

NAMIBIAN USE CASES ON GLOBAL AND NATIONAL DATA INTEGRATION STRATEGY

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UN-GGIM EXPERT GROUP – ISGI MEETING

MANCHESTER, UK

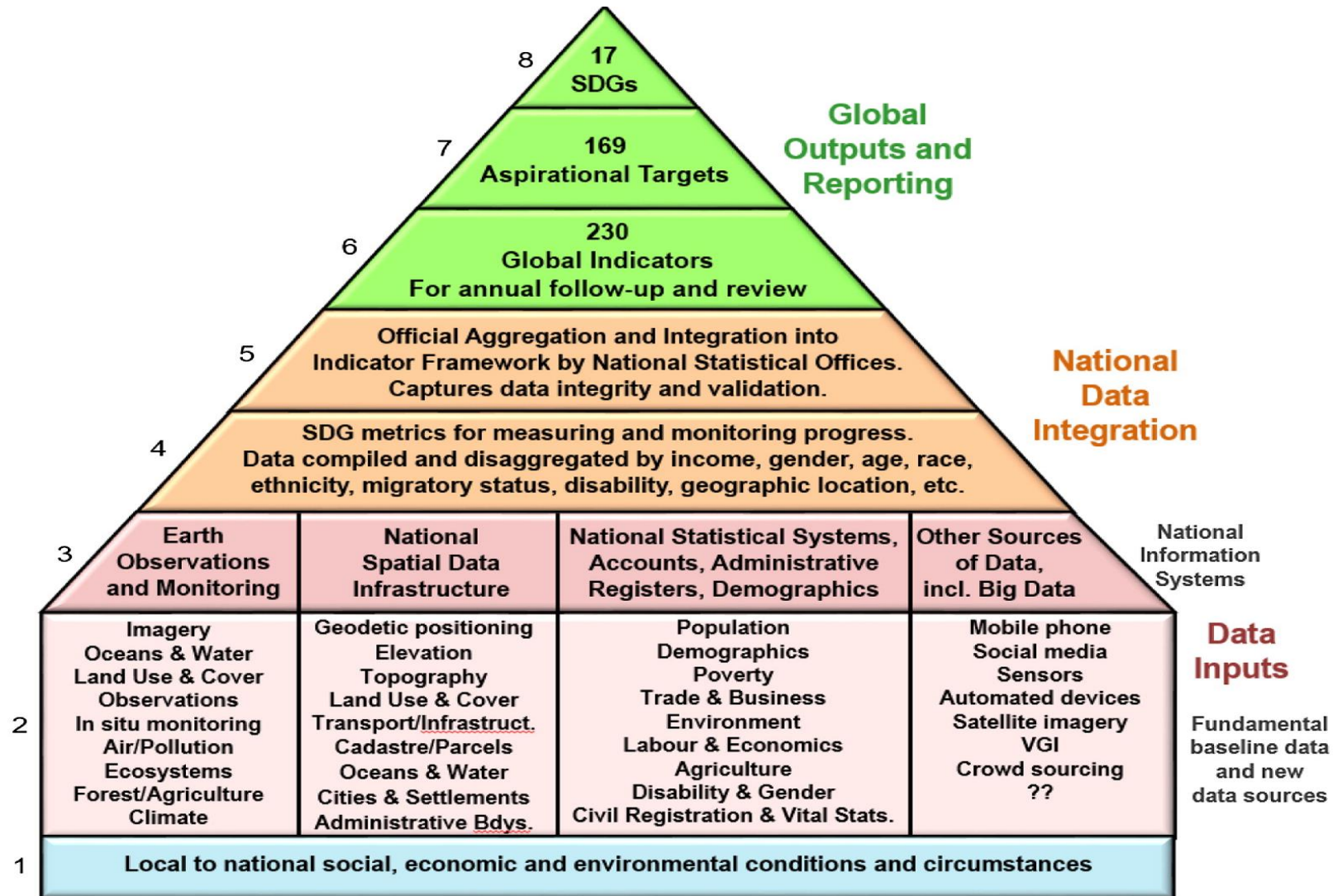
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OUTLINE

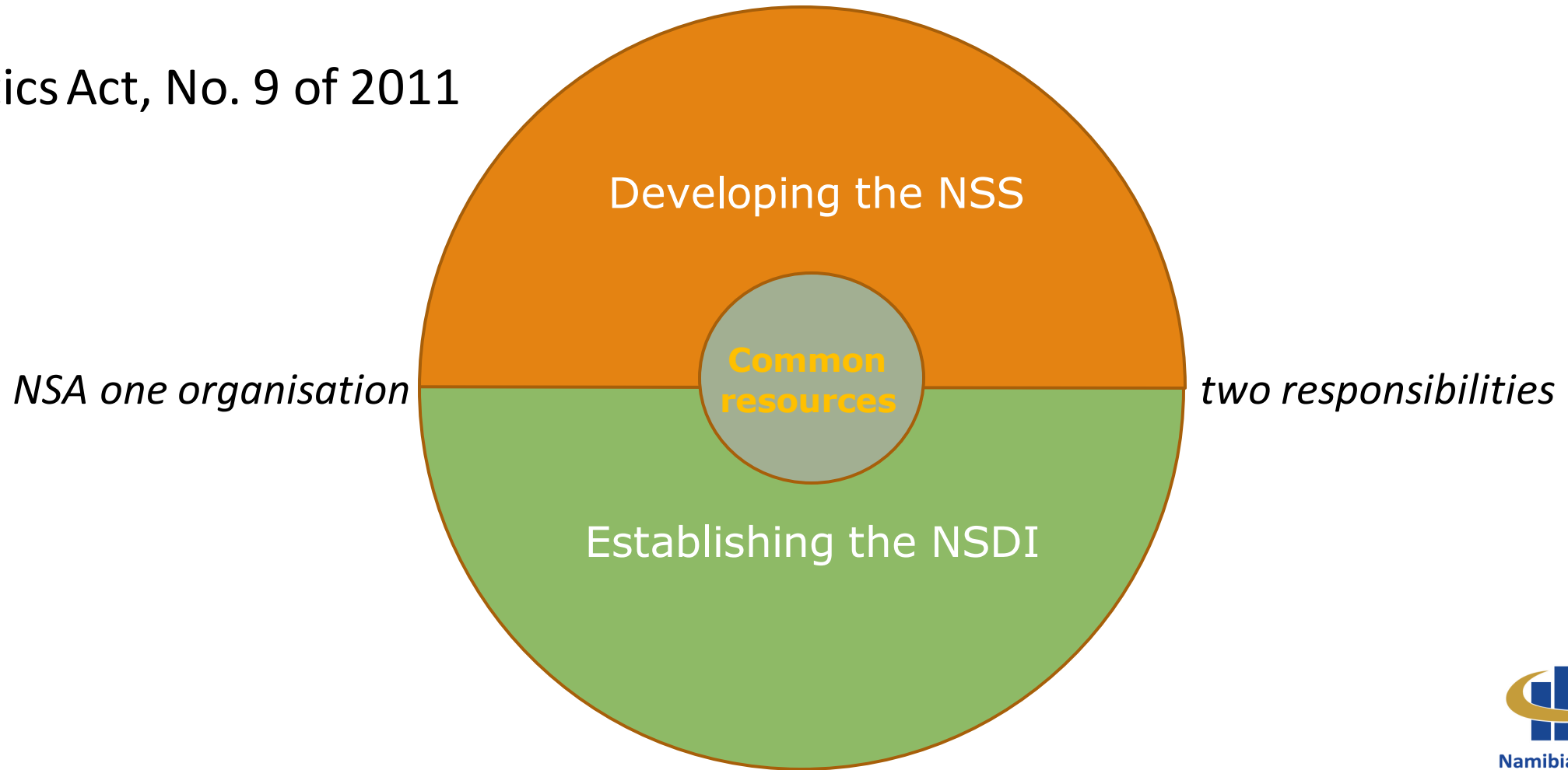
1. GLOBAL & NATIONAL INITIATIVES FOR DATA INTEGRATION
2. USE CASES FOR THE INTEGRATION OF STATISTICAL & GEOSPATIAL INFORMATION
3. WHAT ARE SOME OF THE ISSUES IN DEVELOPING COUNTRIES?
4. THE REQUIREMENTS OF DEVELOPING COUNTRIES

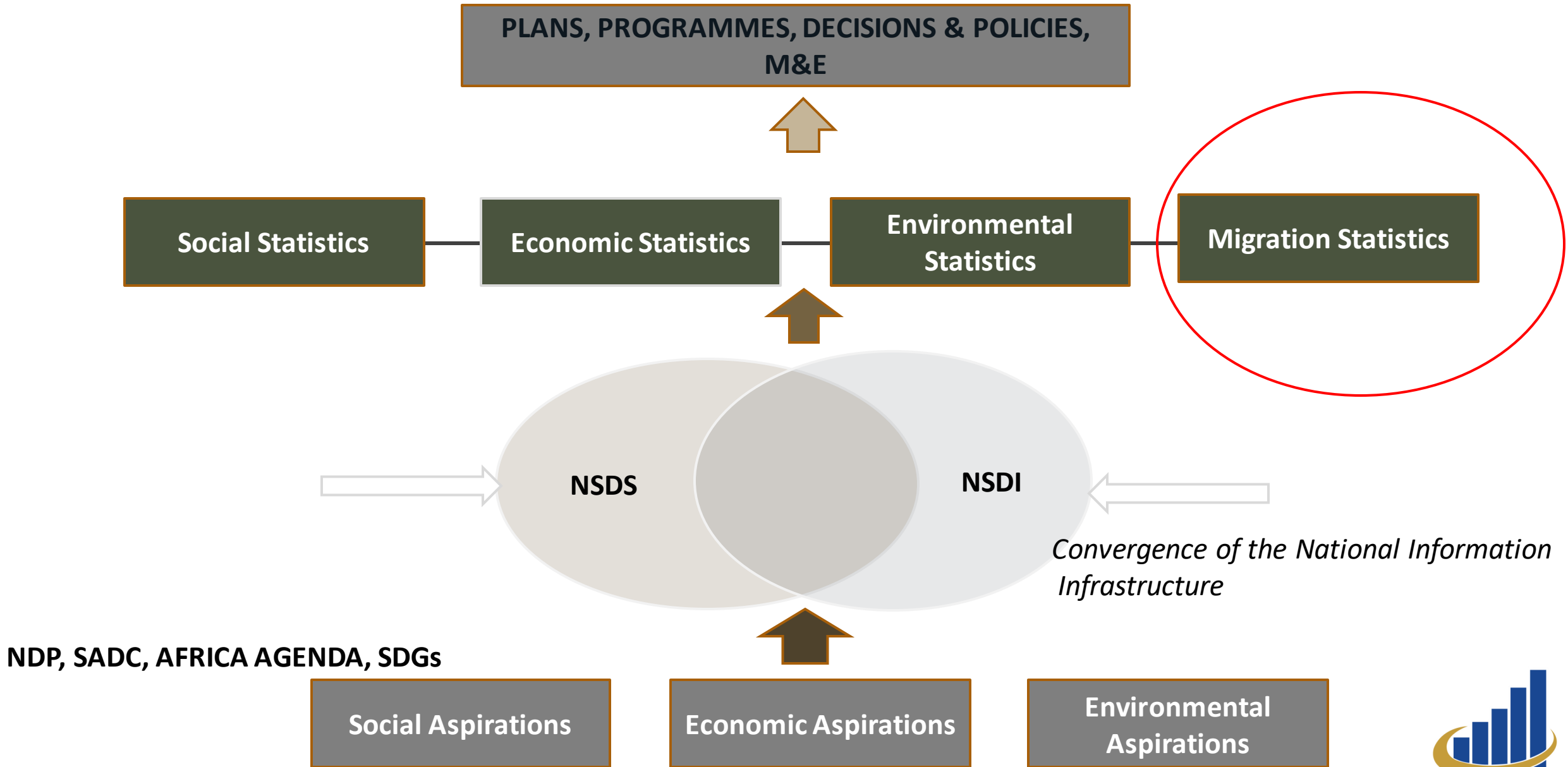
1. GLOBAL INITIATIVES FOR NATIONAL DATA INTEGRATION



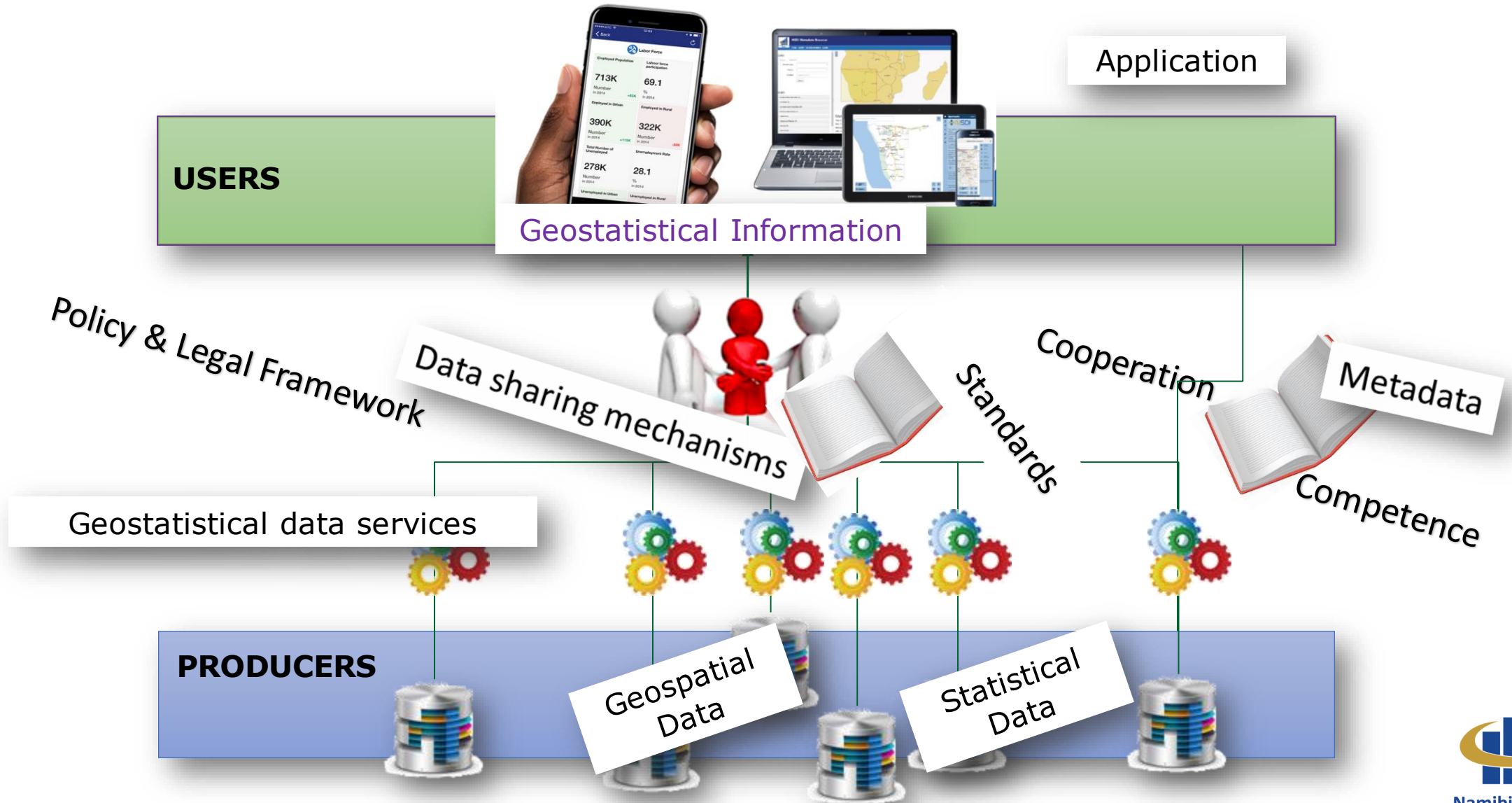
EXAMPLE STATISTICAL LEGAL AND POLICY FRAMEWORK IN NAMIBIA

Statistics Act, No. 9 of 2011



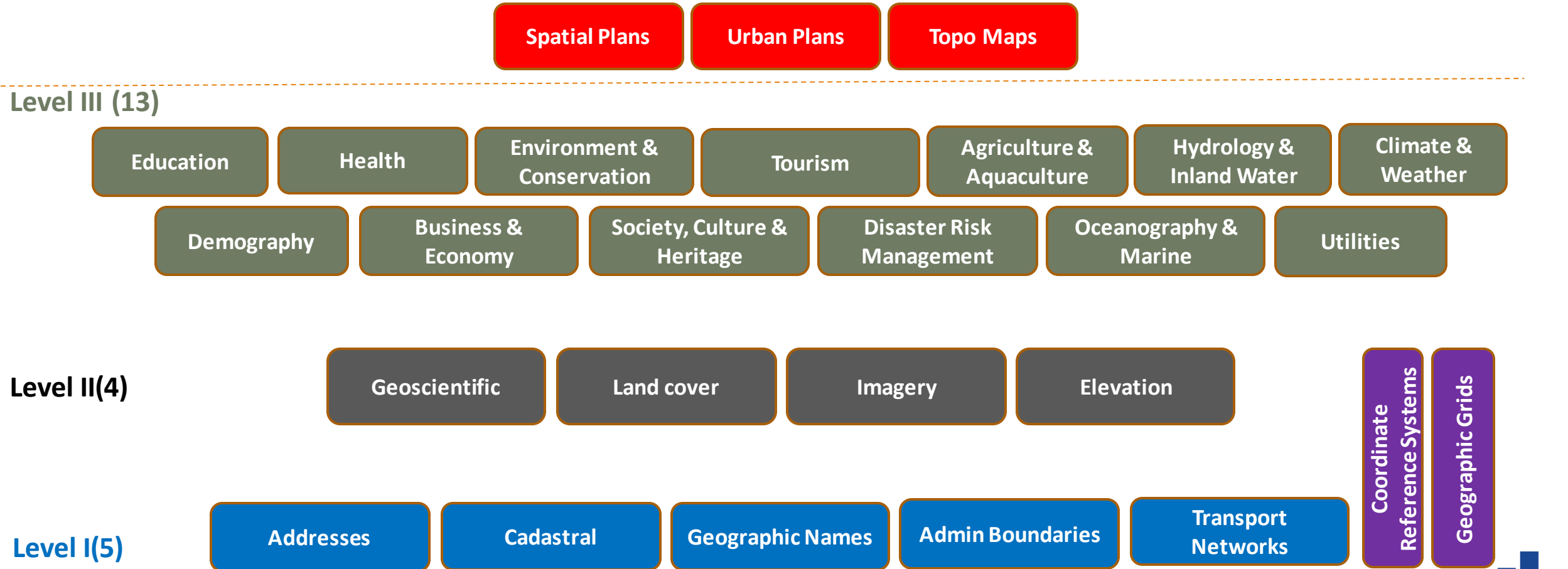


A National Geo-statistical Data Infrastructure



USE CASES FOR THE INTEGRATION OF SPATIAL DATA WITH STATISTICS

GSGF Principle 1: Use of fundamental geospatial infrastructure and geocoding (NSDI)



22 x Main Fundamental Data Themes

USE CASE 2: Geocoded unit record data in a data management environment





Linking Statistics to Location

MAIN

Id	Name
0	Unknown
1	Vacant
4	Dwelling Unit
5	Special Dwelling Unit
6	Commercial Structure
7	Educational Facility (excluding Hostel)
8	Health Facility (excluding overnight stay)
9	Recreational Facility (excluding overnight stay)
10	Heritage Site
11	Public Structure
12	Religious Place
13	Transport Node
14	Industrial Structure
15	Agricultural Facility
17	Observation Structure
18	Power Station
19	Waste Site
20	Water Supply Point
21	Treatment Plant
22	Telecommunications Tower
23	Reservoir
24	Headmen/Traditional Leader/Chief's House
99	Other, specify



1	Detached House	4 N	A formal, permanent dwelling typically for one family that does not form part of a block of flats
2	Semi-detached house/Town house	4 N	a Semi-detached House, a Duet, a Townhouse, a Cluster Home
3	Apartment/flat	4 N	A set of rooms used as a residence.
4	Guest Flat	4 N	NULL
5	Part commercial/Industrial	4 N	NULL
6	Mobile home (caravan, tent)	4 N	A vehicle or vessel equipped for living in. The dwelling is either self-powered or towed. This includes a Caravan, a Trailer Home, a Portable Hut, a Tent, and a Houseboat.
7	Single quarters	4 N	NULL
8	Traditional Dwelling	4 N	A typically rural dwelling constructed by plastering a wooden framework with a mixture of mud and manure.
9	Impoverished Unit (shack)	4 N	An informal dwelling constructed from metal sheeting, boards, zinc and other material.
10	Holiday home	4 N	NULL
11	Under construction	4 N	NULL
12	Other Dwelling, specify	4 N	NULL

GSGF Principle 3: Common Geographies for the Dissemination of Statistics during Digitising

Region Code

All regions are arranged in alphabetical order for the entire country and numbered

Constituency Code

All constituencies are arranged in alphabetical order by region and numbered from one to the last constituency in the region

EA Type (Urban/Rural)

01 = Urban

99 = Rural

EA Subtype Code (*settlement, village, town, municipality*)(For 99, Communal, Commercial)

01 = Municipality

02 = Town

03 = Village

04 = Settlement

05 = Communal

06 = Commercial

Locality Code

01 = Keetmanshoop (Municipality)

01 = Luderitz (Town)

01 = Bethanie (Village)

01 = Aus (Settlement)

Township Code (*For urban only. For rural this will be 00 or any other agreed upon 2-digit number*)

00 (None for cases where suburbs do not exist)

01 (Arranged in alphabetical order per locality)

Formality Code (formal, informal, rural)

01 = Urban Formal

02 = Urban Informal

03 = Peri-Urban

04 = Rural Formal - Farms

05 = Rural Informal – Communal/Tribal lands

Example DU Variables to be captured during Fieldwork

Unit number

Building/Complex Name

Name of Respondent

Relationship to the head of Household

Surname of Head of Household

Name of Head of Household

Age of Head of Household

Sex of Head of Household

Household size

Contact details

Tenure Type

Type of Roof

Type of Wall

Type of Floor

Source of Electricity

Source of Water

Type of Sanitation

Access to Road

Dwelling Identifier (total rooms)

Dwelling Identifier (sleeping rooms)

Mode of Communication

PLAN FOR MAINTENANCE. AUTOMATED HOUSING & CHANGE DETECTION TOOL FROM OPTICAL RS

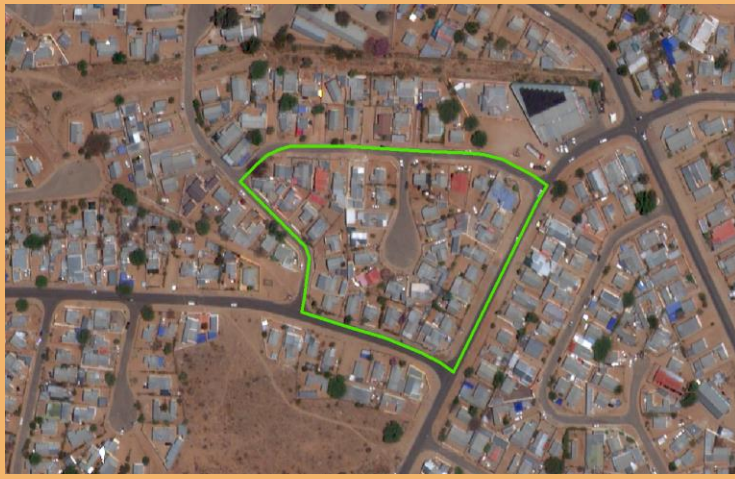
Input – Generic

Satellite Imagery

- High Resolution Optical Imagery (DigitalGlobe, AirBus)
- Open Source Landsat, Sentinel, etc. – Spectral bands

Use Case: Housing Detection

- Optical High- Resolution Satellite Imagery from DigitalGlobe in WMS format/download possible
- Optical Aerial Photographs
- ArcGIS, QGIS



Application – Generic

- Add-on / Script / GUI to ArcGIS or QGIS for machine learning on Spectral Bands and/ or RGB
- Input parameters: Shape, Patterns, Size, Colours, spectrum, etc.
- Sample Area to teach classes and patterns

Use Case: Housing Detection

- Teaching of Formal/ permanent structures,
- Teaching of informal structures (zinc roof, thatching (grass) roof and tents)
- Teaching of other Built Up Structures
- Methodology with proof of concept and given accuracy/ confidence in other use cases



Output / Outcomes

- Classes (shapefiles) based on defined parameters. (e.g land cover maps)
- Object Database for detected units
- Linked Statistics
- Better Policies & Decision Making

Use Case: Housing Detection

- Countrywide Database of Housing Units (Attributes & Location)
- Countrywide Classes of Built Up Structures
- **Countrywide Change Detection (future)**

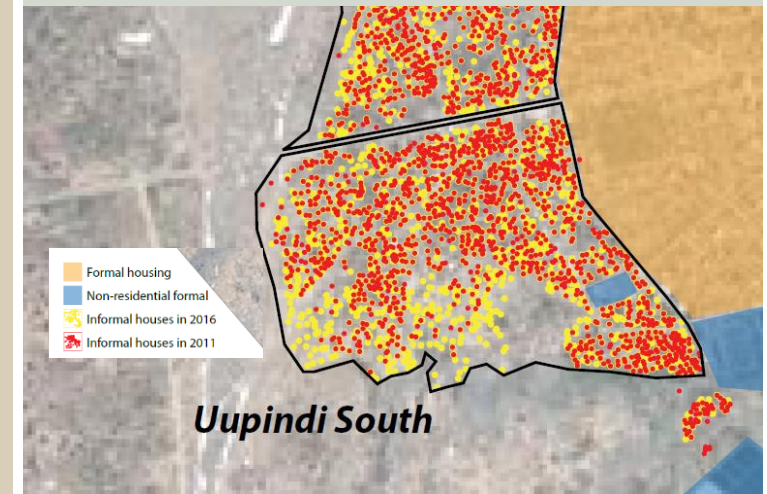


Image source: Beat Weber and John Mendelsohn (2017)

HIGH LEVEL OUTCOME: 1. LINKING HOUSING TO LAND TENURE 2. MOVE TOWARDS FORMAL ADDRESSES



Identify

Identify from: <Top-most layer>

SQL_SDE.GEODB.Dwelling_Unit_SP_2011

Location: 605 114.835 7 509 157.532 Meters

Field	Value
OBJECTID	70030
Identifier	{E0AC4742-5FC1-4715-894B-32B6852E9D79}
RegionCode	06
Constituen	05
TownlandId	22
SuburbId	338
OtherSubur	
OtherLocal	GOLGOTA
EANumber	6051101016
Settlement	1
Settlement1	7
Latitude	-22.51512
Longitude	17.04971
FarmgateLa	0
FarmgateLo	0
StreetNumb	4286
StreetName	MORIA
StreetSuff	11
PostalCode	
SGCode	
NoStreetNu	Y
VisibleHou	
SurnameHH	
NameHH	
SurnameHea	
NameHeadma	
NameOwner	
ClassId	4
OtherClass	
SubClassId	1
SubTypeId	0
OtherSubTy	
Name	
FarmNameAt	
UnitCount	0
SpecialDwe	1
StructureC	1
StructureT	1
OtherStruc	

What benefits are we selling at national level?

To the respondents:

1. Better service delivery and policies
2. Possibility to own a formal address
3. Emergency response e.g. shack fires, floods, drought, crime, etc.
4. Access to financing

To the policy and decision makers:

1. All of the above plus
2. Better tax collection
3. New businesses, new markets, more government revenue
4. Accountability and transparency (leave no one behind) – win the election

To the data producers:

1. Better data management, data-driven decisions
2. Quality, timely and accessible national data
3. Motivation for state funding
4. Enhanced data sharing through partnerships, focus on core business
5. Elimination of duplication, reducing costs
6. Capacity, economies of scale

WHAT ARE SOME OF THE ISSUES IN DEVELOPING COUNTRIES?

1. Alignment of global goals to national goals including indicator frameworks
2. Digitalisation of land records; outdated data; no data maintenance plans
3. Lack of addresses (rural and in some countries even urban)
4. Limited capacity (emphasis on technical and human)
5. Overcoming scepticism – privacy issues of geospatial information
6. Incoherent legal and policy frameworks – makes it difficult to coordinate
7. Statistical and geospatial communities – 2 worlds apart
8. Raising political awareness.

THE REQUIREMENTS OF DEVELOPING COUNTRIES

1. High level awareness / communication strategy
2. UN principles and recommendations for the geo-statistical framework
3. Simple implementable actions **linked to Regional and National Development Agendas** – work with regional groupings.
4. Systematic capacity development
5. Enforcing an authoritative repository of data (fundamental and thematic)
6. Standardisation (use of common standards, definitions, methods & processes) - comparability
7. Formalisation of new data sources & use of emerging technologies in official statistical systems
8. Aligning the needs of the developing world to the rest of the World.

Thank You