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Session 1: Land Information for Sustainable Development
Sub-Session: Addressing challenges confronting countries
20 April 2016: 15h45 – 17h00

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The challenge is not to arrest development but to use the available resources in a more productive and efficient manner, ensuring better and more equitable returns to people while at the same time lessening pressure on the environment.

Changing demography and particularly the high rate of urbanization, and a faster rate of population growth in relation to economic growth are major drivers of environmental change in Africa, with significant impacts on the natural resource base.

According to the UNEP report, statistics indicate a current rate of urbanization in Africa of around 3.5 percent per year. This rate is the highest in the world. By 2030, the proportion of Africa's urbanized population is expected to reach 53.5 percent, compared to 39 percent in 2005. This fast rate of urbanization places strain on infrastructure and other services. An example is the deforestation rate estimated 0.8 percent per year.

In South Africa, the constitution affirms the right of all South Africans to have access to "sufficient food and water" and the state is compelled to "take reasonable legislative and other measures" to ensure food security to all citizens. Agriculture is viewed as the major resource for food security. Only 1.5% of South Africa's total surface area is high potential arable land. Two factors I would like to mention that threaten the availability of this land for agriculture 1) urbanization and 2) open-cast coal mining.

The UN-HABITAT predicts that for South Africa the current 61.7% total population in urban areas will increase to 71.3% by 2013, an estimated growth of 2% per year. The large-scale migration to rural into urban areas has forced the local governments to expand their housing programmes, there by moving into prime land around the cities and urban farmlands are being taken by real estate developers.

The second threat is mining, coal mining. Of the 1.5% high arable land in the country, 46.4% is in Mpumalanga province, where most of the country's coal reserves are located below the arable land used for the production of grains such as maize, a staple food in South Africa. Reports indicate that open-cast mining practices in this Province have taken up 12% of the high arable land from farming. Another 13.6% high potential arable land is being prospected for coal in the province, resulting in almost 50% of the potential arable land in this province being mined in

the near future. In addition, almost all open-cast coal mining has additional negative affects in the environment such as water pollution, acid mine drainage, destruction of biodiversity and increased airborne particulate material. All of which have consequences on food security and negatively impact achieving a quality of life for all.

There is therefore is a growing and urgent need for integrated approaches to environmental planning, management and good governance.

The Group on Earth Observations (GEO), a voluntary intergovernmental organisation of 102 Members and 93 Participating Organisations, sees access to timely and fit-for-purpose data and information as the main challenge for countries in realizing their intentions on land management. In this regard GEO works to ensure the capacities exist for any country and region to be able to do deal with land issues through coordinating and facilitating access to data, information and development of products and services to meet user needs. GEO advocates, engages and aims to deliver coordinated and sustained earth observations (both space and in-situ observations) enabling the building a Global Earth Observing System of Systems (GEOSS). The GEO Data Sharing Principles have been successful in encouraging countries to adopt open access policies to data, thereby enabling the environment for the development of innovation products and services from earth observations data.

Land management is complex in that is impacted and in return impacts other environmental areas. GEO works in a number of areas that benefit land management, for example:

1. Global Land Cover

- There is a growing demand for data on land cover and land cover change, which are important parameters needed by many users, including UN Conventions, the UN Statistical Division (UNSD, particularly their System of Environmental-Economic Accounting--SEEA), and national governments for monitoring and managing growth and natural resources.
- Understanding land cover and land cover change is needed to track progress towards meeting commitments such as the SDGs, the Aichi Targets of the UN CBD, the UNFCCC Paris Agreement and a variety of national and sub-national internal goals.
- User needs are disparate and current approaches to generating Land Cover datasets do not meet all these needs. A sustainable operational system that can meet varying user requirements for geographic scope (e.g. national, regional, global), number and types of classes, temporal frequency, accuracy, and other respects is needed.
- The **GEO Global Land Cover** task is working to improve coordination of land cover activities around the globe. It seeks to develop an international network where GEO Members can express their needs for land cover

products, contribute mapping and monitoring efforts, and support related capacity development initiatives.

2. Urban and Human Settlements

- A new generation of global fine-scale information products of human settlements is becoming available through advances in remote sensing technology and open data access policies.
- Integration of multi-disciplinary data (global remote sensing, environmental, population and socio-economic) is getting increasingly important.
- EO of global human settlements and the derived information such as maps and spatial statistics can support the UN Third Conference on Housing and Sustainable Urban Development (Habitat III, 2016), the Sustainable Development Goals (SDGs), the UNFCCC Paris Agreement and the Sendai Framework for Disaster Risk Reduction.
- Commitment to sustain the global human settlement baseline production and to update the products with new satellite data (e.g. from Sentinel) is important.

3. Sustainable forest management

- In this area, the major initiative in GEO is aimed at reducing greenhouse gas emissions, which emissions from forests amount to almost 20% of all global greenhouse gas (GHG) emissions. However the work being done contributes to land management, as national governments are making significant investments to reduce emissions from deforestation, forest degradation and associated land use change.
- Multilateral frameworks such as the REDD+, the Forest Carbon Partnership Facility (FCPF) of the World Bank and various bilateral agreements underpin many of these national investments supporting developing countries in their efforts to reduce emissions from forests.
- Determining the effectiveness of these actions and investments depends on the capabilities of national forest monitoring systems. Robust national forest monitoring based on objective observations and measurements is widely accepted as a pre-requisite for countries to participate in international agreements and incentive mechanisms related to forest carbon.
- Improved monitoring will also enhance the existing reporting frameworks of the United Nations Framework Convention on Climate Change (UNFCCC) and the periodic Global Forest Resource Assessments of the UN's Food and Agriculture Organization (FAO).
- To operate efficiently and sustainably, national forest monitoring systems require a continuous, timely and affordable supply of observations. The Group on Earth Observations (GEO) seeks to facilitate this supply and use of forest observations through its Global Forest Observations Initiative (GFOI).

4. Land Degradation

- The GEO Secretariat and the UNCCD Secretariat are currently working together to identify what role GEO could play in building a Global Partnership supporting the development (and testing) of the technical guidance for the calculation of the indicator 15.3.1 - Percentage of degraded land over the total land, addressing the SDG target 15.3 which is "By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation-neutral world".
- The GEO Secretariat presented, at the UNCCD/FAO/CBD Expert meeting in Washington, D.C. in late February, a preliminary option on how this global partnership could be structured and highlighted the areas in which GEO could provide substantial support, thus complement the in-country activities already planned by the UNCCD Secretariat for 2016 and 2017. These are: (i) Further identification of needed observations to support systematic calculation of the indicators, (ii) Definition, implementation and testing of the arrangements for making these observations accessible to Countries; and (iii) Further development and refinement of technical guidance, including specific advice and capacity building actions. A joint concept note between the GEO and UNCCD Secretariats is under preparation.

5. Biodiversity and ecosystems

- GEO BON (the GEO Biodiversity Observation Network) is developing Essential Biodiversity Variables, the key biological variables needed to understand what is changing and why, applying the concept of essential variables pioneered by the Global Climate Observing System.
 - The GEO BON Ecosystem Services group is developing a related set of Essential Ecosystem Services Variables (ecosystem services are the goods and services provided by nature).
 - The GEO BON Marine group is developing, in conjunction with other marine entities, Essential Ocean Biodiversity Variables.
 - The GEO-ECO initiative, driven largely by the ECOPOTENTIAL H2020 project, is working on some Essential Ecosystem Variables.
- All of these variables provide important guidance as to what should be measured, facilitate standards and therefore information exchange, and are the key variables needed to generate indicators as well as to facilitate natural resource management.
- The GEO BON Biodiversity Observation Network in a Box (BON in a Box) is a box of essential tools to help a national government (or any other organization) set up a biodiversity observation network. It provides tools to help the using organization decide what to measure and how to measure it (e.g. EBVs and protocol standards), database tools to help organize the collected observations, analysis tools to help understand the data, and reporting tools to help visualize and communicate the results of the analyses.
- Global Wetland Observing System (GWOS) and the Satellite-based Wetland Observing Service (SWOS). The goal of GWOS is to provide information into

the World Wetlands Report, planned to be released every 5 or 6 years or so. The concept was initiated by Ramsar in 2008, making only gradual progress since then. However, the H2020 project SWOS was funded last year and will provide a good basis for moving forward.

- LiMES. While it has so far only been prototyped, LiMES is a software application that uses satellite images to monitor and describe change using various parameters (some of which are EBVs). It is managed by UNEP-GRID with consultations by GEO, Ramsar, and IUCN. If funding can be found to make it operational it would allow automated monitoring of Ramsar sites, protected areas, key biodiversity areas etc--in fact, any area of interest that the user can delineate using the friendly user interface.

Summary

- Underpinning all these activities is the objective to build country capacities to enable appropriate land management
- The convening power of GEO allows for bilateral, regional and global partnerships to formed where there are common objectives
- The challenge that now faces us as data and information providers is how do ensure the data and information is transmitted in a way that enables knowledge creation and timely actions to be undertaken by the appropriate institutions and people.
- Make sure our community (geospatial and EO) structures and organizations support the notion of people taking the time to engage with all stakeholders involved in land management decisions and broaden our job to go beyond just putting information out but that we deliver a products developed through a collaboration process.