Organizational SDI at the Geological Survey of Namibia: Driving NSDI Implementation for Sustainable Development

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Ministry of Industries, Mines and Energy
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Harnessing Geospatial Intelligence for Africa's Sustainable and Resilient Future

17-21 November 2025, Alisa Hotel, Accra, Ghana

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EIS

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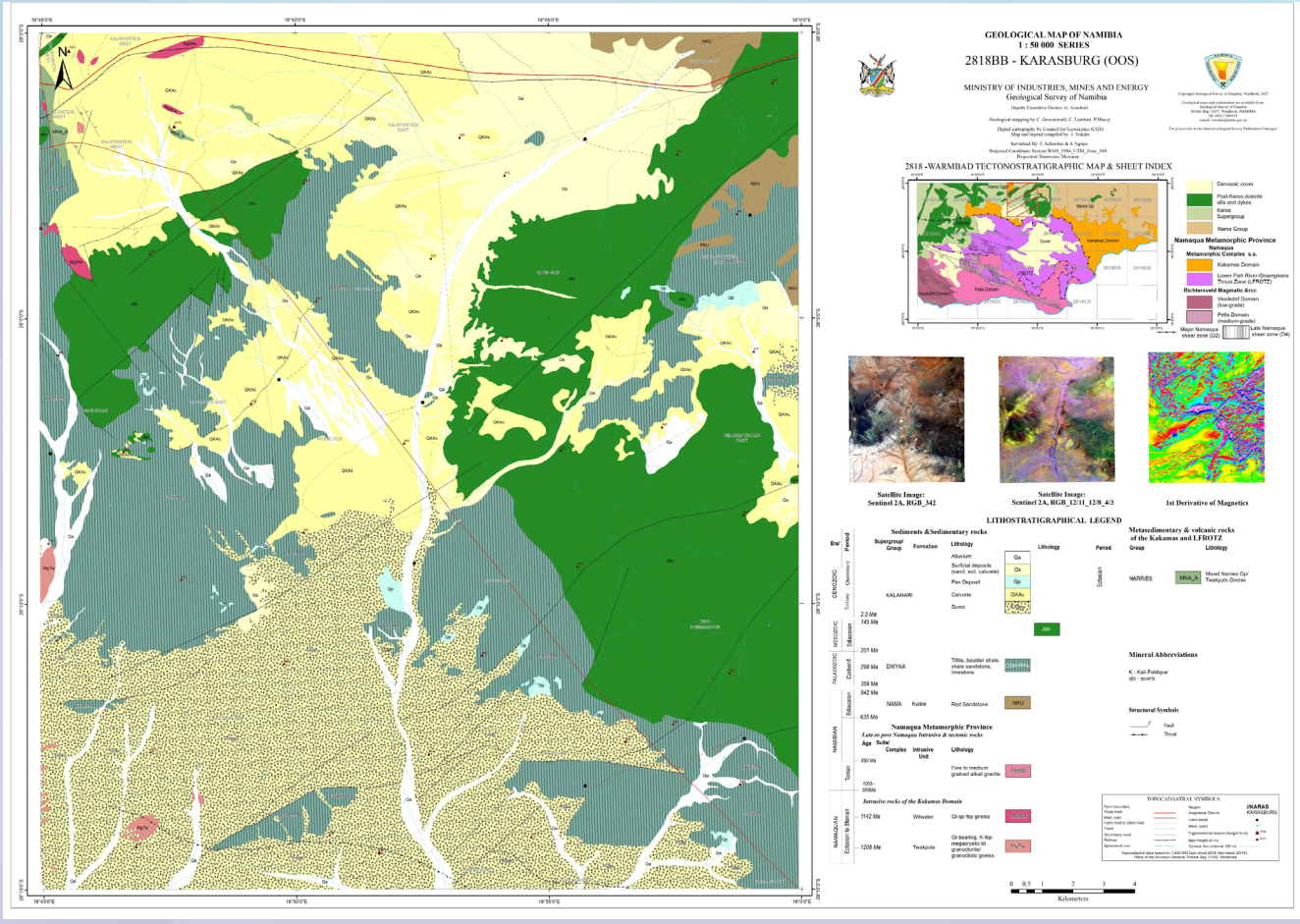
Contents

- The Geological Survey of Namibia (GSN)
- What is National Spatial Data Infrastructure (NSDI)
- The need for a Spatial Data Infrastructure (SDI) at GSN
- Building Organisational SDI at GSN
- Driving Sustainable Development
- SDI Implementation Road Map
- Challenges and Way Foward

Geological Survey of Namibia (GSN)

Mission

- Enhance the knowledge and awareness of Namibia's geological resources through scientific investigation as well as application and **dissemination of quality research data**
- Facilitating the search for and the assessment of mineral resources, geological engineering and land-use planning through sustainable development with due regard to the environment



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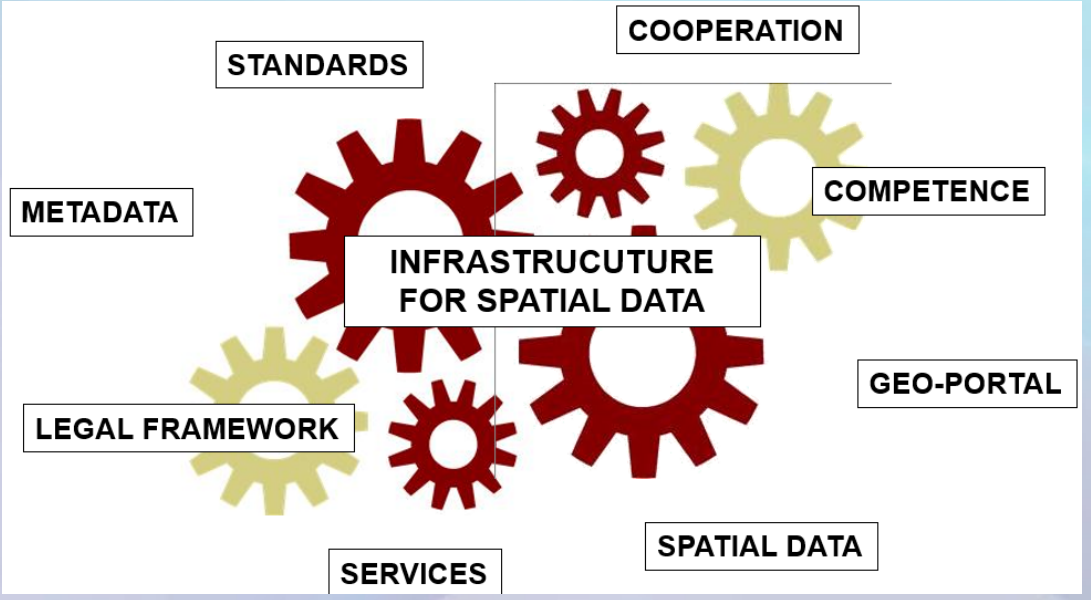
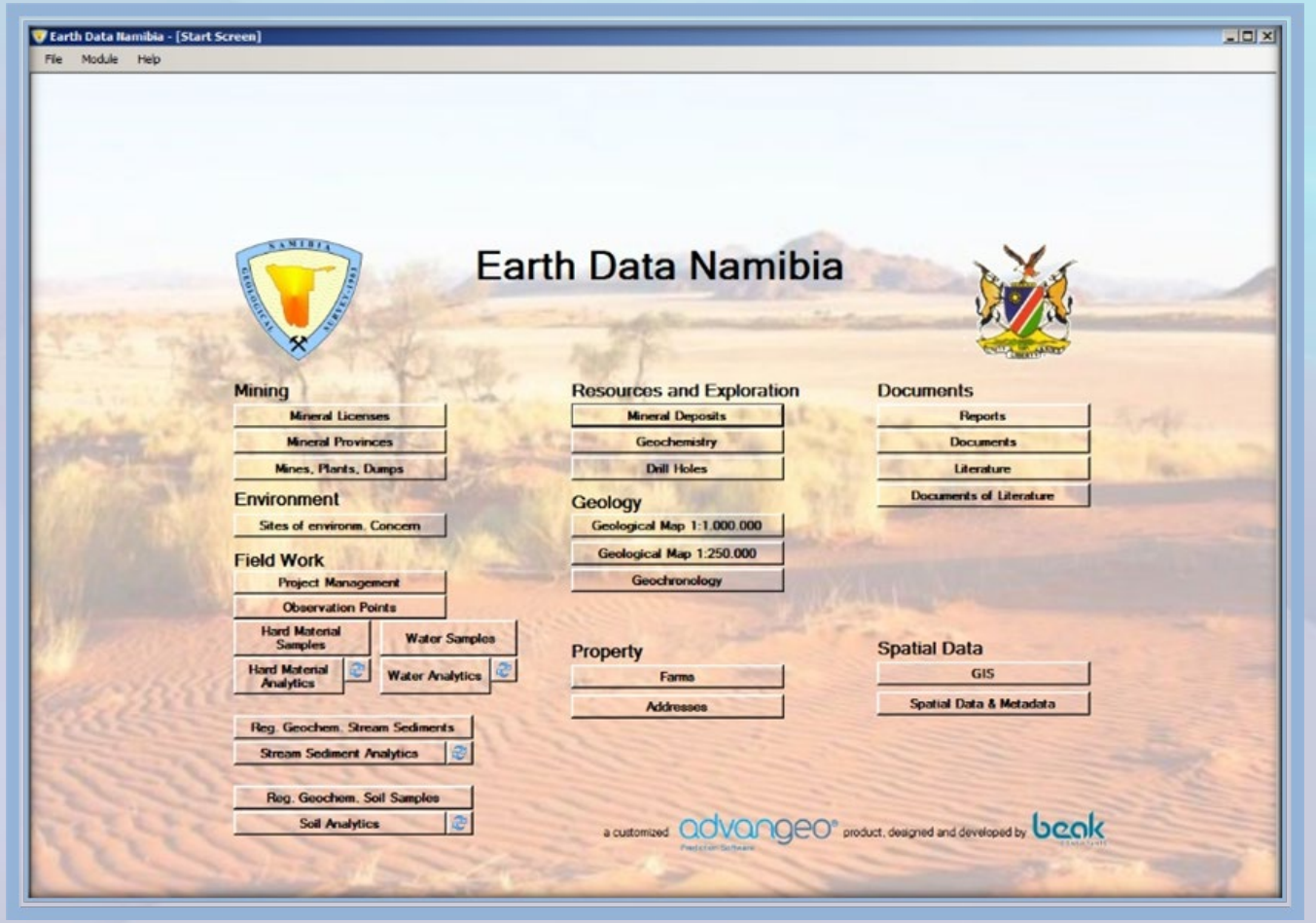
The National Spatial Data Infrastructure (NSDI)

- NSDI is a set of policies, standards and procedures under which organizations and technologies interact to foster more efficient production, management, access and use of spatial data in a country
- The objective is to eliminate spatial data duplication and foster collaboration among institutions
- Legal framework: NSDI Policy, Metadata standard and Data quality standard



The need for a Spatial Data Infrastructure (SDI) at GSN

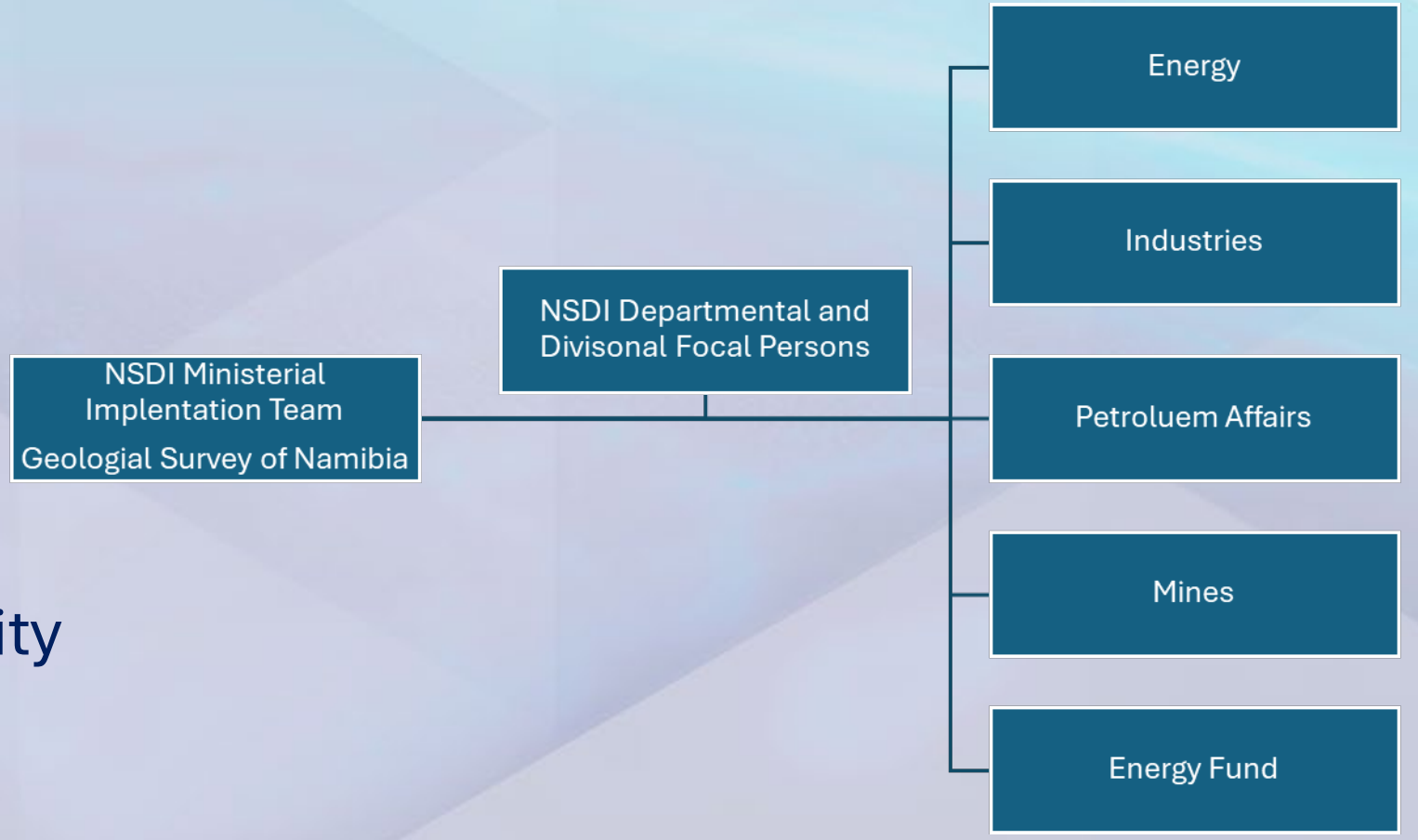
- To efficiently manage massive geoscientific data volumes
- Cross departmental data integration to overcome data silos and data duplication
- Data discovery and accessibility for stakeholders
- Support decision: Informing national planning and resource management



Building Organisational SDI at GSN

Key pillars of GSN SDI

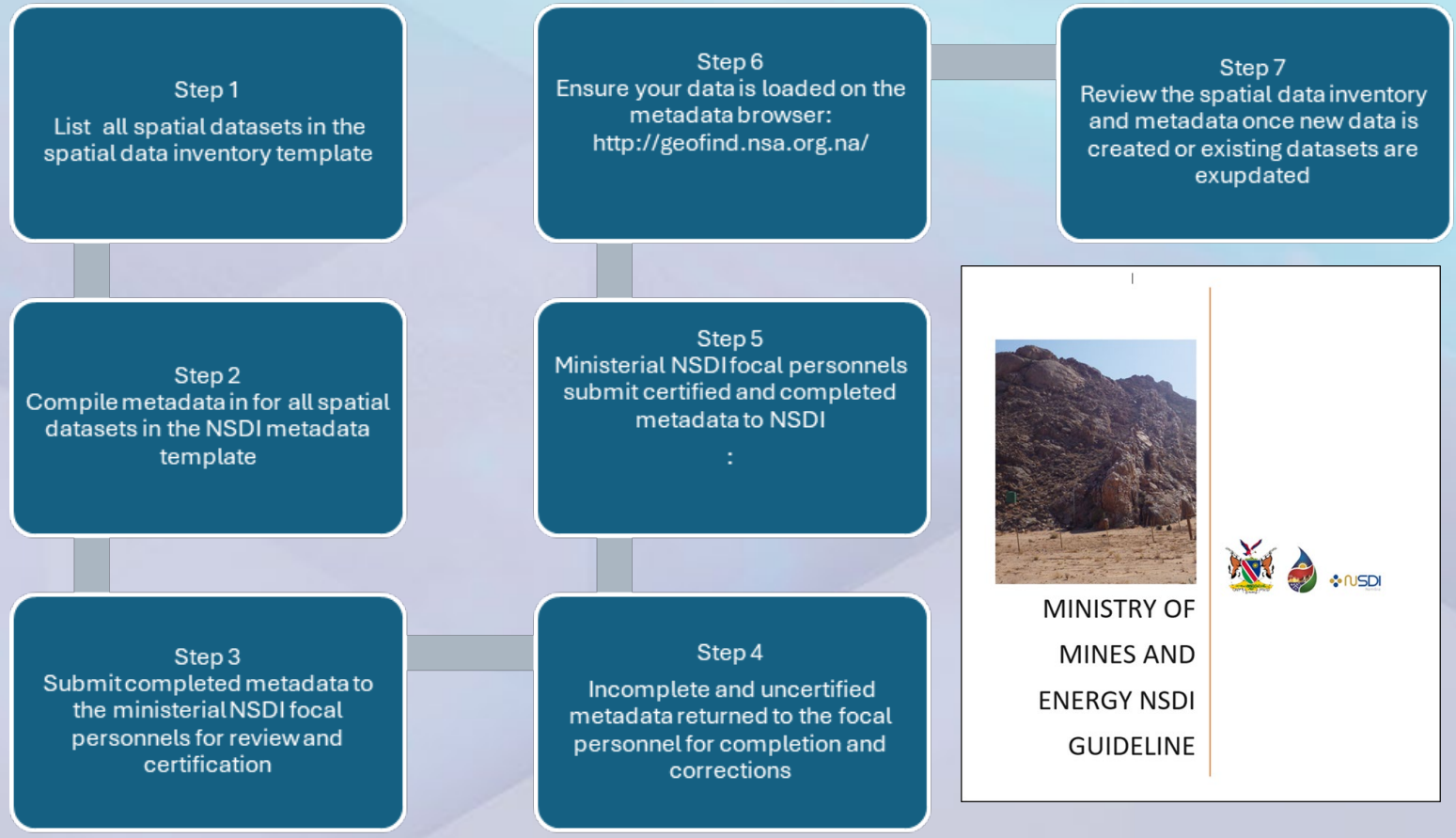
- Geoscientific data and databases
- Technology
- Standards and guidelines
- Cross departmental cooperation: building capacity within the SDI



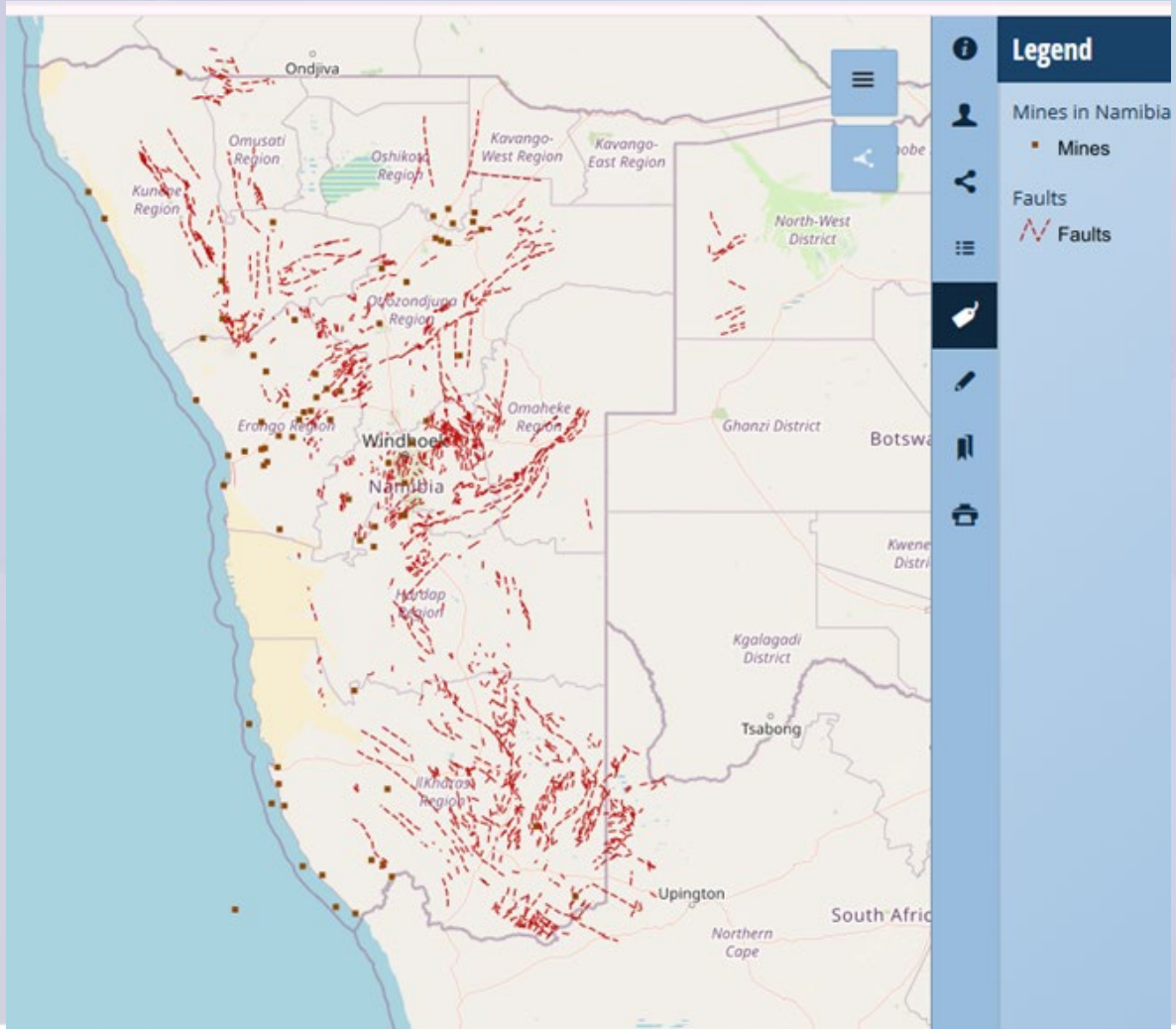
Building Organisational SDI at GSN Conti..

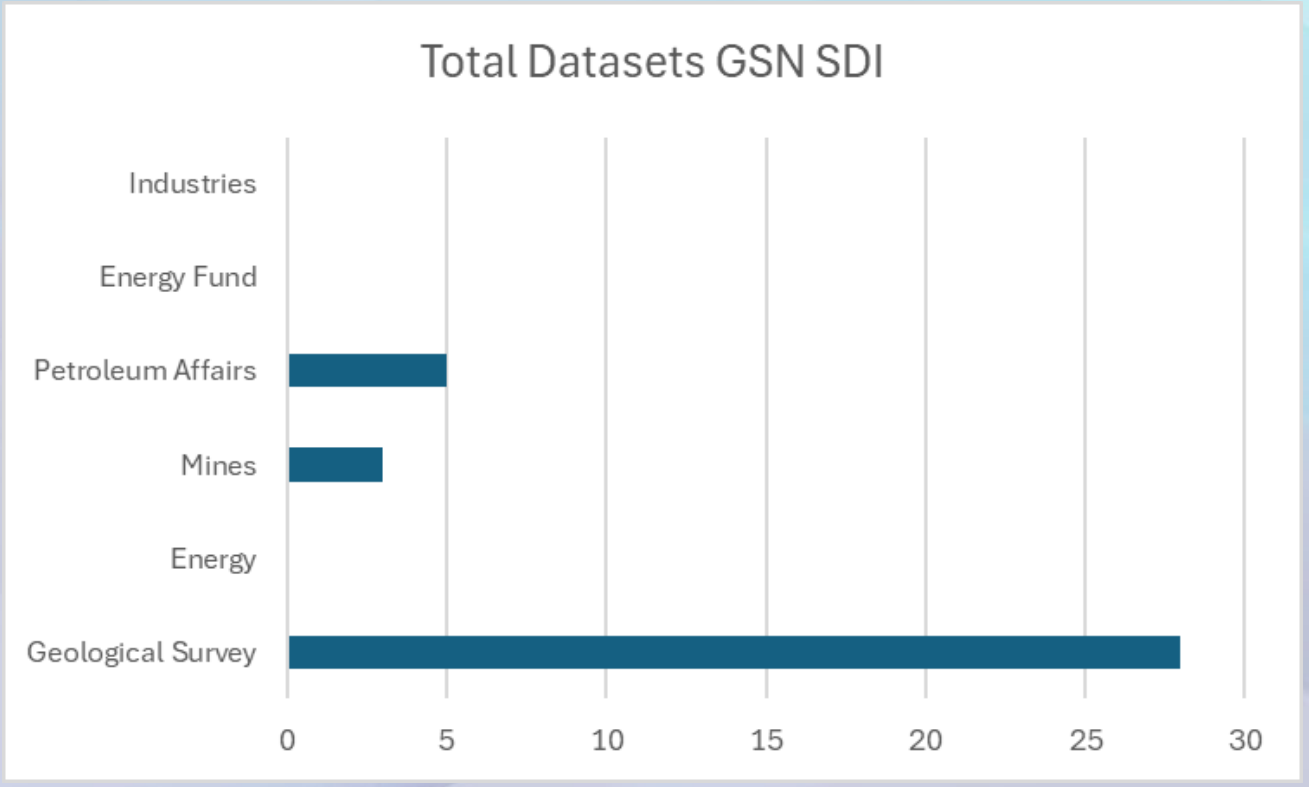
Implementation approach

- Spatial data inventory
- Metadata data documentation
- SDI implementation guideline developed
- Development of standard operating procedures (SOP) for creation, collecting/mapping and compiling of geoscientific datasets



Building Organisational SDI at GSN Conti..





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Building Organisational SDI at GSN Conti..

Petroleum Datasets
Service stations
Fuel consumption
Fuel grade
Petroleum licenses oil and gas
Petroleum deposit in Namibia oil and gas

Mines Datasets
Mines in Namibia
Mineral licenses
Mineral occurrences

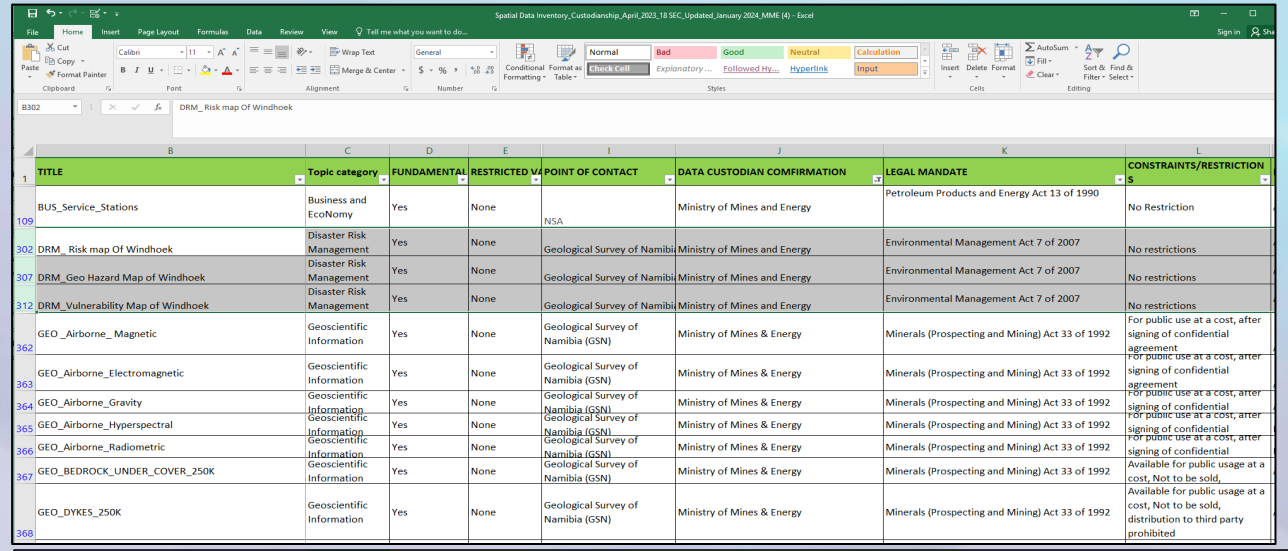
TITLE	Topic category	FUNDAMENTA	RESTRICTED	POINT OF CONTACT	DATA CUSTODIAN COMFIRMATION	LEGAL MANDATE	CONSTRAINTS/RESTRICTIONS
GEO_Mineral Occurances	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992	Available for public usage at a cost, Not to be sold, distribution to third party prohibited
GEO_Mineral Occurances_1million	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992	No Restrictions
GEO_Mineral_Licences	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992 and Diamond Act 13 of 1999	No Restrictions
GEO_Mines in Namibia	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992	No Restrictions

TITLE	PUBLICATION DATE	DATE_TYPE	URL	ORIGINATOR	ROLE	ABSTRACT	PURPOSE	STATUS
GEO_Mineral Occurences in Namibia 1:1 000 000	2013	Publication	NONE	Ministry of Mines & Energy	Custodian	A layer showing mineral occurences across namibia at a scale of 1:1 000 000	Assist the mineral investor with known mineral occurrence data for exploration purposes.	Ongoing
GEO_Mineral Occurences in Namibia 1:1 000 000_2021	2021-09-01	Publication	NONE	Ministry of Mines & Energy	Custodian	A layer showing mineral occurences across namibia at a scale of 1:1 000 000	Assist the mineral investor with known mineral occurrence data for exploration purposes.	Ongoing

Building Organisational SDI at GSN Conti..

GSN Datasets

- Exploration drill holes
- Faults
- Structure 250k
- Structural points
- Abandoned mines
- Geology stratigraphy 1 million
- Structural points
- Earthquake



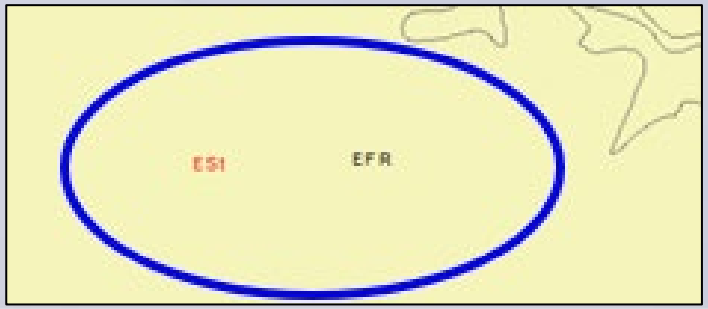
	TITLE	Topic category	FUNDAMENTAL	RESTRICTED VA	POINT OF CONTACT	DATA CUSTODIAN COMFIRMATION	LEGAL MANDATE	CONSTRAINTS/RESTRICTIONS
109	BUS_Service_Stations	Business and EcoNomy	Yes	None	NSA	Ministry of Mines and Energy	Petroleum Products and Energy Act 13 of 1990	No Restriction
302	DRM_ Risk map Of Windhoek	Disaster Risk Management	Yes	None	Geological Survey of Namibi	Ministry of Mines and Energy	Environmental Management Act 7 of 2007	No restrictions
307	DRM_Geo Hazard Map of Windhoek	Disaster Risk Management	Yes	None	Geological Survey of Namibi	Ministry of Mines and Energy	Environmental Management Act 7 of 2007	No restrictions
312	DRM_Vulnerability Map of Windhoek	Disaster Risk Management	Yes	None	Geological Survey of Namibi	Ministry of Mines and Energy	Environmental Management Act 7 of 2007	No restrictions
362	GEO _Airborne_ Magnetic	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992	For public use at a cost, after signing of confidential agreement
363	GEO_Airborne_Electromagnetic	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992	For public use at a cost, after signing of confidential agreement
364	GEO_Airborne_Gravity	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992	For public use at a cost, after signing of confidential
365	GEO_Airborne_Hyperspectral	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992	For public use at a cost, after signing of confidential
366	GEO_Airborne_Radiometric	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992	For public use at a cost, after signing of confidential
367	GEO_BEDROCK_UNDER_COVER_250K	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992	Available for public usage at a cost, Not to be sold,
368	GEO_DYKES_250K	Geoscientific Information	Yes	None	Geological Survey of Namibia (GSN)	Ministry of Mines & Energy	Minerals (Prospecting and Mining) Act 33 of 1992	Available for public usage at a cost, Not to be sold, distribution to third party prohibited

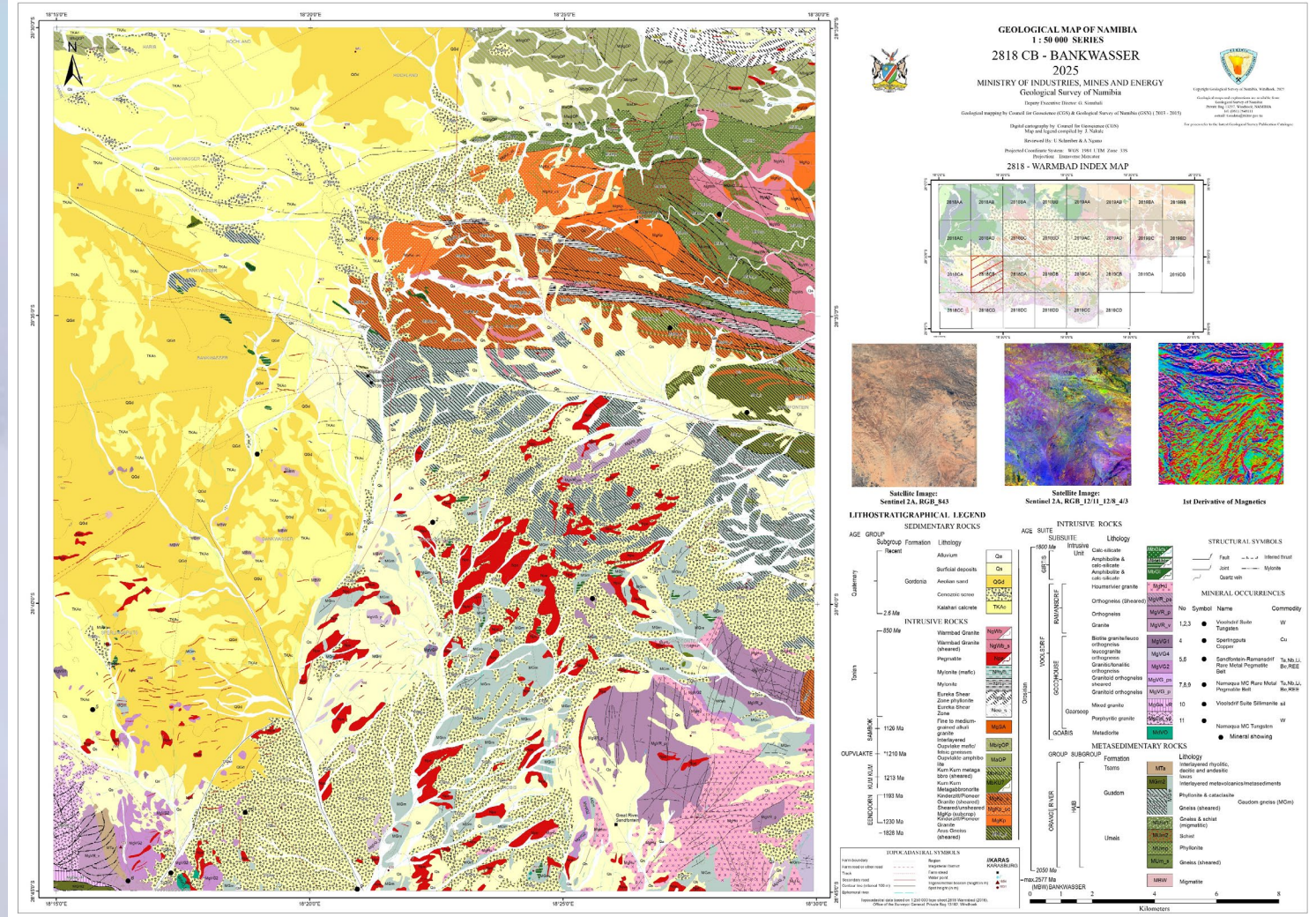
TITLE	PUBLICATION_DATE	DATE_TYPE	URL	ORIGINATOR	ROLE	ABSTRACT	PURPOSE	STATUS	FREQUENCY
The given name of the dataset	*Provide the date that the data was published or otherwise finalised.*	**Publication**	*URL link to the datase, if one exists.*	*The name of the data custodian (organisation, person etc.)*	*Custodian', 'PointOfContact' or 'Distributor'*	*Provide a description of the data content and features including geographic coverage, time period of content, and methods of data creation, limitations or other information that will aid data consumers in determining if the data is relevant to their intended application.*	*Provide an explanation as to why the data was created.*	**Complete', 'OnGoing' , 'Planned' or 'Undetermined'**	**AsNeeded', '1-3 years', '3-5 years', '5-10 years' or 'Periodic'**
GEO_DYKES_250K	2013-08-06	Publication	NONE	Ministry of Mines & Energy	Custodian	A line layer showing intrusive dykes too thin to be displayed as polygon	Representation of a geological feature on the maps	Ongoing	AsNeeded
GEO_INTRUSIVES_250K	2013-08-06	Publication	NONE	Ministry of Mines & Energy	Custodian	Point layer showing intrusive units too small to be displayed as polygons at scale 1: 100000	Representation of a geological feature on the maps	Planned	AsNeeded
GEO_STRUCTURE_250K	2013-08-06	Publication	NONE	Ministry of Mines & Energy	Custodian	Line layer showing detailed structural elements (scale 1:50 000 to 1: 250 000 depending on accuracy	Representation of a geological feature on the maps	Planned	AsNeeded
GEO_THIN_UNITS_250K	2013-08-06	Publication	NONE	Ministry of Mines & Energy	Custodian	It consist of 52 different rock units that are too small to map out as polygonat 250K map scale. The unit appears as line and is dominated by marbles, carbonate rocks, quartzite and amphibolite.	Representation of a geological feature on the maps	Planned	AsNeeded
GEO_BEDROCK_UNDER_COVER_250	2013-08-06	Publication	NONE	Ministry of Mines &	Custodian	These are polygon layer showing subsurface geology as determined from water and exploration	Representation of a	Planned	AsNeeded

Building Organisational SDI at GSN Conti..

The National Stratigraphy Committee was established

- Refine the existing geological data standard
- Ensure that geological naming conventions and structural unit coding are fully aligned with the standard
- Guide in case of splitting/creation of formations or groups, ensuring consistency in geological data creation





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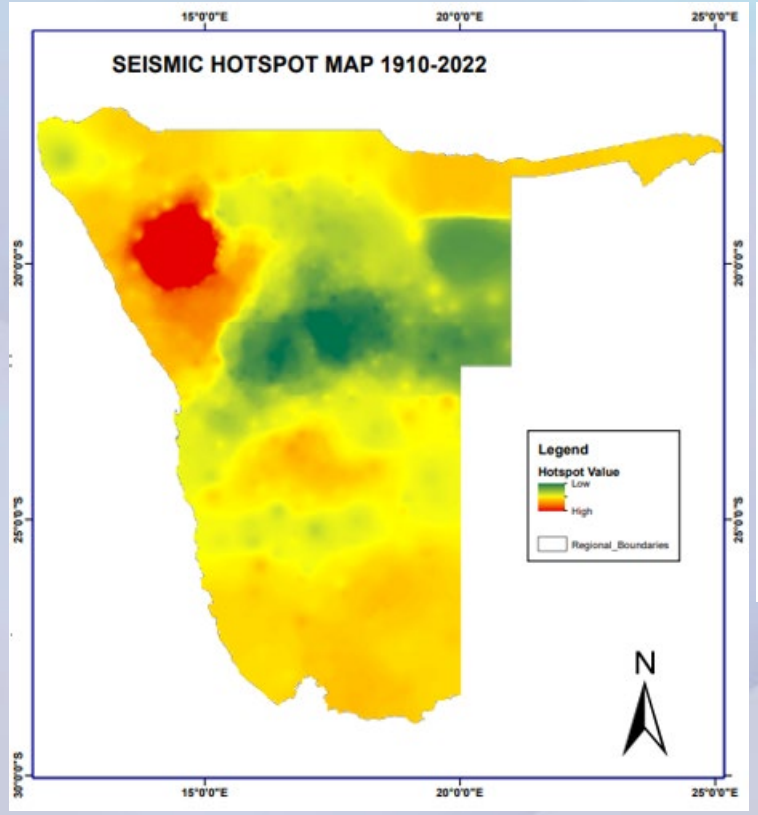
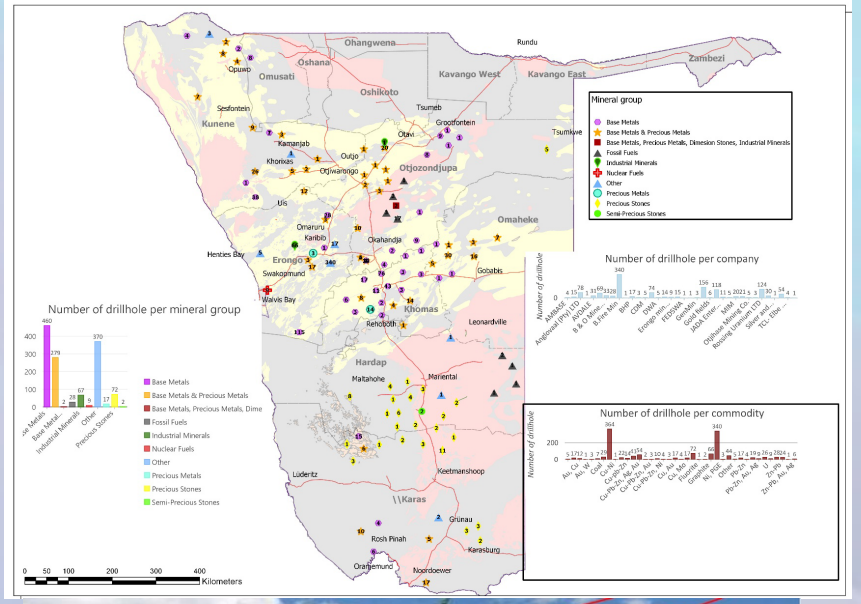
Driving Sustainable Development

- Integration of critical geoscientific data at all levels of planning
- Support informed mineral exploration
- Strengthens earthquake monitoring, infrastructure development and geohazard planning





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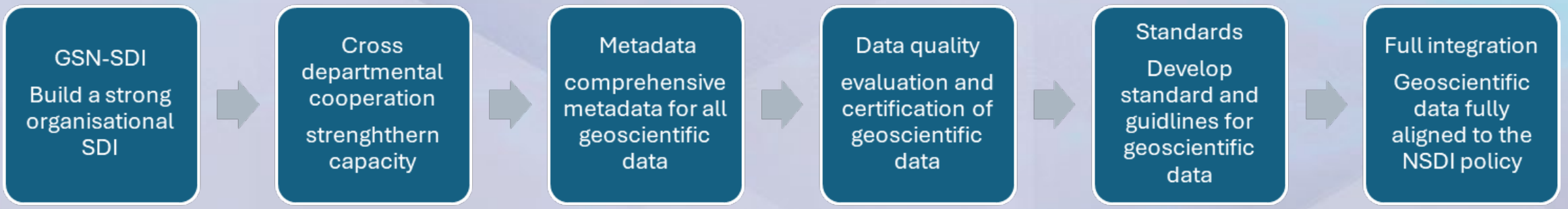
SDI Implementation Road Map



Challenges and Way Foward

Challenges

- Data standardization across departments and all other organisational SDI
- Sustainable funding for geoscientific data management and human resources

Way Forward

- Strengthening the GSN SDI capacity in:
  - ❑ Data quality assurance
  - ❑ Spatial data management
  - ❑ Data homogenization
- Expanding on the GSN spatial data ecosystem
- Finalisation of the SOPs
- Advancing towards a full alignment to the NSDI Policy
- Strengthening cross departmental collaboration

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Thank you

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