



Vocational Excellence: From partnerships to skills ecosystems

International insights





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Preface

'Vocational Excellence: From partnerships to skills ecosystems – International insights' shows how four Centres of Vocational Excellence work in partnerships and skills ecosystems to meet labour market and societal demands. The description and analysis of the case studies is developed as part of the "Internationalising Vocational Excellence" project (IntVE), which has been funded by the European Union and coordinated by the European Training Foundation (ETF).

This report presents four case studies of vocational excellence and their approaches. The case studies were carried out in two European countries, the Netherlands and Greece, and in two ETF partner countries, namely Egypt and Moldova.

The study project was coordinated by Jolien van Uden (ETF). The research design was led by Willem Kleinendorst (CINOP), Pauline van den Bosch (CINOP) and Jolien van Uden (ETF). The research was undertaken in the period from January 2025 to March 2025 by a team of researchers working at CINOP B.V., Ockham IPS and 3S. The report was written by Willem Kleinendorst (CINOP), with the contributions of Pauline van den Bosch (CINOP), Simon Broek (Ockham IPS) and Monika Auzinger (3S) and a final editing by ETF.

We would like to extend our gratitude to all of the stakeholders who contributed to this research, either by helping with the data collection, providing feedback, or bringing us into contact with relevant experts. Our gratitude goes out to the Centres of Excellence Firda and CIV Water, Ta'Heal Applied Technical Schools and the Centres of Excellence AKMI and CEEF for their time, openness and warm welcome in their institution.

Content

Preface	3
List of abbreviations	5
Introduction	6
1. Summary of findings	8
2 Case 1: Firda and CIV Water	12
2.1 Centre of Vocational Excellence: Firda and CIV Water	14
2.2 Management organisation and funding of CoVEs	16
2.3 Partnerships and stakeholder engagement	18
2.4 Curriculum development and skills provision	20
2.5 Involving staff and students in vocational excellence	25
2.6 Operational challenges and best practices	26
3 Case 2: Ta'heal and Nahdet Misr Applied Technology School	30
3.1 Centre of Vocational Excellence: Ta'heal and Nahdet Misr Applied Technology School	32
3.2 Management organisation and funding of CoVEs	34
3.4 Curriculum development and skills provision	38
3.5 Involving staff and students in vocational excellence	40
3.6 Operational challenges and success factors	41
4 Case 3: AKMI and Tour X	42
4.1 Centre of Vocational Excellence: AKMI and TourX	44
4.2 Management organisation and funding	48
4.3 Partnerships and stakeholder engagement	49
4.1 Centre of Vocational Excellence: AKMI and TourX	54
4.5 Involving staff and students in vocational excellence	55
4.6 Operational challenges and success factors	56
5 Case 4: Centre of Excellence in Economics and Finance (CEEF) - Moldova	58
5.1 Centre of Excellence: Centre of Excellence in Economics and Finance (CEEF)	60
5.2 Management, organisation, and funding of CEEF Moldova	62
5.3 Partnerships and stakeholder engagement	64
5.4 Building skills ecosystems that work towards a future-proof labour force	65
5.5 Involving staff and students in vocational excellence	66
5.6 Operational challenges and success factors	67



List of abbreviations

3S – Smart Specialisation Strategy

ATS – Applied Technology School

AHK – German Chamber of Commerce in Egypt

AUC – American University in Cairo

BOT – Board of Trustees

CBET – Competency-Based Education and Training

CoE – Centre of Excellence

CoVE – Centre of Vocational Excellence

CVET – Continuing Vocational Education and Training

EMIS – Education Management Information System

ESF – European Social Fund

ETF – European Training Foundation

GIZ – German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit)

HE – Higher Education

IAG – Information, Advice and Guidance

IATS – International Applied Technology School

IVET – Initial Vocational Education and Training

MoETE – Ministry of Education and Technical Education

MoU – Memorandum of Understanding

M&E – Monitoring and Evaluation

PPP – Public-Private Partnership

RPL – Recognition of Prior Learning

SME – Small and Medium Sized Enterprise

TE 2.0 – Technical Education 2.0 Strategy

TVET – Technical and Vocational Education and Training

UNESCO-UNEVOC – UNESCO International Centre for Technical and Vocational Education and Training

VET – Vocational Education and Training

WBL – Work-Based Learning

Introduction

There is no one-size-fits-all in achieving vocational excellence

In a well-functioning skills ecosystem that anticipates (regional) labour market challenges, there is a balance between the three elements of the working-innovation-learning triangle (WIL triangle). Depending on the origin of a skills ecosystem, the start-up phase is often focused on bilateral collaboration between two partners from the triangle¹. This is a natural process: in the start-up phase, a Centre of Vocational Excellence (CoVE) focuses on enhancing its routine activities and maintaining strong connections with the private sector. Working and collaboration are in this first stage, which is focused on improvement and working more effectively and efficiently in routine activities.

However, in a mature stage of achieving vocational excellence, all three elements of working, learning, and innovation should be interrelated, and vocational excellence is met through a continuous loop fostering local innovation and contributing to regional development². There is no end-station in achieving vocational excellence: it requires active involvement and commitment from all partners, resulting in a collaboration that is sustainable and focuses on continuous improvement at institutional, sector and regional levels. And this goes beyond industry and enterprise and involves other actors as well. Reaching this stage of maturity requires another way of working and thinking, working differently, looking at the challenge from another perspective, thinking out of the box and going beyond the boundaries that we are used to applying in our daily work.

From “not invented by me” to “getting up to speed”

The diversity among current practices of CoVEs shows that there is not one single way to achieve vocational excellence. It is a journey that depends on a combination of institutional ambitions, capacity, experiences, national and regional policy contexts, and local needs.

This diversity in level of experience and maturity will be the reality in the development of vocational excellence and this is why there is no one-size-fits-all. There is no fixed roadmap, and skills ecosystems go through stages from beginner to mature at a different pace and will face different challenges and need different solutions. What works in one context doesn't necessarily work in another context.

Achieving vocational excellence takes time and requires a lot of investment from all partners and if there is no strategy, passion or common need to keep the fire burning, collaboration structures that were meant to be skills ecosystems disappear as fast as they were set up. However, there are many good vocational excellence practices as part of/contributing to skills ecosystems. We see that effective approaches can lead to acceleration and organisations are encouraged to cross the finish line. Therefore, it's crucial that good practices reach other areas and are shared more widely and effectively. Rather than thinking in terms of “not invented by me”, it is worth learning from other practices as they have gone through the entire journey to support their peers.

In practice, it seems that collaborations often follow their own unique process, and participants do not adopt models from others directly. This means that each group ends up reinventing the wheel. Moreover, participants in skills ecosystems tend to retreat into their own bubble with the practices with which they are familiar. How can this be better prevented than it has been so far, and how can we ensure that the shared interest becomes more than the sum of individual interests? These concerns support processes and tools that ensure real collective learning, innovation, and practical application.

¹Dialogics, Versterking leervermogen Learning Communities binnen de TSE (RVO)

²ETF (2023), Building evidence to support vocational excellence for the digital and green transitions: The Role of Centres of Vocational Excellence in the Green Transition, p. 16.

Unlocking resources: the methodological approach for the case studies

Building upon this idea of sharing and learning and strengthening the learning dimension of ISATCOVE³, ETF has been working on unlocking existing resources that can help vocational education and training (VET) providers in any stage of vocational excellence. From a survey that ETF disseminated among members in ENE⁴, the CoP CoVE⁵, EVBB⁶, EfVET⁷ and EVTA⁸, it seemed that there is a request for more specific resources addressing two specific challenges. In first place, “enhance collaboration with the private sector to design and deliver relevant and responsive training programmes”, while the second challenge is to “utilise innovation, smart specialisation, and socio-economic development as leverages to build skills ecosystems”.

To inspire centres that have the ambition to develop themselves as CoVEs, ETF has initiated a study of four case studies based on existing practices in vocational excellence. The case studies focus on the challenges described above: building partnerships, stakeholders’ involvement and development of partnerships towards ecosystems. The four centres were visited on-site, and interviews were conducted with all stakeholders involved to provide a 360-degree overview. This means that not only the point of view of the coordinator of the Centre of Excellence (CoE) is highlighted, but also the vision and point of view of private sector partners, teachers involved in the curriculum development and training provision, students and, if possible, national or local governments.

To select the case studies, the following criteria were applied:

- 1) Links with the two challenges: (1) “enhance collaboration with the private sector to design and deliver relevant and responsive training programmes”; (2) “utilise innovation, smart specialisation, and socio-economic development as leverages to build skills ecosystems”.
- 2) Years of existence: to increase the likelihood that selected CoVEs have established results, have set up industry networks and have embedded ‘new’ processes in their way of working, years of existence was selected as an important criterion.
- 3) Regional representation: to ensure a geographically balanced representation, a mix of EU Member States and ETF partner countries were selected. In this selection, special attention has been given to an east-west and north-south balance.
- 4) Sectoral representation: in the selection of case studies, attention has been given to ensuring a balanced representation in terms of sectors (e.g. technical innovations and socio-economic development).

The case study report gives a description of each case study, including the background of the national VET system. This helps to understand the functioning of the specific CoE and puts its vision and strategy in the right context. After the description of the general context, a synthesis is made of the four case studies, focused on the functioning of:

- Management, organisation and funding.
- Partnerships and stakeholder involvement.
- Involvement of staff and students in vocational excellence.
- Curriculum development and training delivery.
- The role of the centre towards the development of ecosystems.

³The International Self-Assessment Tool for Vocational Excellence | [ISATCOVE: Driving Vocational Excellence through Self-Assessment and Collaboration | Open Space](#)

⁴<https://www.etf.europa.eu/en/what-we-do/vocational-excellence-ene>

⁵<https://www.copcoves.eu>

⁶<https://learning.evbb.eu>

⁷<https://efvet.org>

⁸<https://www.evta.eu>

1. Summary of findings

The four CoVEs that represent different countries have different approaches to achieving vocational excellence. This highlights that there is no single route towards vocational excellence. In some of the cases, the centres started with government and EU grants such as the Erasmus+ funded CoVE

grants; in others, there is the top-down appointment of CoEs by national policymakers. This chapter will highlight the different approaches reflected in the four case studies based on a selection of common themes that characterise vocational excellence.

1.1 Management, organisation, and funding of CoVEs

The analysis of the case studies reveals diverse management structures, funding sources, and governance models across the investigated CoVEs. At CIV Water, which manages the PoVE Water Erasmus+ funded CoVE project (Netherlands), management involves a flexible governance framework, embedding industry, educational institutions, and government agencies. They do so while being embedded within Firda (VET centre) but operating independently. Their positioning within a VET centre, while being independent, provides them with a unique position to actively engage with industry and vocational education partners, in this case Firda, Yuverta, and Aeres, while maintaining a neutral position. Here, there are also similarities with the case from Egypt, where a private sector organisation (Ta'Heal) embeds itself within a VET centre. Ta'Heal forms a bridge between industry, education and government and is involved in the vocational education institute at two levels. Firstly, Ta'Heal oversees curriculum development, teacher training, and human resource management of the VET centres it manages, and secondly, they play an advisory role at the management level, where they act as a liaison between industry and education. At this level, they work together with school principals and governance boards to manage day-to-day operations. At the other end of the spectrum, in Moldova, the government appoints CoEs per industry sector. Such CoEs are mandated by the MoECR to advise on education and sectoral policies, to approve curricula of other VET centres, to take care of the professional development of teachers in their sector, and to keep current curricula in line with labour market demand. This is a unique position among the cases that were studied, placing them at the heart of the VET ecosystem. This approach has been illustrated by the Centre of Excellence in Economics and Finance (CEEFF).

Financial sustainability varies between the selected cases. CIV Water relies on combined government subsidies, European funding, and private sector contributions. They are, on the one hand, dependent on project-based funding, which can be a vulnerability. However, on the other hand, it provides CIV Water with a degree of autonomy and neutrality, which improves its effectiveness.

Ta'Heal (Egypt) demonstrates a centralised project management model, overseeing multiple Applied Technology Schools (ATs), largely funded by private-sector investments and international grants. This method of funding is, on the one hand, sustainable, as long as the private sector partners benefit from their cooperation. On the other hand, it creates a degree of liability to private sector partners to deliver, for instance, a steady flow of qualified graduates.

AKMI, with Tour X, presents yet another example. As a private VET provider without state funding, AKMI is primarily financed through students' tuition fees. Tour X, meanwhile, benefits from dedicated funding through the Erasmus+ Programme for a period of four years to help set up tripartite knowledge triangles that better connect education providers, sector representatives and public authorities. While the Erasmus+ funding serves as kick-starter funding to develop regional skills ecosystems, TourX will need to look for alternative funding arrangements to make the knowledge triangles financially sustainable in the long term.

CEEFF Moldova operates under a national framework with funding and incentives primarily derived from governmental support and international collaborations as well as student fees. Their funding is the most structural, coming from the MoECR. Yet, this funding still does not always meet the needs that come with the appointment as a CoE in Moldova.

1.2 Partnerships and stakeholder engagement

All cases show that robust multi-stakeholder partnerships are a critical factor in achieving vocational excellence. There are three distinct stakeholder categories that collaborate within CoVEs. Namely, private, public, and non-governmental organisations (note that education partners here can fall under private or public partners). These partnerships with private companies, government agencies, and non-governmental organisations ensure the relevance, quality, and sustainability of vocational education programmes across all the case studies, fostering a close alignment with labour market needs and providing students with the skills required for successful careers and a more fulfilling life. Below, we illustrate how the cases cooperate with private and public partners.

Firstly, private sector involvement is key to achieving vocational excellence. This can be on a more incidental basis, such as cooperation within projects, curriculum development, training provision or internships involving formal agreements. Alternatively, it can be more structured in the form of VET ecosystems, which may evolve organically from prolonged partnerships or through strategic decision-making from public and private sector stakeholders who see the need to (re-)align VET with the skills needs of the future. This strategic positioning of VET in terms of smart specialisation can lead to innovation and boost socio-economic development.

In CEEF, for instance, the private sector contributes through curriculum development, internships, and business plan competitions, further bridging the gap between education and employment.

CIV Water excels through active industry involvement in curriculum co-design and providing real-world projects for learners to work on, ensuring alignment with labour market needs.

Ta'Heal illustrates an effective PPP model, explicitly designed to bridge gaps between education

providers and industry stakeholders such as Nahdet Misr and Jaz Hotel Group, which offers guaranteed employment to ATS graduates.

The knowledge triangles approach followed by TourX/AKMI provides a structured format to promote a new way of collaboration between education providers, the tourism sector and public authorities - which can be particularly useful for those countries in which the level of collaboration between the public and private sector is typically at a low level. In addition to these regional skills development efforts, Tour X has also introduced a second layer of partnerships between CoVEs at the transnational level to create a space for regionally oriented organisations to enrich their work through international collaboration.

Secondly, strong engagement with governmental bodies is evident in all case studies. Their engagement with governmental bodies ranges from receiving funding from public authorities to exchanging policy guidance with local and national authorities. In Moldova, next to the structural funding CEEF receives from the MoECR, CEEF collaborates with the ministry to provide policy advice and align training programmes with industry priorities.

In CIV Water, regional and national authorities provide strategic support and funding, ensuring the programmes are in line with national priorities.

Ta'Heal works closely with the Ministry of Education and Technical Education (MoETE) for curriculum approval and the appointment of schools as ATSS. The ministry also provides teachers for subjects such as Arabic language and culture, as well as maths.

Each case study underscores that maintaining sustainable PPPs requires clear role definitions, mutual benefits, continuous engagement, and transparent communication strategies.



1.3 Involving staff and students in vocational excellence

Staff and student involvement is crucial for the effectiveness of CoVEs. Staff and students in the case studies play pivotal roles beyond traditional education delivery, contributing to curriculum development, industry engagement, and governance. At CEEF Moldova, staff are involved in research, curriculum updates, and governance structures like the Administrative and Teachers' Councils, ensuring that educational offerings remain aligned with industry needs. Students participate in extracurricular activities such as business plan competitions and real-world projects, enhancing their practical skills and professional exposure. At CIV Water (Netherlands), staff collaborate with industry partners to co-develop curricula and engage in continuous professional development, transitioning from traditional teaching to a coaching-based model that supports industry-driven, project-based learning. Such activities, albeit part of the education provision, contribute significantly to building and maintaining partnerships, which is integral to CoVEs. Both students and staff from CIV Water actively participate in industry-driven projects and international collaborations, gaining valuable practical experiences and skills. Continuous feedback mechanisms and opportunities for the co-design of curricula and projects enhance their

motivation and skill development. Ta'Heal similarly encourages significant involvement of staff and students through real-life training simulations, structured internships, and active industry engagements. Staff development is rigorously implemented, with regular professional training to update their skills and competences, while students benefit from extensive hands-on industry exposure. Regular assessment and feedback from industry partners ensure continuous alignment of educational content with labour market needs. VET staff at Ta'Heal's ATs are involved to a lesser extent in curriculum design because this is overseen by the staff of Ta'Heal and not VET staff. In the case study of AKMI/TourX, staff involvement has not been described as much as in the other examples, yet study visits for staff are seen as a very valuable capacity-building tool for educators at AKMI. These activities allow staff not only to learn how teaching and learning take place in other tourism schools but also to reflect on their own teaching practice as well. Together, the four cases illustrate that the involvement of staff and students is beneficial to building healthy partnerships, exposing staff and students to new practices, and helping keep education on track with regional innovation.

1.4 Curriculum development and training delivery

Across the examined CoVEs, the importance of aligning the training programmes with labour market needs is reflected in the approach to curriculum development and training provision, although specific practices vary significantly. At CIV Water, the curriculum is developed collaboratively, actively integrating industry input to ensure the provision of relevant, practical skills. Their approach emphasises hybrid learning and work-based learning, where classroom theory is combined with hands-on experiences. Students frequently engage with industry-driven projects, allowing them to address real-world challenges and develop skills directly applicable to current water sector demands. Modules such as "Future-Proof Water Management", which are co-designed with local authorities and industry, illustrate their proactive approach to addressing future industry requirements, particularly in terms of sustainability and climate adaptation.

In Egypt, Ta'Heal similarly emphasises a collaborative curriculum development approach involving private sector partners. They incorporate practical industry experiences through realistic simulations, exemplified by Nahdet Misr ATS, which offers housekeeping programmes in replicated hotel rooms and culinary training in kitchens designed to closely mirror those of their private sector partners. Additionally, their curriculum integrates digital and

entrepreneurship skills, aligning training directly with labour market demands. Regular feedback loops with industry partners ensure continuous adaptation, allowing for a prompt response to evolving industry requirements.

Greek VET curricula allow for limited flexibility in adapting contents at the provider level. AKMI relies on applying innovative teaching methods to ensure a high-quality learning process for its learners. This is, for example, done through Hospitality Labs that replicate real working environments in the hospitality sector (e.g. fully equipped hotel rooms in different styles or a hotel reception area), alongside a pedagogical concept that focuses on experiential learning.

CEEF Moldova positions itself strategically within the vocational education landscape through proactive labour market research and frequent curriculum updates. Their position and status as a CoE in Moldova enables close collaborations with private sector companies and facilitates the continuous alignment of curricula with emerging trends in the finance and technology sector. CEEF also expands its educational scope to include lifelong learning opportunities and professional certifications, further enabling individuals

to update their skills continuously to match industry advancements.

Furthermore, they play a role in the approval of

new education programmes at VET colleges in their sector. Across all cases, industry collaboration is a critical factor in curriculum relevance and graduate employability.

1.5 Building skills ecosystems that work towards a future-proof labour force

Building robust skills ecosystems involves strategic collaborations between education, industry, and government, creating sustainable environments that foster vocational excellence. CIV Water exemplifies this by establishing multi-stakeholder networks, where continuous engagement with industry, educational institutions, and policymakers ensures the relevance and sustainability of vocational training.

Ta'Heal strengthens the skills ecosystem through structured PPPs, effectively bridging gaps between industry demands and educational provision. Their active engagement with industry and government agencies facilitates the development of a responsive and sustainable vocational education system.

CEEF Moldova enhances the skills ecosystem through national and international collaborations, actively participating in policy design, curriculum innovation, and capacity-building initiatives. Their central role within Moldova's vocational education

framework positions them as key drivers of skills development and economic growth.

TourX is in the process of building a skills ecosystem that addresses tourism workforce demands through targeted collaboration between VET systems and the tourism industry. To do so, it designs innovative training modules, upskilling pathways, and micro-credentials, supported by a Competence-Based Curriculum Design Box for employers and providers. Note that these short-term partnerships on education design and delivery form the foundation of more structural agreements and cooperation that constitute a skills ecosystem. Furthermore, through regional skills, WatchTower TourX monitors sector-specific skills needs, complemented by a self-assessment tool to identify skills gaps. These combined efforts ensure that skills provision at AKMI is future-proof and serves the needs of the Greek tourism industry.

1.6 Operational challenges and best practices

Common operational challenges are identified across the four case studies:

- Aligning education programmes with rapidly changing industry needs.
- Securing sustainable funding.
- Managing multi-stakeholder governance complexities.

As success factors, the four practices emphasise different aspects:

- CIV Water highlights the importance of independence and neutrality in stakeholder engagement, agility in adapting educational content, and financial diversification strategies.
- Ta'heal emphasises clearly defined roles within PPP structures, robust quality assurance practices, and continuous curricular adaptation as effective responses to operational hurdles.
- TourX is deeply embedded in key EU projects and initiatives, particularly through its involvement with the Pact for Skills Large-Scale Partnership for Tourism, which now includes over 70 members. This integration has already led to new funding opportunities and collaborative projects that enhance the initiative's sustainability. This clearly shows that TourX is not a stand-alone initiative but strongly embedded into a set of

different initiatives aimed at developing and providing the skills that the European tourism sector requires to thrive.

- Moldova's CEEF underscores governmental policy support, incentives for industry participation, and structured dual education models as successful practices addressing operational challenges.

Each CoVE demonstrates the necessity of ongoing stakeholder dialogue, flexible curriculum models, and proactive management strategies to sustain excellence.

These transversal findings underscore the importance of adaptive management in responding to the ever-changing needs of the labour market, keeping up with innovation, and implementing government policies adequately. Robust stakeholder partnerships, practical curriculum design, and active staff and student involvement are pivotal elements in shaping successful vocational excellence initiatives.

2 Case 1: Firda and CIV Water





2.1 Centre of Vocational Excellence: Firda and CIV Water

CIV Water was founded in 2013 and financed via national funds as one of the first Centres of Innovative Craftsmanship (Centrum voor Innovatief Vakmanschap (CIV⁹)) to support innovation for water education in collaboration with triple-helix partners (from education, industry and government). The aim was to develop a regional skills water ecosystem in the northern part of the Netherlands and develop new educational programmes that better align with the needs of the labour market. The founding fathers of CIV Water were Vitens (drinking water company) and Wetterskip Fryslan (semi-governmental organisation (water board) responsible for regional level water management) on the labour market side, and on the educational side, MBO Life Sciences, offering VET programmes, amongst others, in the area of water. For the VET schools, the objective of CIV Water was clear. As expressed by a VET school representative:

“CIV Water had two main goals for us: first, to connect major water companies like Vitens and water boards with education; and second, to develop educational approaches that allow these collaborations to work in practice.”

2.1.1 Description of the national VET system in the Netherlands

The Netherlands has a well-structured VET system designed to prepare students for the labour market through close industry collaboration.

VET is offered by regional training centres (ROCs), sector-specific vocational colleges, and private training institutions. VET institutions offer qualifications at four levels, ranging from entry-level assistant training to specialist and managerial roles (NQF/EQF levels 1-4)¹⁴. All VET programmes have nationally agreed learning outcomes, defined in collaboration between the education sector and the labour market stakeholders, and described in the Qualification Files (Kwalificatiedossiers). These learning outcomes can be obtained through two different pathways, namely, the BOL (school-based) and BBL (work-based) learning pathways. BOL programmes primarily involve classroom-based learning supplemented with internships (between 20% to 40% of the total programme duration),

CIV Water is housed at the ‘WaterCampus’ in Leeuwarden (Friesland, the Netherlands). On the WaterCampus, different research and education institutions are present, covering VET institutions, universities of applied sciences and universities (including a PhD graduate school, Wetsus¹⁰).

MBO Life Sciences was a cooperation between two VET institutions operating in the northern province of Friesland. Both these VET institutions have been integrated (or merged) into larger VET institutions, Firda¹¹ on the one hand and Aeres¹² on the other. Firda is a (very) large general VET college, offering a wide range of VET programmes. Aeres is a more specialised agricultural VET college. Institutionally, CIV Water falls under Firda VET college, but it has the autonomy to run its own strategic orientation. CIV Water, however, works with both Firda and Aeres departments and teachers to run its operations.

Vocational excellence in the context of CIV Water is linked to agile craftsmanship (wendbaar vakmanschap¹³), offering rich hybrid learning environments and working together with different partners to solve emerging education and skills-related challenges in the water sector.

while BBL pathways require students to work at least 60% of the time in a company while attending classes part-time. Training programmes are co-developed with businesses to align educational content with sectoral skill demands. Many students undertake internships or apprenticeships with private-sector partners.

VET providers (ROCs) have a high level of autonomy. While at the national level, the ‘what’ of VET programmes is defined (i.e. the Qualification Files), VET providers, in cooperation with companies, can themselves decide on ‘how’ these learning outcomes can be delivered. Furthermore, VET institutions can actively participate in public-private partnerships (PPPs), which can facilitate industry-driven innovation in education. These partnerships allow training programmes to remain relevant to evolving market needs.

⁹Centra voor Innovatief Vakmanschap (Centres for Innovative Craftsmanship) were established by a Dutch initiative focused on enhancing vocational education by fostering collaboration between educational institutions, businesses, and research organisations. Its primary aim is to develop and implement innovative training programmes that align with the evolving demands of the labour market, ensuring that students acquire the advanced skills and practical knowledge required for their professions.

¹⁰<https://www.wetsus.nl/>

¹¹<https://www.firda.nl/>

¹²<https://www.aeres.nl/>

¹³Wendbaar vakmanschap (Agile Craftsmanship) refers to the ability of professionals to adapt swiftly and effectively to changing demands and circumstances in their field of expertise. It emphasises continuous learning, flexibility, and the development of a broad skill set that enables workers to navigate technological advancements, evolving job requirements, and unpredictable challenges.

Agile Craftsmanship combines a strong foundation of specialised skills with the versatility to apply them creatively in various situations, ensuring long-term employability and resilience in a dynamic labour market. See for instance: Ruimte voor Wendbaar Vakmanschap (n.d.), Ruimte voor Wendbaar Vakmanschap: begeleiden van wendbaar vakmanschap in hybride leerwerkomgevingen: <https://husite.nl/ruimtevoorwendbaarvakmanschap/ruimte-voor-wendbaar-vakmanschap/>

¹⁴VET programmes in the Netherlands vary in duration: Level 1 (entry-level) takes around 1 year, Level 2 (basic vocational) takes around 1 to 2 years, Level 3 (professional) takes around 2 to 3 years, and Level 4 (middle management or specialist) takes around 3 to 4 years.

One of the hallmarks of the Dutch VET system is its responsiveness to labour market changes. A stakeholder from the water industry remarked:

“What makes Dutch VET education unique is how agile it is. The training institutions work closely with us to ensure students acquire the exact skills we need in our workforce.”

2.1.2 Education pathways

In the Netherlands, children begin their education with eight years of primary education (basisonderwijs), typically starting at the age of 4 or 5. After completing primary school, pupils move on to secondary education, which is divided into different tracks based on academic ability and interest. One of these tracks is pre-vocational secondary education (VMBO), a four-year programme usually completed around the age of 16. VMBO combines general education with vocationally oriented components and leads to a diploma that grants access to senior secondary vocational education and training (MBO). The MBO system (middelbaar beroepsonderwijs) forms the backbone of VET in the Netherlands and is structured into four qualification levels:

The Dutch VET sector has been, since the mid-1990s (introduction of the VET Act (Wet Educatie en Beroepsonderwijs) and related reforms), subject to major institutional reforms and mergers. In the context of this case study, this also played a role as two associated VET institutions merged with other VET institutions, changing the dynamics between the VET institutions (as will be explained in more detail below).

- Level 1 (Assistant training) – 1 year, EQF level 1
- Level 2 (Basic vocational training) – 2–3 years, EQF level 2
- Level 3 (Professional training) – 2–4 years, EQF level 3
- Level 4 (Middle management/specialist training) – 3–4 years, EQF level 4

Graduates from MBO level 4 can progress to higher professional education (HBO) at universities of applied sciences, where they can pursue bachelor’s degrees (EQF level 6). This clear progression pathway ensures strong vertical mobility within the Dutch education system and contributes to the attractiveness and status of vocational education, providing VET students with real opportunities for lifelong learning and career development.

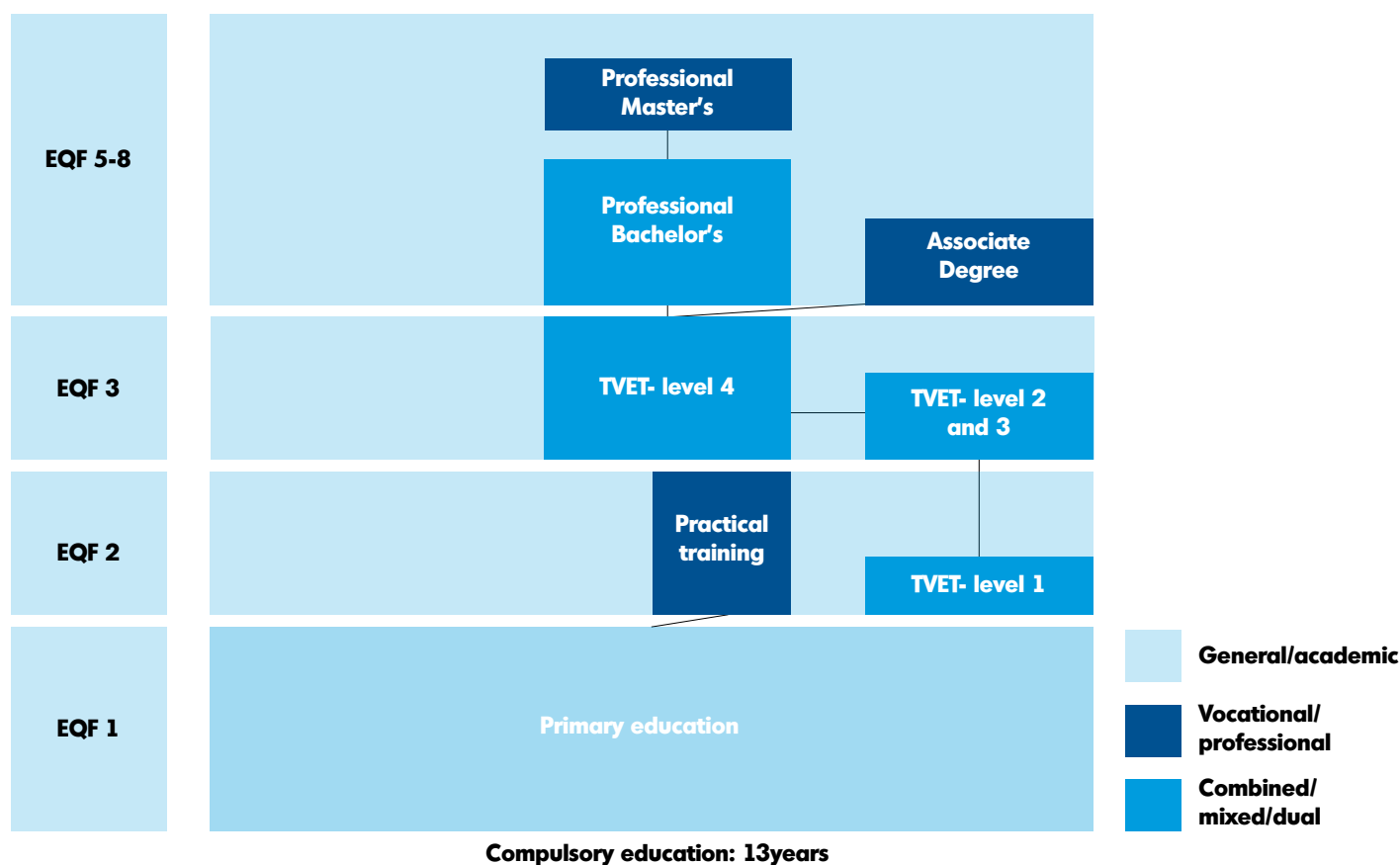


Figure 1: Education pathways in the Netherlands.
Source: UNESCO-UNEVOC (2025)

2.1.3 Erasmus+ PoVE Water project

The water education ecosystem that was developed attracted the attention of the European Commission and inspired the European Commission's CoVEs call under the flag of Erasmus+. In this call (2019), CIV Water led the pilot PoVE Water pilot project and the follow-up PoVE Water Scale-up project. Initiated in 2019, the PoVE Water project¹⁵ aimed to establish transnational cooperation networks for vocational excellence in the water sector. CIV Water led both the pilot and follow-up PoVE Water Scale-up initiatives, focusing on international best practices, digital learning innovations, and sector-specific skills

development. One of the educators involved in PoVE Water explained:

"We saw this as an opportunity to go beyond national collaboration and engage with European partners facing similar skills challenges. The international component adds tremendous value to our students' learning experiences."

2.2 Management organisation and funding of CoVEs

CIV Water operates within a multi-stakeholder governance framework designed to ensure effective collaboration among key partners. These include:

- Education providers (Firda, Aeres): Responsible for developing VET curricula, delivering training, and ensuring alignment with national educational frameworks. The education providers provide the educational and pedagogical expertise, which is mobilised by CIV Water.
- Private sector/semi-governmental partners (Vitens¹⁶, Wetterskip Fryslân (Frisian water board)¹⁷, Waterlaboratorium van het Noorden (Water lab of the North: WLN)¹⁸, SMEs etc.): Provide industry expertise, hands-on learning opportunities, and financial/in-kind contributions. The private sector partners provide real-work cases for students to work on and come up with specific labour market (skills) challenges for which CIV Water is asked to provide a solution (develop training programmes).

- Local and regional authorities (Province of Friesland, Municipalities, European Agencies): Offer funding, policy alignment, and strategic support.

While CIV Water is embedded in Firda, it operates rather independently, maintaining a neutral and inclusive stance towards the different key partners. An industry representative shared:

"CIV Water's independence is what makes it work so well. It's not just another school initiative; it's a platform where we, as industry partners, have a real say in shaping training programmes."

2.2.1 Human resources and engagement (and role) of staff

CIV Water consists of around 10 staff members (9 FTE)¹⁹, with only a small part of them being teachers (these teachers are seconded by Firda and Aeres). CIV Water has a core team focused on project coordination and stakeholder engagement. However, the delivery of educational programmes relies on mobilising expertise from both educational institutions and industry partners. Staff from industry and academia are actively involved in shaping content, mentoring students, and contributing to applied research projects. One key learning has been the importance of a well-resourced project team. In its early years, CIV Water operated with minimal dedicated staff, which limited its effectiveness. Over time, the structure was refined, ensuring dedicated project leaders to run

the different projects and initiatives (such as PoVE, develop the company training programmes, and student learning initiatives (see later)) and greater institutional backing.

The in-kind hours distribution provides a good overview of the involvement of different types of partners in the delivery of projects and learning programmes. It shows, for industry (werkveld), education (onderwijs), and total (totaal), both the prognosed and realised in-kind contribution in hours. What can be seen is that industry partners in 2023 delivered nearly 3,000 hours, and education partners delivered almost 2,000 in-kind hours.

¹⁵ <https://www.povewater.eu/>

¹⁶ <https://www.vitens.nl/>

¹⁷ <https://www.wetterskipfryslan.nl/>

¹⁸ <https://wln.nl/>

¹⁹ Based on Annual report 2023

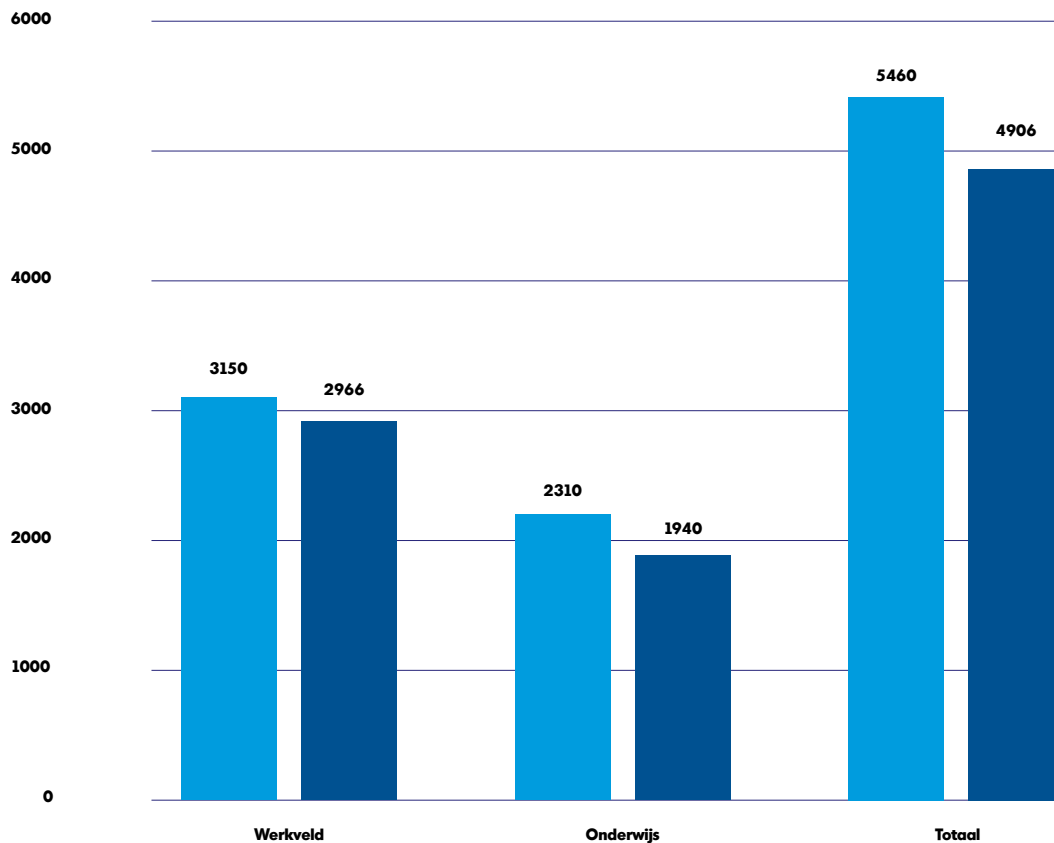


Figure 2: In-kind hours distribution (in Dutch)
Source: Annual Report 202

2.2.2 Funding sources and financial sustainability models for CoVEs

CIV Water relies on multiple funding streams, including:

- **Government grants:** Initially supported by the CIV (centrum voor innovatief vakmanschap) and RIF (Regionaal Investeringsfonds²⁰) subsidy, which enabled the launch and expansion of its activities.
- **European grants:** CIV Water has participated in Erasmus+ PoVE and Horizon 2020 projects, securing additional funding for international collaboration.
- **Regional subsidies:** The Province of Friesland finances certain initiatives, covering 20% of co-funding to benefit from the government and European grants.
- **Private sector contributions:** Companies provide financial support and in-kind contributions (e.g., staff time, facilities, equipment (use own equipment (analytical tools, for instance) during training programmes) to support training and development activities.

A key challenge has been ensuring long-term financial sustainability beyond project-based funding. To address this, CIV Water has focused on establishing industry-funded training programmes and exploring new funding sources. An example

concerns the Groene Transitie initiative (a subsidy within the National Growth Fund (Nationaal Groeifonds NGF²¹). Being involved in this initiative broadens CIV Waters' focus to include chemistry and other technical fields, all facing water-related challenges, in the context of establishing a wider PPP. The Centre for Innovative Craftsmanship Water (CIV Water) plays a key role in the PPP, which was established with support from the National Growth Fund. As part of a broader consortium, CIV Water contributes to the green transition in the water, chemistry, and food sectors through innovative education and training initiatives. With the allocated funding, CIV Water supports the development of vocational students and professionals into adaptable specialists equipped with the necessary skills and knowledge to tackle societal challenges such as climate change, environmental pollution, and the energy transition. By collaborating with partners from the food and chemical industries, CIV Water helps to expand water expertise across sectors, fostering cross-disciplinary innovations²². The green transition works to bridge the gap between VET education and applied science.

²⁰<https://www.dus-i.nl/subsidies/regionaal-investeringsfonds-mbo>

²¹<https://www.nationaalgroeifonds.nl/>

²²See: <https://www.civwater.nl/nieuws/9-miljoen-voor-groene-transitie-in-water-chemie-en-foodsector/>

2.3 Partnerships and stakeholder engagement

2.3.1 Types of partnerships with private and/or public stakeholders

Supported by the governance framework, CIV Water collaborates with a broad range of stakeholders to create an integrated and dynamic learning ecosystem (see Section 5). These partnerships include (but are not limited to):

- **Vocational education and training (VET) institutions:** Institutions such as Firda, Aeres, and Van Hall Larenstein²³ (university of applied science) play a crucial role in developing and delivering training programmes that align with industry needs.
- **Private sector companies (and semi-government organisations):** Organisations like Vitens²⁴, Wetterskip Fryslân²⁵, and

Waterlaboratorium van het Noorden (WLN)²⁶, Waterschap Noorderzijlvest²⁷ contribute expertise, provide apprenticeships, and co-finance learning projects.

- **Regional and national authorities:** These include the Province of Friesland, various municipalities, and European agencies, which provide policy guidance and financial support.
- **International partners:** Collaborations extend to countries like Estonia, Latvia, Czech Republic, and Malta, promoting knowledge-sharing, student and staff exchange, and exposure to international best practices.

2.3.2 Methods for fostering sustainable public-private partnerships (PPPs)

Sustainable PPPs are critical to the success of CIV Water and are, from the start, fully embedded in the organisation (given that the founding fathers are from both the education and labour market sectors). Key strategies for maintaining and strengthening these partnerships include:

- **Joint programme development:** Industry partners contribute actively to training programme design to ensure training programmes remain relevant and up-to-date with sectoral developments.
- **Industry-led research collaborations:** Companies identify pressing challenges, which are then addressed through applied research projects conducted in partnership with educational institutions by students.
- **Flexible training models:** CIV Water employs rich hybrid learning environments, combining online education with on-site training at company facilities to maximise engagement. Also, the laboratories and workshops of the education

providers (VET and UAS) can be used for training purposes.

An industry partner reflected on this model: “CIV Water bridges the gap between education and industry. We don’t just get trained graduates—we actively shape their learning to ensure they are work-ready upon completion.” Or as put by another industry representative:

“CIV Water ensures that education remains relevant to industry needs. They don’t just develop training courses; they work with us to identify skill gaps and tailor education accordingly.”

The impact of CIV Water on the VET schools is noticeable. As expressed by a Firda representative:

“Without CIV Water, we would never have built such strong connections between vocational schools and the water industry. These relationships now feel natural, but they didn’t exist at this level before.”

Figure 3 & 4: Photo by Maarten Noordijk, from the Wij zijn Katapult coffee table book (2024)



²³<https://www.hvhl.nl/>

²⁴<https://www.vitens.nl/>

²⁵<https://www.wetterskipfryslan.nl/>

²⁶<https://wln.nl/>

²⁷www.noorderzijlvest.nl

2.3.3 Incentives for engagement and maintaining effective collaboration with the private sector, and for the private sector with VET

Being involved in CIV Water has a number of benefits for companies, and these benefits can be considered the core of the initiative. As indicated by the CIV Water manager,

“If we do not have added value for the private partners, we have to close down.”

Maintaining long-term engagement between industry and education providers requires ongoing incentives, such as:

- **Financial and resource contributions:** Companies that invest in training programmes benefit from a steady pipeline of skilled workers tailored to their needs. Companies have the opportunity to make students (and future workers) enthusiastic about their company, which is important in labour markets that are short of skilled workers.
- **Access to cutting-edge research and innovation:** Industry partners gain access to the research facilities of the VET schools and the associated Van Hall Larenstein University of Applied Science. The students of Van Hall Larenstein are more conceptually oriented, while the VET students are more oriented on how to build specific solutions. The combination of both can help companies find solutions to practical problems they face.

- **Student engagement in real-world challenges:** Companies receive support from students working on practical, sector-specific projects and conducting applied research projects, fostering innovative solutions.

A student described the impact of these collaborations:

“Working with real companies gives us a sense of responsibility. We’re not just learning—we’re solving actual problems in the industry.” In addition, representatives from the private sector acknowledge the added value of CIV Water, especially when it comes to developing training and development programmes to train new internal professionals. This is done through programmes developed by CIV Water and the companies. In these programmes, CIV Water provides the didactical expertise while the content-related expertise is mobilised within the company, as expressed by a company representative: “There are no programmes available for this, we have to develop it ourselves and CIV Water supports us in this. The private training sector does not offer this.”

2.3.4 Feedback loops between industry and education to ensure training relevance

CIV Water acts as a bridge between vocational education and industry, facilitating knowledge exchange and applied learning. One interviewee commented on the benefits of this model:

“CIV Water ensures that education remains relevant to industry needs. They don’t just develop training courses; they work with us to identify skill gaps and tailor education accordingly.”

This feedback loop between education and industry is crucial for maintaining training relevance and workforce preparedness. Hence, the feedback loop

is not implemented through an institutionalised research approach (i.e. asking employers through surveys what they need), but it is implemented through facilitating real cooperation and joint development of programmes. This allows educational institutions, and in particular VET teachers, to learn directly from company experts about the latest knowledge developments in the sector and to integrate this into the VET programmes.



2.4 Curriculum development and skills provision

A core contribution to the formal VET providers and programmes of CIV Water is the (further) development of the 'Hybrid education vision' (Hybride onderwijsvisie). This vision of education underlies all education and training provisions offered by CIV Water and is also more and more incorporated in VET programmes at Firda and Aeres. The rich hybrid learning and pedagogical

innovations (hybrid learning environments) approach is based on the idea that students work on real-world industry challenges and that learning is competence-based, focusing on agile craftsmanship (wendbaar vakmanschap). The following figure presents the theoretical model underlying hybrid learning environments. It differentiates between four quadrants in which students learn.

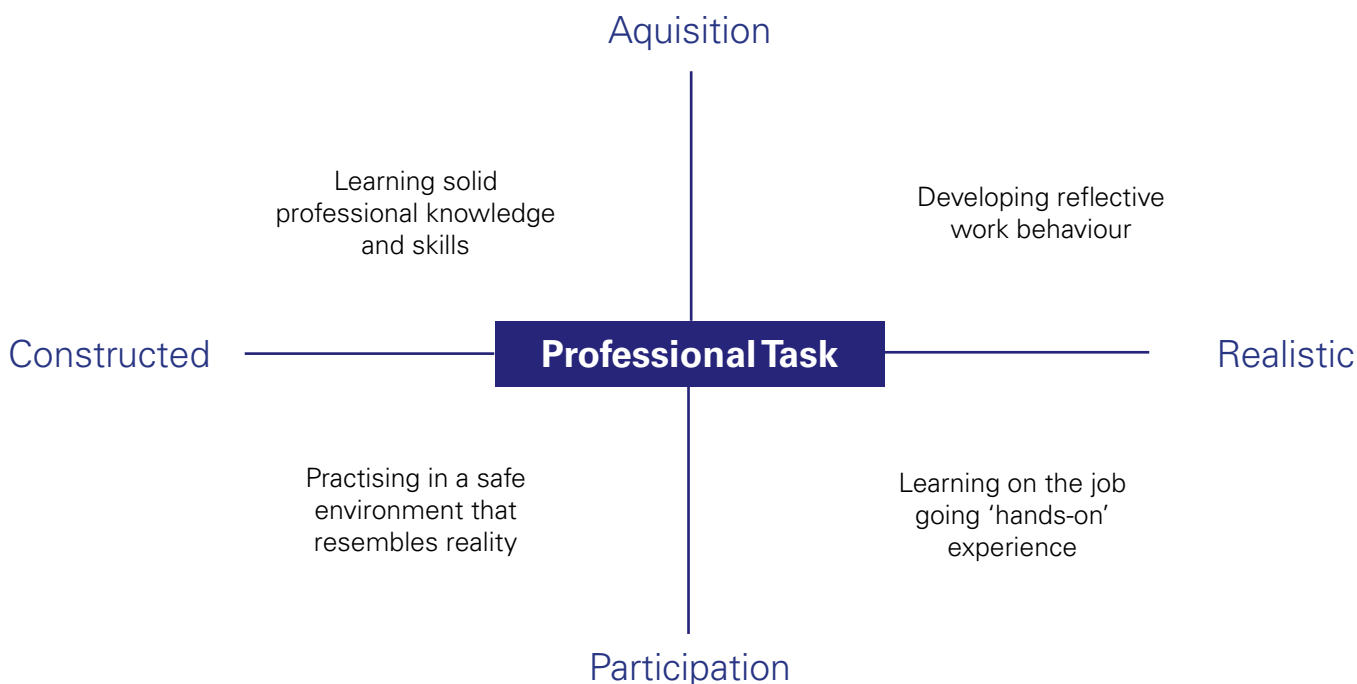


Figure 5: Rich hybrid learning environments
Source: CIV Water Annual Report 2023

In the rich hybrid learning environment, students are guided in their development within all four quadrants: acquiring theoretical knowledge, developing reflective work behaviour, practising in a safe environment, and learning on the job at companies.

Therefore, working with companies is essential for establishing rich hybrid learning environments. CIV Water is therefore continuously searching, together with companies, for meaningful projects on which students can work, both at the regional level and internationally (in the context of the PoVE Water project).

Overall, the VET schools (especially Firda) expressed that CIV Water, with the emphasis on rich hybrid learning environments and company involvement, had a large impact on the curriculum of VET

programmes. Implementing the rich hybrid learning model meant a complete overhaul of the curriculum and scheduling two days for project work, making the curriculum suitable to respond to emerging demands and opportunities from companies. As indicated by a stakeholder: "We completely changed our approach by clearing two days from the curriculum. There's no fixed programme on those days—students tackle real projects, and companies bring in real challenges."

Below, a number of the education and training programmes and approaches are presented. The type of programme is illustrated with specific examples in which the rich hybrid learning model is applied²⁸.

²⁸NB: As CIV Water programmes are based on demand, there is a strict set of (VET) programmes that CIV Water offers. The website lists all short courses, events, (elective) modules, development programmes and project weeks: <https://www.civwater.nl/trajecten/>

2.4.1 Students working in real-life challenges

Within Aeres, a student-led and organised organisation is established and tasked to find interesting projects for students to work on within their VET programme. This Environmental Advisory Bureau (Milieu Adviesbureau (MAB)) supports the students in finding and conducting projects that respond to the needs of companies. Within Aeres, dedicated time has been allocated in the curriculum of the VET department 'Water, Earth and Climate' to support this, enhancing the learning process. Notable projects are showcased on the MAB website²⁹. CIV Water also brings in projects for students to work in the MAB and also stimulates and supports water-related companies to submit projects on which students can work. Overall, CIV Water supports a more interactive, problem-based way of VET, similar to the formal programmes of Aeres and Firda. An instructor described this shift:

"We moved away from traditional lectures to a more interactive format where students tackle real projects. The engagement levels have increased significantly."

In addition, the perspective on how education should be linked to industry was well captured by an instructor involved with CIV Water:

"Education should evolve alongside industry. If we want competent water professionals, we must integrate real-world industry challenges into the learning process."

Over the past years, targeted "makeathons"³⁰ have been organised with and at various companies. These events centred around real-world cases, where students worked alongside company knowledge workers to develop potential solutions. The students then further refined these solutions in a structured project format. These makeathons (see an example in the box below) are an excellent example of a rich hybrid learning environment, blending classroom knowledge with hands-on industry experience. By working on authentic challenges in collaboration with professionals, students develop technical expertise, critical thinking, and teamwork skills—all essential for their future careers.



²⁹See: www.mab.nl. An example is provided here: Concorp Jirnsum, known for producing Autodrop and Oldtimers sweets, aims to reduce its environmental footprint by minimising residual waste at its production facility. Students are asked to advise on how to decrease residual waste, starting with prevention and exploring whether any residual streams can be diverted away from incineration.

³⁰Or Makathon. Makeathons are innovative competitions that unite "makers"—artists, craftspeople, and designers who create tangible objects rather than digital works. These events, organised by associations, fabrication labs, and educational institutions, aim to gather makers from diverse backgrounds to collaboratively explore and address a common challenge.

Box 1. Makeathon Methane: A Real-World Challenge for VET Students

On 23 January 2025, a group of vocational students took part in the Makeathon Methane, an intensive one-day challenge organised by CIV Water in collaboration with Vitens, a leading Dutch water company. The event, held in Noordburgum, aimed to tackle a pressing environmental issue: How can Vitens prevent methane from being released into the atmosphere while ensuring a sustainable removal process from drinking water?

Students worked in teams, guided by lecturers and industry experts, to develop innovative and practical solutions. The day was structured around a problem-solving cycle, including:

- Exploration of the challenge, with input from Vitens representatives
- Team-based ideation and prototyping, supported by expert coaching
- A site tour to gain insights into water purification processes
- Workshops on pitching and presentation skills
- Final presentations, where teams pitched their solutions to Vitens experts

The winning concept was further refined in follow-up sessions, leading to potential real-world applications.

Also, in international contexts, students are exposed to hackathon and makeathon-like settings in which they need to work together with students from other countries to develop solutions for real-life problems. The integration of international collaboration is particularly valued by students, with one student (Biomedical Analysis, Year 2) stating:

“The exchange in the Czech Republic was an eye-opener. It was not just about the technical skills but also about how different cultures approach problem-solving in the water sector.”

Professionals from Vitens also participated in the hackathon organised in South Africa. The participants stated the following:

“The hackathon in South Africa was an eye-opening experience. Working under time pressure in a multidisciplinary team taught us innovative problem-solving approaches.”



Figure 6: Students during an international experience. Source: CIV Water

2.4.2 Involving industry in curriculum design and implementation

CIV Water collaborates closely with companies to co-develop curricula. Industry experts provide input on course content, ensuring alignment with emerging skills needs. CIV Water realises that in order to provide professionals to the water sector, it requires close cooperation with companies to continuously assess what is needed in terms of skills, knowledge and competences. This is particularly needed as VET programmes' learning outcomes (Qualification Files (Kwalificatiedossiers)), while being developed nationally together with employers, sometimes do not fully match labour market needs. As expressed by a teacher,

“Some formal curricula don't align well with industry needs. The mandatory modules may not cover the practical skills required in the workforce, making it difficult to fully prepare students for industry demands.”

As a respondent from a company noted in addition to this: “Our analysts need more than just technical

skills. Understanding the broader water sector and emerging challenges makes them more effective professionals.” Other statements point in the same direction. An industry stakeholder noted:

“One of the greatest challenges we face is ensuring that students graduate with skills that are relevant to our rapidly evolving sector. Having direct input into curriculum design through CIV Water has helped, but more alignment is needed.”

Hence, involving companies in curriculum design and implementation is crucial.

In the formal VET context, this is further operationalised in the development of elective parts (keuzedelen). Students need to select elective parts within their VET programme. Students can select these elective parts to add specialisation to their VET programme. CIV Water developed four elective parts for the water sector. The box below provides an illustration of one elective part.

Box 2. Elective Module: Future-Proof Water Management (source: CIV Water³¹)

The Future-Proof Water Management elective module is a specialised training programme developed for vocational students interested in careers within the water sector. This module, created in collaboration with CIV Water and industry partners, equips students with the knowledge and skills required to address climate change challenges and ensure sustainable water management.

Why This Elective?

Water authorities and regional water boards are actively seeking adaptable professionals who can contribute to maintaining clean and safe water and managing flood risks. This elective provides students with expertise in climate models, water governance, hydrology, and environmental regulations, making them valuable assets to the sector.

What Do Students Learn?

By completing this 480-hour elective, students gain:

- Understanding of water systems and their interconnections
- Knowledge of water quality, hydrology, and climate scenarios
- Insights into water legislation and sustainable management practices
- Skills in GIS and automated data analysis for water management
- The ability to advise stakeholders on future water strategies

Learning in a Real-World Context

The module emphasises practical, hands-on learning where students work on real-life challenges in collaboration with companies, water boards, and experts. They apply legislation, analyse competing interests, and develop solutions for emerging water management risks.

A Valuable Step for Future Careers

Upon completion, students receive recognition on their diploma, demonstrating their specialisation in future-proof water management. This enhances their career prospects in the water industry, positioning them for roles in water authorities, consultancy firms, and environmental organisations.

In addition to companies being involved at a distance in curriculum development and through the regular joint implementation of VET programmes (through internships and work-based learning), CIV Water also facilitates and encourages the direct integration of company knowledge and expertise in the delivery of VET programmes in schools.

This is through bringing company experts into the classroom to offer guest lectures. A company representative stated: “Having our experts involved in the classroom means we get graduates who are much better prepared for the job market. It's a win-win situation.”

³¹<https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.civwater.nl/app/uploads/2023/04/Keuzedeel-Toekomstbestendig-waterbeheer.pdf&ved=2ahUKewjF9ZeznsCLAxVU3gIHHTR2LI4QFnoECA4QAO&usq=AQvVaw3XhiFpujpJlIXmOk1YmbIY>

2.4.3 Development programme

CIV Water is also developing and offering tailored company-based training programmes (so-called development programmes (ontwikkeltrajecten)). Companies in the water sector have unique challenges and training needs. To address these, CIV Water designs customised development programmes that align precisely with their specific learning objectives. Each programme is developed in close collaboration with an experienced VET lecturer from the VET schools, who ensures a clear structure, and with industry professionals who contribute practical expertise from the field. This blended approach ensures that the training remains relevant, applied, and directly beneficial to the organisation. Through these tailored programmes, professionals can expand their expertise and effectively share knowledge across teams within the company, preventing critical skills from being confined to just one individual. This enhances organisational learning and strengthens sector-wide expertise. The box below provides an example of a development programme, developed for and with Wetterskip Fryslân.



Figure 7: Students doing field research.
Source: CIV Water

Box 3. Water Quantity: A Tailored Development Programme for Regional Water Managers (source: CIV Water³²)

Each region has its own unique water management challenges. Regional water managers (rayonbeheerders) play a crucial role in monitoring and maintaining local water levels, ensuring effective water quantity management. To transfer this specialist knowledge to a new generation of professionals, CIV Water and Wetterskip Fryslân have developed the 'Water Quantity' training programme.

This 31-week course is designed for new regional water managers and other interested professionals within the organisation. Delivered through a collaborative approach, the curriculum is developed and taught by experienced lecturers from Aeres alongside industry experts from Wetterskip Fryslân. The programme consists of several modules covering all key aspects of the role, including:

- Water system management
- Monitoring, enforcement, and compliance
- Asset management
- Planning and administration
- Communication skills

A key feature of this training is the buddy system, where each participant is paired with an experienced regional water manager for practical mentoring. The course offers flexibility, allowing professionals to follow individual modules separately.

By combining theory and practice, this tailored development programme provides new regional managers with the knowledge, skills, and competences needed for their role. At the same time, it offers experienced professionals the opportunity to refresh and update their expertise, ensuring continuous learning and improvement across the organisation.

2.4.4 End-beneficiaries' reflections

Overall, students reflect positively on the rich hybrid learning environments. A student summarised their experience:

"What I appreciate the most is the diversity of learning approaches. Whether it's working in teams, using digital tools, or engaging with professionals, I feel much better prepared for my future career."

Also, company representatives are positive. An industry partner highlighted the benefits:

"These new learning formats make training more accessible and engaging, especially for young professionals entering the field."

³² <https://www.civwater.nl/trajecten/waterkwantiteit/>

2.5 Involving staff and students in vocational excellence

2.5.1 Enhancing vocational education through rich hybrid learning: the role of CIV Water

CIV Water has played a pivotal role in bridging the gap between vocational education and the professional water sector by integrating a rich hybrid learning approach. This initiative has significantly

benefited both VET teachers and students, fostering stronger connections with industry partners while modernising educational methods.

2.5.2 Engagement with VET teachers and students

CIV Water has served as a crucial intermediary between vocational education institutions and the water industry, facilitating meaningful collaborations. A team leader in laboratory technology at a vocational education institution highlighted that the rich hybrid learning model at CIV Water ensures that students develop the competences required in their future professions. Instead of following a purely traditional curriculum, which often separates theoretical knowledge from practical application, the programme actively involves industry professionals in shaping the learning process. A student reflected on the importance of industry participation:

“When we learn directly from professionals in the field, it’s easier to see the relevance of what we’re studying. It makes our education more meaningful.”

This approach has seen significant involvement from educators, with several instructors working closely with industry partners such as water companies, food production firms, and pathology laboratories. Through a series of structured sessions, they co-developed occupational tasks aligned with

real-world expectations. These sessions also included feedback from learners, ensuring that the designed competences resonated with on-the-job realities. This collaborative approach fostered a synergy where both educators and employers better understood their respective expectations, strengthening the overall training framework. Changing towards the rich hybrid learning model did come with challenges for the VET schools and their staff, as indicated by a school representative:

“At first, the shift to a hybrid model was challenging. Teachers had to move from traditional lessons to a more coaching-based role. But now, students and teachers alike see the benefits of learning through real projects.”

CIV Water also played an essential role in supporting teachers as they adapted to this new educational paradigm. Recognising that traditional instruction methods needed to evolve, the initiative helped shift the role of educators from knowledge providers to learning facilitators. Teachers underwent didactic coaching and participated in training sessions that equipped them with the necessary skills to guide students in a project-based and problem-solving manner. The transition towards a coaching-based approach was vital in ensuring that students became active participants in their learning journey rather than passive recipients of knowledge.



Figure 8: CIV Water staff. Source: CIV Water

2.5.3 Benefits of CIV Water for students and staff and VET schools

The rich hybrid learning model implemented by CIV Water has yielded numerous benefits for students, making education more relevant, engaging, and applicable to industry needs. Students who participated in CIV Water projects emphasised the value of real-world exposure. One student in environmental studies highlighted the importance of international learning experiences, where students tackled real-life challenges in diverse settings such as Denmark and the Czech Republic. Through hackathons and interdisciplinary projects, they developed problem-solving skills, engaged with industry professionals, and gained insights into alternative approaches to water management.

Another student, who specialises in biomedical analysis, shared similar experiences, noting that participating in CIV Water initiatives exposed her to new knowledge beyond the standard curriculum. Her involvement in international projects and collaborative problem-solving exercises reinforced her confidence and enhanced her professional communication skills. Moreover, she acknowledged that the exposure to diverse working methods across different countries enriched her understanding of vocational education. Overall, students have underscored the importance of internationalisation. As one student (Water, Earth, and Climate, Year 4) put it:

“The ten days in the Czech Republic taught me more than an entire year in school. It wasn’t just about theory; we had to find real solutions.”

A notable aspect of the rich hybrid model is its ability to provide students with ownership over their learning pathways. One student explained that those involved in industry-linked projects had to liaise directly with external stakeholders, negotiate project parameters, and work independently to devise solutions.

The presence of industry mentors ensured that students received practical guidance while retaining the autonomy to drive their projects

2.6 Operational challenges and best practice

CIV Water plays a pivotal role as an intermediary between VET providers and industry stakeholders within the water sector. Its primary function is to facilitate collaboration, ensure curriculum alignment with industry needs, and foster innovative educational practices. It had a noticeable impact on the participating VET schools. As indicated by a school representative:

“One of the biggest successes is that water companies no longer see VET as a secondary partner—we are fully part of the conversation, working with them on equal footing.”

forward. This setup not only improved their technical competences but also strengthened their employability skills, including teamwork, leadership, and adaptability.

CIV Water’s function extends beyond simply connecting students with industry. As described by an education manager, the organisation plays an instrumental role in shaping the evolving educational landscape. By maintaining close relationships with both businesses and educators, CIV Water acts as a ‘linking pin’ that aligns vocational training with industry needs. This is particularly crucial as the water sector, like many industries, faces an increasing demand for adaptable and responsive professionals.

Beyond initial training, CIV Water also contributes to lifelong learning initiatives. The organisation has been instrumental in developing upskilling and reskilling programmes, addressing labour market demands and ensuring that workers remain competitive in a changing landscape. As part of this effort, CIV Water has collaborated with vocational adult education divisions, exploring opportunities for professional training and re-education in response to regional labour shortages.

Overall, the hybrid learning environment fostered by CIV Water exemplifies a forward-thinking approach to vocational education. Integrating industry collaboration, hands-on projects, and adaptive teaching methods equips students with the necessary skills to thrive in their careers. Additionally, it provides teachers with the resources and support needed to transition towards a more interactive and responsive educational framework. The continued success of this model will depend on sustained industry-education partnerships and the ability to evolve in response to sector-specific needs.

However, this role comes with significant operational challenges and necessitates strategic approaches to achieve success. The insights gathered from various stakeholders—including industry representatives, educators, and students—shed light on these complexities and highlight the factors contributing to CIV Water’s effectiveness.

2.6.1 Operational challenges

The following operational challenges were identified:

1. Bridging the gap between education and industry:

One of the core challenges faced by CIV Water is effectively aligning VET curricula with the rapidly evolving needs of the water sector. Industry partners such as Vitens and Wetterskip Fryslân highlight the necessity of ensuring that students are equipped with practical and up-to-date skills. However, VET institutions operate within rigid qualification frameworks, making it difficult to implement immediate changes to curricula. Industry representatives stress that the disconnect between theoretical education and practical industry demands necessitates continuous dialogue and flexibility in programme development.

2. Maintaining industry engagement:

While industry involvement is crucial, sustaining active participation from companies can be difficult and requires continuous attention. Many businesses initially engage with CIV Water through funding or occasional project participation but do not always commit to long-term collaboration. Some stakeholders noted that while financial contributions were easier to secure, securing active involvement in mentoring, training, and curriculum development required sustained effort. Moreover, differences in company priorities and the availability of personnel to engage with educational initiatives pose additional hurdles. As the case of Vitens shows, while there is continuous engagement in developing specific training programmes, additional efforts are still required to engage Vitens in the PoVE project.

3. Financial sustainability and funding diversification:

The financial structure of CIV Water relies on a mix of public subsidies, European grants, and contributions from industry partners. While these multiple funding streams offer some stability, they also create dependency on external funding cycles. Some interviewees pointed out that securing co-financing from industry partners has been particularly challenging, especially in international collaborations where partners must justify investment in education over short-term business returns. Furthermore, reliance on government subsidies means that policy shifts can significantly impact financial sustainability. The reliance on funding from industry partners is regarded as a fundamental prerequisite to ascertain that what is done by CIV Water has added value and is appreciated.

4. Adapting to internationalisation and rich hybrid learning environments:

As CIV Water expands its international partnerships, new challenges emerge regarding cultural differences in learning approaches, but also the willingness of VET teachers to enhance and change their educational approach (and mindset). The rich hybrid learning model requires more industry engagement, project-related work and VET teachers acting more as coaches instead of teachers. For VET teachers, making this change requires additional training and institutional backing (from management). The same applied to embedding internationalisation into the VET programmes.



2.6.2 Success factors

Based on the interviews, a number of factors for success (for CoVEs) were identified:

1. Strong industry relationships and practical learning integration:

One of the defining success factors of CIV Water has been its ability to integrate industry-led learning experiences into VET programmes. The rich hybrid learning model, the 'learning by doing' model, wherein students engage in real-world problem-solving projects, has proven highly effective. For instance, students involved in international exchanges have worked on water sustainability challenges, gaining hands-on experience that extends beyond conventional classroom learning. Moreover, companies such as Vitens actively contribute to training modules, ensuring that students gain industry-relevant expertise.

2. Ensuring neutrality and independence as a linking organisation:

CIV Water has strategically positioned itself as a neutral intermediary rather than being seen as fully embedded within a VET institution (although CIV Water is organisationally embedded in Firda, it is physically at a (short) distance at the WaterCampus). This neutrality has been a deliberate choice to foster trust among both education providers and industry stakeholders. An industry representative shared:

"CIV Water's independence is what makes it work so well. It's not just another school initiative; it's a platform where we, as industry partners, have a real say in shaping training programmes."

2.6.3 To conclude

CIV Water's role as an intermediary organisation presents both unique challenges and opportunities. The ability to balance educational and industry expectations, secure sustainable funding, and adapt to evolving workforce needs requires strategic management and strong stakeholder engagement. By fostering a collaborative ecosystem that prioritises practical learning, industry alignment, and internationalisation, CIV Water has positioned itself as a critical player in shaping the future of vocational education within the water sector. However, continued efforts are necessary to

By positioning itself as a facilitator rather than an educational institution, CIV Water has successfully navigated the complexities of multi-stakeholder engagement. It acts as a 'linking pin' between businesses, VET institutions, and policymakers, enabling seamless knowledge exchange without being perceived as favouring one party over another. This strategic positioning has helped maintain trust and foster sustained partnerships.

3. Flexibility and responsiveness to industry needs:

Unlike traditional educational institutions, which may be constrained by bureaucratic structures, CIV Water has demonstrated a high level of agility in responding to industry demands. One of its key roles has been supporting the development of modular training programmes that allow for rapid curriculum updates in response to technological advancements and regulatory changes. The shift towards e-learning modules for new professionals, currently being explored with Vitens, is an example of this adaptability.

4. Commitment to continuous improvement:

A key reason behind CIV Water's sustained success is its commitment to continuous learning and improvement. Feedback from students, industry professionals, and educators is actively incorporated into programme development. The willingness to experiment with new educational formats and assessment methods, such as peer evaluations and interdisciplinary collaboration, has contributed to its dynamic growth.

enhance industry commitment, secure diversified funding, and further integrate rich hybrid learning methodologies. By addressing these operational challenges while building on its key success factors, CIV Water can continue to serve as an exemplary model for intermediary organisations such as CoVEs in vocational education.



Figure 9 Photo by Maarten Noordijk, from the Wij zijn Katapult coffee table book (2024)



Figure 10: Photo by Maarten Noordijk, from the Wij zijn Katapult coffee table book (2024)

3 Case 2: Ta'heal and Nahdet Misr Applied Technology School





3.1 Centre of Vocational Excellence: Ta’heal and Nahdet Misr Applied Technology School

Ta’heal is a private-sector organisation in Egypt that plays a key role in transforming vocational education by fostering collaboration between public institutions and private industry. Rather than delivering education directly, Ta’heal focuses on establishing and managing Applied Technology Schools, with the aim of aligning education with labour market needs. One of these schools is the Nahdet Misr Applied Technology School for Sustainable Tourism. Ta’heal brings together stakeholders from across sectors and champions a vision of vocational excellence that embraces themes such as digitalisation, innovation, and sustainability. Positioned as a bridge between policy and practice, Ta’heal supports a learner-centred, forward-looking approach to vocational training, contributing to the elevation of technical education in Egypt.

Nahdet Misr is a prominent Egyptian conglomerate focused on learning and development, spanning educational publishing, content creation, and

EdTech. As the parent company of Ta’heal, it plays a vital role in reshaping vocational education. Its key contribution is the Nahdet Misr Applied Technology School in Cairo, which specialises in sustainable hospitality. The school benefits from private sector investment in modern infrastructure and digital learning tools. A close partnership with the Jaz Hotel Group strengthens the school’s practical focus, offering students hands-on training in environments that replicate real hotel settings. Jaz also guarantees employment for all graduates, making the link between education and the labour market tangible. This collaboration helps foster a motivated learning culture and prepares students with industry-relevant skills. Through such initiatives, Nahdet Misr contributes to improving the quality and perception of technical education in Egypt while supporting youth employment and workforce development.

3.1.1 Description of the national VET system in Egypt

Egypt has the largest education sector in the MENA region, with 25 million students in pre-tertiary education³³. However, the system struggles to meet industry demands for skills and competences. Recognising the need to bridge the gap between education and industry, the government has prioritised Technical and Vocational Education and Training (TVET).

In 2018, the Technical Education 2.0 (TE 2.0) strategy was introduced to modernise curricula, improve teacher training, and strengthen industry partnerships³⁴. A recent assessment by ETF highlighted TE 2.0’s significant role in transforming Egypt’s TVET sector, demonstrating a strong political will for change³⁵. This political will has managed to open doors for innovative initiatives striving for vocational excellence.

Several pillars of TE 2.0 emphasise closer collaboration with private sector partners to ensure training programmes remain relevant. These include measures to stimulate better alignment of teachers’ skills with industry standards and evolving workforce demands, increasing employer engagement in technical education, and shifting perceptions to position the private sector as a strategic partner in technical education.

To achieve these goals, multi-partner approaches to Work-Based Learning (WBL)—both in Applied Technology Schools and Dual Systems in traditional schools— are prioritised.

Applied Technical Schools

Applied Technology Schools (ATs) and International Applied Technology Schools (IATs) emphasise WBL by integrating classroom instruction with practical, hands-on training. This approach ensures alignment with labour market needs through strong employer engagement. As of 2024, there are 76 ATs in operation, including 10 IATs.

³³ ETF (2019). EDUCATION, TRAINING AND EMPLOYMENT DEVELOPMENTS 2019 – EGYPT

³⁴ ETF (2024). KEY POLICY DEVELOPMENTS IN EDUCATION, TRAINING AND EMPLOYMENT –EGYPT 2024

³⁵ETF (2024). Assessment of the progress of the Egyptian strategy for Technical Education (TE 2.0)

3.1.2 Education pathways

In Egypt, students start their 12 years of compulsory education with 6 years of primary education, after which they complete their lower secondary education either with a basic education certificate or an Al-Azhar certificate (religious schools). Upper-secondary education is split up into three pathways: general education, religious education, and (advanced) technical education. The latter leads to the vocational education pathway, resulting in an

intermediate institute diploma after two years and a higher diploma in technology after three years. Ultimately, students can choose to progress their path in bachelor's or master's programmes at higher education institutes (see Figure 11). This pathway has recently been introduced and gives VET students in Egypt the opportunity to progress to higher education, resulting in a changing perception of the VET sector.

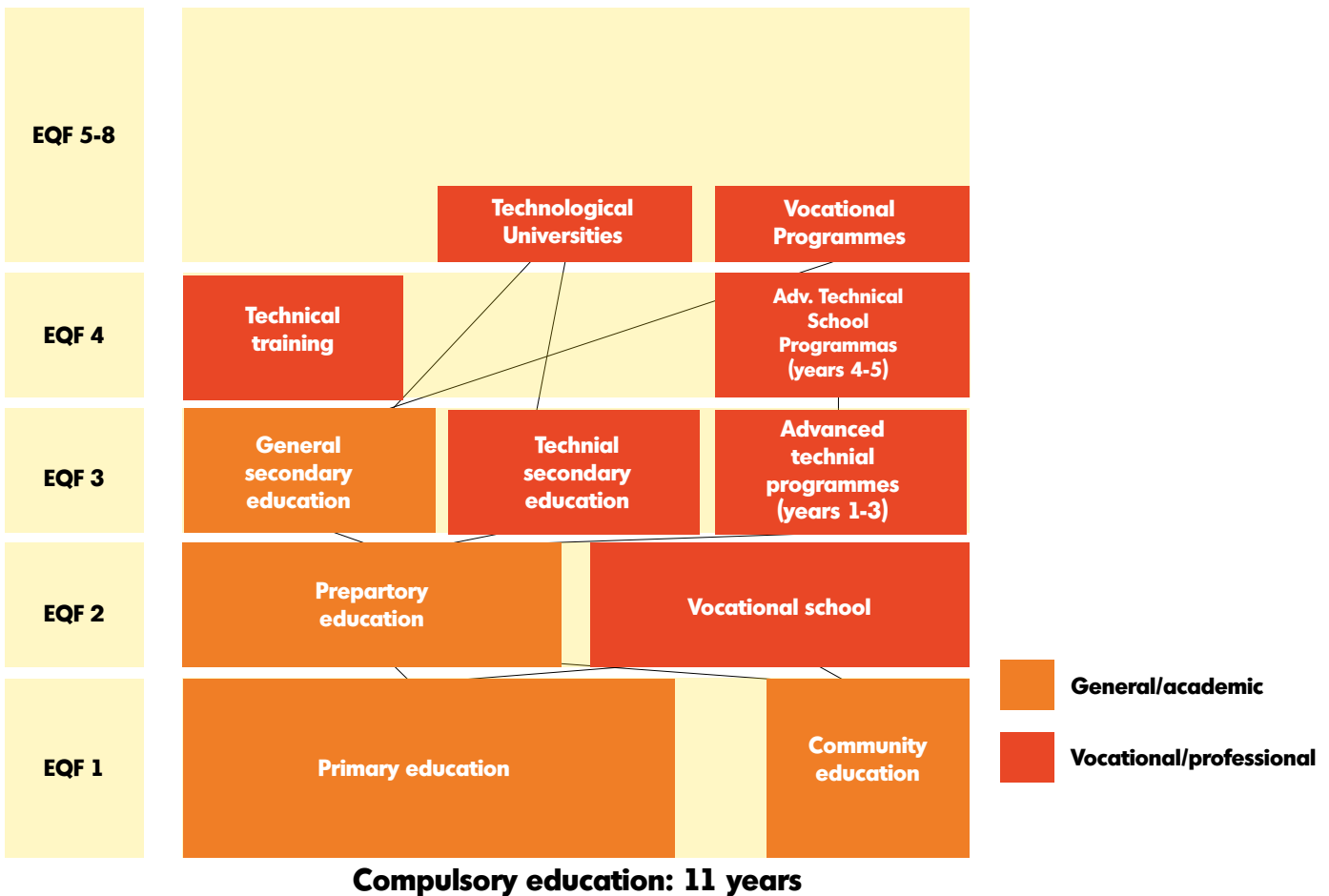


Figure 11: Education system in Egypt (source: UNESCO-UNEVOC (2025))

3.1.3 VET governance in Egypt

In Egypt, VET is centralised under the administration of the Ministry of Education and Technical Education (MoETE), which oversees all aspects of VET governance³⁶. Some relevant key functions of the MoETE are the management of PPPs, VET provider networks, financial resource mobilisation, and research and development.

At the VET level, the MoETE is responsible for curriculum development, textbook editing and printing, and strategy and policy formulation. This means that managing industry-driven VET initiatives requires a delicate balancing of interests, influence, and power between the key stakeholders.

³⁶ ETF (2024). KEY POLICY DEVELOPMENTS IN EDUCATION, TRAINING AND EMPLOYMENT – EGYPT 2024

3.2 Management organisation and funding of CoVEs

Ta'heal is a private sector organisation that strives to elevate the quality of vocational education institutes across Egypt. Ta'heal does not provide education on its own but focuses on the establishment of new Applied Technology Schools, for which they have developed their own methodology. Most

critical in this methodology is the cooperation with various public and private stakeholders and the implementation of competence-based education and training (CBET). How Ta'heal operates, cooperates with stakeholders, and manages various ATSs is explained below.

3.2.1 Governance structures and decision-making processes:

Decision-making within Ta'heal is structured across two levels:

- Project management unit (central level): Oversees curriculum development, teacher training, and overall programme implementation.
- School-level advisory functions: Works with school principals and boards to manage day-to-day operations and partnerships with industry stakeholders.

Ta'heal gets involved in the management and organisation of an ATS once the MoETE designates a building to become an ATS. From that moment, Ta'heal manages the operations and finances of a new ATS. In doing so, Ta'heal steps in with a private sector partner to renovate the facilities and lay the foundation in terms of infrastructure.

The methodology Ta'heal applies can best be described as below. Firstly, they engage in a **foundational phase** with the school and relevant governmental bodies. In this phase:

- A market analysis is carried out to validate assumptions and labour market needs set by their industry partners.
- The school infrastructure, such as classroom environments and overall aesthetic, is brought up to pre-agreed standards.
- Curricula are revamped by subject matter experts to align with international qualifications, meet local industry demands, and incorporate

life skills, business English and other foreign languages, entrepreneurship, green skills, and digital skills.

- Current staff is reskilled or upskilled where necessary, and new talent is recruited.
- An outreach campaign is launched to market the school and attract new students.
- A quality management system is set up with clearly defined quality standards and KPIs, and an EMIS system is set up.

Once the ATS is ready to admit students and start operations, the Ta'heal project team will set up a management structure at two levels. Firstly, a project management unit at the central level oversees programme development, teacher training, and the student journey, as well as support in school management and operations, including human resource management. Secondly, the Ta'heal team is involved in an advisory function at the school level, where they work closely together with the school principal and the board of trustees (BOT) (see Figure 12). At this level, relations with industry partners are managed, investments in infrastructure are secured, and support from the "project management unit" involved in programme and curriculum development, teacher training and quality assurance is provided. In their model, Ta'heal pursues vocational excellence with three cross-cutting themes: greening, digitalisation, and innovation.



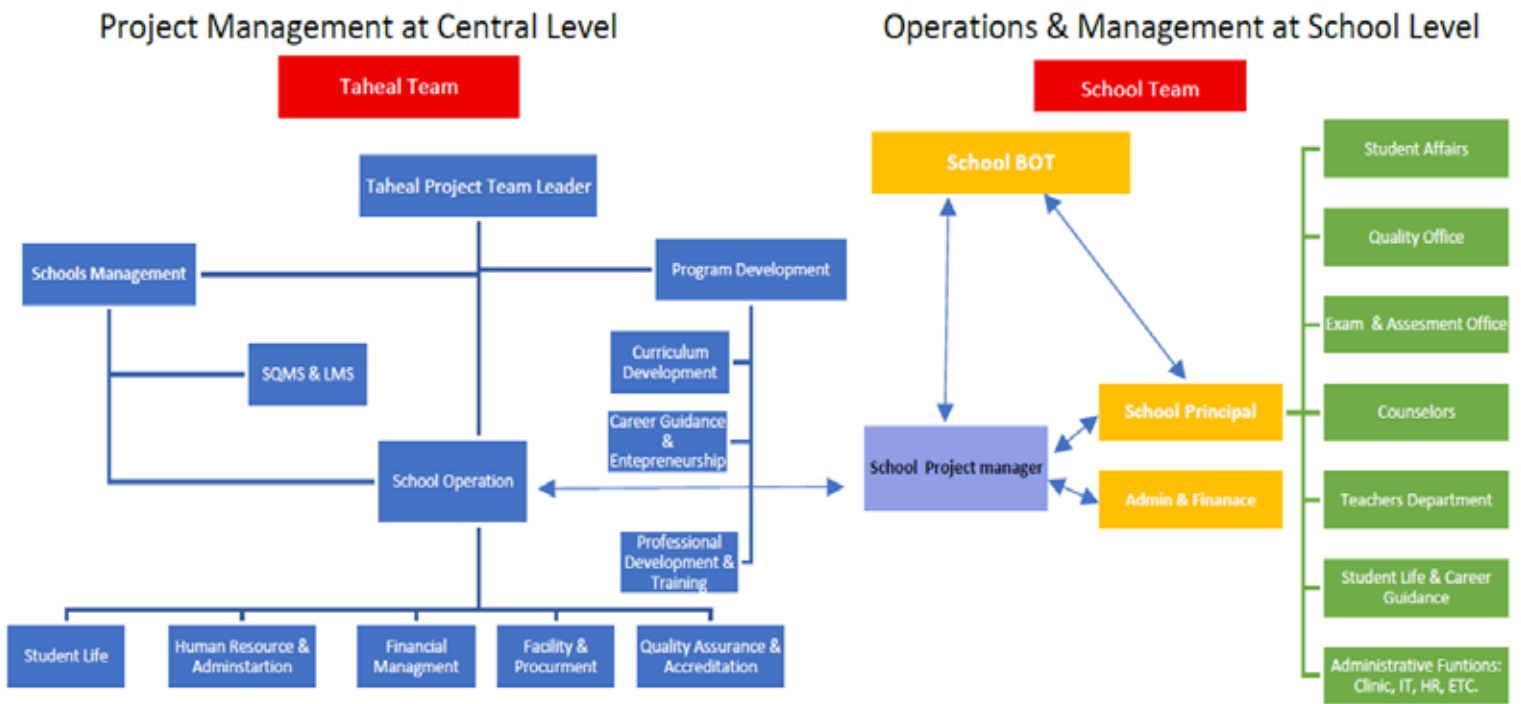


Figure 12: Organisational structure of Ta'heal and the ATS

3.2.2 Human resources and management

The project management unit oversees human resources, ensuring the recruitment of motivated and competent staff for the ATS. This includes hiring new employees alongside reskilling or upskilling existing staff as needed. For example, professionals recruited directly from the industry undergo training in pedagogical and didactic teaching methods to transition into teaching roles. Meanwhile, teachers previously employed in traditional government-

funded VET schools receive industry attachments and training in competence-based education. As a private-sector organisation, Ta'Heal offers more competitive salaries than traditional VET schools, enabling it to attract and retain highly qualified staff. Additionally, the human resources unit within Ta'Heal's project management unit is responsible for overseeing teacher training and continuous professional development for ATS staff.

3.2.3 Funding sources and financial sustainability

Being a private sector company, Ta'heal operates on the basis of fees that they collect from managing their various ATSS, international projects, and other grants that they secure.

- Private sector contributions: Industrial partners like Nahdet Misr Group finance operations and Jaz Group contribute with in-kind donations as well as investment in school infrastructure.
- Government support: MoETE funds salaries for core curriculum subjects (e.g., Arabic, English, Maths).

- International grants: European grants such as Erasmus+ and GIZ support capacity-building initiatives.
- Service fees: Schools under Ta'heal management pay service fees for operational and curriculum development support.

Nahdet Misr Group

Zooming in on the Nahdet Misr Applied Technology School (one of the ATSs managed by Ta'Heal), the school is funded by the Nahdet Misr group, a learning and development conglomerate that is involved in, among others, the publishing of learning materials, developing learning content, and EdTech incubation. Nahdet Misr is, at the same time, the mother company of Ta'heal.

This private-sector funding gives the ATS a degree of autonomy, within the boundaries of the MoETE, which allows Ta'heal to innovate, attract talented staff through competitive human resource management (i.e. higher wages), manage their own student selection processes, and offer additional labour market responsive curricula in their teaching programmes. By doing so, Ta'heal manages to induce a culture of change within the ATS, meaning that staff are eager to learn, care for their pupils, and willing to engage in activities that fall outside of the scope of their curricula and lessons (more in Chapter 5).



Figure 13: Nahdet Misr ATS.
Source: authors

3.2.4 Challenges in funding and sustainability

Ta'heal faces challenges in financial sustainability due to its reliance on donor-funded projects and service fees. To mitigate this, Ta'heal and Jaz Group are considering a student tuition fee at Nahdet Misr

ATS to lessen dependency on donors and reduce vulnerability to economic changes affecting industry partners' funding capabilities.

3.3 Partnerships and stakeholder engagement

Ta'heal has established a robust network of partnerships and stakeholder engagement, which plays a crucial role in its ability to deliver high-quality vocational education and training aligned with industry needs. These collaborations span across various sectors and levels, encompassing industry partners, educational institutions, and government bodies. Ta'heal actively leverages the Technical Education 2.0 (TE 2.0) strategy, aligning their initiatives with national priorities and demonstrating commitment to government objectives.

Ta'heal engages with the following types of partners:

- Public sector partners (Ministry of Education and Technical Education - MoETE): Oversight and curriculum approval, funding of the general education courses (e.g. Arabic, maths, and culture).
- Private sector partners (e.g., Jaz Hotel Group, Nahdet Misr Group): Funding of operational costs, infrastructure and tools and equipment. They provide work-based learning opportunities, and co-design and deliver training programmes. The Jaz Group, in particular, has an agreement with Nahdet Misr ATS to guarantee employment for all its graduates.
- Research institutions: Labour Market Economics Department of the American University in Cairo (AUC), which collaborates in workforce analysis and training needs assessments.
- International collaborations (e.g., Erasmus+ partners, GIZ): Curriculum benchmarking, accreditation, exchange programmes, capacity building.
- Non-governmental organisations and associations (e.g. Chefs Association, Industry Chambers, Burns Victim Hospital, various international cultural centres, AHK Chamber of Commerce) are involved in the development and updating of curricula or partake in project-based learning activities. The latter counts mostly for the cultural centres and the burns victim hospital.

3.3.1 Sustaining Public-Private Partnerships (PPPs)

Ta'heal was established to bridge the gap between education and industry, which is a primary motivator for stakeholder engagement. By directly addressing a recognised need, they attract partners who want to contribute to workforce development, gain access to highly skilled employees, and be involved in the design of training content. They have a well-defined operational model and division of responsibilities at both the project management (central) level and the school level. This clarity ensures that each partner understands their role and contributions, as well as how different stakeholders contribute to the overarching objectives of Ta'heal.

Ta'heal sustains its relationships with these partners through:

- Formal agreements: establishing clear (MoU) agreements outlining the roles, responsibilities, and commitments of each partner, similar to the agreement between Jaz Group and Ta'heal ATS to guarantee employment for graduates. This agreement creates a strong “win-win” and motivates both partners to guarantee quality of education.
- Joint curriculum design and training delivery: industry experts are directly involved in

curriculum development to ensure relevance and alignment with current industry needs. They are closely involved in work-based learning activities, internships, and project-based learning activities.

- Financial sustainability: exploring diversified funding models, including government support for core subjects, private sector contributions for operational costs and infrastructure, international grants, and potentially student tuition fees (as explored by Ta'heal and Jaz Group).
- Tailoring their education to the needs of their partners: Ta'heal creates a learning environment that closely resembles the working environment of their private partners. One example is that some of the classrooms are designed to exactly simulate the hotel rooms of the Jaz Hotel Group. This allows students to get used to their work environment in preparation for their internship and later employment.
- Frequent industry visits: Ta'Heal project managers visit their industry partners every week. For example, to accompany students at WBL experiences or to gather input from the industry for their education quality assurance.

3.3.2 Feedback loops and training relevance

To ensure training relevance as well as the quality of training delivery, Ta'heal evaluates the curricula, training programmes, teacher performance, and student experience through surveys. These surveys are sent out externally as well as internally, providing multiple perspectives on the relevance of their training programmes. This process allows for continuous improvement and adaptation of

the curriculum to meet the evolving needs of the labour market. If industry partners identify a gap in skills, the curriculum is adjusted accordingly. In cases where the curriculum cannot be revised, extracurricular activities are organised, or extra attention to certain skills or knowledge is given during career guidance classes.

3.4 Curriculum development and skills provision

Ta'heal's approach to curriculum development and skills provision is characterised by its responsiveness to industry needs, its commitment to innovation, and its focus on developing well-rounded graduates with the skills necessary to succeed in the 21st-century labour market. The context of Egypt, with its ongoing TVET reforms under TE 2.0, requires a nuanced approach that balances national standards with industry-specific requirements. To accomplish this, Ta'heal incorporates various extracurricular activities and has developed a strong study and career guidance programme to satisfy industry skill requirements within the boundaries of nationally approved curricula.



Figure 14: Curricula developed by Ta'heal.
Source: Authors

3.4.1 Real-life challenges

Ta'heal employs several innovative training practices to enhance the learning experience and ensure that students acquire the skills requested by employers. For instance:

Hybrid learning models combine classroom instruction with practical industry exposure. The curriculum is designed to be highly relevant to the needs of the industry. Classroom instruction is contextualised with real-world examples (e.g. hotel rooms and hotel kitchens that are recreated in the ATS). Teachers ask students to present real-life challenges they encountered during their WBL experiences and treat them as case studies in the classroom environment. Such application of WBL experiences does not only provide students with hands-on training in the latest technologies and techniques; it also allows students to develop their soft skills by, for instance, engaging with customers.

Integration of theory and practice: The goal is to integrate theory and practice seamlessly, ensuring that students understand not only what to do but also why they are doing it. This approach fosters critical thinking, problem-solving, and adaptability. Practising with industry-relevant and real-world problems and situations prepares students well for their industry learning.

One student mentioned the following about this:

"I would like to work with the Jaz hotels and here I learn the right skill set to obtain my goal. I already did an internship. In preparation, I studied Business English in our curriculum, and I learned the terminology and other vocabulary necessary to communicate with guests in English. I took this practical experience with me to my internship at the Jaz Hotel. I also studied Italian language and cuisine, and I learned about new dishes they had at the hotel.

I was totally not nervous to go to work, as I gained a lot of confidence during my training in the school. For example, in communication and technical skills."



Figure 15: Practice kitchen funded and installed by the private sector partners.
Source: Authors

Ta’heal is also implementing **blended learning** approaches in the classroom, which mixes face-to-face teaching with online learning resources. Language courses can be taken and studied through an online platform developed by Nahdet Misr’s publishing company. Through this approach, the students will be encouraged to develop digital skills and learn to collaborate online as well as take ownership over their own learning processes. This approach will enable them to control their learning and seek support from teachers and industry experts when necessary.

A modular approach integrates entrepreneurship, green skills, and digital transformation into the curriculum. Ta’heal has developed stand-alone modules that are used to integrate the following cross-cutting topics in all their programmes:

- **Entrepreneurship:** Students participate in workshops on business plan development, marketing, and financial management. They then create their own business plans, which they present to a panel of industry experts for feedback and potential funding.
- **Green Skills:** Students learn about sustainable practices in their respective industries. For example, hospitality students learn about waste reduction, energy efficiency, and sourcing local and sustainable food products.

- **Digital Transformation:** Students develop skills in digital marketing, e-commerce, data analytics, and other digital tools relevant to their fields.
- **Extra Curricular:** Running a vegetable garden and integrating its harvest into menus to engage with “farm-to-fork” principles as well as learning to work with seasonal products.



Figure 16: Vegetable garden used by students in extra curricular projects.
Source: Authors

3.4.2 Industry collaboration in curriculum design and delivery

For co-designed curricula with input from private-sector stakeholders in the form of industry experts who are hired under Ta’heal, the first step is to conduct labour market needs analyses and alignment with national industry standards. Where necessary, curricula are then topped up with extracurricular activities such as summer schools, extra projects and courses that are required according to the needs of the industry partners. Ta’heal makes use of such extra curricular activities where the nationally approved curricula do not provide the space required for industry alignment.

Sometimes, new education programmes are developed. For instance, Nahdet Misr ATS and Ta’heal have developed an integral hotel facility maintenance programme that has integrated all the technical skills that are required for a hotel. Such a programme is unique in Egypt as electrical engineering courses are combined with plumbing courses or gardening skills which traditionally are separate stand-alone programmes. In addition, Ta’heal is currently developing a housekeeping programme at the request of the hotel industry, which has identified the need for more skilled

housekeeping staff in hotels that have skills beyond laundry and cleaning. In this course, they will incorporate additional skills such as stock management, customer service, and other logistical aspects that are required in the hotel industry.

Through their collaboration with the German Chamber of Commerce in Egypt (AHK), as well as Finnish partners in Erasmus+ Capacity Building projects, Ta’heal benchmarks their education programmes with international qualification frameworks. They do so, for instance, by offering German language courses for business, which is a requirement for accreditation in the German system. This benchmarking ensures that graduates from the CoEs managed by Ta’heal have internationally recognised skill sets, further increasing the likelihood of employment after graduation. This benchmarking requires a strong focus on foreign languages such as German and Business English, entrepreneurship, green and digital skills, and 21st-century skills, further distinguishing Ta’Heal ATSS+ from traditional VET schools.

Additionally, industry non-governmental partners are also involved in the delivery of training programmes, next to guest lectures and work-based learning opportunities. At Nahdet Misr, ATS cultural centres often organise projects where students learn about, for example, Italian cuisine, language and culture, providing them with relevant skills to work in hotels that cater for international guests. Another example is the collaboration with the American University of Cairo (AUC), where university students from labour market economics programmes visit the ATS to

exchange experiences with ATS students. Students from AUC come to visit to experience what vocational education is like. They learn practical skills from the students at Nahdet Misr ATS. Through this exchange, VET students feel seen as a valued part of the labour force, and the university students are exposed to the craftsmanship and skills of the VET students, positively impacting the morale of students as well as public perception of VET in Egypt.



Figure 17: Students from Food and Beverages in knife skills class.
Source: Authors

3.5 Involving staff and students in vocational excellence

Ta'Heal strived for a student-centred approach in its ATSS. Career guidance is given priority from the start of the programme to guide students toward the right career path and develop the skill set that is required for this career path and that supports personal growth. Through the mandatory work-based learning experiences as well as their internship programme, toward the end of their programme, students undergo high levels of personal growth that is recognised by teaching staff upon return to the college.

One student said the following about their work-based learning experience:

“During the training, we learned to deal with real work issues. I respected the challenge and then I tried to deal with it: how to deal with people and customers and how to depend on myself. I also learned to make drinks during my industry training.

When I came back from the school, I noticed that I had changed and discovered that I learned a lot, which sped up the process of learning in the school as well. It made me better in school and studying as well. I am more confident.”

The success of Ta'heal depends on the active involvement and commitment of its students and staff.

From the start of Ta'heal's involvement in an ATS, teaching staff follow professional development programmes and each teacher has an individualised development plan which they make based on the assessments from students and industry. These assessments are collected through questionnaires after each semester. The staff coming from the private sector is trained in pedagogical and didactical skills for effective training delivery. This way, Ta'Heal fosters high-quality instruction at their ATS.

3.6 Operational challenges and success factors

The journey towards vocational excellence has not been without its challenges. However, by addressing these obstacles head-on and leveraging its strengths, Ta'Heal has achieved significant success in transforming vocational education and training. Challenges mentioned during the interviews included:

The ownership and management structure of ATSs presents challenges in authority and decision-making. While the government officially owns the ATSs, their management is handled by Ta'Heal, with private sector partners involved in training design and delivery. This multi-stakeholder model complicates operations, particularly when introducing new training programmes, often requiring advocacy from private sector leaders and directors.

Due to Ta'Heal's complex organisational structure, coordination challenges sometimes arise. Ensuring smooth information flows between private, public and education partners may demand increased time investment and engagement from Ta'heal's leadership and its partners.

On the other hand, dependency on private-sector funding causes challenges in terms of sustainable funding. Uncertainty in long-term commitments from industry partners due to economic fluctuations or uncertainties can lead to financial constraints.

3.6.1 To conclude

Ta'heal has established itself as a leading model in Egypt's evolving technical and vocational education landscape, successfully bridging the gap between education and industry. Through structured governance, strong private sector partnerships, and a focus on work-based learning, Ta'heal equips students with industry-relevant skills. Despite challenges such as bureaucratic delays and financial sustainability, the initiative has institutionalised quality assurance, guarantees student employability,

These professional development programmes entail, for instance, regular training sessions on competence-based education (CBET), which are mandatory for both teaching staff as well as staff coming from the industry. Additionally, teachers benefit from continuous mentoring programmes, providing them with ongoing support and guidance from experienced educators and industry professionals. This means that teaching staff visit the industry to learn about new developments in the field (industry attachment). They can sign up for professional development camps, offering teachers opportunities to network with peers, share best practices, and learn about the latest trends in vocational education.

Despite these challenges, Ta'Heal has achieved significant success due to several key factors:

- Strong industry partnerships that ensure training relevance through robust collaboration with industry partners (e.g. Jaz Hotel Group, Nahdet Misr Group).
- Institutionalisation of quality assurance mechanisms: implementing rigorous quality assurance mechanisms to ensure continuous improvement.
- Student-centred learning models that prioritise employability and prepare graduates for work.
- Career guidance and job placement support that is embedded into the ATS model to ensure that graduates are well-prepared for work.
- Commitment to innovation through digital and green skills integration: integrating digital and green skills into the curriculum to equip students with the skills needed for the 21st-century labour market.
- Clear division of responsibilities: operational models and division of responsibilities are set up at both the project management (central) level and the school level.

Ta'heal aims to expand its ATS model to more sectors and strengthen international cooperation to broaden the recognition of Egyptian vocational qualifications. The organisation continues to advocate for policy changes that allow greater autonomy for private-sector-led VET initiatives.

and integrated digital and green skills into training programmes. Moving forward, Ta'heal aims to expand into new sectors and strengthen international partnerships. Ta'heal is well-positioned to further modernise Egypt's TVET sector and drive vocational excellence. Its approach offers a replicable model for industry-driven technical education, ensuring long-term benefits for students, employers, and the broader economy.

4 Case 3: AKMI and Tour X





4.1 Centre of Vocational Excellence: AKMI and TourX

Founded in 1989, AKMI is today Greece's largest VET provider. Focusing on the provision of post-secondary vocational education and training, AKMI has campuses in nine cities across Greece (Athens, Piraeus, Thessaloniki, Crete, Larissa, Rhodes, Chalkida, Alexandroupoli, Glyfada).

AKMI Vocational Training School is a private VET institution. It provides VET programmes at EQF levels 3 to 5. Learners can choose from 107 specialities offered in 14 different sectors, ranging from tourism, IT & new technologies to arts & design³⁷. Approximately 18,000 students are currently enrolled in one of AKMI's VET programmes across the country.

AKMI's target group primarily consists of young people above the age of 18 who have completed their upper-secondary education and are seeking opportunities for further education, vocational training or skills development to enhance their future career prospects.

AKMI maintains strong ties with VET and industry partners across the world. Additionally, AKMI is a member of EVBB (European Association of Institutes for Vocational Training) and a member of the Pact for Skills Large-Scale Partnership for the Tourism Ecosystem³⁸.

"Vocational excellence for us is a holistic approach of how to provide training that will impact people's lives – not only to prepare them for employment, but to empower them and improve their quality of life."

VET school representative

Since 2022, AKMI International³⁹, which is the VET school's international department, has coordinated the four-year TourX project. TourX⁴⁰, a CoVE initiative co-funded by the Erasmus+ Programme, aims to create excellence in the tourism sector through a bottom-up approach, empowering education providers to adapt skills provision to ever-changing economic and social needs.

"For me, a CoVE [Centre of Vocational Excellence] starts to be really successful when some partners together take the initiative to launch additional projects; when they start doing mobilities, that's when a CoVE really starts to have an impact."

TourX consortium partner

³⁷ Gastronomy & Tourism, Health, Technical professions, Beauty & Spa, Fashion, Information Technologies, Finance & Administration, Sports professions, Journalism & Media, Nursery teacher, Art & Design, Sound & Music Technology

³⁸<https://pact-for-skills.ec.europa.eu/about/industrial-ecosystems-and-partnerships/tourism-en>

³⁹<https://akmi-international.com>

⁴⁰<https://tour-x.eu/>

4.1.1 Description of the national VET system in Greece

VET in Greece is strongly state-regulated. The overall responsibility lies with the Ministry of Education, in cooperation with the Ministry of Labour. Compulsory schooling lasts until the age of 15. VET is offered at the upper-secondary and post-secondary levels.

There are two main routes at the upper-secondary level—general education and VET—with both leading to an upper-secondary school leaving certificate at EQF level 4. The main VET route at the upper-secondary level is the three-year EPAL programmes (epaggelmatika lykeia – vocational upper-secondary schools). Additionally, upper-secondary VET is delivered by apprenticeship schools (EPAS) with a typical duration of two years and leading to an EQF level 3 certificate. In 2021, 34% of all upper-secondary learners in Greece were enrolled in VET. General education pathways are generally considered more popular and have a better image than the parallel VET pathways at the upper-secondary level.

At the post-secondary level, VET is offered in two distinct formats:

- 1-year apprenticeship programmes offered by EPAL schools, with a work-based learning element of approximately 80 percent. The programmes lead to a VET specialisation at EQF level 5, awarded only upon successful completion of the certification exams externally organised by EOPPEP (National Organisation for the Certification of Qualifications and Vocational Guidance).
- 2-2.5-year VET programmes offered by public and private higher vocational training schools (SAEK, formerly referred to as IEK), with a work-based learning element of at least 60%.

AKMI belongs to the 'SAEK'-type higher vocational training schools that offer up to 2.5-year post-secondary programmes including a 6-month

obligatory internship, whereas the tourism programmes at AKMI typically have an overall duration of four semesters, or two years, plus the mandatory 6-month internship. Besides the company internship, a significant component of the training is laboratory-based and takes place in training kitchens or hospitality labs. SAEK refers to public and private higher vocational training schools that offer post-secondary education. The programmes primarily address graduates from secondary education.

The curricula of post-secondary VET programmes (SAEK) have been developed by the General Secretariat for vocational education, training and lifelong learning (which also supervises all the public and private vocational training providers) and certified by the National Organisation for the Certification of Qualifications and Vocational Guidance (EOPPEP). The study guide of each speciality includes the job profile, the learning outcomes expressed as knowledge, skills and competences by subject and speciality, the corresponding credits, the potential candidate placement in the labour market, the timetable and specific curriculum, the teaching methods, and the necessary equipment.

These programmes only allow learners to obtain an attestation of programme completion, i.e. a VET certificate signed by the Ministry of Education. Additionally, SAEK graduates can take VET certification examinations (practical and theoretical) conducted by EOPPEP (National Organisation for the Certification of Qualifications & Vocational Guidance) to acquire an EQF level 5 Professional Specialty Education and Training Diploma. The majority of graduates from AKMI's tourism programmes will go for this option and take the state exam to obtain the level-5 qualification⁴¹.

⁴¹ Cedefop, & National Organisation for the Certification of Qualifications and Vocational Guidance (EOPPEP). (2023). Vocational education and training in Europe – Greece: system description. In Cedefop, & ReferNet. (2024). Vocational education and training in Europe: VET in Europe database – detailed VET system descriptions [Database]. <https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/greece-u3>; <https://eurydice.eacea.ec.europa.eu/eurypedia/greece/overview>

4.1.2 Education pathways

In Greece, children typically begin their education at age 6 with six years of primary school (Dimotiko). Following this, students attend compulsory lower secondary education (Gymnasio) for three years, completing it around age 15. After Gymnasio, students interested in vocational pathways can enrol in vocational upper-secondary education

(Epaggelmatiko Lykeio, EPAL), a three-year programme that integrates general education with vocational specialisations. Upon completion, EPAL graduates receive a diploma at EQF level 4, qualifying them for skilled employment and allowing progression into further vocational training.

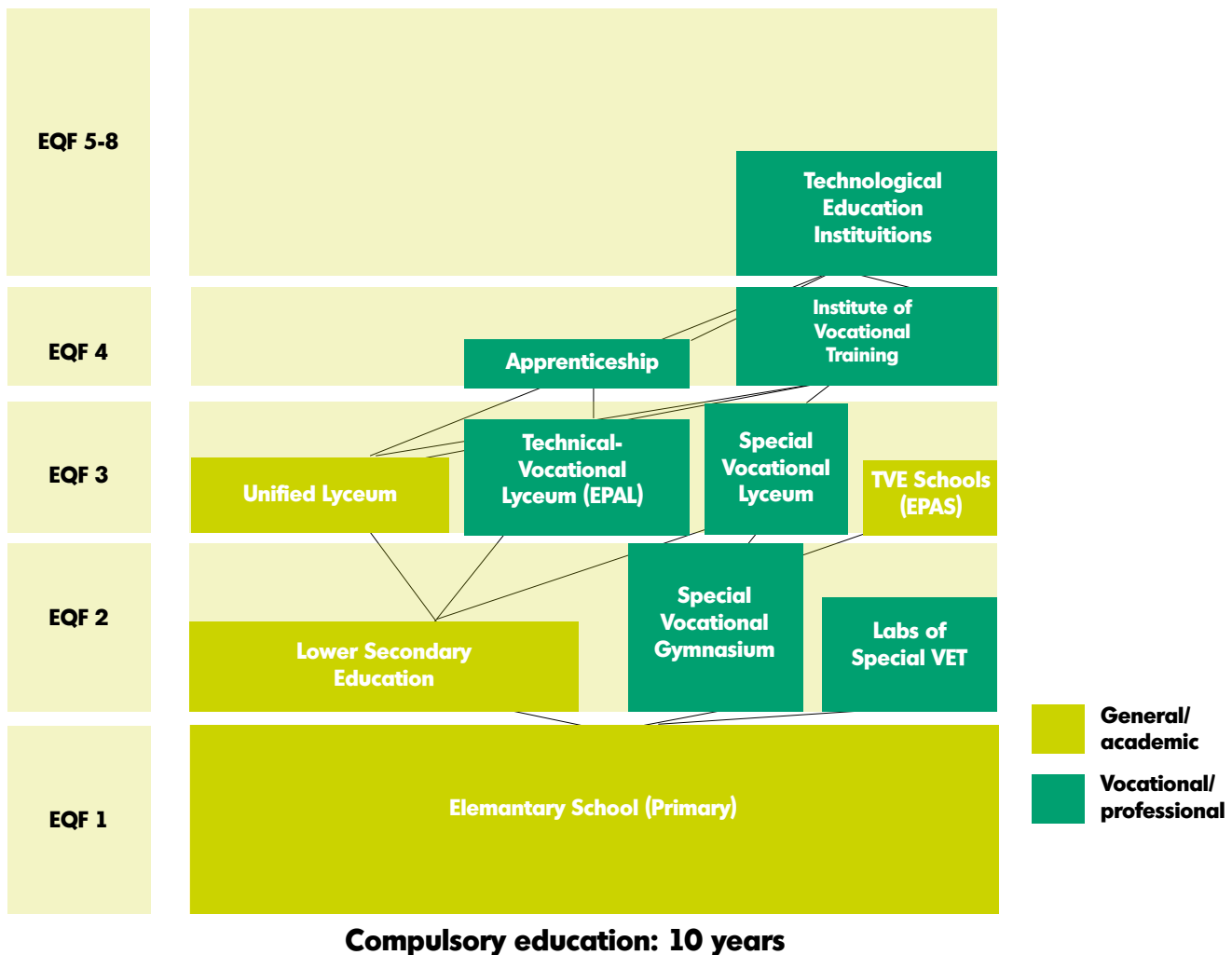


Figure 17: Education pathways in Greece.
Source: UNESCO-UNEVOC (2025)

Post-secondary vocational training is provided primarily by Vocational Training Institutes (Institouta Epaggelmatikis Katartisis, IEK), which offer specialised two-year vocational programmes (four semesters), leading to a vocational diploma at EQF level 5. Graduates from IEK can directly enter the labour market or, upon certification, continue

their education by accessing higher professional education programmes offered by universities or universities of applied sciences (EQF level 6). This structured vocational pathway ensures clear progression opportunities, strengthens employability, and supports lifelong learning within the Greek vocational education and training system.

4.1.3 Erasmus+ CoVE project TourX

TourX, co-funded through the European Commission's Erasmus+ Programme, envisions creating CoVEs in tourism through a bottom-up approach where the education providers of the partnership will enhance their ability to adapt skills provision to ever-changing economic and social needs based on a model of knowledge triangles. These knowledge triangles—regional-level partnerships—are in the process of being set up in four countries: Greece, Germany, Italy, and Spain. The knowledge triangles are gathering VET providers, representatives of the business sector and public authorities to collaborate better and contribute to regional development in the tourism sector.

The project is led by AKMI, a leading VET provider in Greece, together with a consortium of another 22 organisations from 7 countries: Greece, Italy, Spain, Germany, Portugal, Belgium, and China. The duration of the activities is set at four years of implementation, starting from June 2022. TourX is co-funded by the European Commission through the Erasmus+ Programme with a grant of approximately EUR 4 million. The partner from China has been invited to the project consortium for its expertise in the field and its prominence in tourism on the worldwide stage.

The Erasmus+ project TourX is a **CoVE initiative** (<https://tour-x.eu/>) that brings together 23 partners from six different EU countries (Greece, Italy, Spain, Belgium, Germany, and Portugal) plus a partner from China. The project is led by AKMI, a leading provider of post-secondary vocational education and training in Greece.

TourX aims to create excellence in the tourism sector through a bottom-up approach, empowering education providers to adapt skills provision to ever-changing economic and social needs based on a **knowledge triangle model**. TourX operates in four different European regions (Greece, Italy, Spain, and Germany), whereas this case study focuses on the regional approach for the Greek CoVE in the region of Attica.

Why a CoVE for the tourism industry?

The initiative to develop TourX and CoVEs for the tourism industry was triggered by the disastrous reduction in tourism triggered by the COVID-19 pandemic. In the realm of the pandemic, thousands of tourism workers exited the industry to find employment elsewhere. After the pandemic, many of them did not return but left the sector permanently.

Long working hours, unattractive work schedules

and poor salaries are just some of the challenges that make it challenging for tourism businesses to recruit talent⁴². An observed lack of coordination of training needs and regional skills mismatches further hinders growth in the tourism industry. At the same time, VET in tourism-related fields in many countries, including Greece, suffers from a poor image.

This results in a lack of skilled personnel who are often not sufficiently qualified. At the same time, the tourism sector has faced significant transformations in recent years due to technological advances and changing consumer demands, as well as growing awareness of environmental issues. Environmental sustainability has become a key concern for the tourism sector, driven by travellers who are increasingly aware of environmental issues such as climate change, resource depletion and biodiversity loss. Many tourists now seek eco-friendly travel options. Meanwhile, destinations that rely heavily on tourism are often also highly vulnerable to environmental degradation and the ramifications of over-tourism. This creates a significant demand for training for sustainable practices in tourism-related education and training.

In parallel, technological advancements have profoundly transformed tourism in the past decade, significantly changing how people book trips, experience destinations and obtain and consume information about tourist destinations – making it imperative for even the smallest tourism business to embrace digital tools and technologies to stay competitive.

The far-reaching changes in tourism, including those arising from increased digitalisation and sustainability efforts, are often not (yet) sufficiently reflected in national qualifications and curricula, which somewhat lag behind in terms of their responsiveness. At the same time, many tourism businesses are small and medium-sized enterprises with limited capacity to provide training and upskilling opportunities to their staff. Tourism businesses are often hesitant to provide upskilling possibilities to their employees – on the one hand, because of large staff turnover rates in many tourism-related businesses, and on the other, because of the seasonal peak times that often leave little flexibility for training activities during the high season.

This builds the starting point for the TourX project. By enhancing training quality and aligning skills with industry needs better, TourX seeks to make VET a key driver for a more competent, competitive, and sustainable tourism sector.

⁴² TourX (2024). The Future of Tourism: A Training Needs Analysis. TourX CoVE for the Tourism Industry. Written by Manuel Au-Yong-Oliveira, Ana Palma-Moreira, Matilde Macedo, Cicero Eduardo Walter & Theodoros Grassos. <https://we.tl/t-uRXPA7Nhhj>

4.2 Management organisation and funding

TourX is led by AKMI, a leading VET provider in Greece, together with a consortium of another 22 organisations from 7 countries: Greece, Italy, Spain, Germany, Portugal, Belgium, and China. The duration of the activities is set at four years of implementation, starting from June 2022. TourX is co-funded by the European Commission through the

Erasmus+ Programme with a grant of approximately EUR 4 million. The partner from China has been invited to the project consortium for its expertise in the field and its prominence in tourism on the worldwide stage.

The 23 TourX partner organisations represent a variety of actors in local tourism ecosystems:

Regional Authorities	Rural development fund of Attica RDFA (EL); Regione del Veneto (IT); Cabildo de Fuerteventura (ES), Landkreis Spree-Neiße (DE)
National Authorities	EOPPEP (National Certification Authority, EL)
VET providers	AKMI (EL), ENAIP Veneto (IT), Escuela de hostelería europea (EL), AVT (DE)
VET provider associations (EU-level)	EVBB EVTA
Tourism-related industry associations and chambers of commerce	Greco-Italian Chamber of Commerce (EL, IT); Confindustria Veneto SIAV (IT); IME GSEVEE (EL); Asociación de empresarios turísticos de Fuerteventura (ES); DEHOGA Brandenburg (DE); EUPIC (CN)
Higher education institution/ research	Hellenic Open University (EL); Universidade de Aveiro (PT); Skills Together (IT)
Other types of partners	CEA-PME (Confédération Européenne des Associations de Petites et Moyennes Entreprises) (BE), BK Consult (DE), mundus (ES)

4.2.1 Human resources and engagement (and role) of staff

AKMI has an overall headcount of approximately 1,200 permanent staff across all fields of education and training provided, including AKMI International, its international division. The organisation places strong emphasis on ensuring high standards in both teaching and administration. The teaching staff at AKMI's Hospitality and Culinary Campus in Athens mostly consists of industry professionals. This allows the VET provider to recruit reputed chefs and other highly experienced professionals from the sector as part-time trainers. The school timetables are adapted accordingly, making sure that most of the training activity takes place during the low (aka winter) season because, as one school representative put it,

'it would be impossible to keep a chef as a trainer later than Easter week'.

Thanks to its comprehensive business network comprising 2,500 hotels and restaurants in Greece and abroad, recruiting part-time trainers from the tourism sector is reportedly not a big challenge for AKMI – provided that their teaching schedule avoids the high tourism season. According to AKMI's experience, many part-time trainers will do this to promote themselves and their institutions, hoping to recruit talent among their students.

4.2.2 Funding sources and financial sustainability

AKMI Vocational Training School is a private post-secondary VET institution that funds its operations primarily through student tuition fees. Additional funding is obtained through collaboration in Erasmus+ projects and initiatives.

The involvement in these initiatives provides the AKMI VET school with the opportunity to gain access to funding opportunities offered by the

European Commission. In fact, there is a dedicated European department within the AKMI group - AKMI International, that is actively engaged in the pursuit and running of funding and development opportunities through the aforementioned programmes.

4.3 Partnerships and stakeholder engagement

In Greece, there is traditionally a low level of collaboration between the public and private sectors when it comes to providing education and training. Hence, the knowledge triangle approach followed by TourX (see below) provides a genuine opportunity to break down barriers in this regard and promote a new way of collaboration between education providers, businesses, and public authorities. Committed to ensuring the provision of high-quality vocational education and training, AKMI collaborates with a wide range of institutions, forging strategic partnerships that allow its students to gain valuable industry experience through paid internships that may provide them with additional income to

continue their studies. AKMI has developed a strong network of 2,500 hotels & restaurants in Greece & abroad. AKMI's access to such a comprehensive network of enterprises significantly facilitates students' search for internship places and facilitates their labour market insertion after graduation. For all study programmes, AKMI has strategic partnerships that accommodate and facilitate student internships as part of their studies during semesters. The students visit the working space one or two days per week (a Kindergarten school, a hospital, etc.), according to their study programme, in order to participate in the working process and attend the lesson in a real-work environment.

4.3.1 Sustaining public-private partnerships (PPPs): the bottom-up knowledge triangle approach of TourX

TOUR-X seeks to establish partnerships at the regional level, called 'knowledge triangles', in Germany, Greece, Italy, and Spain, which are four leading countries in the European tourism sector. These knowledge triangles bring together VET providers, business representatives, and public authorities in a tripartite manner in order to collaborate better and contribute to regional development in the tourism sector. With the TourX project still ongoing until 2026, this process is currently in development and not finalised yet, i.e. the TourX **knowledge triangles** are at different stages of activation and implementation. TourX builds on existing collaboration at regional and transnational levels, leveraging strong relationships between partners and adding new strong partners to form knowledge triangles where they do not exist. To create a local regional triangle, participation is essential from public authorities in education, innovation or tourism, VET institutions and representatives of the private sector. In short, knowledge triangles bring together stakeholders from the tourism industry, education, and local authorities with the objective of promoting

vocational excellence in a bottom-up approach and contributing to regional development in the tourism sector.

The TourX approach to knowledge triangles focuses on developing public-private partnerships and skills development. It is based on the long-standing conceptual framework related to Research and Innovation Strategies for Smart Specialisation (RIS 3) and the Triple or Quadruple Helix approach as models for innovation⁴³. The following steps are involved in setting up the TourX tourism knowledge triangles:

- Step 1: Identification of tourism actors and stakeholders at the regional level required to organise impactful activities in terms of skills development at the regional level.
- Step 2. Activation of the knowledge triangle through a kick-off activity and setup of a strategic plan.
- Step 3. Internationalisation of the knowledge triangle & set up of transnational cooperation.

⁴³ European Commission, Guide to Research and Innovation Strategies for Smart Specialisations (RIS 3), May 2012. Accessible here: Pages 1-57(59) from 2012.3722_RIS3_GUIDE.pdf (europa.eu) Deakin, Mark. Triple, Quadruple and N-Tuple Helices: The RIS3 and EDP of a Higher-Order Policy Model. Triple Helix, BRILL. 27th April 2022.

By bringing together the above-mentioned concepts, the following governance mechanism has been designed, proposed and approved by the TourX

project partners. This process is depicted in detail in the figure below:

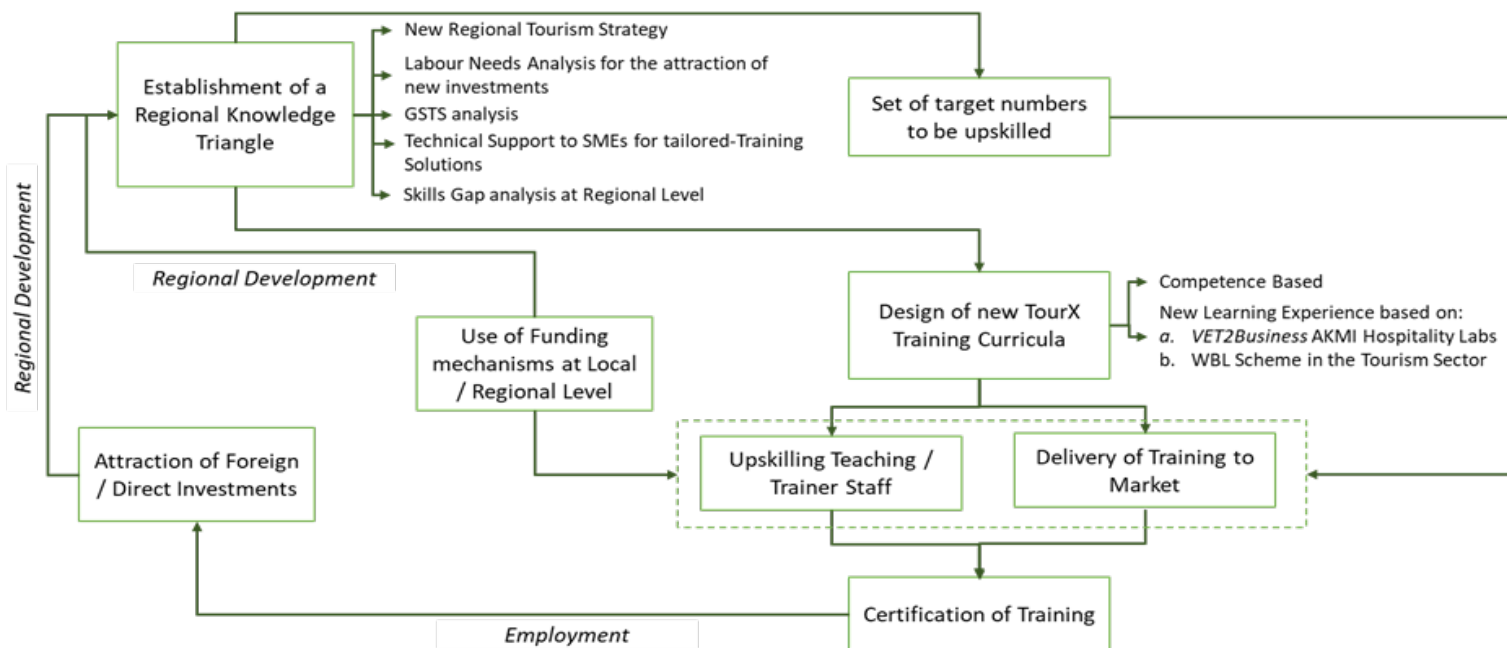


Figure 18: The TourX model for creating regional knowledge triangles in the tourism sector
Source: TourX

Tourism knowledge triangle in the Greek region of Attica

The following organisations make up the knowledge triangle in Attica:

- AKMI SA (VET provider): leads the knowledge triangle and is responsible for establishing regional partnerships between education providers, tourism sector representatives and public authorities.
- Greek-Italian Chamber of Commerce in Thessaloniki (business representative - chamber): contributes its enterprise network of more than 500 members from Greece and Italy.
- IME-GSEVEE (business representative - confederation): as a national social partner, they are the representation of small enterprises within the Hellenic Confederation of Professionals, Craftsmen and Merchants, thus bringing the perspective of SMEs into the knowledge triangle.
- Regional Development Fund of Attica (RDFA): acts as a representative of the regional authority partner in the knowledge triangle.
- Hellenic Open University (higher education): is the higher education and research partner in the knowledge triangle. It is a public higher education institution with a strong focus on lifelong learning – with 80% of its students being working professionals.

- EOPPEP (National Organisation for the Certification of Qualifications & Vocational Guidance): is the National Certification Authority and operates under the auspices of the Greek Ministry of Education.

The Greek knowledge triangle is active in the region of Attica, where the capital city of Athens is also located. AKMI acts as the coordinating entity with two business representatives (a Chamber of Commerce and a research institute dedicated specifically to SMEs). The triangle is then complemented by a public agency, the Regional Development Fund of Attica. IME-GSEVEE, as an economic research centre, has been able to involve a collection of partner business representatives to carry out market research and analysis of trends. RDFA is the public agency in charge of the development and implementation of RIS 3 strategic actions, making it a crucial partner for the alignment of the knowledge triangle activities to the policy objectives for regional development. EOPPEP is the Greek National Certification Authority. It awards the EQF level 5 Professional Specialty Education and Training Diploma that AKMI students can take after completion of their study programme. AKMI itself can count on a network of more than ten training centres throughout the country, each one developing tailored partnerships at the regional level with hotels and restaurants for the placement of its graduates.

TourX Transnational Platform of regional tourism CoVEs

In addition to setting up regional CoVEs across the four implementing regions of the project, TourX is also working on fostering their internationalisation through collaborative partnerships by establishing a transnational platform of regional tourism CoVEs. The objective of this transnational governance structure is to ensure an international approach to vocational excellence in the tourism sector and, ideally, to create a space for regionally oriented organisations to enrich their work through international collaborations.

The figure below outlines the overall project setup for the four regional CoVEs included in TourX. At the time of writing this report, the knowledge triangle and the transnational platform is still a work in progress.

As a first outcome of the TourX study visits, a total of 26 Memoranda of Understanding (MoUs) were signed with various partners, laying the groundwork for sustained collaboration among project partners and stakeholders.



Figure 19: TourX Transnational CoVE Platform in tourism.
Source: TourX. KT stands for Knowledge Triangle.

4.3.2 Feedback loops to ensure training relevance

While the European tourism sector shares common challenges across countries (upskilling and reskilling, recruiting and maintaining talent, unattractive job profiles and working hours, addressing the implications of the green and digital transition, etc.), the results from the TourX research on training

needs also show that the challenges and needs vary significantly across countries and require tailored approaches at the national level. The figure below shows both the commonalities and variations across countries in stakeholder perceptions about the priorities of the tourism sector.

China

The development and management of tourism destinations
Career development and planning of hotel professionals

Greece

Green and digital skills, the future

Germany

The curriculum framework, challenges, the future, digital and sustainable

Portugal

Challenges, sustainability, digitalization

Belgium

Needs for change hospitality after Covid-19

Spain

Challenges, sustainability, digitalization

Italy

Challenges, sustainability, digitalization

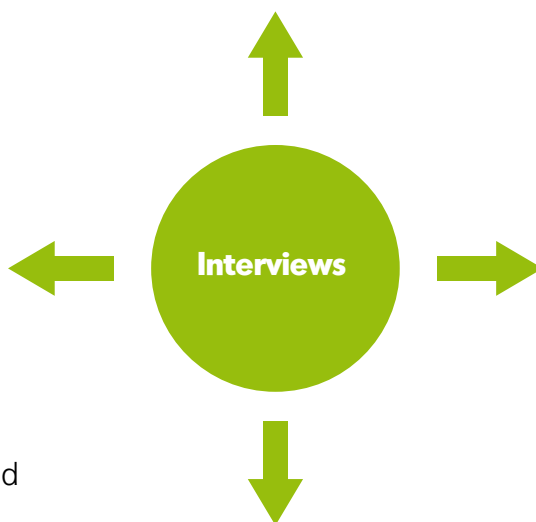


Figure 20: Insights from TourX interviews on priorities for the tourism sector – commonalities and variations across countries
Source: TourX (2024, p. 135).

In total, TourX will develop the following training content:

- three updated competence-based curricula for EQF levels 3-5 (in total, 180 hours of training)
- two updated competence-based curricula for EQF levels 6-7 (in total, 110 hours of training)
- short-term training programmes for upskilling of tourism-related employees (20-40 hours each)
- a horizontal training package, including i) digital skills, ii) green skills, iii) intercultural skills

The three EQF 3-5 curricula will be based on the Hospitality Labs approach implemented at AKMI (see below). Two curricula focus on the core components of hospitality - culinary arts and hotel services - while the third curriculum focuses on the development of soft skills, which are essential for competitive advantage in the service industry. These soft skills curricula are designed to build learners'

resilience, management, organisational and leadership skills, which are essential for success in both the culinary and hotel service sectors.

AKMI itself has limited flexibility in adapting its curricula to changing needs. Approximately 80 percent of the curriculum is set through national curricula (which are considered somewhat slow to respond to current industry requirements), while only 20 percent can be flexibly shaped by the school itself. With the curricula themselves allowing limited flexibility to adapt, AKMI relies on applying innovative teaching methods to still be able to gain a competitive edge, for example, through the Hospitality Labs.

AKMI's Hospitality Labs replicate real working environments in the hospitality sector, such as fully equipped hotel rooms in different styles, a hotel reception area, a fine dining restaurant, a cocktail bar, and real hotel units.

The Hospitality Labs have been part of AKMI's tourism education curriculum. The training content has been designed to provide comprehensive knowledge and practical skills that are required for graduates to build successful careers in the tourism and hospitality industries. The curriculum covers the following subjects: tourism fundamentals,

hospitality management, business and marketing, practical training and applications, food and beverage management, health and safety, language and communication skills, human resource management, advanced training and certifications, and career development.



Figure 21: Hospitality Labs at AKMI Athens.
Source: TourX.

4.4 Building skills ecosystems that work towards a future-proof labour force

TourX aims to create excellence in the tourism sector through a bottom-up approach, empowering education providers to adapt skills provision to ever-changing economic and social needs. Vocational excellence in TourX is understood as ensuring the continuous striving towards the most effective practices for the sector's success and advantage. This is achieved through ongoing monitoring, defined areas of strategic cooperation, and the TourX Hospitality Labs toolbox. For TourX, the path towards achieving vocational excellence in the VET sector means ensuring a highly smooth flow of information between the market and the VET sector. Through these actions, TourX, in particular, also seeks to contribute to developing a fairer, more sustainable, and resilient tourism model, to strengthen feedback loops to adapt VET provision, and elevate the perception of VET within the

tourism sector.

A key objective of TourX is the creation of educational tools and resources aimed at promoting the development of vocational excellence, by supporting the governance of CoVEs at the regional level, skills intelligence, VET graduate tracking, education and funding solutions for SMEs, the development of micro-credentials, and support for the internationalisation of VET centres. These are all gathered under the umbrella of a so-called **TourX Hospitality Toolbox**.

The toolbox, which is currently still under development, will set out a comprehensive mechanism to promote vocational excellence in regional skills ecosystems. The toolbox will include specific tools and resources to develop and maintain vocational excellence in the tourism sector.

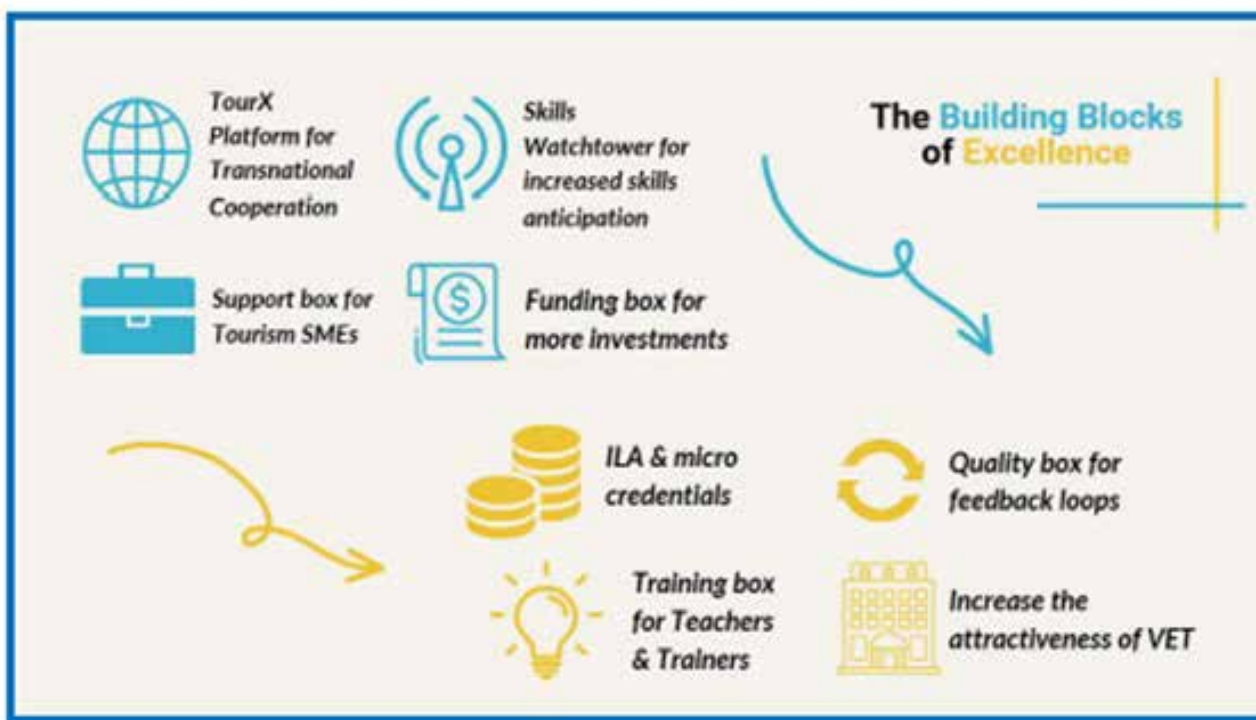


Figure 22: TourX Hospitality Toolbox. Source: TourX.

TourX will, in particular, provide the following deliverables:

- TourX seeks to address workforce demands by establishing knowledge triangles that foster collaboration between VET systems and the tourism industry.
- TourX designs and delivers innovative training modules and upskilling/reskilling pathways, offering a clear validation and skills recognition process through micro-credentials. The Design Box for Competence-Based Curricula will provide the necessary support to both tourism employers and VET providers.
- It introduces a 'WatchTower' for regional skills needs in the tourism sector and develops a self-assessment tool for identifying skills gaps.
- It develops an 'SME Technical Support Box' to assist micro and SMEs in upskilling their employees through tailored training programmes.
- TourX promotes and pilots the use of 'Hospitality Labs' to enhance practical training.
- The project fosters communication and knowledge transfer between TourX CoVEs through the nomination of ambassadors and the creation of an 'Ambassadors Club'.
- TourX supports the professional development of tourism teachers and trainers to effectively deliver updated curricula within the Hospitality Labs, focusing on sustainable tourism, green skills, and accessible tourism.

National Level

The TourX approach includes the creation of **regional knowledge triangles**, which are integrated into the transnational CoVE platform.

Regional Level

Regional actors, VET providers and business representatives collaborate to address skills needs and promote excellence in the tourism sector.

European Level

At European level, TourX participates in high level discussions and collaborates with stakeholders to promote excellence in VET.

Figure 23: TourX approach to developing skills ecosystems at regional, national, and European levels.
Source: TourX.

4.5 Involving staff and students in vocational excellence

4.5.1 Teacher training and professional development

With a dedicated team of around 1,200 permanent staff, AKMI places great emphasis on ensuring high standards of teaching and administration. AKMI organises summer schools, mobility programmes, training seminars and various events with the overall aim of providing a holistic educational experience.

Study visits have represented a key capacity-building tool for the TourX consortium, providing the opportunity for knowledge triangles to take part in activities at local and international levels. As part of its work package 2, TourX organised a series of knowledge transfer activities in the form of short-term staff mobility initiatives in five different countries: Greece, Italy, Spain, Germany, and China. Thereby, over the course of two years, a total of 99 participants from 13 organisations within the TourX consortium and associated organisations were directly involved in these staff mobility

actions across the five countries. Beyond this direct participation, the mobilities also had an outreach to local communities, with approximately 400 local stakeholders engaged in one of the manifold study visit activities, which included expert presentations, roundtables, and conferences.

This allowed key staff from VET providers and tourism organisations in TourX to participate in three-day peer learning visits to each of these five countries. The study visits took place between October 2022 and November 2024, each one focusing on a different theme: hospitality training, sustainable tourism, city tourism, placements and practical training, and public-private partnerships.

Interviewed AKMI teachers who participated in a site visit emphasised the great learning experience it brought them and how it also led them to reflect on their own national practices.

4.5.2 Student engagement and career outcomes

To support students' career outcomes, each AKMI student has a career advisor assigned to them. To facilitate their professional insertion, AKMI hosts Career Days twice a year. During these days, students participate in workshops to prepare for formal interviews. Partner institutions are invited to interview students seeking internships, many of which lead to full-time employment, supporting students in securing successful careers. Students also receive ongoing support from a dedicated Career Advisor within the most comprehensive

Interactive Career Office in Greece. To support students in overcoming this hurdle, AKMI connects them with a broad network of partner organisations offering internships and helps students approach additional organisations they identify. The goal is to develop or strengthen their network of professional contacts and ultimately claim a place in their workforce.

4.6 Operational challenges and success factors

The TourX initiative faces several operational challenges that will need to be addressed to ensure its long-term sustainability and impact. With a specific focus on the regional CoVE for the Attica region, the following can be observed:

- **Funding constraints:** AKMI, as a fully privately funded institution, relies primarily on funding from learners through tuition fees. This financial model poses challenges in ensuring inclusive access to VET, as there are limited opportunities for publicly funded scholarships or financial aid. The reliance on tuition fees makes it difficult to move towards a model of inclusive excellence, where access to high-quality training is available to all, regardless of financial background.
- **Industry engagement and investment:** A key challenge in Greece is the limited willingness and/or capacity of tourism companies to invest in employee training and upskilling. This has been one of the driving forces behind the development of the TourX project. While the knowledge triangle approach aims to change industry perceptions and encourage greater participation, its effectiveness in shifting employer attitudes remains to be seen.
- **Limited curriculum flexibility:** National regulations in Greece prescribe approximately 80% of the curriculum, leaving only 20% flexibility for institutions like AKMI to tailor their programmes. This limited autonomy restricts the ability to provide cutting-edge education and training, especially as national curricula are often perceived as slow to adapt to emerging industry trends. Despite this constraint, AKMI strives to bridge the gap through innovative teaching methods, integrating modern teaching methods to enhance learning outcomes and better prepare students for the evolving tourism sector.
- **Collaboration across regional CoVEs:** One of the main operational hurdles for the remaining duration of the project is the need to foster collaboration between the four regional CoVEs. Establishing an effective framework for cooperation will be crucial to enabling cross-regional knowledge sharing, joint initiatives, and more cohesive development of tourism skills ecosystems. TourX project partners highlighted the EU Pact for Skills and the Community of Practice for CoVEs⁴⁴ as valuable platforms for exchange. However, additional support was requested to better connect CoVEs operating in similar fields and enhance their collaborative efforts.
- **Sustainability beyond EU funding:** With TourX still ongoing until 2026, it is uncertain how quickly the tourism knowledge triangle in the Attica region will develop a strong and distinct identity. The key challenge is ensuring that the initiative can continue and thrive beyond the availability of project-based EU funding, securing alternative support mechanisms to sustain its impact in the long term.



⁴⁴ <https://www.copcov.es/>

Success factor

Despite these challenges, several factors contribute to the success and potential sustainability of TourX – both for the regional CoVEs for the Attica region but also for the other regional CoVEs in the project:

- **Bottom-up knowledge triangle approach:** The initiative’s regional knowledge triangle model fosters close collaboration between education providers, tourism industry stakeholders, and policymakers, ensuring that training programmes remain aligned with real-world industry needs.
- **Strong industry and institutional partnerships:** TourX benefits from strong ties with both industry and public authorities, reinforcing its credibility and impact within the tourism sector.
- **Integration with EU initiatives:** TourX is deeply embedded in key EU projects and initiatives, particularly through its involvement with the Pact for Skills Large-Scale Partnership for Tourism, which now includes over 70 members. This integration has already led to new funding opportunities and collaborative projects that enhance the initiative’s sustainability. This clearly shows that TourX is not a stand-alone initiative but strongly embedded into a set of different initiatives aimed at developing and providing the skills that the European tourism sector requires to thrive.

4.6.1 To conclude

TourX is pioneering a bottom-up approach to excellence in the tourism sector, enabling VET and HE institutions to align skills provision with evolving economic and social needs through regional knowledge triangles. The case of TourX and AKMI highlights that vocational excellence thrives on strong collaboration between education providers, industry stakeholders, and public authorities, as well as open dialogue among them. Even VET institutions constrained by nationally set curricula can elevate their impact by forging strategic partnerships at regional, national, and European levels.

The knowledge triangle model developed by TourX—alongside its evolving set of toolboxes designed to support VET providers in becoming CoVEs—has the potential to serve as a blueprint for advancing vocational excellence in the tourism sector. Early project outcomes indicate promising progress. However, with over a year remaining and key

- **Engagement with EU-level VET provider associations:** TourX’s strong connections with EU-level VET associations ensure that it remains aligned with broader European vocational education strategies, facilitating knowledge exchange, peer learning and policy influence.
- **Adaptability to regional needs:** A core strength of TourX is its ability to tailor the knowledge triangle model to different regional contexts, ensuring that skills development aligns with specific economic and social conditions in each participating area.
- **Cross-border collaboration and knowledge sharing:** By promoting collaboration with other projects such as TOURing, Pacts4All, and PANTOUR, TourX enhances its impact by sharing best practices and integrating global perspectives into its approach.

While these success factors position TourX as a promising initiative, it is important to note that this remains a work in progress. With the project continuing until mid-2026 and several key deliverables still in development, the full impact of its approach can only be properly assessed in the coming years. The ability of TourX to operationalise its vision for regional tourism knowledge triangles, sustain its outcomes, and establish a long-term tourism skills ecosystem will be the true test of its success.

activities still underway, the true measure of TourX’s success will lie in its ability to create a sustainable regional tourism knowledge triangle in Attica and other participating regions—one that actively shapes the skills ecosystem beyond the lifespan of project-based funding.

Crucially, TourX’s strong ties with the Pact for Skills Large-Scale Partnership for Tourism and key EU-level VET associations reinforce its potential for lasting impact. Engaging in dialogue with complementary initiatives, such as the Pact for Skills, will be instrumental in maximising the project’s reach and effectiveness. If sustained, this collaborative approach could ensure that TourX not only achieves its goals but also contributes to a broader transformation of vocational education and training in the tourism sector.

5 Case 4: Centre of Excellence in Economics and Finance (CEEFF) - Moldova





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5.1 Centre of Excellence: Centre of Excellence in Economics and Finance (CEEFF)

5.1.1 Description of the national VET system in Moldova

In Moldova, VET is overseen by the Ministry of Education, Culture, and Research (MoECR), which is implementing key reforms under the Education Development Strategy (EDS) 2020-2030. Unlike previous strategies, EDS 2020-2030 takes a cross-sectoral approach, focusing on quality, teacher training, and digitisation across all educational levels rather than dividing reforms into sub-sectors.

In recent years, dual education has been a significant component of reform. Introduced in 2014 and formally established in 2018 through regulations governing dual VET programmes along with a framework curriculum for dual secondary VET, it provides an alternative pathway within technical VET (TVET), enabling students to integrate classroom instruction with practical training in companies.

As of the 2024/25 school year, the number of students enrolled in dual VET programmes has increased by 60%, reflecting the growing interest in work-based learning. This expansion has been supported by strong collaboration between the MoECR and the Chamber of Commerce, as well as other industry partners. Despite progress, Moldova faces challenges in increasing upper-secondary VET enrolment, which remains relatively modest at 44.8% (2022). Additionally, gender disparities persist, with boys (72.4%) being far more likely than girls (27.6%) to enrol in technical vocational education. The VET system consists of three types of providers: Centres of Excellence, Colleges, and Professional Schools⁴⁵. While Professional Schools offer secondary VET programmes, Centres of Excellence and Colleges provide a full range of programmes, including initial and continuous secondary VET, post-secondary VET, and post-secondary non-tertiary VET. WBL is an integral part of VET at all levels, ensuring that students gain practical experience alongside their studies.

Starting in 2015, CoEs in Moldova were appointed by the MoECR as part of the modernisation of VET⁴⁶. In total, 12 centres have been appointed at the national level, which are defined as:

“A VET education institution with enhanced potential, responsible for organising professional training programmes at various levels or integrated programmes, as well as for developing the capacities of the VET education system⁴⁷”

The reference legal framework is “the Framework Regulation for the organisation and functioning of the Center of Excellence, Order of the Ministry of Education 1158/2015, of 04.12.2015”. With reference to the ETF taxonomy of Centres of Excellence⁴⁸, Moldovan CoEs perfectly fit the type B “independent training institutions created from an existing provider, which might deploy extended functions”. The CoEs have been identified among the existing VET schools and renovated through substantial financial support from the European Union.

The state order specifically mentions the additional functions under the responsibility of the CoEs:

- Ensuring the continuous training of the labour force
- Didactic, curricular, methodological support function
- Coordination and support function of the affiliated VET institutions
- Training function of the teachers and managers of the affiliated institutions
- Validating the professional competences acquired in a formal, non-formal and informal environment
- Cooperation with the economic environment
- VET image promotion function

These centres are thus mandated with extra functions compared to other VET colleges and professional schools, including:

- Coordinating and guiding mobility of staff of Professional Schools and Colleges in their respective sectors to transfer good practices
- Continuous professional training of teaching and managerial staff in their respective sectors
- Certification of professional skills acquired in a formal, informal and nonformal environment.

⁴⁵ETF (2020). WORK-BASED LEARNING IN MOLDOVA https://www.etf.europa.eu/sites/default/files/2020-10/wbl_factsheet_moldova_2020.pdf

⁴⁶Gincu et al. (2024). THE ROLE OF CENTRES OF EXCELLENCE IN CONTINUOUS PROFESSIONAL DEVELOPMENT FOR TEACHING STAFF IN THE VOCATIONAL EDUCATION AND TRAINING SYSTEM. [https://doi.org/10.52326/jss.utm.2024.7\(4\).08](https://doi.org/10.52326/jss.utm.2024.7(4).08) UDC 377.3

⁴⁷Gincu et al. (2024). THE ROLE OF CENTRES OF EXCELLENCE IN CONTINUOUS PROFESSIONAL DEVELOPMENT FOR TEACHING STAFF IN THE VOCATIONAL EDUCATION AND TRAINING SYSTEM. [https://doi.org/10.52326/jss.utm.2024.7\(4\).08](https://doi.org/10.52326/jss.utm.2024.7(4).08) UDC 377.3

⁴⁸ETF (2020). Centred of Vocational Excellence: An engine for vocational education and training development. <https://www.etf.europa.eu/en/publications-and-resources/publications/centres-vocational-excellence-engine-vocational-education>

Tax incentives for employers

To encourage employer participation, the government has introduced tax incentives for businesses hosting apprentices. Employers can claim tax deductions on costs related to dual VET. Additionally, apprentices typically earn two-thirds of the national average salary and may receive benefits such as transportation, meals, and accommodation.

Source: ETF (2020). Work-based learning in Moldova. https://www.etf.europa.eu/sites/default/files/2020-10/wbl_factsheet_moldova_2020.pdf

The Centres of Excellence have become model schools in the education sector, working on building relationships with affiliated and partner VET schools and expanding the services they offer beyond initial VET. Building on the successes of Moldovan CoEs, MoECR is working on establishing model school networks for general education.

Looking ahead, the government aims to⁴⁹ strengthen the institutional framework for dual VET, clarifying the roles of the state, private sector, and civil society in order to:

- Align training programs more closely with labour market demands.
- Further develop occupational standards and curricula.
- Establish a quality assessment methodology for dual education.
- Approve a law on apprenticeships, introducing a new legal status for apprentices.
- Enhance education pathways.

In Moldova, students begin their education with 11 years of mandatory education, including 9 years of general education in core subjects, such as mathematics, their mother tongue, and natural and social sciences. Afterwards, students can transition to upper-secondary education, where they can choose the TVET pathway. The TVET pathways are provided by three types of institutes:

- Professional schools offer secondary TVET programmes up to EQF level 3.
- Colleges offer a full range of programmes including continuing VET (CVET) and post-secondary non-tertiary programmes (up to EQF 4).
- Centres of Excellence provide a full range of VET programmes, similar to the Colleges. However, they also play a leading role in their respective sectors in terms of curriculum innovation and teacher training (up to EQF 4).

Graduates of TVET programmes (especially those at EQF Level 4) can progress to higher education institutions (universities) to pursue bachelor's degrees (EQF Level 5) and beyond.

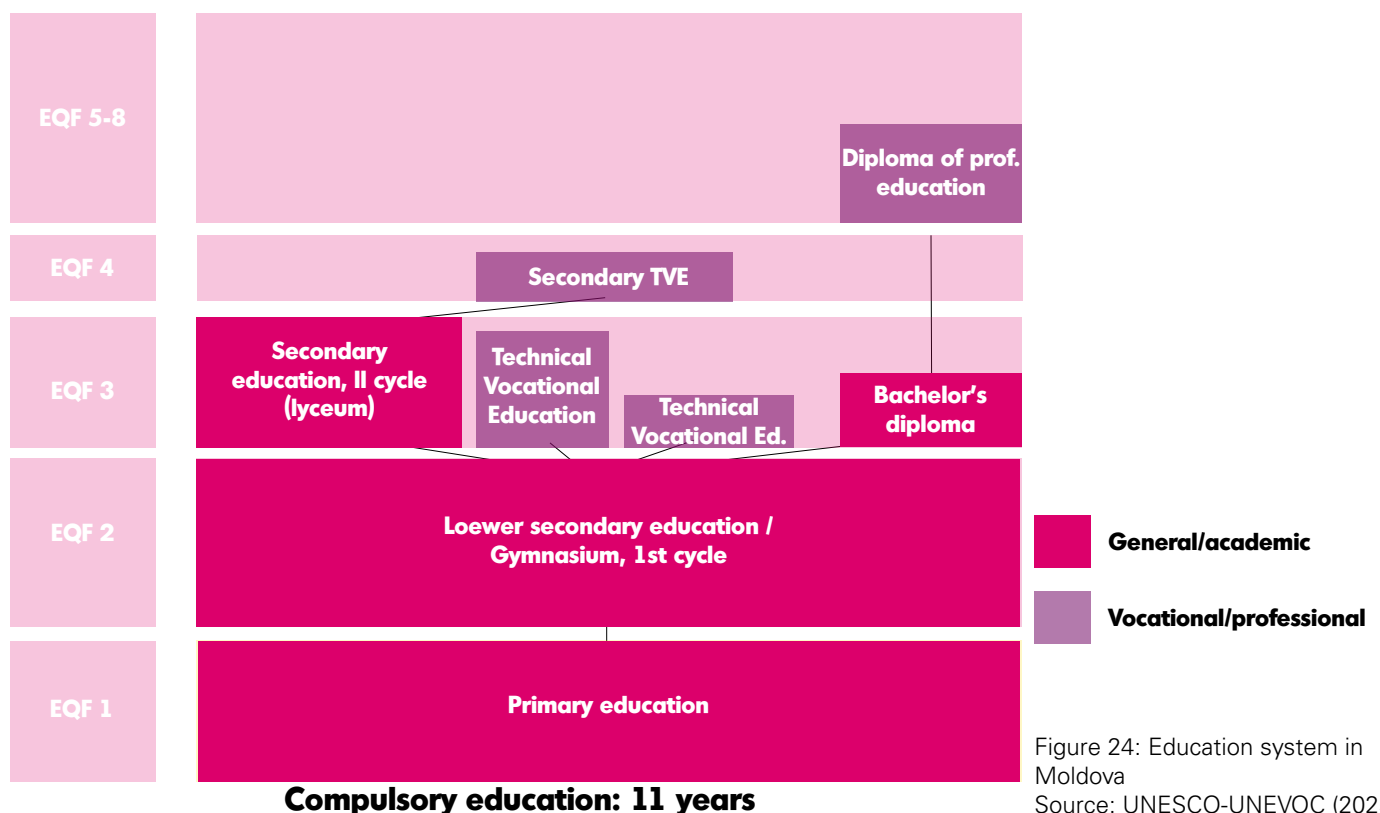


Figure 24: Education system in Moldova
Source: UNESCO-UNEVOC (2025)

⁴⁹ETF (2020). WORK-BASED LEARNING IN MOLDOVA https://www.etf.europa.eu/sites/default/files/2020-10/wbl_factsheet_moldova_2020.pdf

5.2 Management, organisation, and funding of CEEF Moldova

As a CoE, the Centre of Excellence in Economics and Finance (CEEF) is certified by the Ministry of Education, Culture, and Research (MoECR), signifying that it meets high standards for vocational education. CEEF offers both Initial Vocational Education and Training (IVET) and Continuing Vocational Education and Training (CVET), with programmes in⁵⁰:

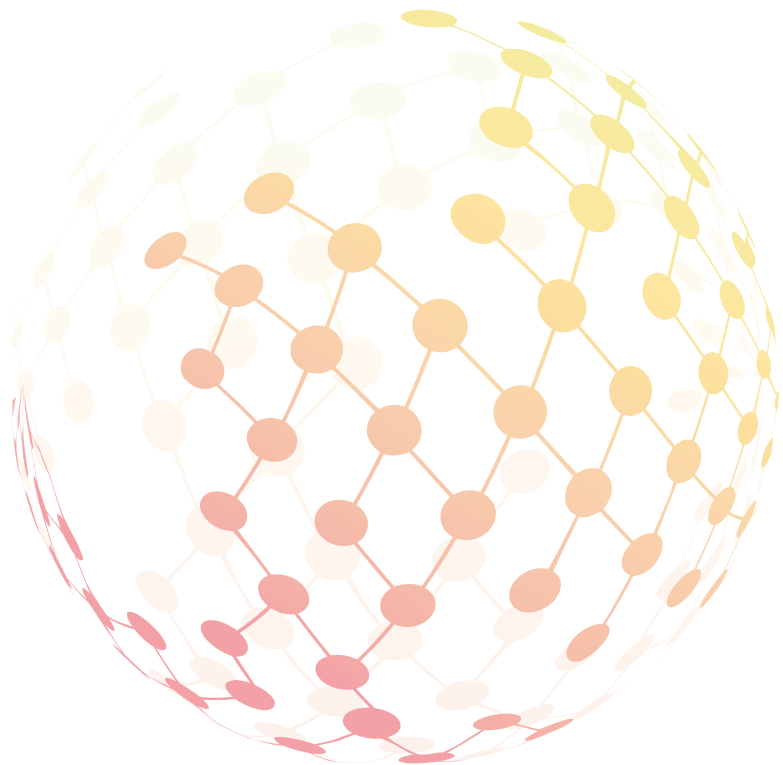
- Accounting
- Taxes and Tax Collection
- Finance and Insurance
- Finance and Banking
- Business Planning and Management
- Web Application Administration
- Programming and Program Product Analysis

Beyond its role as an educational institute, CEEF plays a leading role in vocational education, collaborating with professional schools and other VET colleges. It actively contributes to policy design, curriculum development, and the creation of specialised training programmes. Guided by its vision to be a model institution in entrepreneurial skills and economics, CEEF's strategic goals focus on strengthening collaboration between industry and education.

CEEF is also an authority in curriculum development for programmes provided in their sector. It means that if other VET institutions develop similar programmes, CEEF must approve them, reinforcing its authority over vocational education. CEEF ensures the alignment of education programmes

with industry standards. Additionally, CEEF validates the skills of individuals acquired through informal or non-formal learning.

CoEs like CEEF do not engage in the accreditation of other institutions; this is done by the National Accreditation Agency.



5.2.1 Governance structures and decision-making processes:

CEEF operates under a structured governance model (see Figure 25), with oversight and accreditation provided by the MoECR. Governance is shared among:

- CEEF Leadership & Board: Includes school administration, faculty representatives, and industry partners.
- Education Planning Commission & Working Groups: Provide recommendations on curriculum design and work-based learning practices.

CEEF engages in policy consultation with the MoECR to ensure education quality standards are met, and it is responsible for teacher training and professional development, often hosting national-

level workshops for teacher training in the sector of economics and finance.

As a model institution in its field, CEEF supports other vocational institutions through the COOPNET network platform for VET centres in economics⁵¹. It provides guidance on teacher training and curriculum development to, for example, strengthen educational ecosystems. CEEF also plays a central role in education planning commissions, which bring together VET institutions and private sector representatives to develop specialisations. Within these commissions, working groups—composed of subject matter experts and teachers—are responsible for designing and updating curricula to ensure alignment with industry needs.

⁵⁰ETF For more information, see: <https://ceef.md/certificare%C8%99iacreditare>

⁵¹For more information, see: <https://ceiti.md/language/en/project/coop-net-en/> (note that this website is of another CoE)

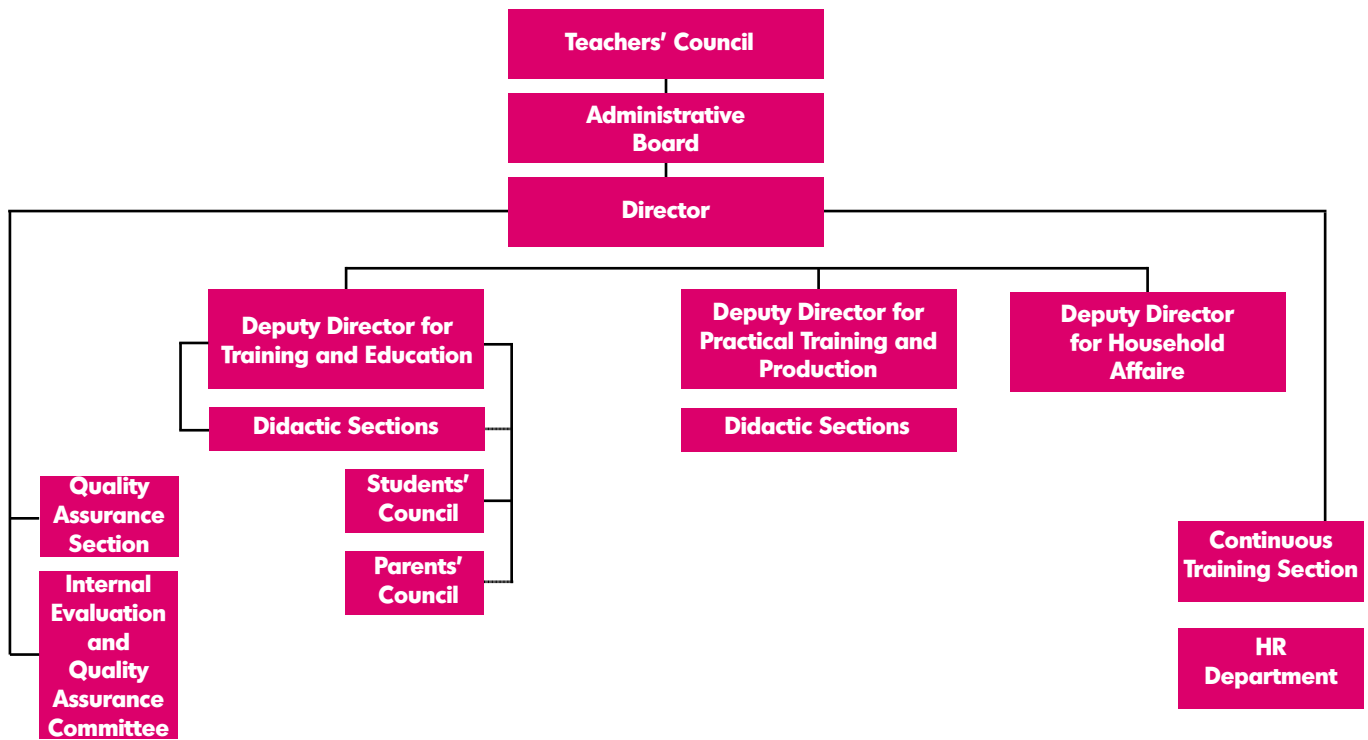


Figure 25: Organisational structure of CEEF

5.2.2 Funding sources and challenges in financial sustainability:

CEEF is partially funded by the MoECR, with the remainder coming from student fees. However, legally, CEEF has limited capacity to generate income in the CoE outside of student fees and government funding. This is, according to CEEF staff, mostly due to the high workload of staff

associated with the appointment as a CoE. For project-based funding or infrastructure projects that fall outside of the operational costs of the CoE, CEEF has to directly apply for funding from MoECR on a project basis.

Budget programme:

The MoECR has a budget programme through which they provide scholarships to students with exceptional grades. In order to receive such grants, pupils must compete in the national scholarship competition. The Ministry uses these competitions to influence enrolment in sectors in which they anticipate labour shortages. MoECR does so by allocating a number of “budget placements” (e.g. scholarships) per sector. As of now, CEEF has approximately 30% of its students on this government scholarship (the other students pay full fees). However, CEEF management perceive this funding insufficient to cover the full costs per student. This discrepancy between funding and actual costs has led to a shortage of financial resources. As a result, CEEF has had to reduce the number of direct contact hours with students and increase the time allocated for individual study to manage the budget constraints.

5.3 Partnerships and stakeholder engagement

CEEF recognises the critical role of partnerships in ensuring the relevance and quality of its vocational training programs. Its engagement strategy encompasses a diverse range of stakeholders, including private sector companies, public sector institutions, and international bodies such as ETF. The following types of partnerships can be categorised:

- **Private sector:** CEEF collaborates with various companies in the finance, banking, and economics sectors. These partnerships involve joint curriculum development, internship programs, mentorship opportunities, and participation in innovation camps and business plan competitions for students. Examples include Green City Lab and outsourcing companies in the tech sector.
- **Public sector:** CEEF works closely with the MoECR and the National Accreditation Agency. These collaborations focus on ensuring compliance with national standards, participating in policy consultations, and aligning training programs with national priorities.
- **Other VET centres:** As a CoE, CEEF closely cooperates with other colleges and professional schools. CEEF cooperates in the COOPNET network, provides teacher training for other colleges, and is involved in curriculum development of other colleges, as well as skills validation (i.e. Recognition of Prior Learning).
- **International organisations:** CEEF engages with international organisations through the various international projects that they organise (e.g. skills competitions in the Czech Republic and the Girls go Circular project⁵²). They are looking to develop their international network further through programmes funded by Erasmus+ on skills development projects and by participating in the ETF's network of excellence (ENE). CEEF is also involved in international networks such as ETF's ENE Network, and they participate in ISATCoVE.

5.3.1 Sustaining public-private partnerships (PPPs)

CEEF employs several strategies to build and maintain strong PPPs, recognising that these relationships are crucial for long-term success:

- **Formal agreements:** When CEEF engages with the industry, they establish formal agreements with private sector companies. In these agreements, they outline the scope of collaboration and establish commitment. This is to embed cooperation in combating problems arising from turnover.
- **Maintaining communication:** CEEF understands that regular communication is crucial to ensure that all partners are informed and engaged. To do so, on the one hand, CEEF regularly invites private sector representatives to provide guest lectures (every Wednesday) or to partake as a jury in various projects and skills competitions. On the other hand, companies maintain an open-
- door policy. This means that students can visit affiliated companies to gain industry exposure and experience.
- **Joint curriculum development:** Private sector representatives participate in curriculum advisory groups, ensuring that training programs meet industry needs. This fosters a sense of shared ownership and commitment and gives private sector companies the opportunity to influence the skills of graduates.
- **Maintaining an active alumni network:** CEEF maintains an active alumni network. They leverage this active network to engage with the private sector. For instance, they invite alumni to provide guest lectures as role models, or they set up internship programmes at companies where alumni work. Alumni also present their careers at job fairs.

⁵²ETF For more information, see: <https://eit-girlsgocircular.eu>

5.3.2 Feedback loops to ensure training relevance

CEEF has established several feedback loops to ensure that its training programmes remain relevant and responsive to industry needs. CEEF develops their own quality assurance questionnaire. For the development of the questionnaire and interpretation of the results, it helps that most of their staff is academically trained (Master of Science), including a large number of post-doc lecturers⁵³. CEEF regularly collects feedback on their training quality and relevance through three of four surveys per semester, including:

- **Labour market surveys:** CEEF conducts regular surveys to assess industry skill needs and trends, informing curriculum updates and program development. They make use of events organised by the MoECR, such as career trade fairs, to disseminate their surveys.
- **Satisfaction surveys for teachers, students, and industry:** CEEF frequently consults their staff, students and industry partners on their satisfaction with the quality of education,

performance of teachers, and relevance of skills for employers. Surveys that are required to be administered externally are disbursed by students at their WBL and internship placements.

- **Graduate tracking system:** Alumni feedback is integrated into curriculum adjustments, ensuring that training remains relevant to the evolving needs of the workforce. CEEF maintains a database of alumni, which they contact to participate in events, partake in surveys, etc.
- **Employer consultations:** In their capacity as a CoE in Moldova, CEEF has the unique position of being involved in curricula development and review. Through this position, they regularly engage in industry roundtables and consultations and provide a platform for discussing emerging trends, challenges, and opportunities in the labour market. They engage with subject matter experts, and they approve education programmes of other VET colleges.

5.4 Building skills ecosystems that work towards a future-proof labour force

As a CoE in Moldova, CEEF plays a central role in developing education for its sector. Its position enables it to anticipate future skills needs through labour market surveys, industry roundtables, and direct engagement with employers.

By fostering strong partnerships with the private sector, operating under the direct authority of the MoECR, and employing highly qualified academic staff, CEEF has created its own knowledge triangle, positioning itself at the centre of innovation in vocational education. As a result, CEEF and other CoEs naturally develop their own skills ecosystems from the moment they are designated as CoEs by the Ministry. This top-down approach, initiated by government mandate, ensures that skills ecosystems are systematically created and strengthened across the country.

CEEF's role in stimulating innovation and smart specialisation is multifaceted. The institution fosters collaboration between academia, the private sector, and public institutions through research programmes, including a national conference with international participation. CEEF supports the development of digital financial solutions, promoting digitalisation and the use of emerging technologies such as blockchain and artificial intelligence in the financial sector. They do so by involving innovative businesses in training delivery at the institute.

To contribute to socio-economic development and lifelong learning, CEEF offers refresher courses for economic agents and professional certifications, including the certification of skills acquired in non-formal settings. Through such partnerships with educational institutions and companies, CEEF provides a framework for lifelong learning so that professionals can respond effectively to the challenges of the global economy.

One example of how CEEF applies smart specialisation is by developing a specialisation for finance in the tech sector. The government of Moldova is currently investing in an enabling business environment for tech start-ups and businesses. Through CEEF's position as a CoE in the Moldovan skills ecosystem, they are at the forefront of such developments. They continuously update their finance and business law programmes to keep up with the fast pace of the developing tech sector in Moldova. Furthermore, as a CoE, CEEF can be asked by the government to provide policy advice to financial institutions and regulators. In this way, CEEF can contribute to innovative economic strategies to boost competitiveness and economic sustainability in the country.

In addition to their individual ecosystems, CoEs collaborate through the COOPNET network, a platform where CoEs and VET colleges share best practices and work together to enhance vocational education in Moldova.

⁵³ https://ceef.md/storage/public/files/Strategia%20activit%C4%83%C8%9Bii%20metodice_CEEF.pdf

5.5 Involving staff and students in vocational excellence

5.5.1 Teacher training and professional development:

Next to being responsible for teacher training of other VET centres and professional schools, CEEF recognises that professional development of their own staff and active involvement of students is crucial for the institution's success. To achieve this, the institution involves staff in the following way:

- **Participatory governance:** Staff members are represented in various decision-making bodies, including the Administrative Council and the Teachers' Council. This ensures that staff perspectives are considered in strategic planning and operational decisions.
- **Curriculum expertise and development:** Staff collaborate with external stakeholders, including industry professionals, to review and update the curriculum. This ensures that the curriculum is up-to-date and aligned with labour market needs. They assess what subjects are current and evolving, helping to introduce greening and efficiency aspects into the programmes.
- **Research and innovation:** Staff are encouraged to engage in research activities and innovative projects. Because a considerable share of CEEF's teaching staff is academically educated, staff engage in academic research projects. Through this research, the quality of teaching and education is enhanced, and it also contributes to the institution's overall knowledge base.

- **Self-assessment tools:** CEEF makes frequent use of self-assessment tools published by ETF, which are implemented with the involvement of teaching staff. For instance, they engage in the ISATCoVE⁵⁴ tool for internationalising vocational excellence, or the Ecosystems Toolkit⁵⁵ developed to help VET centres analyse its strengths and weaknesses, which can be used to leverage the involvement of external partners as part of a skills-ecosystem.
- **Professional development:** CEEF invests in continuous professional development for its staff. As outlined in the Strategic Development Plan 2021-2026 of CEEF, the institution aims to increase the number of teachers participating in continuous training programmes by 10% annually.

One staff member said the following about it:

"I was invited to a digitising of education workshop for teachers when we had to switch to digital education during the Covid pandemic. This was provided by MoECR. I went there and then I instructed other teachers at CEEF. We now have one activity a year for the development of digital skills."

5.5.2 Student engagement and career outcomes:

CEEF places a strong emphasis on student engagement, recognising that active student participation enhances the learning experience and prepares them for future professional roles:

- **Student Council:** The institution has an active Student Council that represents student interests in various decision-making processes. This body serves as a bridge between the student community and the administration.
- **Feedback mechanisms:** Regular surveys and feedback sessions are conducted to gather student input on curriculum content, teaching methods, and overall learning experience. This feedback is used to inform continuous improvement efforts. Students also provide insights on curriculum content informally. Involving students actively in this process gives them a voice in the education they receive.
- **Work-based learning:** Students are actively involved in work-based learning opportunities,

including internships and industry projects.

This hands-on experience allows them to apply theoretical knowledge in practical settings and develop professional networks. CEEF students have internship opportunities after their third year, which often leads to them being recruited into employment.

- **Collaboration on projects and extracurricular activities:** The CoE organises extracurricular activities such as the "Best Business Plan" competition, fostering innovation and practical skills. Winning business plans are then provided with an industry mentor and seed money. Students also have the opportunity to collaborate with NGOs such as Green City Lab on project implementation, which helps these organisations to implement the projects more quickly and gives students exposure to the world of work. They help develop economic and financial solutions and analyse data as part of tasks proposed by teachers.

⁵⁴For more information, please see: <https://openspace.etf.europa.eu/pages/isatcove-driving-vocational-excellence-through-self-assessment-and-collaboration>

⁵⁵For more information, please see: <https://www.etf.europa.eu/sites/default/files/2025-01/SKILLS%20ECOSYSTEM%20ENGAGEMENT%20TOOLKIT%20.pdf>

5.6 Operational challenges and success factors

One of the main challenges faced by CEEF is the need to continuously update its curriculum to keep pace with evolving labour market demands, technological advancements, and industry expectations. Fields such as IT, greening, and e-business are developing rapidly, requiring constant revisions (yearly) to ensure alignment with both national and international standards while maintaining educational quality.

Financial autonomy remains a significant limitation for CEEF, as it relies heavily on funding from the Ministry of Education. While regulations permit CoEs to generate additional income, strong competition in the industry and private training market, as well as high staff workloads, prevent the development of sustainable revenue streams. Additionally, CEEF management does not perceive that the scholarship funding model covers the full cost per student, resulting in financial shortfalls that impact the institution's ability to expand its offerings.

The high workload of staff is another pressing issue. The additional responsibilities that come with CEEF's CoE status significantly increase teachers' duties without corresponding financial compensation. Educators must juggle teaching, curriculum development, industry engagement, and training responsibilities.

Success factors: a key success factor for CEEF is its

5.6.1 To conclude

CEEF is a leading institution in Moldova's vocational education system, recognised for its strong industry connections, innovative learning approaches, and commitment to high-quality training. By integrating practical experiences such as internships, business competitions, and work-based learning, CEEF ensures that students graduate with skills aligned with the demands of the labour market. Its collaborative approach, involving both public and private sector stakeholders, further strengthens its position as a leader in vocational education.

CEEF's reputation attracts students and employers alike, with many graduates securing employment even before completing their studies. The institution continually enhances its curriculum through structured feedback mechanisms,

strong reputation as one of Moldova's top vocational institutions. This recognition attracts high-performing students and fosters strong employer interest, ensuring that graduates are highly sought after in the job market. Many students secure employment even before completing their studies, highlighting the centre's ability to prepare them for professional success.

Other success factors are:

- A strong alumni network that helps CEEF build their skills ecosystem. Graduates feel a strong connection and a sense of community at CEEF, which motivates them to collaborate with the institute.
- Regular consultations with employers, alumni, and students help shape curriculum updates and training approaches. Labour market data, collected through surveys and industry roundtables, ensures that educational programs remain relevant and keep employers on board.
- CEEF engages with other CoEs in the COOPNET network, allowing them to exchange best practices between CoEs and helping other VET centres professionalise their teaching staff further. Through this network, strong partnerships are formed in Moldova's national skills ecosystem.

assessment surveys and self-assessment tools, and entrepreneurship education offered by the industry. Additionally, its focus on research, self-assessment, and international engagement positions it as a forward-thinking centre of vocational excellence.

Looking ahead, CEEF is well-placed to expand its ecosystem and impact by strengthening its partnerships, enhancing international collaborations, and seizing new opportunities for growth in, for example, the IT sector. With its strong foundation in innovation and stakeholder engagement, the institution will continue to play a vital role in shaping Moldova's vocational education landscape.

