

# INTERNATIONAL CONSULTANT TO DEVELOP NATIONAL NSDI DATA STANDARDS FOR PRIORITY DATA THEMES AND DATA MODEL



## 1. INTRODUCTION

REPUBLIC OF MOLDOVA  
FOR LAND REGISTRATION AND PROPERTY VALUATION PROJECT  
Project ID No. P161238

Registration and Property Valuation Project (LRPVP), aimed at improving the quality and transparency of the land administration and property valuation systems.

The Project consists of four components: (A) First Property Registration; (B) Property Valuation; (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 Financing Agreement (FA)[2]. The PAD is considered as a part of the necessary background materials to be understood by Consultants.

Component C 3.f. Standards will support the development of NSDI standards in Moldova

This Terms of Reference (ToR) defines the scope of work needed for the development of the standards and a data model for the publication of spatial data for the NSDI of the Republic of Moldova. It sets out the requirements for the selection of the consultancy company to perform the work.

## **2. BACKGROUND**

Spatial Information in the European Community (INSPIRE) has been transposed at the national level by means of a Law on National Spatial Data Infrastructure, that has been adopted by the Parliament of Moldova in November 2016. NSDI Steering Committee and NSDI Working Groups (technical, data sharing and capacity building) have been established. The Agency for Land Relations and Cadastre of Moldova (ALRC) is responsible for coordination of NSDI development of Moldova.

Republic of Moldova has a NSDI Geoportal, developed on the GeoNetwork open source platform: [geoportalinds.gov.md](https://geoportalinds.gov.md). National metadata profiles have been adopted for spatial data and for spatial data services with a Government Decision N: 738/2017 on the approval of the Regulation on the rules for creating and updating metadata for sets and services of spatial data: [https://www.legis.md/cautare/getResults?doc\\_id=101889&lang=ro](https://www.legis.md/cautare/getResults?doc_id=101889&lang=ro) - published in the Official Gazette N: 340-351, art. 843 on 22-09-2017. The Government Decision has three annexes: Annexes 1 and 2 include the metadata profiles, while Annex 3 includes the Guidelines on how to complete the metadata. The Government Decision is available in Romanian, English and Russian languages. The available metadata are available through the NSDI Geoportal.

A Government Decision N: 683/2018 on approval of the Regulation on the rules for applying which establish technical modalities of interoperability and harmonization of spatial data sets and services as well as the implementation deadline [https://www.legis.md/cautare/getResults?doc\\_id=108815&lang=ro](https://www.legis.md/cautare/getResults?doc_id=108815&lang=ro) has been adopted, which includes all ISO standards, mandatory for the spatial data themes.

Several examples of “best practices” related to data sharing in Moldova have been developed over the past years. There are, for instance, the pilot project on Data Harmonization with the Ukraine supported by the JRC, or the data exchange between ALRC and Ministry of Transport and Road Infrastructure as well as with the forest Agency “MOLDSILVA”, that exemplifies how data sharing between different organisations in Moldova already adhere to the principles of INSPIRE. An EU INSPIRE compliant standard for cadaster parcels have being drafted, but none has been drafted yet for other data themes.

The Government Decision N: 458/2017 defines the spatial data themes, under the ALRC responsibilities – see [https://www.legis.md/cautare/getResults?doc\\_id=114061&lang=ro](https://www.legis.md/cautare/getResults?doc_id=114061&lang=ro). This

includes: 1) Coordinate reference systems, 2) Geographic grid systems, 3) Geographical names, 4) Administrative-territorial units, 5) Addresses, 6) Land parcels, 7) Elevation, 8) Orthoimagery, 9) Buildings, 10) Soils, 11) Land categories.

The purpose of this consultancy work is to develop a set of standards, compliant with the EU INSPIRE Data Technical Specifications and the ISO 19152:2012 for Geographic information - Land Administration Domain Model (LADM) for a priority data themes under the ALRC responsibilities and to develop a data model for the publication of the ALRC datasets, based on that standard.

The work under this assignment will be conducted in compliance to the Law on Spatial Data Infrastructure in close cooperation with Agency for Land Relations and Cadastre and will contribute to the adoption of standards and definitions within the overall Moldova NSDI. A dedicated team of technical experts will be established to work with the consultant and with the purpose of knowledge and know-how transfer.

## **2.1. NSDI Context**

With donor support, National Spatial Data infrastructure (NSDI) is in development in Moldova under the responsibility of the Agency for Land Relations and Cadastre.

For implementation of the NSDI Law a number of Government Decisions have been passed:

1. Establishment of NSDI Steering Committee;
2. Responsibility for spatial datasets allocated to the relevant public entities;
3. Creation and updating of metadata;
4. Regulations regarding sharing of datasets and services;
5. Guidelines for data interoperability and harmonisation;
6. Establishing NSDI Working Groups (technical, data sharing and capacity building)

Since 2006 Moldova and its ALRC Agency is receiving support from the Norwegian government to develop its land mapping and spatial data. The main project goal is to produce a new nationwide electronic map, which will facilitate better governance, economic growth and implementation of the Sustainable Development Goals in Moldova. The results of the projects are available at <http://moldova-map.md/#/> and <http://moldpos.md/>.

A provisional national geoportal for the Republic of Moldova has been developed within the framework of an EU Twinning Project. It provides information about spatial data and services from public authorities that participated in the project. The portal provides the ability to search, view and download spatial data from different sources (public authorities) and it is considered a key element of the NSDI - <http://www.geoportalinds.gov.md/>.

The “Guideline for Data Specification” and “Data Model Guidelines” will be developed in the frame of EU Twinning project “Improving Spatial Data Services in the Republic of Moldova following EU standards”2020-2022.

Product Specifications and Standards for Maps aligned with EU INSPIRE Directives will be developed with technical support of Norwegian Ministry of External Affairs in frame of the project “Maps for Sustainable Development” 2020-2022. The following themes are included in the data model which is under development: transport, nature, utilities, building and constructions and hydrography.

The Government of Moldova has requested the World Bank to support the ongoing land reform through an investment and technical assistance operation to address the outstanding challenges in the sector.

### **3. OBJECTIVE**

The primary objective is to enable different information systems to communicate and exchange data, enabling knowledge discovery and interaction between systems. This is intended to provide users with the means to discover access to and reuse geospatial information.

The objectives of the consulting work are to enable wider data sharing both within and outside the Moldova NSDI by encouraging the use of interoperable standards:

- Develop SDI National Standards for priority data themes under the ALRC responsibilities, compliant with the EU INSPIRE Data Technical Specifications,. National metadata standards for data sets and services have already been adopted (see the background information);
- Develop a new data model, covering priority data sets under the ALRC responsibilities, will be developed using the new standards to facilitate the publication of the ALRC spatial data sets. The testing of data model will be done by the ALRC in coordination with the consultant;
- Know-how and knowledge transfer to build up an internal capacity.

### **4. TASKS**

The International Consultant Company (hereinafter: Consultant) will be hired under the Component C: Land Administration Strengthening.

Three phases of work will be undertaken:

Phase 1 Development of national standards for the data themes under the ALRC responsibilities, compliant with the EU INSPIRE data technical specifications, including the work streams for the assessment of ALRC data and standards. Specifically, development of national standards for:

1. Coordinate reference systems;
2. Geographic grid systems;
3. Administrative-territorial units;
4. Addresses;
5. Land parcels;
6. Elevation;
7. Orthoimagery;

8. Soils;
9. Land categories.

Phase 2 Development of data model for priority data sets under ALRC responsibilities. Specifically:

Develop a data model, covering the following data sets

1. Coordinate reference systems;
2. Geographic grid systems;
3. Administrative-territorial units;
4. Addresses;
5. Land parcels;
6. Elevation;
7. Orthoimagery;
8. Soils;
9. Land categories.
  1. Develop a test plan for testing and acceptance of the new data model and test acceptance criteria together with the dedicated technical team of experts;
  2. The ALRC technical team will develop a database, using the new data model and data migration and validation tools to validate the new data model and will test the data migration into the new data model;
  3. The consultant will amend the data model, based on the test results and provide the final data model together with the sets of recommendations for the next steps;

Phase 3 Know-how and knowledge transfer. The consultant will work closely with the dedicated technical team of experts to transfer know-how and knowledge to at least 5-7 experts and will prepare recommendations for further capacity building for the NSDI Technical working group. The consultant will organize at least two online workshops to present the standards and the data model.

Considering the fast changing situation with the covid-19 pandemic, the consultant should plan to work remotely. In case of possibility to travel, the consultant should coordinate the travel plans with the ALRC and the travel expenses will be covered separately.

## **5. REPORTING**

The Consultant shall develop a detailed work plan, including milestones for development and acceptance of all technical deliverables, as part of their proposal and finalize it during the first two weeks of the contract implementation.

The consultant will prepare short monthly progress reports, an Inception Report, an Interim Report and a Final Report. The Inception report should be delivered at the end of the second month with listed risks and issues, agreed timetable for completion and any agreed changes to the ToR. An Interim Report shall be provided at the end of the 5th month, presenting the progress, timetable and identifying the key issues and propose mitigation measures. The Final Report will be provided upon completion to include a short description of all activities performed under the assignment, conclusions and recommendations, and final versions of the documents developed by the

Consultant.

All deliverables should be submitted in electronic version (format upon agreement) for approval, to the Project Implementation Unit of the Public Services Agency.

All Reports shall be approved by the Agency for Land Relations and Cadastre of Moldova as NSDI Coordination Unit.

## 6. DURATION OF THE ASSIGNMENT

The duration of this assignment is 10 months. The work is estimated to take about 80-100 working days.

## 7. WORKING LANGUAGE

The working language of this assignment is English. All deliverables and reports should be submitted in English. ALRC will be responsible for translation into the local language.

## 8. DELIVERABLES AND TIMEFRAME

No	Deliverable	Deadlines
1.	Detailed Work Plan	By the end of the 2nd week
2.	Short Monthly Progress Reports	By the 5th day of the following month
3.	Inception Report	At the end of the 9th week
4.	National data standards	At the end of the 17th week
5.	Interim Report	At the end of 21th week
		1. Draft data model submission - at the end of 30th week
6.	ALRC data model	1. Data model testing and acceptance (led by the ALRC) – by the end of 39th week
7.	Know-how and knowledge transfer and recommendations for capacity development of the NSDI Technical WG	Through the whole project duration, aiming to transfer knowledge and know-how to at least 5-7 experts
8.	Final Report	At the end of the contract

## **9. PAYMENT SCHEDULE:**

1. Acceptance of the national standards, subject of this consultancy work – 55% of the lump sum;
2. Data model development and acceptance – 35% of the ;
3. Acceptance of the Final Report and the knowledge and know-how transfer – 10%.

## **10. QUALIFICATION 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:

1. A proven track record of at least 3 projects, related to similar assignment is size and complexity;
2. Previous experience in developing national standards, based on the INSPIRE Data Technical Specifications;
3. Previous experience in developing data models, which include the data sets under this consultancy work;
4. Previous experience with geospatial standards and at least three (3) years experience in developing INSPIRE compliant data models and transforming spatial data into INSPIRE Data Specifications;
5. A proven track record of at least 3 years in data modelling and migration of similar data sets, as the ones under this consultancy;

### **EXPERTS REQUIREMENTS:**

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

#### **Expert on EU INSPIRE Data Technical Standards:**

- University degree
- Knowledge of INSPIRE technical specification and standards
- Practical knowledge of Open Geospatial Consortium (OGC) and ISO standards for geospatial interoperability, geospatial data formats, data management;
- Previous experience in NSDI infrastructure and services, harmonization
- Previous experience with NSDI infrastructure and services, international standards, policy and best practices and use cases;
- Previous experience in drafting national standards for the data themes, under this assignment;
- Previous experience in NSDI infrastructure and services and geospatial data harmonisation with EU INSPIRE Data Technical Specifications;
- Knowledge of Russian or Romanian Languages will be considered as an advantage
- Previous experience in Moldova on NSDI will be considered as an advantage.

#### **Expert on Data modelling:**

- University degree

- Minimum 5 years of experience and knowledge with PostgreSQL + PostGIS, or Oracle DB and conversion tools like ogr2ogr
- Experience in database design, data migrations, backup and restore procedures
- Extensive experience in geospatial data transformation software (hale, fme etc )

**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.

#### **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.

### **11. 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 visit 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 will be provided 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 Serghei Lazo str, MD 2004, Chisinau. Contact person at ALRC: Ms. Maria Ovdii, e-mail maria.ovdii@arfc.gov.md.

The consultant must provide information indicating that she / he is qualified to perform the services (CV, description of similar assignments, experience in similar conditions, general qualifications and other relevant information).

Interested qualified candidates should submit their expressions of interest and CVs, with the mark **LRPV, INTERNATIONAL CONSULTANT TO DEVELOP NATIONAL NSDI DATA STANDARDS FOR PRIORITY DATA THEMES AND DATA MODEL** by 20th of September, 2021, Moldova time: 17:00 hrs. to the address below:

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### [Terms of Reference](#)

Data limit?

20.09.2021 14:00