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Integration of geospatial, statistical and other information

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Note by the Secretariat

Summary

The present paper contains the report of the Expert Group on the Integration of Statistical and Geospatial Information for consideration by the Committee of Experts on Global Geospatial Information Management.

At its third session, held in July 2013, the Committee of Experts discussed the need to integrate geospatial information with statistics and other data; the programme review on developing a geospatial statistical framework; and the related recommendations adopted by the Statistical Commission at its forty-fourth session (see E/C.20/2013/9). The Committee of Experts acknowledged the importance of integrating geospatial information with statistics and endorsed the decision of the Statistical Commission to establish an Expert Group composed of representatives of both the statistical and geospatial communities to carry out the work on developing a statistical-spatial framework as a global standard for the integration of statistical and geospatial information. The report provides information on the establishment of the Expert Group and summarizes the major issues discussed at its first meeting, held in New York from 30 October to 1 November 2013. It outlines the main recommendations to emerge from the meeting, including the proposal to organize an international conference on the integration of statistical and geospatial information, to be held in New York in August 2014 in conjunction with the fourth session of the Committee of Experts. It also summarizes some of the activities carried out since the establishment of the Expert Group, including the convening of an International Workshop on integrating geospatial and statistical information, held in Beijing, China from 9 to 12 June 2014.

* E/C.20/2014/1

I. Introduction

1. At its forty-fourth session, the United Nations Statistical Commission discussed the issue of developing a statistical-spatial framework in national statistical systems (see E/2013/24, chap. II, sect. A). In making decision 44/101 (see E/2010/24, chapter I.C), the Statistical Commission strongly supported the linking of socio-economic and environmental data to a location in order to enrich and maximize the potential of statistical information; welcomed the proposal of an international conference as a way of reaching out and exchanging best practices, bringing together both statistical and geospatial professional communities; and requested the United Nations Statistics Division (UNSD) to establish an Expert Group composed of representatives of both statistical and geospatial communities to carry out the work on developing a statistical-spatial framework as a global standard for the integration of statistical and geospatial information.

2. At its third session, held in July 2013, the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) adopted decision 3/107 (see E/2013/46, chap. I, sect. B), in which it acknowledged the critical importance of integrating geospatial information with statistics and socio-economic data and the development of a geospatial-statistical framework, especially in the context of the on-going debate on the post-2015 development agenda, and supported the decision of the Statistical Commission to create an Expert Group on the integration of geospatial information and statistical information, comprising members of both the statistical and geospatial communities, as well as to organize an international conference on the integration of statistical and geospatial information.

3. The present report provides information on the establishment of the Expert Group and summarizes the major issues discussed at its first meeting, held in New York from 30 October to 1 November 2013. It outlines the main recommendations to emerge from the meeting, including the proposal to organize an international conference on the integration of statistical and geospatial information, in New York in August 2014, in conjunction with the fourth session of the Committee of Experts on Global Geospatial Information Management. The report also summarizes some of the activities carried out since the establishment of the Expert Group, including an International Workshop convened on the subject in China in June 2014. The Committee of Experts is invited to take note of the report and to express its views on the way forward for the global geospatial information community, including in encouraging Member States to actively participate in the Expert Group on the Integration of Statistical and Geospatial Information and its work on the development of a geospatial-statistical framework in the context of the on-going debate on the post-2015 development agenda. Points for discussion and decision are provided in paragraph 24.

II. Establishment and first meeting of the Expert Group on the Integration of Statistical and Geospatial Information

4. In pursuance of Statistical Commission decision 44/101 and Committee of Experts decision 3/107, the Statistics Division has established the Expert Group on the Integration of Statistical and Geospatial Information¹, composed of experts with an even professional mix of statistical and geospatial expertise, and with good geographical representation. The Expert Group has been tasked with developing and advancing the

¹ At the recommendation of the experts in the field, the naming regarding this Expert Group was changed from “Expert Group on Developing a Statistical-Spatial Framework in National Statistical Systems” to “Expert Group on the Integration of Statistical and Geospatial Information”.

implementation of a global statistical-geospatial framework as a standard for the integration of statistical and geospatial information. A key component of this task consists of the inclusive global consultations and communications with relevant experts in determining the metrics of a statistical-geospatial framework. Mechanisms for achieving this include a Global Forum on the topic, to be held in New York from 4 to 5 August 2014, and a number of technical workshops.

5. The first meeting of the Expert Group, held in New York from 30 October to 1 November 2013, was attended by 34 experts from the statistical and geospatial communities, and international organisations. The statistical community was represented by Australia, Finland, France, Germany, India, Japan, Norway, Saint Lucia, and the United States. The geospatial community was represented by Belize, Bangladesh, Brazil, Egypt, Germany, Japan, Poland, and the Republic of Korea. International representatives were from the Economic and Social Commission for Western Asia (ESCWA), the Statistics Division, the Cartographic Section of the Department of Field Support of the Secretariat, and the European Commission. A full list of attendees is available on the UN-GGIM website at: http://ggim.un.org/UN_Statistical_Geospatial_EGM.html

6. The modalities of the Expert Group were determined and agreed upon and the two co-chairs, from the Australian Bureau of Statistics (ABS), Australia, representing the statistical community and from the Instituto Nacional de Estadística y Geografía (INEGI), Mexico, representing the geospatial community, were elected for a term of three years. The agenda for the meeting was considered and adopted (see http://ggim.un.org/UN_Statistical_Geospatial_EGM.html). The contributions of all members were positive and fully supportive of the need to integrate statistical and geospatial information, including through the sharing of knowledge, the building of capabilities and expertise, the adoption of common terminology and the identification of opportunities for communication and collaboration.

III. Major outcomes of the first meeting

7. The Expert Group discussed and agreed on Terms of Reference (see Annex I). The Expert Group seeks the endorsement of the Committee of Experts to the proposed Terms of Reference, consistent with securing endorsement of the United Nations Statistical Commission at its forty-fifth session in March 2014.

8. The Expert Group recognized that the importance of integration of statistical and geospatial information goes beyond just population and housing census activities, and needs to be mindful of a broader agenda including agriculture and economic censuses, environmental-economic accounting, and the Post-2015 Development Agenda. In this regard, the Expert Group agreed to review the Terms of Reference every three years or as part of a change of chair.

9. One of the key issues discussed was the various practices and approaches used to determine and represent geographical units for statistical purposes. The Expert Group agreed to undertake a global consultation on geocoding practices, linking and integration practices, and geographic classification practices. The purpose of the consultation will be to better understand and articulate practices, particularly a comparative analysis of grid-based versus population-based approaches to geocoding, integration and geographic classifications. Australia, Mexico, Brazil and Poland agreed to collaborate with UNSD

on the global consultation, building as much as possible on existing global consultation processes.

10. In parallel, the Expert Group agreed to a research programme into the genesis, advantages, benefits, and issues associated with a grid-based and population/administrative approach to the collection, compilation and dissemination of statistics. The United States, in conjunction with Australia, Brazil, Finland, France, India, and Poland, agreed to contribute to this research activity.

11. A focus on the development of a statistical-geospatial information infrastructure in support of the 2020 Round of Censuses was also discussed, and the Expert Group agreed that all censuses, including population and housing, agriculture, economic and other censuses, were important. However, the Expert Group also stressed the importance of prioritisation and focus, and agreed that the forthcoming round of population censuses were a particular opportunity to focus on. In this regard, the Expert Group requested UNSD to propose a course of action that would best deliver an integrated statistical and geospatial solution to the 2020 Round of Population Censuses.

12. The Expert Group discussed and explored at length the terminology and understanding of methodologies and practices including integration, linking, geocoding and geographic classifications. It was acknowledged that in order to meet the objective of providing a forum for coordination and dialogue among representatives of both statistical and geospatial communities, with a view to developing and advancing the implementation of a global statistical-geospatial framework, it was important to first share knowledge of existing terminologies and practices. The Expert Group agreed to develop a web-based portal to share knowledge, including a glossary of terminology, and requested UNSD to host this portal.

13. Information was provided about other international initiatives in the statistical community. In particular, the United Nations Economic Commission for Europe (UNECE) High Level Group on the Modernisation of Statistical Processes and Products (HLG-BAS). Initiatives in the geospatial community included the Open Geospatial Consortium (OGC), which has developed a standard for linking geospatial data, such as census boundaries, with corresponding statistical data. Furthermore, OGC, ISO/TC-211, the ISO technical committee on *Geographic information/Geomatics*, and the International Hydrographic Organization (IHO) are preparing a guide on the adoption and implementation of standards in geospatial information, needed for the fundamental layers of a Spatial Data Infrastructure (SDI) for presentation to the Committee of Experts at the fourth session in August 2014. The Expert Group agreed that it was important that both statistical and geospatial metadata communities reach out to each other, and requested UNSD to make contact with relevant groups dealing with metadata standards to inform them of the establishment of the Expert Group and put in place coordination mechanisms.

14. The contributions and comprehensive discussions enabled the Expert Group to formulate and agree on a work programme as outlined in Annex II. The participants stressed the importance of an action-oriented programme and that the issues to be addressed should be based on prioritisation, clarity and focus. In this regard, the Expert Group seeks the endorsement of the United Nations Committee of Experts on Global Geospatial Information Management to the proposed work programme, consistent with securing endorsement of the United Nations Statistical Commission at its forty-fifth session, held in March 2014.

IV. Organization of an international conference on the integration of statistical and geospatial information

15. The Statistical Commission and UN-GGIM Committee of Experts proposal to hold an international conference was also discussed at the first meeting of the Expert Group. To minimise costs and maximise attendance, the Expert Group agreed to hold the Conference in conjunction with the fourth session of the Committee of Experts in August 2014, noting that it will be important to ensure good representation from the statistical community. With the title 'Global Forum on the Integration of Statistical and Geospatial Information', and to be convened 4-5 August 2014 in New York, the Expert Group requested UNSD to organize the conference, following a format with plenary and panel sessions. Belize, Mexico and Australia agreed to work with UNSD on a conference programme.

16. The Global Forum will be bringing together for the first time the heads of national statistical offices and national geospatial information authorities from Member States, to discuss the strategic vision and goals for the integration of statistics and geospatial information. It was agreed to present the findings of the global consultation, the research activity, and the collaboration plans for the 2020 Round of Population Censuses at the Forum.

V. Other UN activities in progressing the integration of statistical and geospatial information

17. UNSD, as the Secretariat of the UN Statistical Commission and the UN-GGIM Committee of Experts, and the National Administration of Surveying, Mapping and Geo-information (NASG) of China jointly organized an International Workshop on Integrating Geospatial and Statistical Information, held from 9 to 12 June 2014 in Beijing, China. It was substantively supported by the Regional Committee of United Nations Global Geospatial Information Management for Asia and the Pacific (UN-GGIM-AP). The Workshop was attended by more than 140 participants from 41 countries, 25 among them (all of them from developing countries) were financially supported by the host country.

18. The International Workshop provided a platform for discussing priority issues related to developing and advancing the implementation of a global statistical-geospatial framework as a standard for the integration of statistical and geospatial information. It consisted of five sessions that enabled participants to engage with leading international experts to discuss and share experiences and methodologies, including in the following areas: (i) Country experiences in the integration of socio-economic and environmental information using geography; (ii) Approaches to determine and represent geographical units, including geocoding, for statistical purposes; (iii) Grid-based and administrative approaches to the collection, compilation and dissemination of statistics; (vi) Statistical analysis of geospatial information, and relevance of spatial data infrastructures (SDIs) and international standards; and (v) Positioning for the future: Trends in technology, big data, 2020 Round of Population Censuses, and the post-2015 Development Agenda.

19. There was a general recognition by the participants, from both geospatial and statistical communities, that the International Workshop initiated an important journey to

unite their professions and their business. It was stressed that users want information/knowledge; this is why we need to transform data into information. Data collection, processing, analysis and operations are indeed a means to an end - not the end in itself. The Workshop participants also stressed the fact that collaboration is essential: Statistics and Maps are parts of an overall information management framework; they don't exist in isolation. Cooperation is essential between communities, between countries, regionally and internationally, to build capacities, lower costs and ultimately turn data into information.

20. It was noted that coordination between the statistical and geospatial information offices within a country is a vitally important step, and that institutional integration is a useful demonstration of coordination and collaboration within a country to support statistical and geospatial integration. Participants agreed that geospatial data can improve the quality (accuracy, relevance, accessibility) of official statistics. They particularly recognized that Population Censuses are key enablers for demonstrating statistical and geospatial integration for all stages of a statistical cycle or production chain: input – throughput – output, and across collections. In other words, we should build integration in a sustainable and repeatable way.

21. It is worth noting that the International Workshop, in discussing and demonstrating the importance of geography to Census activities, and to statistical information more generally, has contributed significantly to the global consultations and communication process.

VI. Conclusion

22. The establishment of the Expert Group, bringing together global statistical and geospatial experts to discuss and address common issues, reflects the recognition of the importance of the integration of geospatial information and statistics in supporting social, economic and environmental policy decision-making, including at the sub-national level. The Expert Group was satisfied that the first meeting was successful in laying the foundations for effective coordination and collaboration. The International Workshop, convened in Beijing in June 2014, built upon this first meeting and continued the global consultation and consensus at a technical level, while the Global Forum in August will provide a strategic perspective to the topic. For the Expert Group to maintain the momentum and consensus, it is imperative that the professional statistical and geospatial communities remain fully engaged, as partners, in the work of the Expert Group.

23. The Committee is invited to take note of the progress in the establishment and the work related to the Expert Group on the Integration of Statistical and Geospatial Information and to give guidance on the way forward. Further, the Committee might like to invite that progress be reported back to it at a future meeting.

VII. Points for discussion

24. The Committee is invited to:

(a) Take note of the progress achieved in the establishment and the work of the Expert Group on the Integration of Statistical and Geospatial Information, and its Terms of Reference;

(b) Encourage the involvement of the geospatial community from Member States in the work of the Expert Group and participation in related appropriate events;

(c) Provide guidance on the time frame within which a progress report of the Expert Group should be submitted at future meetings of the Committee.

ANNEX I

Terms of Reference of the Expert Group on the Integration of Statistical and Geospatial Information

Note: The establishment of a United Nations statistical-geospatial expert group was requested by the Statistical Commission at its forty-fourth session, in March 2013, and endorsed by the Committee of Experts on Global Geospatial Information Management at its third session, in July 2013.

Objectives and functions

1. The overall objectives and functions of the Expert Group will be:
 - (a) To provide a forum for coordination and dialogue among representatives of both statistical and geospatial communities with a view to developing a global statistical-geospatial framework as a standard for the integration of statistical and geospatial information;
 - (b) To propose work-plans and guidelines to advance the implementation of a global statistical-geospatial framework so that there is increased information to support social, economic and environmental policy decision-making, including at the subnational level;
 - (c) To address various technical, institutional and information policy issues related to the implementation of a global statistical-geospatial framework, especially issues related to confidentiality; and
 - (d) To pursue the implementation of the statistical-geospatial framework in the 2020 round of censuses with the understanding that it would apply to other initiatives, including other censuses, such as agriculture censuses, economic censuses etc., and global initiatives such as the post-2015 development agenda and big data.
2. To achieve these objectives, the programme of work of the Expert Group will focus on the following:
 - (a) Undertake activities that foster collaboration between statistical and geospatial communities at the national and international levels, including to identify and address issues common to linking socioeconomic information to a location and implementing a global statistical-geospatial framework;
 - (b) Evaluate the statistical-geospatial framework developed by the Australian Bureau of Statistics and determine if and how it could be internationalized;
 - (c) Support the development, promotion and sharing of guidance material and best practice documentation in relation to a global statistical-geospatial framework;
 - (d) Identify existing capability development programmes in national statistical offices and geospatial communities that could be leveraged to develop geospatial components suitable for other national statistical offices and geospatial agencies, including the ability to promote and standardize

geocoding processes, methodologies and frameworks (for example, dynamic linking techniques);

- (e) Promote and encourage close collaboration between national statistical offices and their national geospatial counterparts during the 2020 round of censuses so that statistical and geospatial integration occurs, and encourage adoption of global statistical-geospatial framework principles in this work;
- (f) Encourage the use of existing, and the development of new, data and metadata standards as well as other standards to enhance the interface of location-based datasets from multiple sources;
- (g) Encourage the development of approaches to increase geospatial skills and capabilities within national statistical offices and geospatial agencies;
- (h) Encourage the development of communication mechanisms to increase the visibility of geospatial activities, beyond specialist geospatial units that exist in some national statistical offices and other agencies, to help keep the statistical and geospatial communities aware of the developments coming from the Expert Group's programme of work;
- (i) Encourage the development of geospatial analytics; and
- (j) Encourage the work of the geospatial community towards developing spatial data infrastructures, and their potential use for improving integration of statistical and geospatial information.

3. The Expert Group will bring to the attention of the Statistical Commission, the Committee of Experts on Global Geospatial Information Management and the Statistics Division new developments relating to the integration of geospatial and statistical information, the work on developing a global statistical-geospatial framework and developments coming from the Expert Group's programme of work.

Membership, composition and terms of office

4. The Expert Group will comprise high-level experts from national Governments and international organizations from both the statistical and geospatial communities. In appointing their national representatives, Member States will seek to designate experts with specific knowledge drawn from the fields of statistics and geospatial information. Where only one representative is appointed, Member States will encourage collaboration between representatives at the national level. Member State representatives would also be selected so as to ensure equitable regional representation.

5. The Expert Group will elect two co-chairs, one from the statistical community and the other from the geospatial community. Each will serve for a three-year period, renewable once for an additional three years.

6. If considered appropriate, the Expert Group will establish a bureau to assist the two co-chairs in moving activities forward outside of Expert Group meetings. The Expert Group may establish subgroups to work on particular aspects of the programme under its oversight.

7. The Expert Group will liaise as required with other international groups that may have an interest in linking statistical and geospatial information, including the Committee of Experts on Global Geospatial Information Management, the Committee of Experts on Environmental-Economic Accounting, the Cartographic Division and the Expert Group on Revising the Principles and Recommendations for Population and Housing Censuses.

8. The Expert Group will review and, if appropriate, revise its terms of reference every three years, and in conjunction with a change in chairs.

Reporting procedure

9. The Expert Group will report to the Statistical Commission and the Committee of Experts on Global Geospatial Information Management.

Frequency of meetings

10. The Expert Group will normally operate virtually and try to meet in conjunction with appropriate meetings.

11. The Expert Group will operate with the help of a website to facilitate communication, collaboration, knowledge management and information.

Secretariat

12. The Statistics Division of the Department of Economic and Social Affairs will serve as the permanent secretariat of the Expert Group. It will provide the day-to-day management and coordination, host and maintain the website and undertake all internal and external communication on behalf of the Expert Group. In cooperation with the co-chairs, the secretariat will coordinate, monitor and report on the activities of any subgroups, organize and develop the agenda for the Expert Group meetings, maintain the website and issue notices from the Expert Group.

ANNEX II**Proposed work programme of the Expert Group on the Integration of Statistical and Geospatial Information**

- Form a subgroup (Australia, Brazil, Mexico, Poland, and Statistics Division) to develop a global consultation questionnaire on (a) geographical classifications and practices and (b) geocoding practices, with a view to preparing a comparative analysis of the grid and population/administrative approaches to the integration of statistical and geospatial information.
- Build on the existing questionnaires from the global geospatial information management process to ensure coordination rather than duplication, in time to present findings to the fourth session of the Committee of Experts and the international conference.
- In parallel with the work on the questionnaires, research (Brazil, Finland, France, Saint Lucia, United States, European Commission) the genesis, the advantages and disadvantages etc. of the grid-based and population/administrative approach to the collection, compilation, analysis and dissemination of statistics, in time to present findings at the international conference.
- Form a subgroup (Australia, Belize, Mexico, and Statistics Division) to develop the International Conference proposal further.
- Reach out to the metadata standards groups in both the statistical and geospatial communities (Poland, Statistics Division, European Commission); timing to be determined by the Statistics Division.
- Reach out to the Statistics Division Demographic and Social Statistics Branch to discuss how the Expert Group can best engage with the 2020 round of population censuses, with the focus on contributing, not doing (Statistics Division in first instance); timing: as soon as possible by the Statistics Division.
- Start process of arriving at common terminology: collect existing information on terms, meanings, identify gaps etc. (Finland, Statistics Division, European Commission).
- Develop a schedule with activities, their dates and those responsible for them.
- Finalize terms of reference and seek endorsement by both the Statistical Commission and the Committee of Experts.
- Finalize a work programme and seek endorsement by both the Statistical Commission and the Committee of Experts.
- Finalize international conference proposal and seek endorsement by both the Statistical Commission and the Committee of Experts.
- Establish website; Expert Group members initiate work on the work programme elements they have offered to contribute to; send meeting outcomes/ presentation to Expert Group members.
- Expert Group members to provide feedback within their countries.