Funded by the European Union

EU4GREEN RECOVERY EAST

EU4 Green Recovery East (700002623)
Recovery through a Circular Economy and Pollution Reduction in the Eastern Partnership countries

TERMS OF REFERENCE

Enhancement and modernisation of the Water Cadastre website, integration of the SCADA system, and development of APIs for the Water Resources Management Department (WRMD) of the Ministry of Environment of the Republic of Armenia

1. Background and objectives

The EU4Green Recovery East (EU4GRE) is a regional Programme funded by the European Union to support Eastern Partnership countries (Armenia, Azerbaijan, Georgia, Moldova, and Ukraine) in transitioning to a circular economy, improving water management, strengthening environmental data systems, aligning with the EU environmental acquis, and enhancing cross-border cooperation.

EU4GRE Programme builds on the results of a decade of EU support for better water management and green economy adoption, and is the successor to the green economy, water, and environmental data pillars of the regional EU4Environment Programme.

It is implemented by a consortium of EU Member State agencies and international organisations, including the Environment Agency Austria (UBA), leader of the consortium, Expertise France, the International Office for Water (OiEau), the Organisation for Economic

Co-operation and Development (OECD), the United Nations Economic Commission for Europe (UNECE) and the United Nations Industrial Development Organisation (UNIDO).

The five components of the EU4GRE Programme are the following:

- Promote circular economy and resource efficiency;
- Protect water resources and reduce pollution;
- Align with EU environment standards ;
- Strengthen environment data and digitization;
- Enhance transboundary cooperation on environmental issues.

This assignment concerns the enhancement and modernisation of the Water Cadastre website, integration of the SCADA system and development of APIs for the Water Resources Management Department of the Ministry of Environment of the Republic of Armenia.

The contract aims to modernize the Water Cadastre website, integrate the SCADA system and develop the APIs aiming to allow interoperability processes with the WRMD databases including Water Use Permit procedures, Water Cadastre database and Online Flow Meters database (SCADA).

2. Financing

European Union

3. Procedure

EF Procurement rules

4. Contracting Authority

International Office for Water (OiEau) – France

5. Nature of contract

Lumpsum Service contract

6. Time period of implementation

December 2026 - April 2027

7. Maximum contract value

8 400 EUR

8. Scope of work

8.1 Enhancement of the Water Cadastre website

- Review and modernize the cadastre website's design, structure, and database tables to provide a modern appearance and improved usability.
- Implement graphical reports (charts, diagrams, and other visualizations) to present data in a clear and user-friendly manner.
- Develop a "Contact Us" section that enables users to send messages. Submitted messages shall be stored in the database and made available within the Water Cadastre system for review, processing, and response.
- Implement a website visitor counter for collecting and maintaining website traffic statistics.
- Develop a graphical representation (chart) of reservoir filling levels based on the maximum daily values recorded during the selected year (non-standard/custom implementation).

8.2 Integration of Water Use Permit data into Water Cadastre database

Develop software components to enable automatic data exchange between the Water Cadastre database and the Water Use Permit (WUP) Management System.

The exchanged data structure shall include the following sections:

- Water User Information;
- Water Use Permit (WUP) Information;
- Water Abstraction Information;
- Water Use Location Information;
- Wastewater Discharge Information;
- Hazardous Substances Information;
- Ecological Flow Information;
- Water Meter Information.

The reference data (lookup lists) used in both systems shall be unified to prevent duplicate records and ensure data integrity and consistency across both systems.

8.3 Water meter APIs development

To develop and give access from outside (Public IP) to a swagger interface presenting the following APIs:

1/ API operation #1: Return the list of all Basin Management Organisations (BMO).

- GET http://xxxxx.am/api/water-flow-meters/v1/bmo/
- Which should return json file with the list of all BMO, presenting at minimum the following fields: id / name
- This API should be open to public, without authentication

2/ API operation #2: Return the list of all water users classifications

- GET http://xxxxx.am/api/water-flow-meters/v1/water-users-classification/
- Which should return json file with the list of all water users' classification, presenting at minimum the following fields: id/ name
- This API should be open to public, without authentication

3/ API operation #3: Return the list of all water users

- GET http://xxxxx.am/api/water-flow-meters/v1/water-users/
- Which should return json file with the list of all water users presenting at minimum the following fields: id/ name/ group_id/ flowrate_day / indication_day/ phone/ email
- This API should be open to public, without authentication

4/ API operation #4: Return the list of object types

- GET http://xxxxx.am/api/water-flow-meters/v1/infrastructure-type/
- Which should return json file with the list of all water users presenting at minimum the following fields: id/ Model, name, join_param, is_hwid, range_type , report_type, dt_field_name, obj_id_field_name, moving_object, dual_sim,model_id
- This API should be open to public, without authentication

5/ API operation #4: Return the list of all water infrastructures

- GET http://xxxxx.am/api/water-flow-meters/v1/water-infrastructures/
- Which should return json file with the list of all water meters and other devices presenting at minimum the following fields: water meterID /hwid/group_id/ pool_id/ organisation_id /name/ ping_interv/ address/ coord_lat/ coord_lng/ altitude/ object_types_id/ created_on/ last_update/ description
- Coordinate should be available in decimal degrees
- This API should be open to public, without authentication

6/ API operation #5: Return the time series values for all the parameters for a specific water infrastructure between start date and end date

- GET http://xxxxx.am/api/water-flow-meters/v1/timeseries/{infrastructureID}/ /{startdate}/ enddate}/

- Which should return json file with the time series of all data for all parameters at infrastructure {infrastructureID} available between the start date and the end date, presenting at minimum the following fields: infrastructureID /Date-time/ waterLevel/ waterFlowrate / waterMeterIndication
- This API should not be open to public=> with authentification

8.4 API Development in Water Cadastre to enable future SCADA integration

In order to allow in the future the SCADA system to display water permit data, cross-check usage against cadastre limits, and verify meter coordinates, the contractor will:

- Develop new API functions to enable SCADA system to retrieve information on water users and water use permits from the Water Cadastre system.
- Enable retrieving the SCADA data and automatically compare it with the corresponding data stored in the Water Cadastre system.
- Implement verification of water meter coordinates by comparing the coordinates received from the SCADA system with the coordinates registered in the Water Cadastre system and recording any detected discrepancies.

9. Deliverables

Deliverable 1: Modernised Water Cadastre Website

- New website design: A modernized, mobile-friendly website with redesigned data tables.
- Charts & Diagrams: Visual charts built into the site to show water data easily.
- "Contact Us" Form & Admin Panel: A form for visitors to send messages, and a back-end page where staff can read and reply to them.
- Visitor Counter: A tool that tracks and stores website traffic numbers.
- Reservoir Water Level Chart: A custom chart showing the highest daily water levels for any selected year.
- **Website enhancement report** in English language: A simple report summarizing the redesign, how the visitor counter works, and how reservoir levels are calculated.

Deliverable 2: Water Use Permit data integrated into Water Cadastre

- Automatic data synchronisation: Software that automatically shares data back and forth between the Water Cadastre and the Water Use Permit system.
- Shared data sections: Automatic sharing for all 8 required categories (Water User, Permit, Abstraction, Location, Wastewater, Hazardous Substances, Ecological Flow, Water Meters).

- **Data integration report** in English language: A report mapping out how data moves between systems and proving that all drop-down lists match.

Deliverable 3: APIs developed for Water Flow Meters data

1. **Developed authentication component and six REST API GET endpoints deployed on the water department server:**
   a) **Public APIs (no login required):**

      - GET /bmo/ – Returns list of BMOs.
      - GET /water-users-classification/ – Returns user classifications.
      - GET /water-users/ – Returns list of water users and details.
      - GET /infrastructure-type/ – Returns object/device types.
      - GET /water-infrastructures/ – Returns list of water meters and devices.

   b) Private API (Login required):

      - GET /timeseries/{infrastructureID}/{startdate}/{enddate}/ – Returns date/time records for water levels and flow rates.

2. Configured water department server enabling access to the REST API.

3. Documentation including Swagger UI integration mentioning the public IP

4. **API test report** in English language: A short report with API technical documentation and testing results.

Deliverable 4: Water Cadastre API development and tools for future SCADA integration

- Water Cadastre API endpoints for SCADA access: Documented API functions deployed within the Water Cadastre system allowing an external SCADA system to retrieve water user and permit data.
- Data comparison tool: Automatic tool comparing live SCADA meter readings with official Water Cadastre records.
- Location verification tool: Automatic check comparing meter GPS locations sent by SCADA against official locations in the Cadastre to catch errors.
- **SCADA integration report** in English language: Technical report documenting the API endpoints, listing any location or data mismatches found during testing and presenting first results of data comparison and of verification tools.

10. Indicative calendar

Deliverable	Indicative deadline
1. Modernised Water Cadastre Website	**January 11,2027**
2. Water Use Permit data integrated into Water Cadastre	**April 30, 2027**
3. APIs developed for Water Flow Meters data	**January 11,2027**
4. Water Cadastre API development and tools for future SCADA integration	**April 30, 2027**

11. Payment modalities

- Payment will be made upon receipt of an invoice and approval of deliverable by the EU4GRE manager.
- Payment will be transferred via bank wire to the EUR account specified in the offer.

12. Participation to the tender

Interested persons are invited to inquire the tender dossier by email from Ms. Ilke CICEKOGLU, project assistant:

Email address: i.cicekoglu@oieau.fr

- Tender Submission Form (B1)
- Legal Identification From (B2)
- Declaration of Honour (B3)
- Financial Identification form (B4)
- Financial offer form (B5)
- Technical offer with proposed methodology and implementation schedule
- CVs of the proposed key expert(s).

Deadline for submission of the technical and financial offer is November, 20th, 18:00 CET.