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POLICY BRIEF

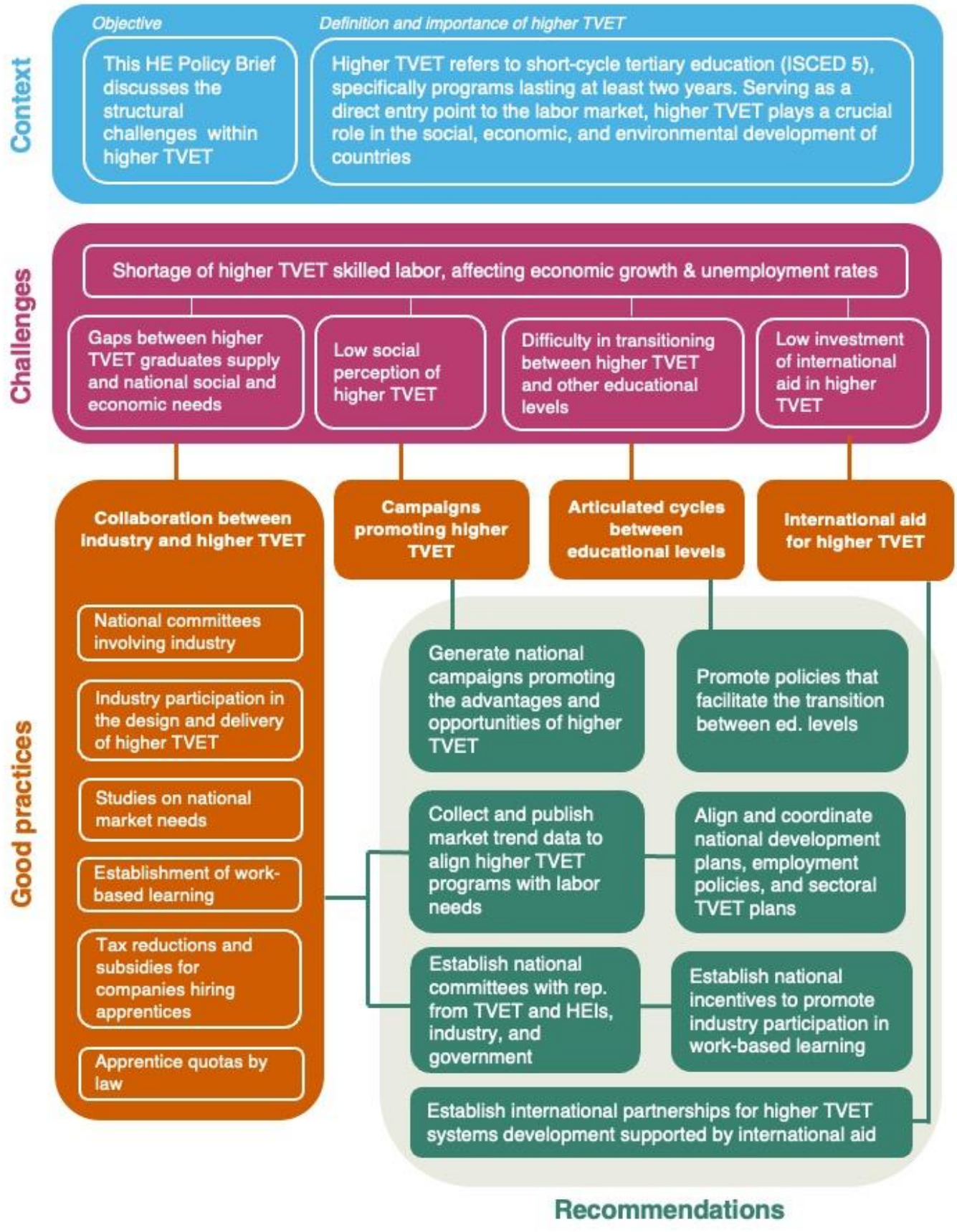
Strengthening higher Technical and Vocational Education and Training systems

Executive Summary

- This Policy Brief analyzes how strengthening higher Technical and Vocational Education and Training systems (higher TVET – shortcycle tertiary education at ISCED 5 level) is critical for the progress towards SDG target 4.3 on technical, vocational, tertiary and adult education.
- In the current context of rapid technological development and demographic changes, higher TVET is crucial for the social, economic, and environmental development of countries. However, many countries face a shortage of skilled labor.
- Three main challenges are identified in the structure of higher TVET concerning labor shortage: an inadequate supply that does not meet the needs of the country and industry, low social value of higher TVET, and a lack of policies facilitating articulation across educational levels.
- To address these challenges, this brief recommends strengthening collaboration between industry and higher TVET. This includes developing national committees with the industry, implementing policies to involve the industry in designing educational programs, promoting studies on labor market needs, and establishing dual systems or work-based apprenticeships.
- The development of higher TVET will also benefit from systems for recognizing prior learning, quality career guidance, and campaigns that promote the value of higher TVET.
- The importance of different forms of financing for higher TVET equity to advance these policies is also highlighted.

Education 2030

STRENGTHENING HIGHER TECHNICAL AND VOCATIONAL TRAINING (TVET) SYSTEMS



Context

This HE Policy Brief discusses the structural challenges[1] within Higher Technical and Vocational Education and Training (higher TVET). Technical and vocational education and training' (TVET) is understood as comprising education, training and skills development relating to a wide range of occupational fields, production, services and livelihoods. UNESCO believes in the role of TVET to address multiple demands of an economic, social, and environmental nature by helping youth and adults develop the skills they need for employment, promoting inclusive and sustainable economic growth and supporting transition to digital and green economies (UNESCO, 2022).

TVET, as a part of lifelong learning, can occur at secondary, post-secondary, and tertiary levels. It includes work-based learning, continuing training, and professional development, which may lead to qualifications. TVET also offers a broad range of skills development opportunities aligned with national and local contexts. Integral components of TVET include learning to learn, literacy and numeracy skills, transversal skills, and citizenship skills (UNESCO, 2015).

TVET programs can cover ISCED level 2 (lower secondary) through ISCED level 5-8 (tertiary education), depending on the specific education system and the scope of the program[2] (UIS, 2012). Higher TVET is defined differently across systems and countries. In this document, it is referred to short-cycle tertiary education (ISCED 5[3]), characterized by practically based, occupationally specific programs lasting an average of two years, which prepare students to directly enter the labor market.

Aligning with the objective of the UNESCO Strategy for TVET (UNESCO, 2022) to support the efforts of Member States to enhance the relevance of their TVET Systems, this brief addresses the following question: How can we strengthen higher TVET systems in relation to their contribution to the sustainable development of countries? In other words, it aims to foster discussion on the systemic aspects of TVET in higher education and the opportunities associated with this process.

Alongside higher education, higher TVET is a key tool for the social, economic, and environmental development of countries. Firstly, it enhances social mobility, especially for the most disadvantaged populations, by increasing the employment opportunities for students. Secondly, it can improve the productivity of economies by increasing human capital, particularly in priority or emerging sectors, due to its ability to quickly adapt to labor market changes within the framework of lifelong learning. Lastly, and precisely due to this capacity to quickly train workers in emerging professions, TVET is crucial in green transitions, which include both industrial transformation towards greater sustainability, within the framework of circular economies, and the mitigation and adaptation to climate change (CEDEFOP, 2011; INACAP, 2023; Randstad, 2022; UNESCO, 2016; UNESCO, 2022; World Bank, UNESCO & ILO, 2023; Webb, 2022)

1 This report delves into strengthening TVET from systemic or structural aspects. A twin report further explores the challenges of strengthening TVET directly related to the educational processes of students.

2 The mapping of TVET and general/academic education within the formal education system in Member States are available on UNESCO-UNEVOC's TVET Country Profile pages.

3 According to the International Standard Classification of Education (ISCED) by UNESCO, 2011. In some countries, programs of this type may be associated with other educational levels.

This brief is intended for policymakers, educational leaders, stakeholders and researchers in tertiary education, encompassing both higher TVET and higher education.

Problem statement

Higher TVET is less prominent than other forms of higher education. For example, according to OECD data, only 17% of those entering tertiary education for the first time do so in higher TVET programs. Likewise, of the total number of students accessing TVET programs, only 17% of them are enrolled in higher TVET programs (OECD, 2020).

In a context of rapid technological development and demographic changes, many priority sectors have experienced a shortage of skilled labor, affecting both economic growth and the unemployment levels of countries (Randstad, 2022; UNESCO, 2016; UNESCO-UNEVOC, 2024; World Bank, UNESCO & ILO, 2023). For example, according to the Chilean Society of Industrial Promotion (Asociación de Industriales de Antofagasta, in Spanish), a guild association of industrial sector companies, there is a deficit of 600,000 technical professionals in Chile (AIA, 2023). In the European Union, nearly two-thirds (63%) of small and medium-sized enterprises indicated in a recent survey that they cannot find the workforce they need. Additionally, the European Commission has identified 42 occupations with a shortage of skilled personnel (European Commission, 2024).

Similarly, in the Philippines, the labor shortage not only refers to the lack of graduates but also to the quality of their training. In 2017, it was found that 43% of recent TVET graduates required higher qualifications for the labor market. Furthermore, about one-third of employers in the Philippines report difficulties in filling vacancies due to the lack of necessary qualifications among applicants (Asian Development Bank, 2021).

Strengthening higher TVET emerges as a relevant alternative in addressing these labor shortage issues. However, the training of technicians and professionals with the competencies required by labor markets faces two major types of challenges: a) the way educational systems are structured and articulated and b) the educational trajectories of students (access, permanence and training).

This first brief[1] delves into the challenges related to the structures or systemic aspects that define higher TVET, highlighting the following three challenges.

- **Gaps between higher TVET graduates supply and national social and economic needs:** In some countries, higher TVET curricula are generally developed without substantial input from the demand side or employers in environments where public-private dialogue on competency needs is not promoted. This is attributed to a lack of incentives, resources, and knowledge from educational institutions, where there is also a low awareness of collaborative opportunities and even skepticism about the value of such cooperations.

  This hinders the effectiveness of these training processes in improving employment opportunities, leading to a qualitative mismatch between the qualifications and skills people possess and those required by the labor market

(OECD, 2018a; People in Need, 2018; UNESCO & ILO, 2023; UNEVOC, 2024; World Bank).

For example, in Australia, over 40% of employers reported facing shortages in 2022 due to a lack of qualified applicants for various occupations, including primary school teachers, occupational therapists, electricians, metal fitters, and social workers, among others. Additionally, nearly 40% employers noted that while some applicants possess the necessary qualifications, they often lack specific skills, particularly in fields like advertising, construction, and sales. This suggests a potential gap in higher TVET programs for these occupations (Jobs and Skills, 2023b).

An educational offer aligned with industry and social needs is particularly important in higher TVET due to its practical approach, through providing knowledge and skills needed in the workplace and a focus on technical aspects, which increases the ability to enter the labor market.

- **The low social perception of higher TVET:** One of the most significant limitations of higher TVET in attracting students who wish to continue their studies after secondary education is its lower social value compared to university education. Even in countries where it is well-developed, TVET often has a poorer image associated with lower educational and teaching quality, weaker industry links, and social stigma.

  For example, in countries like Egypt, Palestine, Jordan, Lebanon, and Morocco, higher TVET is considered an undesirable and low-level option due to the social stigma associated with this type of learning. In contrast, academic higher education institutions have a higher social value due to their institutional standing, legitimacy, the certification they offer, and the expectations of well-paid employment for their graduates (Billett, 2019; El-Ashmawi, 2018; Ghneim, 2018).

  Despite these beliefs, data on higher TVET reveals positive outcomes, such as high employment rates within one to two years after graduation. Countries like the Czech Republic (100%), Ireland (97%), the Netherlands (96%), and Norway (91%) demonstrate particularly high employment outcomes (OECD, 2023b). In countries like Belgium, Spain, Italy and Croatia, graduates from higher TVET programs exhibit similar or even higher enrollment rates compared to bachelor's degree holders within the same period (OECD, 2023b). In China, employment rate of graduates from higher TVET exceeds 90% (Fan et al., 2024).

- **Difficulty in transitioning between higher TVET and other educational levels:** A central characteristic of how TVET is structured is that it is offered at different educational levels, from secondary and tertiary education to continuous education programs. In this context, countries' ability to have well-trained technicians and professionals is often limited by the absence of policies and regulations that facilitate coherent educational pathways, such as recognition, validation and accreditation (RVA) policies and quality career guidance systems. The absence of those policies hinders countries from having a more skilled workforce with greater technical human capital (OECD, 2022; Sevilla et al., 2014; UNESCO-UNEVOC, 2017).

  For example, graduates from upper-secondary vocational programs are more frequently found not in education, employment, or training (NEET), whereas graduates from general upper-secondary education are more likely to

pursue tertiary education (OECD, 2023b). This trend may be linked to the challenges of progressing to higher educational levels that fully recognize and integrate their prior vocational qualifications. In fact, in countries such as France, Greece, Italy, Lithuania, and Spain, one in five graduates from vocational upper-secondary education is NEET, highlighting difficulties in transitioning to both tertiary education and the labor market (OECD, 2023b).

In addition, in a quarter of countries worldwide, vocational secondary schools do not provide access to tertiary education (Global Education Monitoring Report, 2021) and, in some countries, universities do not formally recognize two-year community college degrees, forcing students to restart their studies despite holding an associate degree (UNESCO, 2018). The low proportion of students in bachelor's programs with prior higher TVET qualifications highlights this absence of effective policies that integrate TVET studies with academic higher education pathways. In countries such as Peru, Portugal, Chile, the Netherlands, and Poland, fewer than 10% of students entering bachelor's programs have higher TVET qualifications (OECD, 2023b).

- **Low investment of international aid in higher TVET:** Only 3% of international aid for tertiary education is allocated to higher TVET, with the majority directed toward academic higher education. This imbalance limits the development of short, skill-based, and employment-oriented training programs, which are essential in low-income countries where such aid plays a crucial role. As a result, it can hinder workforce readiness and slow economic growth. Moreover, the disproportionate investment in higher education over TVET exacerbates inequalities between different types of education and overlooks the critical role that higher TVET play in economic development (Bouckaert & Galán-Muros, 2024; UNESCO IESALC, 2022).

Policy analysis

Policies that systematically strengthen higher TVET include its collaboration with industry, establishing incentives to encourage this participation, promotional campaigns for higher TVET, adopting pertinent qualifications frameworks to facilitate academic progression, enhance labor mobility, and strengthen higher TVET, implementing articulated cycles between educational levels (from secondary to tertiary), and international aid agreements. The following section describes national examples of such policies.

Collaboration between Industry and Higher TVET

Unlike higher education, higher TVET is primarily focused on equipping students with specific technical and vocational skills that are directly applicable to particular jobs or industries. Therefore, collaboration between industry and higher TVET is crucial to help maintain an educational offer aligned with market and societal needs, directly addressing skills shortages and enhancing students' employability. To achieve this, countries can establish committees with various relevant stakeholders for the planning and development of higher TVET and conduct studies on the market areas with the highest demand. Additionally, countries can implement work-based learning, also known as dual systems, and establish

incentive policies to promote employer participation in training, such as tax reductions, subsidies, and the establishment of apprentice quotas by law.

Establishment of National and Sectoral Committees Involving Industry

Some countries have created national planning and supervision committees that include leaders from various sectors. These committees play a fundamental role in identifying needs, developing policies, and monitoring and evaluating higher TVET. Their goal is to ensure that the training provided, and thus the skills and knowledge of graduates, are relevant and responsive to both current and anticipated labor demands. For example, in Canada, there are Program Advisory Committees composed of representatives from businesses, industries, professions, and administrative and academic staff from TVET institutions (UNESCO-UNEVOC, 2013). Similarly, China has established 56 National Industry Vocational Education and Teaching Steering Committees, covering nearly all sectors of the national economy and every major in secondary and higher vocational education (MOE, 2018).

This is also the case in Australia, where the Jobs and Skills Councils have been established, bringing together employers, unions, and governments to provide a stronger voice for industry and ensure that TVET delivers better outcomes for students and employers (Australian Government, 2024). Similarly, in Colombia, sectoral tables have been established including representatives from the government, the productive sector, and the academic sector (OECD, 2023a; SENA, n.d.). These tables aim to identify the current and future needs for technical professional training, considering the national government's priorities, the specificities of each region, and the reduction of gaps in the existing human capital. Additionally, they are responsible for promoting the transfer of technical and technological knowledge, managing human talent, and facilitating labor mobility in the sector at national and international levels (SENA, 2018).

> Countries can establish committees with various relevant stakeholders for the planning and development of higher TVET and conduct studies on the market areas with the highest demand

Industry Participation in the Design and Delivery of Higher TVET Programs

Some countries have implemented strategies to involve industry in the design of higher TVET programs formally and systematically. This is the case in Sweden, where TVET institutions must ensure employer participation to establish a new higher TVET program (Kuczera & Jeon, 2019). In this regard, employers, along with local higher TVET institutions, propose programs to the National Agency for Higher Vocational Education, which can then be funded by the agency and offered to the public.

Similarly, the Modern Vocational Education Development Strategy 2014-2020 in the People's Republic of China encouraged companies with specific skilled labour demands to develop tailored programs and subcontract local higher TVET institutions to offer these programs under the "Joint Admission & Training" scheme. For instance, BMW Brilliance Automotive has been operating a TVET program in Shenyang, Liaoning, since 2013, collaborating with TVET institutions to develop industry-relevant courses and provide students with practical training and internship opportunities (Edutechtalks, 2024).

Undertake Studies on National Market Needs

Some countries have also adopted the strategy of orienting TVET towards national

needs through large-scale studies identifying the most important areas. For example, in South Africa, the List of Occupations in High Demand is developed to respond to emerging occupations and needs, develop new programs, facilitate resource allocation processes, and provide career guidance to students. One of the goals of the South African National Skills Fund is to fund the education and training of around 200,000 students in occupations listed in the List of Occupations in High Demand during the 2020-2025 period (OECD, 2021).

Similarly, Jobs and Skills in Australia provides high-quality data and analysis to the government and other stakeholders to understand the skills and labor shortages in the Australian economy. This facilitates informed decision-making on current, emerging, and future skills and workforce needs (Jobs and Skills Australia, 2023a). For example, the 2023 annual report revealed that 50% of occupations for technicians and skilled workers face labor shortages, mainly in the Construction and Food sectors (Jobs and Skills Australia, 2023b). In response, ten Jobs and Skills Councils have been established in Australia to support the TVET sector and give industry a stronger voice (Jobs and Skills Australia, 2023b).

Innovation ecosystems as catalysts of collaboration

To address some of humanity's large challenges, it is essential to generate spaces for research, creation, and innovation that foster initiatives capable of facilitating co-creation and transfer of knowledge and technologies. The development of innovation ecosystems is strengthened through collaboration, coordination, and interaction among various actors, businesses, government, civil society as well as research and training institutions, including higher TVET institutions. In Europe, programs such as Horizon Europe, the European Digital Innovation Hubs, the European Institute of Innovation and Technology or the Regional Innovation Schemes promote these collaborations.

In the European Union, the Smart Specialization strategy, based on the systemic endeavor theory, seeks to capitalize on these interactions. This innovation policy encourages collaboration between research and training institutions, businesses, government, and civil society to identify and enhance each region's competitive advantages (ETF, 2020).

> Countries can implement work-based learning in higher TVET and establish incentive policies to promote employer participation in training, such as tax reductions, subsidies, and apprentice quotas by law.

Establishment of Work-Based Learning or Dual Systems

Another collaboration strategy between industry and higher TVET is dual education or work-based learning. Dual TVET is designed to align training as closely as possible with labor market needs, increasing the likelihood that students will be employed by the companies training them or by others in the sector (European Commission, n.d.). For example, in Germany, dual higher TVET programs combine theoretical learning with practical training in a company, typically for three years (GOVET, 2024) These companies bear the cost of in-company training and pay the corresponding remuneration to the apprentice (CEDEFOP, 2022).

The Mexican Dual Training Model, based on the German model, integrates work-based learning from the third semester. In this model, students join a company according to a personalized training plan, combining classroom instruction with work experience for a minimum of 1 to 2 years,

depending on the career (Government of Mexico, 2014). Similarly, in England, Sweden, and Denmark, work-based learning is mandatory in a percentage of dual higher TVET programs. For example, in England, students dedicate at least 20% of their studies, in Sweden, 25%, and in Denmark, a minimum of 3 months is mandatory (CEDEFOP, 2019; Kuczera & Jeon, 2019; OECD, 2014). This aligns with the EU member states' goal of ensuring that 60% of recent graduates from all TVET have been exposed to work-based learning (European Commission, n.d.).

Tax Reductions for Companies Hiring Apprentices

Some governments establish tax incentives for companies participating in work-based learning programs. In Croatia, tax exemptions are granted to companies hiring and training apprentices. For example, a company hiring one to three students for practical training can reduce its corporate income or self-employment tax base by 5% and up to 15% if it has more than 3 apprentices (CEDEFOP, n.d.). In Hungary, companies offering practical training can reduce their tax obligation using a formula based on the number of apprentices, the percentage of the minimum wage, and the company's tax rate (DC dVET, 2019).

Similarly, in Vietnam, the operating expenses of in-company vocational training are deducted from the taxable income, according to the country's tax law regulations (Vocational Education Law, Article 51).

Subsidies to Companies Hiring Apprentices

In some countries, companies participating in work-based learning programs receive subsidies in the form of a sum of money per apprentice or for each completed training. This amount can vary depending on the training duration. In Austria, the subsidy varies according to the training year: in the first year, the employer receives the equivalent of three gross apprentice salaries per apprentice; in the second year, the equivalent of two salaries; and in the third year, the equivalent of one salary per apprentice (OECD, 2018b). In Australia, the Priority Hiring Incentive provides up to 5000 Australian dollars to employers hiring apprentices in an occupation included in the Australian Apprenticeship Priority List (Department of Education, Skills and Employment, 2022). Similarly, in France, companies hiring apprentices for at least one month receive 1,600 euros per apprentice per year. Small and medium-sized enterprises (SMEs) are exempt from employer social contributions (Kuczera, 2017).

Establishment of Apprentice Quotas by Law

A strategy to encourage industry participation in work-based learning programs is to establish apprentice quotas by law. In Colombia, all private companies, except those in the construction sector, with more than 15 employees must hire one apprentice for every 20 employees. Companies wishing to forgo apprentices must pay an amount to the National Learning Service (SENA) based on the number of employees and the legal minimum wage in force (Law 789 of 2002, Article 32).

Campaigns Promoting Higher TVET

Various national strategies have focused on improving the social perception, visibility, and attractiveness of higher TVET. This is crucial because a positive perception of higher TVET programs can help attract a more diverse range of students who might otherwise be led to believe that higher education is the only viable pathway after their upper-secondary studies. Improving social perception ensures that potential

students recognize the direct and immediate value of these qualifications in securing employment, especially when compared to higher education programs that typically are more academically oriented and require a longer time commitment.

A notable example is Singapore, where this social prejudice has been combated through a marketing plan known as "hands-on, minds-on, hearts-on" (Stewart, n.d.; Loo, n.d.). This plan, aimed at parents, students, teachers, and the community, managed to double enrollment between 1995 and 2009. An effective strategy of this plan has been organizing annual talks in secondary schools, inviting potential students to participate in the "ITE Experience Programme," where they spend two days on campus experiencing the practical skills, they would receive upon enrolling in a technical education institute (Stewart, n.d.).

In the United Kingdom, initiatives like the National Apprenticeship Week, organized by the Education and Skills Funding Agency, have also been established. For four days each year, activities are designed for all stakeholders (government, TVET institutions, and students) to share their experiences with the general public (NAW, n.d.). Another notable initiative in the UK is the National Apprenticeship and Skills Awards, which recognize the success stories of students and employers in various sectors related to TVET (National Apprenticeship and Skills Awards, n.d.).

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In Viet Nam, the General Directorate of Vocational Education and Training (GDVET), along with sector associations and TVET institutes, developed a basic guide for TVET institutes to develop their marketing and communication initiatives (GIZ, 2014). Additionally, within the framework of the TVET Reform in Vietnam program (2020-2024), six training courses have been organized for approximately 300 people from the public relations area of TVET institutes, covering topics such as content marketing, video editing, photography, and gender sensitivity in communications. Events have also been developed to enhance the image of TVET, including open days, Girls' Days, and youth competitions. Furthermore, a new television program is being developed in collaboration with GDVET and a national channel, aiming to raise awareness among young people about different occupations and the potential of TVET, expected to be implemented before the project's completion in 2024 (GIZ, 2022b; Trained in Vietnam, n.d.).

Articulated Cycles Between Educational Levels

As higher TVET programs are an alternative to higher education for students who had completed upper-secondary education, and given that these programs are typically shorter, it is crucial to articulate them with lower TVET and higher education programs. This ensures that students can seamlessly continue their studies at higher levels if they choose to, creating flexible learning pathways that can adapt to a student's evolving career goals and life circumstances. Moreover, this articulation promotes upward social mobility and helps individuals achieve better long-term economic outcomes.

Some governments are aware of the importance of articulating these levels and have implemented integrated cycles that connect the various educational levels (from secondary to tertiary) and complement each other, allowing for a smooth and coherent transition

throughout the educational process. In Colombia, undergraduate higher education (ISCED 5 and 6) is organized into three flexible, sequential, and complementary stages, also known as "propaedeutic cycles." In this model, students can start with a technical program (lasting 2-3 years), which then articulates with a technological program (for an additional year) and finally with the professional university level (for another 1-2 years). In total, the complete pathway can last 5-6 years, which is efficient considering that undergraduate university programs (ISCED 6) in Colombia have an average duration of 5 years. Each cycle is designed to integrate with the next, and once completed, it is accredited to facilitate access to the labor market (National Ministry of Education, 2024; Tobón, 2007).

For example, a student can enroll in the technical program in Information Systems (ISCED 5, 4 semesters). They can then continue with a technologist program in Software Development Technologies (ISCED 5, +2 semesters) and finally reach the professional university level in Systems Engineering (ISCED 6, +3 semesters; OECD, 2023a). This approach offers the flexibility to decide when to resume studies in the next cycle.

> Countries can implement cycles that articulate various educational levels and complement each other, allowing for a smooth and coherent transition throughout the educational process.

Similarly, in France, where undergraduate university programs (ISCED 6) typically last 3 years, students who have completed the equivalent of 1 or 2 years of higher TVET (ISCED 5) can articulate with university programs and study only the additional time required (1 or 2 more years) to obtain the undergraduate higher education degree (also called licence professionnelle) (OECD, 2022; ONISEP, 2022).

On the other hand, Chile's National Articulation Agreement promotes the linkage between Secondary TVET (ISCED 3) and higher TVET (ISCED 5 and 6). Specifically, it encourages secondary TVET graduates to continue their studies in higher TVET programs within the same technical specializations they previously studied. This is facilitated through the validation of subjects from the first semester of higher TVET study, contributing to the development of coherent and more efficient educational and career pathways (Ministry of Education, 2021).

International aid to build capacities and infrastructure in higher TVET

As a policy instrument frequently employed by wealthy nations to support development efforts in the Global South, international aid can play a crucial role in advancing higher TVET systems, particularly in low-income countries (Bouackert & Galán-Muros, 2024). This aid can be strategically leveraged to deliver technical assistance through knowledge and expertise transfer, fund the construction and upgrading of relevant infrastructure, and support the development of robust legal and regulatory frameworks.

The "Cooperative Vocational Education 2019-2023" project (Kooperative Berufsbildung) between the German Office for International Cooperation in Vocational Education and Training and the Ministry of Labour and Social Security of Mongolia, co-financed by the Korea International Cooperation Agency, focused on facilitating cooperation between the state and Mongolian companies, promoting work-based learning, and increasing skilled personnel. This cooperation supported the Mongolian government in expanding 7 capacity development centers (CDCs) and creating a favorable framework for their operation. The CDCs offer TVET training in

specialized areas of national interest (GOVET, n.d.; GIZ, 2022a). In addition, this project contributed technical expertise on quality management and social partnerships to support the TVET law reform process (GIZ, 2022a).

Similarly, the USAID[4] funded Workforce Egypt project 2021 – 2026 with the Ministry of Education and Technical Education in Egypt provides technical assistance, capacity building, and training for students, teachers, and administrators in TVET institutions, as well as for training and employment centers, private companies, business associations, and non-governmental organizations. The goal is to prepare 100,000 Egyptian students, between 2021 and 2026, for skilled jobs in the private sector (USAID, 2022).

Recommendations

This section provides recommendations for policymakers in tertiary education, encompassing both higher TVET (ISCED 5) and higher education (ISCED 6 -8).

Engage in labor market data collection, targeted research, market needs analysis, and projections in collaboration with industry and skills bodies to align the offer of higher TVET programs with labor market needs. These studies should be carried out on a national scale, covering all economic sectors, and assessing both labor demands and the availability of skilled labor in each sector. To achieve this, governments must have access to stratified TVET data to effectively assess the need for higher TVET. Moreover, these studies should provide short- and long-term projections, identifying not only current needs but also future labor market trends. This will allow educational institutions to anticipate demands and proactively adapt their educational offers.

Align and coordinate national development plans, employment policies, and sectoral TVET plans, ensuring coherence between economic and development objectives, the data collected, and future projections on labor market needs and present and future educational offerings. Higher TVET is crucial for a country's development as it offers practical, skills-based education that directly addresses labor market demands. By equipping students with specialized knowledge and industry-aligned competencies, higher TVET can produce highly skilled professionals in key areas such as technological innovation (e.g., digital skills, artificial intelligence), industrial upgrading, and sustainable development (e.g., green skills), aligning with international development plans. This alignment enhances employability, drives economic growth, and supports the adaptability of the workforce in a rapidly changing global economy. Moreover, it fosters social mobility by providing accessible educational pathways that lead to meaningful and sustainable employment opportunities.

Analyze and expand research and practice of qualifications frameworks, considering the governance models of the educational systems in each country. This will make it possible to strengthen policies focused on the development of qualifications, especially at the higher levels of the framework.

Establish national committees comprising representatives from TVET and higher education institutions, industry, government, and social partners (such as NGO and community

4 United States Agency for International Development (USAID)

groups) to develop joint strategies that foster the alignment of higher TVET with labor market and societal needs. These committees should adopt a systemic approach to identify skill gaps that can be effectively addressed by higher TVET graduates, ensuring that educational programs are responsive to current and future workforce demands. Some of these strategies may include establishing policies that require employer participation in proposing new higher TVET programs, recognizing the importance of industry in creating future educational offerings in fields corresponding to the objectives of higher TVET, such as advanced manufacturing, green construction, e-commerce, etc. (UNESCO-UNEVOC, 2021a,b,c). Additionally, these committees could advocate for incentives for companies to actively participate in the co-design and delivery of curricula. This could include, for example, implementing dual education models that promote work-based learning.

Establish national incentives to promote industry participation in work-based learning processes or dual education. Unlike academic higher education programs, work-based learning is a significant component of higher TVET that provide students with practical skills that are directly relevant to the labor market. Consequently, industry participation is essential to ensure that the training provided aligns with current industry needs and standards. Some of the incentives for industry involvement may include tax reductions for companies that hire apprentices, subsidies to cover training costs, and exemptions from social contributions for small and medium-sized enterprises participating in dual training programs. The establishment of apprentice quotas in private companies can also incentivize hiring and ensure that a minimum number of apprentices receive practical training in a real work environment.

Generate national campaigns promoting the advantages and opportunities of higher TVET to improve its perception and become an attractive alternative for students. To overcome low social value, it is necessary to fund programs and communication strategies that inform the potential of TVET and eradicate prejudices associated with lower quality and prestige. For instance, offering comparative data on employment and salary rates between higher TVET and higher education graduates can be valuable for potential students in making informed decisions about their educational pathways. It is suggested that the campaigns target all members of educational communities (parents, students, and teachers), as they all play a role in students' vocational decisions.

Promote policies that facilitate the transition between educational levels through the promotion of propaedeutic cycles that prepare students for greater success in higher-level programs. This implies both the transition from upper-secondary higher TVET and from there to higher education programs, facilitating flexible educational pathways. It is also recommended to develop strategies for the recognition of prior learning to encourage the continuation of studies by recognizing prior learning and experiences. These strategies foster the realization of smooth and coherent educational pathways.

Establish partnerships between higher TVET systems and international agencies to enhance funding and support for underdeveloped systems. In this collaboration, recipient countries should take the lead in setting their higher TVET development priorities, while partners acknowledge the crucial role of higher TVET in sustainable development. International aid can be strategically applied to capacity

building and training, providing technical assistance in areas such as public-private partnerships, and supporting policy development and advocacy efforts.

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POLICY BRIEF

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