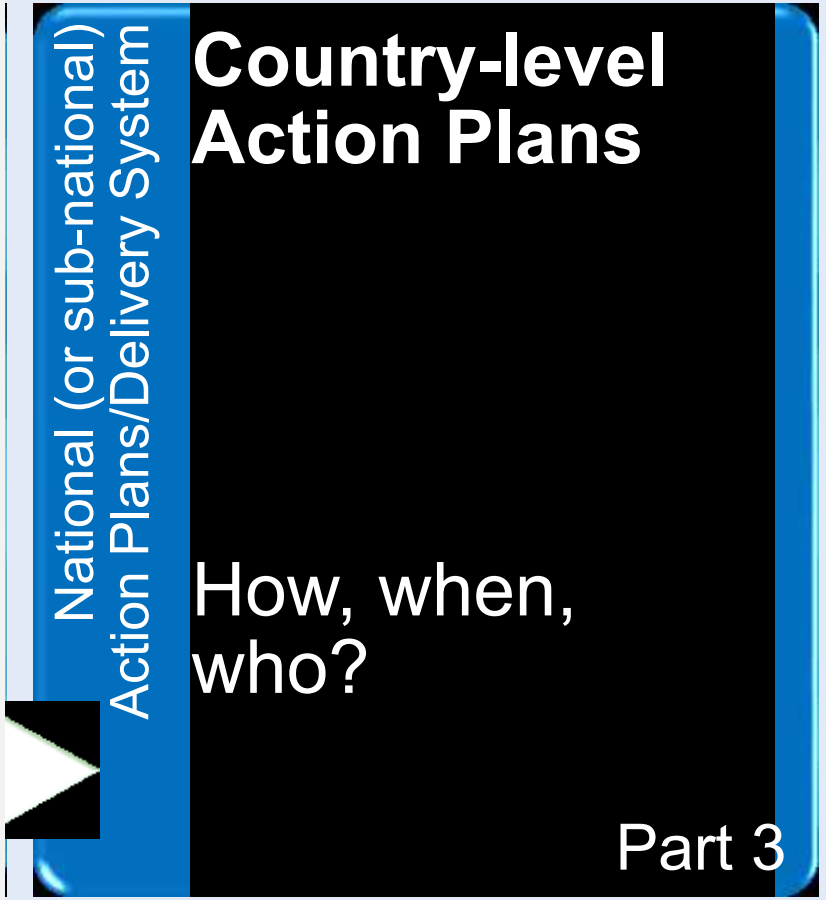
Presented at the FIG Working Week 2019,
April 22-26, 2019 in Hanoi, Vietnam.

Integrated Geospatial Information Framework (IGIF)

Implementation and Financing at National and Local Levels

Rumyana Tonchovska, UNFAO
Kathrine Kelm, World Bank

OPERATIONALIZING THE IGIF



Adopted by UNGGIM August 2018

Draft to be presented at the UNGGIM meeting in August 2019

WB-FAO - developing toolkit for task teams/counterparts and conducting pilots

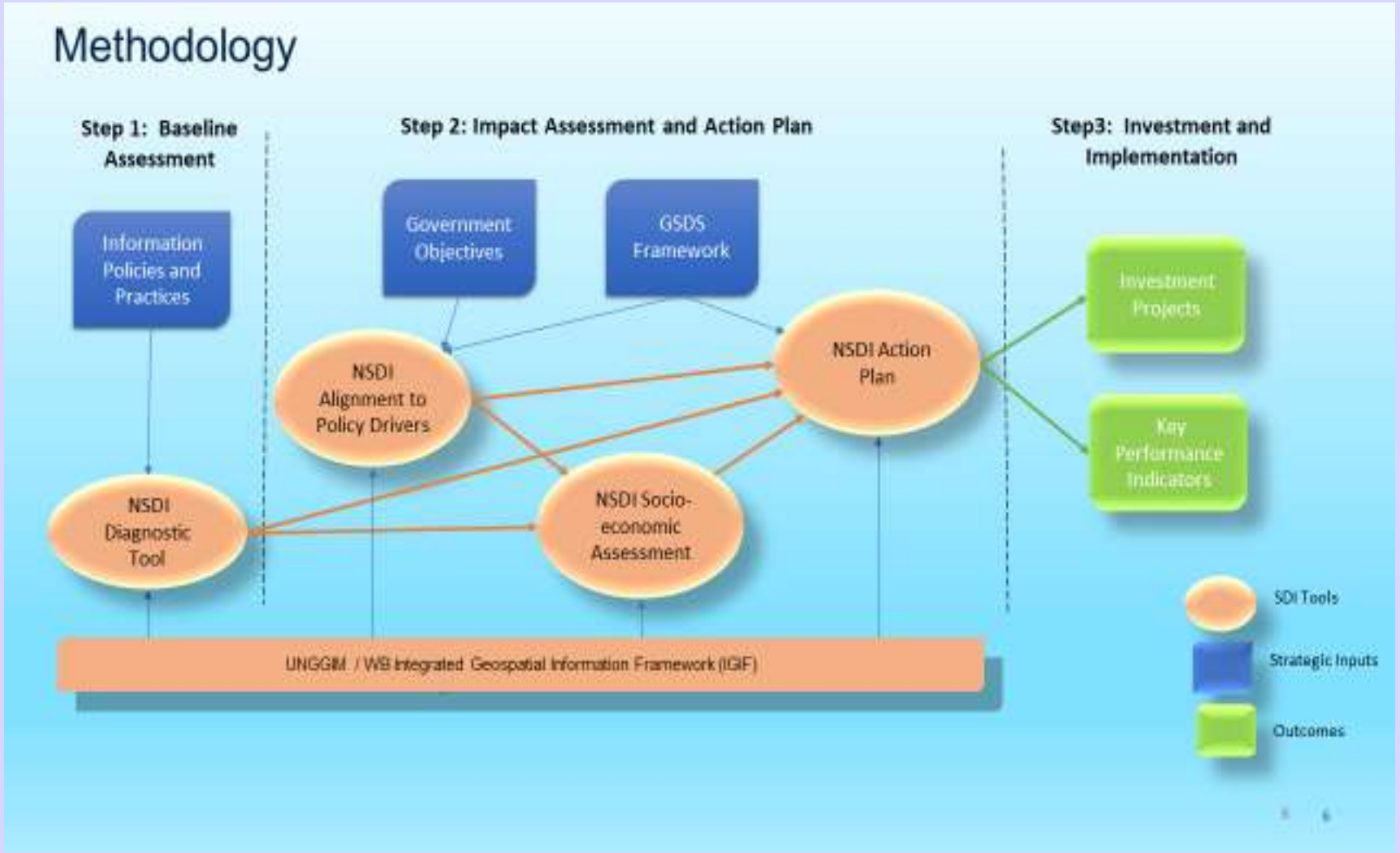
IGIF COUNTRY LEVEL IMPLEMENTATION METHODOLOGY

Step. 1: Diagnostic
- Initial Assessment
- Country Diagnostic Report

Step 2: Action Plan
2.1. Business case
- Geospatial Alignment to Business Drivers
- Socio-Econ analysis

2.2. Action Plan

Step 3. Implementation
- Investment projects
- KPI
- Risks



Food and Agriculture Organization of the United Nations

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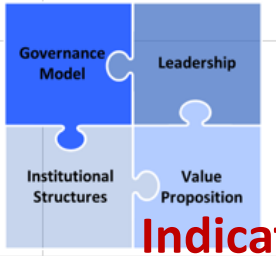
IGIF TEMPLATES

VIETNAM: IGIF National Diagnostic Report, March 2019

STRATEGIC PATHWAY 1

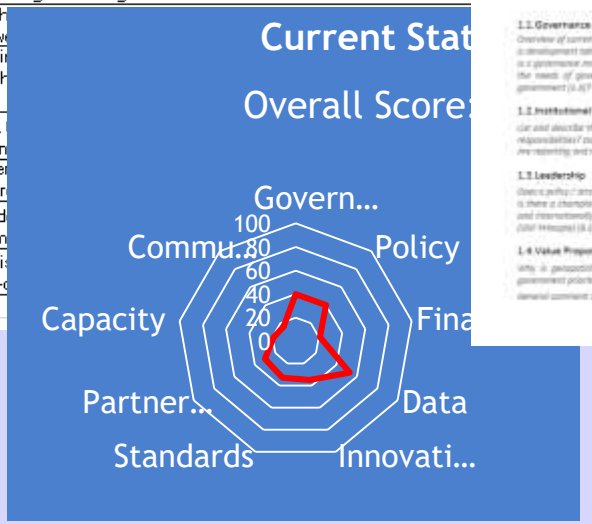


Governance and Institutions

This strategic pathway establishes the leadership, governance model, institutional arrangements and a clear value proposition as a means to strengthen multi-disciplinary and multi-sectoral participation and a commitment to achieving an Integrated Geospatial Information Framework. The objective is to attain political endorsement, strengthen institutional mandates and build a cooperative data sharing environment through a shared understanding of the value of an Integrated Geospatial Information Framework, and the roles and responsibilities to achieve the vision.

Indicator **Scoring Guide** **Notes from Interview** **Score** **Guidance**

	Indicator	Scoring Guide	Notes from Interview	Score	Guidance
1.1	Is there a NSDI "champion" in Government?	None=0; role defined=25; defined and person exists=50; Active=75; Tangible outcomes from role=100		0	Is there a clearly identifiable individual(s) actively promoting SDI, resulting in tangible outcomes towards the development and
1.2	Is there a NSDI Coordinating body?	None=0; body defined=25; defined and ToR=50; ToR and persons nominated=75; In existence and		0	This should be cross sector, and across levels of Government. Could be officially designated or de facto.
1.3	Is the NSDI Coordinating body represented at senior / top level in government?	None=0; role defined=50; defined and ToR exist=50; Defined, ToR, people in place=75; Staffed and		0	Is there someone from the co-ordinating body representing it at the top level of Government .e.g. a cabinet level minister?
1.4	Is the coordinating body supported by an active secretariat?	None=0; role defined=25; defined and ToR exist=50; defined, ToR and staffing identified=75; Staffed and Active=100		0	Has a NSDI secretariat been defined, mandated, and is actively supporting the NSDI governance structure?
1.5	Are there clear Terms of Reference (ToR) for the Coordinating Body?	None=0; Need for ToR recognised=25; being drafted=50 Exists=75; Exists and being used=100		0	Has th... follow...
1.6	Does the coordinating body actively reach out to all levels of government (including local government) and other stakeholders (private sector, NGOs, volunteering sector)?	None=0; Responsibility acknowledged=25; Strategy (ToR) in place for this=50; Liaison with some levels=75; All levels=100		0	This i... with th...
1.7	Are there Working Groups supporting SDI development? e.g. technical, standards, legal, service development)?	None=0; roles defined=25; Some exist=50; All set up=75; All active=100		0	Work ... and in...
1.8	Is there a user group / forum available for consultation and providing user feedback / requests?	None=0; informal channels=25; formal role defined=50 Exists=75; Exists and active=100		0	A user... requir...
1.9	Does the national "champion" actively interact with the global and regional geospatial community?	None=0; role defined=25; Person in role=50; Active Regionally=75; Active Globally=100		0	The d... comm...
1.10	Are there linkages between the coodinating body and those developing the e-Government agenda?	None=0; need identified=25; being drafted=50; In place=75; Being used=100		0	This i... of co-...
				0	



Initial version conducted in 15 countries 2017-2018
IGIF version conducted in: Guyana, Vietnam, Seychelles

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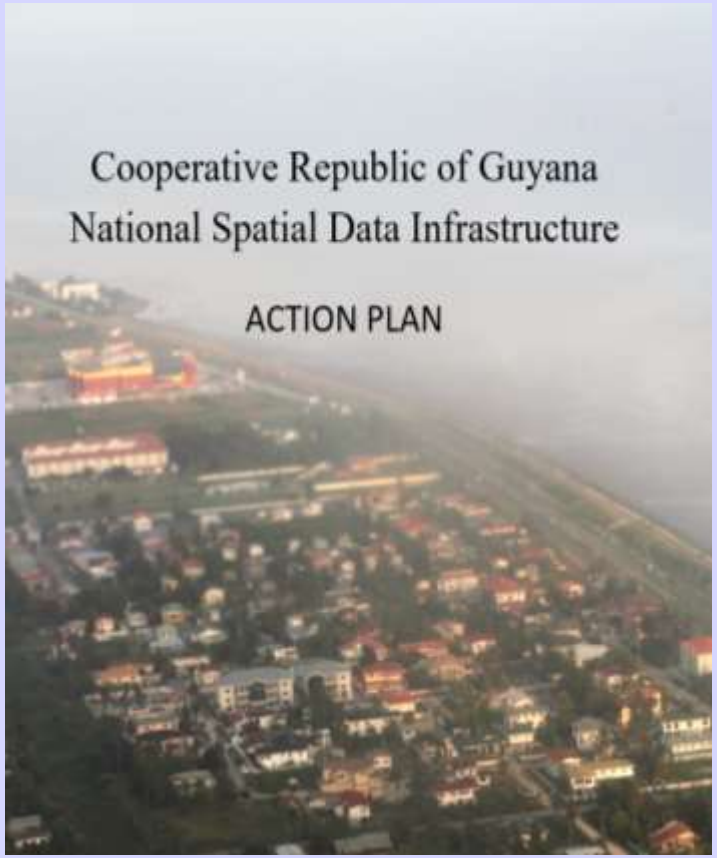
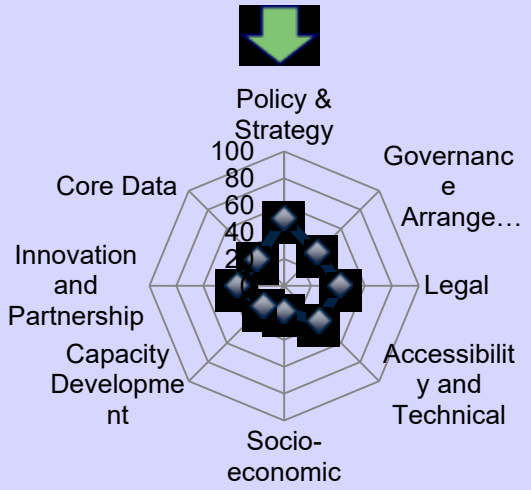
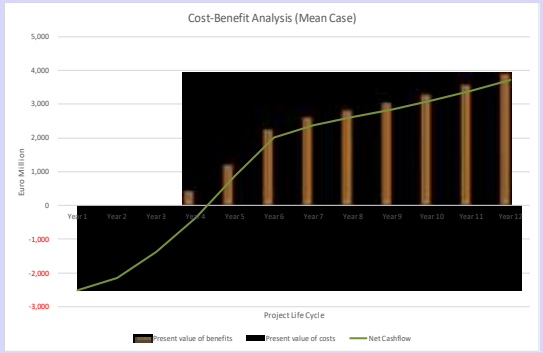
GUYANA: IGIF ACTION PLAN



Food and Agriculture Organization of the United Nations



National Policy Drivers



ACTION PLAN

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Strategic Alignment with Government Policy Drivers
Socioeconomic Benefits
NSDI Vision and Mission
Goals: What will NSDI success look like?
Action Plan
Conclusions

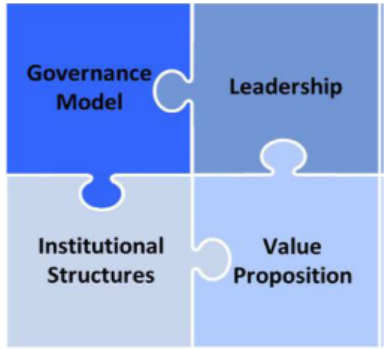
GUYANA: ACTION PLAN

7. Strategic Pathways

In this chapter we outline the recommended Action Plan in terms of the IGIF strategic pathways. It includes an overview of the current situation, summarized from the current state diagnostic report and possible measures by which the success of Actions can be evaluated, referred to as Key Performance Indicators (KPIs).

The following chapter then arranges these in the form of an outline implementation program.

7.1. Governance and Institutions



Governance and Institutions *This strategic pathway establishes the leadership, governance model, institutional arrangements and a clear value proposition to strengthen multi-disciplinary and multi-sectoral participation and a commitment to achieving an Integrated Geospatial Information Framework.*

The objective is to attain political endorsement, strengthen institutional mandates and build a cooperative data sharing environment through a shared understanding of the value of an Integrated Geospatial Information Framework, and the roles and responsibilities to achieve the vision.

7.1.1. Action 1.1: Ministerial Approval of National Geospatial Policy (High Priority)

Overview of Current Situation

The policy has been further revised based on the emerging action plan and ECLAC input.

Another round of consultation is not necessarily helpful as the policy is only setting a framework, which should be fleshed out by regulation, so the Commissioner could proceed direct to Ministerial approval now. The feeling from stakeholders throughout this study has been that GLSC need to "get on with it".

Strategic Alignment

This is a necessary underpinning to all use cases. Particularly NSDI Institutional collaboration (use case3.1).

Tasks:

- Soliciting set of supportive letters from major stakeholders to this effect may be helpful.
- Sensitise relevant Permanent Secretary-level representative(s) in stakeholder organisations, through a briefing session on the Action Plan.

For supporting communication plan, see strategic pathway on communication and engagement.

7.1.2. Action 1.2: Establish Geospatial Advisory Committee (GAC) (High Priority)

Overview of Current Situation:

Tasks:

- An initial "summit" meeting to agree priorities, based upon the final agreed action plan, may be useful.
- One of the most obvious first priorities is the need for coordination of the existing initiatives to avoid wasteful duplication of effort and ensure proper curation of their information products, without stifling innovation or their overall objectives.

7.1.3. Action 1.3: Establish Working Groups (Medium Priority)

Overview of Current Situation

No bodies currently exist to advance the technical development of the NSDI. An informal exercise has been undertaken to identify persons in stakeholder organisations who would be capable of participating in these working groups. The GAC will need to ratify these recommendations.

Strategic Alignment

This supports most directly use cases on geostatistical integration 4.1,4.2, blue economy (use case 8.2), air navigation (use case 8.3) and improving capacity and skills of human resources (use cases 7.1,7.2)

Tasks:

The working groups should be led by specialist members of the GAC and will specify practical steps and decisions to guide execution of the projects defined by the Action Plan. The groups that need forming first are:

- Standards and Guidelines: to implement technical interoperability.
- Data Content: to agree missing (or out of date) content of fundamental data themes (e.g. land use)
- Architecture: defining a distributed technical architecture for the NSDI to foster data sharing and collaboration.
- Geographical names approval (no current body)
- Innovation: including setting up a Centre of Excellence.
- Education and Capacity.

The Working Groups need to be properly established by the development of Terms of Reference (ToR) and appropriate work plans.

7.1.4. Key Performance Indicators

The following possible indicators are identified:

i) Geospatial Policy approved within 3 months.
ii) GAC and working groups established and operational within 6 months.

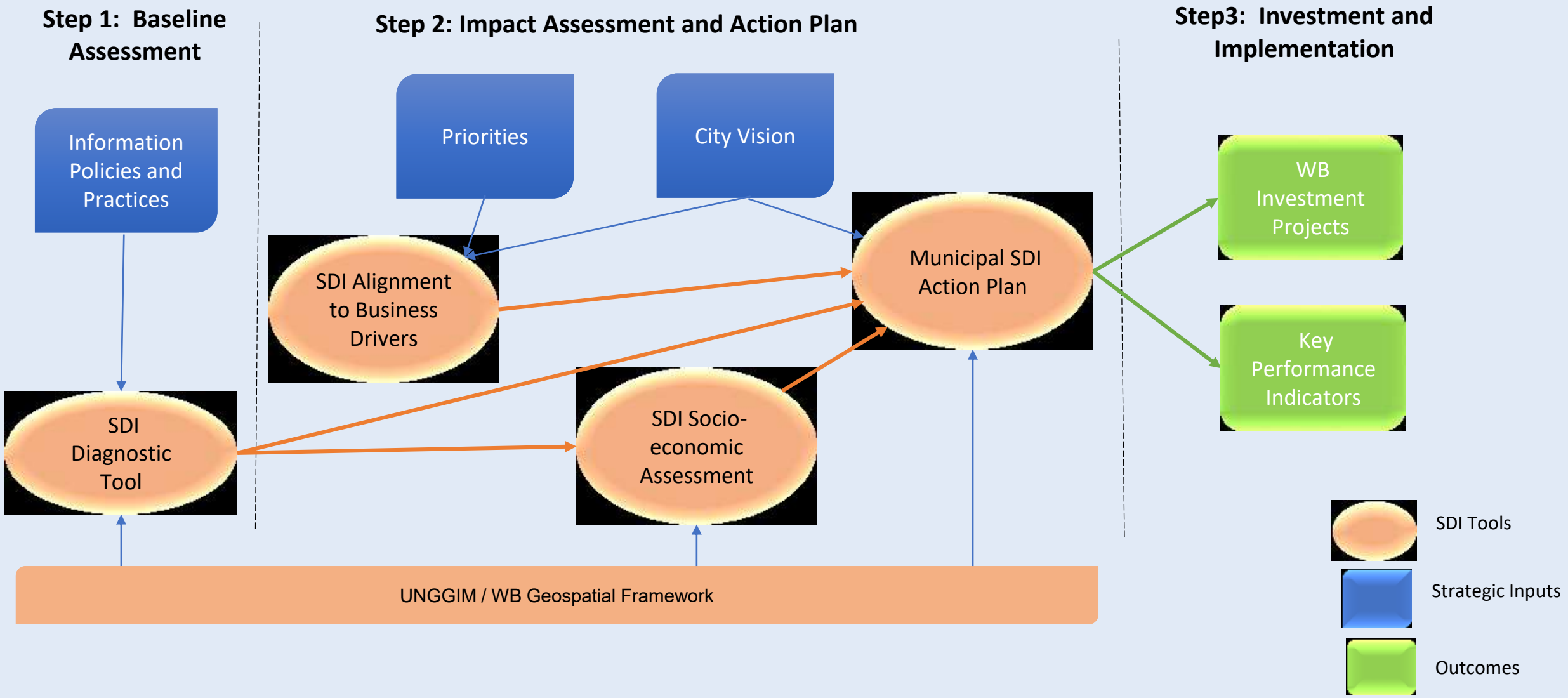
GUYANA: IMPLEMENTATION PLAN

Task Type					Financial			Timeframe								Comments
Action Ref	Title	GGIM Strategy Pathway Type	Priority	Description	Total Investment (US$)	Capital or Recurrent	Funding	Start Date	End Date	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	
	Section 1: Program Management															
1.1	Secretariat Support to Geospatial Advisory Group (GAC)				486,340	C		1.00	6.00							Note: Secretariate Support Costs only. Members assumed self-financing.
1.2	Program and Change Management				217,952	C		0.75	6.00							
	Title	GGIM Strategy Pathway Type		Description	Total Investment (€k)					Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Comments
	Section 2: Strategic Actions															
1.1	Ministerial Approval of National Geospatial Policy	Governance and Institutions	High		0	C		1.00	1.25							Use of existing resources
				Soliciting set of supportive letters from major stakeholders.												
				Sensitise relevant Permanent Secretary-level representative(s) in stakeholder organisations, through a briefing session on the Action Plan.												
1.2	Establish Geospatial Advisory Committee (GAC)	Governance and Institutions	High		0	R		1.25	1.50							Use of existing resources
				An initial "summit" meeting to agree priorities, based upon the final agreed action plan, may be useful.												
				Coordination of the existing initiatives to avoid wasteful duplication of effort and ensure proper curation of their information products, without stifling innovation or their overall objectives.												
1.3	Establish Technical Working Groups	Governance and Institutions	Medium		0	R		1.50	2.00							Use of existing resources
				Standards and Guidelines: to implement technical interoperability.												
				Architecture: defining a distributed technical architecture for the NSDI to foster data sharing and collaboration.												
				Innovation: including setting up a Centre of Excellence.												
				Education and Capacity Building.												

FROM NATIONAL …….TO SUB-NATIONAL

MUNICIPAL GEOSPATIAL ACTION PLAN Tirana, Albania

APPROACH: IGIF STRUCTURE FOR SUB-NATIONAL LEVEL



IGIF: MUNICIPALITY OF TIRANA, ALBANIA

- **Largest City in Albania**, recently enlarged to incorporate surrounding rural areas
- **Tirana 2030 Plan** envisages more the **doubling of size**:

  Current Population (est) 650,000…. Projected in 2030 1,6 million

- **Request for assistance from the City Mayor** :

" In its daily activity, Tirana Municipality encounters endless problems - land registration is still incomplete, and service provisions, territorial planning, decentralization initiatives and tourism development ***are limited by the lack of current and accurate spatial and land ownership information."***

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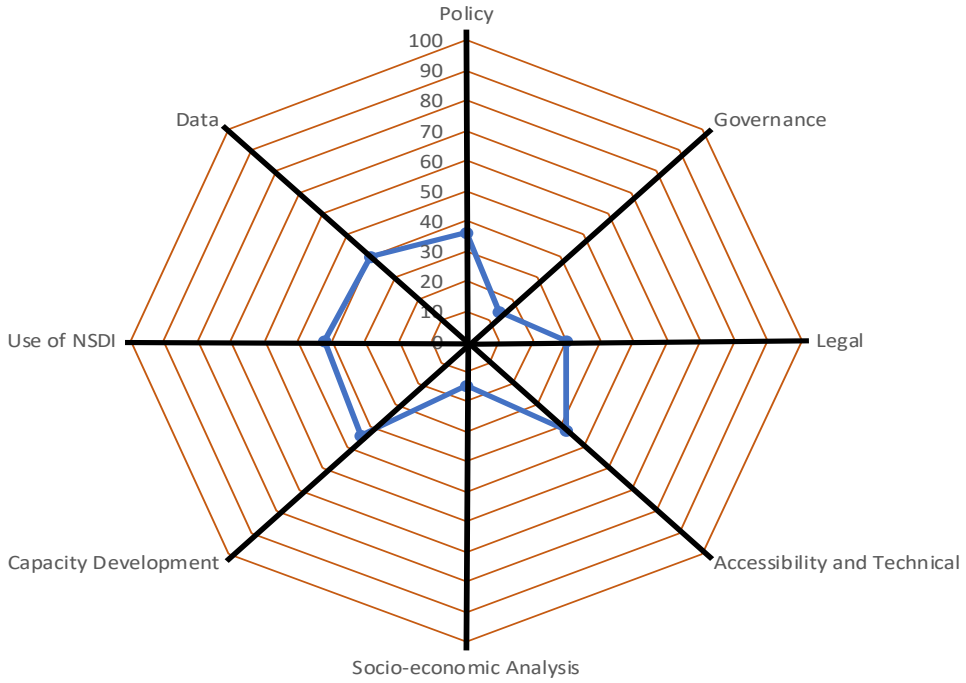
RESULTS OF DIAGNOSTIC – CURRENT STATUS

NSDI Diagnostic Tool Template: Guide to Scoring Indicators

1. Policy & Strategy				
No	**Indicator**	**Scoring guide**	**Comments**	**Score and notes**
1.1	Does a NSDI policy and/or strategy exist, and is it "signed off" by government	None / not discussed=0; Planned /being drafted=25; Draft exists=50; Under Review=75; Exists and signed off=100	Policy should include vision / mission statements and road map.	Yes =100
1.2	Is there a NSDI policy and/or strategy Monitoring and Evaluation Framework / Mechanism set up?	None=0; Being drafted=25; Draft exists=50; Under Review=75; Exists and is being implemented=100	Is there a way of checking to see if the policy, if it exists, is achieving its objectives?	Yes=100
1.3	Is the NSDI aligned to high-level Government information policies (e.g. e-Government, Open Data, Statistics)	No=0; Aligned to some=50; Yes, fully integrated/harmonised=100	When the NSDI policy is designed was it done with overall Government policy in mind? – i.e. is it designed to support Gov' policy – in planning, implementation etc	Yes=100
1.4	Is there a NSDI Engagement strategy?	None=0; Being drafted=25; Draft exists=50; Exists and being implemented=100	Or a communication plan? including stakeholder analysis, segmentation and targeted activities	Yes=100
1.5	Is there a policy to make geospatial (and other) data accessible through "Open Data"?	None=0; Being drafted=25; Draft exists=50; Under Review=75; Exists and is being implemented=100	Is there an Open Data policy, and does this recognise and include NSDI?	Yes=100

2. Governance arrangements				
No	**Indicator**	**Scoring guide**	**Comments**	**Score and notes**
2.1	Is there a NSDI "champion" in Government?	None=0; Exists=50; Exists and active=100	Is there a clearly identifiable individual(s) actively promoting NSDI, resulting in tangible outcomes towards development and implementation of NSDI?	General Director of ALRC is also a member of the Government=100
2.2	Is there a NSDI Coordinating body? (policy/funding level)	None=0; Exists=50; Exists and active=100	This should be cross sector, and across levels of Government. Could be officially designated or de facto	Steering body being created for NSDI – in draft = 50
2.3	Is the NSDI Coordinating body represented at senior / top level in government?	No=0; Yes=50; Yes, by a senior Minister=100	Is there someone from the co-ordinating body representing it in the top level of Government .e.g. a cabinet level minister?	"Steering Body" Being designed, awaiting government approval = 50
2.4	Is the coordinating body involved in developing e-Government / Open Data / Statistics governance policy	No=0; Involved to some extent, some communication between players=25; Considerable communication between players=50; Yes, fully integrated / involved with relevant policy development=100	When Government policy is being decided, is there anyone to speak up for the role NSDI can play?	No, steering body still being designed and put in place=50



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ALIGNMENT OF INTERVENTIONS TO BUSINESS DRIVERS: TIRANA 2030 PLAN

Objective	Facilitated by:
Digital Government	Cadastral Upgrade to register state land and agricultural land on City fringe, 3D City models for valuation and taxation, participation in development of key registers, particularly completion of the National address database
Urban Regeneration	Upgrade of fundamental spatial datasets for master planning, formalised data sharing, spatial-enabled permitting, better real estate asset management
Accessible City	Spatially-enabled transport modelling, open geo-information for public mobile apps to increase public transport efficiency and minimise congestion
Flood Management	Overlays of critical infrastructure and population on Digital Elevation Models for smart zoning, evacuation planning and disaster recovery
Reduced Environmental Pollution	Using 3D models to predict air and noise pollution levels, reduction in congestion through better transport planning and building permit control
Quality Human Resources	Applied GIS education in local University. Improved internal communication of socio-economic benefits of a Municipal Spatial Data Infrastructure
Economic Competitiveness	Geovation program – stimulating innovation in the use of open geospatial information to generate new jobs in ICT and other sectors
Tourism Growth	Spatial-enabling market analysis and online promotion of Tirana as a destination

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SOCIO-ECONOMIC IMPACT ASSESSMENT

Business Benefits

New products and services

Additional Jobs

Growth of the land market

Stimulates Tourism

Agricultural Productivity

Consumer Benefits

Fuel efficiency

Travel time savings

Environmental/Social Benefits

Improved Social Cohesion- Reduced Land-related Court Cases

Public Sector

- Meet European Union Accession req.
- Reduced costs from Geospatial Data Sharing
- Enhance National Key Registers
- Increased Income from Taxation
- Additional Land Value Capture
- More Responsive Master Planning
- Faster Emergency Response

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ACTION PLAN: PRIORITY INTERVENTIONS AND INVESTMENTS

Governance (€325k)

- Management Group; Program management; Data sharing regulation

Integrated Land Management Plan Interventions (€10.5m)

- Implementing and enhancing Key Registers (€2.2m)
- Cadastral Upgrade (€7.8m)
- Taxation System (€375k)
- Enhanced Land Value Capture (€75k)

Geospatial interventions (€4.4m)

- Improved City Spatial Data Management (€1.0m)
- 3D City Model (€1.15m)
- Mobile GIS for Operations (€465k)
- Satellite Imagery-based Systems for Agri-business (€835k)
- City Open Data (€300k)
- Sponsorship of Applied GIS Professorship (€500k)
- City Geospatial Advisor (€115k)

Total Investment: € 15.5

Return on Investment (RoI)
Provisional benefit to cost ratio: 3:1
Significant costs of Inaction

Assumes conservative values for all impacts
Not all impacts quantified
Financial Model: project life cycle of 12 years
- 5 year implementation + 7 year use
- Based on 12% discount rate

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ACTION PLAN: PRIORITY INTERVENTIONS AND INVESTMENTS

Implementing and enhancing Key Registers (€2.2m)

Title	GGIM Strategy Pathway Type	Intervention	Total Investment (€k)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Section 2: ILMP Related Interventions									
Key Registers									
	Governance and Institutions	Agree business processes with custodians and associated stakeholders, e.g. Municipalities, for maintenance of Key Registers	20						
	Technical	Upgrade ICT solutions custodians and associated stakeholders to support key registers and their interoperability.	1,667						
	Data	Implement data quality assessment and improvement programs for all Key Registers. This will be incrementally implemented by geographical priorities.	533						

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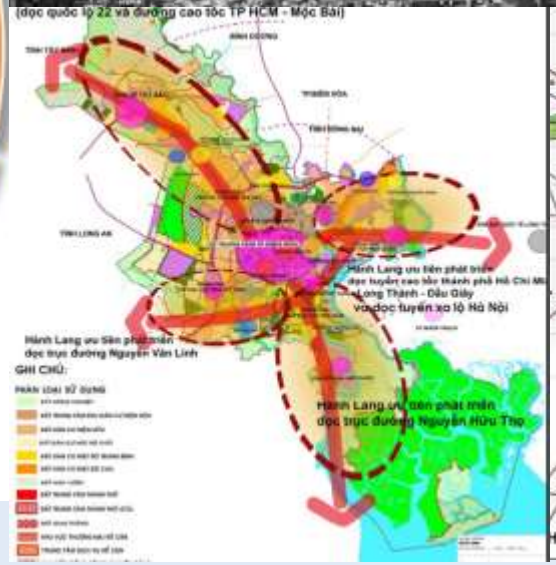
FROM NATIONAL …….TO SUB-NATIONAL

HO CHI MINH CITY - SMART CITY PROGRAM

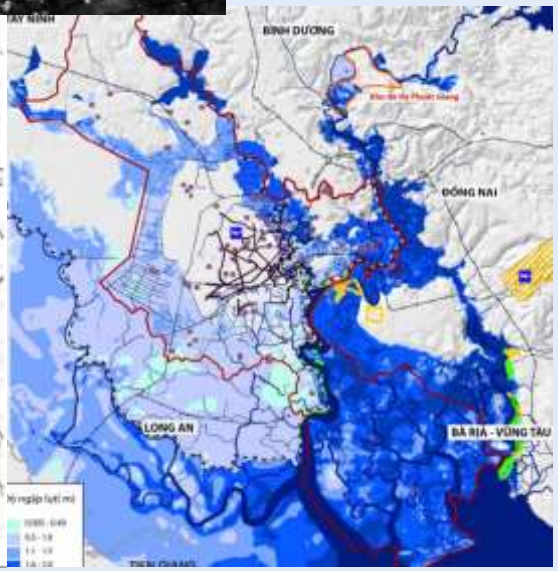
FROM NATIONAL TO SUBNATIONAL SPATIAL DATA INFRASTRUCTURE
HO CHI MINH CITY - SMART CITY PROGRAM

HO CHI MINH CITY
7 BREAK-THROUGH PROGRAMS
2016-2020



PRIORITY CORRIDORS

GREEN SPACE PLAN

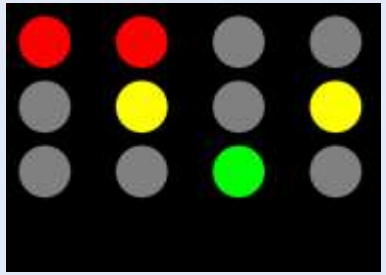


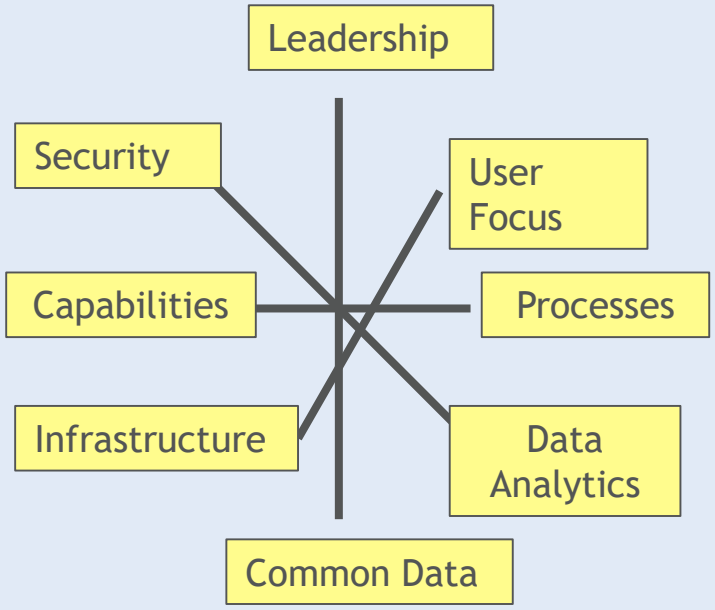
FLOODING SCENARIO 2050

HO CHI MINH CITY: ASSESSMENT FRAMEWORK

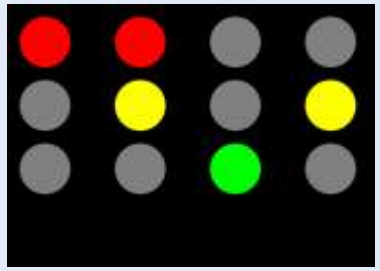
LINKING DIGITAL GOVERNMENT + OPEN DATA + MUNICIPAL SPATIAL DATA INFRASTRUCTURE

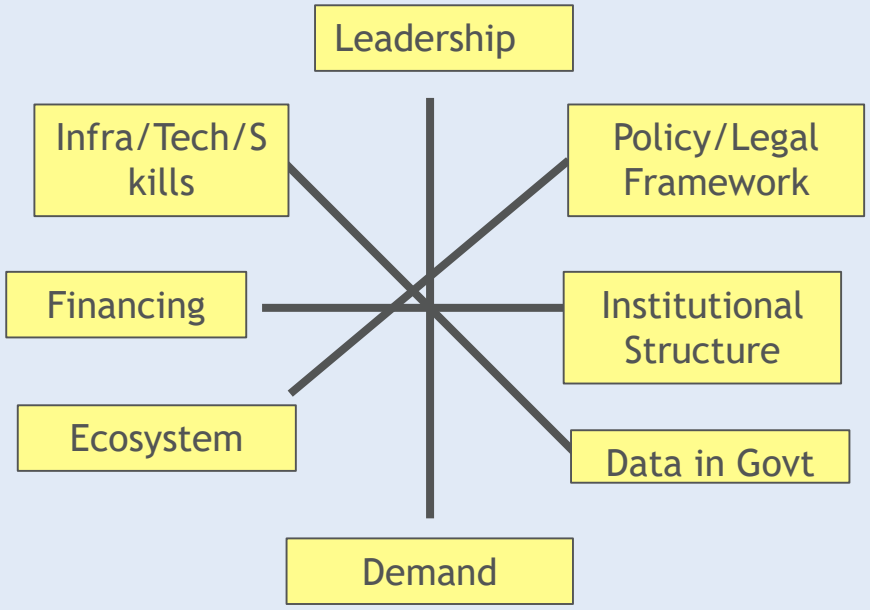
DIGITAL GOVERNMENT



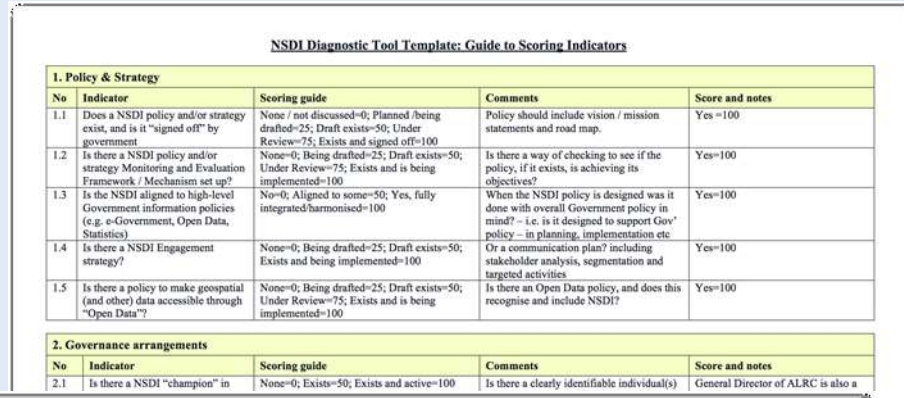


OPEN DATA





MUNICIPAL SDI



NSDI Diagnostic Tool Template: Guide to Scoring Indicators

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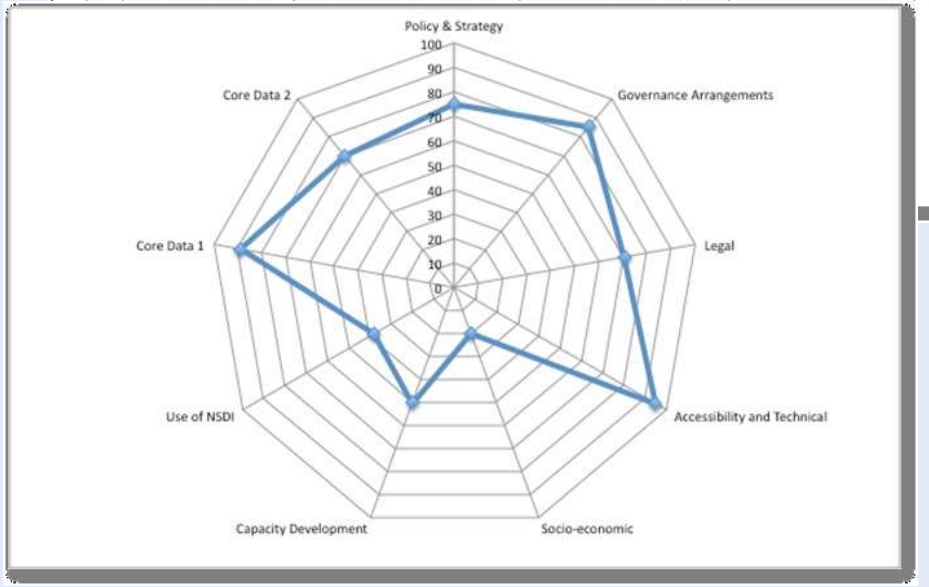
1.3	Is the NSDI aligned to high-level Government information policies (e.g. e-Government, Open Data, Statistics)	No=0; Aligned to some=50; Yes, fully integrated/harmonised=100	When the NSDI policy is designed was it done with overall Government policy in mind? – i.e. is it designed to support Gov' policy – in planning, implementation etc	Yes=100
1.4	Is there a NSDI Engagement strategy?	None=0; Being drafted=25; Draft exists=50; Exists and being implemented=100	Or a communication plan? including stakeholder analysis, segmentation and targeted activities	Yes=100
1.5	Is there a policy to make geospatial (and other) data accessible through "Open Data"?	None=0; Being drafted=25; Draft exists=50; Under Review=75; Exists and is being implemented=100	Is there an Open Data policy, and does this recognise and include NSDI?	Yes=100

2. Governance arrangements				
No	Indicator	Scoring guide	Comments	Score and notes
2.1	Is there a NSDI "champion" in	None=0; Exists=50; Exists and active=100	Is there a clearly identifiable individual(s)	General Director of ALRC is also a



IGIF – SECTORAL CONTEXT: LAND ADMINISTRATION

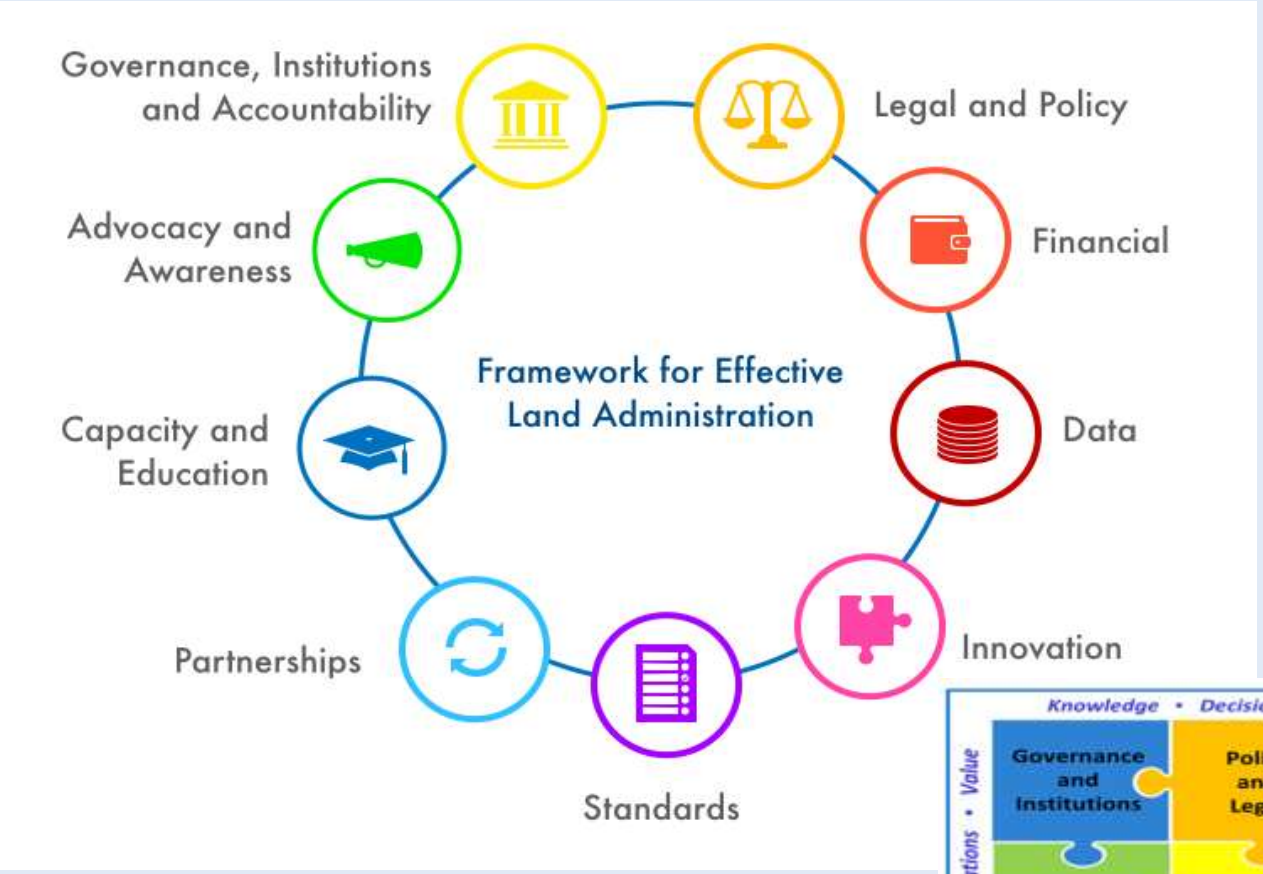
Framework for Effective Land Administration

A reference for developing, renewing or strengthening Land Administration and Land Management Systems

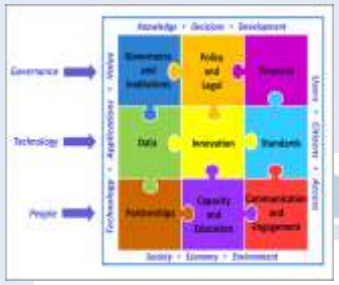
United Nations Expert Group on Land Administration and Management

The United Nations Committee of Expert on Global Geospatial Information Management (UN-GGIM)

Draft version 0.3
March 23, 2019



The nine strategic pathways of the IGIF have been used for the development of the Framework for Effective Land Administration



IGIF AND THE VOLUNTARY GUIDELINES ON TENURE

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Where the Geospatial technology could help?

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Part 3: Legal recognition and allocation of tenure rights and duties: Safeguards, Public land, Informal tenure

Part 4: Transfers and other changes to tenure rights and duties: Markets, Investments, Land consolidation and other readjustments, Expropriation and compensation

Part 5. Administration of tenure: Valuation, Taxation, Regulated spatial planning, Disputes resolutions

Part 6. Responses to Climate change and emergencies: Climate change, Natural disasters, Conflicts

Part 7: Promotion, implementation, monitoring and evaluation

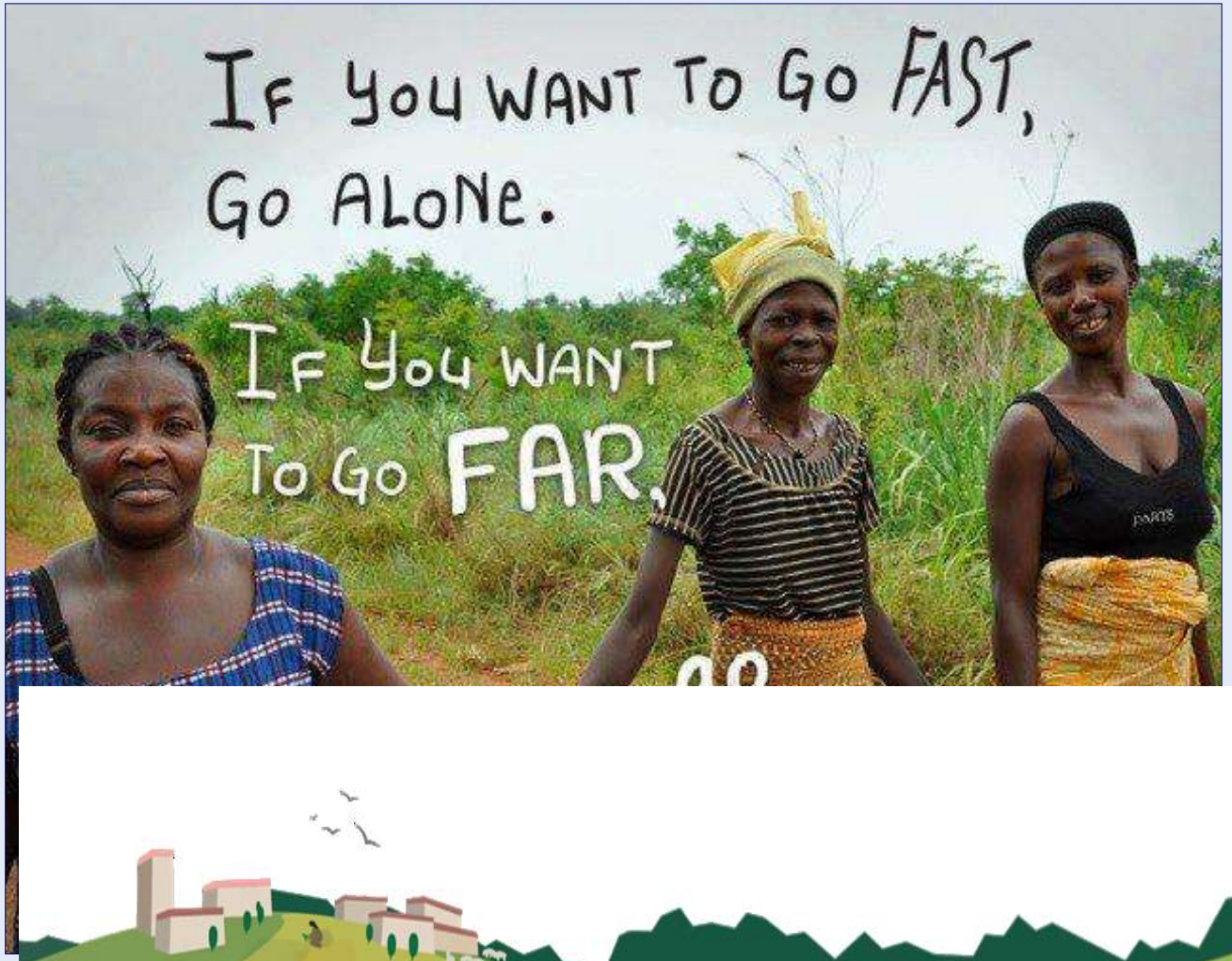
SUMMARY AND NEXT STEPS

Integrated Geospatial Information Framework

- Completion of the **IGIF Implementation Guide**
  - First expert consultation - March 22, 23 and 25 at World Bank, Washington
  - Global/Regional consultations throughout 2019 and endorsement in April 2020
- Update **IGIF Templates** as per the Implementation Guide
- Support preparation of **Country Action Plans a**t least 5 countries in 2019

Completed Pilots	Planned
Palestine Guyana (FAO funded) Tirana, Albania - Sub-national	Vietnam Mongolia Colombia Seashells Tanzania/Malawi

- **Develop/Implement training programs and capacity building** for preparation of country level action plans:
  - E-Learning/OLC course and Face to Face training through the WB Korea Office:
    Colombia, Vietnam, Uzbekistan, Tanzania/Malawi , …?
  - Fragile, Conflict, Violence (FCV) Context (Korea TF): **Myanmar, Kosovo**
  - Disaster Risks Management Context: **Seychelles**



THANK YOU!

XIN CẢM ƠN!