Statistical Commission
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Item 4(j) of the provisional agenda
Items for information: Integration of statistical and geospatial information

Background document
Available in English

Global survey to diagnose readiness at the country level for implementing the Global Statistical Geospatial Framework

Prepared by the United Nations Expert Group on the Integration of Statistical and Geospatial Information

VERSION 1.0

Global survey to diagnose readiness at the country level for implementing the Global Statistical Geospatial Framework

Preamble

The United Nations Expert Group on the Integration of Statistical and Geospatial Information (EG-ISGI)[1] is developing guidance to support the implementation and operationalisation of the Global Statistical Geospatial Framework (GSGF)[2].

Through the adoption by the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) and the United Nations Statistical Commission (UNSC), the GSGF has been recognised as a framework for the world that provides an underlying mechanism to integrate statistical and geospatial information.

Now, to help the EG-ISGI prioritise its future work, its Task Team on Capacity Building has developed this global survey to diagnose readiness at the country level for implementing the GSGF and has disseminated it to the respective national organisations and agencies responsible for statistical data and geospatial information.

The EG-ISGI recognises the dynamic nature that the GSGF is now situated, discussing this in detail within its report to the UNSC's fifty-second session[3]. In summary, while global agendas (such as the 2020 round of population and housing censuses and the 2030 Agenda for Sustainable Development) and national development priorities have driven the development of the GSGF, there are other enabling frameworks which now act as essential enablers for the GSGF. These enabling frameworks offer a practical mechanism to support the GSGF with 'building the bridge' and ultimately enable the integration of statistical and geospatial information.

Within the geospatial realm, the GSGF is most interrelated with the Integrated Geospatial Information Framework[4] (IGIF). As the basis and guide for developing, integrating, strengthening and maximising geospatial information management and related resources in all countries, the IGIF is anchored by nine Strategic Pathways. Specifically, the IGIF's Strategic Pathway 4: Data, is underpinned by the GSGF, but both the GSGF with its five key principles and four guiding elements and the IGIF's nine strategic pathway are interconnected and mutually enable the other framework.

[1] The webpage of the EG-ISGI https://ggim.un.org/UNGGIM-expert-group/
[2] The GSGF: https://ggim.un.org/meetings/GGIM-committee/9th-Session/documents/The_GSGF.pdf
[3] E/CN.3/2021/27 https://undocs.org/en/E/CN.3/2021/27
[4] The IGIF: https://igif.un.org

Section A: Respondent and contact information

Country: _____

Replies have been prepared by the following organisation(s):

☐ National Statistical Organisation (NSO)
☐ National Geospatial Information Agency (NGIA)[5]
☐ Combined NSO/NGIA
☐ Other organisation. *Specify:* _____

Organisation and department of respondent(s): _____

Contact point for follow-up questions:

Name: _____

Role/title: _____

E-mail address: _____

Section B: Awareness of the Global Statistical Geospatial Framework and Integrated Geospatial Information Framework

B.1 Awareness of the Global Statistical Geospatial Framework

How would you describe the level of awareness about the GSGF among institutions in your country?

- Please rate the degree of awareness ranging from 0 (no awareness) to 5 (high level of awareness):

Organisations	Rating	0	1	2	3	4	5
Within NSO(s)							
Within NGIA(s)							
Within combined NSO/NGIA(s)							
Within the rest of government / other public bodies							
Don't know							

B.2 Usefulness of the Global Statistical Geospatial Framework

How useful do you consider the GSGF to be for facilitating statistical-geospatial integration in your country?

- Please select one statement below that best describes your opinion:

- o Very useful, we have already established most of its principles and key elements
- o Very useful, it has already shaped our working modalities

[5] In general - agency which is responsible for topographical and/or cadastral data etc. in your country e.g. National Mapping and Cadastral Agency.

- o Great potential, but we have not yet worked with it in practice
- o Perhaps a little bit useful
- o Not useful at all
- o Don't know

B.3 Awareness about the Integrated Geospatial Information Framework
The Integrated Geospatial Information Framework (IGIF) provides a basis and guide for developing, integrating, strengthening and maximizing geospatial information management and related resources in all countries. As such, the IGIF is an overarching, interdependent, enabling framework for the GSGF.

How would you describe the level of awareness about the IGIF among institutions in your country?

- Please rate the degree of awareness ranging from 0 (no awareness) to 5 (high level of awareness):

Organisations Rating	0	1	2	3	4	5
Within NSO(s)						
Within NGIA(s)						
Within combined NSO/NGIA(s)						
Within the rest of government / other public bodies						
Don't know						

Section C: Current situation and practice in Member States

Section C aims to collect information to assess the current situation and practice regarding the integration of statistical and geospatial information in countries.

C.1 National spatial data infrastructure/national initiative for geospatial information management
How would you describe the national spatial data infrastructure/national initiative for geospatial information management in your country?
- Please select one statement below that best describes the current situation in your country:

- o It is in operation with a legal base (law, decree, presidential directive, other)
- o It is in operation without a legal base
- o It is not operating yet, but initial arrangements are ongoing
- o It is not operating
- o Don't know

C.2 Working relations between NSO(s) and NGIA(s)
How would you describe the working relationship between NSO(s) and NGIA(s) in your country?
- Please select one statement below that best describes the current situation in your country:

- o NSO(s) and NGIA(s) are working in a coordinated manner under a formal agreement
- o NSO(s) and NGIA(s) are working in a coordinated manner but not under a formal agreement
- o NSO(s) and NGIA(s) have a formal agreement but not (yet) work in a coordinated manner
- o NSO(s) and NGIA(s) are not sufficiently coordinated in their work
- o NSO(s)/NGIA(s) are combined in one organisation

- o Don't know

C.3 Implementation of national statistical geospatial frameworks
How would you describe the implementation of a national statistical-geospatial framework in your country?
- Please select one statement below that best describes the current situation in your country:

- o We have a regional/national statistical-geospatial framework in place and are working to develop infrastructure to support it and encouraging adoption
- o We are in the process of establishing a framework, and the work is mainly based on pilot projects, case studies etc.
- o We are in an early stage of implementation, with first conversations on the GSGF held between stakeholders
- o We have not initiated any work to establish a framework yet
- o Don't know

C.4 Fundamental geospatial data for geocoding
Principle 1 of the GSGF specifies the adoption of a common and consistent approach to place each statistical unit of a dataset in time and space, using a fundamental geospatial infrastructure.

What fundamental geospatial data are being used to geocode (sometimes called georeference) statistical and/or administrative data in your country?
- Please select the options(s) below that best describes the current situation in your country. *Multiple choices available:*

- ☐ Direct collection of x- and y-coordinates
- ☐ Address locations
- ☐ Building locations
- ☐ Cadastral parcels
- ☐ Administrative geographies
- ☐ Census/statistical geographies
- ☐ Gridded data
- ☐ Other: Specify:……
- ☐ None

C.5 Governance of administrative and statistical geographies
Principle 3 of the GSGF applies geography as a tool for integrating data. It uses a common and agreed set of geographies for the display, storage, reporting, and analysis of social, economic and environmental comparisons across statistical datasets from different sources.

How would you describe the governance of administrative and statistical geographies in your country?

- Please select one statement below that best describes the current situation in your country:

- o We have a high level of governance. Maintenance of geographies are mainly institutionalised by a standards-based process and common methodology (including both boundary data and coding systems)

- o We have a medium level of governance. Maintenance of geographies are partially institutionalised but there is a need to strengthen standards-based processes for a more consistent output
- o We have a low level of governance. Poor or *ad hoc* based processes for maintenance of geographies and no use of common methodology

C.6 Use of geospatial information in the production of statistics
To what extent and level is geospatial information used in the production of statistics in different statistics domains?

- Please rate the degree of use ranging from 0 to 5 where:
0 indicates no use of geospatial information at all,
1-2 indicates operational use such as the creation of census geographies or field data collection etc,
3 indicates map production and basic calculation etc,
4-5 indicates the use of more advanced geostatistical processing methods and use the of multiple data sources.

Type of statistics **Rating**	**0**	**1**	**2**	**3**	**4**	**5**
Social Statistics						
Demographic Statistic						
Economic Statistics						
Environmental Statistics						
Other. Specify:……						
Don't know						

C.7 Lowest geographical level to capture and geocode unit record data in the next Census
Principle 2 of the GSGF supports the process of linking or storing high-precision geographic references (i.e. geocodes – coordinates, small geographic area codes, or linked-data identifiers) to each microdata/statistical unit record.

What is the lowest possible geographical level at which your country will be able to capture and geocode unit record data in the next Population and Housing Census?

Please note that the question refers to the lowest level for capturing and geocoding Census micro data, not the lowest level for permanent data storage or dissemination.
- Please select *one* statement below that best describes the current situation in your country:

- O x- and y-coordinates using existing reference data such as address locations, buildings or cadastral parcels
- O x- and y-coordinates collected by mobile device etc. during census operations
- O x- and y-coordinates using a combination of the two above mentioned methods
- O Small area units (enumeration areas, districts, mesh blocks, grid cells etc.)

- O A combination of both single coordinates and small area units
- O Not yet decided
- O Other. *Specify:* _____

C.8 Sustainability of the data infrastructure for geocoding and integration of statistical and geospatial data

How would you describe the sustainability of the data infrastructure used for geocoding and integration of statistical and geospatial data in your country?

- Please select *one* statement below that best describes the current situation in your country:

- O High quality standardised and continuously maintained data on address locations and/or buildings exist in our country. Data can be easily obtained via national access points. Several public institutions use the same data sources.
- O High quality standardised and continuously maintained data on address locations and/or buildings exist in our country BUT cannot be easily obtained via national access points. Besides the lack of national access points, data are essentially fit for purpose.
- O Data on address locations and/or buildings exist in our country but are scattered and of uneven quality. The lack of conformity and standards prevents us from using these data efficiently or effectively in Census operations (e.g. we must create our own census address or building files).
- O Data on address locations and/or buildings do not exist or have only partial coverage in our country.
- O Please describe in your own words if none of the above statements fit the situation in your country. *Specify:* _____

C.9 Responsibility for creating and maintaining point-based reference data

The goal of Principle 1 of the GSGF is to obtain high quality, standardised location references (such as physical addresses, property or building identifiers, or other location descriptions), to assign accurate coordinates, and/or a small geographic area or standard grid reference, to each statistical unit at the microdata/unit record level.

Which organisations are responsible for creating and maintaining the point-based reference data (e.g location enabled address, building or property registers) that are used in your country to geocode statistical unit record data?

Please select *one* statement below that best describes the current situation in your country:

- O NGIA(s) alone or in cooperation with regional agencies and/or local authorities
- O NSO(s) alone or in cooperation with regional agencies and/or local authorities
- O Both NSO(s) and NGIA(s) including cooperation with regional agencies and/or local authorities
- O Combined NSO(s)/NGIA(s) including cooperation with regional agencies and/or local authorities
- O Non-government/commercial organisation(s)
- O No one

- O Don't know
- O Other. *Specify:* _____

C.10 Sustainability of the data management environment for geocoding unit record data
Please note that this question is intended for NSOs or any other organisation responsible for undertaking significant geocoding tasks.

Principle 2 of the GSGF recommends the process of linking or storing high-precision geographic references with each microdata/statistical unit record. This process is often referred to as geospatially enabling data, and must occur within a secure, standards-based data management environment.

How would you describe the sustainability of the data management environment for geocoding of unit record data?
- Please select *one* statement below that best describes the current situation in your country:

- O We have a well-structured and well-documented data management environment supporting systematic geocoding and automation in production without specific needs for improvements.
- O We have a well-structured and well-documented data management environment supporting systematic geocoding and automation in production, BUT we see a need for improvement or modernisation.
- O We do not have a well-structured data management environment. Our production suffers from a lack of efficiency, but it does not negatively affect the quality of output.
- O We do not have a well-structured data management environment. Our production suffers from lack of efficiency and unfortunately restricts the content and quality of output.
- O Other. Specify: _____
- O Not applicable

C.11 Obstacles to statistical-geospatial data integration
What are the obstacles in your country that prevent an effective and systematic integration of statistical, administrative and geospatial data?
- Please rate the obstacles listed below, from 0 (not a problem at all) to 5 (significant problem).

Type of obstacle Rating	0	1	2	3	4	5
A national fundamental spatial data infrastructure (address records, building registers etc) does not exist, is incomplete or poorly maintained						
Access to fundamental data is restricted (for legal or financial reasons)						
Poor semantic or technical interoperability between different data sources or across data domains (lack of standardisation)						
Lack of coordination between data custodians and/or unclear responsibilities						
Lack of know-how and/or human resources						

Lack of funding						
Other. Specify:……..						

C.12 Use of administrative data sources

How would you describe the use of administrative data sources to produce spatially enabled data or for geostatistical purposes within the production of official statistics?

In this question, administrative data should be understood as data collected for administrative purposes, typically data from population registries, business information or taxation data.
- Please select *one* statement below that best describes the current situation in your country:

- O Administrative data sources have already been implemented in regular production
- O NOT yet implemented in our regular production, but we are currently looking into it or have plans to use administrative data sources soon.
- O NOT implemented in our regular production. We have NO plans to do it and we do NOT expect to be able to use administrative data sources soon.
- O Don't know
- O Other. *Specify:* _____

Section D: Guidance and capacity development for statistical-geospatial integration

Section D aims to collect information to assess of the need for guidance and capacity development to deploy statistical-geospatial integration.

D.1 Need for guidance

Please rank the following themes to help the EG-ISGI prioritise its work so the most relevant guidance can be developed and provided to countries to support implementation of the GSGF.

- Please rate the need for guidance, ranging from 0 (no need for guidance) to 5 (high priority), for the themes listed below.

Need for guidance **Rating**	**0**	**1**	**2**	**3**	**4**	**5**
Geospatial data sources and data quality assessment (GSGF Principle 1)						
Geocoding and other methods and tools for data integration (GSGF Principle 2)						
Data management issues and architecture (GSGF Principle 2)						
Frameworks for, and governance of, common geographies (GSGF Principle 3)						
Interoperability issues and standards (GSGF Principle 4)						
Tools for data dissemination, including web services (GSGF Principle 5)						

Other. Specify:……..						

D.2 Type of guidance

What *type* of guidance would you consider most useful to implement the GSGF on a national level effectively?

- Please rate the usefulness, ranging from 0 (not useful) to 5 (very useful), for the types of guidance listed below.

Type of guidance **Rating**	**0**	**1**	**2**	**3**	**4**	**5**
High-level guidance with strategic recommendations						
Technical-level guidance with methodological recommendations, technical guidelines and manuals						
Step-by-step guidance or "road maps" for implementation mixing strategic and technical recommendations						
National or regional good practice cases to benchmark with, or get inspired by, other countries and regions						
Concrete business cases to promote the potential of statistical-geospatial integration						
Proofs-of-concept for common tools or services that can be tested and evaluated						
No particular guidance needed						
Other. Specify:……..						

D.3 Need for capacity building

Do you see a need for capacity building in your country and if yes, which themes are most crucial to cover?

- Please rate the needs, ranging from 0 (no need) to 5 (urgent need), for the themes listed below.

Need for capacity building **Rating**	**0**	**1**	**2**	**3**	**4**	**5**
Assistance to establish a national statistical-geospatial framework to improve the statistical-geospatial integration of data						
Assistance to establish a national fundamental spatial data infrastructure						
Methods to build communication, cooperation and collaboration between NSO and NGIOs"						
Assistance to conduct training and development programmes to strengthen institutional capabilities to collect and/or use geospatial information in statistical production						
Assistance to develop guidelines and methodology to strengthen the capacity to collect and/or use geospatial information in statistical production						
Assistance to build capacity for specific technical tasks or statistical domains (such as implementing geospatial information in census operations, computing SDG indicators, etc)						

Assistance to increase understanding of statistical-geospatial relevance to government decision making and deliver community benefit						
Other. Specify:……..						

D.4 Need for training

Do you see a need for training in your country and if yes, which themes are most crucial to cover?

- Please rate the needs, ranging from 0 (no need) to 5 (urgent need), for the themes listed below.

Need for training **Rating**	**0**	**1**	**2**	**3**	**4**	**5**
Basic and general training in Geographic Information Systems (GIS)						
Advanced training in GIS (e.g. scripting and programming in GIS for increased automation in data production)						
Fundamentals of geospatial data management						
Applied methods for geospatial information in statistical production (e.g. data collection, geocoding, data aggregation, managing data disclosure risks, spatial analysis, and geospatial data management)						
Methods for data dissemination (Web mapping tools and services, APIs, etc)						
Use of Earth Observation data and other alternative data sources to generate statistics						
Other. Specify:……..						

Section E: Management of privacy and confidentiality issues when using, sharing or releasing geospatial data

Section E aims to assess the current situation and practices regarding the management of confidentiality with geospatially enabled data within NSOs.

Please note that this section is intended for NSOs or any other organisation responsible for producing geospatially enabled statistical data.

E.1 Awareness of identification issues raised by geospatially enabled data
Geospatially enabled data might increase the risk of statistical disclosure whether it be by identity disclosure or attribute disclosure.

How would you describe the level of awareness, within your NSO, of specific disclosure issues when using, sharing or releasing geospatially enabled data?

- Please rate the level of awareness, ranging from 0 (no awareness) to 5 (full awareness), for the themes listed below.

Type of disclosure	Rating	0	1	2	3	4	5
Aggregate data							
Microdata (unit record data)							

E.2 National legislation and practices
Are specific issues with the management of confidentiality with geospatially enabled data explicitly mentioned in your national statistical or privacy law, in your organisation's data release policy, in nationally agreed guidelines, in your quality assurance framework, or are they just acknowledged in general practice (not codified in your NSO's institutional policies)?

Type of framework	Yes	No
Statistical or privacy law		
Institutional data release policy		
Guidelines		
Quality Assurance Framework		
General Practice		

E.3 Managing disclosure risk with standard geographies
When disseminating statistical results based on your standard statistical or administrative territorial

classifications do you use specific methods to comply with your national confidentiality rules or do you use the same methods that are commonly used for non-territorial classifications?

Method	Yes	No
Same methods than for any other classification (non-territorial)		
Specific methods for territorial classifications (whatever the size of the areas)		
Specific methods for small areas		

Please briefly specify or describe the specific methods used:

E.4 Alternative and non-standard geographies

On which type of alternative or non-standard geography do you disseminate your data?

Type of geography	Yes	No
Grid		
User-defined geometries		
Physical/natural geographies		
Geographic features (e.g., building outlines, property boundaries)		
Other, please specify:…….		

E.5 Awareness of disclosure risks when using non-nested or alternative geographies

Using multiple geographies when releasing data can lead to substantial disclosure risks, for example through a process called geographic differencing. (*Simple geographic differencing occurs where the same statistical data is obtained for two similarly shaped regions and the data from one region is subtracted from the other larger region. By using this method, it is possible to obtain data for the area that is not common to both regions, potentially data for only a very small number of statistical units. Complex geographic differencing occurs when the geographies are non-nested (grid and administrative units for example. Geographic differencing risks are more difficult to identify in the latter case.*) More about geographic differencing can be found at the following hyperlink: Protecting+Privacy.pdf (abs.gov.au).

How would you describe the level of awareness of geographic differencing or other risks in your organisation?

- Please rate the level of awareness, ranging from 0 (no awareness) to 5 (full awareness), for the themes listed below.

	Rating	0	1	2	3	4	5
Level of awareness							

E.6 Specific methods to manage disclosure risks when using non-nested or alternative geographies
Do you use specific statistical disclosure control methods to deal with geographic differencing or other risks linked to non-standard and alternative geographies?

Method	Yes	No
Same methods than for any other classification (non-territorial)		
Specific methods for territorial classifications (whatever the size of the areas)		
Specific methods for small areas		

Please briefly specify or describe the specific methods used:

E.7 Capability to manage confidentiality in geospatially enabled data
Managing confidentiality and other disclosure risks when disseminating geospatially enabled data is an acquired skill.

What are your current needs in capacity building for the management of confidentiality?

- Please rate the needs, ranging from 0 (no need) to 5 (urgent need), for the themes listed below.

Type of capacity building	Rating	0	1	2	3	4	5
Guidance and recommendations							
Training resources							
Tools and software							
Advice and consultation							

Section F: Comments and input from respondents

E.1 Please provide any comments or information that may enrich our final analysis of the survey
