International Workshop on Global Fundamental Geospatial Data Themes for Africa

The Fundamental Geospatial Data Journey

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A bit of history...and a lot of vision...

“I believe we need a ‘Digital Earth’ - a multi-resolution three-dimensional representation of the planet, into which we can embed vast quantities of geo-referenced data.

We have an unparalleled opportunity to turn a flood of raw data into understandable information about our society and our planet. This data will include not only high-resolution satellite imagery of the planet, digital maps, and economic, social, and demographic information.

If we are successful, it will have broad societal and commercial benefits in areas such as education, decision-making for a sustainable future, land-use planning, agricultural, and crisis management; and to collaborate on the long-term environmental challenges we face.”

“Everything happens somewhere…”

Nancy Tosta, June 2001

We can measure and monitor what happens where...
Fundamental Datasets for Africa, 2007

As geospatial information becomes widely accepted as essential components of the body of knowledge that informs national development strategies, then a pan-continental and common definition of what constitutes a minimally necessary core of geospatial data and information products is required.

Objective: Identify and enumerate these core, or fundamental, geospatial datasets to support Africa’s development agenda.

A key aspect of fundamental datasets is that they should be a reference frame, foundation, or base for the development and integration of geospatial datasets at a national, sub-regional and regional level.

For this to be accomplished, it is necessary for the data to be available and widely accessible so that new geospatial datasets can be developed through the cooperation of users.
How can you measure and monitor sustainable development... without geography, place, and location...
Need for geospatial data captured in Sustainable Development
Pillar 2: Science, technology and innovation
(d) Optimal utilization of space and geospatial technologies: “This will require increasing investments and promoting human resources development in the management and deployment of space and geospatial technologies”

Enabling Implementation
“INVEST IN and STRENGTHEN national statistical capacities and geospatial information systems for the collection, analysis, production and dissemination of disaggregated data to measure and evaluate policy effectiveness; and PROMOTE a culture of evidence-based decision making”

The increasing use of geospatial information needs to continue:

- Geospatial information is increasingly being used in Africa, but more capacity building will be needed to scale up existing initiatives and to bring innovative applications from other parts of the world to Africa.

- The lack of consistent up-to-date base mapping - fundamental geographic datasets such as geodetic control, elevation, drainage, transport, land cover, geographic names, land tenure, etc. - across Africa remains a challenge.
Data Approaches for Monitoring Sustainable Development Progress: The Case of Africa

There is an increasing tendency to now make use of multiple data sources: official statistics, geospatial and satellite data, big data, scientific data, data produced by NGOs and research foundations, data from the media, from the crowd and from the business sector.

To explore the full potential of these data sources, the data needs to be easily accessible, interoperable and standardized - so that users are able to integrate different sources and types of information.

Data, and its metadata, needs to be open access (i.e. free and accessible).
The monitoring of the MDGs taught us that data are an indispensable element of the development agenda:

- Despite improvement, critical data for development policymaking are still lacking.
- Real-time data are needed to deliver better decisions faster.
- Geospatial data can support monitoring in many aspects of development, from health care to natural resource management.
- New technology is changing the way data are collected and disseminated.
- Global standards and an integrated statistics system are key elements for effective monitoring.
- Data should be open, easily accessible and effective for decision-making.
Positioning geospatial information to address global challenges

2030 Agenda: Goals, targets, indicators

17 SDGs
Results framework 169 Targets
232 global indicators to follow-up and review progress
Implementation via national planning processes, policies, strategies and frameworks
Measuring and monitoring: Statistics, geospatial information, Earth observations and other Big Data
“Implementation has begun, but the clock is ticking. This report shows that the rate of progress in many areas is far slower than needed to meet the targets by 2030”

“This report provides a snapshot of our efforts to date. It stresses that high-level political leadership and new partnerships will be essential for sustaining momentum. It also underscores the need for reliable, timely, accessible and disaggregated data to measure progress, inform decision-making and ensure that everyone is counted”

António Guterres
Secretary-General, United Nations
Technology and society are driving digital transformation, but are we yet leveraging this new ‘data ecosystem’ effectively?
Do we have the data for development??
Can we make it ‘production ready’ information for all?
Global fundamental geospatial data themes

Positioning (Geodetic)
Address (Buildings)
Cadastre (Tenure)
Names (Gazetteer)
Water (Hydrology)
Administrative Boundaries
Transport
Bathymetry (Hydrography)
Land cover (Vegetation)
Elevation
Imagery (Satellite & Photo)

Geographical names
Cadastre, Topographic, Natural Resources and Climate Data
Land, Island and Submarine Relief
Coastal, International, State and Municipal Limits
Geodetic Reference Frame
Positioning geospatial information to address global challenges

High quality, timely and reliable data

National Spatial Data Infrastructure

Social
- Society
- Poverty
- Education
- Health
- Population
- Employment
- Water
- Sanitation
- Equality
- Gender
- Governance

Economic
- Well-being
- Cities
- Water
- Energy
- Infrastructure
- Industry
- Sanitation
- Economy

Environmental
- Water
- Seas/oceans
- Land use/cover
- Ecosystems
- Forests
- Agriculture
- Climate
- Biodiversity
- Natural hazards
- Pollution

Geodetic
- Elevation
- Water/Ocean
- Land use/cover
- Transport
- Cadastre
- Population
- Infrastructure
- Settlements
- Admin. Bdy.
- Imagery
- Geology/soils
- Observations etc.

UN-GGIM
United Nations Secretariat
Global Geospatial Information Management

ggim.un.org
An integrative data ecosystem

Positioning geospatial information to address global challenges

17 Global Goals
169 Global Targets
232 Global Indicators

Official Aggregation and Integration into Indicator Framework by National Statistical Offices. Captures data integrity and validation.

SDG metrics for measuring and monitoring progress. Data compiled and disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location, etc.

National Sustainable Development Indicators

Earth Observations and Monitoring
- Imagery
- Water/Ocean
- Land use/cover
- Observations
- In situ monitoring
- Air/Pollution
- Ecosystems
- Forest/Agriculture
- Climate

National Spatial Data Infrastructure
- Geodetic positioning
- Elevation
- Topography
- Land use & cover
- Transport/Infrastructure
- Cadastre/Parcels
- Water & Oceans
- Cities & Settlements
- Administrative Bdy.

National Statistics, Accounts, Administrative Registers, Demographics
- Population
- Demographics
- Poverty
- Trade/Business
- Environment
- Labour/Economics
- Agriculture
- Disability/Gender
- Civil Registration & Vital Stats.

Other Sources of Data, incl. Big Data
- Mobile phone
- Social media
- Sensors
- Automated devices
- Satellite imagery
- VGI
- Crowd sourcing

Local to national social, economic and environmental conditions and circumstances

National Information Systems

Fundamental baseline data and new data sources
Goals, targets, indicators...and fundamental data