreed-upon areas of engagement, taking the form of both low- and high-threshold participation. Business involvement ranges from forms of information exchange to the partial assumption of government tasks to participation in corporatist business-sector organizations.

In circumstances where on-the-job training instead dominates, the development stages are similar to those previously outlined in the implementation of the dual principle. In the present context of developing a partnership culture, however, the focus is less on the didactic integration of theoretical and practical training phases than on companies' role in implementing the dual principle.

FIGURE 13 **Stages of business-sector and company participation in the shift from on-the-job training to dual(ized) VET**

1	INTEGRATED PHASES OF INSTRUCTION: When training young employees, companies provide for phases of instruction and reflection in addition to the focus on regular work processes.
2	TRAINING PLANNING: When training young employees, enterprises follow a plan with contents taught within a predefined time frame. The plan covers the full range of work processes performed in the company.
3	TIME PROVIDED FOR OFF-THE-JOB LEARNING: Companies allow trainees time off to engage in off-the-job learning. During this time, they continue to pay regular wages, and pay for any course fees or transportation costs incurred
4	ON- AND OFF-THE-JOB LEARNING PHASES ARE PART OF A CURRICULUM AND CERTIFIED: Companies arrange trainees' work and instruction phases on the basis of a defined curriculum. The skills acquired are documented and certified. This can be done via formal examinations or with procedures validating informally acquired competencies.

5.2.5 Professionalization of VET staff: Setting the pace of development

Any model is only as effective as the people implementing it. Accordingly, those tasked with implementing a VET system can either advance or undermine its realization. In principle, this caution applies to any real (as opposed to ideal) type of system, but is of particular importance in the evolution from school-based to dual(ized) VET. In countries that have taken this development path,

experience has shown that school-based teachers fear that the shift of some training components to companies may lead to lower teaching loads, and thus to reduced employment opportunities for them (WANKLIN 2023). In contrast, examples from a project in Albania have shown that reduced teaching activities can be compensated for by new tasks within a dual(ized) VET model (S4J 2023). In Spain, the regional government in Andalusia gave a guarantee that the introduction of dual VET would not lead to a reduction in the number of teachers in schools (Boja 2023).

VET staff is an umbrella term that embraces a wide variety of functions with different institutional affiliations and roles. In ***vocational schools***, it includes the school administrators who are responsible for strategic decisions and the school's external relations. It also includes the teachers who are responsible for the quality of instruction, and in the context of dual(ized) VET, additionally manage relations with companies at the day-to-day level. The category of teachers is further subdivided into those who teach general education subjects and those who teach vocational theory and/or technical vocational subject matter (ILO 2017, 55). The terminology used to refer to these different roles is not consistent across settings. For example, in addition to "teacher," terms such as instructor, supervisor, tutor or coach may be used (EULER 2018c, 35). On the ***company side***, there is generally a distinction between those responsible for managing employees and overseeing training programs (human resources management), often with a focus on VET management issues, and those responsible for actually training and supervising learners (sometimes called in-company trainers, mentors or supervisors).

Even if there is occasional overlap between these individual groups, we can identify specific sets of competences required for the various roles. At the ***didactic level***, technical vocational skills and pedagogical competencies are particularly important, with in-company training staff generally stronger in the former category and school-based teaching staff stronger in the latter. In principle, these complementary profiles offer potential for collaboration between the learning sites. At the ***organizational level***, staffers must possess skills associated with developing and managing the VET program. This includes issues such as developing curriculum, maintaining quality, monitoring training progress, managing any conflicts that may arise and managing relations between the various learning sites.

Vocational training personnel generally combine some amount of targeted preparation with practical experience gained on-the-job. This process of professionalization takes place with varying intensity and with a different mix of specific activities for the different groups, depending on the local circumstances (EUROPEAN COMMISSION 2017, 95 ff.). This heterogeneity between different countries manifests in different minimum standards and qualification offerings, among other aspects.

An international comparison shows that school-based teaching staffers are themselves trained at differing institutional levels. For example, while vocational school teachers in Germany are usually trained at universities, training in Switzerland often takes place at universities of applied sciences, and in Austria at technical colleges. All of these forms of teacher education involve an alternation between theoretical and practical components. In other countries, teacher preparation may occur directly at the vocational schools. For example, teachers in the Philippines grow into their role through "learning by doing" at the school to which they are assigned (UY 2021, 37). This experience-based skill acquisition is guided by a modularly structured curriculum produced by the Ministry of Education (UY 2021, 35). In addition, prospective teachers can participate in occasional cross-school seminars (GONONG 2018).

The preparation of company training staff for their didactic and organizational tasks is regulated with varying degrees of bindingness, both in terms of scope and content. The spectrum of practical implementation forms can be illustrated via the following examples:

- In Germany, the assumption of responsibility for in-company training is subject to proof of suitability. In formal terms, the Vocational Training Act contains specific regulations governing the personal and technical suitability of vocational

training personnel. An Ordinance on Trainer Aptitude defines the vocational and work pedagogical requirements that training personnel must demonstrate in an examination. However, only one person in a training company needs to provide proof of these skills in order to allow the firm to carry out training functions. In practice, this means that a large proportion of the practical instruction provided within companies is carried out by skilled staffers who are not certified in this way (e.g., experienced workers in a craft enterprise; office staff in administrative settings).

- In Norway, managers responsible for vocational training functions can participate in optional training programs offered by vocational schools or external providers. These courses are publicly funded. Courses last about two days, and address a range of different topics (KIS 2016, 25).

- In Spain, courses for in-company training staff are offered in most regions. In two regions they are compulsory and part of the accreditation of the training company. The courses address, among other things, the development of a training plan, the supervision of apprentices and the examination of learning outcomes. In principle, the courses are administered by the regional education authority, partly supported by chambers and business associations. The Vocational Training Act 2022 strengthens the role of the (in-company) tutor and requires suitable preparation for the responsibilities.

- Experts from six ASEAN member states have developed a set of Standards for In-Company Trainers in ASEAN Countries (GIZ 2015). These include four modules: 1. Analyzing work tasks and defining learning requirements (8 h); 2. Planning and preparing training (16 h); 3. Conducting training (40 h); 4. Evaluation and further development of training (8 h).

- In the Philippines, a reference framework has been developed that extends these regional standards for different specific tasks (e.g., "trainer/assessor," "training designer/developer," "training mentor" and "master trainer"). This defines initial prerequisites as well as basic and advanced skills requirements for each group (UY 2021, 58 f.). This framework is intended to guide the progressive professionalization of in-company training staffers.

In the design of a policy-transfer process, approaches used for school-based instructional staff must be distinguished from those intended for in-company trainers. The following stages of development for the professionalization of the two groups in their function as VET staffers do not focus on the management levels, but rather on the individuals carrying out the training. With regard to school-based teaching staff, we identify the following stages:

FIGURE 14 **Stages in the professionalization of school-based VET personnel within the framework of school-based VET**

1	TECHNICAL VOCATIONAL COMPETENCIES: Teachers in vocational schools are ***technically*** able to support the lesson content with relevant practical examples from the field.
2	PEDAGOGICAL COMPETENCIES: Teachers in vocational schools are ***didactically*** able to combine theory and practice in a methodologically varied way.
3	ORGANIZATIONAL COMPETENCIES: In collaboration with company representatives, teachers in vocational schools are ***organizationally*** able to plan and coordinate a course of vocational instruction for trainees that alternates between the school and practical company learning environments
4	QUALITY DEVELOPMENT COMPETENCIES: Teachers in vocational schools are ***conceptually and communicatively*** able to assess the school- and company-based learning phases of a VET program on the basis of quality criteria, and can make improvements as necessary.

The professionalization of in-company VET staffers who supervise and train learners is also important. Here, the starting point can either be on-the-job training or the expansion of school-based VET into a dual(ized) VET system. In this regard, the following stages of development can be identified:

FIGURE 15 **Stages in the professionalization of in-company VET staffers, on the way to dual(ized) VET**

1	INSTRUCTIONAL COMPETENCIES: Company VET staffers are able to communicate relevant work processes to learners in a comprehensible way.
2	PLANNING COMPETENCIES: Company VET staffers are able to systematically plan learners' progression through the various company work areas.
3	INTEGRATION COMPETENCIES: Company VET staffers are able to incorporate content from school-based VET periods, and use it as appropriate to inform the design of in-company training phases.
4	QUALITY DEVELOPMENT COMPETENCIES: Company VET staffers are able to evaluate in-company training programs based on quality criteria and make improvements as necessary.

5.2.6 Quality development: Codification and review of standards

Two principles based on a quote from PETER DRUCKER can serve as a guide to developing and implementing VET programs: doing the right things and doing things right! While the first principle aims at the relevance of VET offerings, the second addresses the quality of their implementation. The reference to quality can be seen in the designation of "apprenticeships" as "quality apprenticeships," for example (ILO 2017; EUR-LEX 2018).

Quality standards perform various functions in the VET context:

- Assuring performance level: Quality standards are designed to ensure that learners can successfully complete their training at a defined level of performance.
- Creating transparency: If the VET qualification is recognized by the state, it entails a promise that VET program graduates will be able to work at a corresponding skill level. This is important for learners who choose the training program, but is just as significant for companies that want to hire graduates with a recognized vocational training qualification.
- Promoting acceptance: Ensuring a proven level of quality can promote acceptance of the VET program among prospective students, companies and the general public.

Assuring VET quality requires the use of quality criteria or standards, as well as quality review or quality development procedures. Quality concepts used for this purpose can encompass a range of specific areas. In the following, we will discuss four of these areas:

- Contractual basis of the trainee-training company relationship
- Regulations governing vocational training and examinations
- Suitability of training facilities and vocational training personnel
- Training processes in the learning sites

Contractual basis of the trainee-training company relationship

Trainee and training entities conclude legally valid agreements that constitute the basis of the training relationship. These agreements contain binding rules, in the form of minimum standards, which shape the training relationship. They may address the following areas in particular:

- Rights and obligations of the contracting parties
- Training contents, technical focus and schedule of instruction
- Duration of training, examination procedures and certification process
- Remuneration, social security obligations, vacation allowances
- Health and safety provisions
- Probationary period and conditions for contract termination

The agreement is typically concluded in writing. In the context of informal vocational training, the agreement

may instead take oral form (GEWER 2021, 10). With the conclusion of the contract, the status of the trainee as a student or employee is fixed. As a student, support may be provided by the state; as an employee, the trainee receives wages as compensation for the productive work performed during the training process (see ILO 2017, 36 ff.).

Compliance with the underlying contract terms is reviewed and documented by a state organization or an organization commissioned to fulfill this function (e.g., a business chamber).

Regulations governing vocational training and examinations

The skills that a vocational training program is intended to impart, and which will ultimately be the subject of examination, should be systematically defined in the relevant regulations (e.g., sectoral vocational training requirements; vocational training and examination regulations). A structured schedule of instruction should also be included. Examination requirements will be a key element in defining the vocational training standards. Since not all VET systems require an obligatory course of training prior to taking an examination, the schedule of instruction and the associated definition of the training course's duration are not mandatory components. The training program can be structured as individual modules or treated as a whole. Similarly, examinations can be scheduled for a particular time, or extended over a longer period with tests assessing performance within individual course modules.

The regulatorily defined competencies constitute the minimum standards that a graduate of the VET program should have achieved. In addition to this required set of skills, the vocational training course may optionally teach additional competencies. Specific points of focus could also be defined within a framework of elective modules, thus allowing trainees more choice in terms of subject matter and examination content.

Regulations governing the field may also differ with regard to the degree of abstraction with which they describe the skills to be imparted. Anglo-Saxon countries tend to define a large number of detailed, operationalized specifications (so-called national vocational qualifications), whereas regulations in German-speaking Europe provide for a rather smaller number of generally formulated competencies. Comparatively generally formulated curricula offer the various learning environments more flexibility when implementing training and testing programs. Interdisciplinary competencies in particular (e.g., social competencies or "future skills") are usually defined relatively broadly. However, this raises the risk that they may not be included in the examination process, thus being rhetorically emphasized in the training program while in fact being treated as marginal.

The development of the governing regulations usually follows a set procedure carried out either by government agencies or by institutions or bodies appointed by them. In a dual(ized) VET system, vocational training and examination requirements can be developed as a whole for all learning environments, or can be created as two separate but coordinated curricula respectively addressing school-based and in-company activities. Experts from various stakeholder groups are involved in the development process, with representatives of the business sector generally playing a more or less key role. The various participants may have different levels of formal sway (e.g., consultation rights, veto rights, right to vote on the decision).

Examinations also follow a defined procedure that is generally specified in the core VET regulations, with further details contained in extended regulations. Examinations may be conducted at the various learning locations (especially in the case of modularly structured examinations) or assigned to an organization (e.g., a business chamber). Conduct of the examinations follows one of two principles: Either teachers are best suited to test their own students, or alternately, teachers should never test their own students. In either case, the examinations must be carried out by technically competent experts.

One special form of skill assessment is the validation and recognition of informally acquired competencies, or recognition of prior learning (see KIS & WINDISCH 2018). This aims to recognize and certify competencies acquired through work experience

or in other educational contexts in the context of immigration, for example. As with the organization of examinations outlined above, this validation procedure entails defined responsibilities as well as a defined process.

Suitability of training facilities and VET personnel

Training centers should be furnished with the equipment and facilities needed to provide instruction in the defined occupational skills. Training companies can join together to form an association if a single enterprise cannot provide the required breadth or depth of vocational experience. In addition to this technical requirement, there should be a sufficient number of professionalized personnel, with sufficiently strong training skills, to ensure that trainees receive high-quality instruction. The individuals performing the training should be personally and technically qualified to provide instruction in the vocational subjects being covered. Within each country, the suitability of training facilities and staffers is subject to further specific criteria.

Verifying this suitability is in principle a state responsibility. However, the responsibility for such oversight functions can be delegated to specific organizations (e.g., business chambers, accreditation agencies), which themselves must meet specific quality criteria. In addition to the suitability criteria, there are usually procedural regulations that govern this review process.

Training processes in the learning sites

While the three preceding quality standards address VET input and output factors, the standards associated with the actual VET courses focus on process factors. VET research has identified numerous process factors that are likely to affect training quality. However, it is not clear how they specifically contribute to training success, or how they interact with input factors. No matter what the learning site, having a supportive environment that is conducive to learning can be seen as an important quality criterion. "A high level of professionalism among the teaching and training staff (in both the didactic and diagnostic respects) is also important. In addition, the quality of learning and training tasks, their degree of alignment with trainees' needs, and the provision of regular feedback on learning or training progress were identified as important positive factors influencing successful outcomes" (EULER & SEEBER 2023, 17). With regard to the factors mentioned above, the quality of training in the various learning locations can in part be determined by trainees' satisfaction with individual features of the process. Two further indicators for determining VET quality are the rates of contract termination or program dropout, and the share of learners that complete the training program successfully. However, it should be noted that individual trainee differences (e.g., cognitive capabilities, interest in the occupation) and training conditions (e.g., working atmosphere, working conditions) can be variables with significant influence that themselves say little about – or speak only indirectly to – training quality.

A range of different procedures can be used to review quality standards. For example, this can involve internal or external review, or combine both approaches (EULER 2017b). Concepts such as self-assessment, accreditation, and inspections are widely employed (CEDEFOP 2021, 106). Accreditation can focus on a specific educational program (so-called program accreditation), or instead assess the functioning of a quality system implemented by the educational organization (so-called system accreditation). These formalized procedures may be reinforced by a variety of informal procedures. For example, teachers from a vocational school may accompany trainees during the in-company training phases, and can there observe and record the quality of the company's training activities. This type of informal social oversight can also include an approach in which complaints about the training course are submitted to a contact point (e.g., a business chamber), which then evaluates, anonymizes and consolidates these comments and engages in "company visits" if deemed necessary.

More complex procedures may use forms of self-assessment and external review, while also combining quality review with quality development. In simplified terms, this means that the process of self-evaluation and/or external evaluation does not end with the identification of successes or shortcomings. Rather,

it leads to the definition of development goals that, paired with appropriate interventions and a focus on the appropriate quality factors, should lead to improvements. An approach of this kind embeds constant attention to quality in a continuous cycle of improvement.

Codification of quality standards

Quality standards can be introduced (with decreasing binding force) in the form of laws, regulations, voluntary commitments by regional or sectoral bodies, recommendations that span learning sites, or agreements within or between learning sites.

Stages of development

In the design of a policy transfer, approaches relevant to policymakers must be distinguished from those relating to the VET staff at the various learning sites. Policymakers can influence quality standards in the four quality-related areas described above in several ways: the degree to which rules are binding, the scope of the standards, and the level of detail contained in the standards. The development stages outlined below differ primarily in the degree to which standards are deemed binding:

FIGURE 16 **Stages in the codification and review of quality standards by policymakers**

1	POLICY RECOMMENDATIONS: State oversight agencies publish recommendations within the various quality-related areas. Stakeholders are advised to take these key points into account in the design of dual(ized) VET programs
2	CORE SET OF EXPLORATORY STANDARDS: State oversight agencies define a core, relatively small set of quality standards for the quality-related areas. The standards are formulated in a fairly open manner, and are meant to be tested by dual(ized) VET stakeholders. Oversight largely takes the form of self-assessment, and stakeholders can adapt the standards to specific conditions in their vocational field as necessary
3	CORE SET OF BINDING STANDARDS: State oversight agencies define a core, relatively small set of binding quality standards for the quality-related areas. Several systemic features are mandatory: VET contracts must take written form, and must contain binding statements regarding the rights and obligations of trainers and trainees. The development and implementation of examinations are based on detailed standards, as are assessments of the suitability of training facilities and VET staffers.
4	MANDATORY QUALITY FRAMEWORK: State oversight agencies define a detailed, differentiated framework of binding quality standards for the quality-related areas. These are regularly reviewed in a process that includes external bodies. The quality framework is suitable for describing and implementing a dual(ized) VET system at a high level of quality

VET personnel are by contrast responsible for developing and implementing quality assessment and quality development procedures for the training processes carried out at their own learning sites. Here, the following stages can be distinguished:

FIGURE 17 **Stages in VET staffers' codification and assessment of quality standards at learning sites**

1	DOCUMENTATION OF THE SITE'S DEFINITION OF QUALITY: Schools and training companies document their definitions of satisfactory quality in the implementation of VET processes.
2	DOCUMENTATION OF THE QUALITY LEVEL ACHIEVED: Schools and training companies reflect on and document the level of quality achieved at their learning sites, based on their own documented definitions of quality.
3	USE OF EXTERNAL ASSESSMENTS: Schools and training companies obtain external feedback with respect to their learning sites' measures of quality and their own realization of these standards. They reflect on this feedback and, if necessary, adjust their criteria and activities to improve training quality.
4	QUALITY ASSESSMENT AND QUALITY DEVELOPMENT POLICY: Schools and training companies implement a quality policy that blends self-evaluation and external evaluation to analyze and improve the quality of their training. The quality policy includes at least four different quality areas with associated standards. The policy should combine processes of quality assessment and quality development.

5.2.7 Participatory governance: Building the institutional and legal framework

As an element of a country's political system, VET is managed by actors and institutions with defined tasks and responsibilities. The codified quality standards discussed in the previous chapter represent one aspect of this governance. In the political sphere, governance generally refers to the management and regulation of tasks and responsibilities relating to matters of public interest (e.g., vocational education and training), with defined roles for state and non-state actors. This can range "from institutionalized

civil society self-regulation, through various forms of cooperation between state and private actors, to official action by state actors" (MAYNTZ 2004, 66). In the dual VET context, the regulation of core tasks is handled in a partnership between state and non-state actors, within the framework of a corporatist model. Corporatism refers to the involvement (incorporation) of organized interests in political processes, and their "participation in the formulation and execution of political decisions" (VOELZKOW 2021). Involving interest groups in policymaking is done with the expectation that their members' expertise and positions will be incorporated into the political process in aggregated form, thereby facilitating the acceptance and implementation of government measures.

Participation variants

Non-governmental actors' involvement can vary in degree and intensity:

- Range of participants: The choice of actors to be involved primarily depends on the tasks assigned to the body in question. Participation itself is largely motivated by the desire to contribute expertise and provide implementation support for key decisions. Bodies of this kind typically involve employer and employee organizations, representatives of the education sector (e.g., from vocational schools), and representatives of the labor-market sector (e.g., the employment agency). Beyond this corporatist component, a federalist component with representatives drawn from the different levels of government may also be beneficial.

- Participation tasks and powers: Non-state actors' involvement can be focused on a wide range of tasks or be limited to comparatively few. Regardless, participants can be given a range of different rights and powers. An ascending list of different participation rights could include the basic provision of information, a more advanced consultation, veto rights, voting rights and the delegation of decision-making power. In the strongest such form, non-state actors "receive quasi-public or agency-like powers in order to perform a task seen to be in the public interest" (FROMMBERGER 2015, 23).

- Forms of participation: Direct participation can entail the appointment of experts to commissions, advisory boards or other bodies, for example. Indirect participation is when independent organizations (e.g., business chambers) are created that take official responsibility for key tasks (e.g., conducting examinations) and organize them with the participation of other non-state actors (e.g., employer and employee organizations, vocational schools).

- Duration of participation: The work performed by the non-state actors can take place within the framework of permanent bodies or can be of a temporary nature.

Depending on the character of non-governmental actors' involvement, the VET system will have strong or weak corporatist representation. At the same time, the varying degrees of involvement by different public actors leads to conditions of high or low complexity on the government side:

- For example, even at a single level of government (national, regional or local), a variety of different ministries or agencies may be involved in VET governance. Examples from federally structured countries such as Germany show that education ministries, labor ministries and economic affairs ministries often tend to have some role in managing vocational training issues.

- A variety of actors from different levels of government may also be involved. In Germany, for example, in-company training is overseen by the federal government, while individual federal states handle employment issues for vocational school teachers, and local authorities are responsible for equipping the schools.

When a strongly corporatist model is combined with a complex constellation of federal actors, coordination processes can be very time-consuming in the absence of well-developed routines. In countries with complex governance systems of this kind, agencies, committees or other coordinating bodies are often created to discuss and coordinate specific issues.

Tasks and goals

The involvement of non-state actors is in principle intended to increase decision quality by incorporating external expertise, while also facilitating implementation of these decisions. However, this raises the question as to which specific tasks are suitable for corporatist governance. In addition, there is a risk that a strongly corporatist model may hamper fundamental innovation and reform processes.

EMMENEGGER et al. (2018, 10 f.) see tasks in six VET areas as being appropriate for corporatist governance:

- Strategic system development, including the reform of significant system components
- Development of goals, definition of occupational profiles and determination curricula content
- Implementation of VET programs, for instance through the training of trainers, development of training materials and provision of support for collaboration between learning sites
- Matching VET supply and demand
- Sharing of training costs as part of a VET financing system (e.g., under a VET fund model)
- Monitoring, testing and certification as part of a quality-assurance system, and to create transparency around VET qualifications

Tasks are assigned to corporatist actors as the underlying governance structure is developed. Examples from countries with corporatist governance illustrate a variety of potential models. In Germany and Austria, for example, responsibility for monitoring, testing and certification largely falls to the so-called responsible agencies or business chambers. In Switzerland, by contrast, this task is performed by schools and training companies under the supervision of cantonal offices.

Involving non-state actors in VET governance can increase decision-making quality and make implementation more effective. However, a developed system of representation that involves numerous specific interests can make it difficult to reconcile all of these voices. In such cases, coordination processes can be time-consuming. Incorporating a very large number of stakeholder groups can hamper the execution of fundamental and far-reaching VET innovations and reforms, for instance. Individual groups may find it more difficult to act if they are unable to settle on a clear position due to the increasing heterogeneity of interests within the governance body. In such cases, they may prefer to prevent any solution from being implemented rather than agree to a solution that influential members view as misguided. In an extreme negative case, different groups with differing positions might block one another, reducing necessary reform initiatives to symbolic measures or the lowest common denominator. The stronger the power of reform skeptics on the governance body, the less likely it is that serious changes will be introduced (see, for instance, the example describing the introduction of training modules in section 5.2.3).

Given this danger, it is important to take care that a corporatist-managed VET model not only promotes the stability of the system, but also preserves the system's internal capacity for development and innovation. Ultimately, in cases where a need for reform has been identified but corporatist actors are unable to reach agreement on a solution, the state must take responsibility, placing the common good above the particular interests articulated by individual groups.

Codification of governance structure

As with the definition and review of quality standards, the institutional and legal framework may entail different levels of bindingness. Such provisions can be expressed through laws and regulations, but could also arise through the establishment of temporary bodies or projects by state oversight institutions. Individual sections of the framework may range across areas as varied as education, labor and social law, with a variety of different state actors correspondingly affected.

Stages of development

In the design of a policy transfer, the guiding principle should be to involve non-state actors in the VET governance model in order to improve decision quality and facilitate task implementation, but without jeopardizing the system's capacity for innovation and reform. Here, we draw on the participation variants outlined above to distinguish the stages of development:

FIGURE 18 **Stages of involvement of non-state actors in the design of VET governance**

1	SHORT-TERM CONSULTATION OF INDIVIDUAL EXPERTS: Experts, especially from the business community, are involved in the state's design of tasks, working within the framework of temporary bodies (e.g., expert circles, advisory boards). Their role is largely limited to consultation and the provision of information.
2	TIME-LIMITED GOVERNANCE BOARD POSITIONS FOR BUSINESS-SECTOR REPRESENTATIVES: Representatives from core business-sector institutions are appointed for a defined term of office to permanent committees focused on the design of specific VET tasks. They have voting rights on these committees, as do representatives of the state.
3	GOVERNANCE BOARD APPOINTMENTS WITH NON-STATE INSTITUTIONS HOLDING JOINT OVERSIGHT RESPONSIBILITY: Committees tasked with managing specific VET tasks are staffed by business-sector representatives, as well as other non-governmental actors as necessary. The institutions represented on these bodies send their representatives autonomously and independently. The non-state representatives have voting rights on these committees, as do state representatives.
4	DELEGATION OF SOLE TASK AUTHORITY: Specific tasks are delegated wholly to bodies containing representatives of non-state institutions. These governance committees have a defined composition and mandate. The exercise of these tasks is carried out on non-temporary basis, with the body bearing sole responsibility for this process.

5.2.8 VET financing: Balancing costs and benefits

The culture of partnership between the state and business sector also extends to VET financing. In countries with a dual(ized) VET system, companies that provide training sometimes incur considerable expenses in doing so, offsetting these against the benefits realized. For example, in 2018, the private sector accounted for 41.6% of VET spending in Germany (Statistisches Bundesamt 2021, 23). By contrast, the federal government covered 11.3% of VET expenses, while the federal states covered 30.1% and municipalities 17.0%. The business sector's role in financing VET raises the risk that costs and benefits may be unevenly distributed among individual companies. While some provide more training than is justified by their own needs, others offer less than they need or none at all, thus externalizing costs to other companies or the state. In this sense, they are thereby acting as free riders. The argument takes on particular force if the companies providing training in excess of their own demand are using their own resources to fund those training activities. It is thus clear that the issues of financing and cost allocation are closely linked.

In addressing this question, we will first outline relevant factors and discuss empirical findings that illuminate the relationship between VET costs and benefits from different perspectives. We will then examine financing models that help equalize cost burdens, and which make it easier for companies to begin offering dual(ized) VET.

Cost-benefit balance

The following overview summarizes potential costs and benefits in the context of dual(ized) VET:

While various studies have sought to quantify the individual factors cited here, their findings must be interpreted in the context of specific countries and their specific dual(ized) VET models. Nevertheless, their results give some indication of the variety of possible alternatives. The following offers a summary of key findings:

- Companies can fundamentally be divided into those whose training activities are motivated by immediate returns and those that are motivated by longer-term investment. Those motivated by immediate benefits seek to generate net positive financial returns. In the case of the investment motive, the focus is on the long-term retention of skilled workers who have completed the VET program. Other rationales reinforce these two basic motives (e.g., the desire to screen new employees,

FIGURE 19 **Overview of cost-benefit balance from the perspective of companies, apprentices and government**

		Costs	Benefits
Companies	During training	• Wages and social benefits for apprentices • Training staffers' qualifications and work time • Facility costs • Training materials, equipment • Apprentices recruitment	• Apprentices' productive work • Improved reputation as a training company • Government subsidies and incentives (if in place) • Payments from VET fund (if in place)
	Following training		• Savings in recruiting and training costs for new employees • Increased productivity and quality of employee work • Increased employee loyalty • Lower employee turnover rate • Innovation by skilled staffers
Apprentices	During training	• Opportunity costs relative to wages at an unskilled job	• Wages • Social benefits • No school fees (typically) • Highly relevant training certification
	Following training		• High levels of employability and mobility • Higher wages • More demanding work tasks • (Potentially) greater job satisfaction
State	During training	• Government subsidies and incentives (if in place) • Expenses for school-based education (school infrastructure, teaching and administrative staff costs) • Expenses for VET program management	• Savings due to in-company training component • Tax revenues from apprentices (if applicable) • Lower expenditures for unemployment support or transitional measures (if applicable)
	Following training		• Higher tax revenues • Lower expenditures for unemployment support (if applicable)

Source: Adapted from ILO 2017, 64; KUCZERA 2017, 23 f.; ETF 2018, 15, 21; OECD 2018, 36

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expand the company's relevance or improve employee loyalty), or can be viewed as secondary (e.g., the desire to enhance the company's reputation or fulfill its social responsibility) (see EULER 2018b, 35).

- Financial returns associated with apprentices work increase as the duration of training increases, especially if the initial phase of apprenticeship has been effective.

- In Switzerland, approximately 60% of training companies generate net positive financial returns from their training activities. The amount varies considerably between occupations. For example, while the average electrician apprentice generated an overall net financial contribution to the training firm of more than CHF 40,000, an average apprentice in the computer science field resulted in net costs of more than CHF 20,000 (SKBF 2023, 149; data refer to 2017). Both professions have a four-year training period.

- In Germany, the proportion of training enterprises that generate net positive financial returns from their training activities is lower than in Switzerland. Several somewhat older studies report a share of 30% here (ILO 2017, 65; KUCZERA 2017, 24). Three factors are cited as reasons for the differences: higher apprenticeship pay in Germany, a higher share of productive work in Switzerland (83% vs. 57% in Germany), and a higher share of in-company versus school-based training phases in Switzerland (ILO 2017, 65)

- Wages during training are mostly calculated in relation to the wage earned by a qualified skilled worker. In Switzerland, for example, the average ratio is 20%, while the corresponding figure for Germany falls between 25% and 33% (KUCZERA

2017, 25 f.). In Austria, the ratio is 50%, in Denmark between 30% and 70%, and in Norway between 30% and 80% (depending on the year of apprenticeship in each case) (for comparable figures from other countries, see ETF 2018, 25).

- Apprenticeship wages vary significantly between occupations. Also significant are those occupations in which wages after apprenticeship do not differ significantly from those earned by persons who have not completed a formal VET program. In these occupations, at least from a material perspective, potential apprentices have no incentive to enroll in VET courses. In Germany, this situation exists in training sectors such as retail, logistics and catering (AGBB 2022, 347; BOSCH 2023), while compensation differences between trained and low-skilled employees are much higher in Switzerland.

- By contrast, the rates at which VET graduates are hired by their training companies are much higher in Germany than in Switzerland. This hiring rate rose in Germany from 66% to 72% between 2012 and 2020, with above-average hiring rates in large companies, certain industries and companies covered by collective bargaining agreements (AGBB 2022, 189; Tab. E5-9web). In Switzerland, only about 33% of former apprentices remain at their training company a year after completing their apprenticeship (SKBF 2023, 146). The frequency with which people change occupations is also striking. More than half of Swiss VET graduates change occupations within 5.5 years of completing their apprenticeship, and almost two-thirds in office occupations do so (SKBF 2023, 146).

- A study comparing Switzerland and Germany analyzes productivity trends within individual occupations between the first and third year of apprenticeship (MÜHLEMANN 2016, 32 f.). Here, individual occupations show similar trends, but there are also differences in some cases. For example, electricians in both countries achieve around 20% of the productivity of a trained worker in the first year of apprenticeship, with the figure rising to around 80% by the third year of apprenticeship. Among cooks, the productivity ratio in Germany is 30.9% in the first year and 72.8% in the third year of apprenticeship; in Switzerland, the figures are higher at a respective 36.9% and 79.5%. In the computer science field, German apprentices start at a higher level but make less progress (first year 40.4%, third year 67.4%) than in Switzerland (first year 29.3%, third year 88.1%).

- A study by MÜHLEMANN (2016, 28) compares the costs of recruiting and training new personnel in Germany and Switzerland. Expenditures in Germany, calculated across all company sizes, were only around 40% of those Switzerland.

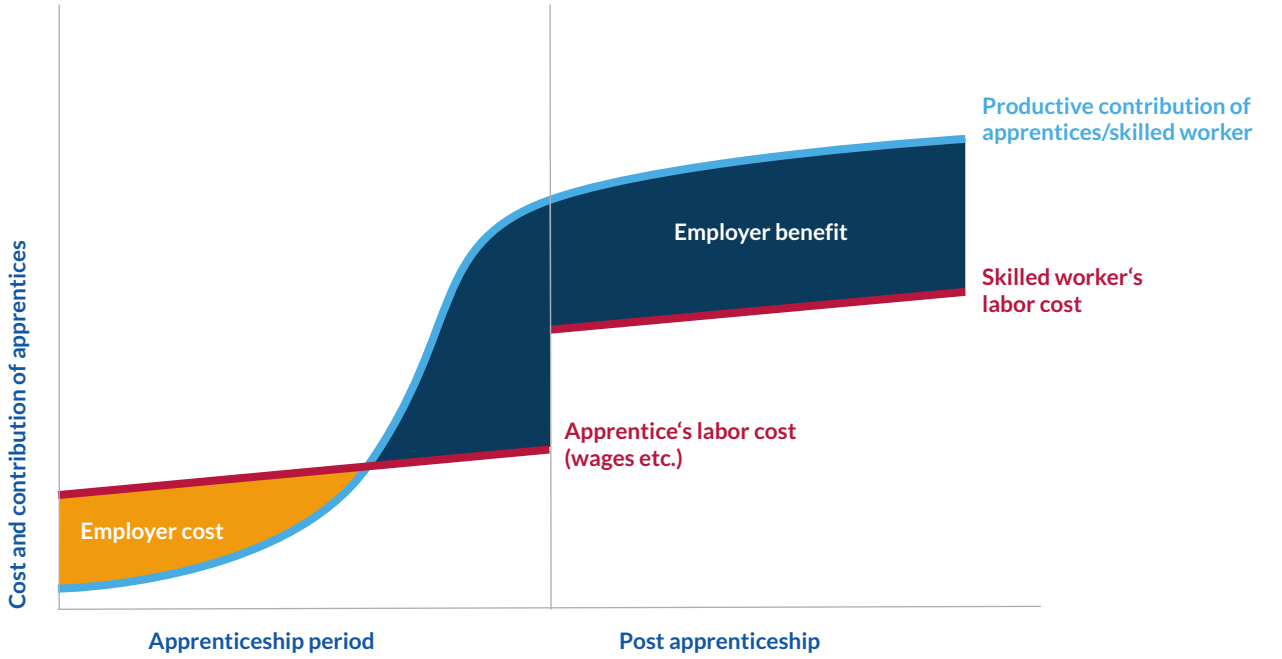
- A Canadian study found that financial returns associated with four-year dual VET programs exceeded costs by about 38%. Similarly favorable ratios were reported from a study in India (ILO 2017, 66). Analyses of programs in Spain (WOLTER & MÜHLEMANN 2015), Italy (MÜHLEMANN et al. 2018) and England (WOLTER & JOHO 2018) have shown varied results.

- Overall, the willingness to create in-company apprenticeships is influenced by a number of factors (ETF 2018, 23): the company's expected economic growth trend, the short- and medium-term demand for qualified skilled workers, the availability of skilled workers on the labor market, the company's own training capacities, the cost-benefit balance, the needs and capabilities shown by potential applicants, the duration of training, and the company's own sense of social responsibility.

Financing models

While financing is clearly regulated under a school model of the ideal type, this is more difficult in a dual(ized) VET context, because companies within a given sector will engage in training activities to different extents. In particular, if firms regard such engagement as being primarily investment-motivated, and training involves net costs, they may be deterred by free-riding behavior by other firms that decline to spend money on training and instead poach skilled program graduates from other firms. In what follows, we present three approaches that could prevent such dynamics:

FIGURE 20 **Costs and benefits of dual VET over time**



Source: Lerman, in ILO 2017, 65

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(1) Subsidization of training companies

(2) Levy-based financing

(3) Publicly funded basic vocational education

(1) The state assumes some portion of training costs via ***subsidies*** in the form of grants, awards, tax exemptions, preferential treatment in the award of public contracts, payments from a government-financed vocational training fund or other such means. This is intended to reduce firms' expenses, and increases the probability of generating net positive financial returns through training activities (ILO 2017, 72; EULER 2018b, 32; SCHMID 2019). In many countries, state subsidies are granted on a universal basis or are tied to specific characteristics (e.g., training of certain target groups, or focusing on specific industries or firm sizes) (ETF 2018, 43, 45; OECD 2018, 46). The state-provided funds are ultimately tax-financed, so the grant of subsidies results in a redistribution from taxpayers to subsidy recipients. Some observers are critical of this payment of subsidies for the provision of training positions (OECD 2018, 18, 47, 49 f.; SCHMID 2019). One reason cited is the potential it creates for windfall profits, especially for companies already generating net positive financial returns from their training activities. Moreover, subsidies provided in an undifferentiated way could encourage companies with questionable training quality to enter the training market. In addition, there is the possibility of a habituation effect, in which the level of benefits would have to be increased over time to maintain the same effective incentive level.

(2) A ***levy grant system*** is a comprehensive model practiced in more than 50 countries (UNESCO 2018, 20). Under this model, the state or an organization with the legitimate power to do collects a levy from individual companies. The funds generated in this way are dedicated to financing in-company or inter-company vocational training expenses. In effect, this means that all companies contribute to the financing of training, while those that offer active VET programs are reimbursed for their expenses. This basic model can be implemented in many ways (DOHMEN 2015; ETF 2018, 40 ff.). For example, it could be limited to certain sectors of the economy, or reimbursements could cover some, all or more

than 100% of expenses. In addition, the basis for the levy (e.g., based on payroll or profits) and the levy amount can vary. One criticism of of the levy grant system is that it applies well in the formal economy, but companies in the informal economy are difficult to integrate into the system. In addition, some argue that the model's introduction could have the effect of making companies feel less responsible for engaging in training themselves. That is, by paying the levy, they might see their obligation as being fulfilled. Some observers additionally argue that the distribution of these financial resources is subject to the risk of misuse and corruption. The following examples illustrate different variants of levy financing:

- In Denmark, a levy system is used in which each company pays into a fund in proportion to the number of its employees. The resources are managed and redistributed by a foundation. The fund covers the costs of vocational school attendance and inter-company training for trainees, and subsidies are paid to firms that provide training positions (see GROLLMANN et al. 2004, 643; ETF 2018, 39). The fund covers 90% of trainee wages, taking a substantial burden off training companies' shoulders.

- If inter-company vocational training measures are carried out at the regional level, and are financed by all companies in the given industry or region, this constitutes a de facto levy system. In Germany, for example, some portions of the inter-company training provided by business chambers are financed by contributions paid by all companies in the chamber's area.

- An example of an industry-based solidarity levy can be found in the German construction industry, where an equalization fund functions on the basis of a collective agreement. Here, all construction firms pay in a percentage of their company payroll to reimburse training companies for the fees and costs associated with inter-company training and a portion of trainee wages (BOSCH et al. 2022, 31 ff.).

- A similar structure exists in the Swiss VET system in the form of VET funds, which can be created by sectoral business associations and can be declared obligatory by the state for all companies in a given sector (ETF 2018, 40, 61 f.). In 2019, there were 29 VET funds, to which approximately 142,000 companies (24% of companies in Switzerland) were subject. A total of 70% of the revenues were spent on vocational training (FREY & OSWALD 2019).

(3) Another variety of financial support is when the initial training phase takes place in a state-supported form. For example, ***publicly financed basic vocational education*** may take place in vocational schools or inter-company training centers. After this phase, trainees move on to dual(ized) training, but with a greater capacity for productive deployment there. This eliminates the comparatively high net costs companies typically experience during the initial training phase, and instead allows them to generate returns from trainees' productive work at an early stage. This makes the training process more profitable for them, creating a significantly higher probability of net positive financial returns, depending on the duration of the initial phase. One functioning example of this model is the so-called training guarantee in Austria (WIELAND 2020; EULER & SEEBER 2023, 43 ff.).

Another specific variant of this mode of support can be found in Norway, where a vocational training guarantee has been in place since the mid-1990s (see OECD 2010, 50). There, all secondary-level students attend classes together until the 10th grade. After that point, they must decide whether they want to take a university-bound path or start vocational training. The vocational training lasts four years. The first two years take place at school; the first of these corresponds to a kind of vocational orientation, while the second amounts to basic vocational training in one of 15 occupational fields. This is followed by a training contract with a training company for a two-year practical phase in one of the approximately 220 recognized training occupations. The alternation between company-based and school-based training phases varies depending on the training occupation. The training period ends with a final exam and certification. Young people who are unable to find an apprenticeship can alternatively take advantage of a school-based program that ends with an equivalent final examination.

Stages of development

Companies' cost-benefit assessments can lead to different initial positions with regard to the evident advantages of training.

FIGURE 21 **Initial company positions in assessing the cost-benefit balance**

Costs/Benefits	High	Low
Net costs	A	B
Net positive financial returns	C	D

On the benefit side, a company's assessment will be strongly influenced by the level of demand and supply of qualified skilled workers in the sector, as well as by the firm's expectations regarding its own economic growth. On the cost side, detailed breakdowns of training costs are rare. This means that comparisons of alternative forms of personnel recruitment tend to be intuitive.

Given these circumstances, the question is how state intervention can help to encourage in-company training. Fundamentally, there are two potential areas in which such action may be useful:

- The state could promote awareness and interest among the sector's firms by publishing cost-benefit balances applicable to that sector.
- The state could improve the benefit side of the equation by implementing an appropriate financing model.

The following stages of development offer variants of these measures, each addressing specific initial company cost-benefit positions (see Figure 21).

FIGURE 22 **Levels of support for companies with different cost-benefit balances**

1	PROMOTING TRANSPARENCY: Detailed cost-benefit balances are provided for sectors in which training produces net positive financial returns, as well as for those with high levels of potential benefits but negative net financial returns (net costs). (Focus on A, C, D)
2	MODERATE SUBSIDIES: Businesses in sectors with high levels of potential benefits and moderate net costs receive moderate levels of financial assistance to offset their training costs. For reasons of reversibility, various forms of subsidy are plausible options. (Focus on A)
3	SIGNIFICANT SUBSIDIES: Businesses in sectors with high levels of potential benefits and high net costs receive significant levels of financial assistance in order to (partially) offset their training costs. (Focus on A)
4	WIDELY DISTRIBUTED FINANCIAL SUPPORT: Businesses in sectors with low levels of potential benefits and high net costs receive significant levels of financial assistance. To bring these businesses into the system, the entire range of financing models can be applied in adapted form. (Focus on B)

5.2.9 Flexible VET structures: Dealing with rapid change and diversity

It has been widely observed that the rapid pace of innovation in business and society has rendered continuous change a constant. This has been exacerbated by the experience of numerous disruptive developments in the recent past, which – triggered by migration surges, pandemics and wars – have also called into question many habits and truths that once seemed self-evident in the education sector. One consequence has been the demand for agility, resilience and flexibility, both for structures and individuals. At the individual level, SENNETT (1998) sees the "flexible person" as being the new guiding model held up for our modern times. He argues that flexibility is the key category that captures the globalized economy's demands on the individual; however, those same demands have serious consequences for social coexistence and individuals' psyches, he notes. What is needed are flexible workers who go where the jobs are. They move as "labor nomads" between different fields of activity, forms of employment and training (BECK 1999, 8). They are always keenly focused on whatever is around the next corner. Individual jobs become episodes, and resumes never cohere. Referring to a

"work world full of 'revolving doors'" (SENNETT 1998, 151), Sennett portrays work as being like a process of perpetual repotting, as with a growing plant.

In the VET context, these considerations are reflected in the overarching effort to equip people with skills that will enable them to deal flexibly with rapid changes. This demand is by no means new. As early as 1956, DAHRENDORF provided evidence for the thesis that technical and economic developments were requiring people to acquire a new kind of qualification. He argued that functional skills would increasingly have to be replaced by "extra-functional skills" (DAHRENDORF 1956). In an influential 1974 essay, MERTENS further explored the question of how qualifications in an economy could be made flexible enough to generate a better match between the education and employment systems in times when traditionally taught skills were rapidly becoming obsolete. He saw a flexibility-promoting effect of this kind in the acquisition of what he called "key qualifications" (MERTENS 1974).

From this perspective, it is the individual that is expected to be flexible. In the VET context, this results in the assumption that with the appropriate curriculum, skills of this kind can be conveyed didactically within existing dual VET structures. The question of whether VET structures also need to be made more flexible in order to better accommodate changes in the labor environment has additionally taken on urgency. This has been triggered by the observation that companies and trainees are increasingly heterogeneous, and that VET programs thus need to be more flexible. The heterogeneity among firms is particularly evident with regard to features such as company size, sector, VET traditions, the degree of professionalization in the training sector, and the motives for engaging in training. Trainee diversity finds expression in characteristics such as educational background, gender, migration background, language skills, socioeconomic living conditions, and physical and mental disabilities (EULER & SEVERING 2020).

Reforms intended to increase the flexibility of VET structures can conflict with the desire to standardize vocational training. The more uniform the training curricula, concepts and examination questions, the more comparable the results will be. Here, we will discuss this tension between flexibilization and standardization as it relates to the following three areas of program design:

- Diversity ***of*** training courses
- Diversity ***in*** training courses
- Permeability ***between*** training courses

Diversity of training courses

VET can do justice to the heterogeneity among school-leavers only if it provides a corresponding diversity of VET courses. On the one hand, this relates to the range of occupational fields and sectors that young people see as highly appealing. On the other, it addresses the correspondence between educational prerequisites and training courses' qualification levels.

Dual VET is often focused primarily on occupations with roots in the craft and industrial sectors. However, with the structural shift toward a service and knowledge economy, occupations from these economic sectors have also become increasingly important (see EBNER et al. 2023 for Germany; JOYE et al. 2023 for Switzerland). It is thus critical that the spectrum of occupations served by the VET system also includes industries and occupational fields that need skilled workers but do not yet have a distinctive VET tradition or culture.

VET is often viewed as being focused on the traditional skilled trade and industrial occupations. However, it is also frequently associated with comparatively undemanding occupations for cognitively less capable youth. Thus, as a means both of addressing the diversity of school-leavers and of preserving the reputation of VET itself, it is important that VET systems include a broad spectrum of training occupations at different qualification levels. VET courses can be assigned to different qualification levels through reference to a national qualification framework or on the basis of International Standard Classification of Education (ISCED) rubrics. For example, the ISCED framework classifies VET programs as falling between ISCED levels 2 to 7

(AGBB 2022, XII f.). VET programs offered in a given country are assigned to levels, ranging from vocational preparation to vocational training to higher vocational education at the tertiary level. The quantity of VET courses offered and their assignment to the various levels varies from country to country. For example, Switzerland distinguishes two-year VET courses leading to a federal VET certificate (EBA) at level 3 from three- to four-year training courses leading to a federal VET diploma (EFZ) at level 4. In England, different types of apprenticeships have emerged at different National Vocational Qualification (NVQ) levels, including intermediate apprenticeships (level 2), advanced apprenticeships (level 3) and higher apprenticeships (levels 4 and 5). The introduction of degree apprenticeships (level 5–7) created the possibility of combining a VET program with a university degree (FROMMBERGER 2019, 50). In Spain, VET programs are offered at four levels: "basic VET" (level 3, two years); "intermediate VET" (level 3, two years); "higher VET" (level 5, two years); "specialisation courses" (level 5, one year). In the Netherlands, VET is offered in either a dual or school-based format at four different levels: Assistant training (level 1, maximum 1 year), basic vocational training (level 2, 2–3 years), professional training (level 3: 3–4 years) and middle-management training (level 4: 3–4 years). In addition, most of these training courses are divided into partial qualifications or modules (FROMMBERGER 2019, 28). Participating youth receive a certificate for each successfully completed partial qualification. After acquiring all partial qualifications, they receive a full qualification. There is no overall final exam. Some of the examinations take place in the training companies, but most take place in the schools, and are administered by the teachers there (vocational training examinations).

In summary, the diversity of company requirements, individual needs and individual prerequisites should be reflected in a corresponding variety of VET courses. In this regard, entry points for disadvantaged young people are just as important as flagship training programs that counteract the perception that VET is an educational sector solely for those who failed to make it to university.

Diversity in training courses

At one extreme, VET courses can be designed as monolithically structured programs that must be completed from beginning to end. This would meet the demands of standardization to the highest degree. However, they can also be designed to be flexible in a number of respects, in this way meeting the differing requirements and needs of companies and trainees. Flexibility of this kind can be realized in many ways:

- Alongside its required elements, the curricular structure of a VET course could include elective modules of greater or lesser scope.
- In addition to a nationally mandatory portion, the curriculum could include a part that is defined and implemented regionally, sectorally or at the level of the individual learning site.
- The program could allow the standard training duration to be shortened or lengthened. Either part-time or full-time training formats are possible.
- The training course could be structured in a modular way or treated as an entirety. In this regard, modules could be small, granular elements or structured as building blocks with larger time units. This modular structuring could include examinations on the individual subjects, as well as the certification of partial qualifications.
- With regard to learning processes, training could involve periods of mandatory attendance, or the details of content acquisition could be left to learners' preferences. Analog or digital media could be provided for self-guided learning processes.
- Skill definitions could be detailed or general, as well as open or closed. In the case of open formulations, those responsible for training must adapt them to specific training requirements in each learning environment.

The modularization of training courses has been the subject of contentious debate, particularly in countries with established dual VET systems. While the modular structuring of curricula and examinations

is a widespread practice especially in Anglo-Saxon countries, it has been almost taboo in Germany and Switzerland in particular.

The introduction of so-called microcredentials or microcertificates has given greater currency to the discussion. Microcredentials certify the learning outcomes that trainees have achieved in the context of a short learning unit (CEDEFOP 2022). Learning outcomes are assessed on the basis of defined standards. The difference between these and traditional certifications is that microcertificates result from courses lasting just a few days or weeks. This discussion is being driven by the European Commission, which in December 2021 presented a proposal for a European recommendation on the development of microcredentials relevant to VET. On the supply side, microcertificates of interest to companies are available through internationally operating digital providers, with sector-specific course offerings on digital platforms. For example, educational platforms such as edX, Udacity and Coursera, and especially technology companies such as Cisco, Google, Amazon and Microsoft, offer courses on numerous topics that provide a microcertificate upon completion (ILO 2022, 171, 183). Many of these courses are offered not only by prestigious universities, but also by companies such as SAP and Ernst & Young, which offer sector-specific courses via their own platforms.

Countries such as Australia, New Zealand and the Philippines have established a reference framework for microcredentials, allowing them to be integrated into comprehensive qualifications (ILO 2022, 45). Current examples demonstrate that microcredentials are reinforcing and accelerating existing trends in continuing education. However, it is not yet clear what ultimate significance they will take within the VET context. The answer to this question will depend on the preexisting VET structure in each country. Particularly in countries in which school-leavers do not have access to formal basic vocational training after the compulsory education period, microcredentials could provide a bridge to a full vocational qualification. This is highly relevant in countries with a high proportion of people working in the informal economy without any vocational training.

However, certain risks coexist with these potential benefits (HIPPACH-SCHNEIDER & LE MOUILLOUR 2022). Certificate inflation could lead to a lack of transparency for potential learners. Too much modularization could make it difficult to see how subjects relate, thus hampering the development of complex skill clusters. In such a case, VET would tend to focus on present-day company needs rather on the breadth of an occupational field. The number of examinations would likely increase, and with it the administrative burden.

Permeability between training courses

Training courses can be designed in isolation from one another, or can be linked both horizontally and vertically. No matter what the case, however, it is critical to ensure that learners' previously acquired training achievements are credited during subsequent training. The more permeable different courses of training are to one another, the more flexibly they can be tailored to the diverse needs of companies and learners. Horizontal permeability makes it possible to switch from school-based to dual VET, for example. Vertical permeability allows for a flexible design of educational paths that build on one another.

Spain offers an example of vertical permeability from VET to higher education. There, the transition from higher VET (cf. Chapter 6.4) to higher education is possible with appropriate grades or after an entrance examination.

The question of permeability is particularly relevant when imagining different possible combinations of vocational and academic education. For more than two decades, these traditionally separate educational sectors have become increasingly linked. In essence, this can be characterized as tendencies toward an academization of vocational education, and a simultaneous vocationalization of academic education (WOLTER 2019, 29 ff.). In Germany, for example, among the more than 300 existing dual vocational training occupations, one distinct segment includes comparatively demanding occupations that are largely chosen by learners possessing a university entrance qualification. On the other hand, state and increasingly private universities offer study programs whose objectives and design promise a high degree

of alignment with labor-market needs. "As a result, the clear curricular distinction between vocationally oriented university programs and VET programs that prepare students for cognitively demanding and complex professional activities is being lost" (EULER 2019, 66). Within these overarching developments, forms of training-integrated dual university study or study-integrated vocational education have emerged that link VET and university certifications and degrees in different ways (EULER & SEVERING 2019; EULER 2021).

The German example shows that the permeability between vocational and academic education can be devised not only as a consecutive link between the two educational sectors, but also in the form of interlocking curricula. In other countries, practical vocational elements are integrated into university studies (see, for example, degree apprenticeships in England; see KUCZERA & FIELD 2018, 108 ff.), or learners can obtain a university entrance qualification within the VET system (as with the "Berufsmaturität" vocational school-leaving certificate in Switzerland; see GONON 2013; ECONCEPT 2015).

Stages of development

The dualization of VET programs can take place gradually, starting from either a school or market model. The ideal final stage would be a network of dual(ized), flexibly structured training courses at different qualification levels, offering both vertical and horizontal permeability. Possible stages of development toward this ideal state could be as follows:

FIGURE 23 **Stages representing increasing VET flexibility at different qualification levels**

1	VET PROGRAMS FOR HETEROGENEOUS TARGET GROUPS: The range of VET programs includes dual(ized) programs for high-achieving learners as well as for disadvantaged learners
2	VET PROGRAMS IN HIGH-DEMAND VOCATIONAL FIELDS: The range of dual(ized) VET programs also includes apprenticeships in sectors that have a strong demand for skilled workers, are considered to have a promising future and hold strong appeal for school-leavers.
3	VET PROGRAMS ARE INTERNALLY FLEXIBLY STRUCTURED: The dual(ized) VET programs on offer are internally flexibly structured, allowing them to be adapted to company and/or learner needs.
4	VET PROGRAMS ARE FLEXIBLE AND PERMEABLE, AND INCLUDE LINKS TO UNIVERSITY STUDY: There is a network of dual(ized) VET programs at different qualification levels that are flexibly structured and offer both vertical and horizontal permeability. Individual VET programs are also connected with university programs.

5.2.10 Evidence-based design: Creating a solid foundation for decisions and design choices

Of all education sectors, VET is the one most closely linked to economic and societal shifts. This characteristic gives it a special significance, but also creates a situation in which trends and future developments must be identified at an early stage. In this regard, systematic forms of data collection and evaluation can help in anticipating, registering and interpreting dynamic developments, and in further translating them into the design of VET programs. These tools should be regarded as a key element of the VET system.

Basing VET interventions on accumulated evidence can place decision-making and coordination processes on an objective footing, diminishing the danger that VET policy measures may instead be based on intuition, speculation, one-sided interests and traditional routines. The compilation of relevant data thus represents an important cornerstone of rational VET policy. It is important to remember that the accumulation of data alone cannot replace decision-making and design processes. Data must be interpreted, contextualized and prioritized. This in turn requires coordination, exchange and discussion. However, data do create a basis for determining whether perceived facts are true or false, worthy of pursuit or rejection, or in need of preservation or change.

When taking an evidence-based approach in the VET sector, two key questions must be answered: (1) What data should be collected and evaluated? And (2) what instruments will be used to collect and analyze the data, and what institutions will perform these tasks?

Which data?

The data to be collected and evaluated should be both relevant and reliable. Thus, before starting out, it is important to consider exactly what data will be needed for what purposes, and to assess the effort that will be needed to collect it. Some data may already be available from public sources, thus requiring limited effort, while other types may require new surveys or collection campaigns. In general, data that can substantiate previously identified weaknesses or help justify planned reforms are of particular importance. The following types of data are likely to prove useful:

- Statistical data on supply-demand relations within the labor and training markets
- Evaluation data on the impact of government labor-market or VET policy interventions
- Survey data illuminating company or individual training needs
- Analytic data on the costs and benefits of dual(ized) training within specific occupations or sectors
- Analytic data on dropout rates in critical VET tracks
- Data on educational progress among specific VET target groups

Which instruments? Which institutions?

Data is effectively a raw material that must be interpreted by experts in order to be used effectively in goal-directed design processes. Expertise of this kind can be obtained in different ways:

- Responsibility for the task could be transferred to a relevant ministry office
- An external institution (e.g., university, consultancy) could be commissioned for the one-time or ongoing collection of essential data
- Participation in international networks could provide access to data from publications and external experts
- An in-house agency could be established and tasked with monitoring relevant developments and/or collecting research data on a regular basis

Examples of this latter approach exist in numerous countries, and can serve as inspiration for institution-building efforts in other countries. The following descriptions illustrate the range of possible options:

- Some countries have placed a high priority on establishing and operating a labor market information system (EUROPEAN COMMISSION 2017, 63 ff.; ILO 2017, 80 ff.). These experiences have shown that establishing the conceptual foundations and technically implementing a system of this kind are demanding tasks, requiring considerable expertise. However, using the data collected to inform labor market and VET policy effectively may be even more challenging.
- In Germany, the Federal Institute for Vocational Education and Training (BIBB) is tasked with conducting a rigorous program of research. The research projects carried out within this framework help prepare the groundwork for new regulations, allow pilot projects to be tested and evaluated, and produce insights into current VET issues.
- The Swiss Observatory for Vocational Education and Training (OBS EHB) identifies, monitors and analyzes social, economic and technological developments in terms of their significance for VET. It identifies VET trends, conducts studies and publishes their results, and organizes technical conferences and forums to facilitate discussion of the findings.
- In countries such as Ghana and the Philippines (see Chapter 5.2.4), national VET agencies have been established that perform a wide variety of tasks with varying degrees of emphasis (FROMMBERGER 2015). Among other duties, they monitor trends, coordinate stakeholders, conduct studies, report on ongoing and longitudinal research and design issues, issue qualifications to VET personnel, and accredit and certify individuals and institutions.

- In Switzerland, so-called leading houses have been established in which VET researchers conduct systematic, in-depth research on specific topics of focus (e.g., digitalization in the VET sector, VET governance). In addition to their original research, these leading houses are tasked with supporting young researchers; facilitating national and international interchange within key VET research areas; and transferring research results via conferences, workshops and publications.

Stages of development

Efforts to generate relevant data that can inform VET policy measures can take place with varying degrees of intensity and continuity. As the following stages of development show, this can range from comparatively low-threshold activities to the establishment of an independent research infrastructure:

FIGURE 24 **Stages in the creation of infrastructure facilitating evidence-based decision-making and design**

1	USE OF NATIONAL DATA RESOURCES: Specific bodies are tasked with regularly compiling and disseminating information relevant to VET from existing national data sources.
2	USE OF INTERNATIONAL DATA RESOURCES AND EXPERTISE: Specific bodies are tasked with regularly compiling and disseminating information relevant to VET from available international studies and sources. This body also participates in relevant networks and works to adapt current VET developments for local use.
3	IMPLEMENTATION OF INDICATOR-BASED VET MONITORING: Specific bodies monitor key developments in the training and labor markets that are relevant to the VET system. This monitoring is based on a set of stakeholder-approved indicators that are used to guide the data collection process.
4	IN-HOUSE RESEARCH INFRASTRUCTURE IN PLACE: Systematic, ongoing research on structural and developmental VET issues is performed, driven and coordinated by specific agencies or institutes, and is used to inform VET policy activities.

5.2.11 Perceived value: VET in the struggle for reputation, appeal and acceptance

As school-leavers and their parents decide between future educational paths, and HR managers in companies choose between recruitment strategies, they necessarily draw comparisons between vocational and academic education, and judge how each performs within the local economic and social environment. Two fundamentally opposing positions often emerge here. One regards VET as general education's poor relation. This view contrasts with the formula that is often affirmed in countries with dual VET systems, especially by politicians: "Vocational and academic education are of equal value, but are not the same!" This equivalency lends VET prestige and acceptance, and also makes it attractive to high-achieving school graduates.

The characteristics sketched here are value-based attributes, and like all such statements of value, they are not true or false, but are either accepted and shared or disputed and rejected by the addressees. Thus, while the formula of VET equivalence initially sounds like a descriptive fact, it turns out upon closer inspection to be a questionable assessment. Value statements can be supported or undermined by arguments; however, both the value statements themselves and the arguments can be disputed.

Evaluations are based on rational arguments and emotions

What, then, supports the assertion of equal value? Possible arguments may include the following: VET certification offers entry into an occupation and employment just as surely as a university degree! The public regards VET as being just as valuable as a university degree! In the National Qualifications Framework, individual VET certifications are assessed at the same level as a bachelor's degree! Counter-arguments can also be made: Young people today are increasingly working toward academic degrees! Overall, a university degree offers better job prospects than a VET qualification!

Decisions for or against VET are often influenced by emotional factors as well as rational arguments. For example, especially in developing and emerging

countries, cultural and religious traditions within specific social groups can shape the image of an occupation, perhaps making it difficult to imagine that women might perform certain jobs or that socially high-status people might engage in physical labor (CLEMENT 2013, 8). "Work in the trades may alternately be viewed as an expression of strength and skill, or of subordination. Such ideas are deeply rooted in the culture of a society, and usually have a long history" (CLEMENT 2013, 17).

These observations lead to two conclusions: (1) Assessing the equivalence of VET as compared to general or university education is a matter of perspective. (2) Evaluations and decisions from the perspective of different groups may be based both on factual arguments and emotions. Thus, when assessing the equivalence of VET with academic study, we do not need quick reflexes of approval or rejection, but rather sober reflection on fundamental facts and contributing factors. With this in mind, we turn now to identifying and exploring the perspectives of the two primary groups of relevance, companies and school-leavers.

The company perspective

For companies, two sets of factors are central to efforts to recruit and retain staff: The supply of individuals in the labor market with adequate skills, and the results of cost-benefit calculations comparing different employee recruitment options. If there are not enough suitably qualified people available on the labor market, then the task of training potential new employees takes on greater prominence. In addition, when seeking to recruit qualified skilled workers, companies may weigh the relative advantages of providing VET against the option of providing introductory training for university graduates.

Within this spectrum, VET is an option that is deemed more or less attractive, or is judged to be equivalent to other recruitment channels for the company, depending on market conditions. Its appeal increases particularly if applicants' skills profiles are relevant to and qualitatively suitable for the company's needs.

Emotional factors can also influence HR managers' decisions in different ways. For example, they may hold traditional ideas about the extent to which it is even a company's task to train people for an occupation. Good or bad past experiences might influence their willingness or refusal to select school-leavers with certain characteristics (e.g., a particular school-leaving certificate, migration background or gender) for an apprenticeship.

In this context, it is clear that VET may be integrated into companies' human resources strategies in different ways depending on the country and economic sector. "British and German engineering companies have integrated apprenticeships based on broad occupational profiles into their long-term recruitment and HRD strategies, using them to fill middle-management positions. The same pattern could be identified for the retail sector in Germany, but not for the retail sector in the United Kingdom." (ILO 2022, 91)

The school-leavers' perspective

School-leavers also weigh two key factors in making their decisions: (1) the actual availability of options based on the individual's educational attainment; and (2) rationally and emotionally influenced expectations and perceptions about future educational and career paths.

The range of options available after leaving school is initially influenced by the admissions requirements for higher and vocational education institutions. As a rule, admission to university study, as well as to other school-based courses of study, requires a defined school-leaving qualification. Depending on the country, tuition or other school fees can present additional hurdles to study, as they may not be affordable for young people from socioeconomically disadvantaged population groups. Furthermore, in many countries, access to civil service employment requires a university degree (CLEMENT 2013, 16). Access to dual(ized) VET requires that companies be willing to create training positions, and – from the perspective of specific applicants – be willing to hire that specific person.

Within this corridor of possibilities, a given school-leaver's decision for or against VET or for or against a specific training occupation will depend on their own mix of rational and emotional inclinations.

Rational factors include the characteristics associated with a VET certification, such as income and earnings; advancement and promotion opportunities; job security; and the prospect of meaningful, challenging and interesting work tasks. In addition, characteristics intrinsic to the training process itself can influence its appeal, such as (perceived) quality, duration or training pay. The way that individuals weigh these factors can vary both between countries and between social groups within a country. While income and security motives may dominate among some, others may give precedence to career and self-fulfillment motives. And even with regard to the income and security motive alone, different points of reference may play a role in people's considerations:

- Lifetime income and employment security: A study by HANUSHEK et al. (2017) shows that VET allows for faster entry into the employment system than do general education degrees, but that over the course of a working life, general education degrees lead to higher levels of employment security, and in many countries, higher lifetime earnings as well. In contrast, surveys in Switzerland show that the risk of unemployment is significantly lower for graduates of VET programs than for graduates of university-prep high schools (KUHN & SCHWERI 2023, 19).

- Income gap between VET program graduates and low-skilled workers: If the earnings differences within an occupation are small between persons with and without VET qualifications, there is no incentive for school-leavers to enter VET for that field of work (AGBB 2022, 347; BOSCH 2023).

- Detailed view required: Although university graduates' average incomes tend to be higher than those of VET program graduates, there is substantial variance in both groups, so that a comparison between specific occupations may also show higher earnings among VET program graduates (see EBNER et al. 2023, 29).

Emotional factors can vary across individuals, but can also take on different relevance depending on the social context. For example, gender-based forms of division of labor, religious taboos and traditional role models have a different impact in rural regions of developing countries than in postmodern societies that place great significance on the individual determination of identity. Attitudes, associations and feelings toward VET (compared to university study) or toward a particular training occupation may in turn depend on many factors, including expectations within a person's circle of family and friends, the way the jobs are described (see ULRICH et al. 2016), or the occupation's societal prestige (EBNER et al. 2023, 29; JOYE 2023). Even the names given to specific learning sites can influence perceptions of VET. For instance, some countries are attempting to conceptually upgrade vocational schools through designations such as "center of excellence," "industrial training institute" or "VET college" (ILO 2022, 89, 139, 167). Again, assessments may vary between countries. For example, both the hairdressing profession and STEM professions are fundamentally more highly regarded in developing countries than in industrialized countries (CLEMENT 2013, 11, 34).

Stages of development

In many countries, companies and/or school-leavers do not have a high regard for VET as an area of education or for individual training occupations, and do not consider them to be of equal value to university study. Efforts to improve VET's image must thus address both the rational and emotional factors underlying such an evaluation as directly as possible. One necessary prerequisite for any image-promotion campaign is that the training courses, training institutions and occupational fields being advertised are in fact of high quality. If this is not the case, any such image campaign will lack credibility, and ultimately be ineffective. Reputation-enhancing measures can be particularly effective if the quality of a program, an institution or the VET in a specific occupational field is higher than is believed by potential addressees, as measured purely by rational factors (CLEMENT 2013, 34).

FIGURE 25 **Stages of image promotion aimed at enhancing VET's reputation and appeal**

1	IMAGE-PROMOTION CAMPAIGN FOR VET PROGRAMS/ PROJECTS: Targeted image activities focus on high-quality VET programs or projects. This approach primarily highlights successful individual examples.
2	IMAGE-PROMOTION CAMPAIGN FOR VET INSTITUTIONS: Targeted image activities focus on VET in high-quality training institutions (e.g., schools, companies, training centers) with a good reputation.
3	IMAGE-PROMOTION CAMPAIGN FOR SPECIFIC SECTORS/OCCUPATIONS: Targeted image activities focus on VET in industries and occupational fields with strong future potential. The sectors may already hold broad appeal, and could thus have a positive spillover effect for other VET areas. However, the focus could also be placed on high-quality sectors and occupations that offer good incomes and advancement opportunities, but do not yet enjoy a strong reputation despite these positive factors.
4	GENERAL IMAGE-PROMOTION CAMPAIGN: Comprehensive image activities address VET as a whole. The measures are aimed at further strengthening VET's reputation, and at making people aware of its potential in comparison with alternative qualification paths.

6 | Implementation: Planning policy-transfer reform projects

6.1 | Reference framework for the analysis and design of reform projects

At the heart of this study is a central question: What steps can be taken in order to develop or introduce a dual(ized) VET system? In answering this question, we begin from the assumption that dual(ized) VET can be analyzed and structured on the basis of 11 individual policy components. This allows the actors responsible for a country's VET system to shape each of the individual components to reflect their desired priorities, at a pace appropriate to circumstances – while in sum moving gradually in the direction of a dual(ized) VET system.

The specifics of a reform project of this nature will depend on the conditions in place at the start of the process, as well as the preferences of and resources available to the actors responsible for the project. For example, some individual components may already be at a higher stage of development, while others may still be at a lower stage. Those responsible for the reform must then decide which components to prioritize, and where to engage in targeted interventions. The project timetable and the human and financial resources available will also set boundaries to the scope of the reform effort.

When we examined these 11 components in Chapter 5, we structured them as stages of development, in the sense of possible steps on the way to dual(ized) VET. In the following, we offer a brief synopsis of these development stages across each of the various system components.

	(1) Policy scope: VET as a means of achieving economic, social and individual goals
1	**Focus on the economic dimension:** The primary goal of VET is to supply the national economy and companies with qualified skilled workers. This is done by imparting the job-specific skills needed to meet the current and future demand for skills.
2	**Focus on social integration via company incentives:** VET aims to help young people integrate economically into the workforce, as well as into society more broadly. Businesses are given incentives to provide disadvantaged young people with apprenticeships, and encouraged to invest special effort in their training.
3	**Focus on social integration via state-supported training positions:** In the absence of sufficient in-company training positions, state-subsidized VET positions are offered to disadvantaged young people, enabling them to acquire a recognized VET qualification.
4	**Focus on personality development:** Within the context of VET programs, a wide range of educational courses are offered to people with different educational backgrounds, combining vocational and general educational skill sets. This diversity of educational pathways offers the potential to use VET as an important stage in shaping the individual educational path

	(2) Objective: Developing skills that will remain relevant in future workplaces	(3) Dual principle: Learning alternates between school and company environments	
		Starting point: School-based vocational education	**Starting point:** On-the-job training
1	**Focus on sector-specific skills:** VET curriculum is primarily focused on the development of vocational skills that meet present-day demands.	**Practice as a subject of instruction:** School-based VET makes reference to practical activities in its coursework, but does so without involving practitioners.	**Enhancement of informal training:** In addition to the demonstration of practical work processes, (informal) on-the-job training offers phases of in-depth explanation and instruction.
2	**Selective expansion to include interdisciplinary competencies:** VET curriculum primarily focused on the development of vocational skills that meet present-day demands. However, few individual units addressing interdisciplinary skills and/or future challenges are added.	**Practical activities intermittently incorporated into instruction:** School-based VET enables learners to gain periodic insights into real-world practice by incorporating practical activities into lessons (e.g., in the form of company visits or presentations by practitioners).	**Planning and structuring of in-company training:** In-company training is based on a plan that details the work practices to be taught over a specific period of time, and additionally provides for their explanation.
3	**Sector-specific skills and interdisciplinary competencies addressed in separate units:** VET curriculum has a high proportion of units that combine specific vocational and interdisciplinary competencies, while also preparing trainees to meet future challenges. At the same time, individual units remain largely focused on meeting current job- and sector-specific requirements. Teaching and examination staff are divided between the different levels of focus.	**Coordinated practical phases within the VET program:** School-based VET programs additionally provide practical phases (internships) of varying scope; these are coordinated with the curriculum content, and learners reflect on and evaluate their experiences within the school environment.	**Enhancements through "off-the-job" learning phases:** Within the context of in-company VET programs, learners are given the opportunity to acquire new knowledge and skills relating to work-relevant processes with an "off-the-job" training provider at least one day per week.
4	**Curriculum consistently addresses sector-specific skills and interdisciplinary competencies in integrated units:** In addition to imparting job- and sector-specific vocational skills, the VET curriculum consistently aims to develop interdisciplinary competencies, and prepares trainees to meet future challenges in their occupational fields. Teaching and testing staff take an integrative approach in all units.	**Alternating VET structures with extensive practical phases:** Practical components comprise at least 40% of the VET program. They are closely aligned with the school-based curriculum, are monitored in terms of quality, and their content is included in final examinations.	**Alternating VET structure:** Informal VET or in-company training evolves into dual(ized) VET as training content from both the company and the training provider is consolidated into a stable curriculum. This additionally allows trainees to be examined and certified on the basis of their performance.

	(4) Partnership culture: Cooperation between state and business-sector actors		(5) Professionalization of VET staff: Setting the pace of development	
	Starting point: School-based vocational education	**Starting point: On-the-job training**	**School-based VET staff**	**Training company VET staff**
1	**Trailblazing enterprises:** A relatively small number of companies are involved to a limited extent in the implementation of in-company training phases, and/or support the development of dual(ized) VET offerings within other action areas.	**Integrated phases of instruction:** When training young employees, companies provide for phases of instruction and reflection in addition to their participation in regular work processes.	**Technical vocational competencies:** Teachers in vocational schools are technically able to support the lesson content with relevant practical examples from the field.	**Instructional competencies:** Company VET staffers are able to communicate relevant work processes to learners in a comprehensible way.
2	**Selective implementation in individual sectors:** In individual sectors of the economy, dual(ized) VET becomes an increasingly widespread option for companies seeking to recruit qualified skilled workers.	**Training planning:** When training young employees, enterprises follow a plan with contents taught within a predefined time frame. The plan covers the full range of work processes performed in the training company.	**Pedagogical competencies:** Teachers in vocational schools are didactically able to combine theory and practice in a methodologically varied way.	**Planning competencies:** Company VET staffers are able to systematically plan learners' progression through the various company work areas.
3	**Sustainable implementation:** Companies' participation within the individual action areas, both at the institutional-organizational and training levels, is both ongoing and sustainable.	**Time provided for off-the-job learning:** Companies allow trainees time off to engage in off-the-job learning. During this time, they continue to pay regular wages, and pay for any course fees or transportation costs incurred.	**Organizational competencies:** In collaboration with company representatives, teachers in vocational schools are organizationally able to plan and coordinate a course of vocational instruction for trainees that alternates between the school and practical company learning environments.	**Integration competencies:** Company VET staffers are able to incorporate content from school-based VET periods, and use it as appropriate to inform the design of in-company training phases.
4	**Institutionalized social partnership:** Cooperation between the state and the business sector is institutionalized within mutually agreed-upon areas of engagement, taking the form of both low- and high-threshold participation. Business involvement ranges from forms of information exchange to the partial assumption of government tasks to participation in corporatist business-sector organizations.	**On- and off-the-job learning phases are part of a curriculum and certified:** Companies arrange trainees' work and instruction phases on the basis of a defined curriculum. The skills acquired are documented and certified. This can be done via formal examinations or with procedures validating informally acquired competencies.	**Quality development competencies:** Teachers in vocational schools are conceptually and communicatively able to assess the school- and company-based learning phases of a VET program on the basis of quality criteria, and can make improvements as necessary.	**Quality development competencies:** Company VET staffers are able to evaluate in-company training programs based on quality criteria and make improvements as necessary.

	(6) Quality development: Codification and review of standards	
	Area of responsibility: Policymakers	**Area of responsibility: VET learning site staffers**
1	**Policy recommendations:** State oversight agencies publish recommendations within the various quality-related areas. Stakeholders are advised to take these key points into account in the design of dual(ized) VET programs.	**Documentation of the site's definition of quality:** Schools and training companies document their definitions of satisfactory quality in the implementation of VET processes.
2	**Core set of exploratory standards:** State oversight agencies define a core, relatively small set of quality standards for the quality-related areas. The standards are formulated in a fairly open manner, and are meant to be tested by dual(ized) VET stakeholders. Oversight largely takes the form of self-assessment, and stakeholders can adapt the standards to specific conditions in their vocational field as necessary.	**Documentation of the quality level achieved:** Schools and training companies reflect on and document the level of quality achieved at their learning sites, based on their own documented definitions of quality.
3	**Core set of binding standards:** State oversight agencies define a core, relatively small set of binding quality standards for the quality-related areas. Several systemic features are mandatory: VET contracts must take written form, and must contain binding statements regarding the rights and obligations of trainers and trainees. The development and implementation of examinations are based on detailed standards, as are assessments of the suitability of training facilities and VET staffers.	**Use of external assessments:** Schools and training companies obtain external feedback with respect to their learning sites' measures of quality and their own realization of these standards. They reflect on this feedback, and if necessary adjust their criteria and activities to improve training quality.
4	**Mandatory quality framework:** State oversight agencies define a detailed, differentiated framework of binding quality standards for the quality-related areas. These are regularly reviewed in a process that includes external bodies. The quality framework is suitable for describing and implementing a dual(ized) VET system at a high level of quality.	**Quality assessment and quality development policy:** Schools and training companies implement a quality policy that blends self-evaluation and external evaluation to analyze and improve the quality of their training. The quality policy includes at least four different quality areas with associated standards. The policy should combine processes of quality assessment and quality development.

	(7) Participatory governance: Building the institutional and legal framework	(8) VET financing: Balancing costs and benefits	(9) Flexible VET structures: Dealing with rapid change and diversity
1	**Short-term consultation of individual experts:** Experts, especially from the business community, are involved in the state's design of tasks, working within the framework of temporary bodies (e.g., expert circles, advisory boards). Their role is largely limited to consultation and the provision of information.	**Promoting transparency:** Detailed cost-benefit balances are provided for sectors in which training produces net positive financial returns, as well as for those with high levels of potential benefits but negative net financial returns (net costs).	**VET programs for heterogeneous target groups:** The range of VET programs includes dual(ized) training programs for high-achieving learners as well as for disadvantaged learners.
2	**Time-limited governance board positions for business-sector representatives:** Representatives from core business-sector institutions are appointed for a defined term of office to permanent committees focused on the design of specific VET tasks. The non-state representatives have voting rights on these committees, as do state representatives.	**Significant subsidies:** Businesses in sectors with high levels of potential benefits and high net costs receive significant levels of financial assistance in order to (partially) offset their training costs.	**VET programs in high-demand vocational fields:** The range of dual(ized) VET programs also includes apprenticeships in sectors that have a strong demand for skilled workers, are considered to have a promising future and hold strong appeal for school-leavers.
3	**Governance board appointments with non-state institutions holding joint oversight responsibility:** Committees tasked with managing specific VET tasks are staffed by business-sector representatives, as well as other non-governmental actors as necessary. The institutions represented on these bodies send their representatives autonomously and independently. The non-state representatives have voting rights on these committees, as do state representatives.	**Significant subsidies:** Businesses in sectors with high levels of potential benefits and high net costs receive significant levels of financial assistance in order to (partially) offset their training costs.	**VET programs are flexibly structured internally:** The dual(ized) VET programs on offer are internally flexibly structured, allowing them to be adapted to company and/or learner needs.
4	**Delegation of sole task authority:** Specific tasks are delegated wholly to bodies containing representatives of non-state institutions. These governance committees have a defined composition and mandate. The exercise of these tasks is carried out on non-temporary basis, with the body bearing sole responsibility for this process.	**Widely distributed financial support:** Businesses in sectors with low levels of potential benefits and high net costs receive significant levels of financial assistance. To bring these businesses into the system, the entire range of financing models can be applied in adapted form.	**VET programs are flexible and permeable, and include links to university study:** There is a network of dual(ized) VET programs at different qualification levels that are flexibly structured and offer both vertical and horizontal permeability. Individual VET programs are also connected with university programs.

	(10) Evidence-based design: Creating a solid foundation for design choices and other decisions	(11) Perceived value: VET in the struggle for reputation, appeal and acceptance
1	**Use of national data resources:** Specific entities are tasked with regularly compiling and disseminating information relevant to VET from existing national data sources.	**Image-promotion campaign for VET programs/projects:** Targeted image activities address VET programs in high-quality educational programs or projects. This approach primarily highlights successful individual examples.
2	**Use of international data resources and expertise:** Specific entities are tasked with regularly compiling and disseminating information relevant to VET from available international studies and sources. This body additionally participates in relevant networks and works to adapt current VET developments for local use.	**Image-promotion campaign for VET institutions:** Targeted image activities focus on VET in high-quality training institutions (e.g., schools, companies, training centers) with a good reputation.
3	**Implementation of indicator-based VET monitoring:** Specific bodies monitor key developments in the training and labor markets that are relevant to the VET system. This monitoring is based on a set of stakeholder-approved indicators that are used to guide the data collection process.	**Image-promotion campaign for specific sectors/ occupations:** Targeted image activities focus on VET in industries and occupational fields with strong future potential. The sectors may already hold broad appeal, and could thus have a positive spillover effect for other VET areas. However, the focus could also be placed on high-quality sectors and occupations that offer good incomes and advancement opportunities, but do not yet enjoy a strong reputation despite these positive factors.
4	**In-house research infrastructure in place:** Systematic, ongoing research on structural and developmental VET issues is performed, driven and coordinated by specific agencies or institutes, and is used to inform VET policy activities.	**General image-promotion campaign:** Comprehensive image activities address VET as a whole. The measures are aimed at further strengthening VET's reputation, and at making people aware of its potential in comparison with alternative qualification paths.

The development stages for the 11 dual(ized) VET system components, summarized in the reference framework here, can be used in a number of ways as an instrument to guide reform. As a starting point, we assume that within any country's real (as opposed to ideal) VET system, the 11 components will have reached different levels of development. With this in mind, the reference framework can be used to:

- Analyze the individual VET system components and describe their present state of development.
- Define a possible target state for each individual system component.
- Plan necessary change processes and interventions, based on an analysis of the differences between the identified developmental states and desired target states.
- Identify possible challenges and the need for external support in planning reform processes.
- Conduct a comparative analysis of real-world VET systems (real types), focusing on specific individual design components.

6.2 | Process model for conceptualizing policy-transfer reform projects

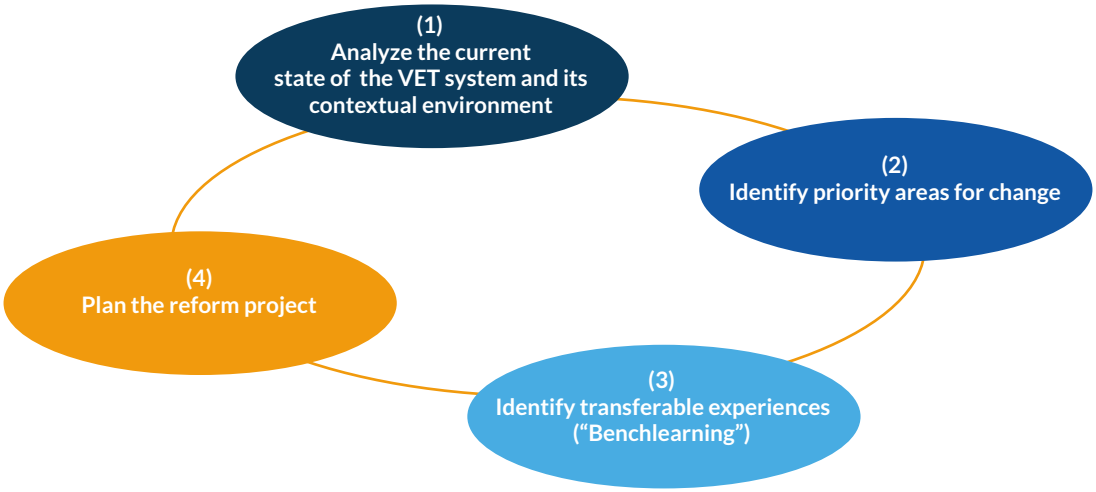
The process model outlined here presents a framework for conceptualizing reforms that aim to transform an existing VET system into a dual(ized) VET system. This model operates under the assumption that key stakeholders within the country are committed to developing their VET system and integrates concepts and insights drawn from experiences observed in other countries. The transfer of such experiences can occur through dissemination, adaptation or transformation (see Chapter 3).

The process model consists of four distinct phases, each of which is explained in detail below:

Analyze the current state of the VET system and its contextual environment

- The first step involves utilizing the outlined framework, which consists of 11 components and four developmental stages, to describe and evaluate the current VET system. This analysis aims to provide a comprehensive understanding of the specific characteristics of the VET system in a particular country. The details provided help identify the elements within the system that resemble a dual(ized) VET system and those that do not.

FIGURE 26 **Process model for conceptualizing policy-transfer reform projects**



Source: Own representation

- In addition to analyzing the individual components of the framework, this step in the process model entails considering the broader political, economic, and social conditions that will impact the implementation of a reform project. This contextual analysis makes it possible to it determine the degree to which the current state of affairs is conducive to reform and whether any necessary measures should be taken before initiating the project.

Identify priority areas for change

- Introducing dual(ized) VET programs requires identifying relevant sectors or occupations with a demand for skilled workers. Businesses must also be open and willing to actively contribute to the VET system. Developing the system will also require the active support of policymakers and politicians.

- Building on the initial description and evaluation of the current state of affairs, this next step focuses on identifying priority areas or components of the framework to be targeted through projects. There are several considerations that can influence the selection process, including:

  - The need to overcome existing bottlenecks in order to create opportunities for future development (e.g., make sure companies are involved before introducing dual(ized) VET programs, professionalize educational staff to ensure quality standards).

  - Determining the availability of relevant support capacities for the implementation of individual elements. This can include, for example, individual trade associations demonstrating their interest in the introduction of dual(ized) VET systems.

  - Accelerating progress by targeting easily achievable goals that can generate momentum for the reform effort.

- Identifying reform priorities should entail exercising diligence in consulting influential stakeholders and including them in the selection and decision-making process. These groups include those individuals who are directly or indirectly affected by the reform, as well as potential external supporters, such as development agencies, and influential experts who could play a significant role in the subsequent implementation process.

- When it comes to specifying concrete steps in the planning process, it is important to define more precisely the stages of development for the selected priority areas. This entails identifying and analyzing the potential interdependencies between these areas.

- After establishing rough target levels of development for the chosen priority areas within the project, an analysis of opportunities and risks can be conducted. The opportunities analysis can be used to communicate the project to the public and provide a justification for the efforts involved, particularly when addressing those who are critical or skeptical of the project. Conducting a risk analysis will help anticipate potential threats to the project and contribute to early mitigation efforts (KEHL et al. 2021, 16 f.).

Identifying transferable experiences (Benchlearning)

- The concept of “benchlearning” combines benchmarking with peer learning. It involves leveraging the experience gained by others in comparable contexts and applying this to the design of one’s own area of responsibility. In the context of a transfer of VET structures, this entails exploring and interpreting relevant examples from implementation efforts in other countries.

- These examples should then be evaluated to determine their transferability to other contexts. The scope and type of a potential transfer can be assessed and specified in line with the typology introduced in Chapter 3 (disseminative, adaptive, transformative).

- The transferable benchmark experiences are documented and made available for the subsequent planning stages.

Planning the reform project

- Once the design element(s) and targeted development stage(s) have been identified and specified, and transferable benchmark experiences have been documented and prepared, the development project can proceed to the detailed planning phase.
- Detailed planning involves the following steps:
  - Specifying development goals
  - Defining indicators of success, identifying project beneficiaries, and formulating impact hypotheses
  - Outlining the implementation strategy, drawing upon transferable benchmark experiences
  - Identifying the roles, tasks and responsibilities of relevant personnel
  - Determining organizational, management and administrative issues, such as scheduling, financial resources, monitoring, evaluation and reporting

6.3 | Case study: VET reform in Albania

Following its attainment of EU candidate status in 2014, Albania initiated an extensive and intensive reform of its VET system. Key elements of this reform process included deepening the involvement of the business community in the governance and delivery of VET and the progressive transformation of the country's school-based VET system toward forms of dual(ized) VET. Politically, this process has been rooted in the adoption of the National Employment and Skills Strategy (NESS 2014-2020), which, among other things, defined key benchmarks for VET reform (HILPERT 2020, 20). Subsequently, the Albanian government passed a new VET law in 2017 that established the framework for the implementation of several different initiatives. The country's reform process receives substantial support through international development cooperation in VET, with Switzerland taking a leading role and contributions also coming from Germany and Austria (HILPERT 2020, 66 f.). In addition, thanks to Albania's status as an EU candidate, the country is ensured access to supplementary financial resources, some of which are channeled into the advancement of VET and labor market policies.

Drawing on the strategy introduced in 2014, this case study examines the Albanian process using the process model delineated in Chapter 6.2. To reconstruct the assessment of the status quo and contextual factors at the outset of the process, as well as the identification of priority areas for change (steps 1 and 2 of the model), we draw on insights from two studies conducted in 2019/20 (HILPERT 2020; FIBS 2020). Subsequently, we outline stakeholders' experience with planning and implementation, as well as the observable effects in the ongoing reform process. Our analysis is based on our own investigations and evaluation of the available project reports and publications.

The current state of the VET system and its contextual environment

Over the 25 years since the fall of the communist regime, Albania has undergone a transformation from being one of Europe's poorest countries to attaining middle-income status. While nearly 40% of the labor force works in agriculture (2017), the service sector has already emerged as a dominant force, contributing to more than 50% of GDP (HILPERT 2020, 84). Nearly 99% of the country's companies are small businesses with less than 50 employees, and a significant proportion thereof, approximately 90%, consists of micro-enterprises with less than five employees (HILPERT 2020, 29). The representation of businesses and employees through associations or unions is weak. Both sides display considerable fragmentation, with approximately 30 employer organizations facing 83 trade unions, and neither side enjoys strong organizational or representational power (HILPERT 2020, 9 f., 97).

The Albanian education system provides for nine years of compulsory schooling (six years of elementary and three years of lower secondary education), followed by three years of general secondary school or four years of vocational education. Statistics for 2013/14 show that 68.7% of lower secondary school graduates chose to attend a general secondary school, 15.1% opted for vocational school, while 16.2% did not pursue further education. This translates into a ratio of 82% transitioning to general secondary education and 18% to vocational education (SD4E 2019, 20). The country's four-year VET programs lead to a double qualification, with students obtaining both a Matura and a vocational degree, as well as the qualification to transition to university studies. These programs are structured in various ways (HILPERT 2020, 34 f.): The "2 + 1 + 1" structure provides for two years of basic vocational training (level 2), one year of specialization (level 3) and another year of consolidation (level 4). Alternatively, some programs, especially in the commercial and IT sectors, follow a "2 + 2" structure, leading to the qualifications of "semi-skilled worker/level 2" and "technician/middle manager/level 4." In 2018, Albania had 35 vocational schools (i.e., public upper secondary VET schools) and ten Vocational Training Centers (VTCs), most of which offer additional qualifications or further training courses for adults (HILPERT 2020, 43). In line with the Vocational Education and Training Act of 2017, efforts were made to integrate these institutions and VET offerings into what are referred to as "Multifunctional Centers (MFCs)."

In addition to this broader contextual information, it is important to consider the conditions specific to the 11 elements of the framework applied at the start of the reform. The following overview offers key information relevant to each element:

Identify priority areas for change

The analysis of conditions in 2014, when policymakers decided to launch a VET reform initiative, revealed the need for a comprehensive development process. One approach and potential anchor point for the introduction of dual(ized) VET was grounded in the fact that the existing school curriculum already included both theoretical and practical vocational learning phases, taught by trained school-based teachers. However, the country lacked fundamental prerequisites for the introduction of dual(ized) VET, such as the required institutional and legal foundations at the macro level, the involvement of

Design elements/Components of a dual(ized) VET system

	Status quo 2015	stage
(1)	**Policy scope: VET as a means of achieving economic, social and individual goals** • School-based VET is primarily understood as a pathway to earning higher education entrance qualifications, with vocational skills considered secondary. • Developments throughout the course of the NESS (2014-2020) underscore the need to target an increased relevance of VET and improved integration of disadvantaged groups.	–
(2)	**Objective: Developing skills that will remain relevant in future workplaces** • School-based VET follows a conventional school curriculum, including general and supplementary vocational subjects (HILPERT 2020, 35). • The vocational subjects mainly focus on vocational content.	1
(3)	**Dual principle: Learning alternates between school and company environments** • Ties to professional practical experience in school-based VET is weak. • Vocational content is taught in school workshops by educators with practical experience. Contact with companies is limited and not systematically integrated into the curriculum (HILPERT 2020, 36).	1/–
(4)	**Partnership culture: Cooperation between state and business-sector actors** • No systematic integration of companies and business into VET governance and implementation. • Ties between providers and local businesses are sporadic and rely heavily on personal contacts.	–/–

	Status quo 2015	stage
(5)	**Professionalization of VET staff: Setting the pace of development** • Educators responsible for teaching theoretical subjects are required to hold a Master's degree in their respective field; educators tasked with teaching practical subjects must possess a tertiary degree along with a minimum of three years of relevant work experience (HILPERT 2020, 38). • Because in-company training phases are not yet integrated into the curricula, company-based VET staff receives limited attention.	1/–
(6)	**Quality development: Codification and review of standards** • School-based training scheme is subject to the standard state quality-assurance procedures. • There are no established processes for quality assurance in the vocational subjects and practical learning components of the VET system.	–/–
(7)	**Participatory governance: Building the institutional and legal framework** • The legal foundations for a dual(ized) VET system established only recently with the Vocational Education and Training Act of 2017. • At the central government level, there are two agencies (NAES, NAVETQ) assigned to the ministry tasked with this issue, but they do not yet have jurisdiction over the governance of VET.	–
(8)	**VET financing: Balancing costs and benefits** • School-based VET is financed through the federal government's budget. In terms of teacher salaries, professional development opportunities, school building infrastructure, and facilities for accommodations, the VET system is underfunded (HILPERT 2020, 9). • The availability of state funds for reforms is limited, and the entirety of the state budget for VET, labor market, and inclusion measures is covered by the inflow of contributions from international donors (HILPERT 2020, 51).	–
(9)	**Flexible VET structures: Dealing with rapid change and diversity** • This element remains beyond the scope of attention.	–
(10)	**Evidence-based design: Creating a solid foundation for design choices and other decisions** • This element remains beyond the scope of attention given to VET.	–
(11)	**Perceived value: VET in the struggle for reputation, appeal and acceptance** • The option of receiving school-based VET is generally perceived to be less favorable than the alternative of a university-prep secondary school education. This is evident in the 82% to 18% enrollment ratio.	–

business-sector organizations and companies in the design of VET at the meso level, and curricula and future-oriented training processes structured according to the dual principle at the micro level.

The Swiss Agency for Development and Cooperation (SDC) supported the planned reform processes by funding three interconnected projects:

- RISI Albania "Enhancing Youth Employment" (start 2013)
- Skills Development for Employment (SD4E) (start 2015)
- Skills for Job (S4J) (start 2016)

While the projects were launched at the beginning of the planned reform, some aspects of their three phases extend as far as 2027. They address a broad range of vital reform elements at the macro, meso and micro levels, while also setting priorities within this space. Below, we summarize the change needs defined in the initial analyses and describe how they were addressed by the three projects, once again following the structure of our reference framework:

Design elements/Components of a dual(ized) VET system

	Objectives and change needs	Development stage goal
(1)	**Policy scope: VET as a means of achieving economic, social and individual goals** • Within the NESS 2014 – 2020 initiative and its 2019 – 2022 extension, four reform pillars were identified, two of which were related to VET development: 1) increased competitiveness and innovation and 2) social cohesion. • Aspects of social inclusion were included in the SDC project plans, and were evident throughout (SD4E 2023, 41; S4J 2023, 30 ff.; S4J 2018, 31).	2
(2)	**Objective: Developing skills that will remain relevant in future workplaces** • Even as early as Phase 1, one focus of the S4J project was "introducing new ways of inclusive teaching and learning" (S4J 2018, 14, 2). This entailed the integration of methodological concepts such as problem-based learning, self-organized learning, blended learning and flipped classrooms, all new to schools in Albania, into the country's school-based learning processes. • During the COVID-19 pandemic in particular, digital learning variants took on increasing importance (S4J 2023, 16). For example, a digital platform providing teaching and instructional materials was developed and run by communities of practice. In addition, the e-VET@Albania2020 roadmap, a comprehensive plan for integrating digital technologies into vocational learning processes at both the content and methodological levels, was created. • Efforts to integrate "green skills" into vocational curricula remain rather programmatic (SD4E 2023, 40). • Overall, the reform process encompasses numerous approaches and trial projects aimed at integrating future-oriented areas of competence into the curriculum and instruction.	2–3
(3)	**Dual principle: Learning alternates between school and company environments** • School-based VET is being transformed into dual(ized) VET under the rubrics of "work-based learning" and "apprenticeships." So-called development units in the vocational schools are helping to drive this change. These units have several basic tasks, including developing the curriculum and didactics for the school-based VET elements, and recruiting suitable companies in their regions to participate in the practical training phases (HILPERT 2020, 35 f.). • Overall, development units perform a total of seven functions: teacher training, curriculum development, relationship-building with training companies, career counseling, development projects, school marketing and the conduct of tracer studies (S4J 2023, 17). • In the S4J project, 10 of the country's 35 vocational schools were initially included in the reform processes. Phase 3 of the project will use a differentiated transfer concept to extend the project to additional schools, regions and training occupations (S4J 2023, 40 ff.). • One aspect of this concept's implementation reduces school-based training in favor of in-company training phases. The fear that teachers of practical vocational skills might lose their jobs due to the transfer of practical training phases from school workshops to companies is countered by the fact that these teachers are tasked with managing training-company relationships and supporting learners during the in-company phases. • The training content is coordinated with the companies on a curricular basis. In-company mentors are being provided with support as the reform progresses, with the aim of enhancing the quality of in-company training.	3–4
(4)	**Partnership culture: Cooperation between state and business-sector actors** • Companies are recruited for participation in the project through decentralized, bottom-up approaches. By strengthening and reorganizing the vocational schools, policymakers intend to tap the potential of interested companies in their surrounding regions. • The decentralized activities are to be gradually supplemented by parallel efforts at the national level. For example, the project is exploring the extent to which individual business associations and trade unions can increase their involvement in VET and support the reform, among other topics. However, the fragmentation in this area and the culturally deep-rooted skepticism toward these organizations, which in earlier times were associated with authoritarian state power, make a quick success in this regard unlikely. • At the national level, business-sector representatives are being integrated into newly created bodies (e.g., sector skills committees and a National VET Council). Business-sector representatives are also increasingly involved in ongoing regulatory and governance activities, with these efforts led by the state agencies for labor market development (NAES) and quality development (NAVETQ) (S4J 2023, 17 f.).	3

	Objectives and change needs	Development stage goal
(5)	**Professionalization of VET staff: Setting the pace of development** • Within the vocational schools, the initial focus has been on building skills among the teachers in the development units. The competencies of the teachers working in these units shape the vital efforts to recruit training companies, adapt curricula, and refashion the schools' organizational and personnel structures to fit the new VET model. Because of this role, the development units can act either as drivers or bottlenecks in the reform process. • In the S4J project, numerous competence development activities have already been implemented in the pilot schools. Moreover, a 24-day training program on the didactics of vocational education was developed and offered (HILPERT 2020, 39) at the national level. For the in-company mentors, three half-day training modules on the issues of business and school cooperation, work pedagogy, and workplace training and assessment have been introduced and offered (HILPERT 2020, 40). • The skills-development activities for school and company-based VET personnel are to be translated over time into accreditation and quality-assurance standards (HILPERT 2020, 81). • Qualified personnel from the development units will also take on the role of so-called transfer agents during the S4J project's transfer phase (S4J 2023, 46).	2–3
(6)	**Quality development: Codification and review of standards** • The national NAVETQ agency is responsible for creating and implementing a quality-assurance and quality-development system. The 2017 Vocational Education and Training Act introduced a reference framework based on the four pillars of self-assessment, accreditation, inspection and monitoring. Comprehensive quality standards for the first two pillars were developed and tested in pilot applications starting in 2019. In 2022, 38 external assessors were qualified and certified. • Support for the standards' development, as well as for further capacity-building needed to implement the pillars, was provided within the context of the SD4E project (SD4E 2023). The S4J project offers additional support for these activities by preparing the teachers in the development units who are responsible for quality development (S4J 2023, 49). • Another goal is to develop a model for validating informally acquired competencies (SD4E 2023, 24 f.). • No binding guidelines govern the implementation of formal quality development processes for the in-company portions of the VET (HILPERT 2020, 82). Nevertheless, the close coordination of in-company training by the school-based development units leads to informal social control, as does vocational schools' ability to select companies offering high-quality training from among a sufficient number of options. • The development of quality standards for VET offerings outside the context of apprenticeship programs represents a new challenge. This gap should be closed beginning in 2023 (SD4E 2023, 25) as vocational schools evolve further into MFCs.	2
(7)	**Participatory governance: Building the institutional and legal framework** • The 2017 Vocational Education and Training Act, a number of other laws and regulations, and the transfer of core responsibilities to the Ministry of Finance and Economies with its two agencies NAES and NAVETQ have collectively created a regulatory and institutional framework for the implementation of the reform (HILPERT 2020, 7, 65). • The regulations provide for the decentralization of tasks and responsibilities in many respects. In addition to the role of the school-based development units, the vocational schools are in the future to be given autonomous control over revenues generated by expanded educational offerings. Many of the regulations require a clarification of strategic guidelines, and call for specific implementation formats to be tested. • Staffing levels have been increased at both the NAES and NAVETQ agencies. Among its other functions, the SD4E project prepares agency staff to carry out their specified tasks. • One additional aspect of the changed governance structure is the increased involvement of business-sector representatives in newly created bodies such as sector skills committees. The RISI Albania project supports the gradual establishment of these industry entities.	2–3
(8)	**VET financing: Balancing costs and benefits** • The issue of financing in-company VET was not initially addressed in a systematic way. At the regional level, it was hoped that companies would take part in designing dual(ized) VET programs partly out of self-interest and partly on the basis of personal contacts with representatives from the vocational schools. Initial discussions on establishing a support fund (HILPERT 2020, 10) have not as yet been put into operation. • However, the government is focusing on optimizing the use of resources that finance vocational schools and vocational training centers. Reducing the overall number of such institutions and consolidating them into MFCs should result in a more efficient use of state resources as student enrollment declines. In this context, it remains unclear how the still-substantial dependence on financial support from the EU and foreign development organizations can be reduced over the long run.	–

	Objectives and change needs	Development stage goal
(9)	**Flexible VET structures: Dealing with rapid change and diversity** • The transformation of existing vocational schools into MFCs is intended to significantly expand the range of VET offered in these institutions (S4J 2023, 30). For example, the change allows the introduction of shorter qualification offerings for specific needs alongside the four-year VET programs. As the range of services has expanded, so has the spectrum of target groups able to take advantage of them. In addition, the changes have allowed formal training courses to be structured so that individual modules can be offered separately as part of entry-level qualification or continuing education programs, enabling them to be combined gradually to produce more comprehensive final certifications. • The RISI project in particular is developing and testing vocational and career counseling services that can be linked to the broader range of skills development offerings (SD4E 2023, 39).	2–3
(10)	**Evidence-based design: Creating a solid foundation for design choices and other decisions** • The resources available at the Ministry of Finance and Economies and its two NAES and NAVETQ agencies have not yet allowed for a systematic evaluation of national and international data as a means of informing VET policy decisions. Relevant data has been collected and analyzed on a selective basis as part of projects supported by development agencies. • The development of a Labor Market Information System (LMIS) represents a first step toward the systematic collection of national-level data. After completion of an initial conceptual stage, this system is to be developed and tested starting in 2023 (SD4E 2023, 23).	1
(11)	**Perceived value: VET in the struggle for reputation, appeal and acceptance** • VET image-promotion measures are primarily carried out on a regional basis, with the aim of convincing companies, school-leavers and their parents of the benefits of existing training programs. • In some cases, these activities are integrated into job and career counseling services (S4J 2018, 12).	1

This sketch of the previously identified development needs describes how each was addressed by the individual projects. It additionally documents the reform priorities actually pursued, and relates them to the 11 VET components of our reference framework. In rough terms, the approach taken can be summarized as follows:

- The highest priority is given to attracting training companies and developing forms of work-based learning (components 3 and 4). In this context, the vocational schools, which in the initial analysis were seen to have the most VET experience, are tapped to serve as the drivers of reform. This focus is clearly essential for the transformation of a school-based VET environment into a dual(ized) system. The aim is to reach a relatively high stage of development within both components.

- These two core reform components are strongly bolstered by the professionalization of the VET staff (component 5), quality-development programs (component 6) and the introduction of a participatory governance system (component 7). These three components are expected to reach a medium stage of development. All three components are critical for ensuring that the dual(ized) VET is of high quality, and are essential prerequisites for public acceptance of the dual(ized) training programs.

- Several other important activities relate to other components. These include expanding the policy scope to include socially inclusive goals (component 1), the further curricular and didactic development of training programs (component 2), and the development of flexible educational offerings through the MFCs (component 9). Here too, the aim is to reach a medium stage of development.

- As yet, developments in components 8 (financing), 10 (evidence-based design) and 11 (equality) remain rather rudimentary. Functions in these areas are partially carried out with the support of international development agencies, and therefore can still be pursued with a lower priority.

Selected implementation experiences and identifiable effects in the reform process

Although the reform process is not yet complete, initial experiences and some specific (interim) results can be reported with regard to components 3-7. The selection is based on research conducted by the projects in a study by HILPERT (2020) and in so-called

mid-term reviews carried out for the SDC-funded initiatives.

Overall, the share of school-leavers moving from lower secondary school to VET in a vocational school increased from 17.2% to 17.7% in the 2017-2021 period (SD4E 2023, 29). However, this figure has only limited significance, as only 10 of the 35 vocational schools have been directly involved in the projects so far. Within the participating vocational schools, the number of students increased by about one-third in the 2016-2021 period (EULER 2022b, 15). The target of 3,000 students receiving dual(ized) VET by the end of 2021 was significantly exceeded, with the actual figure reaching above 5,100 (S4J 2023, 22). The target of 420 companies engaged in forms of work-based learning by 2022 was also significantly surpassed, with 630 companies participating (S4J 2023, 23). The employment rate among graduates increased from 34% to 57.4% between 2016 (school-based training) and 2021 (dual(ized) training) (EULER 2022b, 20; S4J 2023, 20).

The regulatory and institutional requirements needed for the implementation of dual(ized) VET have largely been put into place, with significant support from the SD4E project (SD4E 2023, 19). In addition to the development and adoption of the legal and conceptual framework, one focus here was on the qualification of staffers in the NAES and NAVETQ agencies.

Development units were set up to perform their various functions within the vocational schools involved in the project, and the teachers responsible for these units were prepared for their tasks. Among other achievements, these coordinators were able to convince companies to become involved in the training programs, and subsequently provided students with support during the in-company training phases. In addition, internal school training sessions on "new ways of learning" were carried out. During the pandemic, a digital platform was developed and launched that delivered digital learning content and offered support for online instruction.

In sum, approximately six years into the reform process, a clear impact can be seen in terms of achieving the prioritized components. This has included business-sector and company participation in the VET system, curricular development and the didactic implementation of work-based learning, the development of new competences among VET staff and state agency employees, and the establishment of an innovation-oriented infrastructure in vocational schools. Engaging companies and introducing dual(ized) training programs are tasks that pose serious challenges both for the vocational schools and beyond. The developments to date have not been uniform. Different needs and starting points mean that the pace of development varies by economic sector, region and school. Moreover, the successes achieved to date cannot yet be considered sustainable. For example, companies are currently participating voluntarily, and could scale back this engagement at any time. Future political developments could also lead to a deprioritization of VET reform. The strong dependence on foreign support could pose a threat to future reform financing. Disruptions such as the pandemic, natural disasters, wars or an acceleration of emigration flows among young people could lead to new priorities being set at the governmental, institutional or individual levels.

The initial limitation of the reform to a selection of vocational schools, training programs and regions will also require conscious efforts to engage in vertical transfer within these schools, as well as a horizontal transfer to additional schools and regions. Guided by a differentiated transfer concept, this process was initiated in 2023 with the establishment of an adequately staffed, institutionally grounded transfer infrastructure. This adds a new dimension to the VET policy transfer, as the focus is no longer solely on the transfer of other countries' experiences to Albania, but also on the transfer of experiences from the pilot sites to new sites.

6.4 | Case study: Improving dual vocational education in Spain

Spain has traditionally used a school-based VET system. Since 1993, this has included both in-school and in-company practical phases (SANZ DE MIGUEL et al. 2020, 16). Figure 3 in Chapter 2 indicates that in international comparison, a relatively small share of the population obtains VET qualifications. Under

CEDEFOP'S classification system (2018b, 24), Spain is referred to as a "non-vocational country," meaning that VET has a low status compared to general education (JANSEN & PINEDA-HERRERO 2019; SANZ DE MIGUEL et al. 2020, 6). The relatively weak demand for VET to generate intermediate-level qualifications coincides with a high proportion of academic degrees by international standards, but also with a high share of people who lack any postsecondary qualification. In 2021, Spain had one of Europe's highest proportions of people in the 25-34 age cohort with a tertiary degree (around 49%). However, in the same year, around 28% of this age group did not have either a vocational qualification or university degree. Only about 24% had a VET qualification (OECD 2022, 46). This polarization is combined with a high number of students that repeat classes, as well as a high dropout rate during the compulsory education period. In 2010, the rate of class repeaters among 15-year-olds was 35%, and the dropout rate was 28.2%, with strong variation by gender and region (CEDEFOP 2020a, 24). Although the dropout rate was reduced to 13.3% by 2021, that was still well above the EU average of 9.7% (EUROPEAN UNION 2022).

Spain's school system provides for four years of secondary school ("lower secondary school") following the six years of primary school. Those who successfully complete this 10-year period of compulsory education can move on to upper secondary school either via an academic route ("bachillerato") or by beginning VET ("intermediate VET"; ISCED 3). Approximately 33% of learners in upper secondary education chose the vocational track in 2013 (CEDEFOP 2018b, 61). This share increased to 35.3% in 2017 (CEDEFOP 2020a, 48) and to 36.6% in 2020 (EUROPEAN UNION 2022, 8). After obtaining an upper-level compulsory-education qualification, or after having successfully completed the intermediate VET level, graduates can enter a higher level of vocational education ("higher VET"; ISCED 5) (SANCHA & GUTIÉRREZ 2016, 20).

The VET system was expanded further in 2013 with the introduction of "basic VET" (FP Básica). This program targets learners in general education schools aged 15 or 16 who are risk of leaving compulsory schooling without having obtained any qualification. Successful completion of a basic VET program provides a secondary-level qualification, and allows for entry into VET (ISCED 3) (SANCHA & GUTIÉRREZ 2016, 20). As yet, only a small number of young people have enrolled in this program, so it will not be discussed in further detail below.

Among the main triggers for the reform of the VET system were the consequences of the economic and financial crisis of 2008/2009, which had significant impact on Spain's employment system, among their other effects. For example, the unemployment rate in the 15-24 age group had risen to more than 50% by 2013 (SANCHA & GUTIÉRREZ 2016, 11). One step in dealing with the difficult economic and sociopolitical situation was to reform the VET system. In 2012, Royal Decree 1529 established a framework for the introduction of dual VET as a complement to existing forms of school-based VET (SANZ DE MIGUEL et al. 2020, 4). Before explaining and discussing in more detail the implementation steps and results of this new Spanish VET option, we will first sketch the status quo at the time the legal framework was introduced in 2012.

Status quo and context of the VET system in 2012

VET in Spain takes place within a complex political and institutional framework. This complexity is expressed in three dimensions:

- Within the VET system, there are two subsystems regulated by different sets of legislation and administered by two different ministries. In 2012, the Initial Vocational Training (iVET) subsystem was managed by what was then the Ministry of Education, Culture and Sport, while the Continuous Vocational Training for Employment (cVET) subsystem was managed by the Ministry of Employment and Social Security (SANCHA & GUTIÉRREZ 2016, 4).

- Within the field of education, the 17 regions (autonomous communities/comunidades autónomas) have significant policymaking and decision-making power. This decentralized structure means that national legislation is sometimes implemented in a highly fragmented way (MARTIN ARTILES et al. 2020, 82 f.).

- Within the VET sector, Spain has traditionally followed a state-centered governance model in which the social partners are consulted to a limited extent, but do not have significant decision-making responsibilities (SANZ DE MIGUEL et al. 2022, 21-23).

Since 1993, Spain has had a form of VET typologized in Figure 1 (Chapter 2) as dualized VET. Training is based on an agreement between the school-based learning site and the training company. Apprentices do not receive wages during the training period, but are insured against accidents. Individual regions also cover travel and meal expenses (SANZ DE MIGUEL et al. 2020, 20). Under this model, at least 20% of the VET time must be completed in the company environment. In practice, the in-company phase takes place near the end of the two-year VET program, after completion of all school-based modules (SANZ DE MIGUEL et al. 2020, 19).

In overview, the status quo of the VET system in 2012, before the introduction of dual VET, can be summarized as follows:

Design elements/Components of a dual(ized) VET system

	Status quo in 2012	Stage of development
(1)	**Policy scope: VET as a means of achieving economic, social and individual goals** • VET is regarded as contributing to economic development and promoting social inclusion (CEDEFOP 2013, 23, 39). • A particular focus is placed on making VET available to learners from economically disadvantaged families (CEDEFOP 2013, 39). The Ministry of Employment's VET activities give the low-skilled and unemployed an opportunity to gain qualifications (CEDEFOP 2013, 40).	2–3
(2)	**Objective: Developing skills that will remain relevant in future workplaces** • Especially at the school-based learning sites, personal, social and other transversal competencies are explicitly integrated into individual curricular modules alongside traditional vocational skills (CEDEFOP 2013, 23, 34).	2–3
(3)	**Dual principle: Learning alternates between school and company environments** • In the dualized VET system as practiced, the in-company practical phase is regarded as an add-on to the preceding school-based phase. It offers the potential to gain in-company experience, but there is no systematic curricular link between school-based lessons and the in-company training. The extent to which the in-school phases focus on real-world company issues is primarily a pedagogical choice within the school-based learning sites.	2/–
(4)	**Partnership culture: Cooperation between state and business-sector actors** • Companies are involved in the implementation of dualized VET at the local level. They contribute the in-company module, which is planned for the end of the two-year VET period and takes up at least 20% of program time. • At the local level, school-based tutors work closely with company mentors (SANZ DE MIGUEL et al. 2020, 20). • The vocational schools retain responsibility for recruiting and ultimately testing the learners. Companies primarily play the role of internship providers.	2/–
(5)	**Professionalization of VET staff: Setting the pace of development** • Vocational schools teach both general and vocational subjects. Within the training companies, learners are overseen by trainers or tutors. In addition, subject-area experts take on specific teaching tasks both in the training companies and schools (CEDEFOP 2020a, 40). • VET teachers must have a university degree (ISCED 6) and a relevant master's degree in the area of teacher education (CEDEFOP 2020a, 41; SANITER 2020, 20). • Trainers/tutors for in-company modules are not required to hold formal qualifications (CEDEFOP 2020a, 41; SANITER 2020, 42).	3/1–2

	Status quo in 2012	Stage of development
(6)	**Quality development: Codification and review of standards** • The Ministry of Education and the Ministry of Employment oversee quality systems for reviewing VET programs (CEDEFOP 2013, 36). • Both the national and regional education authorities have responsibility for curricula, teacher training and equipment review mechanisms. Private schooling providers must undergo an accreditation process. Schools are reviewed by school inspectors as part of an external evaluation process. Self-evaluations are not required under national law. Indicators and procedures for conducting evaluations have been in place since 2009 (CEDEFOP 2020a, 16). • A system for tracking VET graduates is in place; at the national level, this is carried out by the National Institute for Educational Evaluation (CEDEFOP 2020a, 17). Specific outcome data relating to VET graduates' entry into the employment system are not reported.	3/–
(7)	**Participatory governance: Building the institutional and legal framework** • The traditional separation of roles between the state and the social partners is still very pronounced in 2012. For example, the social partners are not formally involved in the policymaking process that leads to the introduction of dual VET – "Dual VET was implemented without social dialogue" (SERRA et al. 2022, 7). • Business associations and unions are members of the General Council on Vocational Education and Training (CGFP), which advises the government on VET issues (CEDEFOP 2019, 66). However, the body has little influence on government policy due to its size (the plenum consists of 78 members) and largely nonbinding task priorities. Moreover, the full committee did not meet between 2010 and 2018 (SANZ DE MIGUEL et al. 2022, 29 f.). • The social partners are involved in curriculum development at the operational level, as well as in the regulation of working conditions, which applies to the in-company portion of the training (SANZ DE MIGUEL et al. 2020, 24).	1
(8)	**VET financing: Balancing costs and benefits** • The dualized VET practiced in 2012 is largely funded by the state. • Companies contribute personnel resources, primarily for the implementation of the in-company phase at the end of the training period. In some cases, they provide learners with allowances on a voluntary basis. At the same time, to the extent applicable, they generate earnings through the learners' productive work.	–
(9)	**Flexible VET structures: Dealing with rapid change and diversity** • The VET programs are modularly structured. Modules can be combined to form comprehensive qualifications within the framework of a VET diploma. • Programs are offered in full- and part-time modalities, and in both in-person and online formats (CEDEFOP 2020a, 10; SANCHA & GUTIÉRREZ 2016, 24).	3
(10)	**Evidence-based design: Creating a solid foundation for design choices and other decisions** • Activities in this area focus on anticipating future skill and labor market requirements. • Sectoral joint committees at the level of individual economic sectors are tasked with identifying skill needs in their sectors (CEDEFOP 2020a, 17). • The Public Employment Service and National Institute of Vocational Qualifications (INCUAL) operate oversight bodies tasked with quantitatively and qualitatively identifying changes in the labor market as early as possible, and with translating these into skill needs (SANZ DE MIGUEL et al. 2022, 38).	(3)
(11)	**Perceived value: VET in the struggle for reputation, appeal and acceptance** • The limited appeal of VET is reflected in the comparatively low share of about 33% who chose the upper secondary school vocational track in 2013. • The introduction of dual VET, in which in-company training phases make up a greater portion of the total program time, is seen as a step toward making VET more attractive	–

Implementation of dual VET

Following its legal introduction in 2012, dual VET has existed alongside the dualized VET offerings. Royal Decree 1529/2012 provides few specificities in terms of concrete design. As a result, three implementation variants have emerged:

- Under the scholarship model, the learner receives support from the company or another institution (e.g., a foundation or the government), the amount of which is generally set by the region (SANZ DE MIGUEL et al. 2020, 20). The VET is based on an agreement between the school and the training company.

- Under the contract model, an employment contract is concluded between the apprentice (in the 16-25 age group) and the company. This contract also specifies the apprentice's wages. These are paid only during the period in which the trainee is working in the company. This model did not prove to be very practical as implemented; the regions have therefore gradually replaced it with the scholarship model.

- In some regions, payment of trainee wages remained optional; as a result, a significant number of trainees received no compensation (ESC 2023, 51).

Under the dual VET system, at least 33% of program time must be completed in the training company. Some regions require a higher minimum percentage (e.g., 43% in Catalonia). The alternation between school and in-company phases is handled very differently from region to region (SANZ DE MIGUEL et al. 2020, 20).

From a curricular perspective, both dualized and dual VET are aligned with standardized occupational profiles as contained in the National Catalogue of Professional Qualifications (Catálogo Nacional de Cualificaciones Profesionales, CNCP) (SANZ DE MIGUEL et al. 2020, 17). Within this framework, 45% to 55% of the content is defined in a nationally binding manner, with the remainder being defined autonomously by the regions (CEDEFOP 2013, 33). The professional profiles are modularly structured via so-called units of competences (UCs); these include learning outcomes and assessment criteria, among other aspects (SANZ DE MIGUEL et al. 2020, 17).

To enter VET, students must in principle have a secondary school qualification. Dual VET is generally provided through a vocational school that selects the learners and assigns them to a training company (SANZ DE MIGUEL et al. 2020, 20). In practice, training companies also participate in the selection process, with the vocational school making a preliminary selection and the companies making the final decision. Examination of student progress is the school's responsibility, but assessments provided by the training company tutor are also taken into account. Following 2,000 hours of "intermediate level" (ISCED 3 and 4) or "high level" (ISCED 5) training, a "VET diploma" certification is awarded under the auspices of the education authorities (CEDEFOP 2013, 33).

The formal introduction of dual VET has served as a cornerstone for the further development of Spain's VET system. The (national) law creates a framework but allows for diverse forms of implementation. Taking advantage of this flexibility, the 17 regions have all autonomously implemented individual features of dual VET differently. Among the key differentiators have been the amount of compensation provided, the number of hours required, the point at which the dual phase begins, and the timing of the alternation between learning sites. For example, the shift between learning sites has been defined in some regions on the basis of a daily rhythm, while others have instead used weekly blocks (JANSEN & PINEDA-HERRERO 2019). Madrid represents a unusual case in which the school-based part of the VET is carried out in the first year and the company-based part in the second year.

We will describe Catalonia's implementation here as one example of a regional model (JANSEN & PINEDA-HERRERO 2019):

- The VET program as a whole lasts a total of two years, with the second year using the dual format. During this second year, learners spend approximately 900 hours in the training company, and in the first year they also complete an internship of 80-100 hours.

- Both the contract and scholarship models are possible in Catalonia. If a VET contract is concluded with the training company, the learner receives a fixed minimum wage. Under the scholarship model, compensation cannot fall below a defined monthly standard. In both cases, the learner is covered by the country's social insurance programs.

- Under both the contract and scholarship models, the learner acquires skills in the training company while also attending the vocational school in parallel. For some occupations, school attendance is organized in a block format; in such cases, the maximum weekly working time in the training company is 40 hours.

- During the in-company training phase, the training company assigns a tutor to the learner.

- Performance assessment is coordinated by the school-based tutor. However, the training company tutor's assessment is taken into account.

Dual VET is provided across a wide range of occupations and economic sectors. The following areas are strongly represented (SANZ DE MIGUEL 2022, 18): sociocultural and community services, management and business administration, installation and maintenance, mechanical production, transport and motor vehicles maintenance, and electricity and electronics. In addition, there has been an increasing number of dual VET trainees in the commerce and marketing and hotels and tourism sectors.

Significant support for dual VET emerged in 2015 with the creation of the Dual VET Alliance (Alianza para la FP Dual), which is backed by the Bertelsmann Stiftung (Fundación Bertelsmann), the Spanish business association CEOE (Conferación Española de Organizaciones Empressariales), the Spanish Chamber of Commerce (Cámara de Comercio de España) and the Princess of Girona Foundation (Fundació Princesa de Girona). The Alliance is a national network that now has more than 1,500 members, including business associations, educational institutions, companies, regional administrations, and trade unions. A core objective of the alliance is to help young people become more employable and make companies more competitive through the expansion of dual VET.

The launch of dual VET and the establishment of the alliance initially drew criticism, especially from some individual trade unions. For example, the CCOO trade union criticized the fact that the dual VET system had been introduced in 2012 without any significant participation by the social partners. It further argued that the new VET design was based too heavily on the German dual model, without taking into account Spain's specific historical and social characteristics (SANZ DE MIGUEL et al. 2020, 10; SANZ DE MIGUEL et al. 2022, 53; SERRA et al. 2022, 7). In contrast, the dual VET model received strong support from the country's other major union, the UGT.

The VET system received an institutional upgrade in 2018 when the Ministry of Education, Culture and Sport was renamed the Ministry of Education and Vocational Training (CEDEFOP 2020a, 26).

The implementation processes and the resulting adaptations to Spain's VET system from 2013 onward can be summarized using our reference framework as follows:

Design elements/Components of a dual(ized) VET system

	Implementation after the introduction of dual vocational training	Development stage goal
(1)	**Policy scope: VET as a means of achieving economic, social and individual goals** • VET continues to be understood as an essential tool for promoting economic productivity and social inclusion (SANZ DE MIGUEL et al. 2022, 62). • The promotion of "employability" is identified in 2018 government strategic documents as a key instrument fostering the social inclusion of disadvantaged groups (CEDEFOP 2020a, 29, 51).	3–4
(2)	**Objective: Developing skills that will remain relevant in future workplaces** • In 2015, "key competences" were added to the VET curricula as overarching principles or objectives. "Personal and social skills are also covered transversely in all the modules making up the curriculum of VET" (SANCHA & GUTIÉRREZ 2016, 43). These include "learning to learn" and "interpersonal and civic competencies" (CEDEFOP 2020a, 34). "Key competences such as communication in a foreign language and entrepreneurship and personal initiative were mostly taught as separate subjects/modules" (CEDEFOP 2020a, 34). • The 2013 Education Act gives regions the option of offering additional subjects such as languages (Spanish, foreign languages) or mathematics within their VET programs, so as to enable learners to enter subsequent educational programs (CEDEFOP 2020a, 37). Some regions also offer bilingual VET instruction. • There is no systematic assessment of "key competences" in the VET system (CEDEFOP 2020a, 34).	4
(3)	**Dual principle: Learning alternates between school and company environments** • The design of the dual vocational training system is guided by the dual principle. The alternation between the learning sites is organized in a variety of ways, but in all models, both the school-based and in-company phases are regulated on a curricular basis. • The share devoted to in-company VET accounts for at least 33% of the training time in the majority of regional implementations. • Examination of learners' accomplishments takes place on a modular basis. Performance in the in-company training environment is indirectly included in this assessment as part of the coordination between the school and company tutors	3–4
(4)	**Partnership culture: Cooperation between state and business-sector actors** • In the dual VET system, training companies account for a significant share of overall program time. With the help of an in-company tutor, they organize work-based learning phases and supervise the learners. The in-company tutor serves as the primary contact person with the learner's school. • The Dual VET Alliance has helped to significantly broaden and improve support for VET among businesses and the social partners. The Caixabank Dualiza Foundation also promotes the dual model. The Spanish Chamber of Commerce offers consulting and support services to interested companies, and the UGT trade union highlights the advantages of dual VET in its publications (CEDEFOP 2020a, 14 f.). • In 2020, the national government established a Social Dialogue Round Table for Vocational Training, which includes the Ministry of Education and the social partners as participants, among others. The body discusses current needs and future priorities. One such topic was the design of the new Vocational Training Act, which came into force in 2022 and places VET on a new legal footing in many important respects. Overall, the forum is viewed positively, with only the CCOO union complaining about its consultative nature (SANZ DE MIGUEL et al. 2022, 31). • ARTILES et al. (2020, 81) describe the vocational schools and tutors as the "real drivers of dual VET."	3
(5)	**Professionalization of VET staff: Setting the pace of development** • The professionalization of teaching and training staff has not changed significantly as a result of the introduction of dual VET. • On the training company side, (company) tutors are tasked with coordinating the training. Those in this role are not subject to any mandatory accreditation or training provisions. In most regions, preparatory courses are offered on a voluntary basis, typically ranging from six to 20 hours (ESC 2023, 49). These preparatory courses are compulsory in Aragon and Catalonia. • On the school side, (school-based) tutors play a key role in implementing dual VET in that environment. Tutors in the schools are responsible for recruiting companies, crafting cooperation agreements and monitoring implementation at the various learning sites. Because these tasks go beyond the performance of teaching duties, the responsibility has given rise to a number of new questions, such as how this function fits into existing school structures, and how tutors can be prepared to perform these tasks in the most professional way (ESC 2023, 50). • In view of the increased technical and didactic requirements resulting particularly from the digital transformation, there is a call to provide teachers themselves with more continuing education (SERRA et al. 2022, 9).	3/1–2

	Implementation after the introduction of dual vocational training	Development stage goal
(6)	**Quality development: Codification and review of standards** • The previously developed quality assurance instruments and procedures are also being used in the dual VET environment. In this respect, the practices already employed in 2012 have continued to apply. The EQAVET indicators derived from the European Union's EQAVET quality framework have reportedly been largely incorporated into the Spanish system (CEDEFOP 2020a, 18 f.). • Further review would be necessary to determine the degree to which specific indicators are needed for the development of structures and processes in the dual VET setting. • Quality development work focusing on in-company training remains in its early stages	3/–
(7)	**Participatory governance: Building the institutional and legal framework** • The legal framework for VET is defined via the interaction of national and regional legislative bodies. Dual VET, like the previous system, does not provide for the delegation of tasks within a corporative structure (CEDEFOP 2020a, 13). The regions' substantial independent decision-making authority has led to fragmented implementation of the dual VET model (SERRA et al. 2022, 7). • The social partners are not formally represented in the National Institute of Vocational Qualifications (INCUAL), which is formally responsible for curriculum development. However, they are involved at the technical level in the development and updating of curricula (SANCHA & GUTIÉRREZ 2016, 43; SANZ DE MIGUEL et al. 2022, 38). • Compared to dual VET systems in other countries, it is noteworthy that companies do not directly select learners under Spain's dual VET model. The selection is made in the first instance by the vocational school, although in most regions the companies effectively make the final decision on whether to take on a trainee (SANZ DE MIGUEL et al. 2022, 54). • In 2018, the General Council on Vocational Education and Training (CGFP), which had been inactive since 2010, was reactivated by the government. Five working groups were formed, one of them focusing specifically on dual VET (CEDEFOP 2020a, 17). The Council's profile and role in VET governance does not yet appear to be entirely clear.	1
(8)	**VET financing: Balancing costs and benefits** • Due to the higher number of hours of in-company training, the companies are subject to greater expenses associated with the provision of personnel, premises and materials. • Under both the contract and the scholarship model, learners receive a state-fixed payment through the training company in return for the time spent at the company (for Catalonia, see JANSEN & PINEDA-HERRERO 2019). • Training companies receive a reduction in their social security contributions of between 75% and 100% depending on the size of the establishment (ETF 2018, 26), plus a bonus for the work performed by the in-company tutor under the contract model (ARTILES et al. 2020, 80). Smaller companies are provided with more support than larger ones. • The in-company phase of dual VET is typically focused around the second half of the VET program. This increases the likelihood that learners will be able to accomplish productive work for the training company. • Using three variants of a cost-benefit model, WOLTER & MÜHLEMANN (2015) analyzed selected VET occupations based on Spanish wage data. Based on the two-year dual VET practiced in Spain, with defined time and cost parameters, the analysis showed net company revenue gains due to learners' activities in some occupations, and net costs in others (Wolter & Mühlemann 2015, 75).	1
(9)	**Flexible VET structures: Dealing with rapid change and diversity** • The flexible structuring of alternating VET programs has carried over to dual VET programs. In this respect, the flexibility regarding modular curricula, spatial implementation (in-person or distance learning) and temporal organization (part-time or full-time) also apply in principle to the implementation of dual VET. • Since 2016, direct access to higher VET (ISCED 5) has been possible with the completion of a VET diploma (ISCED 3 or 4). Successful completion of higher VET and the consequent award of a "higher technician diploma" renders the learner eligible to enter university studies at the bachelor's level (ISCED 6) (SANCHA & GUTIÉRREZ 2016, 21).	3–4
(10)	**Evidence-based design: Creating a solid foundation for design choices and other decisions** • Existing approaches for anticipating future skill requirements have been further expanded. A 2020 regulation established a Professional Observatory within the National Institute of Vocational Qualifications (INCUAL) tasked with identifying new occupational profiles and training needs, among other goals. It works closely with existing observatories at the regional and sectoral levels. The social partners have said the Professional Observatory does not yet perform its tasks very efficiently (SANZ DE MIGUEL et al. 2022, 39). • Various VET research projects have been launched, some of which are funded through the Dual VET Alliance (SANZ DE MIGUEL et al. 2022, 53).	3

	Implementation after the introduction of dual vocational training	Development stage goal
(11)	**Perceived value: VET in the struggle for reputation, appeal and acceptance** • The Dual VET Alliance has been a key promoter of VET. It works with businesses and in society more broadly to publicize the opportunities offered especially by dual VET, thus helping significantly to increase its appeal. • The publication by MIRÓ et al. (2021) offers an example of the dissemination of good practices. • In material terms, VET's appeal to learners could be increased by a wide range of advisory services, in addition to financial support in the form of training wages or scholarships. Some regions have created offerings of this kind, although observers say improvement is needed in this area (ESC 2023, 52).It can also be assumed that the greater share of practical work experience inherent in the dual VET model is an appealing factor for some school leavers. • The increased appeal of the dual VET model can be seen in the numbers of participating learners, companies, and schools, all of which have grown continuously since this model was introduced (see below). At the same time, it must be kept in mind that dual VET accounts for only a small proportion of overall VET study at the intermediate qualification level.	(1)

Implementation experiences and (initial) effects of the reform process

Dual VET has grown steadily since its introduction in 2012. The number of participating learners has increased from 4,292 (2012-13) to 37,841 (2020-21). Within this population, nearly 40% were female, and in 2019-20, approximately 60% of the learners were at the higher VET level (ISCED 5) (SANCHA & GUTIÉRREZ 2016, 26; MEFP 2021, 18; ESC 2023, 53). The number of participating companies also increased, from about 500 in 2012-13 to 4,900 in 2014-15, and again to more than 10,000 in 2018-19 (SANCHA & GUTIÉRREZ 2016, 26; JANSEN & PINEDA-HERRERO 2019). The number of participating schools has risen correspondingly, growing from 173 in the 2012-13 period to 1,147 in 2016-17, including 827 public schools and 320 private institutions (SANCHA & GUTIÉRREZ 2016, 26; MEFP 2021, 19).

At the same time, when viewing the VET system as a whole, the share of young people entering dual VET remains low compared with the share participating in the traditional form of dualized VET. At the intermediate VET level, the proportion of learners in dual VET increased from 2.4% to 3.8% over the 2016 – 2020 period, while in higher VET (ISCED 5), the proportion of dual learners rose from 3.9% to 5.7% (ESC 2023, 56). These shares vary significantly between regions and between different economic sectors (ESC 2023, 56 f.).

A variety of transitions into VET are possible. One transition path runs from the four years of lower secondary school to intermediate VET, or from upper secondary school to higher VET. In 2018, 62.1% of graduates chose to transition to university studies (ESC 2023, 70). About 6.9% of VET trainees had previously acquired a university degree or temporarily left the education system prior to their VET (ESC 2023, 70). The freedom to switch between VET and university studies runs in both directions. In 2019, 9.4% of trainees at the higher VET level already held a bachelor's degree; moreover, 13.5% of university graduates with a bachelor's degree also held a higher VET certification, and 3.5% held an intermediate VET certification (ESC 2023, 70).

With regard to the transition from VET to subsequent employment, the available data did not provide a full picture for the previous years. For example, a transition rate of 70% is reported (without specifying the reference year) at the national level, with slightly higher figures for graduates of dual VET than for graduates of dualized VET (SANZ DE MIGUEL et al. 2020, 27). Values for individual regions vary; for example, a transition rate of 91% for those in dual VET programs and 85% for those in dualized programs has been reported for Galicia (SANZ DE MIGUEL et al. 2020, 27). Assessments by the Economic and Social Council indicate that the rate of successful transition into employment is higher for graduates of dual VET than for those coming from dualized VET (ESC 2023, 77). Looking specifically at the graduating class of 2017-18, a total of 49.1% found employment in the first year after completing dual VET (dualized VET:

39.5%); after four years, this figure had risen to 72.1% (dualized VET: 64.8%) (ESC 2023, 77). On average, earning levels are also higher for dual-trained workers (ESC 2023, 87).

Spain's youth unemployment rate remains high by European standards. After reaching a level of 55.5% within the 15-24 age group in 2013, this rate fell to 28.4% in 2023. However, this is still the highest such figure among EU member states (SANCHA & GUTIÉRREZ 2016, 11; EUROSTAT 2023).

In addition to these quantitative data, some initial qualitative findings are available from individual research studies. For example, JANSEN & PINEDA-HERRERO (2019) investigated the motives behind Catalan companies' decisions to participate in dual VET or not, along with potential obstacles to such participation. A total of 571 training companies and 199 non-participating companies of different sizes responded to the study's survey. In the 2016-17 reference year, 81% of these training companies indicated that they preferred the scholarship model to the contract model. The evaluations indicate that for the majority of the companies surveyed, and largely irrespective of company size, the investment and screening motives proved most important when deciding to participate in dual VET. Such companies see training as an investment in a skilled future workforce, and want to get to know and assess potential employees more closely during the training process. In this regard, productive work contributions by learners are welcome, but are not the primary focus (JANSEN & PINEDA-HERRERO 2019, 22). Training under the contract model tends to strengthen companies' intention to hire learners permanently after completion of the program. "When entering into a training contract, apprentices might feel more like an additional employee of the firm and thus might feel more loyalty towards the firm" (JANSEN & PINEDA-HERRERO 2019, 23). In the survey, which was conducted in the 2017-18 period, companies that were not providing training indicated that the risk of seeing their skilled workers poached by other firms was only a secondary reason for their decisions. "Instead, the study shows that other elements such as excessive bureaucracy, difficulties in the supervision of the apprentice and insufficient information about the implementation of dual apprenticeship training are the primary barriers for the non-training firms" (JANSEN & PINEDA-HERRERO 2019, 23 f.). In addition, the firms complained that they could not select the trainees themselves.

A study by MORA et al. (2022) examined the effect of dual VET on grades and program completion rates as compared to the traditional VET option in Catalonia. That study's results indicate that dual VET has a positive effect both on training outcomes and the probability of completing the VET program.

Overall, the early years of dual VET in Spain have resulted in significant insights into existing challenges as well as a steady expansion in certain economic sectors and regions. In particular, these include (SANZ DE MIGUEL et al. 2020; SERRA et al. 2022; MORA et al. 2022; ESC 2023):

- Different implementations of dual VET that have varied in scope and form across the various regions;
- The creation of legal and institutional foundations for the integration of iVET and cVET;
- Stable participation by the business sector and trade unions in dual VET governance;
- Marginal application of the contract-based training model;
- Simplification of administrative processes for implementing contractual relationships, especially for smaller companies;
- An increase in the awareness and appeal of dual VET among young people and companies;
- Insufficient data on the development of dual VET in specific regions and sectors; and
- Further development of training quality, for example through the qualification of in-company training personnel.

The challenges helped motivate the national government's post-2018 efforts to improve the

environment for the implementation of dual VET. Three major developments have led to new momentum for the dual VET model:

- In 2018, the national government launched a strategy process focused on driving economic and social transformation (Plan de Recuperación, Transformación y Resiliencia, PRTR), in which the promotion of VET played a key role. Proposals to modernize the VET system were given concrete form in the Plan de Modernización de la FP (2020 – 2023). This created a comprehensive foundation for the intended reform processes (ESC 2023, 140).

- In parallel with these conceptual developments, policymakers were also discussing a reform of the Vocational Education and Training Act. This led to the adoption of the Organic Law on the Organization and Integration of Vocational Training (3/2022) (Ley orgánica de Ordenación e Integración de la Formación Professonal Dual) in March 2022.

- Financial resources for the implementation of key reform projects have been made available on the basis of the strategic and legal projects defined there.

In one of its components, the strategic Recovery, Transformation and Resilience Plan (PRTR) assigned a key implementation and support role to the VET system (ESC 2023, 137). Specifically, it defined 11 fields of action for the further development of VET, including (ESC 2023, 140) recognition of skills acquired in the course of work processes; competence development in the areas of digitalization, entrepreneurship and innovation; the adaptation of occupational profiles; the expansion of training places; career guidance and counseling; the strengthening of VET centers; and evaluation and quality development. More than €2 billion have been made available for the implementation of these reform projects, thanks in large part to European funding programs (ESC 2023, 177).

The aim of the new Vocational Education and Training Act 2022 is to provide a flexible VET framework for different target groups (including school leavers, working people and the unemployed) within a lifelong learning environment (ESC 2023, 129). Among its various topics, the act addresses various challenges and reform needs in the organization and governance of dual VET. One major innovation is the integration of the separate iVET and cVET offerings, and their translation into a reference framework with five ascending levels of courses or programs:

- The two lowest levels include short courses or micro-trainings (level A) as well as learning modules (level B). These are not necessarily oriented toward the dual VET model, but can fit into modularly structured programs at the higher levels.

- Levels C and D include VET courses aligned with the occupational profiles defined in the National Catalogue of Competences. All VET programs here have a dual organization, with the in-company training phase constituting at least 25% of the total training period. The VET programs follow one of two models: “general” or “intensive” (see below). There is no maximum age limit for either VET model (Article 67, 4).

- At level E, specialization courses serve to broaden and deepen learners’ skills following completion of a VET program.

The modular structure allows for flexible entry points, and enables leaners to design their own VET and continuing education pathways. At each level, learners can acquire certified credentials that also serve as bridges to further qualification activities.

The differentiation between the training courses as either “general” or “intensive” serves to integrate the dualized VET system that has existed since 1993 and the dual VET model introduced in 2012. The distinction is made in articles 65-67 of the law, based on the following criteria: (1) the proportion/duration of in-company training; (2) the significance of in-company training in the curriculum; and (3) the status of the learner as intern or trainee.

The VET designated as “general” (Article 66) in principle provides for an in-company training share ranging between 25% and 35% of total course time.

Moreover, up to 20% of the in-company training content is regulated on a curricular basis with the aim of developing defined vocational skills. The in-company training is ideally to be spread across the duration of the overall VET program. There is no training contract between the learner and the training company.

The VET designated as "intensive" (Article 67) provides for in-company training that makes up more than 35% of total course time. More than 30% of the in-company training content is regulated on a curricular basis, again with the aim of developing defined vocational skills. The trainee and the training company conclude a training contract that regulates the trainee's remuneration, among its other topics. The VET coursework both at school and in the training company follows a training plan which, among its other functions, provides for the alternation of training between the learning sites in a daily, weekly or monthly rhythm.

The law aims to strengthen dual VET ("intensive") without neglecting the dualized form of VET ("general') (ESC 2023, 177). This realignment is associated with two key implications and consequent challenges: (1) the need to expand in-company training capacity, and (2) the increased importance of local VET management functions, and especially the cooperation between school-based and in-company tutors (ESC 2023, 133). Another challenge is to ensure that the quality of VET programs remains high even as the quantity expands. Given this need to balance quantity and quality, the law contains several provisions that are significant for further implementation:

- Minimum standards have been formulated for in-company dual VET (Article 57), including the alignment of in-company training with curricular standards documented in a training plan, supervision of trainees by an in-company tutor, and continuous exchange between the in-company and school-based tutors.

- Article 61 specifies requirements for both the school and in-company tutors.

- As one goal is to attract more small and medium-sized enterprises into participating in dual VET, Article 59 also emphasizes the possibility of collaborative training.

- Article 63 regulates responsibility for examinations within the various training modules, specifying that the final responsibility for this function lies with the schools, but that these assessments must also take learning performance within the in-company setting into account.

As another reform element in the new law, the role of the social partners in promoting and implementing dual VET has been expanded (ESC 2023, 135 f.). For example, they are expected to help increase the number of companies that commit to offering training. Though the number of training companies grew significantly in the first 10 years after the introduction of dual VET, the overall participation rate is currently still well below 1% of all active Spanish firms (ESC 2023, 174).

Developments since 2012, as well as the initiatives contained in the 2022 reform Law, demonstrate that the implementation of dual VET in Spain continues to gain momentum. At the same time, it is clear that structural reforms in the VET sector require staying power and strong supporters at both the professional and political levels.

7 | Conclusion: Knowledge transfer instead of systems export

Developing a dual(ized) VET is a complex and long-term project that can be realized only step by step, and which depends strongly on the conditions in place at the beginning of the reform. Its implementation requires a conceptual framework and strategic plan (master plan) that outlines targeted development stages, milestones and interventions. A reform project of this nature is necessarily a learning process in which phases of action are combined with phases of reflection, and in which the path taken is regularly reviewed and revised as necessary.

With its developmental stage approach, the reference framework presented here is an instrument able to support the essential steps of a reform process. It can be used to analyze the status quo while additionally defining possible stages of development as desired objectives. Its explanations can stimulate the development of goal-focused interventions. In addition, the reference framework facilitates comparisons between the individual development stages as they may be variously realized in different countries or sectors, and can thus help expand the empirical body of VET system research. Examining other countries' practices also helps inform policy transfer considerations in the design or reform of a local VET system.

In this regard, policy-transfer processes should not be regarded simply as one country copying a functioning practice in another. Rather, aspects of a "good practice" are taken up and adapted to fit into local practices and conditions. In some cases this assimilation extends "only" to a basic idea or philosophy, but this then leads to independent and specific developments. Given these realities, learning from good examples – sometimes called "benchlearning" – is very valuable for the reform of a local VET system. However, those responsible for the project should not let unrealistic expectations overwhelm their process. In this sense, support for the development of VET systems does not take place in terms of a system export, but as a transfer of knowledge. The transfer is geared to the framework conditions in the recipient country and is controlled as comprehensively as possible by the actors in the country.

The reference framework with its 11 components, each with four stages of development, sets out a field of possible activity that can be flexibly explored. It allows reform initiatives to focus on individual components, for example by initially planning smaller movements from the first to the second stage of development. Alternately, as the Albanian case study shows, planners can identify specific components as being of greater importance, and use targeted interventions to push these to a higher development stage. Furthermore, it is possible to plan developments in one economic sector relatively comprehensively while temporarily excluding other sectors. In all likelihood, no country will reach the highest stage of development in all 11 of the components. In this regard, the reference framework represents an ideal vision that can be approached step by step through realistic action, but can never be perfectly achieved. Where else but in VET would a form of pragmatic idealism such as this apply so naturally?

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