

TERMS OF REFERENCE

Spatial Data Scientist –Local/International hire

The Ministry of Environment, Waters and Forests (MEWF), together with the National Administration “Romanian Waters” (NARW) requested the Bank’s support in implementing the requirements of the European Water Directives: the Urban Waste Water Treatment Directive (UWWTD) and Floods Directive. The preparation and implementation of the plans of measures implied by the 2 European directives will increase Romania’s capacity for water management and support the country in taking a water secure development path for its people, its economy and its environment.

Objective of the Assignment

The consultant will assist the World Bank team in the collection and structuring of data available from RAS Urban Wastewater Treatment Directive and RAS Technical Support for the Preparation of Flood Risk Management Plans for Romania, including the definition of metadata. The consultant will produce a database containing data from the two projects using the available tools from the bank with the guidance from Geospatial Operational Support Team (GOST) from the World Bank.

Background

The Urban Waste Water Treatment Directive (UWWTD) aims under the overarching environmental objective to improve the quality of water bodies under the Water Framework Directive (WFD). Special attention is devoted to the (i) preparation of an updated implementation plan for the Directive 91/271/EEC; (ii) assistance for the update of the national mechanism for monitoring, evaluation and reporting on UWWTD implementation; (iii) recommendations towards development of a National Strategy for the Water Supply and Sanitation Sector.

The EU Floods Directive (FD) requires the EU member states to carry out three steps (1. Preliminary Flood Risk Assessment, 2. Flood Hazard and Risk Maps and 3. Flood Risk Management Plans) in cycles of six years to reduce and manage the flood risk that impacts human health, the environment, cultural heritage and economic activity from all the Unit of Management’s territories, including coastal areas. The World Bank is supporting the Government of Romania in the implementation of the second Flood Hazard and Risk Maps and Flood Risk Management Plans. According to EU requirements the Flood Risk Management Plans should reduce probability of flooding and the potential consequences proposing measures or group of measures that could be justified with the results of the quantitative flood damage and loss assessment. The results of this assessment are also needed to get access to funding for the implementation of measures or group of measures.

In order to achieve the objectives, detailed information regarding water management system, water body status, flood risk receptors (exposure), big spatial data, etc. is assessed.

At the end of the two projects, a complete database of information such as: water

management system, water quality parameters, delineation of the constructed areas, buildings footprints and roof type, energy infrastructure, location of roads and railway etc. is needed for a successful water management.

Scope of Services

Given the highly technical nature of this work, the World Bank task team is seeking a Local/International Expert in Spatial Data to support the Team in the collection and structuring of the information, including the definition of metadata, manage and store it to facilitate a good workflow throughout the project life-cycle.

The successful candidate is expected, from day one, to be able to lead or assist in the following areas:

- **Spatial Big Data Collection, Curation and Storage:** Collate the various spatial and non-spatial datasets that have been collected from the various agencies and propose/implement an efficient data organization for easier discovery/manipulation (these datasets consist, but are not limited to: Ortho-photo data, DTMs, DSMs, Raster data, Vector data, PDF files etc.). Perform a qualitative and quantitative check on the data and document it when needed in an appropriate metadata file. Support the upload and maintenance of this data to a destination as advised by the team.
- **Data Management Automation:** Implement processes that would automate the data curation, organization, documentation and upload to the storage. Data automation is largely accomplished in Python and R.
- **Basic Imagery Analysis:** Manage, process, analyze and derive statistics from diverse sources of remote sensing data (Electro-Optical, MultiSpectral/HyperSpectral, Synthetic Aperture Radar, Thermal, Microwave, LIDAR).
- **Streamline workflows:** Adapt data management practices, tools, processes, etc. to reduce the response time to requests for information and speed the publication of results.
- **Data Visualization:** Prepare and publish maps for disseminating analytical results;
- **Institutional Memory:** Actively capture, codify, share, replicate and formalize applied geospatial analytics from one area so that lessons can be applied to similar problems in other contexts;
- **Communication:** Explain the work in simple terms, to a non-technical audience (both verbally and in formal writing) in English.

Deliverables:

1. Implemented solution for spatial big data management, with support from GOST and DDH teams;
2. Categorization/ Classification of the existent spatial big data in an efficient manner that makes the data easy to discover and consume and document the process;
3. Collected and curated data and documentation regarding big spatial data;
4. Upload of all the spatial and non-spatial outputs generated from WB projects data to DDH;
5. Maintenance and expenditure of the Romania Hub country page with new content and maps;
6. Trainings' materials for educating partners and clients.

Qualifications

The successful consultant would be expected to have the following qualifications:

- A Master's degree in Geography, GIS, Computer Science, Urban Planning, Statistics or related field and two years of professional experience.
OR
- A Bachelor's degree in these or another relevant field and 5 years of relevant professional experience.
OR
- Substantial evidence of the required skills sets, such as previous projects that benefitted from extensive spatial data management, methodologies applied, examples of infrastructure setup for data management.
- Expertise in analyzing and interpreting a variety of spatial data (Electro-Optical, MultiSpectral/HyperSpectral, Synthetic Aperture Radar, Thermal, Microwave, LIDAR);
- Familiarity with data management and metadata best practices and standards including ISO 19115;
- Applied experience with ESRI suite (ArcMap, ArcGIS PRO, ArcGIS Online, ArcGIS Server, Python API);
- Applied experience with Python, and/or R;
- Applied experience with Cloud Services (AWS, Azure, Google Cloud), Docker and Jupyter Notebooks;
- Demonstrated expertise in geostatistics, spatial data management and analysis;
- Ability to describe relevant topics in clear, concise English, both in writing and in public presentations;
- Demonstrated curiosity, self-directed learning, and persistence in problem-solving;
- Working knowledge of Github is preferred but not required;
- Team player.

Inputs

The World Bank shall reasonably provide or arrange to be provided to the consultant information and documentation, necessary for the consultant to deliver the Services. The World Bank shall further provide assistance in organizing to meet the World Bank Task Team and Romanian stakeholder, as well as pay the related travel costs, according to World Bank regulations.

Reporting Arrangements

The local/international consultant is expected to be working under the guidance of the World Bank Sr. Water Resources Management Specialists Amparo Samper Hiraldo and Chris Fischer and Water Resources Management Specialist Elena Daniela Ghita and will formally report to the World Bank Task Team Leader (TTL) Raimund Mair, who will approve deliverables.

Deliverables and Timing

This assignment covers a total of 40 days of work over the period between April 15, 2020 and June 30, 2020. The proposed payment schedule is linked to the timelines of key deliverables as provided in the table below.

Timely submission of acceptable deliverables as per the time schedule below will be a pre-requisite for payment. The Consultant shall receive his/her payment upon certification of satisfactorily completion of the tasks, as per the following payment schedule:

Installment of Payment/ Period	Deliverables or Documents to be Delivered	Days (total 40 days)	Deadline
1 st Installment	<ul style="list-style-type: none">• Summary Report	Up to 5	April 25, 2020
2 nd installment	<ul style="list-style-type: none">• Report regarding a solution to be implemented for spatial big data management, with support from GOST and DDH teams;• categorization/ classification of the existent spatial big data in an efficient manner that makes the data easy to discover and consume and document the process;• collected and curated data and documentation regarding big spatial data;	Up to 20	May 25, 2020
3 rd installment	<ul style="list-style-type: none">• Upload of all the spatial and non-spatial outputs generated from WB projects data to DDH;• Maintenance and expenditure of the Romania Hub country page with new content and maps;• Trainings' materials for educating partners and clients.	Up to 15	16 June, 2020

Details about the contract

This position is for 40 days, and it is open to Romanian and/or International experts to apply. The tentative starting date is 15th of April 2020. The deadline for submission of applications is March 23, 2020. Applications should be send to agadja@worldbank.org