ISO Advisory Group 13 on Land Cover and Land Use

Land Cover and Land Use in the Global Geospatial Information Management Community

Mark Iliffe
UN-GGIM Secretariat
The Architecture of UN-GGIM - Led By Member States

Bureau: Co-Chairs: Belgium, Mexico, and Tonga Rapporteur: Morocco

- Geospatial Societies
- Academic Network
- Private Sector Network
- UN Geospatial Network
- International Standards Development Organizations (OGC, IHO and ISO/TC 211)

Thematic Groups & International Networks

Regional Committees

Working Groups

Capacity Development

- High-Level Group on the Integrated Geospatial Information Framework
- Subcommittee on Geodesy
- EG on the Integration of Statistical and Geospatial Information
- EG on Land Administration and Management
- WG on Geospatial Information and Services for Disasters
- WG on Policy and Legal Frameworks for Geospatial Information Management
- WG on Marine Geospatial Information
- IAEG-SDGs WG on Geospatial Information

Publications & Frameworks

Annual Plenary Session

UN Secretariat

- UN-GGIM Asia-Pacific - Chair: Australia
- UN-GGIM Americas - Chair: Mexico
- UN-GGIM Arab States - Chair: Saudi Arabia
- UN-GGIM Europe - Chair: Slovenia
- UN-GGIM Africa - Chair: Senegal

International Events

- International Seminars
- High-Level Forums

United Nations World Geospatial Information Congress

- Integrated Geospatial Information Framework
- COVID-19: Ready to Respond
- Global Statistical Geospatial Framework
- Framework for Effective Land Administration
- Global Fundamental Geospatial Data Themes
- Future Trends in Geospatial Information Management
- Policy and Legal Frameworks for Geospatial Information Management
- Guide to the Role of Standards in Geospatial Information Management
- Strategic Framework on Geospatial Information and Services for Disasters
Land Use and Land Cover Across UN-GGIM – At a Glance

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<tr>
<td>Future Trends</td>
<td>3rd HLF on UN-GGIM + Beijing Declaration</td>
<td>2nd Report on Future Trends</td>
<td>Training Workshop at the 4th HLF on UN-GGIM</td>
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<td>Adoption of the IGIF</td>
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<td>1st UNWGIC: Session on Global Land Cover</td>
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<td>2nd Guide to the Role of Standards in Geospatial Information Management</td>
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Underpinned by the substantive program of UN-GGIM’s Functional Groups (ie. through its Expert- and Working Groups) and Thematic Groups (including the UN Geospatial Network, UN-GGIM Academic Network etc)
GlobeLand30

- Comprises of data sets collected at 30-metre resolution
- 10 Classes: Open Water, Wetland, Artificial Cover, Cropland, Forest, Shrubland, Grassland, Bare Land, Tundra, Permanent Snow and Glaciers
- Derived from LandSat

“The World needs solid, science-based information for making wise decisions for sustainable development”

Ban Ki Moon, UN Secretary General
22 September 2014
GEO-XII Land Cover Side Event
Mexico, November 2015

• National governments need control over the dataset and its generation. Governments want control over the information they provide to an international treaty... they do not want to use information developed by an outside source with unknown details or of unknown consistency, even if it is "better". **Ownership often goes hand in hand with capacity-building.**

• **Regularity.** To understand change repeat datasets are needed. To monitor change these must be provided on a regular, reliable basis with sufficient frequency. A growing demand is change detection, not just status; note that the temporal frequency can be more important than spatial resolution.

• **Consistency.** In addition to being available on a regular basis, to understand land cover change the datasets need to be generated using a consistent methodology.

• **Accuracy.** Obviously, sufficient accuracy is needed. This has implications for validation.
The Global Fundamental Geospatial Data Themes

- Land Cover represents the physical and biological cover of the Earth’s surface. Land Use is the current and future planned management, and modification of the natural environment for different human purposes or economic activities.

- Land cover represents the physical and biological cover of the earth’s surface including artificial surfaces, agricultural areas, forest, semi-natural areas, wetlands and waterbodies. The theme also includes Land Use which is the current and future planned management and the modification of the natural environment into built environment for different human purposes or economic activities.

- Land Cover is required, for example, for developing land management policy, understanding spatial patterns of biodiversity and predicting effects of climate change and may also help to forecast other phenomena, such as coastal erosion and flooding. It is critical data in national assessments of biodiversity, conservation efforts, and water quality monitoring.
Interlinkages to the SDGs
The IAEG-SDGs Working Group on Geospatial Information

SDGs Geospatial Roadmap

The vision of the SDG Geospatial Roadmap is to see geospatial and location-based information being recognised and accepted as official data for the SDGs and their global indicators.

The SDGs Geospatial Roadmap communicates, guides and enhances the awareness of geospatial information, Earth observations, and related data sources, products, and enabling tools and methods, to inform and support the implementation of the SDGs, according to national circumstances.

Report on Global and Complementary (Non-authoritative) Geospatial Data for SDGs: Role and Utilisation

<table>
<thead>
<tr>
<th>Product</th>
<th>Spatial resolution</th>
<th>Coverage of years</th>
<th>Contents/overall reported accuracy</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>GlobalLand3D</td>
<td>30 m</td>
<td>2000, 2010</td>
<td>10 classes/80.3%</td>
<td><a href="http://www.globalland3d.com">http://www.globalland3d.com</a></td>
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<tr>
<td>Global tree cover</td>
<td>30 m</td>
<td>Annual (2009)</td>
<td>One class (forest but with percentage cover)</td>
<td>unknown</td>
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Implementation and adoption of standards for the global geospatial information community

The Guide to the Role of Standards in Geospatial Information Management provides detailed insights on the standards and good practices necessary to establish and maintain geospatial information management systems that are compatible and interoperable with other systems within and across organizations.

The Guide also underscores the importance of standards in facilitating the application of the FAIR (Findable, Accessible, Interoperable, and Reusable) data principles.

Other resources and reports of the Standards Development Organisations - OGC, IHO and ISO TC/211 to UN-GGIM Sessions detail advancements in this area, including ISO 19144 on Land Cover Land Use.
Musings on the Challenge

The SDGs are highly dependent on the understanding of geographic location, and this can be provided by the inclusion and use of geospatial information, Earth observations and other forms of data.

The vision of seeing geospatial and location-based information being recognised and accepted as official data for the SDGs and their global indicators is no longer a nice-to-have but is essential to enable countries to make the transformation needed to get back on track towards 2030 and the SDGs.

• So which data sources should be used?
• Where is the data?
• How can we put it, and its downstream analysis into the hands of policy- and decision-makers?
Harnessing Now / Future Trends

Datacubes

Degree of Urbanisation

System of Environmental Economic Accounting

DEGURBA

Positioning geospatial information to address global challenges
The need for an Integrative Data Ecosystem
Looking Forward

We must ensure that we are guided by the needs of countries, not just the technological opportunity.

Who are our users? What do they want and need? How should we advance?

‘A sustainable operational system that generates land cover datasets according to specific user requirements for geographic scope and the number and types of classes; datasets can be generated on a regular basis using consistent methods and with needed accuracy’

Report on the Determination of Global Fundamental Geospatial Data Themes
Sixth Session on UN-GGIM
August 2016