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Global fundamental geospatial data themes

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Note by the Secretariat

Summary

The present paper contains the report prepared by the Regional Committee of United Nations Global Geospatial Information Management for Europe on behalf of its working group on global fundamental geospatial data themes for consideration by the Committee of Experts on Global Geospatial Information Management.

At its eighth session, held in New York from 1 to 3 August 2018, the Committee of Experts adopted decision 8/104, in which it commended the working group for raising awareness of the 14 global fundamental geospatial data themes through its promotion, marketing and communication efforts, noted the suggestions to describe the themes in greater non-technical detail so that they could be harmonized at the national and regional levels and to ensure easier national implementation, acknowledged the alignment of the themes with the Integrated Geospatial Information Framework and encouraged the inclusion of the themes in the development of geospatial information activities at the national level. In this present report, the Regional Committee outlines the actions it has taken to advance work regarding the fundamental geospatial data themes at the regional and global levels and its efforts to anchor the themes in the different work items of the Committee of Experts, including integrating the themes within the Integrated Geospatial Information Framework in the context of strategic pathway 4, which concerns data. The Regional Committee also includes recommendations for the Committee of Experts to consider the future modalities of the working group.

* E/C.20/2020/1

I. Introduction

1. At its eighth session in August 2018, the Committee of Experts received a report from the Executive Committee of the Regional Committee of United Nations Global Geospatial Information Management for Europe (UN-GGIM: Europe) on the progress and activities of its Working Group on Global Fundamental Geospatial Data Themes. This report¹ outlined the actions taken by the Working Group in the previous 12 months, and the work which had been completed in the regions and with other observer groups. This work included the development of high-level descriptions of the fourteen (14) global fundamental geospatial data themes and activities undertaken by the Working Group to promote the themes within the geospatial and non-geospatial communities, including workshops in Africa and promotional activities at other events. In making decision 8/104, the Committee of Experts acknowledged the contributions of the Working Group, the Regional Committees, the Subcommittee on Geodesy and the Expert and Working Groups of the Committee of Experts, as inputs into the global review to determine the 14 theme descriptions. It also acknowledged the alignment of the themes with the Integrated Geospatial Information Framework and encouraged the inclusion of the themes in the development of geospatial information activities at the national level.

2. In this present report, UN-GGIM: Europe outlines the actions it has carried out over the past four years to advance the work in determining the minimum list of themes and describes how the themes are being embedded in the broader programme of the Committee of Experts. The report also provides a recommendation for the Committee to consider regarding the continuing modalities of the Working Group. Points for discussion and decision are provided in paragraph 36.

II. Context for embarking on the work

3. The Committee of Experts embarked on the determination of the data themes when, at its fifth session held in August 2015, it considered and agreed with a report presented by the Regional Committee of United Nations Global Geospatial Information Management for Europe (UN-GGIM: Europe)² that there was “an urgent need for a set of global fundamental geospatial data themes that could be harmonized in order to enable the measurement, monitoring and management of sustainable development in a consistent way over time and to facilitate evidence-based decision-making and policy-making”. In adopting decision 5/103, the Committee of Experts supported the initiative proposed by UN-GGIM: Europe to establish and lead a Working Group to liaise with the other four Regional Committees to bring together information on the consideration of the themes and to lead discussions between interested Member States and observers, with a view to developing an agreed minimum set of global fundamental geospatial data themes.

4. The Terms of Reference³ of the Working Group included the following activities:
- (a) Produce a recommendation for a minimum list of global fundamental geospatial data themes. Each data theme should be supported by a description and guidelines;
 - (b) Take account of existing activity being undertaken by UN-GGIM Regional Committees, ensuring that where possible existing resources are used;
 - (c) Consider the prioritisation of the data themes and how they link to other data needs with in the UN-GGIM programme of work;

¹ E/C.20/2018/7/Add.1: http://ggim.un.org/meetings/GGIM-committee/8th-Session/documents/E-C20-2018-7-Add_1-Global-fundamental-geospatial-data-themes.pdf

² E/C.20/2015/4

³ http://ggim.un.org/documents/Global_Fundamental_Geospatial_Data_Themes-TOR.pdf

- (d) Consider the specific needs and vulnerabilities of small island developing States; and,
- (e) Ensure that the data themes are technical in nature as not to raise political concerns.

5. These activities were actioned by the Executive Committee of UN-GGIM: Europe, in providing governance and oversight of the Working Group, delegating the technical leadership to the United Kingdom of Great Britain and Northern Ireland.

III. The process of determining the data themes: What was done and how

6. Following the fifth session of the Committee of Experts, the Secretariat issued a call to all Member States for membership nominations for the Working Group. The other four Regional Committees were also directly invited to participate in the Working Group. The response from both calls was positive, resulting in the Working Group being represented from all five Regional Committees, 11 Member States and two observer organisations.

7. The Working Group also included the participation of the person(s) responsible for leading the work on fundamental data within each Regional Committee. This was an important point since it was the belief of UN-GGIM: Europe that national and regional fundamental data themes initiatives should form the basis for developing agreement and consensus for the themes.

8. The first actions of the Working Group were to collate and analyse the existing work from all regions. There were several existing initiatives which were considering and defining geospatial data themes at a regional level. These included the INSPIRE Directive in Europe, the work by the United Nations Economic Commission for Africa ‘Determination of Fundamental Datasets for Africa: Geoinformation in Socio-Economic Development’⁴, and ‘One ANZ Foundation Spatial Data Framework’⁵ agreed by Australia and New Zealand, through ANZLIC amongst other relevant initiatives.

9. In addition, in 2015 – 2016 the Working Group on National Institutional Arrangements in Geospatial Information Management selected nine geospatial reference information themes which were required as part of its work in identifying best practice in national institutional arrangements and production system analysis⁶ to support the SDGs. Furthermore, the ISPRS report ‘The Status of Topographic Mapping in the World a UNGGIM - ISPRS Project 2012 – 2014’⁷ provided a useful reference to the existence of a number of data themes for consideration of the Working Group.

10. An initial ‘mapping’ of the various geospatial data themes defined by initiatives within the regional and global projects, the common denominators were highlighted across all regions. Although influenced by regional priorities, much of the work had been focused on datasets not data themes, there was a remarkable degree of consistency. From this, it was possible to produce a list common of ‘candidate’ fundamental data themes.

11. This list then formed the basis for organising a number of consultative of workshops to explore attendees’ views on the determination of the themes. Three workshops were held in 2016: as a side event during the Fourth High Level Forum in Addis Ababa, Ethiopia, 20-22 April 2016; during Geospatial World Forum in Rotterdam, the Netherlands, 23-26 May

⁴ http://www.uneca.org/sites/default/files/PublicationFiles/geoinformation_socio_economic_dev-en.pdf

⁵ http://spatial.gov.au/system/files/public/resources/anzlic/ANZ_FoundationSpatialDataFramework_%28FinalWeb%29.pdf

⁶ http://ggim.un.org/docs/meetings/GGIM5/E_C.20_2015_5_trends%20in%20national%20institutional%20arrangements_en.pdf

⁷ http://www.isprs.org/proceedings/2015/2015-WG-IV-2/4_2015-WG-IV-2.pdf

2016; and, a side event on the margins of the sixth session of the Committee of Experts in August 2016.

12. To fulfil its Terms of Reference, the Working Group concerned itself with data themes which support sustainable development, in alignment with the 2030 Agenda. This included considering what data are required for the implementation and monitoring of the SDGs, especially which of those themes meet the criteria of being ‘fundamental’. By amalgamating the output of these two approaches, the regional common denominators with the fundamental data required for the SDGs, it was possible to produce the draft minimum list of 14 global fundamental geospatial data themes.

13. This draft minimum list was then sent for global review within the wider programme of work of the Committee. Besides being reviewed by all members of the Working Group, the Regional Committees, and the other Working and Expert Groups of the Committee of Experts, were invited to comment and provide feedback. Without exception, all agreed that the themes identified were fundamental and no significant gaps were identified which would hinder their work. Significant and helpful feedback was received, and the comments were included to finalise and produce the Minimum List of Global Fundamental Geospatial Data Themes as follows:

1. Global Geodetic Reference Framework
2. Addresses
3. Buildings and Settlements
4. Elevation and Depth
5. Functional Areas
6. Geographical Names
7. Geology and Soils
8. Land Cover and Land Use
9. Land Parcels
10. Orthoimagery
11. Physical infrastructure
12. Population Distribution
13. Transport Network
14. Water

14. Whilst not a data theme, the Global Geodetic Reference Framework was included in the minimum list to acknowledge the fundamental nature of the reference framework to geospatial data. Similarly, orthoimagery, which is in itself a data source not a data theme, is included in the list since it is widely considered to be fundamental to the SDGs and, after interpretation, fundamental data can be created from it.

15. This list, which is the result of wide consensus and collaboration, was tabled at the Committee’s seventh session in August 2017. In making decision 7/104, the Committee adopted the Minimum List of Global Fundamental Geospatial Data Themes.

16. The Terms of Reference of the Working Group also called for “a description and guidelines for each theme” and to consider the specific needs of other UN-GGIM programmes of work and the needs of small island developing States (SIDS). In alignment with this, and as a result of decision 7/104, the Committee of Experts expressed support for the offer of UN-GGIM: Europe and domain experts to continue to develop more details for each of the fundamental geospatial data themes and to work with the Secretariat and other groups to draw up plans for promoting and making the proposed minimum list better known, accepted and applied within the wider community, including the non-geospatial community.

17. Accordingly, the theme descriptions were developed by members of the Working Group together with subject matter experts and relevant groups (such as SIDS). This ensured

that the activities of the Working Group were inclusive and would address existing and prevailing concerns. The intention was to keep the descriptions at high level so as to achieve a result in a shorter period of time, and to produce such descriptions which could be easily communicated to a non-geospatial audience. As a result, each description was limited to one page and covered the following topics:

- a) Title;
- b) Description;
- c) Why is this theme fundamental;
- d) Which SDGs will it help to meet;
- e) Geospatial data features in more detail;
- f) Possible sources of geospatial data; and
- g) Existing geospatial data standards.

18. On the margins of the seventh session in August 2017, the Working Group conducted informal discussions with subject matter experts involved within the broader programmes of the work of the Committee. This identified linkages between their work and the themes, to discuss and identify gaps, overlapping areas, and/or inconsistencies. This was preceded by an extensive review and consultation process on the draft theme descriptions. This process consisted of consulting with the Regional Committees, their working and expert groups, and the Subcommittee, Expert and Working Groups of the Committee of Experts. This review and consultation process were conducted via email and teleconference. The resulting consensus led to the final agreed theme descriptions. The high level, one-page theme descriptions of the themes were adopted by the Committee of Experts in making decision 8/104 at its eighth session in August 2018. These are now detailed within a background paper to this present report, which aims to communicate the themes in an accessible and usable manner, including those outside the geospatial community.

IV. Alignment with the broader programme of work

Communicating the Themes

19. Recognising the success of the global branding and individual icons related to the SDGs for public awareness, a series of data theme icons were developed by Australia to represent the themes and assist with their promotion.

20. The Secretariat developed a “storyboard”⁸ to describe the themes, leveraging the theme descriptions. Both these initiatives proved highly valuable in helping to visualise the importance of the themes, in promoting them to the different regions, and making them more understandable to a non-technical audience.

21. The themes are now also detailed within a background paper related to this report.

Promotion activities

22. The implementation of the themes has been taken forward and discussed at a Regional level. The International Workshop on Global Fundamental Geospatial Data Themes for Africa was held 25 - 27 April 2018 in Addis Ababa, Ethiopia⁹. This three-day International Workshop raised awareness, provided guidance and exchanged knowledge on how Member States from Africa can and are improving the capacity of their National Geospatial Information or Mapping Agencies in producing geospatial information that are referenced to internationally agreed fundamental geospatial data themes.

⁸ <https://undesa.maps.arcgis.com/apps/Cascade/index.html?appid=4741ad51ff7a463d833d18cbcec29fff>

⁹ http://ggim.un.org/meetings/2018-Addis_Ababa/

23. A condensed “Global Fundamental Geospatial Data Themes” workshop was held in conjunction with the Fifth Plenary Meeting of UN-GGIM: Europe on 6 June 2018 in Brussels, Belgium. This workshop covered the work and outputs of the Working Group to date, together with the complementary work being carried out by the UN-GGIM: Europe Working Group on Core Data and Data Integration, and the work of the Inter-agency and Expert Group on SDG Indicators Working Group on Geospatial Information.

Alignment with other work of the Committee

24. Since its inception, the Working Group has recognised that its work is one element of a wider data infrastructure and ecosystem. Accordingly, the Working Group considered it essential that the themes were adopted and practically implemented to enable the broader work of the Committee. There are many important linkages to be made within the broader programme of work of the Committee, such as the Integrated Geospatial Information Framework and the Global Statistical Geospatial Framework, as well as the on-going work on standards, geodesy, national institutional arrangements, and various national and regional initiatives. These activities further enable themes to become better known, accepted, and applied within the wider community, including the non-geospatial community.

25. The Integrated Geospatial Information Framework, further detailed within a separate report before the Committee, has adopted the themes as a key element within strategic pathway 4 “Data”. The aim of this strategic pathway establishes a geospatial data framework and custodianship guidelines for best practice collection and management of integrated geospatial information that is appropriate to cross sector and multidisciplinary collaboration. This has the objective to enable data custodians to meet their data management, sharing and reuse obligations to government and the user community through the execution of well-defined data supply chains for organising, planning, acquiring, integrating, managing, maintaining, curating, publishing and archiving geospatial information. The themes enable this strategic pathway through promoting, inter alia, consistent data management.

26. The Global Statistical Geospatial Framework, further detailed within a separate report before the Committee, facilitates the integration of statistical and geospatial information. It enables a range of data to be integrated from both the statistical and geospatial communities and, through the application of its five principles and supporting key elements, permits the production of harmonised and standardised geospatially enabled statistical data. The themes underpin each of the five guiding principles of the global statistical geospatial framework, with a specific relevance regarding Functional Areas, as an enabling mechanism for the output and dissemination of geospatially enabled statistical data.

27. The promotion and awareness raising around the themes has resulted in a number of Member States taking up the themes for use in their own national geospatial planning. Mongolia, for example, has translated the theme descriptions into Mongolian as part of their work towards developing their national spatial data infrastructure.

28. The descriptions of the themes have been purposely kept at a high level, both achieve a result in a shorter period of time, and to produce such descriptions which could be easily communicated to a non-geospatial audience. Some of the Regional Committees are now working to further define the themes and their high-level descriptions with detail and specification that meets the needs and requirements of their regions.

III. Future modalities for the Working Group

29. In accordance with its Terms of Reference, the overall objective of the Working Group was to “bring together differing information on fundamental geospatial data themes with a view to developing an agreed minimum set of global fundamental geospatial data themes”. With the adoption of the themes at the seventh session of the Committee in 2017, the development of high-level descriptions at the eighth session of the Committee in 2018, and the subsequent alignment and use within the work programmes of its Regional Committees, the Subcommittee on Geodesy, and the Expert and Working Groups of the Committee of Experts, the Working Group is seeking recommendations regarding its future modalities.

30. This work item has been on the agenda of the Committee of Experts for five years, since making decision 4/104 at its fourth session in August 2014, in which the Committee agreed that “actions should be taken for Member States and the international community to work jointly towards the preparation, improvement and maintenance of fundamental geospatial data themes, building on existing national and regional fundamental datasets”. UN-GGIM: Europe, which was given the responsibility to lead this work by the Committee at its fifth session by decision 5/103, always had the ambition that the tasks set to the Working Group be achieved by consensus and within a short time-frame.

31. UN-GGIM: Europe is of the opinion that based on the consultative process carried out, both for determining the themes and for developing their high-level descriptions, that the themes are fully developed and cannot be taken any further at the global level. This considers the number of iterations, the level and quality of feedback, and strong support received by the wider geospatial community.

32. The Working Group has also, as per its Terms of Reference, considered the specific needs and vulnerabilities of small island developing States, and ensured that the themes were kept technical in nature as not to raise political concerns. The Regional Committee is further encouraged by the fact that the themes are being aligned with the wider global geospatial ecosystem and importantly embedded within broader programme of work of the Committee. As such, UN-GGIM: Europe considers that it has successfully completed all the tasks set out in its Terms of Reference and therefore recommends to the Committee of Experts that the Working Group is closed having satisfactorily achieved its objectives.

33. UN-GGIM: Europe notes that it would not have been able to successfully lead the work without the technical leadership of the United Kingdom of Great Britain and Northern Ireland, the resources provided by the Member States and observer organisations forming the Working Group, and the collaboration and feedback from the Committee’s Subcommittee, Expert and Working Groups and Regional Committees. UN-GGIM: Europe thanks the Working Group and all involved in helping to successfully conclude the task of determining the themes and their high-level descriptions.

IV. Summary

34. Since the fourth session of the Committee of Experts in 2014, and with strong guidance from the UN-GGIM: Europe Executive Committee, the Working Group has worked productively and in a collaborative manner with all Regions, the Subcommittee, Expert and Working Groups and subject matter experts to identify, define, develop, describe, and promote the themes. Through the determination of the themes, related one-page descriptions, icons, interactive storyboards, and several workshops, the themes are now embedded within the broader programme of the Committee of Experts, including the Integrated Geospatial Information Framework and the Global Statistical Geospatial Framework. Due to the Working Group’s promotion efforts, within the wider geospatial community and beyond, the themes and associated material are accessible to all.

35. UN-GGIM: Europe believes that by developing the themes and their high-level descriptions, which were adopted by the Committee at its seventh and eighth sessions respectively, the Working Group has successfully completed the tasks set out in its Terms of Reference. UN-GGIM: Europe therefore seeks guidance from the Committee regarding the ongoing modalities of the Working Group, considering the recommendation by UN-GGIM: Europe that the Working Group is closed having successfully achieved its objectives.

V. Points for discussion

36. **The Committee of Experts is invited to:**

(a) Take note of the report, the background document, and the work of the Working Group, recalling that the 14 Global Fundamental Geospatial Data Themes and their high-level descriptions were adopted by the Committee in its previous sessions;

(b) Take note of the alignment of the 14 Global Fundamental Geospatial Data Themes with the broader programme of work of the Committee, including the Integrated Geospatial Information Framework and the Global Statistical Geospatial Framework; and,

(c) Express its views on the successful completion of the tasks set for the Working Group according to its Terms of Reference and provide guidance regarding the ongoing modality of the Working Group having successfully achieved its objectives.