



CEWM roadmap: public summary

Deliverable D7.3, WP7

Project Number	101081980
Project Title	Climate-resilient management for safe disinfected and non-disinfected water supply systems
Project Acronym	SafeCREW
Project Duration	November 2022 – April 2026
Call identifier	HORIZON-CL6-2022-ZEROPOLLUTION-01
Due date of Deliverable	Month 42, 30.04.2026
Final version date	Month 42, 30.04.2026
Dissemination Level	PU (Public)
Deliverable No.	D7.3
Work Package	WP7
Task	T7.4
Lead Beneficiary	NUWEE
Contributing Beneficiaries	KWB
Report Author	S. Martynov (NUWEE), A. Kucherova (NUWEE), V. Moshynsky (NUWEE), M. Khlapuk (NUWEE), Volker Hettler
Reviewed by	Ulf Miehe (KWB)
Approved by	Anissa Grieb (DVGW-TUHH)



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101081980.

History of Versions		
Version	Publication Date	Change
0.1	22.04.2026	Draft version
0.2	27.04.2026	Internal review
1	30.04.2026	Final version submitted to Commission
2	26.06.2026	Missing author added and submitted to Commission

Abstract

This deliverable provides a public summary of the roadmap for establishing the Centre of Excellence in Water Management (CEWM) in Ukraine under an active role of the SafeCREW partner (National University of Water & Environmental Engineering (NUWEE) from Rivne. It includes a mission statement, a proposed management structure, an analysis of funding options, and an outline of the main thematic priorities of the Centre. The document is intended to support the mobilisation of post-SafeCREW funding and the development of strategic partnerships.

The establishment of a CEWM at NUWEE will provide a strategic platform to consolidate expertise, develop solutions, and strengthen cooperation between academia, public authorities, utilities, and international partners. The CEWM will function as a hub for applied research, innovation, capacity development, and policy-practice dialogue.

Moreover, the Centre will support the reconstruction and modernisation of the water sector, enhance institutional capacities, and contribute to Ukraine's alignment with the EU water acquis. It will also facilitate participation in EU programmes such as Horizon Europe and Erasmus+, while strengthening donor coordination and investment effectiveness.



Table of contents

Abstract	2
Table of contents	3
1. Introduction	5
1.1 Rationale for CEWM in Ukraine	5
1.2 Water Sector Challenges in Ukraine.....	5
1.3 EU integration context	5
1.4 Role of NUWEE.....	5
1.5 Link to SafeCREW	6
2. CEWM as a Hub for Excellence	6
2.1 Vision and mission.....	6
2.2 Specific objectives	6
2.3. Functions of the CEWM.....	7
2.4 Added value for NUWEE.....	7
3. Structure and Governance	8
3.1 Participating Departments for the initial CEWM phase	8
3.2 External Partners from Ukraine	9
3.3 External Partners from the European Union	9
4. Future thematic clusters	10
5. Funding Sources for CEWM operation.....	10
6. Areas of action and measures	11
6. Implementation Outlook	11
7. Summary	11
8. References.....	12
9. Annex	13
9.1 Detailed funding instruments.....	13
9.1.1 Research and Innovation Projects.....	13
9.1.2 Research Infrastructure and Institutional Development.....	14
9.2 Detailed Areas of Action.....	16



Abbreviations

CEWM	Centre of Excellence on Water Management
CSR	Corporate Social Responsibility
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EIB	European Investment Bank
ERIC	European Research Infrastructure Consortium
GA	Grant Agreement
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IFIs	International Financial Institutions
NUWEE	National University of Water and Environmental Engineering
R&D	Research and Development
RBMP	River Basin Management Plan
SIDA	Swedish International Development Cooperation Agency
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WFD	Water Framework Directive



1. Introduction

The overall aim of this roadmap is to summarise the ambitions of the National University of Water and Environmental Engineering (NUWEE) to establish a Centre of Excellence in Water Management (CEWM) as an internal institutional unit. The CEWM is intended to strengthen the university's position in applied research for the water sector at national, European, and international levels.

1.1 Rationale for CEWM in Ukraine

Ukraine's water sector faces urgent and systemic challenges driven by ageing infrastructure, war-related damage, limited monitoring capacity, climate risks, and fragmented governance structures. At the same time, Ukraine's EU integration pathway requires the progressive approximation to EU environmental and water legislation, including river basin management principles, improved drinking water and wastewater standards, and climate-resilient planning.

1.2 Water Sector Challenges in Ukraine

Based on a qualitative national-level analysis, the most pressing challenges relate to the following aspects [1,2]:

- Deteriorating networks – water supply and wastewater infrastructure is aged and suffers significant technical losses
- Underinvestment – limited capital for modernisation of treatment facilities and distribution systems
- Climate stress – droughts, floods, and seasonal variability increase pressure on existing systems
- Pollution hotspots – industrial discharges, agricultural runoff, and untreated wastewater affect water quality
- Monitoring gaps – inconsistent data and outdated technologies limit risk assessment and compliance verification
- Fragmented institutional mandates – overlapping responsibilities across institutions
- Limited capacity at local level – municipalities often lack technical and financial resources
- Regulatory alignment – ongoing approximation to the EU water acquis requires further technical support

1.3 EU integration context

Ukraine is gradually aligning its environmental and water management system with EU legislation in the context of the Association Agreement and the EU accession process. Progress has been made in water management at the river basin level, including the adoption of River Basin Management Plans aligned with the EU Water Framework Directive. However, gaps in legislative harmonization and implementation remain significant in key areas, such as water quality (particularly in drinking water, urban wastewater, and presence of nitrates) [3].

1.4 Role of NUWEE

NUWEE has a unique position as a national leader in water education and engineering sciences. It has long-standing expertise in drinking water and wastewater engineering, hydrology and river basin management, environmental monitoring and modelling, water infrastructure design and operation. The university's structure includes 8 academic and research institutes; 5 colleges; more than 50 departments; a research section; a scientific-technical library; the innovation center; and research, testing, and industry-specific laboratories. Currently, the university hosts approximately 9000 students. There are 53 bachelor's programs, and 60 master's programs. Nearly 1000 students study in



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101081980.

the field of the Environmental Engineering. NUWEE is a member of the Great Charter of Universities, the European Association for International Education, the International Association "Global Water Partnership", the International Water Association. Therefore, NUWEE is well positioned to host the CEWM that connects scientific excellence with real sector demands.

1.5 Link to SafeCREW

The CEWM will build on the results and partnerships established within the EU-funded SafeCREW project and will contribute to ensuring the sustainability of its outcomes.

SafeCREW provides a basis through:

- development of climate-resilient water management approaches
- pilot tools and methodologies for risk assessment and monitoring
- capacity building across governance levels

The CEWM will further develop and institutionalize these results for broader application.

2. CEWM as a Hub for Excellence

2.1 Vision and mission

The CEWM aims to become a national hub for water research, innovation, and capacity building, supporting sustainable and climate-resilient water management aligned with EU standards. Its mission is to contribute to Ukraine's recovery and long-term development through applied research, innovation, and capacity building, while linking science, policy, and operational practice.

2.2 Specific objectives

The CEWM pursues the following specific objectives:

- Pooling water management expertise at a location in Ukraine with a decades-long academic tradition.
- Creating a platform for knowledge transfer between the university, public institutions, local authorities, utility companies and international partners.
- Developing a range of qualification and further training programs for professionals in the water sector.
- Promoting application-oriented research and innovation in the fields of water supply and sanitation, water and wastewater treatment, water resources management, and environmental technology.
- Support for the planning, prioritisation and technical preparation of investments in the water sector.
- Support for the alignment with EU standards and modern water management control and regulation systems in politics, business and society that go beyond purely state hierarchies.



2.3. Functions of the CEWM

The CEWM aims to perform the following functions:

Technical and advisory function.

- The CEWM supports public institutions, local authorities, water authorities and utility companies with technical advice and support relating to water management, particularly in the areas of planning, operation, modernisation, resource protection and resilience.

Research and innovation function.

- The Centre initiates and supports application-oriented research and development projects addressing water management challenges in Ukraine and facilitates the testing of innovative technical and organisational solutions.

Training and qualification function.

- The CEWM develops needs-based training and further education programmes for professionals from public administration, municipal enterprises, water authorities and other institutions in the sector.

Knowledge and transfer function.

- The Centre collates, documents and disseminates specialist knowledge, good practices, technical guidelines and scientific findings, and promotes dialogue between academia and the field.

Networking and coordination function.

- The CEWM serves as a platform for cooperation and exchange between Ukrainian and international partners and supports the coordination of technical contributions within the water sector.

2.4 Added value for NUWEE

CEWM will strengthen NUWEE by:

- strengthen international visibility
- improve access to EU funding
- enhance integration into research networks
- increase attractiveness for students and researchers
- support structured cooperation with sector stakeholders



3. Structure and Governance

The CEWM will be established as a functional unit within NUWEE with a lean organisational structure comprising:

- **Management Board** - The Management Board will include representatives from participating departments and NUWEE administration and will be responsible for:
 - approval of annual workplans and budgets;
 - oversight of implementation progress;
 - operational decision-making and prioritization.

- **Steering Board** - The proposed membership for the Steering Board is: NUWEE, State Agency of Water Resources of Ukraine, Pripjat River Basin Water Resources Management, Public organization All-Ukrainian Ecological League, Municipal enterprise Rivneoblvodokanal, LLC “UKRBIOTAL”. The role of the Steering Board will be:
 - provides governance;
 - strategic direction;
 - accountability;
 - safeguarding transparency and institutional integrity.

- **Scientific Advisory Board** - The Scientific Advisory Board will consist of national and international experts and will provide:
 - strategic guidance on scientific quality and relevance;
 - recommendations on research priorities;
 - support to international networking and credibility.

- **CEWM coordination and administration unit** - An operational unit will support:
 - proposal development and grant management;
 - financial reporting and administration;
 - communication, dissemination, and event organization;
 - coordination with partners and donors.

The CEWM will operate based on principles of scientific integrity, transparency, inclusiveness, and sustainability.

3.1 Participating Departments for the initial CEWM phase

- Department of Water Engineering and Water Technologies
- Department of Hydraulic Engineering and Hydraulics
- Department of Water Supply, Drainage and Drilling
- Department of Ecology, Environmental Protection Technologies and Forestry
- Department of Land Management, Cadastre, Land Monitoring and Geoinformatics
- Department of Business Economics and International Business



3.2 External Partners from Ukraine

The National University of Water and Environmental Engineering (NUWEE) collaborates with a wide range of external partners in Ukraine that contribute to applied research, capacity-building, and innovation in water governance and environmental management. These partnerships are essential for strengthening evidence-based decision-making and supporting the development of CEWM approaches.

Ukrainian water utilities and river basin authorities represent key operational stakeholders for NUWEE. Water supply and wastewater utilities provide practical case studies, infrastructure sites, and technical challenges that support applied research in areas such as water treatment efficiency, infrastructure rehabilitation, leakage reduction, and wastewater management. River basin authorities contribute to basin-scale planning, hydrological monitoring, and integrated water resources management, aligning with national and European water governance frameworks.

NUWEE maintains cooperation with ministries and state-level institutions responsible for environmental protection, water governance, and infrastructure planning. These partners support the university's involvement in policy development, regulatory alignment, and strategic planning for sustainable water management. Collaboration with ministries and national agencies strengthens the link between academic research and national reform priorities, including environmental monitoring systems and water security strategies.

Local municipalities and decentralized utilities serve as important partners for pilot implementation and field-based collaboration. These institutions help identify community-level infrastructure needs and enable practical testing of innovations such as improved water supply systems, decentralized wastewater treatment solutions, and climate-resilient water management practices. Municipal engagement also supports student training, internships, and applied learning opportunities.

Non-governmental organizations and international agencies play a vital role in strengthening stakeholder participation, community engagement, and environmental awareness. Water-focused NGOs contribute through advocacy, public outreach, citizen monitoring initiatives, and local capacity-building. International organizations often provide funding, technical assistance, and international best practices that enhance NUWEE's ability to engage in long-term research and development projects, especially in alignment with EU standards and Sustainable Development Goals (SDGs).

3.3 External Partners from the European Union

NUWEE engages with a range of external partners across the European Union to strengthen research capacity, support innovation in water and environmental engineering, and align Ukrainian water governance with EU standards. These partnerships are relevant for advancing CEWM through knowledge exchange, joint projects, and technology transfer.

NUWEE's key European external partners include universities and specialized research institutes focused on water engineering, wastewater treatment, river basin management, and climate adaptation. These institutions support NUWEE through joint research proposals, academic mobility, and technical expertise sharing. Collaboration often takes place through EU-funded programs (e.g., Erasmus+, Horizon Europe) and contributes to curriculum development, staff training, and access to advanced laboratory and modelling techniques.



4. Future thematic clusters

The CEWM will organise its activities in thematic clusters aligned with national priorities and EU policy frameworks (Figure 1).

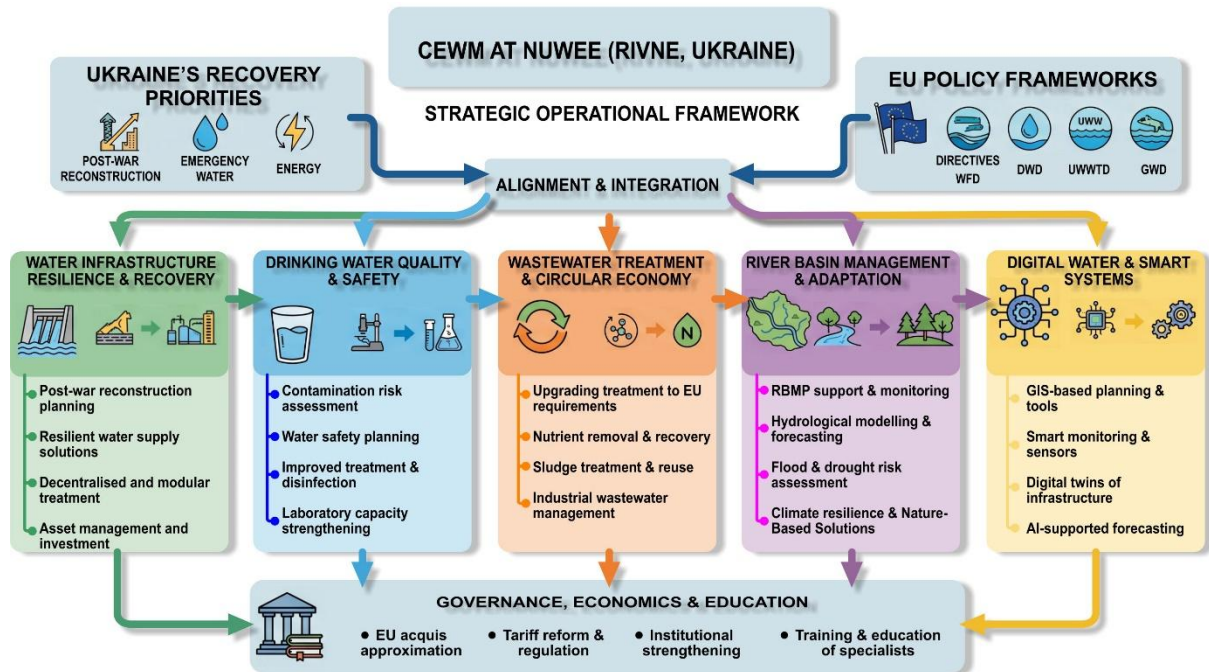


Figure 1: Overview of the thematic clusters of CEWM.

5. Funding Sources for CEWM operation

The establishment and operation of the CEWM require a diversified funding approach combining project-based and institutional funding.

Key sources include:

- EU programmes (Horizon Europe, Erasmus+, Interreg)
- international financial institutions
- bilateral donors
- national funding
- contract-based services and partnerships

Details are provided in the Annex.



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101081980.

6. Areas of action and measures

The CEWM will implement six main areas of action:

- Institutional development
- Development of advisory services
- Training and professional development
- Applied research and pilot projects
- Support for reconstruction and modernisation
- International cooperation

Details are provided in the Annex.

6. Implementation Outlook

The establishment of the CEWM will follow a phased approach:

- Short term (1–2 years): institutional setup and initial activities
- Medium term (3–5 years): expansion of research, training, and partnerships
- Long term (>5 years): consolidation as a national competence centre

7. Summary

The establishment of a CEWM at the NUWEE represents a strategic initiative to support the recovery, modernisation, and long-term sustainability of Ukraine's water sector. The CEWM will serve as a national platform linking research, policy, and practice. It will bring together academic expertise, public authorities, water utilities, and international partners to address key sector challenges, including ageing infrastructure, climate risks, water quality issues, and the need for improved governance and monitoring systems.

Building on the results of the SafeCREW project, the CEWM will focus on applied research, innovation, capacity building, and technical advisory services. It will also contribute to Ukraine's progressive alignment with the EU water acquis and facilitate participation in European research and cooperation programmes.

The Centre will operate within a structured governance framework and will rely on a diversified funding model combining European programmes, international financial institutions, national funding sources, and service-based revenues.

The implementation of the CEWM will follow a phased approach, starting with institutional establishment, followed by consolidation and expansion towards a fully operational national competence centre. In the long term, the CEWM aims to become a recognised partner within the European water research and policy landscape.



8. References

1. Natsionalna dopovid pro yakist pytnoi vody ta stan pytnoho vodopostachannia v Ukraini [National Report on Drinking Water Quality and the State of Drinking Water Supply and Wastewater Management in Ukraine in 2024], Ministry for Development of Communities and Territories of Ukraine. <https://mindev.gov.ua/storage/app/sites/1/uploaded-files/nacionalna-dopovid-pro-iajist-pitnoyi-vodi-ta-stan-za-2024-rik.pdf>
2. Special report Commissioner of the Verkhovna Rada of Ukraine for Human Rights on the state of compliance with citizens' rights to clean and accessible water under the conditions of the legal regime of martial law. <https://www.ombudsman.com.ua/special-reports-en>
3. Otsinka vodnoho zakonodavstva Ukrayiny ta rekomendatsiyi shchodo yoho harmonizatsiyi z praktykamy Yevropeys'koho soyuzu [Assessment of Ukrainian water legislation and recommendations for its harmonization with European Union practices], https://wwfeu.awsassets.panda.org/downloads/wwf_law_1.pdf



9. Annex

9.1 Detailed funding instruments

9.1.1 Research and Innovation Projects

The successful establishment of the CEWM requires continuous and diversified funding for research and innovation activities. These activities will primarily focus on applied research addressing the urgent challenges of the Ukrainian water sector, including infrastructure rehabilitation, compliance with EU water legislation, and climate resilience.

Funding needs in this area include:

- Personnel costs for researchers, technical staff, and PhD candidates
- Costs for field studies, data collection, and monitoring
- Development and operation of pilot and demonstration projects
- International cooperation, mobility, and knowledge exchange
- Dissemination, stakeholder engagement, and policy support activities

To meet these needs, the CEWM should adopt a mixed funding model. Competitive international research funding will play a central role, particularly through participation in European collaborative projects under programmes such as Horizon Europe. These projects not only provide financial resources but also enable integration into European research networks and support the transfer of knowledge and best practices.

In parallel, education and capacity-building programmes such as Erasmus+ can support training, curriculum development, and staff exchanges, thereby strengthening the human capital of the CEWM.

Additional funding should be generated through:

- Contract research and advisory services for Ukrainian water utilities, municipalities, and river basin authorities
- Cooperation with international financial institutions and donors, such as the World Bank or European Bank for Reconstruction and Development, particularly in projects linked to sector reform and infrastructure investments
- Participation in pilot and demonstration projects funded under environmental and innovation programmes
- Strategic partnerships with industry, including technology providers and engineering companies

Overall, the CEWM should aim to position itself as a key national partner for applied water research, capable of attracting both competitive research funding and contract-based project income.



Possible funding programs for research and innovation:

Funding Source	Programme / Instrument	Type of Support	Example CEWM Use
EU	Horizon Europe (IA, RIA, Missions)	research and innovation grants	modelling, monitoring systems, pilot projects
EU	Horizon Europe - Marie Skłodowska-Curie Actions	research and innovation grants	doctoral networks, staff exchange
EU	Interreg (program section not yet defined)	Knowledge exchange and capacity building	Exchange with other former UDSSR members on changing from SNIP design to EU regulation design of water infrastructure
EU	Erasmus+	education and capacity building	training modules, joint programmes, exchanges
EU	Neighbourhood / pre-accession instruments	institutional support	EU directive implementation support
UN	UNDP, UNICEF	development and resilience programmes	water safety, emergency monitoring
Bilateral donors	GIZ, SIDA	grants and technical assistance	governance reform pilots, training programmes
National	Ukrainian R&D funds	research grants	young researchers, equipment upgrades
Utilities	Service contracts	operational income	audits, modelling, lab services
Private sector	CSR and joint projects	co-financing	demonstration projects and innovation pilots

9.1.2 Research Infrastructure and Institutional Development

In addition to project-based funding, the establishment of the CEWM requires additional investment in research infrastructure and institutional capacities. Similar to EU members in Easter Europe the R&D infrastructure suffers from long-term underspending due to lack of sufficient economic resources compared to western EU member states.

Key funding needs include:

- Modern laboratory facilities for water quality analysis (chemical, biological, microbiological)
- Monitoring equipment and digital infrastructure (e.g. sensors, data platforms, modelling tools)
- Rehabilitation and upgrading of university buildings and research facilities, specifically with respect to pilot testing (upscaling of existing lab treatment configuration).
- IT infrastructure to support data-driven water management and integration with European systems

Given the scale of these needs, funding for infrastructure and institutional development cannot rely solely on competitive research projects. Instead, it must be closely linked to national and international reconstruction and recovery efforts.

A key opportunity lies in EU-supported recovery instruments such as the Ukraine Facility, which aim to support the rebuilding and modernisation of public infrastructure, including higher education and research institutions. Aligning CEWM investments with national recovery priorities will be essential to access such funding.



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101081980.

Furthermore, international financial institutions such as the European Investment Bank, the World Bank, and the European Bank for Reconstruction and Development can provide substantial financing for water-related infrastructure projects. The CEWM can play a dual role in this context: as a beneficiary of infrastructure investments at the university level, and as a knowledge partner supporting the design, implementation, and monitoring of funded projects.

Bilateral development cooperation and international donors will also be important sources for targeted investments, particularly for:

- Laboratory equipment and pilot facilities
- Capacity building and institutional strengthening
- Long-term partnerships with European research organisations

Finally, a certain level of co-financing and commitment from NUWEE and relevant Ukrainian authorities will be necessary to ensure ownership and sustainability. Over time, parts of the infrastructure can be financially sustained through service provision (e.g. laboratory services, certification, training), contributing to the long-term viability of the CEWM.

Possible funding programs to invest into research infrastructure for the CEWM at NUWEE:

Funding Source	Programme / Instrument	Type of Support	Example CEWM Use
EU	European Bank for Reconstruction and Development (EBRD) / European Investment Bank (EIB)	infrastructure investment support (mostly loans)	compliance planning, utility modernization
EU	Ukraine Facility	Grants, loans, investment support	Improve internal accounting to EU standards
EU	European research infrastructure consortia (ERICs)	grants	Investment in high-resolution laboratory equipment, fast-computing infrastructure
IFIs	World Bank	loans and technical assistance	feasibility studies, sector capacity building
UN	UNDP, UNICEF	development and resilience programmes	water safety, emergency monitoring
Bilateral donors	GIZ, SIDA	grants and technical assistance	governance reform pilots, training programs
Multi-donor	Multi-donor trust funds for Ukraine such - The Ukraine Recovery Conference - (https://www.urc-international.com/)	To be defined	



9.2 Detailed Areas of Action

Action Area 1: Institutional development of the CEWM

The aim is the organisational, technical and administrative establishment of the centre at the university.

Measures:

- Formal establishment of the CEWM within the university structure;
- Definition of the mandate, remit and organisational form;
- Establishment of a management and steering structure;
- Formation of an interdisciplinary core team;
- Development of a work and funding plan;
- Establishment of an advisory board comprising representatives from the university, public authorities, the professional sector and partner institutions.

Action Area 2: Development of knowledge and advisory services

The aim is to develop a structured range of specialist services offered by the Centre.

Measures:

- Creation of a portfolio of advisory services;
- Development/adaption of technical guidelines and practical handbooks;
- Establishment of a documentation and knowledge platform;
- Collection and compilation of national and international good practices;
- Conducting technical consultations for partner institutions.

Action Area 3: Qualification and Continuing Professional Development

The aim is to strengthen the practical skills of professionals in the water sector.

Measures:

- Development of modular continuing education programmes;
- Delivery of training courses, seminars and certificate courses;
- Introduction of short-form courses for local authority specialists and operators;
- Integration of practice-relevant topics into university teaching;
- Establishment of exchange formats between academia and practice.

Action Area 4: Application-oriented research and pilot projects

The aim is to develop and test innovative solutions to water management issues.

Measures:

- Initiating research projects with practical relevance;
- Developing pilot measuring facilities in collaboration with local authorities and utilities;
- Utilising and expanding university laboratories and demonstration infrastructure;
- Promotion of interdisciplinary research approaches;
- Acquisition of national and international research and funding.



Action Area 5: Support for Reconstruction and Modernisation

The aim is to provide technical support for investment and development measures in the Ukrainian water sector.

Measures:

- Support with needs analysis, prioritization and risk assessment;
- Technical support for selected infrastructure projects;
- Development of standardised approaches for planning, preparation and setup in water management context ;
- Advice on resilient, energy-efficient and sustainable solutions;
- Participation in project development and preparation of investment-ready projects.

Action Area 6: International Cooperation

The objective is to strengthen international partnerships and provide technical support for reform processes.

Measures:

- Establishing cooperation with European universities and specialist institutions;
- Exchange programmes for lecturers, students and professionals;
- Support in analysing relevant European standards;
- Expert dialogues on technology, governance, regulation and water management reforms;
- Participation in international expert networks and programmes.

