Developing a National Land Cover Standard through collaborative custodianship – Opportunities and Challenges: *Embracing the principle of "Letsema"*

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Embracing the principles of "*Letsema*"

- In the Southern Africa region -the Batswana and Basotho people have an outreach programme known as *letsema* – coming together with others for others. It is a voluntary action to help improve the lives of the other people.
- It is essentially a communal collaboration for the benefit of individuals or the community itself.

Embracing the principles of "*Letsema*"

- In the Eastern part of Africa - Boyte (2010) further mentions the Swahili phrase in the Eastern side of Africa: *kidole kimoja hakivunji chawa* – literally meaning one finger cannot kill a lice, emphasizing the importance of working together to achieve a common goal.
- *Letsema* gave birth to the notions such as *ubuntu* (I am because we are) which emphasises synergy, cooperation, symbiosis and mutualism

South African Legal Framework on Collaboration

- Data custodians are now *embracing the principle of "letsema" by* exploring ways to promote efficient, economic and effective use of resources by cooperating and coordinating with one another in the production of geospatial data - **National Land Cover mapping**
- This principle is enshrines in:
  - The Constitution of the Republic of South African (1996) which sets out basic values and principles of cooperative government and intergovernmental relations which promotes coordination, **collaboration**, cooperation amongst organs of state.
  - Intergovernmental Relations Act, 2012, managing **collaboration** and relationships and interaction among different levels of government and arms of the state.
  - Spatial Data Infrastructure Act, No.54 of 2003 encourages organs of state who are appointed as Data custodians to exchange spatial information in terms of **collaborative maintenance agreements** and support each other to ensure synchronised updates of spatial data sets.
  - Policy on Base Dataset Custodianship (2015), highlighting the roles and responsibilities of data custodians on how they should in a **collaborative** manner manage geospatial data on behalf of the country/public.

South African Spatial Data Infrastructure (SASDI)

The SASDI is established in terms of section 3 of the Spatial Data Infrastructure Act, No.54 of 2003 to achieve the following:

(a) facilitate the capture of spatial information through co-operation among organs of state;

(b) promote effective management and maintenance of spatial information;

(c) promote the use and sharing of spatial information in support of planning, socio-economic development and related activities;

(d) create an environment which facilitates co-ordination and co-operation among all stakeholders regarding access to spatial information;

(e) eliminate duplication in the capturing of spatial information;

(f) promote universal access to such information; and

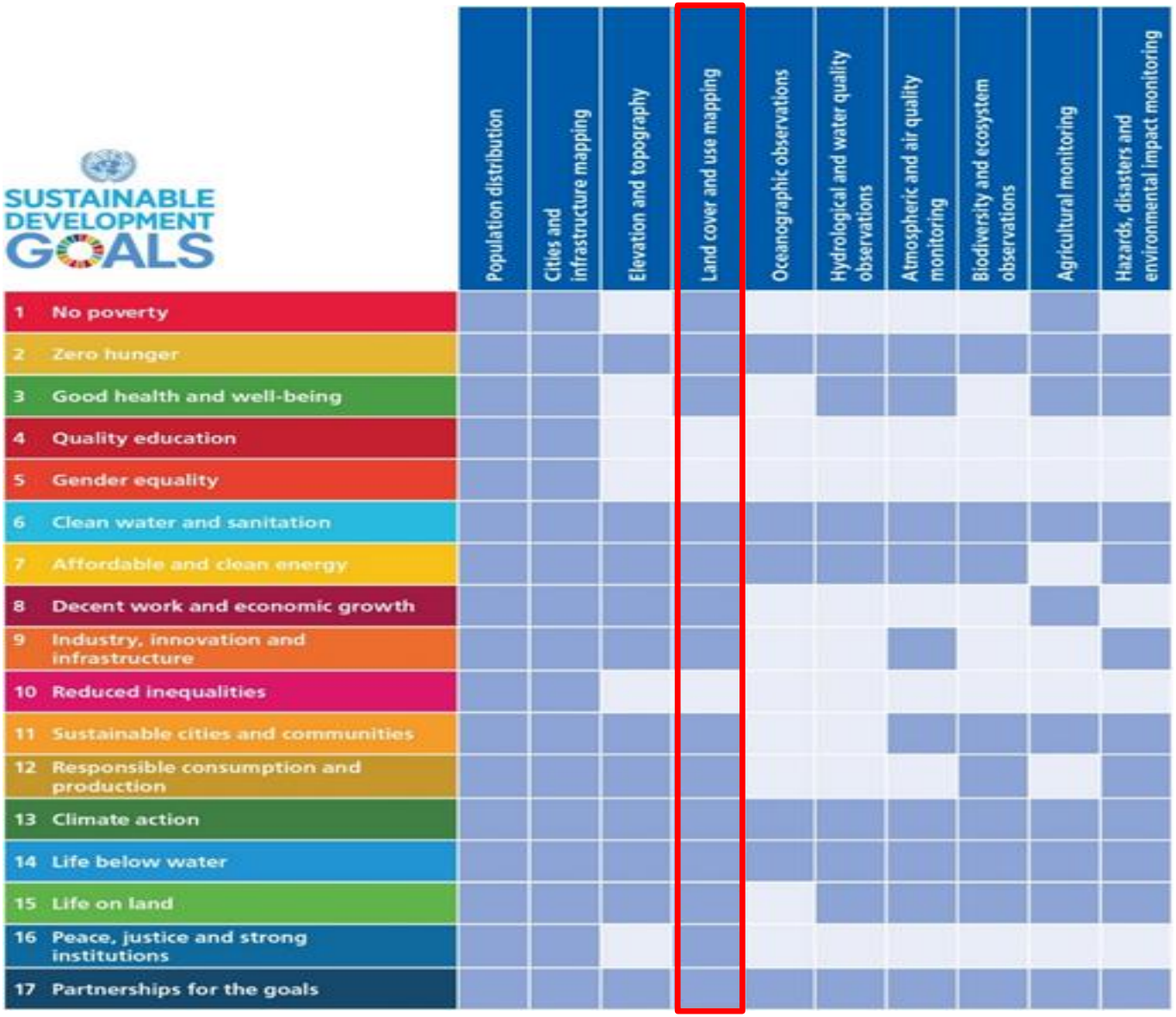
(g) facilitate the protection of the copyright of the state in works relating to spatial information

Land cover –multi sectoral dataset

The importance of standards

Producing an integrated dataset depends on the availability standards to support interoperability.

Universal access and sharing of geospatial information can only be achieved through the development and implementation of standards.



SA journey to a National Land Cover standard

- SA produced Land Cover products in 1994, 2000 and 2013 and the products were in line with the SANS 1877- A standard land-cover classification scheme for remote-sensing applications in South Africa.

- SANS 1877 was based on the Land Cover Classification System (LCCS)1 and LCCS 2 developed by the UN-FAO.

- LCC2 was adopted by the National Mapping Agency in 2008, was able to produce provincial data land cover data sets in 2012.

- The Land Cover Meta-Language was adopted as a land cover classification ISO:19144-2-2012 and later the South African National Standard (SANS) 19144-2-2014 meta-language.

- In October 2016, the SAGEO through the Land Cover CoP, consisting of various organs of state, took a decision to establish a forum to define Land Cover classes and definition for South Africa.

SA journey to a National Land Cover standard

- LCCS1
- SANS 1877

Product

- NLC 94
- NLC 2000
- Provincial NLC
- NLC 2013-2014

- LCCS 2

Product

- North West 2012
- Eastern Cape 2012

- ISO 19144 -2 approved 2012
- SANS 19144-2 approved 2014 (known as LCML – LCCS3)

SDI ACT 54 of 2003

Product

National Land Cover Classes and Definitions

Objectives of the Land Cover standard

The SAGEO took a decision to invoke a provision made through section 11 and 16 of the Spatial Data Infrastructure Act, No.54 of 2003, and deliver on the following:

Objective 1: Define classes - linking with the glossary in ISO19144_2.

Objective 2: Setup a hierarchical structure of classes that is not limiting and prescriptive.

Objective 3: Harmonise terminology to avoid misinterpretation

Objective 4: Define Land Cover Governance model.

Objective 5: To define the role of the Land Cover Coordinating Custodian and Contributing Custodians in the mapping of LC.

Objective 6: Investigate funding opportunities to keep the datasets up to date.

Objective 1 :Define classes aligned with national and international standards

9 Leve1 Classes were identified

The NLC class definitions are structured in such a way that each level has its own definition which has a direct link to the relevant parent class.

Base Data Set Coordinator- Land Cover Theme **Responsibilities: Together with Data contributors defined standard for the management of Land Cover**									
Level 1 Class	**Forest land**	**Shrub land**	**Grassland**	**Waterbodies**	**Wetlands**	**Barren land**	**Cultivated**	**Built-up**	**Mines and Quarries**
Data Custodian	DAFF	DEA	DAFF	DWS	SANBI	DAFF	DAFF	DRDLR	DMR
Responsibilities	Contribute dataset in line with the approved standards								

DAFF: Department of Agriculture, Forestry and Fisheries
DEA: Department of Environmental Affairs
DWS: Department of Water and Sanitation
SANBI: South African National Biodiversity Institute
DRDLR: Department of Rural Development and Land Reform
DMR: Department of Minerals Resources

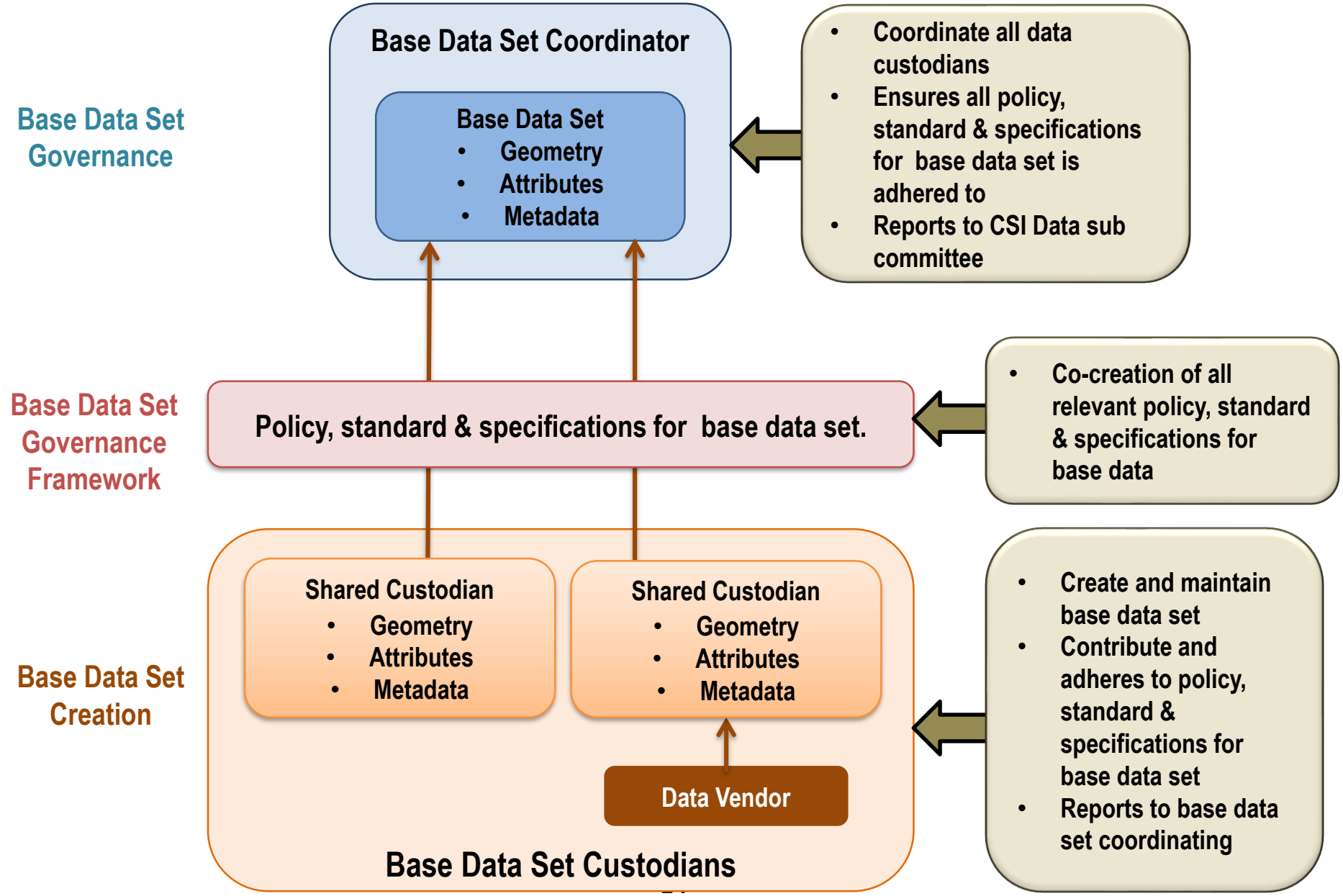
Objective 2: Setup a hierarchical structure

Class: No	Level1: Class	Class Definition	Class: No	Level 2: Class	Class Definition	Class: No	Level3: Class	Class Definition	Level 4: Class Measure
4	**Waterbodies**	This class includes all natural and artificial surface water features. This category entails permanent and seasonal features such as rivers, pans, major reservoirs, farm-level irrigation dams, pans ,lakes, lagoons and flooded mine pits	4.1	**Natural**	Waterbodies occurring naturally in a landscape.	4.1.1	**Rivers**	Perennial and non-perennial flowing rivers which can be subdivided into permanent or seasonal rivers.	
						4.1.2	**Estuaries and lagoons**	Waterbodies associated with oceans which occur at the mouth of rivers or are replenished by tidal flow.	
						4.1.4	**Ocean**	Saltwater waterbodies.	
						4.1.5	**Lakes**	Large standing waterbodies with fresh water.	
						4.1.6	**Pans**	Pans that contain surface water at the time of observation.	Perennial Pans Non-perennial pans.
			4.2	**Artificial**	Waterbodies formed through human intervention (artificial).	4.2.1	**Dams**	Infrastructure constructed for the purpose of water use whereby a dam wall is built interrupting the flow of rivers.	
						4.2.2	**Canals**	Artificial waterway largely used for agricultural purposes.	
						4.2.3	**Sewage pods**	Infrastructure constructed by building wall for the purpose of sewage treatment and that's where sewage ends.	
						4.2.4	**Flooded mine pits**	Waterbodies associated with or created by mining activities	

Objective 3: Harmonized terminology

ORGANISATION	NATIONAL LEGISLATION	INTERNATIONAL AND NATIONAL REPORTING REQUIREMENTS
DWS	• National water Act 1998 • Water service Act 108 of 1997	• National Water Resource Strategy (SFWS) • Strategic Framework for water Services (NWRS)
DEA SANBI CAPE NATURE KZN WILDLIFE	• National Environmental Management : Integrated Coastal management Act (Act No 24 of 2008) • National Environmental Management : Biodiversity Act 2004 • National Environmental Management : protected Areas Act (Act 57 of 2003) • White paper on conservation and sustainable use of South African Biological Diversity (1997)	• National biodiversity strategy and action plan • National Spatial Biodiversity Assessment (NBSAP) reviewed every 5 years • National Protected Area Expansion Strategy (NPAES • National Biodiversity Framework (NBF)
DAFF	• Conservation of Agricultural resource Act 43 of 1993 • Subdivision of Agricultural Land Act 70 of 1970 • National Forest Act 84 of 1998 (chapter 2) • National Veld and Forest Act 101 of 1998(chapter 3) • Disaster Management Act 57 of 2002	• Change of land use application • Environmental impact assessment • Farm planning • Spatial development Framework(SDF) • Integrated Development Plans (IDP) • Monitoring, reporting and verification in relation to UNFCCC.

Objective 4: Governance Model



Objective 5: Define roles for Land Cover Mapping

Base Data Set Coordinator- Land Cover Theme
Responsibilities: Together with Data contributors defined standard for the management of Land Cover

Level 1 Class	**Forest land**	**Shrub land**	**Grassland**	**Waterbodies**	**Wetlands**	**Barren land**	**Cultivated**	**Built-up**	**Mines and Quarries**
Data Custodian	DAFF	DEA	DAFF	DWS	SANBI	DAFF	DAFF	DRDLR	DMR
Responsibilities	Contribute dataset in line with the appr[illegible]d standards								

Level 2 Class	**Natural Waterbodies**					**Artificial Waterbodies**			
Level 3 Class	**Rivers**	**Estuaries and Lagoons**	**Ocean**	**Lakes**	**Pans**	**Dams**	**Canals**	**Sewage pond**	**Flooded mine pits**
Data Custodian	DWS		DEA ★	DWS		DWS			DMR ★

Cooperative action is stronger when the one receiving help takes a lead.

Objective 5: Funding opportunities

- The mapping of Land Cover is not the sole responsibility of one organisation
  "**Letsema for mapping of Land Cover**"
  Supported and well maintained dataset

- Options proposed:
  - Create a kitty/fund (each organisation contributing to the fund)
  - Sponsored or funded by one Organisation for the benefit of all

- NB: Principle of information flow:
  - Any organisation can collected data on condition that the project is approved by the Committee for Spatial Information after consultation with the Coordinator.
  - The data to be collected must adhere to standards including metadata standard
  - Provide a data maintenance plan

Challenges

- The National Land Cover is the first standard developed through the SDI Act, 2003.
- The legislative process on the development of prescripts was followed to latter, exposing resource challenges to interpret legislation.
- Defining Land Cover standard that will aligned with different mandates to respond to different needs and protocols.
- Harmonising terminology from different sectors that is already entrenched within legislations.
- Some of the organs of state had funding challenges

The approved National LCCD Standard

GOVERNMENT NOTICE
GOEWERMENTSKENNISGEWING

DEPARTMENT OF RURAL DEVELOPMENNT AND LAND REFORM
DEPARTEMENT VAN LANDELIKE ONTWIKKELING EN GRONDHERVORMING

No. **December 2016**

SPATIAL DATA INFRASTRUCTURE ACT, 2003

In terms of section 11(2) of the Spatial Data Infrastructure Act, 2003 (Act No. 54 0f 2003), **I,** Gugile Ernest Nkwinti (MP), **Minister of the Department of Rural Development and Land Reform, hereby** approve the National Land Cover Classes and Definitions 2016 Standard. The standard will come into operation one month from the date of publication hereof in the *Gazette*.

Nkwinti, G E (MP)

Minister of the Department of Rural Development and Land Reform

Date: 28/02/2017

SA National Land Cover 2018

- SA National Land Cover was launched on the 1st of October 2019
- Based on the National Land Cover Classes and Definition Standards
- The project was champion and funded by DEA (Contributing Custodian) working together with DRDLR (Coordinating Custodian)
- The National Land Cover is available on an open license agreement
- Accessible at https://egis.environment.gov.za/gis_data_downloads

DRDLR, DEA, DAFF, DWS: SANBI and DMR

An opportunity – Africa Land Cover Standard

- Natural features has no respect for boundaries
- A need to harmonise especially along the boundaries
- An opportunity exist to develop the Regional (SADC) and the African Land Cover Standard
- Aligns with the Programme of Work of the UN-GGIM: Africa – Working Group on Fundamental Dataset and Standards
- As a first step- SADC Standards Committee TC 13 is established.

SADCSTAN /TC 13

Geographic Information

African can be a superpower only if we can embrace the principles like “Letsema” and “*kidole kimoja hakivunji chawa”*

We cannot afford to leave anyone behind to arrive at the “Africa we want”

It is in our hands

Thank You

Maroale Mimi Chauke

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