Agenţia Relaţii Funciare şi
Cadastru a Republicii Moldova

INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK

MOLDOVA

Action Plan
Executive Summary

Kartverket

consultingwhere
Maximising the value of location information

AGENȚIA RELAȚII FUNCIARE ȘI CADASTRU • REPUBLICA MOLDOVA •

EXECUTIVE SUMMARY

1. Context

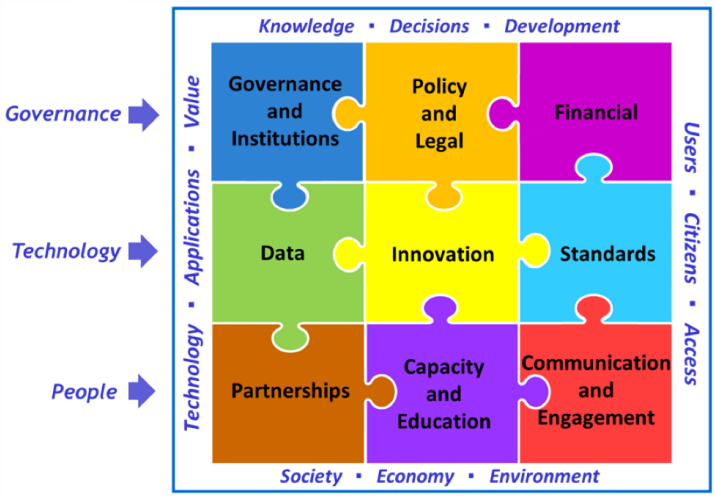
This report has been prepared at the request of Kartverket (SK), the Norwegian Mapping Authority, by specialist Geospatial consultants from ConsultingWhere[1].

Since 2006, SK has been working with the government of Moldova through its cooperation partner the Agency for Land Relations and Cadastre (ALRC). ALRC is the coordinating authority for the National SDI and is responsible for implementing policy in this domain. Through engagement with ALRC, the objective is to provide support to Moldova with the implementation of its Integrated Geospatial Information Framework (IGIF) and provide support for the continued development of the National SDI.

2. Integrated Geospatial Information Framework (IGIF)

The Action Plan is created in accordance with the UN-GGIM Integrated Geospatial Information Framework, its principles, and methodologies. The Framework has been developed by UN-GGIM in collaboration with the World Bank. It was endorsed by the UN-GGIM Committee of Experts in August 2018. The Framework has been developed to support the development of national infrastructures for geospatial information management in developing countries. The framework aims to assist countries to move towards e-economies, e-service, e-commerce, and other services to improve services to citizens in support of the implementation of national strategic priorities together with the 2030 agenda for sustainable development.

The IGIF is anchored by nine strategic pathways within three main areas of influence: governance; technology; and people. These nine strategic pathways seek to maximize the innovative and integral nature of geospatial information by making it available and accessible to governments, communities, businesses, academia, and civil societies. This provision serves to innovate, co-create, and develop new products, services, and applications that deliver new knowledge for evidence-based policy and decision-making.



3. Geospatial Information in Moldova

The development of the National SDI has progressed over recent years through support from various donors including the United Nations, World Bank, European Union, and the Norwegian Mapping Authority (Kartverket). A significant milestone for this was the publication of Law 254 of 2016[2] 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. The spatial data sets identified in Annex 1, 2,

[1] ConsultingWhere website: www.consultingwhere.com

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

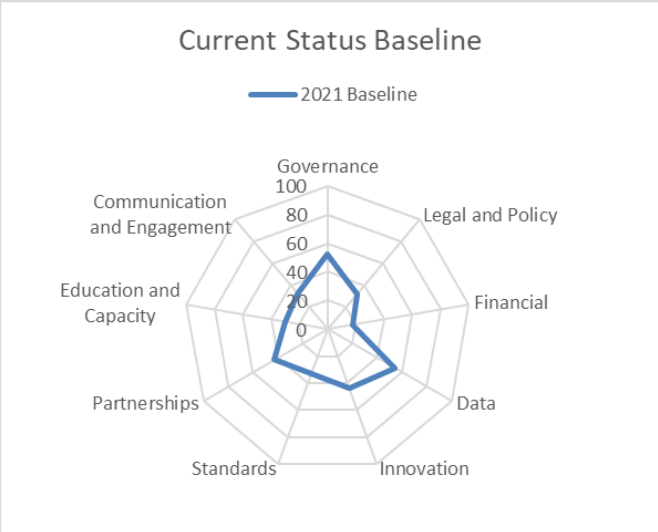
and 3 of the Law are based on the EU Directive Inspire[3] and represents a broader range of data themes than the fundamental datasets covered by IGIF. For details of this and further background on SDI in Moldova see Moldova IGIF Baseline Diagnostic Report 20210422_v0.4.1[4] (available from ALRC).

In parallel with the activities outlined in this report a similar activity by a team representing EU ENI 2020 (referred to as Twinning project MD 16 ENI OT 01 19) has been undertaking a series of missions with ALRC with the objective of identifying improvements to Spatial Data Services in Moldova based on EU standards. The Twinning Project is a complementary project to the SK IGIF project.

4. Baseline Assessment

Moldova completed a baseline assessment of current geospatial information management practices during February – April 2021. The findings, organized in terms of the IGIF Strategic Pathways, reflects the outcome from this baseline assessment. A score of 100 is the maximum achievable, and awarded only if the NSDI, in relation to the strategic pathway being assessed, is fully developed and sustainable.

The Baseline Assessment scores, and a summary of the current situation for each of the strategic pathways, is as follows:



- **Governance and Institutions (Score = 53):** Moldova has high level support for the implementation of a National SDI with clear institutional arrangements defined in Law (law no 254 from 2016 on National Spatial Data Infrastructure[5] governs much of the activity associated with the implementation of IGIF). There is also a framework for monitoring the implementation of the National SDI and this is covered by Government Order no 23 of 2020. However, it is recommended that the role of the SDI Council be reviewed (see 6.1.3).
- **Policy and Legal (Score = 32):** Legislation for a National SDI in Moldova is good. The country benefits from having Law 254 from 2016 on national spatial data infrastructures which provides the framework for the implementation of the SDI. This Law, together with various amendments included in 2018, sets the general rules about the establishment of the National SDI and establishes the legal and policy framework for the implementation of the SDI. However, there is a need to continue to actively promote the legal and policy framework which could be achieved through a suitable outreach plan (see 6.2.3).
- **Financial (Score = 18):** Moldova has been successful at accessing external funding. There has been, and continues to be, excellent collaboration with various international donors which have provided funding for projects which support the implementation of the National SDI. However, outside of the various donors, there appears to be a lack of a cohesive and consistent understanding of how the implementation of the National SDI will continue to be financed. There is no single authority with financial responsibility and accountability for ensuring investment in the National SDI is identified, is appropriate, is achieved, and is sustainable (see 6.3).
- **Data (Score = 54):** The primary geospatial and statistical data holdings are well organized and mainly conform to the UN-GGIM recommended fundamental themes. Moldova has established a

[3] https://inspire.ec.europa.eu/Themes/Data-Specifications/2892

[4] Reference 'Moldova IGIF Baseline Diagnostic Report_20210422_v0.4.1'

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

good geodetic infrastructure, there is a common national geodetic datum reference, projection and co-ordinate system which is accessible and used by most stakeholders. A data framework has been established with the management of fundamental datasets in the M Cloud as a secure storage and retrieval environment. However, few of the stakeholder organizations have implemented an appropriate Data Quality Management (DQM) plan and it is recommended that this is addressed (see 6.4).

- **Innovation (Score = 44):** There are examples where innovation is being used in support of geospatial activities, but this tends to be done on an individual basis by individual stakeholders, or by the private sector. Moldova has a very well-developed ICT infrastructure which will facilitate the implementation of the National SDI, the geoportals are well established but there was no evidence of any formal investment for geospatial innovation projects such as innovation hubs/centre of excellence responsible for actively managing and communicating information. Despite the evidence of some strong academia there is no 'centre of excellence' which would provide a focus for geospatial research (see 6.5).
- **Standards (Score = 33):** The implementation of standards in Moldova is based on the Law 254 from 2016 and is strongly aligned with the EU INSPIRE Directive. National data standards and technical specifications have been defined for the geospatial domain. Initiatives have been taken to establish a community of practice to share skills, knowledge, and experiences about the implementation of standards. Additionally, Moldova is nationally represented on international standards development organizations, such as ISO and CEN.

  Government Decision on interoperability 683 from 2018 establishes a list of standards that need to be applied for relevant geospatial data themes and related services[6] and, while most of the responsible public data providers are aware about standards, the implementation of this appears to be very ad-hoc. There was no evidence of the development of a needs assessment, no active standardization awareness program, and no proper system of compliance in use to ensure that organizations are correctly implementing nationally or internationally endorsed standards (see 6.6.3).
- **Partnerships (Score = 43):** There is some cooperation and collaboration between some of the public sector stakeholders. Collaborations between public sector institutions and academia have also been successfully established. International collaborations on geospatial information management are strong and are active and on-going. However, more needs to be done to raise awareness, promote, encourage, and support public private partnerships (PPP), looking for opportunities for establishing PPP joint ventures with the objective of developing and delivering new or improved geospatial products and services (see 6.7.3**).**
- **Capacity and Education (Score = 30):** The benefits and value of geospatial information has been raised across key decision makers, institutions in government, and across the education sector. The Universities provide courses designed to develop the geospatial information management competences and skills required by the geospatial information sector workforce, and in-house technical training is available. However, there is a need to provide opportunities for continual professional development (CPD) and other lifelong learning initiatives. The study also recommends the development of a national geospatial competencies inventory, to complete an assessment on priority areas for capacity development, together with a proposal to embed geospatial literacy in schools (see 6.8.3).
- **Communication and Engagement (Score = 32):** Stakeholder engagement is ongoing but is ad-hoc, not very active, does not cover all the relevant stakeholder groups. Such communication and engagement as exists, needs to be improved. The consequence of this all is that stakeholders are not fully informed of the significant progress and efforts being made with the SDI. Stakeholder

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

engagement and communication needs to be consistent, regular, and reliable and would benefit from a more formal approach as part of an Outreach plan (stakeholder engagement strategy).

5. Strategic Alignment to Public Policy Drivers

The overall target outcome for the SDI is to lead to the efficient, equitable and optimal utilization and management of geospatial information applied across all sectors of the economy. To facilitate this alignment, the study has analyzed a wide range of Government policies and commitments. Based on this analysis, the following sectors are where geospatial information generally, and the SDI particularly, can make the most significant and positive impact:

(a) **Economic and Urban Planning** – including support to the Moldova 2030 development strategy, improved urban planning, and supporting improvements to the analysis of national statistics.

(b) **Land Management and Administration** – completion of the Land Registration and Property Valuation project, land reform to reduce the number of land related disputes and adopting improvements in property valuation and assessment to provide more predictable revenues from land and property taxation.

(c) **e-Government** – including the integration of national registers, online digital services, and implementation of the National SDI as part of a National Information Infrastructure (NII).

(d) **Transport** – including integrated transport planning, street works management, and transport road safety and maintenance.

(e) **Disaster Risk Management and Emergency Services** – disaster management to aid preparation, response and recovery and improvements to emergency response by the emergency services.

(f) **Agriculture Forestry and Fishing** – including opportunities for increased crop production/sustainable agriculture through precision farming, agricultural land management, forest management and sustainable forest development.

(g) **Health and Social Care** – including improved access to primary healthcare and the ability to model access to primary healthcare in order to reduce healthcare inequalities and the development of patient 'pathways'.

(h) **Natural Resources** – the development of a national geological data model and 3D geological data will support investigations into new groundwater abstractions (important given the risk of drought in Moldova) and support improved flood management schemes.

(i) **Water and Hydrology** – a key objective is to fulfill the requirements of the European Water Framework Directive (WFD), to support improvements in the management of water assets, and tracking water loss and leak management.

(j) **Energy** – site selection for renewable energy initiatives to help reduce the dependence on energy imports.

(k) **Environment and Tourism** – more cost-effective environmental impact assessments together with the monitoring and analysis of air pollution.

(l) **Local Government** – improved decision making together with the opportunity for enhanced development governance, management, planning, and the transparent provision of citizen services.

(m) **Commercial** – providing for more informed decision making for online transactions in the banking, finance, and retail sectors.

(n) **Multi-sector** – adopting policies on open data, national address registers, imagery, and other collaborative data acquisition policies.

This list illustrates the broad range of sectors that can benefit from an effective National SDI. A companion report, Geospatial Alignment to Policy Drivers, contains analysis of key government policy at the time of the study (June 2021) and an inventory of use cases across these sectors.

6. NSDI Vision

The aim of the National SDI is to deliver optimal use of geospatial information to support more effective means of measuring, analyzing, monitoring, and achieving inclusive and sustainable social, economic, and environmental development.

7. Goals and Objectives

As an outcome of the stakeholder engagement, the research completed as part of the IGIF baseline assessment, and the review of the geospatial alignment to national policy drivers, a number of strategic goals and objectives have been identified. Achieving these goals and objectives will enable Moldova to realize its vision for the implementation of a National SDI.

The goals outline what needs to be accomplished to achieve the NSDI vision and the objectives reflect how the goals will be accomplished.

Goal 1 Good Governance and Leadership: a legal and policy framework and investment plan that coordinates and integrates geospatial information management across both the public and private sectors. The objective is to further implement the existing legal and policy framework relevant to the SDI to develop and accelerate cross-sector coordination, industry partnerships, and stakeholder collaboration

Goal 2 Quality Information: timely, reliable, and fit-for-purpose integrated geospatial information that is the trusted source of information for government, business, and the community. The objective is to continue to enhance the quality of geospatial information and make this available to all stakeholders and users through continued improvements in the collection and sharing of geospatial information.

Goal 3 Education and Capacity Development: geospatial information is used widely to improve government products and services and stimulate new business opportunities for the benefit of all citizens. The objective is to strengthen human capacity (skills, knowledge, experience), to promote research and development and innovation programs, to make the opportunities afforded by the National SDI more effective and sustainable.

Goal 4 Partnering: exploiting the expertise, skills, and knowledge across all sectors of society and applying this expertise for the general benefit of all. The objective is to promote a greater awareness and benefits of partnering, the types of collaboration/partnering available, and to develop the strategy for partnering to investigate the benefits to be gained through public private partnerships for the delivery of new or improved and innovative geospatial products and services.

Goal 5 Stakeholder Communication and Engagement: informing, advising, and seeking feedback from all the organizations contributing to and facilitating the implementation of the National SDI. The objective is to keep stakeholders informed and engaged in order to maintain the ongoing commitment to the implementation of the National SDI.

8. Benefits and Outcomes

Positive impacts are expected in many parts of the economy, including:

- **Improved public sector efficiency** – of institutions responsible for land administration, property taxation, agriculture, rural and urban development, emergency services, and transport

- **Citizen benefits** – through increased efficiency in road navigation, emergency services dispatch and improved interactions with the public sector, particularly in respect to land transactions and property taxation and the integration of national registers
- **Improvements in agricultural output** – by facilitating agricultural development and improvements in farming processes, and the implementation of precision farming methods
- **Developments in public health** – through improved monitoring of air pollution (a particular source of adverse health effects in children); air pollution is a major environmental health threat and can impose significant costs on the economy
- **Adapting to climate change** – through improved awareness of air pollution, improvements in the assessment of flood risk, and greater resilience to disasters

Each of these areas is developed in more detail in the body of the report.

9. Action Plan

The Action Plan is designed for implementation of the NSDI over a 5-year timeframe and operation for a least a further 7 years. The Action Plan contains a series of inter-dependent actions with outlines of associated costs and timeframes that together form an integrated roadmap. It encompasses, and is consistent with, the EU Twinning project Action Plan[7]. Individual actions are described in chapter 6 of the report under each strategic pathway and are summarized below. Where appropriate, references to related items in the EU Action Plan are included.

Strategic Pathway 1: Governance and Institutions

- Action 1.1 – Form an SDI coordination and project management team to support ALRC's role to be the coordination body of the NSDI and associated administrative, secretarial, and managerial tasks.
- Action 1.2 – Re-energize the geospatial leadership team with a very clear mandate to drive the implementation of the IGIF Action Plan; this action incorporates EU Twinning Project objectives 2.1.1 and 2.1.2.
- Action 1.3 – Preparation of a National SDI strategy/geospatial strategy linked to the National SDI operating model.
- Action 1.4 – Reconsider the composition of the NSDI Council to Institutionalize the private sector in the governance structure.

Strategic Pathway 2: Policy and Legal

- Action 2.1 – Adjusting the regulatory framework for the establishment, development, and maintenance of the NSDI to the current requirements and principles of INSPIRE; incorporates EU Twinning Project objective 1.1.
- Action 2.2 – Developing the draft Government decision on the methodology for forming tariffs (costs) for spatial data network services; incorporates EU Twinning Project objective 1.2.1 and 1.2.2.
- Action 2.3 – Establish regulations regarding the licensing of spatial data; incorporates EU Twinning Project objective 4.2.
- Action 2.4 – Strengthen Data Sharing Agreements; Incorporates EU Twinning Project objective 2.3.

[7] EU ENI 2020 Twinning Project: MD 16 ENI OT 01 19 Action Plan of NSDI State Programme 2022-2024 Doc no TWMD-1-122-04

- Action 2.5 – Create and operationalize a centralized public sector procurement policy for geospatial services and data.

Strategic Pathway 3: Financial

- Action 3.1 – Develop a Sustainable Business Model for SDI to cover budgets, funding options, and to align this with government policies; incorporates EU Twinning Project objectives 4.1.1 and 4.1.2.
- Action 3.2 – Commission a sustainability strategy to outline plans for ongoing support of existing products and services currently covered by donor agencies.
- Action 3.3 – Measure and document benefits realization through the definition of the KPI's to be used in the implementation of the SDI and how these will be measured.

Strategic Pathway 4: Data

- Action 4.1 – Complete the current cycle of National Orthophoto Mapping and institute a regime of continuous revision.
- Action 4.2 – Implement a process of change detection using satellite imagery and consider the use of services available from commercial suppliers.
- Action 4.3 – Develop a maintenance process for the topographic basemaps (line maps) derived from aerial imagery previously provided under the Kartverket engagement.
- Action 4.4 – Maintain the National Register of Addresses to include a process for harvesting data from the local public authorities.
- Action 4.5 – Complete the National Cadastre Land Registration project and operationalize its on-going maintenance.
- Action 4.6 – Develop and implement the process for data sharing between the road agency and the SDI.
- Action 4.7 – Develop and implement a digital twin for urban centers; city centers have been partly created in Chisinau and Orghei but should be further developed.
- Action 4.8 – Maximize the use of GNSS; a good geodetic reference network has been developed, promote the further usage of this through the investigation of current licensing model and opportunities for 'free to use'.
- Action 4.9 – Complete the Land Use/Land Cover Map of Moldova and join the CORINE network to monitor land degradation.
- Action 4.10 – Integrate the Water and Sewage Databases with the SDI.
- Action 4.11 – Establish and operate a Centre of Excellence for Satellite Imagery.
- Action 4.12 – Implement best international practice using Global Statistical Geospatial Framework (IGIF for Statistics).
- Action 4.13 – Integration with Emergency Services.
- Action 4.14 – Enhancements to the Geoportal to help ensure the network service and including maintenance of discovery and view services, creation of download services, and publication of spatial data CLC 2000, 2018 (Corine Land Cover); incorporates EU Twinning Project objective 3.3.
- Action 4.15 – Updating Metadata Catalogue on NSDI Geoportal, increasing the number of metadata record for harmonized spatial data sets and network services on the Geoportal; incorporates EU Twinning Project objectives 3.4 and 3.5.

- Action 4.16 – Analogue to digital conversion and georeferencing of specific missing or out of date fundamental spatial data; incorporates EU Twinning Project objective 3.1.

Strategic Pathway 5: Innovation

- Action 5.1 – Annual Technology Tracking Review, maintaining an awareness of new developments and how these could be leveraged in Moldova.
- Action 5.2 – Implement a coordinated approach to (geospatial) innovation through the creation of innovation hubs or a center of excellence to provide a focus for geospatial research.
- Action 5.3 – Invest in the incubation of geospatial start-ups, embedded in the digital transformation program.

Strategic Pathway 6: Standards

- Action 6.1 – Establish a working group on standards with responsibility for preparing a needs assessment, a national standards strategy, an active standards awareness program, and a strategy for rolling out data standards and associated technical specifications.
- Action 6.2 – Develop data specifications for spatial data sets and products and transposition of technical specifications for spatial data sets which are part of annexes 1, 2 and 3 of the Law 254/2016; incorporates EU Twinning Project objective 3.2.
- Action 6.3 – Adopt and implement international standards, as a default approach.
- Action 6.4.1 – Establish, maintain, and monitor compliance with common data quality standards based on relevant international standards (reference ISO and OGC-standards).
- Action 6.4.2 – Prepare and implement a Data Quality Management (DQM) plan that assures information is fit-for-purpose.
- Action 6.5 – Improve interoperability through development of APIs and monitor compliance.

Strategic Pathway 7: Partnerships

- Action 7.1 – Strengthen the Partnerships between Public Sector Stakeholders; incorporates EU Twinning Project objectives 2.2 and 6.3.
- Action 7.2 – Establish Partnerships with Private Sector Stakeholders.
- Action 7.3 – Continue to engage with UN GGIM but review the opportunities for engagement to be shared across multiple agencies.

Strategic Pathway 8: Capacity and Education

- Action 8.1 – Re-energize the working group on Capacity and Education and form a relationship with the Ministry of Education; undertake a capability and capacity assessment (a gap analysis of skills and resources) and link this to Government strategies for staff retention.
- Action 8.2 – Expand the available university courses and develop a multi-disciplinary approach to the teaching of geospatial; incorporates EU Twinning Project objective 6.2.3.
- Action 8.3 – Engage with primary and secondary schools and explore opportunities for introducing geospatial literacy into some core courses.
- Action 8.4 – Encourage the principles of continued professional development (CPD) and promote the benefits of lifelong learning; incorporates EU Twinning Project objectives 6.1.1, 6.1.2, 6.2.1, and 6.2.2.

Strategic Pathway 9: Communication and Engagement

- Action 9.1 – Develop and implement a stakeholder communication and engagement Plan; incorporates EU Twinning Project objective 5.1.

- Action 9.2 – Create a National SDI Outreach team with the goal of developing, agreeing, and implementing a communication and engagement strategy to inform, influence, and promote the SDI service and establish performance measures to measure the effectiveness of this.
- Action 9.3 – Undertake an annual market survey of User satisfaction (this will support the monitoring and evaluation requirement).
- Action 9.4 – Create a 'value proposition' for the SDI, prepare supporting collateral, and socialize to support the advocacy of the strategic plan to politicians.
- Action 9.5 – Develop a monitoring and evaluating framework to assess the effectiveness of engagement and communication about the development of the National SDI.

10. Implementation Plan

The costs of implementing these Actions are estimated in detail in the Socio-economic impact Assessment report which is submitted alongside this document. The investment plan to be implemented over a period of 5 years is summarized in the table below.

Period	Investment Value (MDL Thousands)	Cumulative Investment Value (MDL Thousands)	Investment Value (USD Thousands)	Cumulative Investment Value (USD Thousands)
Year 0+1	22,710	22,710	1,282	1,282
Year 2	20,323	43,033	1,147	2,429
Year 3	22,664	65,696	1,279	3,708
Year 4	17,348	83,044	979	4,687
Year 5	12,015	95,059	678	5,365
Total	95,059		5,365	

The plan is based on a relatively steady level of investment over a 5-year period from approval. It assumes that investment will drop off during Year 5 as the investment period is completed. The total investment of MDL 95.1 million (USD 5.4 million) is commensurate with what is being planned for other developing countries. It is worth observing that required investment would be much higher had it not been for the input of major donors over the previous 10 years.

A draft implementation plan, with estimated costings for each activity, is set out in Chapter 7. This can be used as the starting point for a project management plan for implementation of the actions.

11. Business Case

The strategic case for investment is derived from the geospatial policy alignment, socio-economic impact assessment and action plan. Key national priorities that are expected to be supported by the Action Plan are direct economic impacts, as well as societal and environmental benefits. In this section we draw out a small subset of those identified:

Economic benefits

i) To Government:

- **Increase business tax revenue collection** by identifying unrecorded properties from a single national street addressing system
- **Support to the National Development Strategy** with online access to more current and complete geospatial information
- **In the longer-term to reform land use fees and taxes collection based on completing** the land cadastre and register

ii) To Business:

- **Increased crop yields** by use of precision agriculture techniques to link satellite imagery to fertilizer distribution

- **Better asset management for utilities** as the NSDI program will enhance the availability of current geospatial data enabling digitalization of paper records to be more accurate and converted more quickly
- **Quicker and less costly land and construction survey work** from increased use of the CORS geodetic network
- **The real estate sector enabled to use web technology** to provide new and better commercial and residential property services to citizens using location data

iii) **To Citizens:**

- **Improved emergency response** by equipping more vehicles with geospatially enabled software
- **Greater efficiency of transactions between citizens and businesses**, especially by having a single national address database augmented with geographical position

Societal benefits

Key impacts that are not easily expressed in economic terms, include:

- **Completion of land registration and cadastral registers providing a more transparent, consistent, and up to date database** to underpin growth of the land market by increasing the level of mortgages secured on land rights
- **Improved disaster response**, making mobilization faster so reducing loss of life and costs of damage to forests, crops, and property
- **Improved Sustainable Development Goal (SDG) reporting** through enhanced geo-statistics

Cost-Benefit Impact Assessment

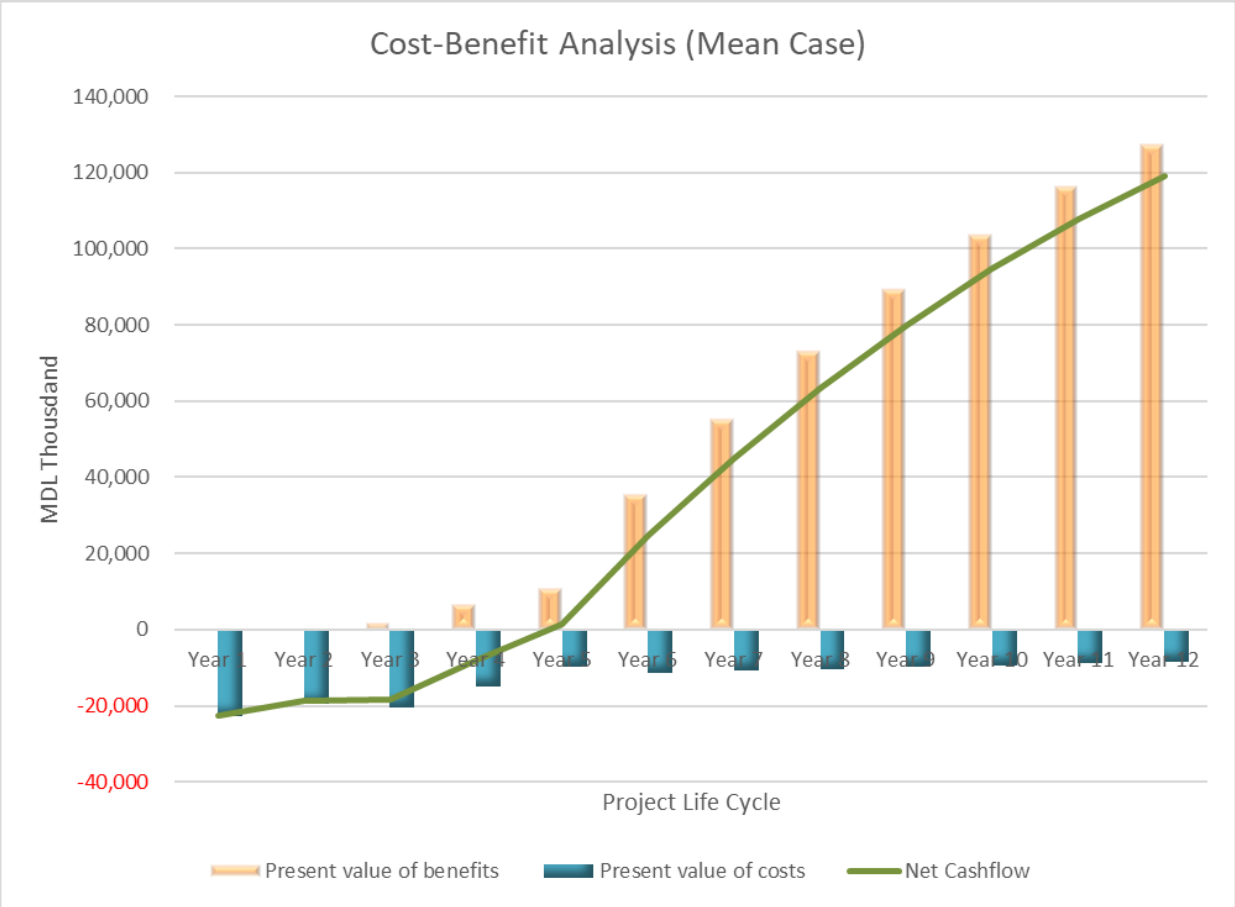
The financial values for the investment plan and on-going recurrent expenditure have been entered into a discounted cash flow spreadsheet to calculate the likely RoI using a standard Cost-Benefit Analysis approach.

The results for the mean case, can be summarized as follows:

Description	MDL (Thousands)	USD (Thousands)
Sum of discounted benefits	624,630	35,255
Sum of discounted costs	156,578	8,838
Benefit to Cost Ratio	**3.99**	
Cumulative Net Present Value	**468,052**	**26,418**

It is important to stress that this assessment is based upon quantification of around 20% of the identified use cases. If data and time were not constrained, and more case studies had been quantified, it is our expert opinion that the calculated RoI would be significantly higher.

The cash flow forecast is indicated in the chart below.



Business Case Sensitivity:

Lower bound (pessimistic case):

Benefit to Cost Ratio: 3.17 (reduction from 3.99 for mean case)

Cumulative Net Present Value: MDL 340 million (reduced from mean case MDL 468 million)

Upper bound (Optimistic case):

Benefit to Cost Ratio: 4.82 (increase from 3.99 for mean case)

Cumulative Net Present Value: MDL 598 million (increase from mean case MDL 468 million)

From the sensitivity analysis, we conclude that the policy advice that this is viable investment would not change even in the lower bound case.

A full analysis of the economic case for investment is provided in the accompanying Moldova Socio-economic Impact Assessment report.

12. Conclusions

It should be noted that any Action Plan is a living document. It will be refined and revised as additional information becomes available, as a consequence of more detailed planning, and will continue throughout the implementation period.