SUSTAINABLE FINANCING FOR THE IGIF:
DEVELOPING A “BANKABLE” INVESTMENT PLAN

Kathrine Kelm
Senior Land Administration Specialist
Land and Geospatial Team
Urban, Disaster Risk Management, Resilience and Land Global Practice
The World Bank Group

Introduction to the World Bank Group
The World Bank Group: Five Institutions

International Bank for Reconstruction and Development (IBRD) 1944

International Development Association (IDA) 1960

IFC International Finance Corporation 1956

ICSID International Centre for Settlement of Investment Disputes 1966

MIGA Multilateral Investment Guarantee Agency 1988

Finance to Government

Private Sector

Dispute settlement/arbitration

Guarantee Agency

US$ 20 million
How the World Bank is organized

Financing is allocated through the Ministry of Finance

Six Regions: Regional VP and Directors
- AFRICA
- EAST ASIA PACIFIC
- EUROPE AND CENTRAL ASIA (ECA)
- MIDDLE EAST & NORTH AFRICA
- LATIN AMERICA AND CARRIBEAN
- SOUTH ASIA

Operations:
- 100+ country offices
- Sustainable Development Group
  Urban, Disaster Risk Management, Resilience and Land Global Practice
- Portfolio US$ 40+ billion
Country Partnership Strategy/Framework: defines investment priorities
63. The Bank will also support the growth of Mongolia’s digital economy............ the ambitious goal of completing the eMongolia initiative in seven years. The new government has further prioritized the digital agenda. The pipeline Digital Transformation project....to build Mongolia’s digital and ICT industry for economic diversification and resilience.
The World Bank Group

Work with Countries: Financing Geospatial Information and Infrastructure

Kathrine Kelm, Dr. Lesley Arnold, Andrew Coote, Elmer Mercado, Bayarmaa Enkhtur, Hong Thu Thi Nguyen, Thai Quoc Ngo, Somunin Nhean, Enkhbayar Batmunkh, The Dzung Nguyen, Dr. Robin McLaren, Rumyana Tonchovska, Simon Wills
The IGIF was adopted by member states in August 2018. It provides a holistic view of geospatial information management through 9 Strategic Pathways.

http://ggim.un.org/meetings/GGIM-committee/8th-Session/documents/
OPERATIONALIZING THE IGIF

Overarching Strategic Framework

Why?

National Implementation Guide

What?

Country-level Action Plans

How, when, who?

Part 1

Part 2

Part 3

Adopted by UNGGIM August 2018

Adopted by UNGGIM August 2020

World Bank - toolkit for task teams and gov. counterparts
IGIF Country Level Implementation: Templates and Tools

Open and Available on the World Bank Open Learning Campus website

Diagnostic/Baseline Assessment
- Baseline Assessment
  World Bank Implementation Methodology

Business case
- Alignment to Policy/Business Drivers
- Socio-Economic Impact Assessment

Action/Investment Plan
- Action Plan
  World Bank Implementation Methodology
## Use Cases - relationship to sectors and investments required

<table>
<thead>
<tr>
<th>SECTORS</th>
<th>USE CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport</td>
<td>Transport Modelling, Traffic Operations, Road Safety, Street Works, Ride-sharing Apps</td>
</tr>
<tr>
<td>Land</td>
<td>Event Management, Mining Cadastre, Intelligent Transport Network, Census, Parking</td>
</tr>
<tr>
<td>Community Services</td>
<td>Urban Planning, Event Management, Mining Cadastre, Intelligent Transport Network, Census, Parking</td>
</tr>
<tr>
<td>Health</td>
<td>Mining Cadastre, Environmental Permitting, Waste Management, State Land Cadastre, Valuation, Earthquake Monitoring</td>
</tr>
<tr>
<td>Law</td>
<td>Business Registration, Business Intelligence, eGovernment, Community Services, Retail Apps</td>
</tr>
<tr>
<td>Security</td>
<td>Eco-tourism, Energy Sourcing, eGovernment, Community Services, Retail Apps</td>
</tr>
<tr>
<td>Disaster Management</td>
<td>Emergency Response, Crime Mapping, Location-based Services, Livestock Management, Disease Monitoring</td>
</tr>
<tr>
<td>Government Administration</td>
<td>Energy Sourcing, National Development Plan, Census, Retail Apps, Real Estate Apps</td>
</tr>
<tr>
<td>Water</td>
<td>Farm to Table, Rangeland Monitoring, Freehold Land Cadastre, National Development Plan</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Farm to Table, Rangeland Monitoring, Freehold Land Cadastre, National Development Plan</td>
</tr>
<tr>
<td>Energy</td>
<td>Marine</td>
</tr>
<tr>
<td>Tourism</td>
<td>Marine</td>
</tr>
<tr>
<td>SECTORS</td>
<td>USE CASES</td>
</tr>
<tr>
<td>Environment</td>
<td>Marine</td>
</tr>
<tr>
<td>Mining</td>
<td>Marine</td>
</tr>
<tr>
<td>Law</td>
<td>Marine</td>
</tr>
<tr>
<td>Security</td>
<td>Marine</td>
</tr>
<tr>
<td>Disaster Management</td>
<td>Marine</td>
</tr>
<tr>
<td>Government Administration</td>
<td>Marine</td>
</tr>
<tr>
<td>Energy</td>
<td>Marine</td>
</tr>
<tr>
<td>Tourism</td>
<td>Marine</td>
</tr>
</tbody>
</table>

### ACTIONS/INVESTMENTS

<table>
<thead>
<tr>
<th>Positioning</th>
<th>Imagery Acquisition</th>
<th>Data Capture</th>
<th>Data Integration</th>
<th>Data Sharing</th>
<th>Business Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. GNSS Network</td>
<td>e.g. Satellite and Drone Imagery</td>
<td>e.g. Land and Building cadastre</td>
<td>e.g. Street Address</td>
<td>Geoportal/Policy</td>
<td>e.g. AI and Machine-learning Applications</td>
</tr>
</tbody>
</table>
### Socio-Economic Impact and Benefits: Mongolia example

**Qualify/Quantify Impacts and Benefits across Public and Private Sectors**

<table>
<thead>
<tr>
<th>Ref</th>
<th>Impact</th>
<th>Evidence</th>
<th>Methodology</th>
<th>Benefit Recipients</th>
<th>Net Discounted Value of Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>National geospatial data sharing (addresses)</td>
<td>ALAMGC cost estimates and current data duplication</td>
<td>Multiplier effect of information sharing</td>
<td>Govt</td>
<td>Billion MNT: 12.0, US$: 4.5</td>
</tr>
<tr>
<td>2</td>
<td>Reduced Loss and Damage during Disasters</td>
<td>Substantial Case Study Expert predictions of reduced costs for future Forest Fires, weather and other natural disasters</td>
<td>Reasoned extrapolation from case study, statistics and expert opinion</td>
<td>Indirect</td>
<td>Billion MNT: 71.5, US$: 26.6</td>
</tr>
<tr>
<td>3</td>
<td>Faster emergency response in case of building fires, leading to savings in damage</td>
<td>Statistics supplied by NEMA. Global Geospatial Value studies</td>
<td>Reasoned estimation of potential savings, backed by expert opinion.</td>
<td>Indirect</td>
<td>Billion MNT: 14.5, US$: 5.4</td>
</tr>
<tr>
<td>4</td>
<td>Increased land use fees and taxes</td>
<td>Current revenues Volumes where premium rates apply</td>
<td>Estimation of proportions of land where premium rates of fees or taxes apply</td>
<td>Revenue</td>
<td>Billion MNT: 71.5, US$: 26.6</td>
</tr>
<tr>
<td>5</td>
<td>Increased collection of Property Tax</td>
<td>WB Study in Ulaanbaatar</td>
<td>Predictions of increased revenues for City Council</td>
<td>Revenue</td>
<td>Billion MNT: 7.1, US$: 2.6</td>
</tr>
<tr>
<td>6</td>
<td>Land Market Growth</td>
<td>Current real estate market size, Comparable study in Bulgaria</td>
<td>Local market analysis, validated by recent comparative study</td>
<td>Indirect</td>
<td>Billion MNT: 9.3, US$: 3.5</td>
</tr>
<tr>
<td>7</td>
<td>Urban Planning efficiencies from 3D City Model</td>
<td>In-depth EuroSDR study for Republic of Ireland</td>
<td>Benefits Transfer, validated by local expert opinion</td>
<td>Govt</td>
<td>Billion MNT: 6.9, US$: 2.6</td>
</tr>
</tbody>
</table>
Additional Tools for the Socio-economic Impact Assessment

Green Growth Use Cases

Cost Benefits Analysis

Generic Process Description
3. Socio-Economic Impact Assessment: Financing Justification

- Benefit to Cost Ratio: 2.5: 1
- Return on Investment: 250%
- Net Present Value: US$ 66.1 million

World Bank Infrastructure Project Model:
- Project Life Cycle:
  - 5 years development
  - 7 years operation
- Discount Rate: 6%
### Example from Colombia IGIF Action Plan

<table>
<thead>
<tr>
<th>Ref</th>
<th>Task Type</th>
<th>IGIF Pathway</th>
<th>Priority</th>
<th>Description</th>
<th>Total Investment (US$)</th>
<th>Capital or Recurrent</th>
<th>Funding Source</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Create an NSDI Business Model</td>
<td>Financial</td>
<td>Med</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Create inventory of existing data</td>
<td>Data</td>
<td>High</td>
<td>see also overlap with 6.3</td>
<td>30,000</td>
<td>C</td>
<td>WB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Train and Guide data owners to complete metadata</td>
<td>Data</td>
<td>High</td>
<td></td>
<td>50,000</td>
<td>C</td>
<td>Gov</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td>Define fundamental dataset &amp; custodians</td>
<td>Data</td>
<td>High</td>
<td>Consultancy advised</td>
<td>50,000</td>
<td>C</td>
<td>Gov</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4</td>
<td>Invest in data themes, prioritised to demand</td>
<td>Data</td>
<td>High</td>
<td>Depending on theme and demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td>Create digital archive of historical data and imagery</td>
<td>Data</td>
<td>High</td>
<td>Consultancy advised</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Cadastral Parcels - MPC</td>
<td>Innovation</td>
<td>High</td>
<td>MPC Subcomponent 3.2</td>
<td>19,500.00</td>
<td>C</td>
<td>WB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Ensure real time GNSS corrections are available</td>
<td>Innovation</td>
<td>High</td>
<td>System testing</td>
<td>20,000</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td>Evaluate imagery for updated topographic base maps</td>
<td>Innovation</td>
<td>High</td>
<td></td>
<td>20,000</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.3</td>
<td>Develop a Geospatial Centre of Excellence (CoE)</td>
<td>Innovation</td>
<td>Med</td>
<td>Assumes Head, 2 x trainers</td>
<td>250,000</td>
<td>C and R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4</td>
<td>Assess Geospatial Innovation start-up scheme</td>
<td>Innovation</td>
<td>Med</td>
<td></td>
<td>20,000</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5</td>
<td>Improve access to key registers</td>
<td>Innovation</td>
<td>Med</td>
<td></td>
<td>50,000</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Vision: **Geo-driven eGovernment and innovation** that empowers efficient and effective use of geospatial information towards national sustainable development and economic growth.

Financing through the WB- financed Digital Development Project: 2022
IGIF IMPLEMENTATION USING WB METHODOLOGY

Source: World Bank
Vietnam - National, Local and Sectoral Engagement 2018-2022

- 2018-2019: IGIF Diagnostic Tool was conducted to evaluate the current status of Vietnam’s Geospatial Information Management (GIM)
- $120m investment project- digital transformation of land sector information and services
- Technical Assistance for Land Policy Reform
- Expanding support for Sub-national programs
IGIF .....FROM NATIONAL TO SUB-NATIONAL

HO CHI MINH CITY – DIGITAL DEVELOPMENT AND SMART CITY PROGRAM
HO CHI MINH CITY: ASSESSMENT FRAMEWORK
LINKING DIGITAL GOVERNMENT + OPEN DATA + MUNICIPAL SPATIAL DATA INFRASTRUCTURE

DIGITAL GOVERNMENT

Leadership
Security
Capabilities
Infrastructure

User Focus
Processes
Data Analytics

Infra/Tech/Skills
Financing
Ecosystem

Common Data

OPEN DATA

Leadership
Policy/Legal Framework
Institutional Structure
Data in Govt

Demand

MUNICIPAL SDI

NSDI Diagnostic Tool Template: Guide to Scoring Indicators

1. Policy & Strategy

<table>
<thead>
<tr>
<th>No</th>
<th>Indicator</th>
<th>Scoring guide</th>
<th>Comments</th>
<th>Score and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Does a NSDI policy and/or strategy exist?</td>
<td>None</td>
<td>No, not documented, or being drafted</td>
<td>N/A</td>
</tr>
<tr>
<td>2</td>
<td>Is the NSDI policy and/or strategy comprehensive and well-defined?</td>
<td>None</td>
<td>Yes or no</td>
<td>N/A</td>
</tr>
<tr>
<td>3</td>
<td>Is the NSDI policy and/or strategy aligned with national policies and strategies?</td>
<td>None</td>
<td>Yes or no</td>
<td>N/A</td>
</tr>
<tr>
<td>4</td>
<td>Is the NSDI policy and/or strategy supported by adequate legal and regulatory framework?</td>
<td>None</td>
<td>Yes or no</td>
<td>N/A</td>
</tr>
</tbody>
</table>

2. Governance arrangements

<table>
<thead>
<tr>
<th>No</th>
<th>Indicator</th>
<th>Scoring guide</th>
<th>Comments</th>
<th>Score and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Does a NSDI governance arrangement exist?</td>
<td>None</td>
<td>No, not documented, or being drafted</td>
<td>N/A</td>
</tr>
<tr>
<td>2</td>
<td>Is the NSDI governance arrangement comprehensive and well-defined?</td>
<td>None</td>
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Current World Bank financing covers approx. 30% of the country… other 60%??

The WB team supporting the client to prepare a National Land Information System Action/Investment plan:
- To Complete the NLIS
- To adopt a sustainable business model for the future (PPP, self-financing, national investment, decentralized investment)
### Framework for Effective Land Administration: Nine Strategic Pathways

<table>
<thead>
<tr>
<th>Frameworks</th>
<th>Requirements</th>
<th>Pathways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency and accountability increased</td>
<td>Accountable and transparent governance</td>
<td>Governance, Institutions and Accountability*</td>
</tr>
<tr>
<td>Gender-responsive and inclusive of vulnerable groups</td>
<td>Inclusive and recognizes all forms of tenure</td>
<td>Policy and Legal</td>
</tr>
<tr>
<td>Affordable investments and economic return assured</td>
<td>Affordable with sustainable business models</td>
<td>Financial</td>
</tr>
<tr>
<td>Reliable data and service quality attained</td>
<td>Data maintained, secure and not duplicated</td>
<td>Data</td>
</tr>
<tr>
<td>Responsible and innovation oriented</td>
<td>Upgradable systems and approaches</td>
<td>Innovation</td>
</tr>
<tr>
<td>Interoperability and integration supported</td>
<td>Considers internationally agreed standards</td>
<td>Standards</td>
</tr>
<tr>
<td>Cooperation, partnerships, and participation leveraged</td>
<td>Strengthens partnerships and supports collaboration</td>
<td>Partnerships</td>
</tr>
<tr>
<td>Capacity, capability, knowledge transfer and exchange attained</td>
<td>Facilitates capacity development and knowledge transfer and exchange</td>
<td>Capacity and Education</td>
</tr>
<tr>
<td>National engagement and communication enhanced</td>
<td>Advocates for effective land administration</td>
<td>Advocacy and Awareness*</td>
</tr>
</tbody>
</table>

*World Bank Group*
Governance, Institutions and Accountability: to understand: (i) the existing leadership and level of commitment to the NLIS; (ii) the governance models (roles and responsibilities) currently in place and the various institutional arrangements that need to be considered for the ongoing NLIS operations; (iii) the value proposition of the NLIS to stakeholders and their strategic needs and use cases moving forward; and (iv) the accountability and authorization processes that need to be considered to achieve high-level endorsement for their (the stakeholder’s) participation in the NLIS.

Policy and Legal: to understand: (i) the existing policy and legal environment associated with the existing NLIS infrastructure; (ii) the policy gaps and legal interoperability issues that need to be addressed to enable data sharing; (iii) the existing institutional mandates and their impact on the effective, efficient and secure management of the future NLIS; and (iv) the scalability and adaptability of the existing legal and policy framework in respect to emerging land information technologies and innovations.

Financial: to understand: (i) the current NLIS business and operating models in place across Vietnam from national to provincial level; (ii) the current investment process and how benefits, both financial and non-financial, are monitored; (iii) the NLIS use cases and how they make for a compelling business case for a MPLIS; (iv) the avenues available to achieving a financially sustainable NLIS including the market for land information services; (v) the policies that will either support or negatively impact on the future business operating environment.
Data: to understand: (i) how LIS data is currently collected and managed and how it can be integrated within the future NLIS; (ii) the level of accuracy, currency, completeness of existing records and data pertaining to the LIS infrastructure; (iii) how the data is organized, planned, acquired, integrated, curated, published and archived, (iv) the primary users of the data (e.g., land administration agencies), how they consume data and use LIS services, and if they on-supply data in the same or different format.

Innovation: to understand: (i) the level of technology maturity in LIS infrastructures at a national and provincial level with a view to gauging where innovation, process improvement and/or leapfrog opportunities need to occur; (ii) existing and planned projects involving LIS infrastructure; (iii) appetite for MPLIS infrastructure and national leadership and coordination through MONRE; and (v) existing support networks and systems that are stimulating innovation.

Standards: to understand: (i) existing schema and specifications for digital data associated with the LIS infrastructure; (ii) the existing standards used for IT infrastructure and level of compliance; (iii) the level of interoperability of current software systems and data; (iv) whether a community of practice on standards exists, and how this community can be leveraged at the national level.
- **Partnerships:** to understand: (i) the existing LIS partnerships in place and the agreements used to establish these partnerships, (ii) the appetite for building new partnerships including collaborations between government agencies and with provinces, public-private-partnerships, regional cooperation, and research and development with academic sector etc.; and (iii) the level of international engagement and participation anticipated in MPLIS program, as well as the alignment of the UN-GGIM Framework for Land Administration (FELA).

- **Capacity and Education:** to understand: (i) the level of LIS understanding; (ii) the current secondary and tertiary education opportunities in LIS and related geospatial science; (iii) the level of LIS competency within each stakeholder organization; (iv) the capacity gaps as seen by the stakeholders themselves; and (v) the level of entrepreneurship in the government and private sector - where LIS services are available.

- **Advocacy and Awareness:** to understand: (i) the existing communication methods and plans in place to raise awareness of the MPLIS – its value and application; (ii) the types of existing advocacy and outreach programs; and (iii) the current synergies and levels of trust between stakeholders – particularly between government (at all levels), private sector, academia and the user community.
Action Plan and Implementation Schedule - to guide financing and investment plan

2023

- NLIS Governance and Operating Governance Model
- Data Acquisition, DQI and updating is ongoing
- Metadata Approval of project investment policy, FS and procurement plan
- Establish Innovation Program
- Monitor and Assess Emerging Technologies
- Develop Business Cases
- Focus on Partnerships

2024

- NLIS Portal, database and software & Security
- Data Transformation
- NLIS Training
- DQI and Updating
- Data Acquisition Program
- Community Skills Development
- Data and System Integration, System Upgrades – National Level
- Product Development
- Marketing
- Policy Engagement

2032

- Innovation Program
- Focus on Partnerships
- Develop Business Cases
- Est. User Group
Financing IGIF Implementation: World Bank Project Cycle

**Easiest and ‘immediate’: Add in to or Guide existing projects**
- Land Administration: Colombia, Moldova, Guyana, Serbia
- Disaster Risk Management: Seychelles

**Projects in the Pipeline (12-24 months)**
- Georgia: Irrigation and Land Administration $100+m
- Nicaragua: land administration
- Liberia (analytics under existing land project; new financing under urban project)
- Mongolia: Digital Development project – IGIF reference in Project Appraisal Document

**New Financing: 18+ months**
- Most projects start with analytics (IGIF tools/Templates provide basis)
- Senegal
Thank you!

kkelm@worldbank.org

IGIF Self-paced Online Learning available free of charge

https://olc.worldbank.org/