European Commission

Unlocking Potential:

A Spotlight on Erasmus+ Centres of Vocational Excellence

Centres of Vocational Excellence

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Foreword

Vocational Education and Training (VET) is vital for building competitive, fair, resilient, and future-ready labour markets. Across Europe, countries are modernising their systems and developing a competitive, state-of-the-art system putting the learner at the heart of education and training offer. Strong VET pathways give people the skills and knowledge they need to thrive in a fast-changing world of work, while boosting growth, competitiveness, innovation, and social cohesion. This is recognized by the Political Guidelines which also announced a new European strategy for VET.

Recent initiatives such as the 2025 Union of Skills, the Clean Industrial Deal and the Competitiveness Compass stress the need to invest in skills development for a competitive Europe. The Union of Skills, in particular, calls upon all Member States and stakeholders to step up their game in investing in those skills the businesses in Europe need to thrive and that will empower European citizens to succeed in their professional lives and in society. It promotes learning for both young people and adults, aiming at providing opportunities for people to upskill and reskill, alongside strong foundations in basic and transversal skills and STEM education.

This evolution is also guided by key policy frameworks: the Council Recommendation on VET for sustainable competitiveness, social fairness and resilience, the 2025 Herning Declaration on attractive and inclusive VET agreed by the Ministers in charge of VET from 38 countries and by the European Social Partners. Together, they point to the same message: vocational education and training thrives when it is excellent, inclusive, and innovative. Strong VET systems not only open opportunities for learners but also spark fresh ideas and help turn reforms into reality in Europe.

Vocational excellence is a cornerstone of the EU's skills and VET policy. Since 2019, the European Commission has supported the creation and development of Centres of Vocational Excellence (CoVEs) through Erasmus+ funding helping drive systemic change. In just six years, these centres have become pillars of innovation, showing how European cooperation can add value and be an inspiration for many national and regional initiatives to adapt their systems to the CoVE model taking account of their specific context.

I would like to thank all the organisations involved in CoVEs projects since 2019 for their efforts. This brochure takes you inside 25 of them. Through the voices of learners, teachers, and partners, it shows how vocational excellence is shaping lives, communities, and industries in Europe. These stories reveal how projects build strong institutions, engage stakeholders, and align with local and national strategies to create a lasting change. CoVEs are modernising VET, supporting Europe's competitiveness, driving its green and digital transitions, and making vocational education and training an attractive first choice.

We hope you enjoy reading about the achievements and success stories of the Centres of Vocational Excellence. A lot has already happened, but the journey goes on. Europe's investment in VET will continue to offer learners of all ages excellent education, training and career opportunities.

Mario Nava

Mario Nava

Director-General for Employment, Social Affairs and Inclusion

List of acronyms

AI	Artificial Intelligence
CoVE	Centre of Vocational Excellence
C-VET	Continuing Vocational Education and Training
DigComp	Digital Competence Framework for Citizens
ECTS	European Credit Transfer and Accumulation System
EDIH	European Digital Innovation Hub
EfVET	European Forum of Technical and Vocational Education and Training
EQF	European Qualifications Framework
ESCO	European Skills, Competences, Qualifications and Occupations
ESF+	European Social Fund Plus
EU	European Union
GreenComp	European sustainability competence framework
I-VET	Initial Vocational Education and Training
ICT	Information and Communication Technology; IT: Information Technology
NGO	Non-governmental organisation
SME	Small and medium-sized enterprise
ToT	Training of Trainers
VET	Vocational Education and Training
VR	Virtual Reality

Featured CoVE projects

CoVE project name	CoVE project website
3LoE - Three-level Centers of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy	https://3-loe.eu
AEDIL-dairy-CoVE - European Excellence in Dairy Learning	https://dairysectorskills.com
AGRIFOOD4FUTURE - Centres of Vocational Excellence in Smart Farming and Sustainable Food Systems	https://agrifood4future.com
AILEEN - centres of vocAtIonaL Excellence in aErospace & defence for advanced manufacturing	https://aileencove.eu
AI4VET - AI-powered Next Generation of VET	https://www.ai4vet4ai.eu
Auto CoVE 2.0 - Greening Europe with support of Clean-tech-vehicle education	https://www.autocove.eu
CARE about IT	https://careaboutit.eu
CATALYST - European VET Excellence Centre for Leading Sustainable Systems and Business Transformation	https://projectcatalyst.eu
EE4M - Engineering Excellence for the Mobility Value Chain	https://ee4m.eu
ECoVEM - European Centre of Vocational Excellence in Microelectronics	https://ecovem.eu
EPLUG - European Platform for Urban Greening	https://platformurbangreening.eu
EULEP - European Learning Experience Platform	https://eulep.eu
EUVECA - European Platform for Vocational Excellence in Health Care	https://euveca.eu
FEA-VEE - Fashion Earth Alliance – Vocational Excellence and Enterprise united for training, policy reform and sustainability in the fashion, textiles and apparel industries	https://fea-vee.eu
GIVE - Governance for Inclusive Vocational Excellence	https://www.thegiveproject.eu
HABITABLE - Alliance of Centres of Excellence in Vocational Training for Sustainable Habitat	https://habitable-cove.eu
H2CoVE - Hydrogen Centres of Vocational Excellence	https://h2cove.eu
INVESTech - Innovation Vocational Excellence in Tech	https://investech-cove.eu
MOSAIC - Mastering job-Oriented Skills in Arts & crafts thanks to Inclusive Centres of vocational excellence	https://mosaiceuproject.eu
PoVE Water Scale-up - Platform of Vocational Excellence Water Scale-up	https://www.povewater.eu
PROMOTE - Promoting Integrated Professional Development for Prison Practitioners in Vocational Excellence for Offender Reintegration	https://www.promoteproject.eu
SHOREWINNER - Southern European Community for Offshore Wind Energy	https://shorewinner.eu
Talentjourney - Platform for CDS VET Excellence	https://talentjourney.scv.si
TOUR-X - CoVEs for the Tourism Industry	https://tour-x.eu
VOLTAGE - Vocational Training for Optimal Learning and Growth in the European Battery Industry	https://voltage-cove.eu

Introduction

Understanding the Centres of Vocational Excellence

Centres of Vocational Excellence (CoVEs) are a European flagship initiative to strengthen and develop Vocational Education and Training (VET) in Europe. CoVE projects are funded under Erasmus+ and aim to enhance the quality and innovation of VET. CoVEs are not just training institutions, but collaborative networks of local and international partners that respond to the evolving requirements of learners, businesses and communities.

What is Vocational Excellence?

Vocational Excellence goes beyond just high-quality training. It puts the learner at the centre and strives for relevant and inclusive VET with strong connections to the world of work and society.

In other words, Vocational Excellence:

- is an integral part of regional skills ecosystems to support regional development and innovation;
- works within knowledge triangles, linking education, research and business;
- helps learners gain both job-specific and key competences through high-quality provision and quality assurance;
- builds partnerships with employers, supports professional development for staff, encourages innovative teaching and promotes learner and staff mobility;
- promotes inclusiveness by ensuring access to top-quality education and training for all learners, not only the most talented.

In this way, Vocational Excellence supports innovation, adaptability and sustainability, aligning VET with economic transitions and societal needs, while preparing individuals for high-quality employment and lifelong learning.

For further information: https://employment-social-affairs.ec.europa.eu/policies-and-activities/skills-and-qualifications/skills-jobs/centres-vocational-excellence_en

From 2019 to 2024, Erasmus+ funded 69 CoVE projects to advance Vocational Excellence in Europe. The CoVE projects work to:

- improve the quality in VET;
- promote excellence and inclusion;
- address horizontal issues such as the green and digital transitions;
- enhance the competitiveness of specific industries or sectors by tackling labour and skills shortages and fostering innovation.

Through international cooperation, Erasmus+ CoVE projects bring together VET providers, private organisations and public authorities from all over Europe. This enables partners from different countries to collaborate on developing Vocational Excellence in their local and regional contexts, while sharing innovative approaches and common interests in solving joint challenges. This empowers local stakeholders and ensures that VET systems can rapidly adapt to economic and societal changes.

CoVEs not only engage learners, teachers, employers and other actors to work together to shape the future of VET, but they also improve the quality and relevance of training and curriculum design. For example, CoVEs have created modular, sector-specific learning pathways, covering different qualification levels (EFQ 3–6 and beyond), equipping learners with the skills needed to succeed in rapidly changing fields like automotive, ICT, and the green economy. The European Qualifications Framework (EQF) makes it easier to align qualifications between countries, supporting transparency and learner mobility.

The stories shared in this brochure show how strong partnerships between multiple stakeholders in the VET system create a thriving environment for Vocational Excellence. When project results are embedded in institutional frameworks, backed by sustainable funding and aligned with policy priorities, CoVEs have the potential to deliver long-term value for people, regions and sectors. CoVEs are helping VET become more agile and inclusive, shaping not only the future of VET but also the communities and economies it serves.

Beyond their impact on systems and structures, CoVEs make a real difference in people's lives:

- **Learners** gain access to cutting-edge training, hands-on work experiences and smoother pathways into meaningful careers.
- **Teachers and trainers** benefit from professional development, international collaboration and exposure to innovative teaching methods and technologies.
- **Employers and businesses** connect to a skilled talent pool that meets evolving industry needs, while contributing to curriculum design and training delivery.
- **Communities** experience the ripple effects of stronger local economies, fewer skills gaps and greater social inclusion.

About this brochure

Centres of Vocational Excellence (CoVEs) are transforming Vocational Education and Training (VET) into a driving force for innovation, collaboration and sustainable growth across Europe's industries and communities.
This brochure presents a selection of 25 Erasmus+ funded CoVE projects, highlighting their innovative approaches to Vocational Excellence, the challenges they have tackled, the partnerships they have built and the tangible results they have delivered.
Part of a wider initiative that also includes an analytical report on the CoVEs and 25 detailed case studies showcasing diverse initiatives across Europe, this brochure brings together CoVE projects at every stage of their journey. Some are newly launched, while others are already showing clear results and making a real impact.
This selection offers a window into the wider CoVE community, comprising so far 69 projects in total, all with equally valuable stories to share. This brochure offers only a snapshot of the full potential and impact of all the Centres of Vocational Excellence funded under Erasmus+ as a proven, scalable model for VET excellence.
If you would like to explore the full range of projects, learn from their experiences and see how they collaborate at European Union (EU) level, visit the relevant webpages and get in touch with the growing CoVE community:

- Centres of Vocational Excellence - Employment, Social Affairs and Inclusion
- Centres of Vocational Excellence - Erasmus+
- Welcome to the CoP CoVEs

Transnational collaboration and lasting impact

Between 2019 and 2024, Erasmus+ funded 69 CoVE projects to advance Vocational Excellence in various regions and sectors. While rooted locally, these projects foster connections in Europe and beyond, enabling collaborative skills exchange, mutual learning and the sharing of knowledge and best practice. CoVEs help to address specific local and regional skills and VET challenges and priorities, which vary according to the context, e.g. the local industry or demography. Further, what is an innovative approach in one region may already be a standard practice in another. This demonstrates the diversity of European VET systems and highlights the relevance of tailored approaches, 'thinking globally and acting locally'.

CoVEs are often focused on a specific occupational area, such as healthcare, engineering or tourism, while simultaneously addressing cross-cutting themes like social inclusion or green and digital skills. Their mission is to provide high-quality VET that meets employers' evolving needs, while driving innovation and impact at system level. They also support applied research through partnerships with research institutions, businesses, public authorities and other stakeholders.
The projects seek to continue their collaboration beyond their initial Erasmus+ project funding, supported by long term governance structures and diverse funding models. These transnational partnerships demonstrate how stakeholder networks can sustain impact, broaden access to resources and secure recognition at the policy-level.

Partnering up to establish skills ecosystems

At the heart of the CoVE initiative lies a strong commitment to partnerships, where 'the sum is greater than its parts'. CoVE projects are broad collaborations that bring together a wide range of partners from different countries, including, but not limited to, education and training providers, businesses, civil society organisations, local and regional authorities and research institutions.

Within this model, CoVEs develop innovation ecosystems where VET institutions, industry representatives and research organisations work together to develop practical solutions for fast-evolving and high-tech sectors. Through such partnerships, CoVEs strengthen their capacity to innovate, adapt and ensure that training programmes match labour market needs and regional development priorities. VET institutions are at the core of CoVE partnerships, driving the delivery of vocational programmes. Businesses provide insights into existing and emerging skills needs and help shape training content. Civil society organisations bring perspectives on equity, inclusion and community needs, while public authorities help to align CoVE activities with regional and national strategies. In some cases, collaboration with tertiary education institutions not only supports lifelong learning but also fosters entrepreneurial skills and innovation. Since CoVE projects have partners from several European countries, their practices, results and solutions are shared across national borders.

the INVESTech project

Building skills ecosystems for the digital transition:

The challenge

The Information and Communications Technology (ICT) sector is evolving at a rapid pace, demanding new technical and transversal skills such as communication, teamwork, problem-solving and adaptability. VET institutions often struggle to keep up with developments in areas such as Artificial Intelligence (AI), blockchain and quantum computing. There was a need to bring education providers, businesses and other stakeholders together to identify skills gaps and design practical responses.

The approach

To address this challenge, INVESTech has focused on building strong partnerships between academia, industry, the public sector and civil society, forming regional ecosystems. In each of the five partner countries, national workshops and events were organised based on a comprehensive skills needs assessment in ICT, bringing together various institutions that had previously operated independently. These workshops and events have attracted a broad range of stakeholders, ensuring all relevant local actors could contribute to identifying gaps and co-designing practical solutions. Activities were focused on greening VET institutions, advancing digital skills and fostering innovation.

Engagement was tailored to each stakeholder group. Schools were motivated by skills competitions, government bodies by workshops on regional development, and companies through targeted opportunities. For example, the Cypriot partner has piloted micro-credentials, which are short programmes designed to enable workers to upskill quickly, with the support of local business and the project partners. Meanwhile in Slovakia, high-tech firms were drawn to the project's sustainability focus. The project's international network has also offered training opportunities beyond what was available locally.

The outcomes

- In Greece and Cyprus, INVESTech has partnered closely with governmental bodies such as the Ministry of Education and national quality assurance agencies to strengthen Vocational Excellence.
- The project has also strategically leveraged existing regional networks (such as Kosice IT Valley in Slovakia, a project partner) to mobilise external stakeholders around a shared vision for ICT-driven regional development.
- By improving how VET aligns with industry needs, INVESTech has encouraged more external companies outside of the project to collaborate with VET schools on targeted training.
- The project has shown that with the right environment, VET can adapt to fast-changing technologies and harness its potential as a driver of innovation.

the AI4VET4AI project

Higher Education and VET jointly developing artificial intelligence (AI) modules for teaching and learning:

The challenge

As digital technologies reshape the labour market, VET must adapt quickly. Many sectors, including healthcare, tourism, transport and manufacturing, require workers with AI skills, yet non-technical fields often lack targeted training for students and teachers.

The approach

AI4VET4AI (AI-powered Next Generation of VET), a Europe-wide CoVE project led by Algebra University in Croatia, has brought together VET providers and universities to develop AI training in Europe. Together, they have created modules, trained teachers, and tested new digital learning tools including online courses and practical AI exercises based on real-world scenarios. The project has ensured practical relevance by collaborating closely with industry, including companies beyond the project partnership and embedding ethics into the AI curriculum. The project has focused on helping both VET students (including adult learners) and teachers in developing AI skills, especially in non-tech fields like healthcare, tourism, transport and manufacturing.

The outcomes

- Learners and teachers have gained AI skills applicable to labour market needs, while VET institutions have strengthened their capacity to integrate AI into teaching and learning.
- The project has emphasised ethics and worked closely with industry to ensure the training is practical and aligned with labour market needs.
- Overall, **AI4VET4AI** has demonstrated how collaboration between higher education and VET can keep curricula aligned with digital innovation and prepare learners for the rapidly evolving labour market.

"A big achievement of the project is that it brought together institutions with traditionally separate mandates – vocational and academic – and developed a coherent framework for content co-creation and delivery." *- AI4VETAI project partner*

the Auto CoVE 2.0 project

Co-creation to bridge the skills gap in the automotive sector:

The challenge

The automotive sector is undergoing rapid technological change. Electric vehicles, battery systems, hydrogen transport, and advanced driver assistance systems are becoming increasingly common, creating a growing skills gap among workers and VET graduates.

The approach

Auto CoVE 2.0 has addressed this gap by developing tools for upskilling and reskilling, alongside targeted educational content to support career growth. The project grew out of a skills-needs analysis involving 375 industry representatives and vehicle field teachers from seven partner countries. A standout feature has been the biannual Collaborative Development Workshops, which have brought together VET teachers, university lecturers, and industry experts to co-create and refine training materials. These workshops have encouraged knowledge exchange between secondary and tertiary education and ensured that teaching stays aligned with the latest industry developments.

The outcomes

- This collaborative, feedback-driven approach has helped to improve teaching quality and ensured that learners gain skills directly relevant to emerging automotive technologies.
- By fostering cooperation between education and industry, **Auto CoVE 2.0** has prepared VET graduates and workers to meet the demands of a rapidly evolving mobility sector, helping to close the skills gap and support innovation in the industry.

"In Auto CoVE 2.0, we have created a culture of exchange for highly specialised knowledge, enabling mutual learning among experts to strengthen the overall expertise within the industry."
- Auto CoVE 2.0 project partner

the TOUR-X project

Strengthening SMEs' involvement in training and skills development in the hospitality sector:

The challenge

Small and micro businesses in the tourism sector often struggle to provide staff with up-to-date training in line with evolving industry standards. Ensuring that qualifications are relevant, widely recognised and aligned with regional labour market needs remains a key challenge.

The approach

The TOUR-X project has developed qualifications and training programmes that combine hands-on experience with digital and green skills tailored to the hospitality sector. Chambers of Commerce have played a pivotal role in connecting education and training providers with industry and shaping regional strategies. Hotel-based labs, created with input from both large companies and SMEs, have provided practical learning environments that meet real industry expectations. A key goal of the project has been to encourage a cultural shift among tourism employers toward greater involvement in training and skills development.

The outcomes

- Around 2000 learners have acquired skills that are directly relevant to regional businesses and professional associations, improving employability and sectoral competence.
- The exchange of good practices in Europe has supported mutual learning, such as Greece adopting German waste management practices.
- **TOUR-X** demonstrates how targeted collaboration with SMEs can strengthen VET provision, ensuring that the tourism workforce is equipped to meet the sector's evolving needs.

"Before the TOUR-X project, VET providers did not actively participate in regional discussions with businesses and public authorities. The project brought about a shift in perspective, ensuring that Vocational Education plays a more prominent role in shaping regional innovation strategies."

- Tour-X stakeholder

Developing skills for a dynamic labour market and resilient society

CoVEs are at the forefront of preparing learners and workers for economies and societies in transition. They foster future-proof skills, support the greening and digitalisation of industries, and promote upskilling and reskilling. By bringing together education and training, business and research, CoVEs create ecosystems where skills development keeps pace with technological change and economic transformation.

Anticipating skills needs through labour market intelligence

A consistent trend across CoVE projects is the use of robust labour market intelligence to shape teaching and learning, ensuring that training responds to both current and future skill needs. VET plays a unique role in generating new knowledge. Drawing on hands-on experience of industry, teachers and learners, CoVEs apply diverse methods to identify and anticipate future skills demands in innovative sectors at regional and local level. The insights gathered provide a strong evidence base for developing targeted training programmes that respond to emerging economic and technological trends.

Many CoVEs have translated this intelligence into practical training content by engaging regional stakeholders from education and training, research and business to co-develop training programmes for new and rapidly evolving industries. To keep training relevant, many projects have also developed platforms that continuously update labour market intelligence.

This demand-driven approach strengthens the alignment between education and labour market requirements, particularly in the context of the green and digital transitions. While strategies are co-developed at a transnational level, each regional CoVE adapts them to local conditions during implementation, ensuring training meets the specific needs of their respective labour markets.

the EULEP project

Surveying businesses to anticipate their training needs on Artificial Intelligence, Virtual Reality and Social Innovation:

The challenge

Businesses increasingly need skills in innovation-driven areas such as Artificial Intelligence (AI) and Virtual Reality (VR). However, many companies hesitate to adopt these technologies due to a lack of knowledge, uncertainty about legal and ethical considerations and limited trust in their commercial applications. Moreover, the implementation of these technologies can have disruptive effects on the workforce and their performance. Continuing Vocational Education and Training (C-VET) has the potential to close these gaps, but training opportunities need to be attractive, tailored and directly aligned with business needs.

The approach

EULEP, the European Learning Experience Platform has addressed this challenge with a large-scale survey of businesses spanning all sectors. Distributed through national, regional and local Chambers of Commerce and Industry, the survey has gathered insights from 717 companies. It has identified in-demand skills related to digital transformation, job-specific functions and regional economic priorities.

Based on these findings, **EULEP** has developed three learning paths covering AI, VR, and Social Innovation. The training modules have focused on transversal skills such as applying AI and VR in business, understanding ethical and legal implications and supporting organisational change. Chambers of Commerce and VET providers have co-created the content, tailoring it to regional contexts such as applications in Türkiye's textile industry and the sales sector in Catalonia. VET Councils have brought together employers' organisations, public authorities, trade unions, academia and VET providers, who provided strategic guidance throughout the development.

The outcomes

- **EULEP** has produced three comprehensive training paths that respond directly to business needs in AI, VR and Social Innovation.
- The AI, VR, and Social Innovation training materials have been uploaded to the dedicated e-learning platform and have been tested by over 400 VET trainers and more than 400 businesses in the participating countries.
- The project's analysis and recommendations have been presented in two reports: Workforce needs for up and reskilling in AI, VR and social innovation and Recommendations for the development of transnational training modules.
- By aligning training content with regional priorities and industry input, **EULEP** has strengthened the role of C-VET in helping companies adapt to digital transitions while ensuring the training remains relevant and trusted in the participating countries.

"Chambers of Commerce and Industry are trusted partners of businesses and have direct access to employers. They are ideally placed to collect key data and information from businesses through surveys and interviews. However, during the survey creation phase, all the regional CoVE partners should collaborate to develop the survey together. This ensures an inclusive approach to the various tasks and activities within the project."

- Eurochambres, EULEP project leader

the HABITABLE project

Greening and digitalising the Habitat sector through skills intelligence:

The challenge

The habitat sector in Europe faces a shortage of skilled workers, particularly in areas linked to digitalisation and the green transition. The sector encompasses a wide range of activities such as infrastructure construction, housing and installations, wood and furniture manufacturing, home textiles, electricity and lighting installation. The diversity of jobs within the sector highlights the need for forward-looking education and training approaches that can respond to evolving labour market demands and sustainability goals.

The approach

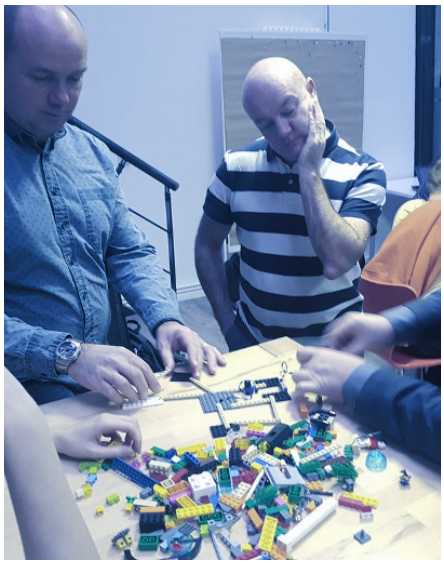
The **HABITABLE** CoVE has developed the SMART Skills Intelligence Platform (SMART SIP) to monitor changes in jobs and skills within the habitat sector. The platform includes three practical tools:

- **SMART Info:** An online resource offering professionals access to up-to-date information, guidance and European tools for applying skills intelligence;
- **Sector Map of Jobs and Skills:** A digital map showing how different roles are interrelated and linked to the relevant VET programmes;
- **Training Offer Panel:** A digital monitoring panel providing real time information on initial and continuing VET programmes and courses available in the sector.

These tools have supported policymakers, training providers and employment services to help align training with labour market needs, using European Skills, Competences, Qualifications and Occupations (ESCO) taxonomy.

The outcomes

- By combining labour market intelligence with user-friendly digital tools, **HABITABLE** has supported the habitat sector in adapting to the green and digital transitions.
- The SMART SIP has enabled stakeholders to anticipate skills needs, design targeted training and ensure that Europe's workforce is equipped to support sustainable development and climate resilience in the habitat sector.
- A dual Online Centre has promoted learning models that combine classroom teaching with real-world work experience helping learners to gain practical skills through partnerships between training centres and companies.



the Talentjourney project

Closing the skills gap in smart manufacturing:

The challenge

Smart manufacturing refers to an innovation-driven approach to industrial production that leverages technologies such as Internet of Things, AI, and cybersecurity to make manufacturing processes more efficient and sustainable. As these technologies rapidly transform the sector, employers increasingly seek workers with digital, green and transversal skills, such as an entrepreneurial spirit. However, VET offers often lag behind. Without coordinated efforts to anticipate labour market changes, skills gaps risk slowing innovation and competitiveness.

The approach

The Talentjourney CoVE has set out to address these gaps through in-depth labour market foresight and intelligence studies. This research has informed the design of 48 modules that integrate digital, green, and transversal skills as well as sector-specific fields such as AI, robotics, cybersecurity and data science.

A co-creation approach has brought together VET providers, students, industry partners and technology experts to ensure the training aligned with real labour market demand.

The outcomes

- **Talentjourney** has created a flexible, industry-driven training model that equips learners with the digital and technical skills needed for smart manufacturing.
- By aligning training directly with business needs, the project has helped close skills gaps and strengthened regional competitiveness.
- One standout example has been the creation of demo labs which are interdisciplinary spaces that replicate smart manufacturing environments. These labs enable learners to gain practical experience with technologies such as sensors, industrial automation, predictive maintenance and cybersecurity. They also serve as co-working and prototyping hubs where students, teachers and industry experts collaborate.

"Using the ISATCOVE self-assessment tool enabled our school centre to evaluate its progress toward vocational excellence. The Talentjourney initiative served as key evidence demonstrating how our curricula are evolving in line with labour market needs = supporting innovation, adaptability, and continuous improvement in vocational education."

- Talentjourney project partner

the AILEEN project

Establishing Career Pathways in the Aerospace and Defence Industry:

The challenge

In the Aerospace and Defence sector, skills shortages persist in advanced manufacturing, innovative technologies and smart processes such as additive manufacturing and welding. These are crucial for improving production efficiency and quality, yet career pathways for workers remain unclear.

The approach

The AILEEN CoVE project has brought together Higher Education Institutions, VET providers, certification bodies and industry partners to co-design a transnational curricula, applied research and apprenticeships based on labour market requirements. Joint working sessions have ensured that training content and assessment tools remain directly relevant to labour market needs. The partnership has also cooperated with new stakeholders such as Defence authorities and aerospace cluster organisations interested in training in additive manufacturing.

The outcomes

- The project has developed 22 sector-specific modules covering EQF levels 3 to 6 which can be integrated into existing qualifications or used as micro-credentials.
- These modules, recognised by sectoral organisations, have contributed to the establishment of clear and transparent career pathways, enabling learners to advance from foundational positions to more specialised roles within the Aerospace and Defence sector.
- The project has designed and implemented the skills competition 'From Inspection to Perfection', which attracted nearly 100 young people to pursue a professional pathway in Advanced Manufacturing Inspection.
- AILEEN stands out for its procedure to recognise and nominate Centres of Vocational Excellence in Aerospace and Defence. Organisations must comply with quality assurance principles and demonstrate they meet established criteria. The aim is to reward excellence in education and cooperation, and to help more organisations become, or join, a CoVE network.

"Higher education institutions, industry organisations, and training providers, all working closely together to transfer insights from one organisation to another."
- AILEEN project coordination team

the H2CoVE project

Specialised VET for the hydrogen sector:

The challenge

Low-carbon hydrogen (produced from renewable energy or fossil fuels with carbon capture) will support efforts to decarbonise sectors such as aviation, shipping and certain industrial processes, where it has been difficult to reduce emissions. The hydrogen sector faces shortages of engineers, technicians, and specialists, particularly in emerging regions. Industry stakeholders often struggle to define their training needs, and education and training systems are not yet fully prepared.

The approach

H2CoVE has helped several European regions to prepare their workforce for the fast-growing hydrogen sector. A key part of the project has been mapping the skills, education and training needs at each stage of the hydrogen lifecycle (such as production, transports, operations and research) within the regions involved in the project. Based on these insights, the project is training educators to become hydrogen experts, reskilling workers and integrating hydrogen-related content into existing courses.

A key innovation has been the introduction of structured annual consultations with industry representatives in the partner regions, ensuring that companies play a consistent and active role in shaping training content and forming lasting partnerships with the education and training sector.

The outcomes

- Regions are building educational capacity ahead of large-scale hydrogen deployment. For example, in Ukraine, the **H2CoVE** project partner will contribute full standalone degrees once the national sector is more established.
- Meanwhile, in all the countries involved, the regular consultations with industry representatives have ensured that training remains responsive to the rapidly evolving needs of the industry.

"The collaboration with industry partners provides confidence that the programmes will produce graduates with immediately applicable skills."

- H2CoVE education project partner

the 3LoE project

Dual training for a greener workforce:

The challenge

Traditional school-based VET often struggles to equip learners with practical skills and meet labour market demands, particularly in emerging green economy sectors.

The approach

3LoE has called for a fundamental shift in how VET is delivered, moving from traditional, school-based approaches to dual training models that combine classroom instruction with structured, work-based learning in small and medium-sized enterprises (SMEs). The CoVE has developed and implemented 59 programmes spanning EQF levels 3–7, including teacher and SME trainer programmes, business idea challenges, and courses in green technologies. SMEs have been central to programme design, hosting learners and collaborating with universities on applied research. The curricula have integrated transversal skills, digital literacy, and sustainable practices to align education with sector needs.

The outcomes

- More than 5000 learners have gained practical skills and transversal competences such as critical thinking, problem-solving, teamwork and adaptability, preparing them for dynamic careers in the green economy.
- SMEs have benefited from closer engagement with VET providers, helping shape training that meets their evolving needs and supporting local innovation.
- The project has created sustainable networks between universities, industry and regional CoVEs, ensuring dual training programmes continue to adapt to labour market demands.
- Importantly, **3LoE** has helped to change mindsets in countries where VET was traditionally school based, such as Poland, Lithuania, and Latvia, showing how collaborative approaches can deliver high-quality, practically relevant VET while maintaining academic standards.
- By embedding SMEs into regional CoVEs, **3LoE** has created sustainable networks that continue to support dual VET programmes, ensuring they remain responsive to the evolving needs of industry in the context of the green transition.

"3LoE created something that didn't exist before, serving as the missing link between the business community and the academic community. It bridged the gap between blue-collar and white-collar workers, especially in countries like Poland and Lithuania. While Germany and Austria had a stronger tradition in this area, there was still room for improvement."

- 3LoE Project coordinator

the PoVE Water Scale-up project

Expanding qualifications for the water sector:

The Challenge

The water sector in Europe and beyond faces skills gaps at multiple levels, from entry-level operators to management professionals, limiting workforce readiness and sector innovation.

The approach

PoVE Water Scale-Up has developed targeted trainings and qualifications to meet labour market needs.
Industry partners were directly involved in curriculum design, providing real-world case studies and industry-focused learning opportunities. Innovative tools, such as educational games in the Czech Republic, have helped to make water management engaging for learners. Meanwhile, Stellenbosch University in South Africa has formalised partnerships with water utilities through Memoranda of Understanding, ensuring long-term alignment between training and labour market needs.

The outcomes

- In Estonia, a new EQF level 4 study track was added to the existing Water Treatment Operator programme (EQF level 5), expanding access for students entering directly from basic education.
- In South Africa, three new qualifications – Water Conservation Practitioner, Sanitation Worker, and Water Works Management Professional – have addressed urgent skills shortages. To support this new training offer, a vocational school has established its own water treatment facility, providing students with practical experience using real equipment and processes.
- The PoVE project has expanded access to water sector careers in different countries and at different levels of education, equipping learners with practical skills and sector-specific knowledge.
- Students have gained hands-on experience through real facilities and case studies, while industry partners have strengthened their engagement in VET, helping to ensure that training remains relevant and responsive to evolving workforce needs.

"In the hybrid learning environment, the work field is taking responsibility for educating youngsters and professionals, together with teachers. It's not that companies only have a wish list of what they want to know - they are working together on educational activities."

- CIV Water, PoVE Water Scale-up coordinator

Upskilling and reskilling the workforce

Besides developing solutions for initial VET, CoVE projects also design strategies for upskilling and reskilling the workforce. These often focus on transversal and future-proof skills, helping to address the mismatch between available skills and labour market demands across countries, sectors and entire value chains, particularly in innovative and fast-changing industries.

the AGRIFOOD4FUTURE project

Empowering teachers, students and entrepreneurs in the agrifood sector:

The challenge

The agrifood sector is evolving rapidly, with emerging technologies, sustainability demands, and entrepreneurial opportunities reshaping the skills required. VET educators and learners often lack the resources and support to develop the digital, entrepreneurial, and practical competences needed for the agriculture of the future. SMEs and farmers also face challenges adopting innovations and connecting with new talent.

The approach

AGRIFOOD4FUTURE (AF4F) has built VET capacity by empowering teachers, students and entrepreneurs through a combination of training, mobility and collaborative initiatives. Teachers have participated in a Training of Trainers (ToT) programme to integrate entrepreneurship and soft skills into curricula, supported by peer learning formats and an online forum for professional exchange. International mobility schemes have allowed educators to share strategies and best practices beyond national borders. For SMEs and farmers, the project has offered tailored support to adopt sustainable technologies, including the Open Innovation Test Farm Programme for piloting new approaches, and the Entrepreneurship & Acceleration Programme for start-ups, for mentoring and training. Co-creation workshops have brought together students, farmers and other stakeholders to explore challenges such as climate change and policy, directly shaping e-learning tools and course content and promoting applied research. Summer schools have provided practice-oriented experiences with emerging technologies and sustainable farming methods.

The outcomes

- Teachers have gained the skills and confidence to embed entrepreneurial thinking and digital competences in their courses.
- Students and professionals have developed practical, future-ready competences in sustainable farming, technology adoption and entrepreneurship.
- SMEs have benefited from tested innovations and strengthened connections to talent pipelines.
- By integrating peer learning, mobility and practical experimentation, **AF4F** has strengthened regional agrifood networks, supported the green and digital transition and equipped learners and practitioners with the tools to meet the evolving demands of the sector.

"AGRIFOOD4FUTURE has facilitated the upskilling of teachers and trainers through the use of innovative pedagogical methodologies and digital tools. This not only improves the quality of teaching but also makes VET more attractive to students by incorporating modern and engaging learning methods."

- AF4F project partners

the CATALYST project

Making skills visible:

The challenge

As the green transition transforms industry, investing in upskilling and reskilling is vital for long-term growth, innovation and productivity. These efforts are key to helping businesses of all sizes, particularly SMEs, stay competitive in a changing economy.
Continuing Vocational Education and Training (C-VET) often lags behind, and SMEs and other organisations struggle to upskill their workforce in ways that meet evolving industrial and environmental demands.

The approach

CATALYST has addressed this gap by providing a wide range of educational services to tackle personal and organisational development and embrace transformation in SMEs, enabling and inspiring them to re-think and re-design their business models.
The CATALYST CoVE operates through national focal points in North Macedonia, Austria, Germany, Greece and Portugal, ensuring that the shared European vision is effectively adapted and implemented at the local level.Courses were co-designed with companies from the outset to ensure alignment with industry needs. This process also involved a comprehensive skills mapping exercise – conducted through surveys, interviews and focus groups – to guide curriculum development. The project has also leveraged transnational cooperation to exchange good practices and ensure that training responds to both local and cross-border labour market needs. This led to the creation of the CATALYST study programme 'Leading Sustainable, Systems and Business Transformation' which is organised into three fields to address various aspects of sustainability: Leading Sustainable Systems (systemic field); Creating Sustainable Brands (organisational field); and Embracing Sustainable Growth (personal and interpersonal field).

The outcomes

- **CATALYST** is giving learners across Europe the tools to apply sustainability skills in real contexts, from biodiversity to the circular economy. In total, 70 courses have been developed for EQF levels 4 to 8 across eight different fields, with the aim to reach more than 1500 learners during the project lifetime.
- SMEs and other organisations have benefited from employees who are better equipped to implement sustainability and governance initiatives.
- By embedding industry collaboration and research-informed curriculum design, the programme has strengthened the capacity of VET providers to deliver programmes that are responsive, future-focused and supportive of sustainable industrial development.

"The core aspect of the project is applying a Collaborative-Innovative (CO-IN©) Model, which directly fosters knowledge triangles and collaboration to build sustainable systems"

- Institute for Research in Environment, Civil Engineering and Energy (IECE, North Macedonia), CATALYST project coordinator

the EE4M project

Reskilling and upskilling engineers throughout the European mobility value chain:

The challenge

The mobility sector is undergoing a rapid transformation, shaped by digitalisation, Industry 4.0 and the shift towards greener, more sustainable production. Yet, engineering education often struggles to keep pace, with outdated curricula and limited alignment to industry's evolving needs. Without modernised qualifications and new learning environments, both students and professionals risk being unprepared for future roles in logistics, manufacturing, supply chains and product development. This is particularly critical for professionals already in the workforce, who require targeted reskilling to transition into new roles and upskilling to stay current with emerging technologies in the mobility sector.

The approach

EE4M (Engineering Excellence for the Mobility Value Chain) aimed to close this gap by realigning engineering education to meet evolving technological, environmental and social demands. Besides initial VET, the project also targets professionals already in the mobility sector. It has developed modular, blended and activity-based learning opportunities designed as flexible formats accessible to working professionals, equipping engineers with the digital and green skills demanded by today's labour market. Teaching methods have ranged from problem-based learning in collaboration with companies, to hybrid co-teaching by VET and university staff. To ensure relevance, **EE4M** has worked closely with industry partners (both within and beyond the CoVE partnership) including Volkswagen Navarra, MUBIL and Fraunhofer Italia, as well as with universities. This cooperation has strengthened curricula, integrated entrepreneurship and sustainability and allowed for the joint design of qualifications that are adaptable to national and regional skills strategies.

The outcomes

- Although still in development, **EE4M** has been already reshaping engineering training.
- Curricula have been updated with green and digital competences, and more than 1,000 teachers and learners (including those in continuing education and training) have gained applied experience with modern tools and industry content.
- Regional CoVE platforms have now connected VET schools, universities and businesses, enabling joint curriculum design, shared facilities and integrated teacher training.
- The project's partnerships have also extended beyond its scope, sparking Erasmus+ mobility opportunities, and alliances with Industrial Engineering and Management associations in Europe and Latin America. In this way, **EE4M** has been not only equipping engineers with the skills of tomorrow but also building a transnational skills ecosystem that links education and training, research and industry.

The role of CoVEs in VET innovation

All over Europe, learners are gaining access to practical and future-oriented VET thanks to CoVEs driving innovation. By uniting diverse stakeholders in regional skills ecosystems, CoVEs promote high-quality and inclusive VET provision. Their contributions span multiple levels of innovation – from teaching pedagogies and the use of emerging digital technologies in learning, to flexible learning pathways and applied research – helping individuals and organisations adapt to rapidly evolving skill demands.

Harnessing digital technologies for innovative teaching and learning

Digital skills and technologies are central to nearly all Erasmus+ CoVE projects, driving innovation in teaching and learning and extending beyond basic literacy to advanced, sector-specific applications. They are closely aligned with the digital transformation of specific industries, making them both transversal and occupation-specific.

A consistent theme across CoVEs is the link between teaching innovations and shifts in sectors and labour markets. Emerging digital technologies, such as AI or VR are being integrated into teaching and learning processes to enhance both the relevance and effectiveness of VET.

the FEA-VEE project

Supporting the green and digital transitions in fashion:

The challenge

The fashion and textile industry needs to adapt training programmes to support sustainable and digital economic models. Countries with traditional, inter-generational learning approaches – where people of all ages learn together and from each other – lack formal digital skills education, leaving learners underprepared for the evolving industry.

The approach

FEA-VEE has developed sector-specific digital skills by offering hybrid internships that connect remote learners to digital projects such as graphic design. These internships are complemented by transnational study visits to Spain and Germany, which bring together learners from all project countries.

The project has integrated digital modules, including VR and Extended Reality, while maintaining a focus on the creative essence of fashion. Learners have been taught not just how to use tools, but when and why to apply them. **FEA-VEE** has also raised awareness of sustainable practices in textiles, such as using three-dimensional printing for material recycling, and has facilitated cross-country exchanges of good practices.

The outcomes

- Learners have gained digital design competencies that can be applied directly to modern fashion workflows, while also developing an understanding of sustainable practices through the practical application of digital technologies.
- The combination of hybrid internships and flexible digital modules has increased access to high-quality, industry-relevant training all over Europe, helping prepare a workforce capable of supporting the sector's green and digital transitions.
- The project explores cooperation with the European Alliance for Apprenticeships
- Modules on green entrepreneurship strive to help people to learn how to establish their own businesses in fashion through green principles and circular models and can support the return of the industry back to Europe.
- By showing that digital tools are accessible and versatile, the project has highlighted how the green and digital transitions can complement each other, supported by cross-country exchange of good practices.

"FEA-VEE tries to provide awareness that green and digital can go hand in hand, enabled by the exchange of good practices from country to country."

- FEA-VEE project partners

the EPLUG project

Digital learning for sustainable urban landscapes:

The challenge

Urban landscaping and green infrastructure sectors require new digital competencies as cities adopt to smart technologies and data-driven maintenance systems. Traditional gardening and landscaping education and training does not prepare learners to meet these challenges.

The approach

EPLUG has integrated digital tools into vocational education and training, including sensor technology, virtual 3D models and environmental monitoring systems, in strong cooperation with employers. Learners have applied these tools to plan and manage green infrastructure, supported by curricula that combine practical, soft and intercultural skills. Country-specific innovations have included 3D virtual walls in Finland and sensor-based environmental data collection in the Netherlands.

The outcomes

- Nearly 40.000 Learners at EQF levels 3-5 have developed the technical and digital skills needed to manage smart, urban and green infrastructure and gain broader competencies in different skills.
- This training has equipped a new generation of professionals to address sustainable urban development challenges while enabling VET providers to deliver education that is both innovative and directly aligned with evolving sector demands.
- Several municipalities have showed interest in improving their urban landscaping practices with innovative education and training offers to enhance green spaces.
- Working with Romania's Ministry of Education, the project has helped to define new professional standards, leading to the recognition of the 'Urban Greening' occupation in the country's official job classification system (National Code of Occupations) and a matching formal training offer.

"The project we completed was to design a garden for the balcony of a hospital in the town of Benešov. We visited the site to take measurements and plan the vertical garden design. Then we spent a day using design software, working alongside people from different countries."

- VOŠ a SZeŠ Benešov (Czech Republic), EPLUG student

the AEDIL project

Modernising the dairy sector through interactive learning:

The challenge

The dairy sector is evolving rapidly, combining traditional craftsmanship with highly automated production processes. Educators face the challenge of preparing students for this modernised environment while making technical content engaging and accessible.

The approach

AEDIL has addressed this by pioneering a range of innovative teaching and learning methods. One of its flagship initiatives has been the development of digital twins – virtual replicas of dairy equipment – co-created by Siemens Germany and VET schools in Germany and Denmark.

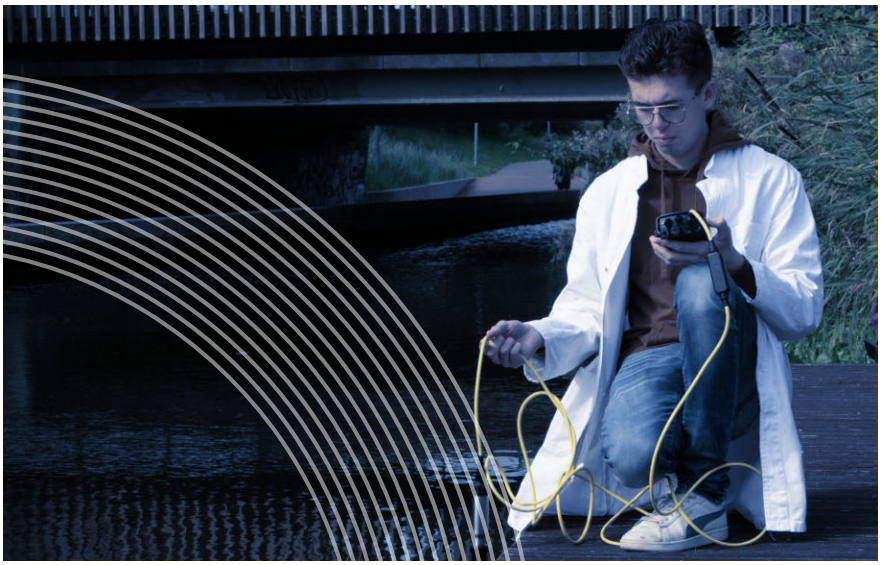
To further enrich teaching, **AEDIL** has used three dimensional scans of dairy production lines, giving students immersive access to complex equipment. Meanwhile, teachers have been trained to use ThingLink, a digital tool that enables creation of interactive images and videos, making technical content more engaging and accessible. Industry videos have been repurposed with voiceovers and quizzes to enhance the learning experience. Student-led podcasting and role-playing exercises have developed learners' communication skills and prepared them for collaboration in an internationalised sector. A dedicated course trained teachers to design interactive materials, which have been then shared on the Dairy Learning Hub management system to foster a European community of practice among dairy educators.

The outcomes

- With **AEDIL**, learners have gained vocational experience with realistic simulations, building practical skills and confidence for modern dairy operations.
- Teachers have been able to deliver more interactive and engaging lessons, adapting digital content across different learning contexts.
- By combining new technologies for learning, **AEDIL** has equipped students with the technical and problem-solving skills needed to thrive in both traditional and automated dairy workplaces.

"The project has developed and is developing digital twins in Germany. Two are ready: a heat exchanger and a cream separator and they are used in dairy education. Another one is under preparation on mozzarella cheese production line."

- Zentralverband Deutscher Milchwirtschaftler (Germany) AEDIL business partner



the PoVE Water Scale-up project

Using immersive technologies and innovative pedagogies in water sector training:

The challenge

The water sector faces growing demands for skilled professionals, yet traditional VET often struggles with limited access to specialised equipment, safety concerns and keeping learners engaged in technical subjects. Students also need practical experiences that can be difficult to replicate between different countries and institutions.

The approach

PoVE Water Scale-up has transformed VET in the water sector by integrating immersive and interactive technologies. VR scenarios have simulated wastewater treatment operations, while educational games have taught the history and management of water systems. Students have explored river systems via Google Earth and responded to simulated plant alarms. In the Czech Republic, interactive controllers have let learners measure water channels, while Estonian partners have delivered virtual laboratory experiences. A VR expert has ensured all content is interoperable between partner institutions. Beyond technology, the project has incorporated storytelling methodologies and interactive pedagogies to make learning more engaging. Summer and winter schools, hackathons and the week-long 'Water Days' in Brno have connected students and professionals from multiple countries, giving them hands-on experience in international collaborative settings.

The outcomes

- Students have gained practical skills in managing water systems and wastewater operations without the risks or costs of traditional lab setups. Immersive tools have increased engagement, making complex concepts accessible and memorable.
- Cross-border exchanges and collaborative projects have fostered problem-solving, cultural awareness and teamwork.
- By combining VR, interactive learning and storytelling, **PoVE Water Scale-up** has enhanced the attractiveness and quality of VET in the water sector, preparing learners for practical challenges.

"We have a water application centre where various installations and setups from companies are available for both education and research purposes. We bring in real cases and challenges that companies are struggling with, and our teacher guides the process as a facilitator rather than the sole knowledge provider."

- CIV Water (Netherlands), PoVE Water Scale-up coordinator

Applied research and uptake of new technologies

Applied research in VET bridges the gap between learning and real-world challenges.

VET organisations conduct practical research and provide services that focus on finding solutions to the everyday problems faced by businesses and society. The results of this research can lead to new or improved products and services, thereby enhancing business productivity. CoVE projects embed sector-specific innovations into learning pathways and the professional development of teachers. Many collaborate with companies and research centres to pilot and test new technologies in practical settings. This combination of education and innovation ensures that learners develop future-proof skills, while VET continues to drive technological and economic transformation, preparing both learners and the labour market for the challenges of tomorrow.

the 3LoE project

Applied research for green innovation:

The challenge

SMEs in green economy sectors such as renewable energy, waste management and environmental protection often lack the resources and expertise to fully implement innovative solutions, while VET students need opportunities to apply knowledge in practical settings.

The approach

The **3LoE** project has taken collaboration between learners, SMEs and universities a step further through an applied research model. Students have worked directly with businesses on real challenges, developing practical solutions supported by academic guidance. This practical experience was complemented by entrepreneurship training and green business idea competitions that foster innovation and creativity. SMEs have been closely involved in designing training content, hosting learners in dual training programmes, and participating in collaborative Research & Development projects with education and training institutions, creating a two-way exchange of knowledge between the classroom and the workplace.

The outcomes

- Students have gained immersive experience in green technologies and entrepreneurial skills, while SMEs have benefited from practical solutions to business challenges, particularly relevant for those that rely on agility and creativity to remain competitive.
- The project has fostered a culture of innovation and collaboration while strengthening local green economies and creating sustainable links between education, research and industry.

the ECoVEM project

Advancing microelectronics through VET-led applied research:

Challenge

The microelectronics sector requires skilled professionals who can apply advanced technologies to product design, process optimisation, and emerging green applications. Traditional VET programmes often lack direct access to cutting-edge research and industry practice.

The approach

ECoVEM has engaged VET students and teachers in applied research, collaborating closely with universities and industry partners. Experts from both academia and industry have contributed to teaching, ensuring that learners are exposed to cutting-edge knowledge and practices. Students have participated in competitions and problem-solving challenges addressing real microelectronics industry needs. VET providers like the *Institut National de l'Énergie Solaire* (INES) in France, affiliated with the *Commissariat à l'Énergie Atomique et aux Énergies Alternatives* (CEA), a major research centre, have involved learners in cutting-edge research on photovoltaics and space applications. The project has also fostered knowledge sharing through discussion forums, conferences and joint use of equipment and human resources.

To further support innovation, the project has launched:

- Discussion forums to solve microelectronics challenges collectively, including industry, VET centres and research centres
- Conferences and seminars to share research findings and foster joint publications among teachers, researchers and professionals
- Initiatives to share equipment and human resources between VET centres, research institutions and companies.

The outcomes

- Learners have gained direct experience with emerging technologies, deepening their understanding of microelectronics and its applications in the green economy.
- VET teachers have enhanced their expertise through direct engagement with industry and research partners.
- The **ECoVEM** project has strengthened the sector's innovation ecosystem and promoted best practices. By contributing to the development of a workforce prepared for future technological and environmental challenges, the project is helping to advance the green economy across Europe. The project developed 42 modular courses, twice as many as those initially planned in the project.

"In France, INES, being a branch of *Commissariat à l'Énergie Atomique et aux Énergies Alternatives* (CEA) is the best example of the link of VET and research: their affiliation with CEA highlights their strong connection to cutting-edge research, making them a model for how VET can be tightly integrated with research and innovation."

- ECoVEM project partners

the SHOREWINNER project

Uptake of new technology:

The challenge

The offshore wind sector faces a shortage of skilled workers, not only in coastal areas but also in regions that support the wider supply chain or could develop future installations. Ensuring VET curricula are aligned with the evolving technical, digital and green skills needs of different countries is a key issue.

The approach

The **SHOREWINNER** project has brought together five regional CoVEs to create a Community of Practice, building a collaborative ecosystem at national and transnational levels. Education providers, policymakers, local authorities and industry partners have co-developed curricula informed by labour market research. VR has been introduced for safety and remote learning, which is particularly valuable in regions without direct access to offshore plants. The project has also focused on trainer development and resource sharing via a digital platform and engaged companies in curriculum design to ensure relevance.

The outcomes

- The various partners have worked together to adopt innovative approaches in order to contribute to more effective workforce development in offshore wind energy, meeting the EU sustainability goal.
- The involvement of higher education institutions and research centres has enabled the training content to be updated with the latest scientific knowledge and technological advances. Their participation has ensured that the content remains aligned with the latest offshore renewable energy research and development.
- The participation of SMEs has provided students with valuable, industry-relevant case studies relating to the offshore sector. In the longer term, it is expected to produce a common multilingual curriculum modularised for transnational use, a robust Community of Practice and an online platform offering modular, English-language training.
- The project has leveraged digital tools such as VR linked to safety training scenarios and active simulation, while supporting upskilling, reskilling and mobility in Europe.

the MOSAIC project

Future-proofing craftsmanship:

The challenge

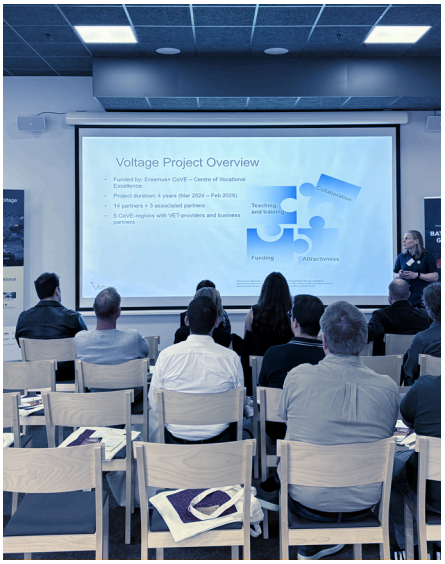
The arts and crafts sectors face growing pressure from automation and AI-driven content creation. Traditional VET programmes often lack exposure to digital tools and sustainable practices, leaving craft professionals underprepared for technological and environmental transitions transforming their trades. Persistent barriers to access also call for more inclusive and equitable pathways into creative professions.

The approach

MOSAIC has aimed to future-proof the sector by integrating digital tools and sustainable, inclusive practices and methodologies into VET, while ensuring that craftsmanship remains at the core. One of the project's flagship initiatives has been the development of innovative training materials such as the 'Future of Making' module, where learners engage with technologies rarely included in traditional curricula, such as laser cutters, 3D printers, collaborative robots and Computer Numerical Control machines (that automatically cut or shape materials based on computer instructions). Modules like three dimensional modelling with Rhino 7 and three dimensional printing in jewellery design have combined practical training with digital software skills, while entrepreneurship and professional portfolio courses have taught learners how to create digital portfolios and promote their work online. There is a strong emphasis on digital marketing skills, which are vital for arts and crafts professionals who often rely on self-promotion to reach new customers and grow their businesses. To ensure that innovation is inclusive and environmentally conscious, MOSAIC has also promoted eco-design thinking, circular economy principles and resource efficiency across its training content, as well as including a dedicated module. Teachers and trainers have been supported through digitalisation and social inclusion courses aligned with EU-wide competence standards.

The outcomes

- Learners have acquired direct experience with advanced technologies, gaining confidence in applying them creatively within their craft.
- Virtual tours and immersive exercises have brought real-world craft environments into the classroom, while entrepreneurship and professional portfolio training has provided practical tools for self-promotion and business development.
- Educators have strengthened their digital, pedagogical and inclusion competences, fostering a culture of innovation and inclusiveness that ensures both learners and teachers are prepared to navigate the evolving landscape of arts and crafts.



the VOLTAGE project

Innovative training for the battery industry of tomorrow:

The challenge

The battery industry is growing rapidly in Europe, creating a need for skilled professionals. At the same time, teachers and trainers often lack the specialised knowledge and practical experience to prepare learners for these emerging roles. This gap threatens to slow workforce development in a sector that is critical for Europe's green transition.

The approach

VOLTAGE has addressed this by placing teachers and trainers at the centre of its strategy. The project has launched an EU-wide ToT programme, combining online modules, on-site sessions at the Battery Centre in Gothenburg, and follow-up virtual workshops to support local implementation.

Educators have also participated in practical workshops at the Battery Innovation Centre in Brussels, gaining direct experience with battery production and high-tech industrial processes. Girls' camps in Finland and Portugal have provided young women with immersive experiences in robotics, 3D printing, and battery technologies, while introducing them to female role models in technical careers. A dedicated Teachers Forum has allowed educators to share resources, exchange best practices and collaborate transnationally.

The outcomes

- Through **VOLTAGE**, teachers and trainers have gained the knowledge, confidence and practical experience needed to deliver high-quality training in the battery sector.
- Young learners, particularly girls, have been inspired to pursue technical careers and have acquired real-world skills in battery technologies and related fields.
- The combination of training programmes for teachers, immersive workshops and cross-border collaboration has helped ensure that training is relevant, up-to-date and aligned with the evolving needs of the battery industry, strengthening the pipeline of skilled professionals Europe-wide.

"In Portugal, VOLTAGE was instrumental in developing the capacity of teachers and developing new courses for students."

- VOLTAGE project partners

Flexible and transparent learning pathways

Imagine an experienced technician returning to the classroom to update their digital skills, or a young apprentice combining hands-on training with short, focused modules on green technologies. These kinds of flexible and transparent learning pathways are becoming central to VET, offering opportunities for both initial education and lifelong learning.

Learning formats such as dual training models, apprenticeships, micro-credentials and modular learning pathways allow learners of all ages to access training that fits their needs. Adult learners in particular benefit from tailored routes for upskilling and reskilling, helping them stay competitive in fast-changing labour markets. To guide the development of these new curricula, CoVE projects draw on European transparency tools and competence frameworks such as DigComp and EntreComp, as well as green transition skills included in the ESCO database. This alignment not only supports the integration of new modules into formal education and training systems, but also ensures transparency and cross-border recognition. The result is a more flexible, portable learning experience that can be applied across Europe.

the Talentjourney project

Micro-credentials for cross-border skills recognition:

The challenge

Learners and workers often face barriers when trying to have their skills recognised internationally. Full qualifications can take time to achieve and may not always reflect fast-changing labour market needs, particularly in emerging sectors. Employers, meanwhile, look for more agile ways to verify practical competences.

The approach

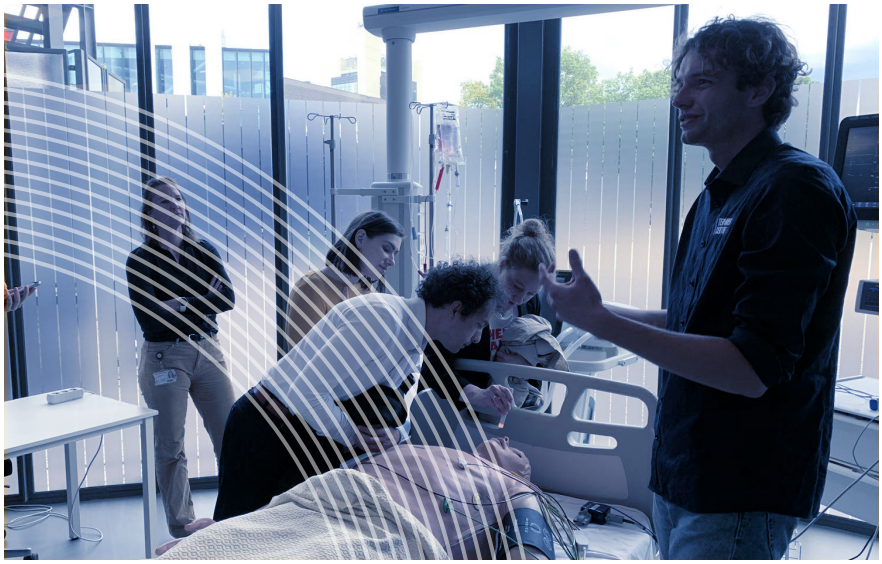
Talentjourney has promoted the cross-border recognition of skills by developing micro-credentials that certify specific units of learning. These micro-credentials are designed to be flexible and compatible between countries, making it easier for learners to move and work in other European countries. By aligning with EU frameworks such as EQF and the ESCO framework, the project has ensured that its training offer is relevant across borders.
The micro-credentials have been formalised through certificates issued by VET institutions in close collaboration with industry partners and bodies such as the Slovenian Institute for Vocational Education and Training. A key feature of **Talentjourney**'s approach has been its open curriculum model, which allows each participating institution to integrate locally relevant content while awarding micro-credentials within a shared recognition framework. The certificates have been issued by VET institutions in close collaboration with industry partners.

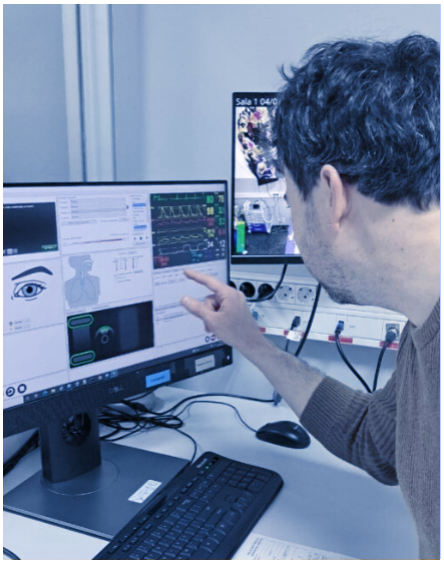
The outcomes

- By creating micro-credentials that certify precise learning outcomes, **Talentjourney** has opened doors to international opportunities for learners.
- Learners can move between countries while gaining recognition for skills that match real labour market needs.
- With an open curriculum model, each institution has added locally relevant content. This gives learners choice and employers confidence that graduates are prepared for emerging challenges.

"These micro-credentials served as flexible and modular proofs of competence, recognised by participating schools and designed to reflect real-world skill needs."

- School Centre of Nova Gorica (Slovenia), Talentjourney project coordinator





the EUVECA project

Micro-credentials for career mobility in healthcare:

The challenge

Healthcare workers often face barriers when seeking to transition into new roles. In some countries, such as Denmark, nurses wishing to become paramedics must restart their entire education and training. This lack of flexibility creates obstacles to career mobility and makes it harder for employers to respond to workforce shortages.

The approach

EUVECA has been focused on strengthening VET within the health and social care sectors, with a key initiative being the development of micro-credentials that allow health professionals to transition into new roles by building on their existing qualifications, rather than starting over.

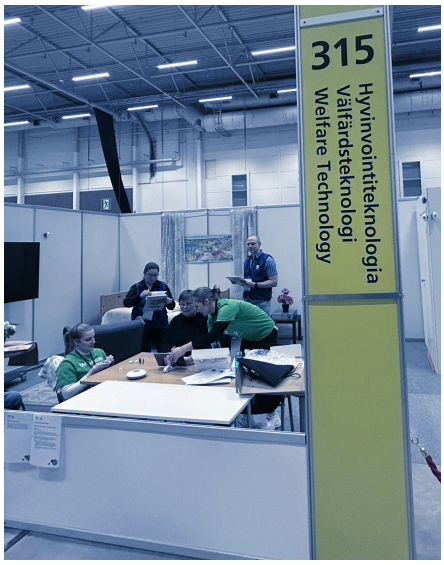
These short, targeted learning units have been integrated into continuous professional development and are designed to support smoother career transitions. By embedding them into national qualifications frameworks, EUVECA has ensured their formal recognition and alignment with national education and training systems.

The outcomes

- **EUVECA** has used micro-credentials to smooth the path for health professionals changing roles. Nurses, for example, have been able to retrain without restarting their education, while employers have gained a flexible way to fill workforce gaps.
- At the same time, learners have continued to upskill in response to technological and societal change, demonstrating how VET can strengthen the health and social care sectors.
- By offering more personalised learning pathways, the project has sought to reduce early career dropouts in the health sector, which are often caused by the gap between theoretical education and training and practical experience.

"These micro-credentials help to bridge the gap between theoretical education and practical experience, supporting broader government recognition efforts."

- Region of Southern Denmark (Hospital of South Jutland), EUVECA project coordinator



the Care about IT project

Micro-credentials for digital skills in healthcare:

The challenge

The care sector faces rapid digital transformation, yet many professionals lack opportunities to develop IT-related skills. Without accessible, recognised training, workers risk being left behind as healthcare increasingly integrates digital tools and innovation.

The approach

The **Care about IT** project has aimed to future-proof education and training in the care sector by leveraging IT training and innovation. They have developed six micro-credentials designed to support career mobility in the digital and healthcare sectors. Each partner country has led on a specific module. For example, Italy has developed a creative and critical thinking module, while Finland has designed an introduction to health tech micro-credentials. These modules are being translated into all CoVE project partner languages and made publicly available to ensure broad uptake. To ensure recognition at European level, the project team has engaged with the European Digital Credentials for Learning initiative, as well as Europass. Teachers from partner organisations have also met monthly in workshops to exchange best practices and refine their methods. In Italy, Care About IT has worked closely with regional authorities in Piedmont to ensure both local and national recognition of the micro-credentials.

The outcomes

- **Care About IT** has brought digital and healthcare careers into the modern era. Its micro-credentials allow professionals to build skills in creative and critical thinking and health tech, among others, all recognised through European frameworks.
- Teachers have collaborated between countries, sharing best practices, while regional authorities have ensured these micro-credentials fit local and national systems, helping learners chart new career paths.

"The development of micro-credentials has the potential to have far reaching impact once formally recognised nationally."

- Care about IT project partner

the ECoVEM project

Modular learning for careers in microelectronics:

The challenge

The microelectronics sector faces fast-paced technological change and needs a workforce with up-to-date skills in areas such as digitalisation, green technologies and advanced manufacturing. There are also broader challenges around gender equality in technology and the integration of migrants into the labour market. Traditional qualifications often lack the flexibility to respond quickly to these needs.

The approach

ECoVEM has developed modular VET courses in microelectronics that can be integrated within existing programmes at EQF levels 3 to 8, supporting both initial (I-VET) and continuing VET (C-VET). Its curricula have covered key areas such as design, fabrication, and photovoltaics, with over 1,250 hours of VET content and shorter courses designed for 900 trainees. Rather than creating entirely new qualifications, **ECoVEM** has focused on developing a modular structure, giving learners more choice and opportunities to specialise. For university students, modules have been recognised with ECTS credits, while non-university learners have received certificates validating their skills. Beyond formal education and training, **ECoVEM** has also worked closely with enterprises to design customised training, as in Bulgaria where BOSCH requested a tailored programme in automotive-related microelectronics.

To ensure high standards, the project shares its quality assurance practices – which are in line with the European Quality Assurance in Vocational Education and Training (EQAVET) – with national authorities. In Italy, its approach is recognised by the National Institute for Public Policy Analysis (INAPP) as a good practice to strengthen quality assurance in VET.

The outcomes

- **ECoVEM** has transformed microelectronics learning into flexible, modular journeys.
- Students and professionals have explored design, fabrication and photovoltaics through courses that fit existing programmes, gaining ECTS credits or certificates.
- When enterprises have requested tailored programmes, learners have tackled real challenges, linking their education and training directly to industry needs.

"Some participants from migrant background changed their career paths and pursued technical education in Germany after attending the seminars and workshops."

- J-ARTECK JUGENDBILDUNGSSTATTE EV (Germany), EcoVEM partner NGO

the PROMOTE project

Flexible training for justice professionals:

The challenge

Professionals in the justice and correctional sector are key to social reintegration, even if their efforts are not always visible or recognised. Opportunities for peer exchange are limited. This highlights the need for training that builds core competencies and key transversal skills to work effectively with individuals deprived of liberty and help ensure their successful reintegration into society.

The approach

PROMOTE has aimed to provide a learning experience that transforms the way professionals (such as prison officers, probation staff, teachers or psychologists) support individuals in prison. It has been pioneering flexible and modular training formats to support the upskilling and reskilling of professionals in the justice and correctional sectors. At its core has been a competency-based approach, a method that prioritises the development of practical, job-relevant skills over traditional qualification structures. PROMOTE has also produced a skills ecosystem map to strengthen cooperation between the justice and correctional sectors, education and key stakeholders. These formats are adaptable beyond the justice sector and can be applied in fields such as social care and addiction treatment.

The outcomes

- While **PROMOTE** does not issue full qualifications, it has supported the development of micro-credentials and joint training modules in collaboration with VET and higher education project partners. These have been designed in consultation with national authorities and regulatory bodies, while also exploring pathways for the validation of learning outcomes acquired through the training modules.
- All training materials has been developed in line with the EQF and the ESCO framework, ensuring consistency with EU standards.
- The use of micro-credentials aligned with EU frameworks are expected to enhance the validation of newly acquired skills, improve employability within the justice sector and support the mobility and professional development of both learners and trainers.

"Learners gain access to modular, competency-based training aligned with real correctional sector needs."

- PROMOTE project partners

the GIVE project

Inclusive training for diverse learning needs:

The challenge

VET professionals often need additional skills to support learners with diverse needs, including disadvantaged learners or those with disabilities. Traditional training formats are not always flexible or inclusive enough to equip educators, employers and public sector staff with the tools to adapt teaching and learning to these groups.

The approach

The **GIVE** project has developed modular and adaptable training formats. Its learning paths have covered inclusive pedagogical practices, such as managing classroom diversity, designing personalised learning plans, and supporting learners with diverse needs. Resources have been accessible through a multilingual online platform, enabling flexible, remote learning.

The curriculum has been designed for integration into existing VET qualifications or for use in Continuing Professional Development. **GIVE** has worked with national partners to embed content locally. For example, in Malta the curriculum has been integrated into mainstream VET provision, and in Italy, into staff training for VET tutors.

The outcomes

- When VET trainers and employers are equipped to support every learner, including those from disadvantaged backgrounds, education and training becomes truly inclusive, excellent and adaptable.
- **GIVE** has turned inclusion into action and strengthened institutional capacity for training disadvantaged learners, particularly those with disabilities, migrant backgrounds, or low qualifications.
- Trainers and public sector professionals have learnt how to support diverse learners, from creating personalised plans to managing classroom diversity.
- The developed adaptable modules have travelled beyond borders, reaching VET institutions in the partner countries of the project and transforming the learning experience for both educators and students.

"Piloting such training packages in different countries revealed the value of adaptability in content delivery especially when supporting students with cognitive or physical disabilities."

- EfVET and Lantegi Batuak, GIVE project partners

Contributions of CoVEs to EU policies and priorities: building stronger synergies

Since 2020, Vocational Excellence has been central to the EU's vision for skills and education and training. Major EU frameworks – including the European Skills Agenda, the European Education Area, the 2020 Council Recommendation on VET , the Osnabrück Declaration and the recently approved Herning Declaration – consistently reference Centres of Vocational Excellence as 'the pillars of excellent vocational education and training in Europe', driving systemic reform and shaping the future of VET.

The need for a skilled work force in Europe is urgent. Europe faces skills shortages within many sectors, and the Union of Skills initiative seeks to bridge the gap by promoting skills for young people, lifelong learning, upskilling and reskilling. Erasmus+ CoVE projects sit at the heart of this effort, ensuring people gain the competences businesses need to power the green and digital transitions.

Across Europe, CoVE projects are turning these ambitions into reality, equipping learners and workers with the skills needed to navigate and shape Europe's twin transitions:

- **CATALYST** has created a network that serves as a vibrant European community bringing together professionals, students, SMEs, VET providers, academia and public institutions – all united by a shared commitment to sustainability.
- **AI4VET4AI** has integrated artificial intelligence and data literacy into VET in sectors such as logistics, healthcare and tourism, preparing workers to use emerging technologies effectively and responsibly.
- **EUVECA** has embedded green skills into healthcare training, raising awareness of sustainability in the sector.
- **EULEP** has created strong links with the Digital Europe Programme by developing VET programmes in AI, VR, and Social Inclusion that reflect regional priorities and support the growth of both digital and green economies.
- **Talentjourney** has combined Internet of Things, AI, robotics, and cybersecurity with sustainable practices to prepare learners for tomorrow's industries.

CoVE projects are also helping to build a more connected and flexible European skills system. In line with the Union of Skills initiative, projects like **Talentjourney**, **VOLTAGE**, **EULEP** and **Auto CoVE 2.0** have made it easier for learners to gain qualifications recognised across borders. These projects also offer personalised learning paths and sector-specific micro-credentials that respond to labour market needs.

Others are strengthening Europe's initiatives on skills. **3LoE**, **Auto CoVE 2.0**, **MOSAIC**, **TOUR-X**, **ECoVEM** and **PROMOTE** have advanced the Pact for Skills by focusing on regional partnerships, lifelong learning and skills forecasting. **TOUR X**, for example, has developed policy recommendations tailored to national and regional realities. Meanwhile, **MOSAIC** has led the Creative Skills Week, an event linked to the Creative and Cultural industries' system and part of the Pact for Skills, which is helping shape EU-level guidance for the arts and crafts sector. Some CoVEs are aligned with broader EU sector-specific strategies. For example, **ECoVEM** has contributed directly to the European Chips Act, working with industry clusters to strengthen microelectronics strategy and training in this crucial sector.

Making CoVEs last beyond Erasmus+ funding

CoVEs are committed to ensuring the long-term impact of their work beyond the Erasmus+ funding period. Projects work to secure funding to ensure their partnerships endure and that their outputs are widely adopted.

They have developed comprehensive action plans to embed project outcomes using scalable methodologies and sustainable partnerships between education and training providers, industry and other key labour market actors. In some CoVEs, cooperation extended past the project period and occasionally expanded to involve additional institutions. Others have developed sustainable financial models, such as combining public and private funding, or generating income through the products they developed.

CoVE partnerships drive the uptake of innovations at sectoral, regional and national levels through collaboration with the institutions responsible for putting them into practice. The success of individual CoVEs offers a blueprint that can be adapted and extended across Europe, multiplying their impact at both national and EU level.

Ensuring sustainability and continued impact of the partnerships

CoVEs have developed strategic mechanisms for their longevity and long-term viability. These include sustainable financial models beyond the Erasmus+ funding period, such as combining other sources of public and private funding, or generating income from the products they create. Additionally, some projects have built new governance models and institutional frameworks to ensure lasting collaboration in their partnerships beyond the funding period, with diversified partnerships and funding sources further supporting continuity.

- The **AILEEN** project has combined VET and academic-industry cooperation, applied research and cross-border certification to create innovation hubs in the Aerospace and Defence sector that can be transferred to other countries. Using a fee-based membership model combined with shared frameworks, AILEEN is working to grow its network from eight to at least sixteen regional CoVEs.
- **Talentjourney** has built a collaborative framework underpinned by layered partnership models, including Memoranda of Understanding with key stakeholders. These partnerships have continued beyond the project, with lasting cooperation between Slovenian and Finnish VET centres. Training resources have remained freely available online, ensuring ongoing use. In Slovenia, the project has laid the foundation for lifelong learning initiatives, including an ESF+ funded programme delivering micro-credentials for employees with a strong focus on ICT skills.
- **In AGRIFOOD4FUTURE**, a working group focused on long-term viability and the monetisation of training services, while partnerships with industry actors and national stakeholders have sustained knowledge exchange. Transnational initiatives, such as the CoVE Community of Practice and the Pact for Skills have helped identify new funding opportunities and partnerships.
- **EUVECA** is strengthening its sustainability through dedicated strategies and business plans developed by its regional CoVEs. The project's edu4health online training platform, which offers high-quality course materials and mobility opportunities, will support its long-term viability and maximise its impact. To sustain this platform, the project is exploring diversified funding, including fee-based models for institutions, while keeping access free for individual learners. Collaboration with the Global Health Connector – a network linking regional health ecosystems, providers and stakeholders – further anchors EUVECA's edu4health platform, enhancing both continuity and impact.

Scaling up and mainstreaming

To ensure the long-term relevance of CoVE initiatives, many projects have worked to embed their outputs directly into national training systems. Integrating CoVE outputs into broader sectoral strategies and policy frameworks helps ensure they are widely adopted and deliver lasting benefits. By using modular, flexible and digital designs, and aligning content with EU and national standards, many projects demonstrate strong potential for replication. This allows the success of individual projects to be scaled up and transferred across regions and sectors, and even at European level, while remaining adaptable to local contexts.

- The **3LoE** project has developed 59 vocational education and training, further training and study programmes across EQF levels 3-7. These have included dual training pathways, teacher and SME trainer programmes, business idea challenges and advanced courses in green technologies. These initiatives have been implemented in several countries, aligning with national reforms, and involving VET schools and universities to institutionalise curricular innovations. This was achieved by the use of clear dissemination and business strategies, including policy recommendations and engagement across 14 countries, to ensure the outputs remain in use and enjoy ongoing political support.
- The **SHOREWINNER** consortium programme is structured around five regional CoVEs to strengthen Europe's workforce in the offshore wind industry. It brings together educational institutions, industry stakeholders and policymakers to develop new training programmes that equip professionals with the skills needed to succeed. By sharing course materials and training instructors, and fostering cross-border collaboration, it enables learners to acquire the green, digital, and technical skills required for careers in this sector.
- The **CATALYST** project has created a central hub for sustainable business transformation in Europe with courses and modules to address personal and organisational development, and to embrace transformation in SMEs. These resources have already been integrated into the training offerings of some of the partner countries. All activities and knowledge are mainstreamed via the **CATALYST Prospectus Magazine**, a biannual open-access online publication that provides practical insights and practitioner perspectives on key topics in sustainability, leadership and management.
- The **Auto CoVE 2.0** project has developed extensive, ready-made teaching and learning packages to upskill and reskill automotive workers, including educational content to support career growth and retention. These resources are available on the Electude online training platform. Thanks to its Collaborative Development Workshop model and partnership with Electude, the project is set to translate these packages into nine languages and connected with more than 4,000 technical schools through global industry networks.
- From the outset, **MOSAIC** has prioritised sustainability and continuity by creating the 'Crafting the Future' observatory and the MOSAIC Ambassadors group, which is embedded within EfVET's Creative and Cultural Industries Working Group, 'Crafting VET for Tomorrow's CCIs', launched in synergy with the MOSAIC project. The project has also developed training courses in six languages based on in-depth research reports as well as an advocacy kit tailored to different stakeholder groups, helping to future-proof VET in the arts and crafts sector. These initiatives help ensure that project outputs and partnerships endure, while also supporting ongoing exchange, innovation and collaboration across Europe and beyond.
- **TOUR-X** has created tools and curricula to strengthen skills anticipation and promote fair, sustainable tourism while supporting internationalisation. Its outputs are freely available and designed for easy integration into existing training programmes, especially by private providers.

Scaling success, shaping tomorrow

These success stories show that CoVEs are a proven, scalable model for VET excellence and a key pillar of European policy. This is now formally recognised in the Herning Declaration on attractive and inclusive VET, in which the Ministers responsible for VET from the EU Member States, EU Candidate Countries and European Economic Area countries – together with the European social partners and the European Commission (inter alia) – pledge to 'Increase excellence in VET, including by expanding the Centres of Vocational Excellence (CoVEs) model, as a motor for innovation and implementation of VET reforms and facilitate their networking.' By scaling these successes, CoVEs are turning innovation into lasting impact, shaping a stronger, more resilient future for learners, businesses and society across Europe.

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