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Status on the National Land Cover Standard



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Executive Remarks



The Department of GIS and NSDI Coordination at the NSA has been exploring effective ways to communicate the NSDI work plan, progress and challenges to the public. One of the vehicles as per the NSDI Communication Plan 2015-2020 as extended to 2022 has been through the NSDI Newsletter. We are pleased to state that as we come to the end of the first NSDI strategic period, the Department has set a solid foundation for regular publication of its coordination work. Namibia has become a reputable nation with regards to NSDI implementation in Africa as the country continued to improve its continental ranking since the start of the NSDI government programme in 2015.

NSA has used many methods of communication to forcefully drive the NSDI message across. The Agency has developed a video to explain what the NSDI is all about and how it is being implemented in Namibia. Stakeholder workshops were conducted annually covering national, regional and local government institutions. Furthermore communication and engagements through the use of both print and social media was promoted. As an example, the Namibia Spatial Data Infrastructure Facebook Page had 289 members as of 10 March 2022. Further insights on engagement were regularly derived from the number of interactions that happens on the National Geographic Portal system through Google Analytics.

As we look forward to the next strategic period for the period 2022-2027, it is fulfilling to note that NSA has built its internal capacity within the limited resources it received from government. The youthful Department is manned by highly professional and dedicated personnel who are a joy for any Executive to work with.

With decreasing government funding, new innovative approaches to indirectly and directly implement the next strategic actions will be formulated, including those approaches related to effective communication and engagement.

I therefore dedicate this last series of the NSDI Newsletter to our professional staff of the Department for their zeal, professionalism and dedication to the call of duty throughout the first strategic period. The Department grew from being the youngest Department at the NSA to one that has become another strong pillar of the Agency because of your skilful uncompromising work and love for Namibia. With your effort, our country is a step away from being fully digitalised as we continue to contribute to the government's e-Governance strategy.

I want to end by thanking our readership and to those who contributed articles in the previous Newsletters. It is because of your advice and constant checks and balances you placed upon us that we could achieve these milestones together. Thank you very much and we hope to elevate our engagement further in the next strategic period beginning in April 2022.

A handwritten signature in black ink, appearing to read 'Alex Muluti Mudabeti'.

Alex Muluti Mudabeti
Executive GIS & NSDI
Coordination

Africa GIS Conference 2021

The AfricaGIS Conference has become a flagship Geospatial market place in Africa. In 2021, the event took place in the city of Abidjan, Côte d'Ivoire under the theme: *Geospatial Innovation and Science for Africa's Growth and Sustainable Development*. The forum served as a platform for bringing together hundreds of key stakeholders including professionals, government officials, development agencies, policy and decision makers to deliberate on innovations in the field of geospatial information technology and potential contribution to development. The event kick-started on the 22nd November and ended on the 26th November 2021.

The Conference featured keynote speakers by leading scholars, technical sessions with reports on the latest research outcomes. In the mornings, various presentations were held by the event sponsors (GEODATA, TRIMBLE, ESRI, AIRBUS, MAXAR, EUMETSTAT etc.) on their products, projects and technologies; whilst focus group discussions took place in the afternoons. Furthermore, the Conference featured side events such as poster presentations and exhibitions for latest products and services in geospatial science and technology.



Mr. Mudabeti representing Namibia at the Conference



Namibia scores high in group continental ranking of Spatial Data Infrastructures

Namibia scored the highest group ranking for an assessment of national spatial data infrastructure (NSDI) development in Africa which was conducted by the Regional Committee of the United Nations Global Geospatial Information Management (UN-GGIM). The country is implementing the NSDI through the Namibia Statistics Agency in consultation with the Ministry of Agriculture, Water and Land Reform.

In the 2021 assessment, countries were ranked as either champions, aspirers or beginners depending on the outcome. Namibia's assessment resulted in the movement of the country from aspirer in 2018 to the champion's group, the highest group score in this assessment. This is surely commendable and it is only needed that Namibia sustains this high rating. Other countries in this champions group are Malawi, Senegal and South Africa.

The methodology that was used in the assessment was based on the Capability Maturity Model, which was originally developed by the Software Engineering Institute at Carnegie Mellon University in the United States of America for evaluating and improving software development processes. The assessment focused on strategic planning, policy and legal frameworks, geographic/spatial data, standards, access networks, and people and 20 African countries took part in the assessment.

Oshana Regional Council opens a GIS Office



Hon. Gerson Kapenda and Mr. Alex Shimuafeni officially opening the GIS office in Oshana

The Oshana Regional Council is the first council to launch a Geographical Information System (GIS) office. The office was launched in partnership with the Namibia Statistics Agency in Oshakati on the 15th of December 2021. Honourable Gerson Kapenda, Chairperson of the Regional Council officially opened the office on behalf of the Governor.

Prior to the launch, NSA conducted a two-day Open-source GIS refresher training for 10 Oshana Regional Council staff members, among these trainees was Mrs. Kaakunga, the focal person for the newly opened Oshana Regional GIS Office. The training was aimed at understanding the government initiative to establish a National Spatial Data Infrastructure (NSDI) and creating regional spatial databases to assist the regional council with evidence-based planning.



Hon. Gerson Kapenda and Mr. Alex Shimuafeni awarding certificates to trainees



Oshana Regional Council staff with certificates of completion

Status on the National Land Cover Standard

The NSA in collaboration with GIZ and UNDP is coordinating the development of the National Land Cover Standard. Various consultations with key stakeholders took place between 2019 and 2021 resulting in the establishment of a technical working group to support the formulation of the standard. The last workshop of the technical working group met from 04-06 September 2021 to provide inputs and map out the activities of the National Land Cover Standard document. The standard has 9 respective classes at level 1 with sub classes at levels 2 to 4.

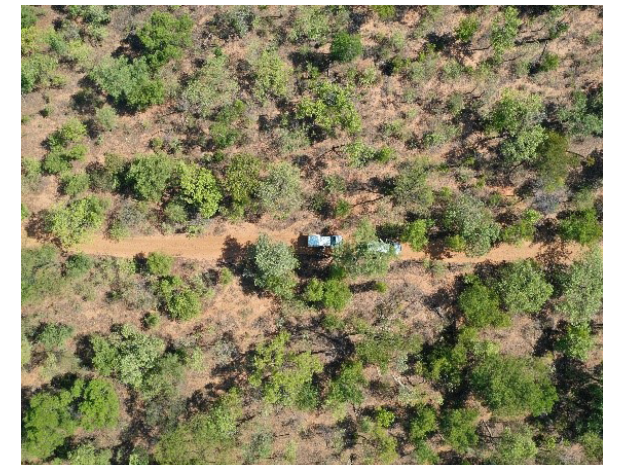
Thus far, field verifications for the Forest, Savannah and shrubland and grassland classes have been conducted. The two teams managed to collect data from 137 sites. The NSA, with the support from the technical working group is working towards finalisation of the verification of classes and plans to host a stakeholder consultation meeting to finalise the National Standard and submit it for gazette.



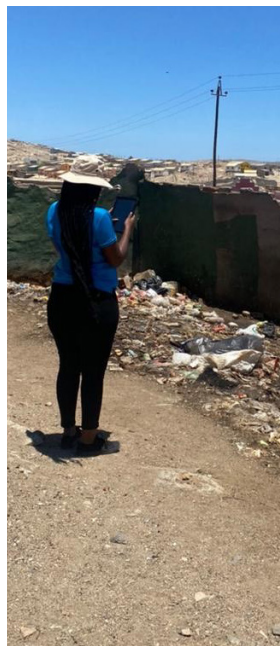
Members of the Technical Working Group and NSDI Secretariat at River Crossing Lodge, Windhoek



Drone coverage images from the Forest belt in Kavango East Region



NSA attempts automation through a Feature Extraction Tool



NSA staff conducting the verification and part of the structures that were verified

The NSA hired the services of a consultant to design and construct a comprehensive, open, generic and user friendly GIS national feature extraction tool. The tool is able to extract features from high resolution satellite imagery for change detection and information extraction. The tool will be used as a government-wide NSDI tool during censuses and statistical surveys.

The deliverables of this tool were received, in order to assess the output, the Department of GIS and NSDI Coordination embarked on a two-

week verification field work in December 2021 to verify the structures captured by the tool in 12 regions. The different teams had to study the area and identify whether all structures were captured, note if structures were missed, check for duplicates and the accuracy of the tool.

The field verification data indicated that the feature extraction tool captured the majority of the structures from the satellite imagery with high accuracy. 93 percent of all the points visited and verified were accurately captured.

NSDI High Level Regional Socialisations

The NSA conducted Phase 2 of the NSDI decentralisation workshops in //Kharas, Hardap, Omaheke and Otjozondjupa Regions from 15-18 November 2021. The workshops were aimed at creating high level awareness among regional stakeholders, update the regional stakeholders on what has been achieved thus far since the NSDI implementation started in 2015 and to discuss the modalities of decentralising the NSDI to the regions.

Stakeholders indicated their willingness to participate in the implementation of the NSDI activities and various aspects relating to the use of statistics and spatial data for day to day planning were discussed. The importance of spatial data provided through the NSA was highlighted, especially the role it plays in the implementation of projects and attracting investors in the regions. Projects like potential development of hydrogen that is expected to triple renewable energy creation and create more employment in the country was outlined as one of the projects that will benefit from the availability of accurate spatial data.

Moreover, challenges that are likely to hinder the implementation of NSDI activities at some institutions were discussed. One of the major challenges experienced by the regional councils and local authorities is lack of skills and hardware like servers and computers. Most village councils are looking forward to the training, so that they can be capacitated to start using GIS in management of council land. It was further indicated that it will even be more helpful if local authorities can access historical data that is required to monitor developmental changes and address land disputes.

NSDI in aiding geography teaching at Secondary Schools

Awareness creation, outreach and advocacy programs play a critical role in the successful implementation of the NSDI. It is emphasised in the NSDI policy that education on NSDI shall be appropriately integrated into the Namibian education/academic system at all levels of schooling through the leadership of the NSA. As part of the implementation plan, the NSA

continues to create awareness, educate and socialise the NSDI to senior Geography learners in Secondary Schools. Recently, the NSDI awareness socialisation program for schools was carried out in \\Kharas and Hardap Regions. The table below indicates the number of schools where the NSDI was presented.

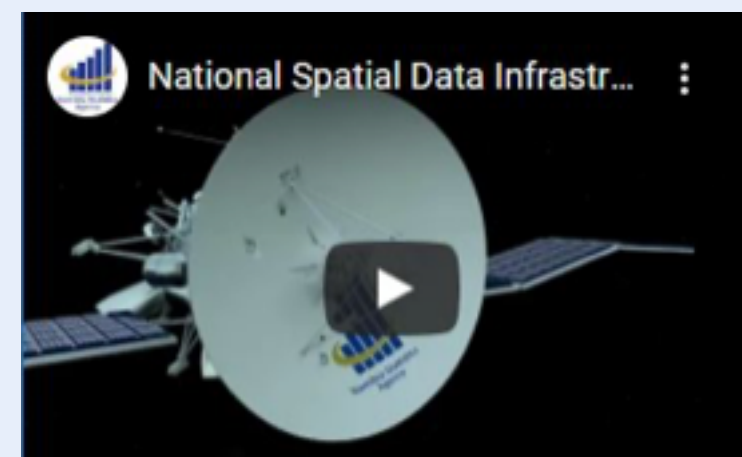
Table 1: List of schools visited

School Name	Town	Region	Date	Number of Learners
Suiderling Secondary School	Keetmanshoop	\\Kharas	28 January 2022	30
Keetmanshoop Junior Secondary School				
P.K De Villiers Secondary School				
J A Nel Senior Secondary School				
Mariental Secondary School	Mariental	Hardap	21 January 2022	25

NSDI Promotional Video

The Namibia Statistics Agency (NSA), as the Secretariat and coordinating body of the NSDI is responsible for implementing the NSDI Communication Plan by reaching out to the target audience through various outreach activities. Various communication tools that can be easily understood by the spatial data community and public at large are very crucial for effective communication. Effective communication plays a big role in advancing the importance of spatial information in economic development, natural resources management, national security, public safety, environmental quality and stability, social services provision and research.

A promotional video is one of the essential communication tools that can be used for this purpose. With the assistance of TribeFire Studios, the NSDI Secretariat developed a promotional NSDI video that is being used at various engagements and platforms to educate the society about the use of spatial data.



To view the video kindly follow this YouTube link:
<https://youtu.be/5yDHivsh1IU>

NSA successfully conclude pre-enumeration Census Mapping

The Namibia Statistics Agency (NSA) completed the Census Mapping exercise in April 2021. The purpose of conducting census mapping is to demarcate the country into uniquely defined units of Enumeration Areas (EA's), which are operational geographic units for the collection and dissemination of census data and are often used as a national sampling frame for various types of surveys.

In addition to identifying household locations, census mapping also collected detailed information regarding the use of built up structures and such outputs will contribute to the development of a Statistics Business Register (SBR) and the National Dwelling Unit Frame which provides detailed information of housing with geolocation.

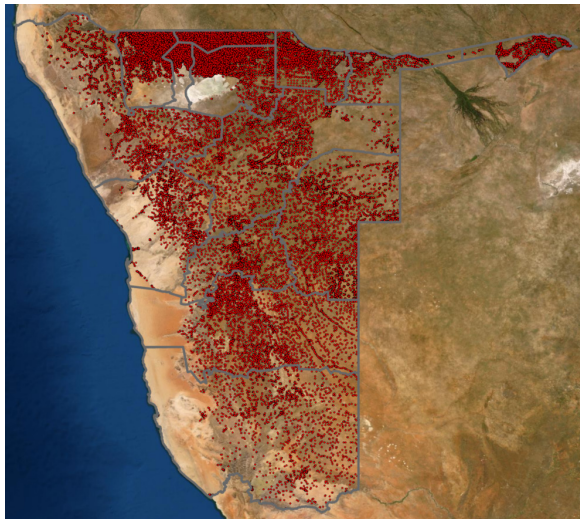


Figure 2: National Dwelling Unit Frame

The NSA conducted census mapping in collaboration with the Ministry of Urban and Rural Development (MURD) and the Ministry of Agriculture, Water and Land Reform (MAWLR). MURD provided questions on housing characteristics such as household sizes and types of housing. The information on housing characteristics was needed for the initial development of a National Housing Information System. MAWLR wanted statistics on water and sanitation nationally.

The NSA is expected to release atlases and reports based on information collected during census mapping which will highlight variables in different thematic areas such as agriculture, water, sanitation, businesses, education and health.

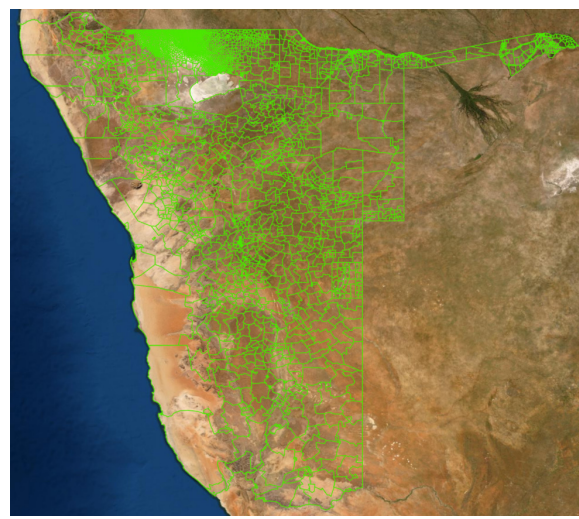


Figure 3: Demarcated Enumeration Areas for 2021

Government moves to develop a Namibia Housing Information System

The Namibia Housing Information System (NHIS) is a joint project between the Namibia Statistics Agency (NSA) and the Ministry of Urban and Rural Development (MURD). The development of the system was commissioned as a resolution of the National Land Conference of 2018 to address the lack of statistics on land and housing. Upon finalisation, the system will contain four (4) modules: Housing Stock, Housing Needs, Land Use and Informal Settlements. Two (2) of the four (4) modules are already developed (Housing Stock and Housing Needs) whilst the development of the other modules is still ongoing. The housing stock and housing needs modules currently make use of 2021 census mapping data as well as town planning zoning data as baseline.

The system is currently being developed by the Department of IT and Data Processing. The Department of GIS and NSDI coordination is responsible for providing all support with regards to spatial data required for the system. The project employ 5 fixed term contract staff in both Departments.

Second NSDI Strategic Plan 2022-2027

Namibia's first NSDI Strategic and Action Plan was approved by the former Minister of Economic Planning Hon. Tom Alweendo in 2015 in consultation with the former Minister of Land Reform, Hon. Uutoni Nujoma. The strategy covered the period 2015-2020. In 2019, the Committee for Spatial Data (in Namibia, this is the NSDI Executive Council) approved the extension of the Strategic Plan to 2022 in order to align it with the NSA Strategic Plan and the 6th National Development Plan (NDP6).

The first NSDI strategic plan concentrated much on data, partnerships, capacity building and communication. Because of the technical requirements of an NSDI, Namibia selected a simplified model in this initial SDI development to set up an infrastructure that is viable and useful within available limited resources and technical expertise.

Although this was the first experience for Namibia, a lot was achieved during the period and the following are some of the key achievements:

- The legal and policy frameworks were in place through the enactment of the Statistics Act, No. 9 of 2011 and NSDI Policy of 2015;
- The Committee for Spatial Data which is a committee of experts as per Section 48 of the Statistics Act was set up and in operational since November 2013;
- A Department established at the NSA dealing with the technical coordination of the NSDI;
- Formulation of partnerships (signed up 19 out of 25 target institutions at national level. All regional councils and local authorities were socialised about the NSDI of which one regional council (Oshana) has moved to open a GIS Regional Council Office in December 2021;
- A stable national and regional annual training programme/GIS workshops for Offices, Ministries and Agencies of government;
- Inter-Agency NSDI subcommittee consisting of inter-agency membership established and active since August 2016;

- Gazetting of standards (Metadata and Spatial Data quality) and one specification on the manner for data collection, October 2016;
- A draft National Inventory of Spatial Data was generated containing more than 200 national datasets;
- A National Geographic Portal system was developed and launched serving as a technical point of entry into the infrastructure;
- Enterprise Open Source GIS solutions developed and installations initiated for Local Authorities and Regional Councils;
- Namibia improved continental ranking from beginner in 2015 to aspirer in 2018 and finally champions' group in 2021;

Despite the achievements above, the NSDI is faced with challenges that are hindering its successful implementation at all levels of government such as:

- Most recently, the Committee for Spatial Data has become very inactive due to some governance issues;
- Lack of quality and timely spatial datasets in the infrastructure for evidence-based planning;
- Lack of cooperation among institutions that lead to duplication of efforts and wastage of government resources, despite established coordination framework;
- Lack of skills and capacity to implement NSDI activities in all institutions;
- Raising NSDI awareness at all levels;
- Limited understanding of the NSDI and the importance of spatial data as well even among decision makers.

The Agency is now developing the second strategic plan for the period 2022-2027. The draft strategy is now in place and ready for public consultations.

NSDI Advance Data Release Calendar

Table 2 below lists the national datasets which are expected to be released in the infrastructure as indicated by the data custodians. The main feature of the second strategy is a shift from NSDI formalisation to adoption and implementation of NSDI programmes across participating government institutions.

Table 2: NSDI Advance Data release calendar

Topic category	Dataset	Coverage	Date of last Update	Expected Date of release
Demography	Enumeration areas	National	June 2011	April 2022
Education	15th Day Schools Statistics	National	June 2021	April 2022
Transportation	Road Network 13	National	September 2019	April 2022
Utilities	Power lines and Substations	National	December 2021	
Utilities	Fibre network coverage	National	-	February 2022
Utilities	2G,3G & 4G Network Coverage	National	July 2021	November 2022



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