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Integrating statistical and geospatial data: challenges and next steps

Standards and initiatives relevant to the integration of statistical and geospatial information

Prepared by the Secretariat

Summary

This document outlines some of the main standards and initiatives relevant to the integration of statistical and geospatial information. It is intended to provide an overview of available resources and provide links for further details. The Conference is invited to take note of the information provided in this document.

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I. Introduction

1. There are growing demands for new types of statistics and data. The indicators for the Sustainable Development Goals require the use of new data sources, whilst the COVID-19 crisis has emphasized the need for the official statistics community to react quickly and creatively to meet unforeseen needs. A key element of these new demands is the requirement to integrate data from various sources to provide a comprehensive picture of what is happening. Two core data sources in every country are official statistics and geospatial information. The integration of these sources provides a strong base for a wide range of analyses.

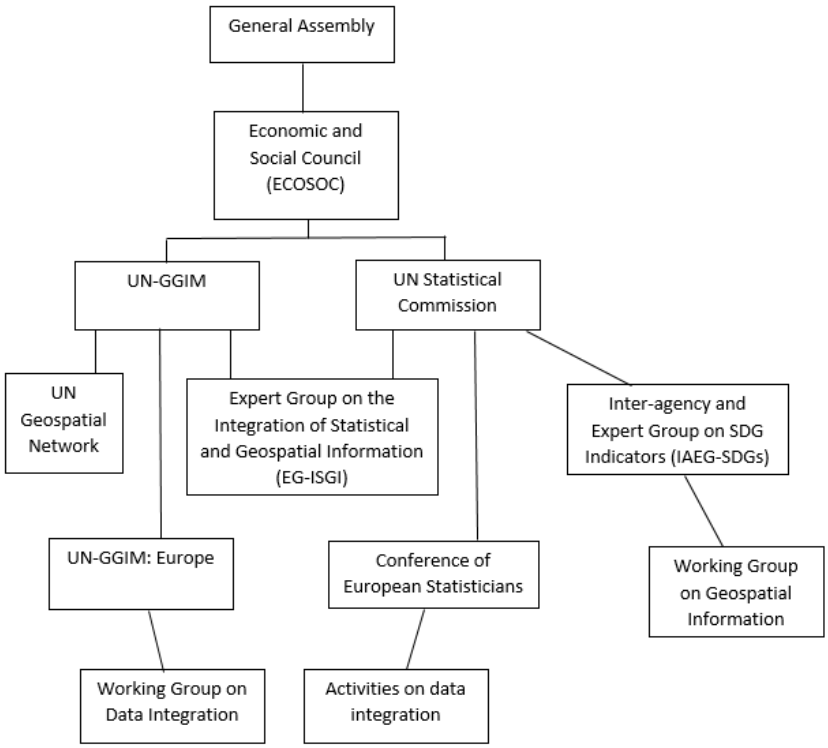
2. In response, the statistical and geospatial communities have been increasingly working together to find ways to meet user needs. This is happening at the national level in many countries, and also at the international level, as evidenced by the growing partnership between the Conference of European Statisticians and the Europe Region of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM: Europe).

3. The rapidly evolving landscape of standards, initiatives and groups relevant to the integration of statistical and geospatial information can seem rather confusing to those not directly involved in this work. This paper aims to remove that confusion by providing a brief overview of the different resources and how they relate to each other. Links are provided for those who need more detailed information.

II. The landscape within the United Nations System

4. Figure 1 shows the different groups and initiatives within the UN system relating to the integration of statistical and geospatial information, with a focus on those most relevant for the UNECE region.

Figure 1.
The landscape within the UN System



5. **UN-GGIM**[1] is the United Nations Committee of Experts on Global Geospatial Information Management. It was created by ECOSOC in 2011 and comprises the heads of national mapping and cartographic agencies. It usually meets once a year, in August, in New York. **The United Nations Statistical Commission**[2] is the equivalent body for official statistics. It was created in 1947 and also meets annually in New York, usually in March.

6. **UN-GGIM** has 5 regional committees, corresponding to the coverage of the UN Regional Commissions. **UN-GGIM: Europe**[3] is the committee for the Europe region, and was created in 2014. In addition, UN-GGIM has various thematic sub-groups, referred to as "networks". **A UN Geospatial Network**[4] was created in 2017, comprising representatives of various UN agencies. In early 2020 this Network, and its statistical counterpart, the Committee of Chief Statisticians of the UN System, started to discuss joint activities in areas of mutual interest.

7. UN-GGIM and the UN Statistical Commission also have various sub-groups working on specific topics, including the **UN Expert Group on the Integration of Statistical and Geospatial Information**[5] (EG-ISGI), which is unique, in that it reports to both bodies.

8. On the statistical side, there are also 5 regional bodies, including the **Conference of European Statisticians**[6], which is serviced by the UNECE Statistical Division. Both UN-GGIM: Europe and the Conference of European Statisticians have annual plenary sessions, and also have various teams of experts that report to them. UN-GGIM: Europe has a **Working Group on Data Integration**[7]**,** and the Conference of European Statisticians has had various **activities on data integration**, e.g. for population and housing censuses and for migration statistics. The Conference of European Statisticians also has a High-Level Group for the Modernisation of Official Statistics (HLG-MOS)[8], which ran projects on data integration in 2016 and 2017[9].

9. Finally, the UN Statistical Commission has an **Inter-agency and Expert Group on SDG Indicators** (IAEG-SDGs), which has a **Working Group on Geospatial Information**[10]**.**

III. Beyond the United Nations System

10. The European Commission and Eurostat[11] have a long history of activities relating to statistical and geospatial information. The European Union's INSPIRE Directive[12] came into force in 2007 and aims to create a European Union spatial data infrastructure for the purposes of EU environmental policies and policies or activities which may have an impact on the environment. GISCO - the Geographic Information System of the European Commission[13], is located within Eurostat, and is responsible for meeting the Commission's geographical information needs at 3 levels: the European Union, its member countries, and its regions. Eurostat has also facilitated a series of European Union projects under the title "GEOSTAT". GEOSTAT 3[14] concluded in 2019, and GEOSTAT 4[15] started in early 2020.

[1] https://ggim.un.org/
[2] https://unstats.un.org/unsd/statcom
[3] https://un-ggim-europe.org/
[4] https://ggim.un.org/UN-GGIM-Thematic-Groups/
[5] https://ggim.un.org/UNGGIM-expert-group/
[6] https://www.unece.org/stats/ces.html
[7] https://un-ggim-europe.org/working-groups/working-group-data-integration/
[8] https://statswiki.unece.org/display/hlgbas
[9] https://statswiki.unece.org/display/DI
[10] https://unstats.un.org/sdgs/iaeg-sdgs/
[11] https://ec.europa.eu/eurostat/home
[12] https://inspire.ec.europa.eu/
[13] https://ec.europa.eu/eurostat/web/gisco/overview
[14] https://www.efgs.info/geostat/geostat-3/
[15] https://www.efgs.info/geostat/geostat-4/

11. The GEOSTAT projects have been carried out in close cooperation with the European Forum for Geography and Statistics (EFGS)[16], which started as a voluntary cooperation between National Statistical Institutions (NSIs) in the Nordic countries in 1998, and now covers over 40 countries. It has annual meetings, bringing together experts from the statistical and geospatial communities. The EFGS also has an initiative to broaden its scope by creating a Global Forum for Geography and Statistics (GFGS).

IV. Standards

12. Over recent years there has been a considerable effort internationally to develop, align and implement standards to support the integration of statistical and geospatial information. However, this should be seen as "work in progress", as the Joint UNECE / UN-GGIM: Europe / Eurostat / EFTA Workshop on Data Integration (Belgrade, May 2019) recognised that standards remain the biggest challenge for integrating statistical and geospatial data[17]. Some of the main standards are described in the remainder of this section.

13. The main reference standard for the integration of statistical and geospatial information is the **Global Statistical Geospatial Framework (GSGF)**[18]. This Framework was developed by the Expert Group on the Integration of Statistical and Geospatial Information and endorsed by both UN-GGIM and the Statistical Commission in 2019. It builds on various statistical and geospatial standards, including the Generic Statistical Business Process Model (GSBPM) and other models developed by the UNECE HLG-MOS.

14. The Integrated **Geospatial Information Framework (IGIF)**[19] is another important global standard. It "provides a basis and guide for developing, integrating, strengthening and maximizing geospatial information management and related resources in all countries". This Framework was developed under UN-GGIM, and an implementation guide is currently being elaborated.

15. The statistical and geospatial communities have also been discussing how to best reflect the importance of geospatial information in the **GSBPM.** This topic was a major strand of the European Union GEOSTAT 3 project and is currently being considered by a task team under the HLG-MOS, which is working on a geospatial "view" of the GSBPM.

16. In the specific area of housing and population censuses, the UN Statistical Division published a **Handbook on Geospatial Infrastructure in Support of Census Activities**[20] in 2009. The use of geospatial information and geographic information system (GIS) technology is also referenced in various other manuals, guidelines and handbooks for specific areas of official statistics.

V. Other resources

17. The UN-GGIM: Europe Working Group on Data Integration has produced various reports, studies and analyses[21], as well as a document aimed at policy makers "**The integration of statistical and geospatial information — a call for political action in Europe**"[22]. This was published in 2019, with the support of Eurostat.

[16] https://www.efgs.info/

[17] https://statswiki.unece.org/download/attachments/244090646/Data%20Integration%20Workshop%20Report.docx

[18] https://unstats.un.org/wiki/display/GSGF

[19] https://ggim.un.org/IGIF/

[20] https://unstats.un.org/unsd/publication/seriesf/Seriesf_103e.pdf

[21] https://un-ggim-europe.org/working-groups/working-group-data-integration/

[22] https://un-ggim-europe.org/wp-content/uploads/2019/09/KS0319423ENC_new.pdf

18. The Joint UNECE / UN-GGIM: Europe / Eurostat / EFTA **Workshop on Data Integration** (Belgrade, May 2019) focused on the integration of statistical and geospatial information and attracted a range of useful presentations of ideas and experiences[23].

19. There are also joint annual **workshops on the integration of statistical and geospatial information** organized by Eurostat, UNECE and UN-GGIM: Europe. These are held back-to-back with the meetings of the Eurostat GISCO Working Group.

20. A Webinar on **The Geo-statistical Response to the COVID-19 Crisis**[24] was jointly organized by UNECE and the Global Forum for Geography and Statistics (GFGS) in collaboration with Eurostat. This Webinar attracted over 120 participants and highlighted the importance of having flexible systems and processes, as well as common standards, to be able to bring together statistical, geospatial, administrative and other data sources quickly to respond to a crisis.

VI. Conclusion

21. Whilst the evolving landscape of groups, standards and initiatives related to the integration of statistical and geospatial information can appear rather confusing at first, the key point to note is that strong coordination mechanisms, both formal and informal, have been established between the main players. For the UNECE region, this means that events and activities are mostly joint, involving some combination of UNECE, UN-GGIM: Europe, Eurostat and the UN Statistical Division (representing the global level). The active support of other organizations, particularly EFTA, and a wide range of national statistical and geospatial bodies is also vital for this work.

[23] https://statswiki.unece.org/display/geo/Belgrade+Workshop
[24] https://statswiki.unece.org/display/GFGS/Webinar