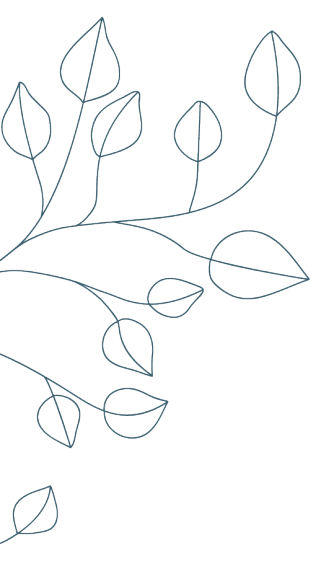




Vocational Education and Training (VET) Activities

Subtask C3.2



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SUMMARY

The European Partnership Water4All strengthens water security through cooperation between research, innovation, policy, industry, and education. Within this framework, Task C3.2 focuses on vocational education and training (VET) activities for the European water sector.

The Water4All VET activities build upon existing initiatives such as the Platform of Vocational Excellence Water (PoVE Water), coordinated by CIV Water. Through cooperation between vocational schools, universities, water companies, governments, and research organisations, the initiative supports the development of a future-proof and highly skilled workforce for the water sector.

A first phase focused on mapping vocational education initiatives across Europe and beyond. This mapping demonstrated the growing importance of international cooperation, public-private partnerships, digital learning, and competence-based education in addressing challenges such as climate adaptation, sustainability transitions, labour shortages, and technological innovation.

Based on these findings, Water4All partners developed an improvement plan focused on:

- expanding the international CoVE network;
- curriculum innovation;
- digital learning, VR and microcredentials;
- international mobility and lifelong learning.

The activities strongly build upon the Pilot PoVE Water and PoVE Water Scale-Up projects, which established international cooperation structures, developed educational modules, and created a growing European ecosystem for vocational water education.

International mobility forms a major pillar of the initiative. Through recurring International Water Weeks, Water Days, seasonal schools, study visits, and exchange programmes, students, teachers, professionals, and policy makers collaborate on real-world water challenges and innovation themes. These activities have evolved into a durable European mobility ecosystem for vocational water education.

Together, Water4All and PoVE Water demonstrate how vocational excellence, innovation, international cooperation, and public-private partnerships can contribute to a resilient and future-proof European water sector.

1. INTRODUCTION

The European Partnership Water4All aims to strengthen water security for the planet by connecting research, innovation, policy, industry, and education. Within this framework, Pillar C – Science-Policy-End User Interface focuses on strengthening knowledge transfer, capacity building, and practical implementation in the water sector. One of the core activities within Pillar C is Task C3.2: Vocational Training and Skills Development Programmes.

The vocational education and training (VET) activities within Water4All were established to address the increasing need for highly skilled water professionals capable of responding to major societal and environmental challenges. Climate change, ageing infrastructure, water scarcity, circular economy transitions, digitalisation, and the implementation of innovative water technologies require a future-proof workforce with strong technical and operational competences.

Water4All therefore supports the development of international vocational excellence ecosystems in which vocational schools, higher education institutions, research organisations, water utilities, governments, and industry partners collaborate closely. The initiative builds upon existing European networks and projects, particularly the Platform of Vocational Excellence in Water (PoVE Water), coordinated by CIV Water.

The overall objectives of the VET activities within Water4All are to:

- strengthen vocational excellence in the water sector;
- improve and modernise water-related curricula;
- support lifelong learning and upskilling;
- stimulate international mobility and cooperation;
- enhance recruitment and retainment of water professionals;
- foster collaboration between education, industry, research, and government.

The Water4All VET activities combine regional implementation with strong international cooperation and contribute directly to the development of a resilient and sustainable European water sector.

2. CENTRES OF VOCATIONAL EXCELLENCE (COVES) AND WATER-RELATED COVES

Centres of Vocational Excellence (CoVEs) are collaborative innovation ecosystems in which vocational education providers, industry, governments, and research organisations jointly strengthen vocational education, applied innovation, and workforce development.

A CoVE is not a single educational institution, but rather a regional partnership model that structurally connects education and professional practice. The European Commission promotes CoVEs as an important instrument for strengthening vocational education and supporting economic and societal transitions.

Within the water sector, CoVEs focus strongly on practical and technical vocational education at EQF levels 3, 4, and 5. These educational levels are essential for developing the operational and technical workforce required for drinking water production, wastewater treatment, water infrastructure, water quality monitoring, climate adaptation, and sustainable water management.

The Platform of Vocational Excellence Water (PoVE Water) is one of the leading European initiatives in this field. Coordinated by CIV Water in the Netherlands, PoVE Water connects regional water ecosystems across Europe through long-term cooperation between vocational schools, universities, water companies, innovation clusters, governments, and research institutes.

The PoVE Water approach is based on:

- public-private partnerships;
- challenge-based learning;
- international mobility;
- applied research and innovation;
- competence-based education;
- lifelong learning and reskilling.

The project contributes to strengthening vocational excellence through:

- curriculum development;
- mobility programmes;
- digital learning environments;
- virtual reality learning;
- microcredentials;
- industry cooperation;
- international networking activities.

Through Water4All, the existing PoVE Water ecosystem is further expanded and connected to a broader European and international water innovation network.

3. FINDINGS OF THE WATER4ALL MAPPING STUDY (PHASE 1)

The first phase of the Water4All VET activities focused on mapping vocational education and training initiatives related to the water sector across Europe and beyond. The mapping study identified vocational schools, universities, research institutes, water companies, sector organisations, and innovation networks active in water-related education and workforce development.

The mapping exercise demonstrated that vocational education in the water sector is rapidly evolving due to:

- climate adaptation challenges;
- sustainability transitions;
- digital transformation;
- increasing labour shortages;
- growing demand for technical water professionals.

One of the key conclusions of the study is that vocational education can no longer operate in isolation. Successful programmes increasingly rely on regional innovation ecosystems in which education providers collaborate closely with industry, governments, and research institutions.

The mapping identified strong regional ecosystems across Europe, including:

- Western Europe (Netherlands, Germany, France);
- Northern Europe (Scotland, Sweden);
- Baltic countries (Latvia, Estonia);
- Central Europe (Czech Republic, Slovenia);
- Mediterranean region (Malta, Portugal, Spain);
- Global cooperation partners in South Africa and international organisations.

Important organisations identified in the mapping include:

- CIV Water;
- Yuverta;
- Vitens;
- MCAST Malta;
- Glasgow Clyde College;
- Riga Technical University;
- Mendel University;
- SPŠS Brno;
- Water Services Corporation Malta;
- UNESCO-UNEVOC;
- Water Research Commission South Africa.

The mapping also confirmed the strong alignment between the Water4All VET activities and the existing PoVE Water network. Many organisations identified in the Water4All study were already active partners within PoVE Water, demonstrating the strategic relevance of the existing CoVE ecosystem.

The study concluded that international cooperation, competence-based education, digital learning technologies, and strong public-private partnerships are essential for future vocational excellence in the water sector. *Water4All Mapping Report (Deliverable DC3.7 and DC3.8):*



Water4all Overview
of VET programmes

4. EXISTING COVE PROJECTS SUPPORTING WATER4ALL ACTIVITIES

Pilot PoVE Water

The Pilot PoVE Water project forms one of the foundations for the vocational education and training activities within Water4All. The pilot project focused on exploring and strengthening vocational excellence in the European water sector by connecting vocational education providers, industry partners, research organisations, and public authorities.

The pilot phase mainly focused on:

- mapping existing vocational education and training initiatives in the water sector;
- identifying regional strengths and opportunities for cooperation;
- developing initial educational modules and learning materials;
- testing international collaboration between Regional Centres of Vocational Excellence (CoVEs);
- exploring innovative approaches such as digital learning and Virtual Reality;
- initiating mobility and knowledge exchange activities.

The Pilot PoVE Water project helped establish the first international cooperation structures and provided the basis for further development of the growing PoVE Water network and the later PoVE Water Scale-Up activities.

Several educational modules and pilot activities developed within the project directly contributed to the further development of Water4All Task C3.2 on Vocational Training and Skills Development Programmes.

More information: <https://povewater.westeurope.cloudapp.azure.com/>

PoVE Water Scale-Up

The PoVE Water Scale-Up project further expands the original PoVE Water network and strengthens international cooperation between Regional CoVEs. The project focuses on scaling up educational innovation, mobility activities, and cross-border cooperation.

The Scale-Up project supports:

- development of new learning modules;
- implementation of VR learning;
- mobility programmes;
- teacher exchanges;
- Water Weeks and thematic schools;
- international collaboration between regional water ecosystems.

More information: <https://www.povewater.eu/>

Katapult Network and the European CoVE Community

The Dutch Katapult network plays an important role in the development of vocational excellence ecosystems within the Netherlands and increasingly at European level. Katapult supports public-private partnerships between education, industry, and government and connects hundreds of collaborative innovation ecosystems across sectors such as water, energy, healthcare, and technology.

Within Water4All and PoVE Water, the Katapult methodology and maturity model are used to support the development and scaling-up of Regional Centres of Vocational Excellence (CoVEs). This includes strengthening long-term cooperation between vocational education providers, companies, research organisations, and public authorities.

An important recent development is the growing international connection between regional CoVEs across Europe through the wider European CoVE Community. This development supports stronger cooperation between Centres of Vocational Excellence, encourages exchange of best practices, and helps create international learning and innovation ecosystems around major societal transitions.

PoVE Water plays a major role within this growing European CoVE landscape. Through its strong international water network, mobility activities, curriculum innovation, and public-private cooperation model, PoVE Water has become an important example of how vocational excellence can contribute to sustainable workforce development and innovation in Europe.

The PoVE Water ecosystem is actively connected to broader European CoVE collaboration initiatives and contributes to strengthening cross-sector and cross-border cooperation between vocational excellence partnerships.

More information:

- <https://www.wearekatapult.eu/>
- <https://www.copcov.es.eu/>
- <https://netwerk.wijzinkatapult.nl/map/connect/>

BarCOVE

BarCOVE (Blueprint Alliance for a Resilient CoVE Ecosystem) is another important initiative connected to the wider PoVE Water and Water4All ecosystem. The project focuses on strengthening cooperation and resilience between Centres of Vocational Excellence (CoVEs) across Europe. BarCOVE supports:

- international cooperation between CoVEs;
- sharing of best practices;
- strengthening regional innovation ecosystems;
- resilience and sustainability of vocational excellence partnerships;
- knowledge exchange between sectors and regions.

The project contributes to the broader European ambition of creating strong interconnected CoVE ecosystems capable of responding to major societal transitions such as climate adaptation, sustainability, and digital transformation.

More information: <https://www.povewater.eu/barcove>

5. IMPROVEMENT PLAN FOR VET DEVELOPMENT PROGRAMMES (PHASE 2)

Following the mapping exercise, Water4All partners developed an improvement plan for vocational education and training programmes in the water sector. The improvement plan builds upon the existing PoVE Water ecosystem and outlines a long-term strategy for strengthening vocational excellence in Europe.

The plan focuses on four major themes:

- Expansion and Strengthening of the VET Network
- Curriculum Innovation
- Digital Learning, VR and Microcredentials
- Mobility Opportunities

Expansion and Strengthening of the VET Network

The initiative aims to further expand the international network of Regional Centres of Vocational Excellence (CoVEs) in water education. New partners are invited to join the network through collaborative pilot phases and action plans focused on regional water challenges and workforce needs.

Curriculum Innovation

A large number of new educational modules are being developed covering topics such as:

- watershed management;
- water chemistry and microbiology;
- drinking water treatment;
- wastewater treatment;
- climate adaptation;
- water reuse;
- distribution systems.

The modules are competency-based and designed for multiple educational levels. They combine theoretical knowledge with practical operational skills.

Digital Learning, VR and Microcredentials

The improvement plan strongly focuses on digital and flexible learning approaches.

Virtual Reality (VR) learning environments are being developed to simulate operational water environments and practical decision-making processes. These VR applications allow students and professionals to safely practise technical procedures and emergency situations in realistic learning environments.

In addition, Water4All partners are developing microcredentials for targeted upskilling and reskilling within the water sector. These short and flexible educational units support lifelong learning and rapid adaptation to labour market developments.

Mobility Opportunities

International mobility forms an essential part of the improvement plan. Students, teachers, professionals, and industry representatives participate in:

- International Water Weeks;
- seasonal schools;
- internships;
- exchange programmes;
- thematic workshops;
- study visits;
- international conferences and competitions.

Improvement Plan for VET Development Programmes (D3.10):



D3.10_Improvement
Plan for VET Develop

6. INTERNATIONAL MOBILITY ACTIVITIES AND EVENTS

International mobility is one of the core strengths of the Water4All and PoVE Water cooperation model. Mobility activities support knowledge exchange, professional development, international networking, and the transfer of innovation between regions and countries.

The implementation of mobility activities within PoVE Water Scale-Up significantly exceeded the original participation targets defined in the Grant Agreement.

Across structured learning activities, the project recorded:

- 332 student participations;
- 117 teacher participations;
- dozens of participations by industry experts and policy makers.

Examples of major mobility activities include:

International Water Weeks and Long-Term Mobility Cooperation

A central element within the PoVE Water and Water4All mobility approach is the organisation of recurring international learning and exchange activities. Rather than isolated events, these activities have developed into a structural and long-term mobility programme that connects vocational students, teachers, researchers, water professionals, and industry partners across Europe.

Over multiple years, International Water Weeks, Water Days, seasonal schools, study visits, and thematic exchange programmes have been organised in different partner regions, creating a sustainable European mobility ecosystem for vocational water education.



The International Water Weeks in Leeuwarden (Netherlands) have become an important recurring meeting point within the network. These weeks combine technical workshops, excursions, practical assignments, company visits, networking activities, and participation in the European Water Technology Week ecosystem. Students and teachers work together on real-life water challenges while engaging directly with companies, researchers, and innovation partners from across Europe.

In parallel, Water Days in Brno (Czech Republic) have strengthened the Central European cooperation within the network through challenge-based activities, technical workshops, and collaboration between vocational and higher education institutions.

In addition to these larger recurring events, the network also organises seasonal schools hosted by different regional partners. Examples include:

- Summer Schools in Estonia;
- Winter Schools in Latvia;
- Autumn and Winter mobility activities in Malta.

These activities focus on themes such as:

- drinking water treatment;
- wastewater management;
- climate adaptation;
- microbiology;
- water technology;
- sustainability and circular water systems.

The recurring nature of these events has created a durable international mobility structure in which students, teachers, and professionals continuously exchange knowledge, educational approaches, and practical expertise. Over time, this has contributed to:

- stronger international cooperation between Regional CoVEs;
- long-term institutional partnerships;
- increased mobility opportunities for VET learners;
- stronger alignment between education and labour market needs;
- development of an international vocational water community.

The mobility activities also contribute directly to the attractiveness and visibility of vocational education in the water sector by offering students international experiences connected to innovation, sustainability, and real-world industry practice.

Through this structural and continuously growing mobility ecosystem, PoVE Water and Water4All demonstrate how international vocational cooperation can become a sustainable driver for workforce development, innovation capacity, and lifelong learning within the European water sector.

Study Visits, Industry Exchange and Community Building

Additional mobility activities include:

- study trips;
- thematic lecture visits;
- industry exchanges;
- participation in European conferences and cooperation events.

The Study Trip to the Netherlands during European Water Tech Week involved students, teachers, policy makers, and more than 600 industry representatives and stakeholders from the international water sector.

Other activities included:

- a study trip to South Africa focused on international cooperation and knowledge exchange;
- thematic lectures in Malta;
- expert visits and technical exchange sessions in Latvia and the Czech Republic.

The mobility programme also contributes to the wider European Community of Practice of Centres of Vocational Excellence (CoVEs). Through participation in the annual Forum on Vocational Excellence and related international cooperation events, the PoVE Water network actively contributes to European dialogue on vocational excellence, innovation ecosystems, workforce development, and public-private cooperation.

VET – The Power Behind Innovation (2025)

The 2025 event “VET – The Power Behind Innovation” highlighted the strategic importance of vocational education within innovation ecosystems and the water transition. The event focused on the role of vocational excellence in supporting sustainable innovation, workforce development, and European competitiveness.

The programme demonstrated how vocational education contributes directly to:

- innovation capacity;
- sustainability transitions;
- regional economic development;
- climate adaptation;
- implementation of new technologies in the water sector.

The event also showcased how Centres of Vocational Excellence (CoVEs) connect education, research, and industry in practice and how vocational talent contributes to solving complex societal water challenges. Together, these activities demonstrate how Water4All and PoVE Water successfully combine vocational education, innovation, mobility, and international cooperation within a practical, scalable, and sustainable European framework.



More information: <https://www.civwater.nl/nieuws/vet-the-power-behind-innovation/#html>

European Water Technology Week 2024 – Leeuwarden

A strong example of the connection between vocational education, innovation, and international cooperation is the participation of PoVE Water and Water4All partners in the European Water Technology Week (EWTW) 2024 in Leeuwarden, the Netherlands.



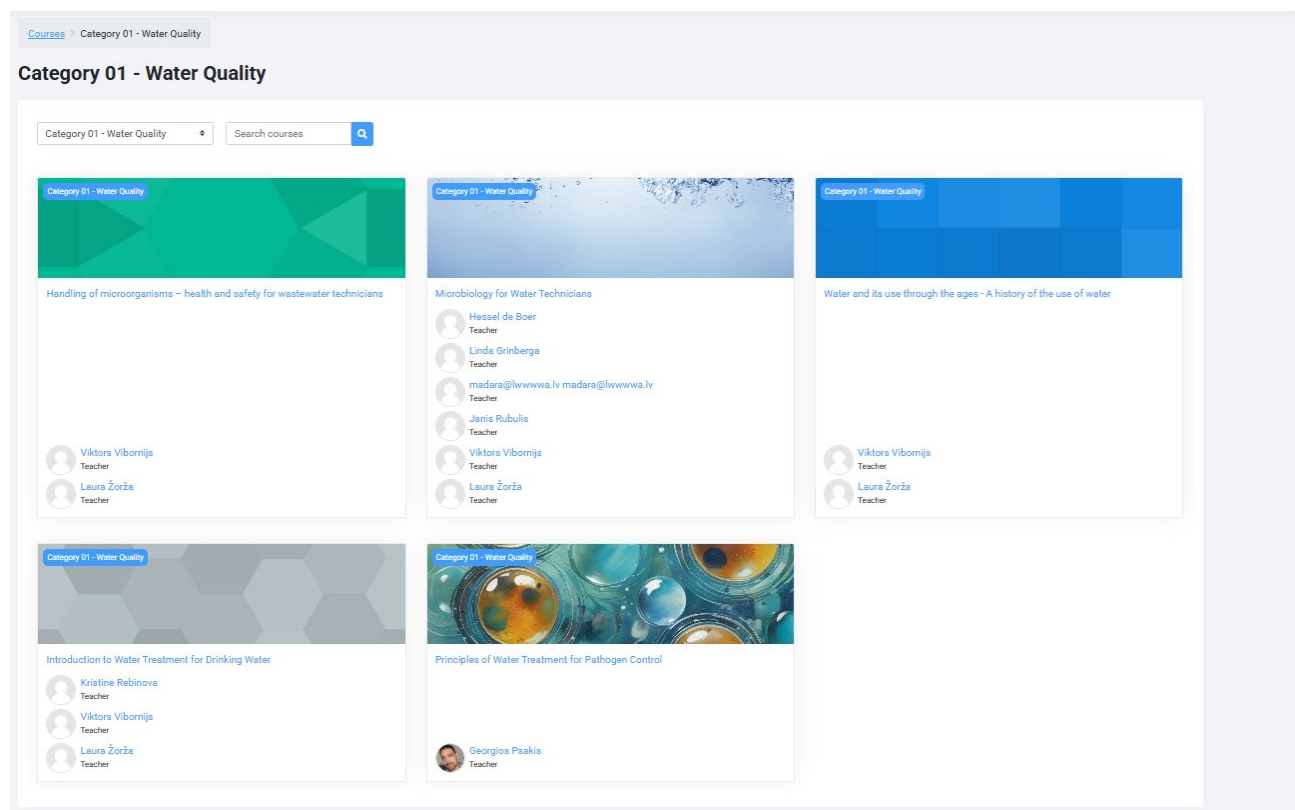
During this international event, VET students, teachers, researchers, and industry professionals participated in workshops, technical visits, innovation sessions, and networking activities connected to the European water technology sector. The programme provided students with direct exposure to real-life innovation ecosystems, international companies, research institutes, and applied water technology developments.

The event also demonstrated the strong connection between vocational education and the broader WaterCampus Leeuwarden ecosystem, where education, research, entrepreneurship, and government collaborate on sustainable water solutions and workforce development.

More information: [European Water Tech Week 2024 – CIV Water](#)

7. TRAINING MODULES AND EDUCATIONAL RESOURCES

An important component of the Water4All and PoVE Water activities is the development and sharing of high-quality vocational learning materials for the water sector. Building upon the results of Pilot PoVE Water and PoVE Water Scale-Up, partners jointly develop educational resources that support both initial vocational education (IVET) and continuing vocational education and training (CVET).



The educational resources focus on practical, competence-based, and challenge-oriented learning approaches connected to real-world water sector challenges. The materials are designed to support:

- vocational students;
- teachers and trainers;
- water professionals;
- lifelong learners;
- industry upskilling and reskilling.

The learning materials are developed collaboratively by international partner organisations within the PoVE Water ecosystem and cover a broad range of themes, including:

- drinking water treatment;
- wastewater management;
- water quality;
- microbiology;
- watershed management;

- climate adaptation;
- water reuse;
- distribution systems;
- sustainable water management.

A strong emphasis is placed on modern and flexible educational approaches. The network increasingly integrates:

- digital learning environments;
- Moodle-based learning platforms;
- hybrid learning approaches;
- Virtual Reality (VR) learning applications;
- microcredentials and modular learning units.

Several pilot modules and digital learning resources developed within Pilot PoVE Water and PoVE Water Scale-Up already contribute directly to the Water4All VET activities. These include modules on:

- Understanding Water Quality;
- Water Distribution Networks;
- Water Operations and Water Resources;
- Sustainable Water Management;
- Microbiological Parameters of Drinking Water;
- Water Management and Water Quality Policy.

The educational materials are designed to support international transferability and cooperation between Regional Centres of Vocational Excellence (CoVEs). By sharing modules, methodologies, and digital tools across regions and countries, the network contributes to the development of a connected European vocational learning ecosystem for the water sector.

In addition to formal educational modules, the network also develops:

- challenge-based assignments;
- practical case studies;
- international workshops;
- mobility-related learning activities;
- industry collaboration projects;
- VR-supported simulations and learning experiences.

The PoVE Water Learning Environment (PVLE) acts as a shared digital platform where learning materials, modules, and educational resources are brought together and made accessible to partners within the network.

All learning modules can be accessed here: <https://pilotpovewater.eu/pvle/course/index.php?categoryid=2>

8. FINAL ASSESSMENT AND FUTURE OUTLOOK

Water4All partner CIV Water is currently working on the final assessment of the implementation of the VET improvement plan and the impact of the developed activities within existing vocational education ecosystems.

The final report will assess:

- the implementation of the improvement plan;
- the added value of the developed activities;
- the impact of mobility programmes;
- curriculum innovation;
- international cooperation;
- the contribution of CoVEs to workforce development in the water sector.

The assessment will also analyse the added value of the implemented activities both with and without the improvement plan framework, helping to identify the long-term impact of vocational excellence approaches within the European water sector.

The results will contribute to future scaling-up activities and the continued development of international vocational excellence ecosystems in water-related education and training.

Final Assessment Report (to be published)

9. CONCLUSION

The Water4All vocational education and training activities demonstrate how vocational excellence can contribute directly to solving major societal and environmental water challenges.

By connecting education, industry, research, and policy within international innovation ecosystems, Water4All and PoVE Water help create a future-proof workforce capable of supporting sustainable water management, climate adaptation, technological innovation, and circular economy transitions.

The combination of:

- Centres of Vocational Excellence,
- international mobility,
- curriculum innovation,
- digital learning technologies,
- public-private cooperation,
- and lifelong learning

creates a strong European framework for vocational excellence in the water sector.

Through continued international cooperation and scaling-up activities, Water4All contributes to strengthening the resilience, sustainability, and innovation capacity of the global water sector.



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