
TERMS OF REFERENCE

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| Job title: | Consultant to provide assistance in elaboration of the Technical Specifications for the SMART Water Metering for Ungheni Municipality |
| Duty Station: | remotely |
| Section/Unit: | EU4Moldova: Focal Regions Programme (EU-funded) |
| Type of Contract: | Individual Contract |
| Starting Date: | August 2021 |
| Duration of Assignment: | August – November 2021 up to 15 working days |

Job Content:

I. BACKGROUND

The EU4Moldova: focal regions Programme (*hereinafter the Programme*) is based on the European Commission Implementing Decision on the Annual Action Programme 2018 in favour of the Republic of Moldova and is funded by the European Union and implemented by the United Nations Development Programme.

The overall objective of the five-year Programme is to strengthen the economic, territorial and social cohesion in the Republic of Moldova through smart, green, inclusive, sustainable and integrated local socio-economic growth as well as by improving the standards of living of the citizens in the focal regions of Cahul and Ungheni.

To this end, this Programme will address also the urban-rural divide as well as regional disparities, stimulate economic growth and job creation, refurbish and upgrade some social and technical infrastructure in selected areas (smaller towns and villages) while taking into account climate change and a gender perspective in the activities of the Programme.

Specific objectives:

1. To strengthen transparency, accountability of local public authorities and citizen participation in local governance processes in the focal regions.
2. To improve citizens' access to quality public services and utilities in the focal regions.
3. To create employment opportunities for men and women in the pilot focal regions and improve the attractiveness of the pilot regions for investors and entrepreneurs.
4. To promote the smart specialization of the economy of the focal regions through the development of the clustering and value chain approach in key economic sectors.

The Programme objectives will be achieved through measures targeted at: (i) capacity building to support the implementation and monitoring of local economic development plans; (ii) civil society engagement in local planning, governance processes and basic social service delivery; (iii) provision of investment funding in support of the creation and/or development of social and technical infrastructure which, combined with the outcomes from interventions (i) and (ii) above, will have an

immediate, visible and tangible impact on employment creation, the standard of living of the population in the focal regions.

II. SPECIFIC CONTEXT

Every region, city or municipality is different, with different challenges and a different culture - for cities to become really SMART they must embrace their unique context. Each region/city therefore develops its own SMART vision, to use SMART the local resources and technology, but preserving the regional, urban or rural identity.

In 2020 the Local Public Authorities (LPAs) from the two selected focal regions were assisted to elaborate the Concept of a SMART City and two Roadmaps. To facilitate SMART integrated, development in a short, medium and long term, the current documentation envisaged clear implementation methodologies, indicators, and timelines, describing necessary actions to be undertaken for the digital transformation of the two focal regions.

The SMART development Roadmaps for Cahul and Ungheni municipalities are set to maximize the value of technologies within the local authorities. Jointly with the local authorities the key pillars for the SMART City framework were identified: *SMART Mobility, SMART Built Environment, SMART Utilities and Public Infrastructures, SMART Public Services, and Programme Activities.*

Under the *SMART Utilities and Public Infrastructures pillar* the implementation of the SMART Water metering initiative is envisaged, including Smart Metering – developing Water metering network, exploring home and commercial uses, and Sewerage Project metering capabilities - record/metering of water consumption and payment methods, consumption verification.

The overarching purpose of these new utilities and public infrastructure investments is in making easier connections to resources on energy efficiency, water services, and the availability of communication services in public space, homes, and businesses, to result in economic productivity, social and environmental outcomes.

In terms of the *specific objectives* in line with the SMART and integrated regional development of Ungheni municipality, the implementation of water meters was a project agreed by community stakeholders and is part of the "SMART Concept and Roadmap for Ungheni" developed jointly with the LPA in 2020.

Ungheni municipality tends to become a modern and SMART community. One of the most appropriate solutions to facilitate a modern community is implementation of a SMART Water metering initiative that would lead to an improved water supply service in Ungheni municipality through intelligent and correct monitoring of drinking water consumption, data and processes, feasible and sustainable from the technical and investment prospective.

The Programme support Ungheni municipality in the process of implementation of the "Automated and intelligent systems for collecting and monitoring data and processes within the water supply and sewerage service in the Ungheni region". The ambitions approach for the transformation of Ungheni

into SMART sustainable city, with a focus on the use of SMART technology and innovative solutions for economic infrastructure development and service delivery will require a new approach to the management of the development processes of modern urban communities.

The continuous and qualitative provision of drinking water supply services to all consumers, strictly respecting the quality and efficiency indicators, is the primary objective of the Municipal Enterprise "Apa-Canal" Ungheni (further "Apa-Canal" or *Operator*).

"Apa-Canal" is the largest Operator of drinking water supply and sewerage services in the region. It aims to provide services at the regional level, in accordance with high quality standards and is in a continuous process of expanding the area of service provision. "Apa-Canal" provides its services on the entire territory of Ungheni municipality, but also in Zagarancea and Semeni neighbouring localities. The length of the functional water supply networks extends over 139.1 km. Out of the 15,439 "Apa-Canal" consumers, a number of 8,914 are domestic consumers of the residential buildings, and 5,864 household consumers of individual houses. 39 of the consumers constitute the public institutions and 558 are the economic entities, which provide services both for Ungheni municipality and rayon residents.

"Apa-Canal" Ungheni is oriented towards an ecological and sustainable approach to provide citizens with drinking water, which represents life. Water from the natural environment is considered a common good, but the path it takes to reach each consumer is hard and might be encounter different challenges. Non-metered water consumption, water losses and leakages along the network journey due to the obsolete and damaged pipes, a few situations that lead to an uncontrolled loss of natural water resources.

"Apa-Canal" aims to continuously improve the indicators of financial performance, environment, safety, security and health at work, thus providing quality services to citizens, customers, local organizations and partners.

One of the major problems faced by the Operator, in addition to the infrastructure with a high degree of amortization, is also the registration of high values of physical and commercial water losses. Technological consumption and water losses in the public water supply system during 2020 amounted to 1,488.9 thousand m³, and the volume of water billed in 2020 amounted to 1,270.2 thousand m³ (individual houses - 486.1 thousand m³, apartments - 546.4 thousand m³, economic agents - 167.8 thousand m³, Public Institutions - 69.9 m³). Out of the total volume of NRW / Non-Revenue Water = (V water supplied to the distribution network - Volume of water billed to all consumers) / Volume of water supplied to the distribution network * 100%) recorded in the year 2020, a share of 14.70% have commercial or apparent losses (fraudulent consumption, measurement and data processing errors, etc.).

The monitoring of water consumption is carried out to increase the capacity of the operator so that in the future it can expand the area of water supply services in other rural localities in Ungheni rayon. However, monitoring the water consumption is the most challenging issue for the economic entities, especially in car washes and commercial units/areas, where water consumption is very high and not fully billed.

The management of water resources starts with an accurate record of its consumption. As an initial step, "Apa-Canal" aims to set up the tracking of the water balance, to implement a SMART Water metering system with remote reading of data for ensuring financial sustainability and technical operation, reducing commercial losses and improving services provided to final consumers.

According to the Art. 76 of the National Agency for Energy Regulations of the Republic of Moldova Decision No. 355 of 27.09.2019 only metering systems metrologically verified and legalized on the territory of the Republic of Moldova will be accepted for installation. The type, parameters and technical characteristics of meters will correspond to those included into the State Register of measuring instruments of the Republic of Moldova.

The current investment will contribute to the efficiency of the Operator's activity by:

- real-time signaling of meters malfunction to take immediate actions;
- rapid, accurate intervention, complete elimination of the human factor, database integration into an information system, to be further procured;
- protection against unauthorized schemes;
- timely signaling of certain unjustified consumption.

Controlling the collection of remote metering data will help increase the quality of services provided to consumers and improve the permanent monitoring of water consumption by detecting fraudulent actions (water consumption from the metered network), eliminating unauthorized interventions and manipulations, ensuring accuracy and complete elimination of the human factor, real-time signalling of meter malfunctions, etc.

Implementing the SMART Water Metering system means acceleration the transformation process of Ungheni city into a SMART city where its citizens want to live, take greater responsibility and contribute to environmental protection through balanced consumption of water resources, to increase the quality of life, to maximize the resources of the region / city and to ensure the safety of citizens.

Due to the SMART Water Metering system implementation, citizens will benefit from higher quality water supply services due to the faster reaction of the Operator and intervention teams to citizens' requests. The most pressing problems related to interventions and water losses caused by economic agents, especially car washes, which consume large amounts of water, will be solved by implementing the new SMART metering system with remote data reading. These savings will be oriented towards improving the Operator's capacity to provide quality drinking water. Thus, the principle of equity related to the water consumption among the citizens, as well as institutions and economic agents will be respected.

By implementing a remote data reading system, 100% data reading accuracy will be ensured, the meters being protected against possible interference of magnetic fields or human factor intervention if willing to modify the data or block the water meter. The system will allow the signalling of water meter malfunctions, which leads to the possibility of taking immediate measures, using minimal resources and helping to reduce water losses.

III. SCOPE OF WORK

The **overall objective** of this assignment for the Consultant is to provide assistance in the elaboration of the Technical Specifications for the SMART Water Metering for Ungheni, a step leading to the implementation of the "Automated and intelligent systems for collecting and monitoring data and processes within the water supply and sewerage service in the Ungheni region".

While drafting the Technical Specifications, the Consultant will consider the use of strategic documentations, national legislation and legislative frameworks supporting water metering technologies, SMART tools in the management of the modern urban communities and development processes as indispensable aspects for ensuring the good functioning of the SMART Water Metering initiative. Additionally, the Consultant will consider and refer to the platforms built so far at the national/central public authority level and utilize back-end integration.

The following tasks should be part of the **current assignment**:

IV. TASKS AND ESTIMATED WORKLOAD

The assignment will require the completion of the following tasks:

| Tasks, Activities & Deliverables <i>(provision of deliverables of required content and quality is the only criteria for consultant's payment)</i> | Estimated work volume <i>(used at the submission stage)</i> | Tentative timeframe <i>(subject to coordination/adjustment with EU4MD project team)</i> |
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| <p>Task 1: Conduct needs assessment and provide technical recommendations for the SMART Water Metering for Ungheni Municipality.</p> <p><u>Note 1.</u> Assessment will be performed in close cooperation and support from the EU4Moldova team, Municipal Enterprise "Apa-Canal" Ungheni and LPAs.</p> <p>This assignment will require on-site visits (two visits) at the "Apa-Canal" Ungheni premises to analyse the status-quo of the municipal enterprise and conduct needs assessment. For the current visits, the Consultant should meet and discuss with the Mayor, "Apa-Canal" Ungheni and relevant experts designated for the SMART Water Metering initiative. "Apa-Canal" Ungheni will facilitate the Consultant's visits to at least 20-30 economic agents / institutions to assess on the spot the state of the meters currently used by consumers.</p> <p>The Consultant will examine how all types of meter models are currently used by the economic agents and institutions proposed to be included into the project, what kind of software "Apa-Canal" Ungheni</p> | up to 4 working days | |

| Tasks, Activities & Deliverables <i>(provision of deliverables of required content and quality is the only criteria for consultant's payment)</i> | Estimated work volume <i>(used at the submission stage)</i> | Tentative timeframe <i>(subject to coordination/adjustment with EU4MD project team)</i> |
|---|---|---|
| uses for data recording and invoicing, what is the current technical data processing capabilities and estimate the ability of the municipal enterprise to manage an intelligent remote data reading system from smart meters. | | |
| Deliverable 1: Inception Report, with results of the assessment of the actual water metering system in Ungheni. | | by August 16, 2021 |
| Task II. Draft the Technical Specifications for the "Automated and intelligent systems for collecting and monitoring data and processes within the water supply and sewerage service in the Ungheni region", including provision of concrete proposals and solutions considering the best water metering practices. <ul style="list-style-type: none"> ✓ Develop detailed and accurate Technical Specifications. ✓ Develop a detailed budget-efficient, innovative, accurate proposal (technical solution) including two scenarios based on new water meters. | up to 5 working days | |
| Deliverable 2: <ul style="list-style-type: none"> ✓ Technical Specifications. ✓ Proposal and solutions, including solutions for the development of the SMART Water Metering System in Ungheni municipality. | | by August 25, 2021 |
| Task III. Support in the evaluation process of technical offers to develop SMART Water Metering System <ul style="list-style-type: none"> ✓ Provide feedback to the Evaluation Committee in the evaluation of technical offers. | up to 3 working days | |
| Deliverable III: Evaluation Report <ul style="list-style-type: none"> ✓ Input to the Evaluation Report. | | By September 20, 2021 |
| Task IV. Support in monitoring and evaluation the quality of services provided by the selected company <ul style="list-style-type: none"> ✓ Monitor and evaluate the quality of services provided by the selected company to develop the SMART Water Metering System; | up to 3 working days | |

| Tasks, Activities & Deliverables <i>(provision of deliverables of required content and quality is the only criteria for consultant's payment)</i> | Estimated work volume <i>(used at the submission stage)</i> | Tentative timeframe <i>(subject to coordination/adjustment with EU4MD project team)</i> |
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| <ul style="list-style-type: none"> ✓ Provide feedback to the requests for clarifications – technical related aspects; ✓ Final Report on the progress and findings. | | |
| Deliverable IV: Final Progress Report <ul style="list-style-type: none"> ✓ The Final Progress Report and feedback to the technical aspects, monitoring and evaluation of the quality of services provided. | | by November 30, 2021 |
| TOTAL estimated workload | Up to 15 working days | |

Note: The indicated tentative timeframe has been estimated as being sufficient/feasible for the envisaged volume of work to be completed successfully and is proposed as a guideline for the duration of the assignment. The provision of the envisaged deliverables approved by UDNP shall be the only criteria for Consultant's work being completed and eligible for payment/s.

All activities under this assignment shall be performed in a gender-sensitive manner, with respect of blue /green principles and applying human rights-based approach.

Language of the deliverables: All deliverables shall be submitted in Romanian language.

V. INSTITUTIONAL ARRANGEMENTS

The Consultant will work under direct supervision of Project Officer for SMART Development and Digital Transformation and in close cooperation with Project Manager/Local Development, Project Officer/Public Services Improvements, Local Engineer for Ungheni focal region.

This assignment will require two on-site visits at the "Apa-Canal" Ungheni premises to analyse the status-quo of the municipal enterprise and conduct needs assessment. Therefore, the IC shall include travel expenses in the consolidated financial offer.

Documents for review and evaluation will be provided by the LPAs and/or the Programme in electronic format. All the above-listed deliverables shall be endorsed by the Programme Manager within 14 calendar days from their submission.

VI. PAYMENT FOR PROVIDED SERVICES

The payment for services will be made in tranches upon submission of deliverables stated in point IV above and certification by the Programme Manager that the services were satisfactorily performed.

VII. PERFORMANCE EVALUATION

Consultant's performance will be measured against such criteria as: timeliness, responsibility, initiative, communication, accuracy, and quality of the products delivered.

VIII. REQUIREMENTS FOR EXPERIENCE AND QUALIFICATION

The following qualification criteria shall be applied for the selection of the Consultant:

Academic Qualifications:

- Degree (or equivalent) in engineering, planning and design, water and sewerage, or other relevant technical fields.

Working experience:

- At least 5 years' experience in the engineering, planning and design, water and sewerage area and /or IT system designing processes in the area of public and business support services;
- Proven track record of minimum 2 similar assignments of drafting technical specifications for development dynamic solutions for public authorities and/or international organizations;
- Demonstrated experience in working within water and sewage projects and/or initiatives;
- Previous experience/participation in working with public authorities in carrying out needs' analysis of public institutions (CPAs or LPAs, at least two similar analysis) and development projects;
- Professional understanding of the functioning of SMART Water Metering systems is considered a strong asset;
- Experience with UNDP, EU or World Bank, other donor funded programs/projects and procurement procedures and standard bidding documents would be a strong advantage.

Competencies:

- Excellent analytical, writing and reporting skills;
- Good understanding of the Water and Sewerage technologies processes and challenges, programming, smart development and digital transformation;
- Strong ability to work with all levels and functions within the organization and manage diversity of views;
- Excellent language proficiency in both written and oral Romanian and Russian;
- Knowledge of English language will be an asset.

Personal Qualities and other requirements:

- Demonstrated capacity of team-orientation work, excellent planning and organizational skills;
- Good interpersonal skills, solid judgment/decision making, initiative and creativity;
- Ability to analyze, plan, communicate effectively with a diverse group of stakeholders to meet expected results and deadlines in a timely manner, maintaining a high standard throughout;
- Demonstrated cultural sensitiveness and sound judgment;
- Proven commitment to the core values of the United Nations, in particular, respecting differences of culture, gender, religion, ethnicity, nationality, language, age, HIV status, disability, and sexual orientation, or other status.

The United Nations Development Programme in Moldova is committed to workforce diversity. Women and men, persons with different types of disabilities, LGBT, Roma and other ethnic, linguistic or religious minorities, persons living with HIV, as well as refugees and other non-citizens legally entitled to work in the Republic of Moldova, are particularly encouraged to apply.