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Contribution of the Committee
to the United Nations Conference on Sustainable Development (Rio+20)

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Report of the Secretary-General

Summary

The role of geospatial information in informing sustainable development policies and their monitoring and implementation was explicitly mentioned in the report of the Secretary General which led the Economic and Social Council to establish the UN Committee of Experts on Global Geospatial Information Management (UNCE-GGIM). This echoed the call for better data and information platform in Agenda 21 adopted at the United Nations Conference on Environment and Development (Rio de Janeiro, 1992) and in the Plan of Implementation of the World Summit on Sustainable Development adopted at the World Summit on Sustainable Development (Johannesburg, 2002). The Committee is asked to take up this challenge and make a contribution to the forthcoming Rio+20 Conference. It is argued that an appropriate geospatial information infrastructure will provide a solid information base, and allow full integration of relevant geospatial and statistical information. This constitutes a powerful tool for the monitoring of goals and targets on sustainable development. The Committee is invited to express its views and to agree to the formation of a working group to further develop the Committee's contribution to the UN Conference on Sustainable Development (Rio+20).

[1] E/C.20/2011/1.

I. Introduction

1. The United Nations system is preparing for the UN Conference on Sustainable Development (commonly referred to as Rio+20) to be held in Rio de Janeiro from 4-6 June 2012. This landmark event will seek to re-engage the world on a sustainable development pathway, by securing from countries a renewed political commitment to sustainable development. It will review progress and implementation gaps with respect to previously made commitments and address new and emerging challenges of high priorities. The Conference is expected to discuss a roadmap for achieving a green economy in the context of sustainable development and poverty eradication, and lay out a new institutional framework for sustainable development.

2. The United Nations Conference on Environment and Development (UNCED), also known as the "Earth Summit," was held in Rio de Janeiro in 1992. It brought the issues of environment and development, and the paradigm of sustainable development firmly into the public and policy arena and laid out a programme of action, called Agenda 21, which outlines key policies for achieving sustainable development. Subsequent conferences, including the World Summit on Sustainable Development in Johannesburg in 2002, reaffirmed the commitment to the Rio principles and the implementation of Agenda 21, and emphasized the importance of an integrated approach to sustainable development, the need for quality data and information for decision making.

3. In the context of sustainable development, location-based and other geospatial information services have become key contributors to better policy formulation, especially due to recent technological advances. Geospatial information services have the ability to integrate quantitative information across sectors and to present sound information to decision-makers in innovative and comprehensible format.

4. The role of geospatial information in informing sustainable development policies and their monitoring and implementation was explicitly mentioned in the report of the Secretary General which led the Economic and Social Council to establish the UN Committee of Experts on Global Geospatial Information Management (UNCE-GGIM). It is, therefore, appropriate that the Committee take up this challenge and make a contribution to the forthcoming Rio+20 Conference. It is proposed that this be done in the form of a policy document that highlights how geospatial technologies and information have become indispensable for the monitoring of spatial processes as a consequence of economic and social activities and, thus, ultimately sustainable development. Such a document could also suggest ways, in which UNCE-GGIM can contribute to any follow-up and implementation plan which is going to be the likely outcome of the Rio+20 Conference.

II. Need for an Integrative Framework

5. The 1992 Earth Summit and the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg (Rio+10) recognized that the three pillars of sustainable development (social, economic and environmental) created the need for the integration of very different types of information on the environment and social-economic development into a common framework. However, building such a common framework, which would allow to link physical tangible and non-physical intangible data alike and which would be

critical for understanding the human/environment relationship, has been a daunting task for the various actors in sustainable development.

6. On the other hand, it is increasingly recognized that geography and location, the physical platform where virtually all human activity takes place, provides the key linkage and, thus, an integrative spatial framework for collecting, processing, storing and aggregating all types of data.

7. At the national, regional and global scales, there is, indeed, a need for a geospatial framework that can provide a common reference base within the country, within a region or for the globe on which thematic geospatial information can be built and disseminated. For example, at country level, a geospatial framework will allow the integration of statistical data compiled according to administrative and statistical base units and spatial units such as watershed areas or eco-zones, which are relevant for the analysis of environmental phenomena, including climate change.

8. Countries will be able to take advantage of geospatial information for sustainable development through a sound national technological infrastructure meshed within a geospatial framework. Countries having not only their own national geospatial information but access to neighbouring or regional geospatial information also are clearly in a better position to understand and manage trans-boundary challenges, such as shared hydrological basins and protected areas, extreme events and disasters (e.g. flooding, drought, earthquakes or pollution spillage) in a more integrated and coordinated manner. Building geospatial infrastructures, therefore, constitutes a prerequisite for good governance at all scales, and is related directly to strengthening the Institutional Framework for Sustainable Development.

III. Need for a solid information base

9. The 1992 Earth Summit and the 2002 WSSD (Rio+10) also recognized that the maintenance of the ecosystems' capacity to provide the goods and services essential to mankind is a prerequisite to social-economic development and human well-being, thus strengthening the role of the environmental "pillar" of sustainable development. By putting the health of ecosystems at the centre, the role of the local level and, thus, the role of geospatial information are also implicitly elevated.

10. Experience shows that the increasing focus on the environment and ecosystems creates the need for i) specific biophysical information that can be obtained through remote sensing and field measurements (such as e.g. changes of land cover); ii) integrating and aggregating information for "natural" spatial units that are very different from the those used in economic and social statistics. This is why the geospatial community has a specific role to play when policy relevant and scientifically sound information is needed to describe and analyse the state of the environment and the ecosystems as well as the changes resulting from human activities and natural events.

11. In the past decades, new technologies have deeply transformed the availability and accessibility of geospatial information and their potential use. An increasing amount of geospatial data are being generated and captured in almost real time through the use of high-resolution satellite imagery and other data collection techniques at a variety of scales from the local to the global level. This increased data accessibility and availability constitutes a

real breakthrough in the geospatial information field and a concrete step towards the building of an information base.

12. A solid and comprehensive information base is required for the monitoring of sustainable development, and for the measurement of progress towards future goals and targets.. Reliable economic, social, environmental and spatial data and indicators will add value to the preparation and follow-up to Rio+20 Conference, by providing the means for benchmarking and monitoring of the implementation of related sustainable development initiatives and policies. An appropriate geospatial information infrastructure will provide a solid information base, and allow full integration of relevant geospatial and statistical information. This will constitute a powerful tool for the monitoring of goals and targets on sustainable development.

IV. Need for integration of geospatial information with official statistics

13. Statistical data concern human activities that can be geographically referenced. There is an increasing production of geo-coded economic, social and environmental data that actually makes the integration with geographic and other geospatial data possible.

14. The rapid integration of these data, their analysis and modeling has increased the understanding of the dynamics of socio-economic and demographic structures and helped create more accurate, timely, and unbiased information for better decision-making. For example, this integration has proven to be critical to achieve improved operational readiness and responsiveness to disasters. By using satellite images, scientists and demographers can compare images and statistics taken before and after earthquakes to estimate the amount of aid to be allocated to certain populated areas. There are many such examples related to an increased use of geospatial data in socio-economic, demographic, and environmental analysis that facilitate a better understanding of interactions and feedbacks between climatic, ecological, and human systems and help the assessment of vulnerability and risk.

15. This integration is made possible through the use of geospatial information technology that can help establish cross-sectoral communication - by providing not only very powerful tools for storage and analysis of multi-sectoral spatial and statistical data, but also by integrating databases of different sectors in a same format, structure and map projection in the platform of Geographic Information Systems (GIS). The use of geospatial information technologies, such as GIS, Remote Sensing, and Global Positioning Systems (GPS), in an integrated approach to cope with related sustainable development issues is becoming a common reality in many countries worldwide.

16. Geospatial information infrastructures, integrated with other information systems, will become as essential for countries and individuals as roads, telecommunications or other basic services. Thus, the geospatial information’s pre-disposition for integration with various information systems naturally corresponds to the integration approach of economic development, social development and environmental protection as the core components of sustainable development.

V. Issues to be discussed by the Committee

17. The Committee is invited to discuss how the effective use of geospatial information can be a powerful tool to strengthen sustainable development assessment and policy making. In particular, it is suggested that the Committee create a task force to prepare a policy document as a contribution to the Rio+20 Conference. Based on specific country examples such a document should support a vision that highlights how geospatial frameworks can provide the integrative framework for different information systems and what concrete benefits can be derived from the integration of geospatial information and statistical information. Furthermore, based on an analysis of the actual outcome document of the Rio+20 Conference, the task force is encouraged to make specific proposals on how UNCE-GGIM can support the follow-up to the Rio+20 Conference.

ANNEX

The role of statistics and geospatial information in the outcome documents of Rio 1992 and Johannesburg 2002

The following are excerpts from Agenda 21, adopted at the Earth Summit (Rio 1992), and the Plan of Implementation, adopted at the World Summit on Sustainable Development (Johannesburg 2002), that are relevant from the point of view of the role of the integration of environment, economic and social statistics with geospatial information in monitoring progress towards sustainable development and integrating environment and development at the policy, planning and management levels.

Earth Summit, Rio de Janeiro, 1992: Excerpts from Agenda 21, Chapter 40, on Information for Decision-Making

A) BRIDGING THE DATA GAP

40.2. While considerable data already exist, as the various sectoral chapters of Agenda 21 indicate, more and different types of data need to be collected, at the local, provincial, national and international levels, indicating the status and trends of the planet's ecosystem, natural resource, pollution and socio-economic variables. (…)

40.3. There is a general lack of capacity, particularly in developing countries, and in many areas at the international level, for the collection and assessment of data, for their transformation into useful information and for their dissemination. There is also need for improved coordination among environmental, demographic, social and developmental data and information activities.

C) Improvement of data collection and use

40.8. Countries and, upon request, international organizations should carry out inventories of environmental, resource and developmental data, based on national/global priorities for the management of sustainable development. They should determine the gaps and organize activities to fill those gaps. Within the organs and organizations of the United Nations system and relevant international organizations, data-collection activities, including those of Earthwatch and World Weather Watch, need to be strengthened, especially in the areas of urban air, freshwater, land resources (including forests and rangelands), desertification, other habitats, soil degradation, biodiversity, the high seas and the upper atmosphere. Countries and international organizations should make use of new techniques of data collection, including satellite-based remote sensing. In addition to the strengthening of existing development-related data collection, special attention needs to be paid to such areas as demographic factors, urbanization, poverty, health and rights of access to resources, as well as special groups, including women, indigenous peoples, youth, children and the disabled, and their relationships with environment issues.

D) Improvement of methods of data assessment and analysis

40.9. Relevant international organizations should develop practical recommendations for coordinated, harmonized collection and assessment of data at the national and international levels. National and international data and information centres should set up continuous and accurate data-collection systems and make use of geographic information systems, expert systems, models and a variety of other techniques

for the assessment and analysis of data. These steps will be particularly relevant, as large quantities of data from satellite sources will need to be processed in the future. Developed countries and international organizations, as well as the private sector, should cooperate, in particular with developing countries, upon request, to facilitate their acquiring these technologies and this know-how.

E) Establishment of a comprehensive information framework

40.10. Governments should consider undertaking the necessary institutional changes at the national level to achieve the integration of environmental and developmental information. At the international level, environmental assessment activities need to be strengthened and coordinated with efforts to assess development trends.

World Summit on Sustainable Development, Johannesburg, 2002: Excerpts from the Plan of Implementation of the World Summit on Sustainable Development

110. Assist developing countries, through international cooperation, in enhancing their capacity in their efforts to address issues pertaining to environmental protection, including in their formulation and implementation of policies for environmental management and protection, including through urgent actions at all levels to:

(a) Improve their use of science and technology for environmental monitoring, assessment models, accurate databases and integrated information systems;

(b) Promote and, where appropriate, improve their use of satellite technologies for quality data collection, verification and updating, and further improve aerial and ground-based observations, in support of their efforts to collect quality, accurate, long-term, consistent and reliable data;

132. Promote the development and wider use of earth observation technologies, including satellite remote sensing, global mapping and geographic information systems, to collect quality data on environmental impacts, land use and land-use changes, including through urgent actions at all levels to:

(a) Strengthen cooperation and coordination among global observing systems and research programmes for integrated global observations, taking into account the need for building capacity and sharing of data from ground-based observations, satellite remote sensing and other sources among all countries;

(b) Develop information systems that make the sharing of valuable data possible, including the active exchange of Earth observation data;

(c) Encourage initiatives and partnerships for global mapping.

133. Support countries, particularly developing countries, in their national efforts to:

(a) Collect data that are accurate, long-term, consistent and reliable;

(b) Use satellite and remote-sensing technologies for data collection and further improvement of ground-based observations;

(c) Access, explore and use geographic information by utilizing the technologies of satellite remote sensing, satellite global positioning, mapping and geographic information systems.