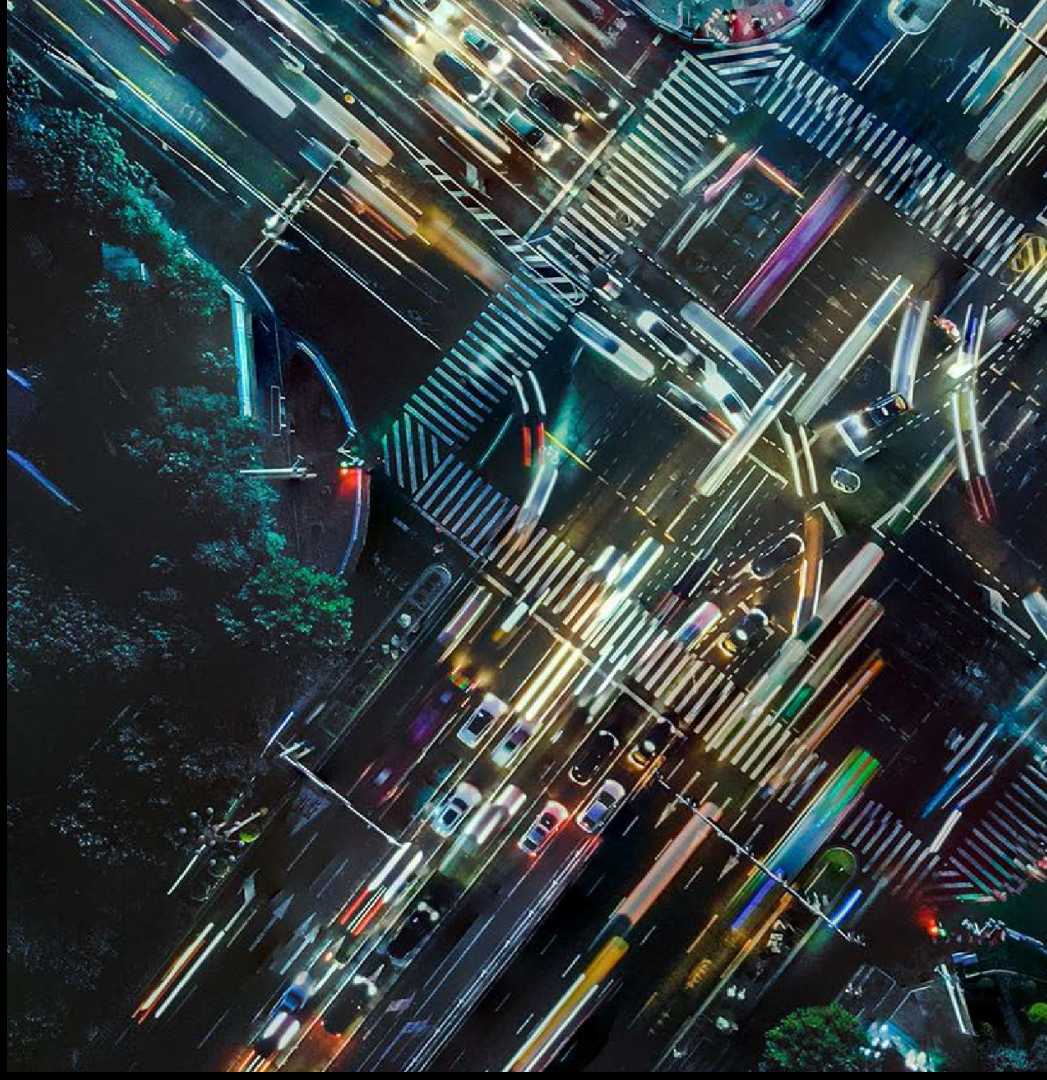




Roadmap Development

Kitengela Municipality





Pre-survey

Highlights and basic concepts

Data as infrastructure can unlock cities potential to overcome challenges related to rapid urbanization.

MSDI Framework for supporting evidence-based decision making in cities: Institutions, People, Data, Systems.

Benefits: institutional collaboration, cross-jurisdictional solutions, targeted investments, performance monitoring.

MSDI Implementation

Four building blocks:
Institutions, People,
Data, and Systems



1. Institutions



2. People



3. Data



4. Systems

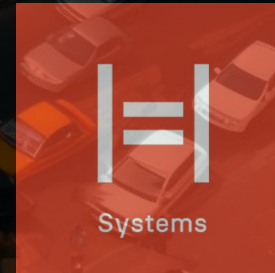
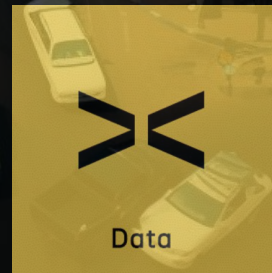
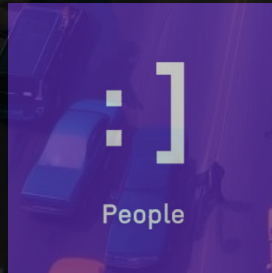


IPDS Framework

Organizational structures and regulatory instruments that provide a supportive environment for data utilization and sharing



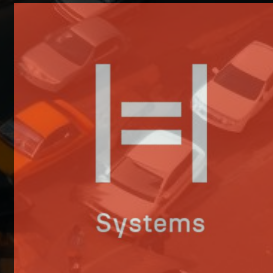
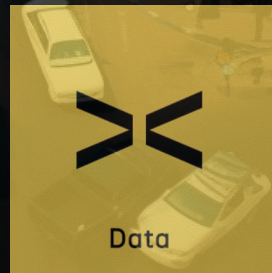
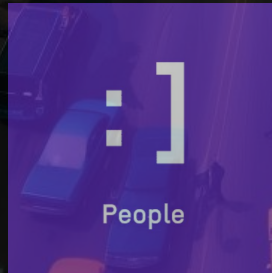
Geospatial skills and knowledge to effectively collect, manage, and utilize data, and ultimately translate it into meaningful actions



IPDS Framework

Reliable, accessible, high-quality data that is collaboratively shared to provide valuable spatial context for analysis and ultimately inform decision-making

Technology for data collection, management, visualization, and analysis, as well as collaboration tools that enable efficient data exchange and utilization



The implementation process

MSDI allows cities to identify, prioritize, and tackle their main challenges in the order they see fit enabling the recovery and capitalization of previous efforts and initiatives.

MSDI Roadmap



The results of these discussions are organized and condensed into what is known as MSDI Roadmap.

It provides guidelines and functions as a blueprint for the next stages of the implementation, showcasing what was conveyed through consensus.

Kitengela

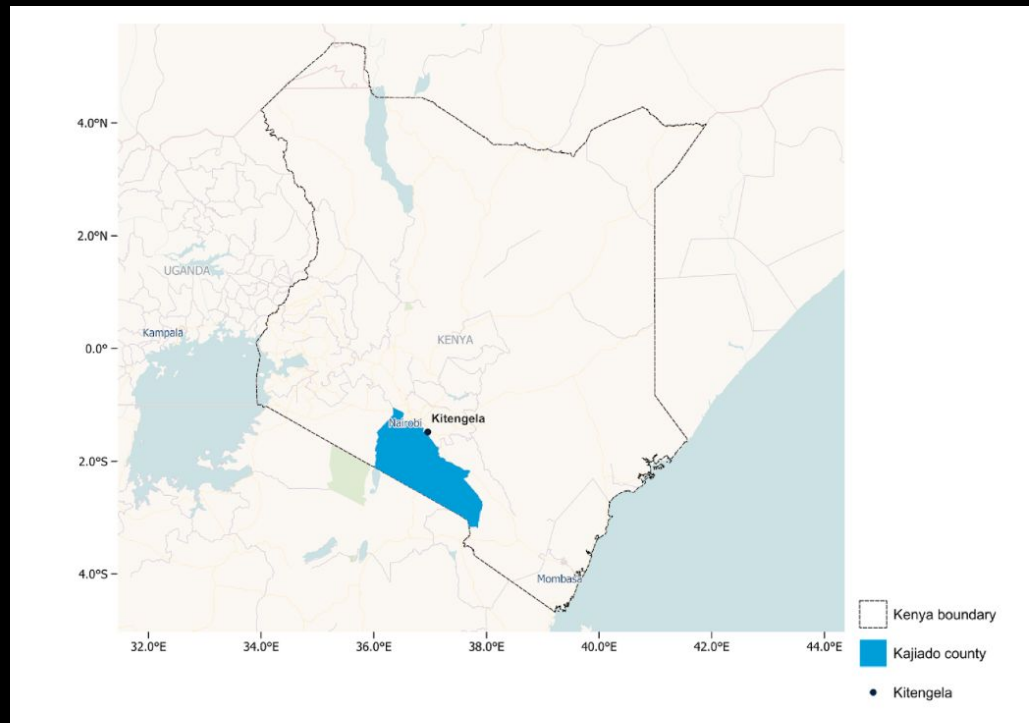
Population of Kitengela: 62,956

Area covered: 87.2 km²

Population density: 718 inhabitants per km²

The municipality has experienced significant growth, with an average annual population increase of 6.3% from 2009 to 2019, the third highest rate in the country.

Source: (KNBS 2019)



A three-step process



**Consensus building
through diagnosis**



**Collaborative
identification of
recommendations**



**Targets and
implementation
plan**

1


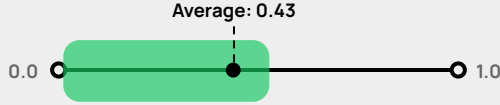

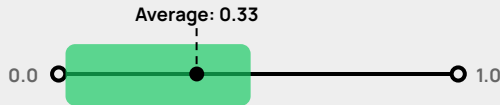

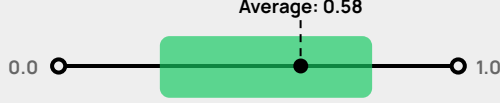

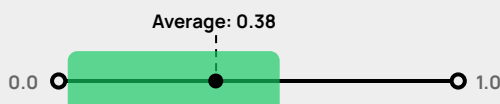
Consensus building through diagnosis




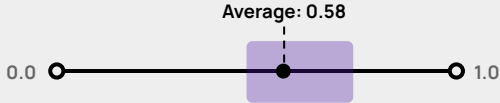

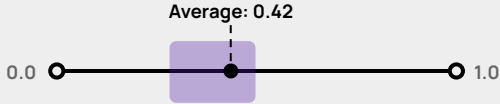

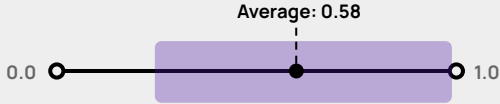
Rapid MSDI Readiness Assessment

	Building Block	Criteria	Score	Building block score	MSDI Index
Λ	Institutional Arrangements	Government central funding	0.42	0.43	0.39
		Data policy aimed to return on investment	0.33		
		Legal framework	0.58		
		Private sector and academia activities	0.38		
:]	People	Human capital	0.58	0.53	
		Spatial data education	0.42		
		Individual leadership	0.58		
><	Data	Digital cartography availability	0.33	0.30	
		Metadata availability	0.21		
		Standards	0.35		
=	Systems	Web connectivity and telecommunication infrastructure	0.50	0.31	
		Access to Web Mapping	0.25		
		Geospatial software	0.21		
		Own development/Open source	0.29		







1 Institutional arrangements

Criteria	Range	Score	
 Government central funding	0.0 - 0.5	Very Low - Average	
 Data policy aimed to return on investment	0.0 - 0.5	Very Low - Average	
 Legal framework	0.25 - 0.75	Low - High	
 Private sector and academia activities	0.0 - 0.5	Very Low - Average	


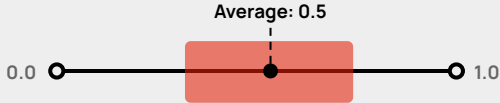

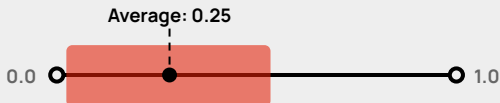

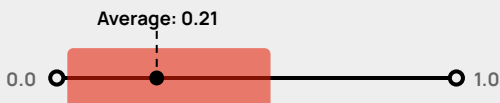

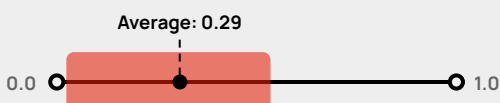
2 People

Criteria	Range	Score	
 Human Capital	0.5 - 0.75	Average - High	
 Spatial data education	0.25 - 0.5	Low - Average	
 Individual leadership	0.25 - 1.0	Low - Very High	

3 Data

Criteria	Range	Score	
 Digital cartography availability	0.0 - 0.75	Very Low - High	<p>Average: 0.33</p> 
 Metadata availability	0.0 - 0.5	Very Low - Average	<p>Average: 0.21</p> 
 Standards	0.25 - 0.5	Low - Average	<p>Average: 0.35</p> 

4 Systems

Criteria	Range	Score	
 Web connectivity and telecommunication infrastructure	0.25 - 0.75	Low - High	<p>Average: 0.5</p> 
 Access to Web Mapping	0.0 - 0.5	Very Low - Average	<p>Average: 0.25</p> 
 Geospatial software	0.0 - 0.5	Very Low - Average	<p>Average: 0.21</p> 
 Own development / Open source	0.0 - 0.5	Very Low - Average	<p>Average: 0.29</p> 

Priority Sectors KITENGELA

1 First Priority Sectors



Urban Planning



Economy and investment



Environment



Transportation



Water & Sanitation

2 Second Priority Sectors



Solid waste



Shelter



Fire and emergency response



Health

3 Third Priority Sectors



Energy



Education/ early childhood education

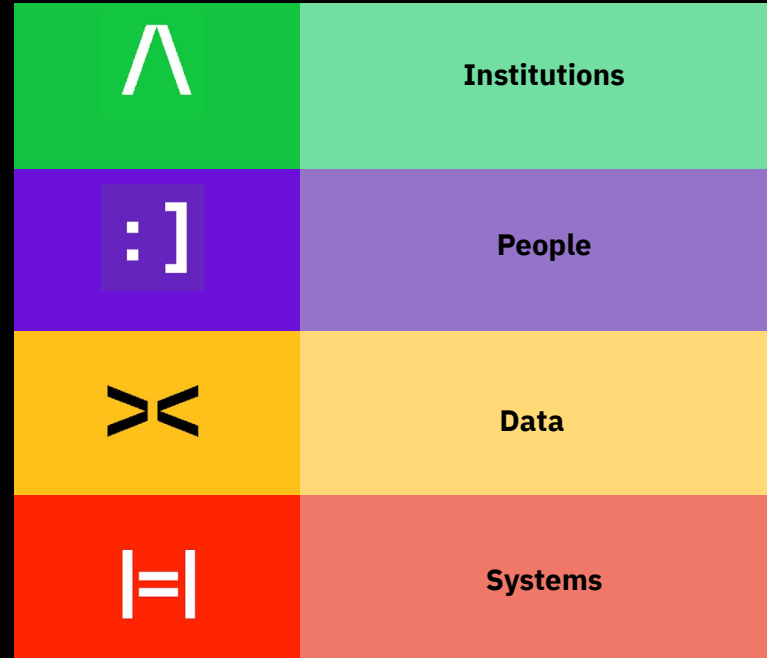


Safety

Deep-Dive MSDI Capacity Assessment

To develop meaningful recommendations for the MSDI roadmap, the delivery team must have a deep and objective understanding of the city's baseline capacity across the four IPDS framework building blocks.

Given the detailed and technical nature of the information required, this understanding will be achieved through a series of one-on-one interviews as part of the Deep-Dive Assessment.



1 Institutional arrangements



Current state

Lack of **Standard Operating Procedures or guidelines** for geospatial data management and data sharing.

Lack of **roles and responsibilities** results in reactive data management, inconsistent data formats and data quality.

A **non-activated ICT department** in Kitengela Municipality prevents data security and data dissemination

Lack of **budgetary allocations** for data management

Strength

Capacity to draw support from national and county level agencies for data management

Robust relations with county government allows Kitengela Municipality to **access** the County GIS Lab

County's **Integrated Development Plan (KCIDP)** 2023-2027 allocates budgets for data and systems locally to cities.
The **Last Mile Connectivity Project** is a source of funding to operationalize the government's e-government strategy.

Spatial data management by Physical and Land Use Planning Department **sets a good example** for the Municipality.

1 Institutional arrangements



Enablers

Robust relationships with national and county governments.

Kitengela Municipality's **drive to lead and set an example.**

Budgetary allocations for data management at the county level extendable to Municipality

IFMIS supports budgetary access.

Geospatial data policies in the Kajiado County **Integrated Development Plan 2023-2027 (KCIDP)** and **County Physical and Land Use Development Plan**

Spatial data management can be mainstreamed across all departments at County and Municipality levels.

Opportunities

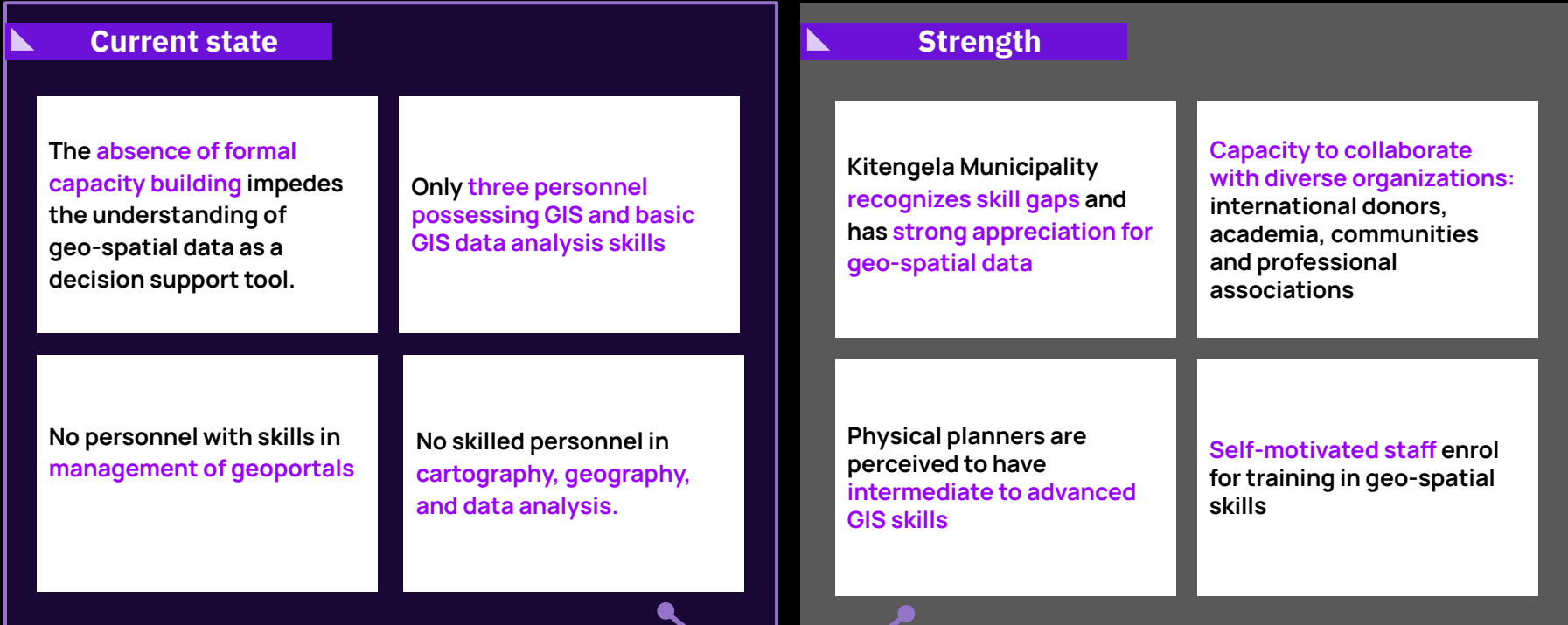
Guidelines for future data governance policy for the Municipality by learning from national and county governments

In the medium term, **set up ICT Department** in Kitengela Municipality and a Local GIS Data Lab

The Municipality intends to adopt Kajiado County's policies for data management in the County Physical and Land Use Development Plan and Integrated Development Plan (KCIDP) 2023-2027, to gain autonomy.

Expand data management budget from Lands and Physical Planning Department to all other departments and Municipality

2 People



2 People



Enablers

Recognition of the importance of geo-spatial data

Awareness about additional training and skill development in GIS

Emphasize importance of training municipal board members and decision-makers to advance vision and funding

Existing collaborations with academia, professional associations provide institutional foundations for sustained capacity building.

Opportunities

To create autonomy, formalize capacity building by creating momentum from the ongoing work with Kajiado County

Support the lack of staff by deepening collaboration with universities and professional associations

An awareness program for informed decision-making for higher echelon officials.

Provide training in advanced GIS skills for urban planners and basic GIS skills for all other departments.

3 Data



Current state

The municipality does not maintain a **data catalog** and comprehensive list of **fundamental datasets**.

Municipality **has no procedures** for data collection, updating, processing and dissemination

Metadata standards or guidelines are also lacking, and data is **rarely shared** with accompanying metadata.

Data sharing, through formal letters and emails is **inefficient** or **made available on payment**.

Strength

Municipal and county level officials prioritize **data-sharing policies**

Data collection is managed through various channels (county, national levels, external consultants, partnerships)

Kajiado County allocates budget for Geospatial Information Management, through the Kajiado County Integrated Development Plan 2023-2027 (KCIDP)

Physical and Land Use Planning Department **conducts geo-spatial data analysis** using ArcGIS, R Studio, and Quantum GIS (QGIS)

3 Data



Enablers

General recognition of the value of **data sharing, metadata, and standards** and official regulations.

All departments adhere to **professional standards and quality processes**

Municipal officials **use open-source platforms** such as ODK or KoboCollect for **data collection** at municipal level

Kajiado county **stores and provides municipal geospatial information** to Kitengela municipality through the **County GIS Lab**.

Opportunities

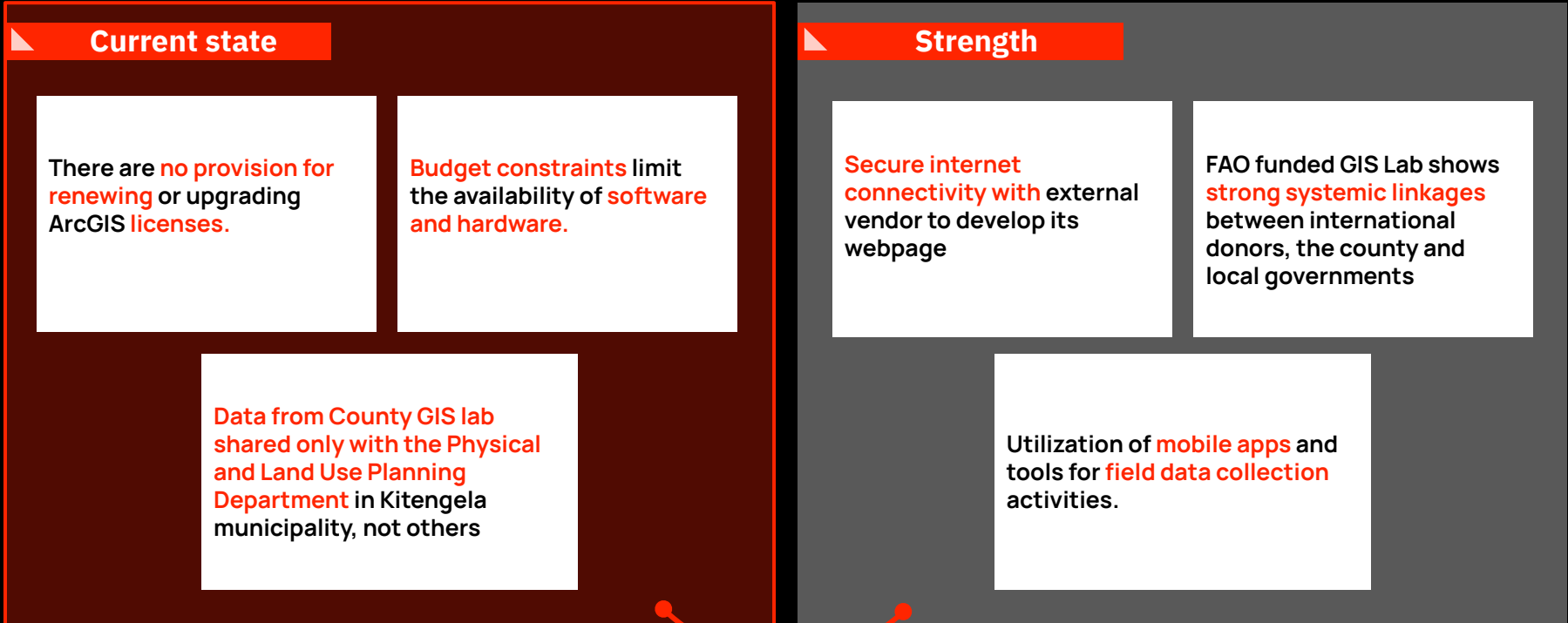
Streamline data management processes, including data collection, processing, data classification and data dissemination

Outline **data sharing protocols** at County and Municipality levels

Establish processes to promote the **use of open-source software and data**

Develop a **data inventory and Fundamental Data Sets**

4 Systems



4 Systems



Enablers

Use of the county's **GIS lab** could increase cities' capacities if this evolves into a medium-term plan towards autonomy

Kajiado county stores and disseminates information to Kitengela municipality through the **County GIS Lab**

ICT staff are also **responsible for maintaining and updating** the county webpage

Opportunities

Provide basic equipment or continue relying on the county GIS Lab?

Develop specific **guidelines for data storage**

Establishing an **internal ICT department** is essential

2

Collaborative
identification of
recommendations



Opportunities for Kitengela Municipality

1

Guidelines for future data governance policy for the Municipality by learning from national and county governments

2

In the medium term, set up ICT Department in Kitengela Municipality and a Local GIS Data Lab

3

Adopt policies for data management through prescriptions in the County Physical and Land Use Development Plan to gain autonomy.

4

Expand data management budget from Lands and Physical Planning Department to all other departments and Municipality

Opportunities for Kitengela Municipality

5

Creating momentum from the ongoing work/efforts with Kajiado County to develop formal capacity building to create autonomy.

6

Support the lack of staff by deepening collaboration with universities and professional associations

7

An awareness program for informed decision-making for higher echelon officials.

8

Provide training in advanced GIS skills for urban planners and basic GIS skills for all other departments.

Opportunities for Kitengela Municipality

9

Streamline data management processes, including data collection, processing, data classification and data dissemination

10

Outline data sharing protocols at County and Municipality levels

11

Establish processes to promote the use of open-source software and data

12

Develop a data inventory and Fundamental Data Sets

Opportunities for Kitengela Municipality

13

Provide basic equipment or continue relying on the county GIS Lab?

14

Develop specific guidelines and infrastructure for data storage

15

Establish an internal ICT department

Opportunities Validation

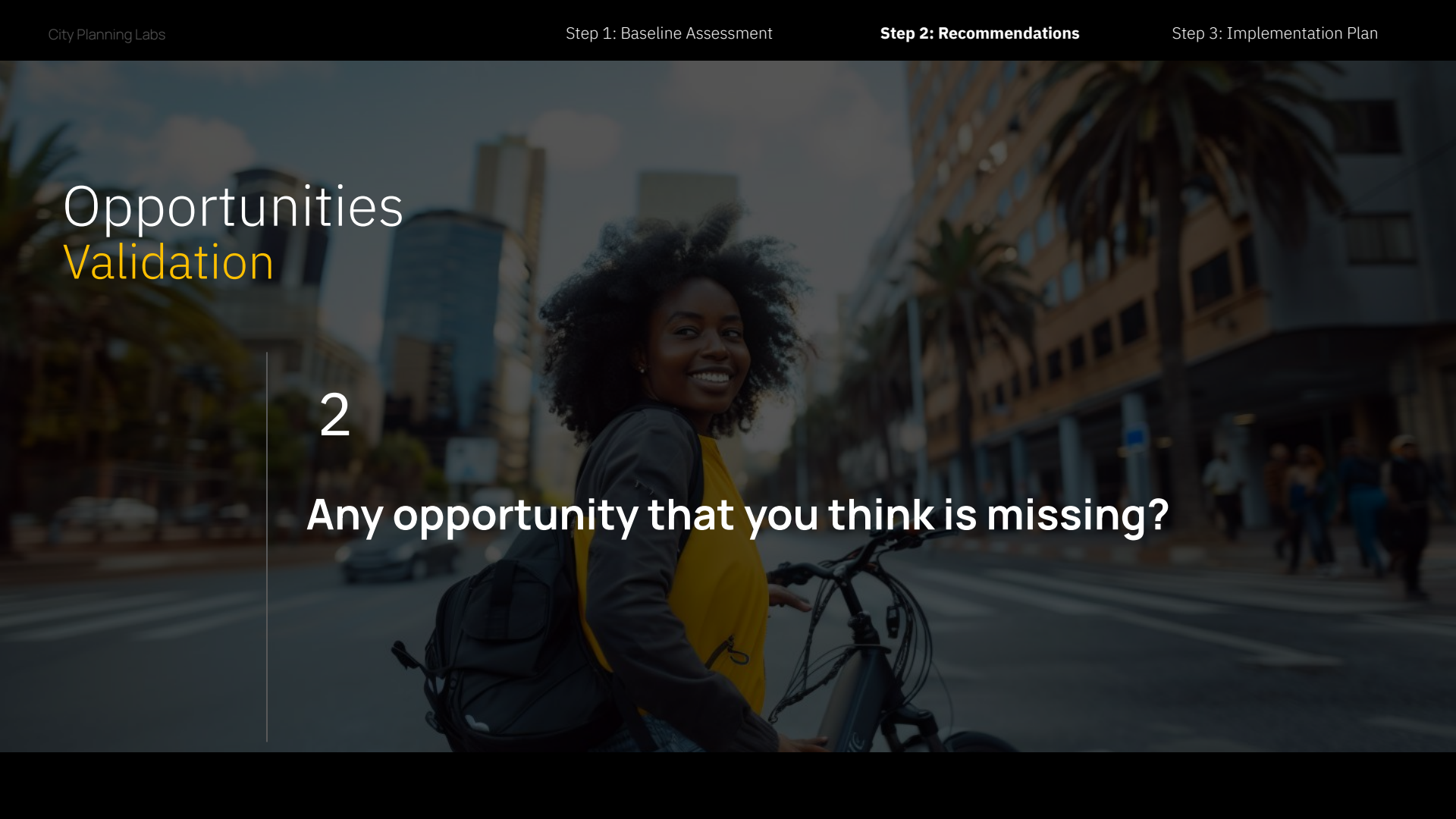
1

Did you identify any opportunities that appear counterintuitive?

Opportunities Validation

2

Any opportunity that you think is missing?

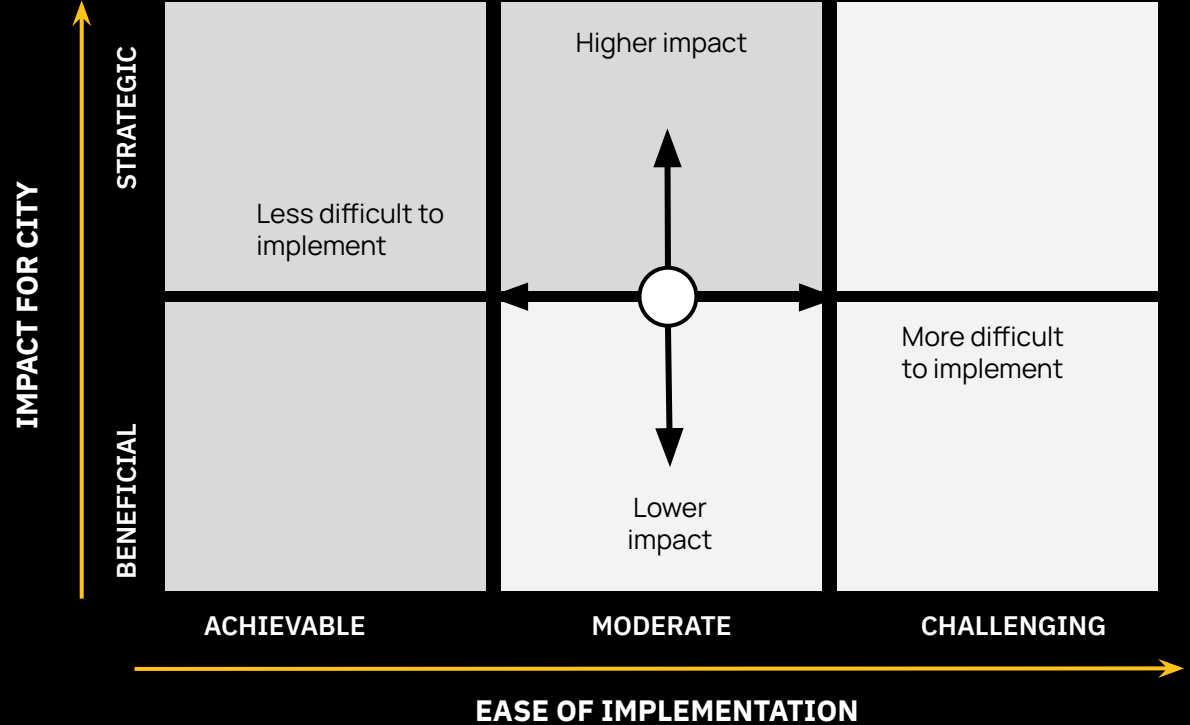


Num.	Validated Opportunities
1	Set up/installation of ICT department (short term) that evolves into a municipal GIS Lab
2	Develop guidelines for the creation of a data policy
3	Creation of land use and development plan
4	Ensure strategic budgeting
5	Strengthen collaboration with the county, universities and professional associations regarding human assets and capacity building (expand to NGOs)
6	Establish an awareness and technical training program
7	Streamline of data management processes, including data sharing protocols and the requirements for the use of Open Data
8	Update data inventory, including the expansion of Fundamental Datasets (FDS)
9	Develop the guidelines for data storage infrastructure and its use

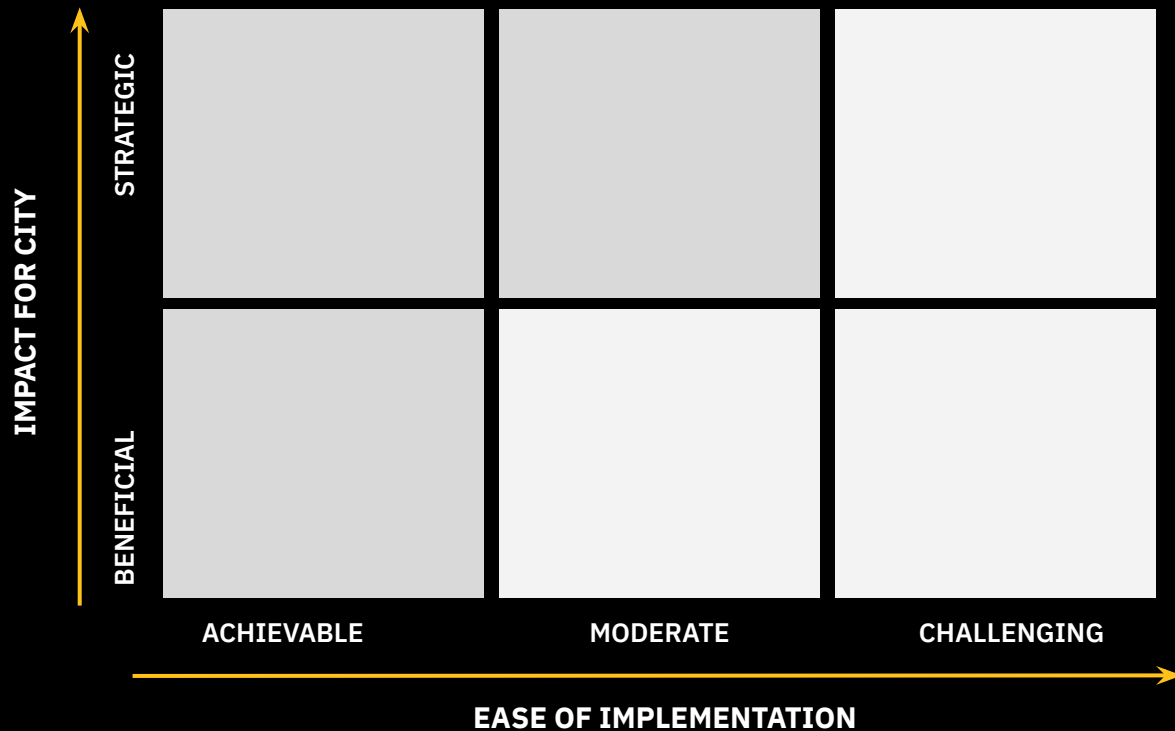
Plot Opportunities

Plot each of your opportunities in terms of:

1. Impact:
 - Will the city benefit from it?
2. Ease of implementation
 - Are significant process changes required?



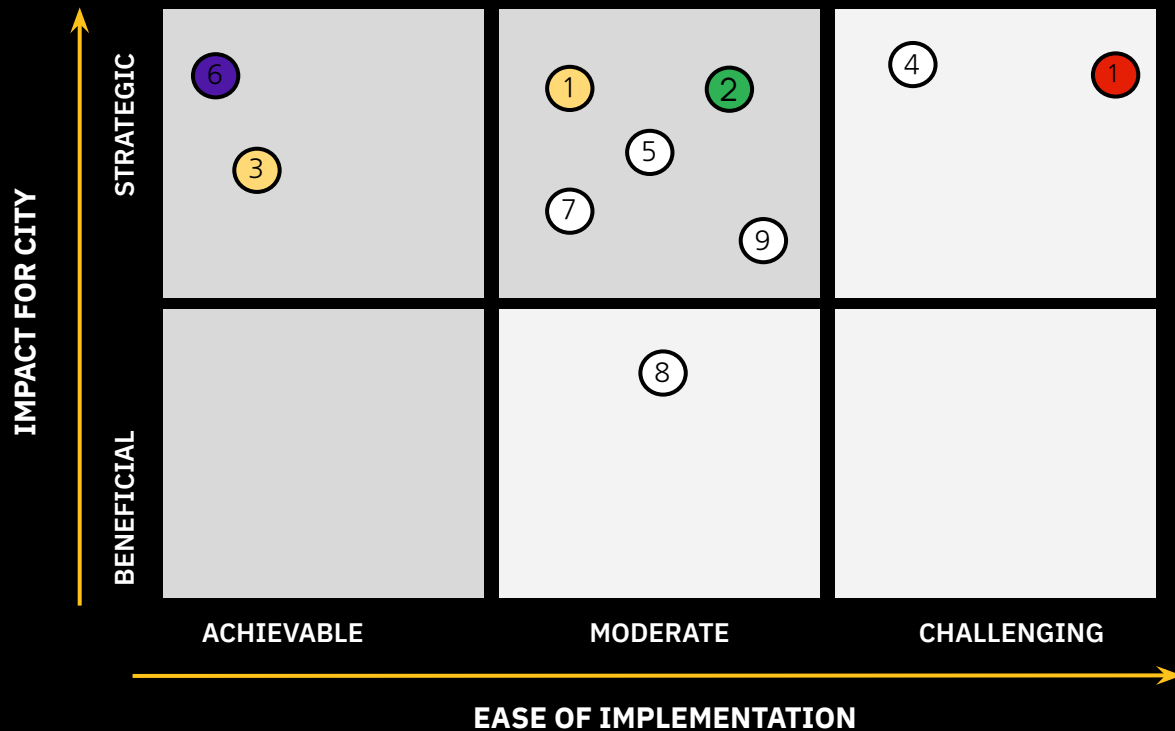
Plot Opportunities *Exercise*



Plot Opportunities

Exercise results

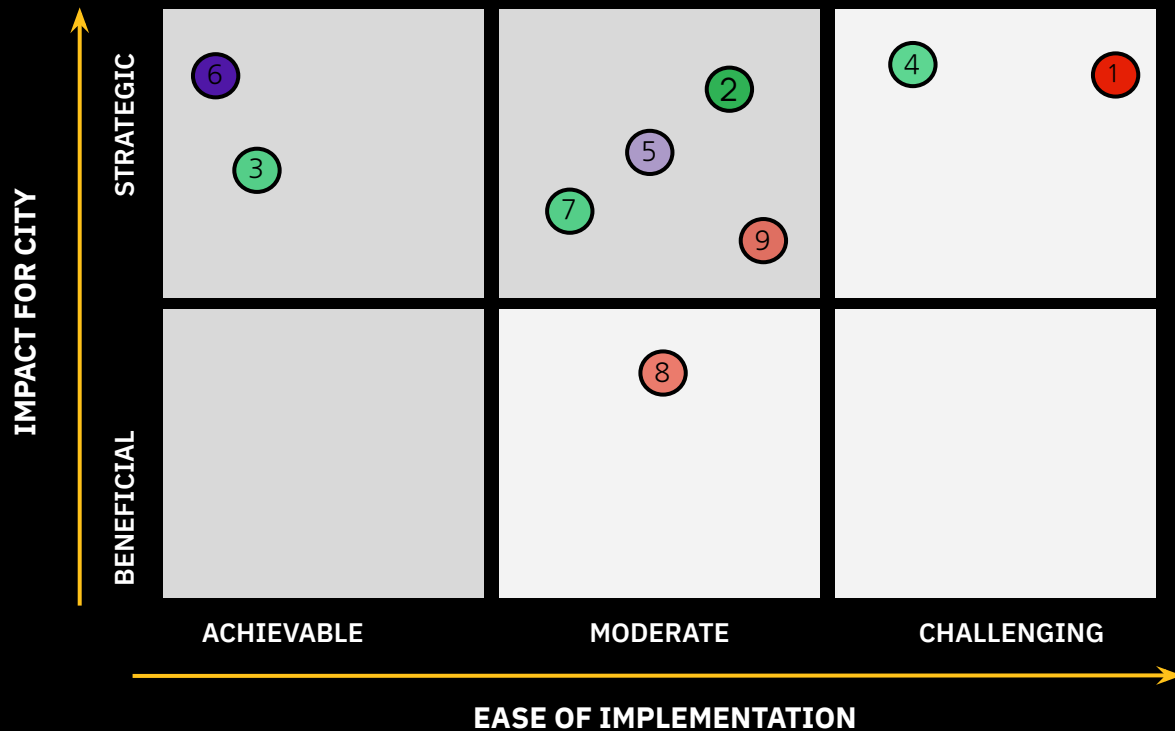
1. Set up of ICT department (short term) that (1b) evolves into a municipal GIS Lab
2. Develop guidelines for the creation of a data policy
3. Creation of land use and development plan
4. Ensure strategic budgeting
5. Strengthen collaboration with the county, universities and professional associations and other institutions
6. Establish an awareness and technical training program
7. Streamline of data management processes, including data sharing protocols and the requirements for the use of Open Data
8. Update data inventory and produce Fundamental Datasets (FDS)
9. Develop the guidelines for data storage infrastructure and its use



Plot Opportunities

Exercise results

1. Set up of ICT department (short term) that (1b) evolves into a municipal GIS Lab and future geoportal for the Municipality.
2. Develop guidelines for the creation of a data policy
3. Creation of land use and development plan
4. Ensure strategic budgeting
5. Strengthen collaboration with the county, universities and professional associations and other institutions
6. Establish an awareness and technical training program
7. Streamline of data management processes, including data sharing protocols and the requirements for the use of Open Data
8. Update data inventory and produce Fundamental Datasets (FDS)
9. Develop the guidelines for data storage infrastructure and its use



MSDI Roadmap

Top Opportunities

1

Establish an awareness and technical training program

2

Develop guidelines for the creation of a data policy

3

Set up of ICT department (short term) that (1b) evolves into a municipal GIS Lab and future geoportal for the Municipality

MSDI Roadmap

Final Recommendations

1

Establish an awareness and technical training program in collaboration with a range partners (universities, professional associations, NGOs).

2

Preparation of a Municipal Physical and Land Use development Plan with a Capital Investment Framework and develop a data policy with guidelines that streamlines data management, data storage, processes for data sharing and the requirements for use of Open Data sources

3

Set up of an ICT department that evolves into a municipal GIS Lab and eventually a Municipal Geoportal and update the data inventory and produce Fundamental Datasets (FDS)

3

Targets and implementation plan



In order to develop each recommendation into an implementation roadmap, **four key components** are required:

Key actions

to provide a baseline of the suggested activities to be carried out and set out broad goals for implementation.

Roles and responsibilities

for key stakeholders to define the scope of work and establish the mandate to initiate each recommendation.

Outputs/ deliverables

to guide the work towards common goals.

Potential metrics

to track progress and support monitoring and evaluation of the roadmap implementation.

In order to develop each recommendation into an implementation roadmap, **four key components** are required:

Key actions

to provide a baseline of the suggested activities to be carried out and set out broad goals for implementation.

Roles and responsibilities

for key stakeholders to define the scope of work and establish the mandate to initiate each recommendation.

Outputs deliverables

to guide the work towards common goals.

Potential metrics

to track progress and support monitoring and evaluation of the roadmap implementation.

Key Activities and Tasks

Recommendation 1

1

Individually write the main tasks you think are needed to achieve R1.

2

Share and discuss your results with the group.

3

Arrange the activities into three time horizons.

Importance of three horizons

Horizon 1 Development

1-2 years

1. Set the foundation for implementing a particular recommendation
2. Proof concept
3. Quick win scenario to obtain greater buy-in for horizon 2

Horizon 2 Scale Up

2-5 years

1. Allow rapid scaling up of the recommendation
2. Demonstrate actual value of MSDI
3. Tackle sustainability issues for the recommendation

Horizon 3 Proliferation

5 years and more

1. Working towards the end state of roadmap targets
2. Integrate private sector and academic contributions
3. Replicate MSDI

Key components for Recommendation 1

Horizon 1: Development (1-2 yrs)

Horizon 2: Scale-up (2-5 yrs)

Horizon 3: Proliferation (>5 yrs)

Establish an awareness and technical training program in collaboration with a range of partners (universities, professional associations, NGOs).

DESCRIPTION

INDICATORS

KEY ACTIVITIES

1. Number of MOUs signed
2. Number of municipal staff trained
3. A better understanding by policy makers on the need of MSDI
4. Number of awareness workshops undertaken
5. Funding secured for training and awareness creation

1. Signing of Memorandum of Understanding with institutions including the universities, professionals bodies and NGOs on training and awareness creation on the importance of MSDI
2. Training of Municipal staff on data skills courses (GIS, ICT, Urban Data Tools)
3. Sensitization and awareness creation workshops for County and Municipal policy makers and the community and social media campaigns
4. Preparation of funding proposals for grant application to facilitate awareness and trainings.

Key components for Recommendation 2

Horizon 1: Development (1-2 yrs)

Horizon 2: Scale-up (2-5 yrs)

Horizon 3: Proliferation (>5 yrs)

Preparation of a Municipal Physical and Land Use development Plan with a Capital Investment Framework and develop a data policy with guidelines that streamlines data management, data storage, processes for data sharing and the requirements for use of Open Data sources

DESCRIPTION

INDICATORS

KEY ACTIVITIES

1. The Area covered by the Municipal Spatial Plan
2. Identified number of data sources
3. Secured funding for the preparation of the Municipal Physical and Land Use Development Plan

1. Preparation of a Concept note on the need for a Municipal Physical and Land Use Development Plan
2. Preparation of Phase 1 of the Plan (Analysis of the existing situation (data collection and analysis)and identification of gaps to inform the plan proposals)
3. Identification of open data sources

1. A 10 year GIS based Municipal Physical and Land Use Development Plan
2. A data Policy in place

1. Plan proposals preparations, preparation of the implementation framework, a capital investment frameworks and a monitoring and evaluation framework
2. Preparation of a Municipal Zoning Ordinance
3. Preparation of a data policy

Key components for Recommendation 3

Horizon 1: Development (1-2 yrs)

Horizon 2: Scale-up (2-5 yrs)

Horizon 3: Proliferation (>5 yrs)

Set up of an ICT department that evolves into a municipal GIS Lab and eventually a Municipal Geoportal and update the data inventory and produce Fundamental Datasets (FDS)

DESCRIPTION

INDICATORS

KEY ACTIVITIES

1. Completion of the construction of the Municipal GIS Lab
2. Number of ICT/GIS skilled municipal staff

1. Construction of an ICT Department/GIS Lab
2. Capacity Building of the existing Municipal Staff on ICT/GIS

1. A fully equipped GIS Lab
2. An operational GIS Lab
3. Number of new staff recruited to assist in running the GIS Lab
4. Identified Municipal data gaps

1. Equipping the lab with hardware and software and data collection tools
2. Operationalization of the ICT Department/GIS Lab
3. Recruitment of new staff to provide capacity in operationalizing the GIS Lab
4. Reviewing of the existing data inventory
5. Identifying the data gaps

1. Availability of fundamental data sets

1. Collecting data to fill in the gaps
2. Updating the data inventory
3. Establishment of a Municipal Geoportal

ROLES AND RESPONSIBILITIES-RECOMMENDATION 1

Horizon 1: Development (1-2 yrs)

Horizon 2: Scale-up (2-5 yrs)

Horizon 3: Proliferation (>5 yrs)

Establish an awareness and technical training program in collaboration with a range of partners (universities, professional associations, NGOs).

ROLES/ RESPONSIBILITIES

1. Municipal Manger
2. Directorate of Physical and Land Use Planning
3. Citizen Participation and Communications Officer
4. Directorate of Corporate Services
5. Directorate of Finance and Planning

ROLES AND RESPONSIBILITIES-RECOMMENDATION 2

Horizon 1: Development (1-2 yrs)

Horizon 2: Scale-up (2-5 yrs)

Horizon 3: Proliferation (>5 yrs)

Establish an awareness and technical training program in collaboration with a range of partners (universities, professional associations, NGOs).

ROLES/ RESPONSIBILITIES

1. Directorate of Physical and Land Use Planning

1. Municipal Manager
2. Municipal Board
3. ICT Department
4. Directorate of Physical and Land Use Planning

ROLES AND RESPONSIBILITIES-RECOMMENDATION 3

Horizon 1: Development (1-2 yrs)

Horizon 2: Scale-up (2-5 yrs)

Horizon 3: Proliferation (>5 yrs)

Establish an awareness and technical training program in collaboration with a range of partners (universities, professional associations, NGOs).

ROLES/ RESPONSIBILITIES

1. Municipal Manager
2. Development Partners
3. Directorate of Engineering and Disaster Management
4. Directorate of Physical and Land Use Planning

1. Directorate of Physical and Land Use Planning
2. Development Partners
3. ICT and GIS Staff
4. Municipal Manager

1. ICT/GIS Staff
2. Directorate of Physical and Land Use Planning

Key components for recommendation 1 (OUTPUTS & DELIVERABLES)

Horizon 1: Development (1-2 yrs)

Horizon 2: Scale-up (2-5 yrs)

Horizon 3: Proliferation (>5 yrs)

Establish an awareness and technical training program in collaboration with a range of partners (universities, professional associations, NGOs).

OUTPUTS / DELIVERABLES

- Signed MOUs
- Skilled personnel in ICT/GIS
- Sensitization Workshops
- Prepared and circulated funding proposals

Key components for recommendation 2

Horizon 1: Development (1-2 yrs)

Horizon 2: Scale-up (2-5 yrs)

Horizon 3: Proliferation (>5 yrs)

Preparation of a Municipal Physical and Land Use development Plan with a Capital Investment Framework and develop a data policy with guidelines that streamlines data management, data storage, processes for data sharing and the requirements for use of Open Data sources

OUTPUTS / DELIVERABLES

-Municipal Data Policy

-Municipal Physical and Land Use Development Plan
-Municipal Zoning Ordinance

Key components for recommendation 3

Horizon 1: Development (1-2 yrs)

Horizon 2: Scale-up (2-5 yrs)

Horizon 3: Proliferation (>5 yrs)

Set up of an ICT department that evolves into a municipal GIS Lab and eventually a Municipal Geoportal and update the data inventory and produce Fundamental Datasets (FDS)

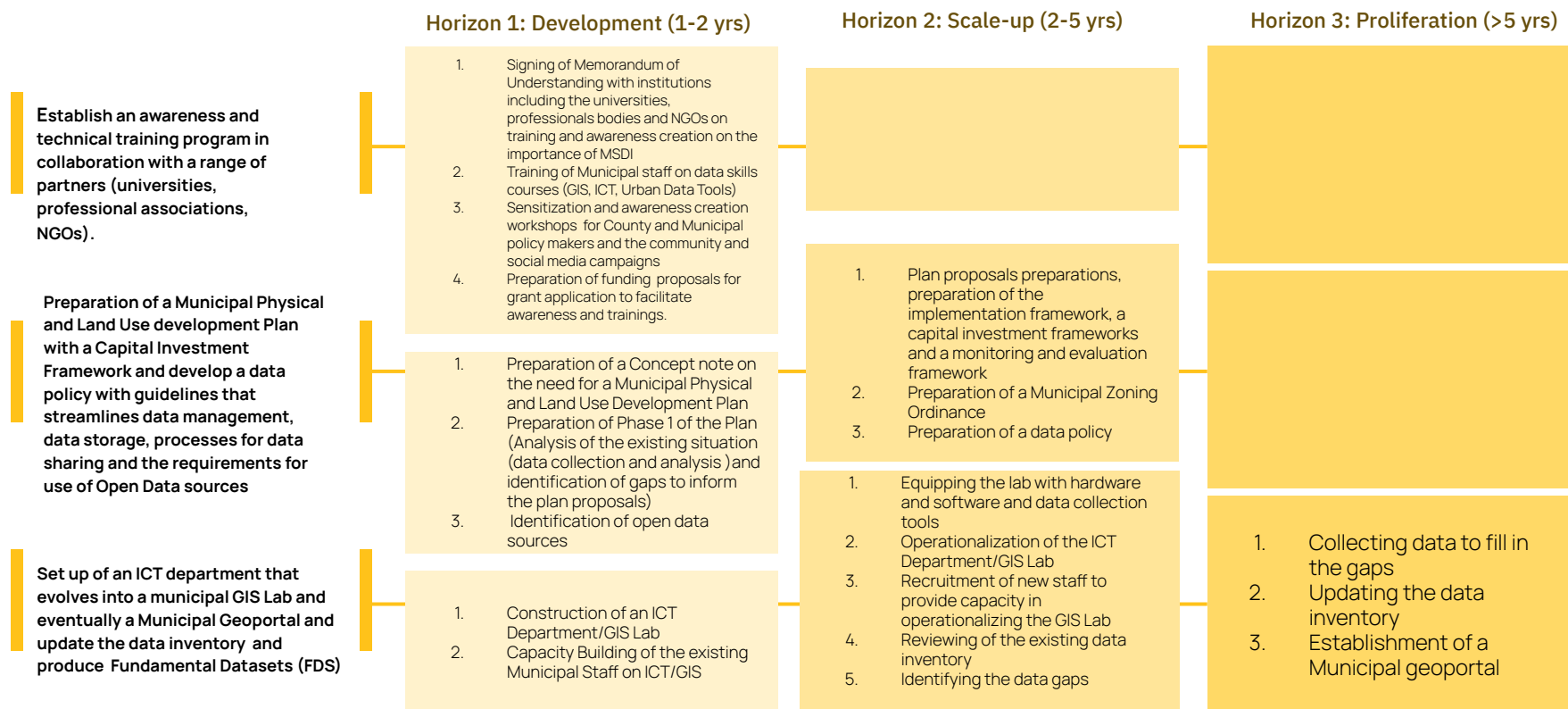
OUTPUTS / DELIVERABLES

-ICT Department/GIS LAB
-Skilled Personnel

-Hardware, Software and Data Collection Tools

-Updated Data Inventory

Roadmap: Summary Template

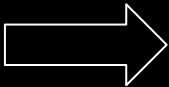


County Governor

Directly elected at County Level

County Dy. Governor

Indirectly elected

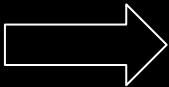


- County development
- Planning and implementation of plans (building permits, zoning)
- Budget and finances

Municipal Board

Representatives to the County Executive Committee

Directly elected by the people of the city



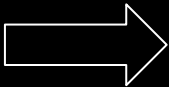
- Oversee all functions of the Directors
- Budget and finances
- Partnerships and JVs
- Accounts-audits
- Integrated Development Plan: a strategic plan

Municipal Manager

Administrator, appointed as per County Recruitment Procedures

Directors

Administrators, appointed as per County Recruitment Procedures



- Citizen's Fora
- Information and publicity
- Ordinary and special meetings

Functions of the Municipality per UACA 2011

Construction and maintenance of Municipal administrative offices and yards

Design, construction and maintenance of :

- Urban Roads and Associated Infrastructure
- Walkways and other non-motorized transport infrastructure
- Street lights and flood lights
- Recreational parks and green spaces

Refuse collection and solid waste management

Water and Sanitation

Collecting rates, taxes levies, duties, fees and surcharges on fees

Development and enforcement of municipal plans and development controls

Promotion, regulation, and provision of animal control welfare

Promotion, regulation, and provision of sports and cultural activities

Construction and maintenance of Municipal markets and Abattoirs

Process for passing a policy with a statutory status by the County Government

1. Kitengela Municipality prepares a draft of the Municipal Data Governance Policy.
2. This Draft Municipal Data Governance Policy needs to be passed by the Members of the County Assembly, for Kitengela. Kitengela has three MCA representatives in the Caucus of County Representatives.
3. The 3 members lobby with the Caucus of County Members for Kitengela, to take the Draft to the mother department - the Lands and Physical Planning.
4. The Committee on Lands (with executive powers) presents the Draft to the County Cabinet and the Governor.
5. The Governor accepts and enacts the draft as a policy.

The three votes fit within the municipality

City Planning Labs

KUSIP etc are managed by the CEOs and staff

4. The Department of Lands and Physical Planning at the County Level is more powerful than the others. Is this the right department to lead data governance efforts at the county and municipal levels? Directorate of Survey, Lands-planning, Housing, Registry- Dir is CEO and Dept is under the CEC- dedicated to each department and one CEO- County calls the city a government agent. The City has its own directorates- department of water, - depends on the importance of the sector. Department of Agri has two - livestock and agriculture

5. General question: What is the role of the Directorate at the national, county and municipal levels?

6. The process of sanctioning a local level policy by the County Assembly is independent of the setting up of a functional NSDI, I believe. We must check.

7. Do municipalities have laws or policies in place for the LUO as well?

IMPACT



Feedback survey