LAND REGISTRATION AND PROPERTY VALUATION PROJECT
Project ID No. P161238

Component C - Land Administration System Strengthening
C.3 Support for NSDI

Terms of Reference
International Consultant Services to support NSDI Action Plan and Business Model implementation

INTRODUCTION

The Government of Moldova received a credit from the World Bank Group - International Development Association in the amount of 30.1 million Euro toward the cost of financing Land Registration and Property Valuation Project (LRPVP), aimed at improving the quality of the land administration and property valuation systems and to enhance transparency of the property taxation system.

The Project consists of four components: (A) First Property Registration; (B) Property Valuation and Taxation; (C) Land Administration System Strengthening; and (D) Capacity Building and Project Management.

Component A 'First Property Registration' will support the first registration of public and private land in Moldova and strengthen the data quality for records already in the land register. This component will also organize mandatory public displays and public awareness campaigns to ensure citizens are engaged and aware of the procedures, activities, and benefits during first property registration

Component B 'Valuation' will support extending the system of mass valuation to incorporate those properties not currently included and to carry out a revaluation of the properties that are already in the mass valuation system but have not been revalued since 2008.

Component C 'Land Administration System Strengthening' will support the strengthening of the land sector in Moldova by facilitating policy dialogue and conducting a review of the existing institutional and regulatory frameworks, proposing improvement where possible. It will also encourage a development of simplified business processes and modernization of cadastre services through use of ICT, and support development of NSDI.

Component D 'Capacity Building and Project Management' will support capacity building at stakeholder agencies and institutions to ensure the smooth implementation of project activities and support project sustainability, as well as provide support for project implementation. A full description of the Project is provided in the document "Project Appraisal Document" (PAD)[1] and inancing Agreement (FA)[2].

1. Background

[1] http://documents.worldbank.org/curated/en/491971535859109015/pdf/Moldova-Land-PAD-08132018.pdf
[2] http://documents.worldbank.org/curated/en/253281538510180437/pdf/ITKWB532331-20189021552.pdf

The Republic of Moldova has developed a roadmap for the implementation of a National Spatial Data Infrastructure (NSDI). The implementation plan for the National SDI has been created in accordance with the UN-GGIM Integrated Geospatial Information Framework (IGIF), its principles, and methodologies (see https://ggim.un.org/IGIF/). The aim of the National SDI is to deliver optimal use of geospatial information to support more effective and sustainable social, economic, and environmental development. The overall target outcome for the National SDI is to lead to the efficient, equitable, and optimal utilization and management of geospatial information applied across all sectors of the economy, for the benefit of the government and citizens of Moldova.

The Agency for Land Relations and Cadastre (ALRC) is the coordinating authority for the National SDI and is responsible for implementing policy in this domain. A Steering Committee (the SDI Council) and some SDI Working Groups have been established. Moldova has a National SDI geoportal (geoportalinds.gov.md) and national metadata profiles have been adopted for spatial data and for spatial data services through Government Decision No 738/2017[3]. A Government Decision No 683/2018[4] on approval of the regulation on the rules applying to the interoperability and harmonization of spatial data sets and services has been adopted. This includes ISO standards and data standards compliant with the EU INSPIRE[5] Data Technical Specifications for Geographic information

A significant milestone for the National SDI was the publication of Law 254 of 2016[6]on national spatial data infrastructures. This Law, together with various amendments, Government Decisions and Government Orders, provides the general rules, together with the necessary political endorsement, regarding the establishment of the National SDI. The scope of the Law includes all spatial data sets as specified in the annexes to the Law, data content, data availability, data sharing, metadata, interoperability of the data, data services, data access, data use, together with the relevant responsibilities of the public entities and third parties.

Over recent years the development of the National SDI has progressed through support from various donors including the United Nations, World Bank, European Union, and the Norwegian National Mapping Agency (Kartverket) through an ongoing engagement with its cooperation partner ALRC.

The National SDI 'road-map' prepared under the direction of ALRC comprises a number of coordinated reports[7]. These reports have been prepared in accordance with the IGIF framework. These include:

a. IGIF Baseline Assessment - this report provides an assessment of the "as is" position of geospatial information management in Moldova structured around the IGIF pathways
b. IGIF Geospatial Alignment to Policy Drivers - this report aligns the Government's strategic objectives and international commitments to specific spatial use cases (applications)

[3]https://www.legis.md/cautare/getResults?doc_id=101889&lang=ro

[4]https://www.legis.md/cautare/ getResults?doc_id=108815&lang=ro

[5]https://inspire.ec.europa.eu/

[6]https://www.legis.md/cautare/getResults?doc_id=105790&lang=ro

[7]Copies of these reports may be available from ALRC on request

c. IGIF Socio-Economic Impact Assessment - this report provides an assessment of the socio-economic business case for investment in a National SDI from both qualitative and quantitative perspectives. It is informed by the outputs from the two reports outlined above
d. IGIF Action Plan - this report has developed the output from the previous reports and created a high-level geospatial strategy together with a corresponding costed plan/roadmap for the National SDI. This is presented as a series of interdependent policy interventions and implementation projects and includes actions linked to GGIM strategy pathways, proposed timescales, resource needs, together with an indicative forecast of costs.

In addition, complementing the development of the IGIF reports outlined above, a parallel activity by a team representing EU ENI 2020 (referred to as Twinning project MD 16 ENI OT 01 19) has completed a series of key activities with ALRC. The objective of these activities is to identify opportunities for improvements to Spatial Data Services in Moldova based on EU standards viz 'Infrastructure for Spatial Information in Europe' (INSPIRE)[8], develop a Business Plan and a Business Model, a Communication Strategy, amog others.

Through engagement with ALRC the objective of this assignment is to provide support to Moldova with the implementation of its Integrated Geospatial Information Framework (IGIF) and thereby provide support for the continued development of the National SDI. The main focus will be put on the short-term and mid-term priorities from the NSDI Action Plan and the implementation of the Business Plan and the Business Model, aiming to strengthen the ALRC capacity to manage the IGIF implementation and ensure sustainability in a long term.

2. Purpose

ALRC require additional capacity to effectively carry out the role of coordinating body for the implementation of the NSDI. There will be 6 (six) core activities required of the ALRC coordination team ie (1) planning, administration, and project management of the implementation of the NSDI project, (2) provision of relevant technical advice to the SDI Council and stakeholder groups, (3) ensuring compliance of the NSDI implementation to relevant national and international standards, government laws, directives, procurement policies and guidelines, and other relevant government regulations, (4) monitoring, (5) evaluation, and (6) reporting.

The purpose of the role of Consultant is to support the NSDI Action Plan and Business Model implementation.

3. Scope of work

ALRC is responsible for coordinating the implementation of the NSDI and for carrying out the tasks sufficient to ensure the successful implementation of the NSDI. A long-term implementation plan for development of the NSDI has been developed under the Norwegian funded project together with socio-economic benefits analyses. The NSDI Action Plan implementation will be accompanied by a business model that considers all aspects (including pricing and licensing options) and presents options for long-term sustainability. The Business Plan for NSDI implementation and the Business Model are under the development with the EU Twinning project support. The licensing policy will be developed under the EU Twining project

[8]https://inspire.ec.europa.eu/

and the licenses for several key data sets will be developed under the Bank funded project. In addition, the Bank funded project is supporting the development of data standards, data models and data harmonization with the EU INSPIRE Technical Specifications and national data standards. The main focus of the support under this assignment will be put on the implementation of the NSDI Action Plan, Business Plan and Business Model.

Specifically, the services to be provided include but are not limited to:

3.1. Support to the implementation of the NSDI Action Plan, Business Plan and Business Model

- *Establishment of a Centre of Excellence* – The consultant will support the establishment of a Center of Excellence at the ALRC in line with the Business Model, and will work closely with the EU Twining Project, specifically the part related to the development of Business Plan and Business Model. The consultant will develop a Roadmap for the establishment of a Center of Excellence, Terms of references for the individual teams/units at the Center of Excellence as well as job descriptions and capacity development plan for the staff at the Center of Excellence;
- *Develop an implementation plan with cost and time estimation for the establishment of the Center of Excellence;*
- *ALRC Capacity development* to manage and operate the Center of Excellence in order to ensure NSDI long term sustainability;
- *Contribute to the professional development of data supply agencies* trough organizing of at least 2 webinars and 2 workshops, sharing good practices and use cases, provide guidance on the development of data standards and data harmonization;
- S*upport the implementation of the NSDI Communication Plan*, developed under the EU Twining project - review and reinvigorate the plan by communicating the role of ALRC, its responsibilities, and how these responsibilities will support and promote the work of the individual stakeholders;
- *Support the establishment and operation of SDI outreach team/unit* as part of the NSDI Business Model to manage the engagement with the stakeholders and continuous outbound and inbound communication to politicians, business and citizens. Celebrate success, involve citizens in reporting errors and liaison with consumer groups. Develop a framework for monitoring and evaluation of the effectiveness of engagement and communication about NSDI development;
- *Support to the Monitoring and Evaluation (M&E) of the NSDI Action Plan, Business Plan and Business Model* – the consultant will support the ALRC to develop a M&E mechanism, including market survey of users satisfaction and will support the NSDI Reporting;
- *Develop a geospatial innovation strategy* - There is a lack of a coordinated approach to innovation and there is no individual group tasked with innovation and having responsibility for innovation. There is no evidence provided for the existence of a geospatial research programs, and a group to help focus geospatial research. As part of the future NSDI Business Model of the ALRC, an innovation unit/team could be established;
- *Support the implementation of the national data standards,* based on the international standards and establishment of common data quality standards – a separate consultancy contract has been signed to develop national data standards for key data sets, based on the EU INSPIRE technical specifications and some more have been developed under the

Norwegian funded project. The ongoing work on development of data standards, includes development of data models and testing the data models. ALRC will be in charge of testing the data migration into temporary databases, developed in line with the new data models. The consultant under this assignment will support ALRC to test and accept the new data models and will provide guidance to ALRC in the process of adoption of the national standards;

- *Support to data harmonization* - several local consultants will be hired to harmonize several key data sets with the EU INSPIRE Technical Specifications. The EU Twining Project developed a guidelines for data harmonization and will pilot it in two locations with several data sets. The consultant under this assignment will prepare a plan with time and cost estimation for data harmonization with the new national data standards;
- *Develop and support the implementation of Data Quality Management Plan* – The consultant under this assignment will support the establishment of a common data quality standards, prepare and implement a Data Quality Management (DQM) plan that assures that the information is fit-for-purpose;
- *Provide Guidance and Quality Review of the Technical Specifications for the Register of Topographic maps.* One of the local consultants, hired under the Bank funded project will support ALRC to develop the Technical Specifications together with time and cost estimation;
- *Support to ALRC to establish partnerships with private sector stakeholders – the* consultant under this assignment will guide ALRC on engaging with the private sector and to assess the possibility for PPP, where relevant;
- *Capability assessment* – The consultant will support the ALRC to assess the industry needs by completing a capability assessment and gap analysis and link to the Government strategies for staff retention. Partnerships with the Ministry of Education and Universities would be of great benefit.
- *Support ALRC to prepare new project proposals* for the next priority areas of the NSDI Action Plan and Business Model implementation.

3.2.Support to the NSDI use-cases development

Moldova has implemented a pilot project to demonstrate how datasets can be made interoperable via the geoportal. The consultant will support the ALRC develop and implement specific use cases to demonstrate the practical use of the available data sets to meet the government priority needs. The purpose of this is to raise awareness of the value of geospatial data and thereby encourage (i) its use by government for decision-making; and (ii) the creation of further datasets. There is generally low awareness of the power of geospatial data in supporting government decision-making and the demonstrator can provide powerful examples (e.g. planning flood mitigation measures and dealing with natural disasters), or providing data to support activities targeted at addressing the UN Sustainable Development Goals.

- *Support ALRC to select priority use cases*, for example related to emergency management, urban planning, army topographic mapping, precision agriculture, forestry management, land management/relations. A number of use-cases have been identified under the Norwegian funded project, as part of the geospatial alignment to the government policy drivers, the socio-economic benefit analyses and the NSDI Action plan.
- *Support to the design of innovative solutions, for the selected priority use-cases* – the consultant will prepare Technical Specifications for several use-cases, using low cost

solutions (open source, crowdsourcing and others) to help ALRC to implement several innovative solutions;

- *Work with the local NSDI consultants, hired under the project, and the ALRC technical experts to develop low cost innovative solutions for the selected use cases* to demonstrate the use of the available geospatial and other data.
- *Share experience with other countries for NSDI use cases and facilitate knowledge exchange.*

4. Technical Deliverables

N	Deliverable	Deadline
1.	Detailed Implementation Plan	Two weeks after the project commencement date
2.	Short Monthly Progress Reports	By the 5th day of the following month
3.	Inception Report	By the end of the 2nd month
4.	Roadmap for the establishment of a Center of Excellence, Terms of references for the individual teams/units at the Center of Excellence, job descriptions and capacity development plan for the staff at the Center of Excellence	By the end of 4th month
5.	Implementation plan for the Center of Excellence with cost and time estimation for the establishment of the;	By the end of 5th month
6.	ALRC Capacity development plan	By the end of 6th month
7.	NSDI M&E methodology and yearly reporting	By the end of the 7th month
8.	Technical report on the results from the testing of data migration into the new databases, based on the developed data standards and data models	Based on the progress under the ongoing contract for data standards
9.	Plan for data harmonization with the new standards with time and cost estimation (for the short and mid-term priority data sets)	By the end of the 12th month
10.	Data Quality Management Plan	By the end of 8th month
11.	Updated NSDI Communication Plan	By the end of 12th month

12.	Geospatial innovation strategy	By the end of 15th month
13.	Industry needs assessment report	By the end of 17th month
14.	Design of priority use cases and Technical Specifications for selected use-cases	By the end of 5th month
15.	Technical Report on the implemented innovative use cases and recommendations for the next steps.	By the end of 18th month
16.	Draft project proposals to support the next NSDI priority areas	By the end of the 16th month
17.	Final Report	First draft by the end of the project

5. Reporting

The consultant will develop an implementation plan, an Inception Report, short monthly progress notices and a Final Report. The consultant will report to the Head of Department Geodesy, Mapping & GIS (senior responsible owner for the NSDI Project). All reports and technical deliverables will be submitted in English language.

6. Duration of the assignment

The duration of the assignment is 22 months. The team of several consultants will work 260 days in total. The consultants will work at least 30% of their time in Moldova, subject of the pandemic situation.

7. Qualification Requirements

Company requirements:

Consultants bidding for this work should state their assumptions in responding to these requirements, and if the requirement cannot be met, explain how the desired outcome would be achieved. Minimum requirements for the Consultant are:

(a) A proven track record of at least 3 projects, related to similar assignment is size and complexity;
(b) At least 3 years experience in planing and implementation of the Integrated Geospatial Information Framework (IGIF) and EU INSPIRE Directive;
(c) At least 3 years experience in institutional capacity development to implement NSDI;
(d) At least 3 years experience with development or implementation of geospatial standards and transforming spatial data into INSPIRE Data Specifications;

Experts Requirements:

The consulting company should nominate one of the key experts to be a Team Leader.

NSDI Team Leader

- University degree in one of the following: Geodesy, Topography and Cartography; Geographical Information Systems or equivalent;
- 5 years experience in leading and managing teams;
- 10 years of practical experience in geospatial information management;
- 3 year experience in IGIF and of EU INSPIRE Directive implementation;
- Practical knowledge of Open Geospatial Consortium (OGC) and ISO standards for geospatial interoperability, geospatial data formats, data management;
- 5 years experience with NSDI infrastructure and services, international standards, policy and best practices and use cases; geospatial data harmonisation with EU INSPIRE Data Technical Specifications;
- 5 years experience of advising on standards, methods, and processes associated with the management and use of geospatial data and provision of appropriate recommendations from available options – will be an advantage
- 3 years experience in Moldova on NSDI will be considered as an advantage;
- Fluent in English.

Geospatial Expert:

- Bachelor degree in one of the following: Geodesy, Topography and Cartography; Geographical Information Systems or equivalent. The following requirements will be considered as an advantage: MSc (or other recognized post graduate qualification) in Geodesy and Geoinformation Technologies; Geographical Information Systems; or an equivalent specialization;
- 5 years' post qualification experience (PQE)
- 5 years experience in the implementation and application of geospatial systems and data transformation software (hale, fme etc)
- 5 years experience of working on geospatial information projects or related fields in the collection, management, and use of geospatial information and the specifications relating to this
- Minimum 5 years of experience and knowledge with PostgreSQL + PostGIS, or Oracle DB and conversion tools like ogr2ogr
- 5 years experience in database design, data migrations, backup and restore procedures
- Fluent in English.

Other experts: The bidder has the responsibility to propose a team of experts with complementary skills and experience to ensure the high quality of all deliverables.

8. Language of the assignment

The working language will be English and all deliverables will be submitted in English.
Knowledge of Romanian or Russian will be considered as an advantage.

Selection

The selection of the Consultants will be conducted in accordance with the World Bank Procurement Regulations for IPF Borrowers, dated July 2016, revised November 2017.

Resources

Client's contribution: The client will assign a dedicated technical team to work with the consultant during the entire contract duration with the purpose of know-how and knowledge transfer. The dedicated team will provide the necessary documentation and information to the consultant and will be responsible to testing the data model, which includes development of test acceptance criteria and test acceptance plan together with the consultant, development of data base, based on the new data model, development of data migration and data validation tools and testing the data migration.

If the visits to Moldova is possible and agreed, the ALRC will provide a reasonable office space with furniture, internet access and necessary equipment for printing and copying.

The Consultant shall work in their premises, using their equipment and should be available during the ALRC working hours. a personal computer with appropriate software for his/her own use and the ALRC will provide the Consultant with electronic version of all necessary documents.

Location of training: Due to the covid-19 restrictions, the online training/workshops should be considered. In case of possible and agreed visit to Moldova, the training/workshops will be provided at the Agency for Land Relations and Cadastre, 48 SergheiLazo str, MD 2004, Chisinau. Contact person at ALRC: Ms. Maria Ovdii, e-mail maria.ovdii@arfc.gov.md.