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Trends in national institutional arrangements in global geospatial information management

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Note by the Secretariat

Summary

The present paper contains the report of the Working Group on Trends in National Institutional Arrangements for consideration by the Committee of Experts on Global Geospatial Information Management.

At its fifth session, held in New York from 5 to 7 August 2015, the Committee of Experts adopted decision 5/106, in which it welcomed the report prepared by the Working Group on Trends in National Institutional Arrangements in geospatial information management and by its three task teams, took note of the extensive analysis of the questionnaires that had generated a valuable source of information to be used in the future and expressed its appreciation to Member States for their contributions. The Committee of Experts acknowledged the importance and complexity of national institutional arrangements and the broad scope of processes they attempted to capture and provided guidance as to how the working group might evaluate the status of efforts in national institutional arrangements, including to provide additional clarity on the process and on conclusions drafted, ensuring that further efforts would be made to avoid duplication of the work of other working groups within the Committee of Experts, and ensuring that its deliberations and outcomes were more focused. In order to achieve this, the Committee of Experts encouraged Member States to actively participate in the work programme of the working group. In its report, the Working Group details the work it and its three task groups have undertaken during the intercessional period as follows: production systems analysis, coordinated by Spain; funding structures, dissemination systems and data policy models, coordinated by Mexico; and the structure of geospatial information management organizations and the role of volunteered geographic information, coordinated by Singapore. The methodology and index for determining best

* E/C.20/2016/1

practices in national institutional arrangements in geospatial information management are presented in the report for consideration and approval.

I. Introduction

1. At its fifth session, held in New York from 5 to 7 August 2015, the Committee of Experts welcomed and considered the report E/C.20/2015/5/Add.1 and associated background paper prepared by the Working Group on Trends in National Institutional Arrangements and its three task groups. Detailed in these documents was the analysis undertaken of the data received from four global questionnaires covering the three areas of work: (a) geospatial information business model analysis; (b) structure of geospatial information management organizations; and (c) the role of people as users and producers of geospatial information.

2. Further to its deliberations the Committee of Experts adopted decision 5/106, noting the extensive analysis of the questionnaires, which served as a valuable source of information for future use, and expressed its appreciation to Member States for their considerable input. Acknowledging the importance and complexity of national institutional arrangements and the broad scope of processes they attempt to capture, the Committee of Experts provided guidance as to how the Working Group could evaluate the status of efforts in national institutional arrangements. Further, the Working Group was asked to provide additional clarity on the process and on conclusions drafted, and to ensure the avoidance of duplication of work of other working groups within the Committee of Experts, and to remain focused in its deliberations and outcomes.

3. This report details the work undertaken by the Working Group and its three task groups during the intercessional period, covering: production systems analysis, coordinated by Spain; funding structures, dissemination systems and data policy models, coordinated by Mexico; and the structure of geospatial information management organizations and the role of volunteered geographic information¹, coordinated by Singapore. The report also presents for consideration and approval the methodology and index for determining best practices in national institutional arrangements in geospatial information management. Points for discussion and decision are provided in paragraph 28.

II. Objectives

4. The overall objective of the Working Group on National Institutional Arrangements is the identification of best practices, sets of institutional models and legal frameworks for national geospatial information management and interoperability between different systems and institutions responsible for its management, while ensuring uniformity and standardization. The institutional models should provide Governments with options on how best to create national geospatial entities.

5. To accomplish this primary objective, in its first phase of work the Working Group analysed geospatial information management organizations across the world from different political, technical, financial and administrative perspectives. The Working Group is focused on building an index on best practices based on a set of meaningful indicators following a three-step process,

¹ As VGI is a relatively new field and its adoption is still relatively low, it would not be considered in this report. The Working Group seeks the Committee's understanding on this matter.

from the characterization of the current situation to the classification of the different organizational systems according to the proposed index.

6. The overall aim will be the identifications and selection of best practices on national institutional arrangements based on objective criteria, globally and by topics already set.

III. Current Situation Analysis

7. A portrait of the different initiatives on national institutional arrangements currently implemented across Member States has been developed from responses to a questionnaire that was distributed to all UN-GGIM Member Countries. The questionnaire is composed of questions about production systems, funding structures, dissemination systems, data policy models, structure in management organizations and the role of people as voluntary producers in the field of geospatial information. In addition, the questionnaire was structured around a set of geospatial themes selected according to their relevance to address the needs of the United Nations 2030 Sustainable Development Agenda.

8. The set of geospatial information themes selected is not exhaustive, but is an initial approach deemed necessary in order to move forward with Working Group activities. It should be noted that the definition of global fundamental geospatial data themes is being addressed under a separate agenda item at this sixth session. The Working Group will coordinate its activities with the Regional Committee of United Nations Global Geospatial Information Management for Europe Working Group, inclusive of keeping abreast with the progress and conclusions of their work on global fundamental geospatial data themes.

9. In 2015 the Working Group received 59 responses to the questionnaire, a response rate of 30%. Given this low response rate, the Working Group re-circulated the questionnaires to allow additional Member States to participate and generate more conclusive results from the analysis.

10. With the second recirculation of the questionnaire, initiated with the assistance of the UN-GGIM Regional Committees, only four new responses were received; an indication that additional responses would not be forthcoming. Therefore, these survey responses have been the data available for the Group to work with. Based on the low response rate it was not deemed necessary to prepare a new report with the additional four questionnaires, however the new answers have been included in the results.

11. With the conclusions drawn from the Working Group questionnaire, combined with the information detailed in the report “The Status of Topographic Mapping in the World” (Prof. Konecny, UN-GGIM-ISPRS), a broad view of the current situation of national institutional arrangements in geospatial information management organisations across the world, and regional differences among Member States, was derived.

IV. Diagnosis and Best Practices

12. The work carried out by Working Group for the intercessional period has been mostly in the context of the diagnosis phase. Two main activities have

been completed: namely the design of a methodology aimed at developing an index, based on the results of the questionnaires and related research in the area; and the consultation made to experts to obtain feedback on the design methodology.

13. The methodology was created taking into account the available information and recommendations provided by the UN-GGIM Bureau. The Working Group proposed methodology intends to facilitate how best practices in national institutional arrangements in geospatial organisations are identified, based on the selection of a set of indicators on each of the topics addressed in the questionnaires, and the subsequent assessment measurement of institutional arrangements on the basis of previous indicators and other elements, not yet decided, such as socio-economic rates and specific characteristics of each country, among others. The proposed methodology is attached in Annex I in the Background Document to this report.

14. The next activity performed under this framework was the consultation of experts. The Working Group sought feedback from external acknowledged and reputable entities on the proposed methodology, together with any comments and/or suggestions. This has helped to refine and accept the best approach and obtain the most representative results in the context of the Committee of Experts. The entities consulted were national and international external reputable entities with recognized prestige within the geographical information world, namely: EuroSDR; Joint Research Centre of the European Commission (JRC); Eurostat; EuroGeographics²; UN-GGIM: Europe Working Group A Core Data; UN-GGIM: Europe Working Group B Data Integration; UN-GGIM Working Group on Land Administration and Management; Carleton University; Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO); Hannover University; Pan-American Institute of Geography and History (PAIGH); GeoSur³; and the United Nations Economic Commission for Africa (UNECA)⁴. These entities were consulted on the suitability of the methodology for the proposed aims and the possibility of considering the use of other ancillary data in the process. The collected suggestions and comments from the organisations that have responded are detailed in Annex II in the Background Document to this report.

15. Once the proposed methodology was endorsed by the external entities consulted, the next phase was the application of the methodology with all the available information. The first step was the selection of indicators, as proposed by the Bureau, in those key areas whose influence would determine the success of the national institutional arrangements identified by each Task Group. This selection was done based on the questionnaires, literature research and the assistance and validation of the external acknowledged entities consulted. A limitation was placed on the selection of these indicators: that is, the answer to them should be obtained directly from the information provided by the Working Group questionnaires as answered by the Member States, or from existing literature. The challenge was to correctly identify those key areas and the indicators that define them, together with the justification underpinning this selection. The second step was the assessment of the national institutional arrangement practices carried out by each Task Group using the selected

² The Association of European National Mapping, Cadastral and Land Registry Authorities.

³ The GeoSUR Program, a regional initiative to integrate and disseminate spatial data in Latin America and the Caribbean

⁴ "the report Fundamental Geospatial Datasets in Africa"

indicators and the information contained in the answers of the questionnaires received and in documentation analysis.

Case Studies

16. The selection of case studies was based on the assessment previously completed. Each Task Group did its own assessment of Member States based on the selected indicators. This step has provided three different grades of Member States for each topic area, one per Task Group. A proposal of two or three Member States by region to be studied was undertaken by the Task Groups. After, a global joint selection was done taking into account this grading and additional information; further this was agreed by the leaders of each Task Group and presented to the UN-GGIM Secretariat for final selection.

V. Next Steps

17. In order to fulfil the final aim of the Working Group a report on best practices on national institutional arrangements, using objective criteria, considering a global scope, and using an established set of topics will need to be completed in 2017.

18. Based on the consultations with experts, ancillary data might be used for obtaining different solutions, as a single solution model cannot be assumed as a representative result for the entire world. Socio-economic contexts and resources available in different countries are too diverse and, therefore, different national institutional arrangements can be seen as best practices depending on the context of the studied Member State. These ancillary data could include official socio-economic indexes, country size among others, and regarding which criteria to include and how; these have not been decided as yet.

19. By following this approach, more appropriate conclusions on the performance of each country's national institutional arrangements can be made, and conclusions per country or by group of countries will be possible to be obtained.

Work Calendar:

| <i>Time Period</i> | <i>Major Activities</i> |
|--------------------|--|
| 2014 - 2016 | Constitution of NIA group and analysis phase |
| 2015 - 2016 | Diagnosis of NIA situation |
| 2017 | Best practices in NIA |

VI. Lessons Learnt

20. Geospatial information is a very broad concept. A first basic indicator (and so it was conceived from the beginning in the Working Group) is the Geospatial Reference Information (GRI), as a first step to further deepen geospatial information as a whole.

21. National institutional arrangements are tightly linked to certain aspects of geospatial topics. An attempt was made to describe these topics by circulating a questionnaire which in turn was used in the definition of a set of indicators. The indicators were not defined beforehand in the questionnaires.

22. The Working Group has analysed how various Member States structure their national institutional arrangements based on the responses to the questionnaire, and concluded that there does not appear to be a single universal model on how best to structure national geospatial information management institutions (please refer to Annex III in the Background Document for more detailed information). Various countries were able to achieve effectiveness in their geospatial information management initiative despite having organised themselves differently. Therefore, the Working Group has proposed other factors contributing towards effective geospatial information management and these are exemplified in the indicators.

23. National institutional arrangements are based on a wide range of factors, such as technical, political and administrative, among others. It is challenging to gather coherent and homogenous information from all Member States, since these factors vary from one country to another. This makes the comparison of institutional arrangements across national geospatial information management institutions difficult.

24. Challenging as well was the selection of significant case studies for each group of Member States; since there are great differences in the vision that each has of its institutional arrangements, its structure and the available background for their implementation.

25. This type of analysis is very important if a future attempt for harmonization of geospatial information is to be made among different Member States.

VII. For Further Consideration

26. One of the issues yet to be discussed is how to include in the analysis socio-economic factors that inevitably affect national institutional arrangements in all facets. This encompasses not only economic growth but also factors such as human development or penetration of information and communications technologies in society and governments. Already available indexes such as the Human Development Index (IDH), its variant Inequality-adjusted Human Development Index (IDHI), and the e-Government Development Index are some examples of potential sources of ancillary data which could be considered in the assessment. Another issue that must be taken into account is the country area, since it undoubtedly affects the establishment of national institutional arrangements in terms of geospatial information management.

27. Considering the suggestions of the consulted experts some other points may be discussed:

- a. To consider taking into account not only the production but also the use of geo-information together with its measurement and monitoring;
- b. To think about the possibility of updating regularly the indexes obtained in the process;

- c. To study the possibility of a benchmark approach between organisations/businesses as more useful and tangible than an overall approach on a geospatial information architecture; and
- d. To consider the possibility of using different indicators for developed and developing countries.

VIII. Points for Discussion

28. The Committee of Experts is invited to:

- (a) Take note of the report and the work carried out by the Working Group and its three Task Groups, inclusive of the Annexes detailed in the Background Paper to the present report;**
- (b) Approve the methodology and indicators for determining best practices for national institutional arrangements;**
- (c) Express its views on the way forward based on the next steps and recommendations proposed by the Working Group.**

ANNEX I, II and III are available in the Background Document: "Annexes to the Report on Trends in National Institutional Arrangements in Geospatial Information Management."

- Annex I** Methodology for Selecting Case Studies within the UN-GGIM National Institutional Arrangements (UN-GGIM NIA) Working Group
- Annex II** External Acknowledged Entities Consulted
- Annex III** Preliminary findings on the Typology of NIA organizational structures