The integration of geospatial data and statistics to compute SDG indicators – requirements and practices: Scoping Paper

UN-GGIM: Europe | Work Group on Data Integration | subgroup I

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Content

WG on Data Integration – Background for current line of work

The new 2019-2022 work plan for UN-GGIM: Europe, approved at the 6th Plenary Meeting held in Brussels between 5 and 6 June 2019[1], recognises that the Working Group (WG) on Data Integration "has formed a network of interested members from both National Mapping Agencies and National Statistical Institutions" and that, over the years, "has successfully explored the challenges and benefits of how the integration of statistical and geospatial and other information can meet and satisfy user needs and requirements". In this context, the new work plan defined, as the next logical step, "to increase the scope of data integration beyond just geospatial and statistical, and to also include earth observations, environmental data and other themes" and to assess how these can contribute to address the 2030 Agenda challenges at global, national and regional levels.

The WG is also set to maintain the interaction with the Inter-Agency and Expert Group on Sustainable Development Goals (IAEG-SDG) Working Group on Geospatial Information (WG GI).

Against this background, the following primary and secondary tasks have been put forward to be completed in the next 2-3 years:

Primary Tasks:

1. Analysing further SDG indicators – focusing on Earth Observation, and can include as part of a subtask 'Requirements and practices from National Statistical Offices for the use of earth observation data for national statistics';
2. Advisory Group for global and European data integration issues;
3. Analysis of (future) trends in data capture, creation, maintenance and management – using Linked (Open) Data methods to enhance data integration

Secondary Task:

1. Consider options of how the Regional Committee can support Post-Census 2020 activities and use synergies with UNECE/WG Data Integration to explore ways of how to manage data integration post Census 2020.

Two subgroups have been established at the kick-off meeting held at BKG (Frankfurt, Germany) between 30 and 31 October 2019, to address these tasks. This document presents the scope of work to be developed by subgroup I dealing with primary task 1 *Analysing further SDG indicators – focusing on Earth Observation, and can include as part of a sub-task 'Requirements and practices from National Statistical Offices for the use of earth observation data for national statistics*".

[1] https://un-ggim-europe.org/wp-content/uploads/2019/11/UN-GGIM-Europe-WorkPlan-2019-2022-FinalAdopted.pdf.

Framework

The activities carried out within the UN-GGIM: Europe WG on Data integration have been taking into account the background of the 2030 Agenda for Sustainable Development, which defines, at the global level, 17 Sustainable Development Goals (SDG), 169 targets and 232 indicators[2] to monitor the progress towards sustainable development and emphasizes the importance of geographical disaggregation of the indicators, along with sex, age, income, race, ethnicity, migratory status, and disability in order to cope with *leaving no one behind*.

At the global level, the goals and targets are to be monitored according to a global indicator framework defined by the IAEG-SDG and a three tier system of classification of indicators regarding data availability and established methodology has been defined: a first tier of indicators for which an established methodology exists and data are already widely available (*tier I*); a second tier for which a methodology has been established but for which data are not easily available (*tier II*); and a third tier for which an internationally agreed methodology has not yet been developed (*tier III*). Therefore, geospatial and other type of information and its integration with statistical data can provide relevant contributions to address these gaps.

The in-depth review on geospatial information services based on official statistics prepared by the ONS[3] and discussed in the 64th UN Conference of European Statisticians (Paris, 27-29 April 2016) states that geospatial data and information can play a very important role and make several contributions to the proposed indicator framework supporting SDG monitoring not only in terms of sources of information to increase data availability and spatial disaggregation, but also in terms of methods and analysis to produce indicators resulting from the integration of geospatial and statistical information.

Recognising the relevance of geospatial data and the possibilities of location-based variables to support the SDG monitoring for a more detailed picture of the progress in and across countries, a Working Group on Geospatial Information, reporting to the IAEG-SDG (IAEG-SDG WG GI) was created in March 2016, with the main purpose of guaranteeing that a statistical and geographic location is reflected in the global indicator framework. One of the first tasks tackled by this working group was to review the global indicators and metadata according to a geospatial lens, which resulted, in November 2017, in the

[2] The list includes 232 indicators, but the total number of indicators corresponds to 244, since 9 indicators repeat under 2 or 3 different targets - *List of global Sustainable Development Goal indicators* as agreed on the 48th session of the UN Statistical Commission, March 2017.
[3] *In-depth review of developing geospatial information services based on official statistics*, UNECE-CES, note by the UK Office for National Statistics.

identification of a set of SDG indicators that directly or indirectly benefit from geospatial information, the so called Short list[4] [Table 1].

The implementation of the SDGs requires the collection, analysis and availability of an unprecedented amount of data and statistics at multiple levels – global, regional, national and sub-national levels. The *Cope Town Global Action Plan for Sustainable Development*[5] issued on 15 January 2017, as a result of the first UN World Data Forum, adopted by the United Nations Statistical Commission in March 2017 recognizes this need and has identified four strategic areas:

i) strengthening National Statistical Systems (NSS) and coordination of the National Statistical Institutes (NSI);
ii) the application of new technologies and new data sources into mainstream statistical activities;
iii) the integration of geospatial data into statistical production programmes at all levels;
iv) multi-stakeholder partnerships for sustainable development data.

In the first report of the WG on Data Integration, *The territorial dimension in SDG indicators: geospatial data analysis and its integration with statistical data*[6], a set of recommendations was put forward with the purpose of enhancing the contribution of geospatial data and its integration with statistics in SDG Indicators and four recommendations are particularly relevant for the current scope of work to developed, namely:

i) use geospatial layers generated from Earth Observation data with a stable and validated methodology at global (e.g. Global Human Settlement Layer) and European level (e.g. Copernicus High Resolution Layers, CORINE) to enable data comparability across countries;

ii) create capacity building initiatives for National Statistical Institutes to take full advantage of Earth Observation based data to produce new statistical indicators and to increase territorial disaggregation of traditional indicators already reported by NSIs;

iii) ensure availability and accessibility of processing workflows, including open formats of programming codes, allowing the automatic or semi-automatic extraction of information from satellite images, the development of algorithms for indicator calculation and territorial

[4] IAEG-SDG WG GI Short list results of the analysis of the Global Indicator Framework with a "geographic location" lens.
[5] The *Cape Town Global Action for Sustainable Development Data* was prepared by the High-Level Group for Partnership, Coordination and Capacity Building for Statistics for the 2030 Agenda for Sustainable Development.
[6] UN-GGIM: Europe (2019). *The territorial dimension in SDG indicators: Geospatial data analysis and its integration with statistical data*. INE, Lisboa.

classifications (e.g. ESS Degree of urbanization) and of its associated metadata, as a way to improve reporting harmonization and comparability of data;

iv) increase the collaboration with researchers and data providers to take full advantage of the available data and processing infrastructures and also for tuning operational workflows and regular computation of SDG indicators.

In this context, and taking into account the recommendations advocated in the first report of the WG, the use of EO data for the computation of statistical indicators is positioned particularly in relation to geospatial layers derived from EO data, taking into account that a primary use of EO data implies specific technical capacities for processing and editing satellite-based data.

The handbook on satellite Earth Observations in support of SDGs[7] states that "geospatial information and EO, together with modern data processing and big data analytics, offer unprecedented opportunities to modernise national statistical systems and consequently to make a quantum leap in the capacities of countries to efficiently track all facets of sustainable development" (CEOS, 2018: 11). It also identifies three main key benefits of satellite earth observation data for the SDGs and for NSIs, namely:

i) the possibility to derive SDG indicators that otherwise would be technically or financially difficult to compute;
ii) to reduce the frequency of surveys, response burden and other costs by providing data at a more disaggregated level;
iii) to provide disaggregation and granularity of the indicators, ensuring that data is more spatially driven.

More recently, the *In-depth review of satellite imagery / earth observation technology in official statistics* prepared by Canada and Mexico highlights SDGs reporting as a relevant context for the application of EO technologies and a good opportunity for NSIs to work on developing standard approaches to collect and report EO-derived data supporting the SDG monitoring framework.[8]

Specifically on the relevance of having data for SDG indicators at sub-national level, OECD has launched a programme on *A Territorial Approach to SDGs: a role for cities and regions to leave no one behind*, which seeks to support cities and regions in fostering a territorial approach to the SDGs. Under the scope of this programme, the OECD has also put forward the need to have a consensual, comparable and

[7] Committee on Earth Observation Satellites (CEOS). *Satellite Earth Observations in suport of the Sustainable Development Goals* – Special 2018 edition.
[8] *In-depth review of satellite imagery / earth observation technology in official statistics*, UNECE-CES, prepared by Canada and Mexico.

standardised localised indicator framework in order to measure where at sub-national level, different regions and cities stand regarding Sustainable Development targets and indicators. The OECD has also been engaged in providing an overview on the performance of member countries across the SDGs[9] as part of their Action Plan on SDGs.

In addition, in order to have a more comprehensive understanding on the progress of sustainable development it is important to account for the interdependencies between indicators and how these can be captured, especially at more detailed territorial level, using geospatial analysis and visualisation tools.

Earth observation (EO) can be defined as the "gathering of information about planet Earth's physical, chemical and biological systems and it involves monitoring and assessing the status of, and changes in, the natural and man-made environment" (GEO, 2017). Nevertheless, it is important to take into consideration that EO spans many approaches, from satellite, airborne (e.g., drones and aircraft) and in-situ sensors. Specifically, EO satellite imagery can be divided into two types depending on how sensors capture data, whether in a passive or active way. Passive EO sensors detect radiation emitted by (thermal infrared/microwave) or reflected from (visible, shortwave infrared) the Earth's surface. Active EO sensors emit radiation and receive the echoes that are backscattered from the Earth surface and operate mostly in the microwave spectral region (radar), but also include LIDAR (light detention and ranging) systems (Andries *et al.*, 2019[10]), which uses a pulsed laser to calculate an object's variable distances from the Earth surface. Additionally, satellite area range detail can provide relevant data for sub-national or urban area data capture.

Therefore, the potential of earth observations and geospatial information to advance the 2030 Agenda has been put forward by relevant stakeholders and the Earth observation community, such as the Committee on Earth Observation Satellites (CEOS[11]) and the Group on Earth Observations (GEO[12]). Additionally, the Ministerial Declaration endorsed at the last GEO Summit (Mexico City, November

[9] In May 2019, OECD launched the 3rd edition of *Measuring Distance to the SDG Targets 2019: An Assessment of Where OECD Countries Stand*.
[10] Andries, A. *et al.* (2019) Translation of Earth Observation data into sustainable development indicators: An analytical framework. *Sustainable Development, 27*: 366-376.
[11] The Committee on Earth Observation Satellites (CEOS) was established in 1984 to provide coordination of the Earth observations provided by satellite missions and has three primary objectives: i) to optimise the benefits of space-based EO through cooperation of CEOS agencies in mission planning and in the development of compatible data products, formats, services, applications and policies; ii) to support both CEOS agencies and other users by serving as the focal point for international coordination of space-based EO activities; and iii) to exchange policy and technical information to encourage complementarity and compatibility among space-based EO systems. CEOS membership has reached 34 agencies and includes, besides others, the European Commission, the European Space Agency and the European Organisation for the Exploitation of Meteorological Satellites.
[12] GEO is a global network connecting government institutions, academic and research institutions, data providers, businesses, engineers, scientists and experts to create innovative solutions to global challenges.

2015) stressed the importance of leveraging EO to support the implementation, monitoring and evaluation of the SDGs and called for an initiative in this field.

In 2015, GEO launched the initiative on Earth Observations in Service of the 2030 Agenda for Sustainable Development (EO4SDG), which aims at supporting efforts to integrate Earth observations and geospatial information into national development and monitoring frameworks for the SDGs, and in 2017, this initiative together with the CEOS issued a report[13] to highlight case studies of how EO responds to sustainable development, whether for health, disaster risk reduction or environmental protection. The report also shows that EO can play a role in relation to most of the 17 SDGs and, more specifically, to around 40 out of the 169 targets and 29 out of the 232 indicators [Table 1], and identifies a set of dimensions which are relevant to assess in order to integrate this type of data with statistics and within the framework of national statistical systems, namely if data is free and open, scale and coverage, consistency and comparability, continuity and time-series, complementarity with traditional statistical methods and diverse measurements.

At the European level, information services based on EO and in-situ data have been developed and made available by the Copernicus Programme[14], providing harmonized relevant data themes for SDG monitoring. Europe has two agencies dedicated to satellite EO – the European Space Agency (ESA), which operates the Sentinel series in cooperation with the European Commission and the Copernicus Programme, and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT). ESA has developed a programme that includes three types of EO missions: meteorological missions, scientific missions and the Sentinel missions for the Copernicus programme led by the European Commission.

[13] GEO (2017). *Earth Observations on support of the 2030 Agenda for Sustainable Development.*
[14] For an overview see Box 1 on page 31 on the UN-GGIM: Europe report *The territorial Dimension in SDG Indicators: Geospatial Data Analysis and its Integration with Statistical Data*.

Table 1 | SDG indicators benefiting from geospatial data identified by the IAEG-SDG WG GI (Shortlist) and by the Group on Earth Observations (GEO)

SDG Indicator	Tier	IAEG-SDG WG GI	GEO
1.1.1 | Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)	I	✓	
1.4.2 | Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure	II	✓	✓
2.4.1 | Proportion of agricultural area under productive and sustainable agriculture	II	✓	✓
3.9.1 | Mortality rate attributed to household and ambient air pollution	I		✓
4.5.1 | Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict affected, as data become available) for all	I/II	✓	
5.2.2 | Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence	II	✓	
5.4.1 | Proportion of time spent on unpaid domestic and care work, by sex, age and location	II	✓	
5.a.1 | (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights bearers of agricultural land, by type of tenure	II	✓	✓
5.a.2 | Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control	II	✓	
6.3.1| Proportion of wastewater safely treated	II	✓	✓
6.3.2 | Proportion of bodies of water with good ambient water quality	II	✓	✓
6.4.2 | Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	I		✓
6.5.1 | Degree of integrated water resources management implementation (0-100)	I		✓
6.5.2 | Proportion of transboundary basin area with an operational arrangement for water cooperation	I	✓	
6.6.1 | Change in the extent of water-related ecosystems over time	I	✓	✓
7.1.1 | Proportion of population with access to electricity	I		✓
9.1.1 | Proportion of the rural population who live within 2 km of an all season road	II	✓	✓
9.4.1 | CO_2 emission per unit of value added	I		✓
9.c.1 | Proportion of population covered by a mobile network, by technology	I	✓	
11.1.1 | Proportion of urban population living in slums, informal settlements or inadequate housing	I		✓
11.2.1 | Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities	II	✓	✓
11.3.1 | Ratio of land consumption rate to population growth rate	II	✓	✓
11.6.2 | Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)	I		✓
11.7.1 | Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	II	✓	✓
11.7.2 | Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months	II	✓	
12.a.1 | Amount of support to developing countries on research and development for sustainable consumption and production and environmentally sound technologies	III		✓
13.1.1 | Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population	II		✓
14.2.1 | Proportion of national exclusive economic zones managed using ecosystem-based approaches	II	✓	
14.3.1 | Average marine acidity (pH) measured at agreed suite of representative sampling stations	II		✓
14.4.1 | Proportion of fish stocks within biologically sustainable levels	I		✓
14.5.1 | Coverage of protected areas in relation to marine areas	I	✓	✓
15.1.1 | Forest area as a proportion of total land area	I	✓	✓
15.2.1 | Progress towards sustainable forest management	I		✓
15.3.1 | Proportion of land that is degraded over total land area	I	✓	✓
15.4.1 | Coverage by protected areas of important sites for mountain biodiversity	I	✓	✓
15.4.2 | Mountain Green Cover Index	I	✓	✓
17.6.1 | Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation	III		✓
17.18.1 | Proportion of sustainable development indicators produced at the national level with full disaggregation when relevant to the target, in accordance with the Fundamental Principles of Official Statistics	III		✓

The scope of work to be developed should take into consideration the principles presented in the United Nations Expert Group on Integration of Statistical and Geospatial Information (EG-ISGI) proposal for a *Global Statistical Geospatial Framework*[15] (GSGF) on how to better achieve this integration in an effective and consistent way, thus facilitating a consistent production and approach integration for geo-statistical information. The empirical analysis of SDG indicators will build upon the work experience from the report *The territorial dimension in SDG indicators: geospatial data analysis and its integration with statistical data* and take its analytical instruments as a reference, including the one-pager template[16] [see Annex 1] to depict current national practices regarding the usage of geospatial information, having in mind the need to provide a more straight forward guidance for indicators computation.

The analysis should focus on pan-European and national data sources, on the identification of the relevant geospatial data themes, according to the UN-GGIM: Europe Core Data recommendations [see Annex 2], and strive to identify advantages and disadvantages of different methodologies by keeping in mind the *fit-for-purpose* approach. A focus on the applicability to different national contexts should also be pursued, having as a reference the *Integrated Geospatial Information Framework*[17] (IGIF). The IGIF corresponds to a strategic framework for the geospatial community with the purpose of helping countries strengthen their management of geospatial information.

At the European level, the work being carried out by Eurostat on the EU-SDG indicator set to monitor EU policies in perspective of the UN 2030 Agenda will be taken into consideration, particularly as a background for indicator selection, and, in this context, an articulation with Eurostat's SDG working group is most relevant. In addition, the selection and analysis of the SDG indicators should benefit from the different institutional background and technical expertise of WG members and from an articulation with the UNECE as well as the European Environment Agency (EEA).

As a reference, the selection and analysis of SDG indicators could also benefit from the exercise already conducted by Andries *et al.* (2019). The authors have reviewed the full extent of the 232 SDG indicators to assess the potential of EO, either directly or indirectly, for their computation based on a Maturity Matrix Framework (MMF)[7]. This MMF is based on two premises. In the first premise, the technical methods of processing EO satellite data (category 1) and combining it with data derived from non-EO based methods (category 2) were assigned 1 to 5 in each of the two categories (an average between

[15] United Nations Expert Group on the Integration of Statistical and Geospatial Information proposal for a Global Statistical Geospatial Framework- 47th Session of the United Nations Statistical Commission and a Global Consultation.
[16] The 'one-pager' was compiled by the Danish Task Team in 2016 and further elaborated by UNGGIM: Europe Working Group on Data Integration to analyse SDG indicators within the 2017-2019 work plan.
[17] *Integrated Geospatial Information Framework: A Strategic Guide to Develop and Strengthen National Geospatial Information Management*, adopted in the 8th session of the UN-GGIM Committee of Experts held in New York, 1-3 August 2018.

the scores of two categories is calculated). In the second premise, a score from 1 to 5 was assigned to a single category representing the level of contribution that EO data assessed in the first premise is able to provide to comply with the data needs for a given SDG indicator. The final score is the result of an unweighted average of the scores assigned to each premise.

Following the subgroup discussion in the breakout sessions of the kick-off meeting held in Frankfurt on 30-31 October 2019, and taking advantage of the background presentations[18] on SDGs, seven indicators have been identified as a reference and, benefiting from a subsequent articulation with the European Environment Agency (EEA), three additional indicators have been identified [Table 2].

[18] In particular, the presentations from Eurostat on EU indicators for the SDGs, from DG REGIO on specific SDG indicators and the IAEG-SDG WG GI's overview on the 2019 results and future work regarding the monitoring Agenda 2030 via a geospatial lens presented by Fabio Volpe.

Table 2 | SDG indicators for analysis

SDG indicator		Global metadata	Corresponding EU-SDG indicator	Frankfurt kick-off meeting	EEA	1st WG report on SDG indicators	IAEG-SDG WG GI	GEO	MMF
3.6.1 | Death rate due to traffic injuries	tier I	See 3.6.1 metadata	11.40 | People killed in road accidents – mpi* (M)	✓					No evidence
6.6.1 | Change in the extent of water-related ecosystems over time	tier I	See 6.6.1 metadata (1) See 6.6.1 metadata (2)		✓			✓	✓	7-10 Strong support
11.2.1 | Accessibility to public transports	tier II	See 11.2.1 metadata	on-hold indicator - waiting for data	✓		See discussion paper	✓	✓	4-7 Medium support
11.3.1 | Ratio of land consumption rate to population growth	tier II	See 11.3.1 metadata	11.31 | Settlement area per capita[1] – mpi* (M)	✓		See discussion paper	✓	✓	7-10 Strong support
11.6.2 | Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities	tier I	See 11.6.2 metadata	11.50 | Exposure to air pollution by particulate matter (M)	✓	✓			✓	7-10 Strong support
11.7.1 | Access to public / green areas (proxy)	tier II	See 11.7.1 metadata	on-hold indicator - waiting for data	✓		See discussion paper	✓	✓	No evidence
14.5.1 | Coverage of protected areas in relation to marine areas	tier I	See 14.5.1 metadata			✓		✓	✓	No evidence
15.1.1 | Forest area as a proportion of total land area	tier I	See 15.1.1 metadata	15.10 | Share of forest area (M)	✓	✓	See discussion paper	✓	✓	7-10 Strong support
15.3.1 | Proportion of land that is degraded over total land area	tier I	See 15.3.1 metadata			✓		✓	✓	7-10 Strong support
15.4.1 | Coverage by protected areas of important sites for mountain biodiversity	tier I	See 15.4.1 metadata			✓		✓	✓	7-10 Strong support

* Multi-purpose indicator.

[1] This indicator is a modified version of former 15.30 "Artificial area per capita" moved from SDG 15 to SDG 11 as replacement of indicator 11. 30.

Aim

The aim of subgroup 1 is to provide methodological, operational and technical guidance in the use of spatial data and statistics to compute SDG indicators, focusing on a European and national perspective, and reflecting on solutions which may contribute to reduce statistical burden and increase the level of detail of SDG indicators.

For this purpose, the subgroup will consider pan-European initiatives and datasets available as reference to select SDG indicators, namely to develop two lines of work:

1. **Benchmarking pan-European data sources**: to provide a comparative analysis (benchmarking) between pan-European and national methodologies, data sources and results, considering also the sustainability of data sources (space and time);
2. **Integration of pan-European data sources with national data sources**: to analyze the combination of pan-European with national data sources to extract new relevant information for indicators computation (e.g. higher spatial disaggregation or new dimensions of segmentation).

Special attention will be given to the contribution of Earth observation (EO) using the European Copernicus programme and to environment-related SDG indicators. For all solutions spatial referencing using fundamental data themes (according to UN-GGIM recommendations) is crucial.

Outputs

The expected outputs of this subgroup include:

1. The development of standard methodological/technical documents for each indicator compiling the solutions analysed and presenting normative methodological guidance on the use of EO for the computation of SDG indicators; and
2. The production of flyers/leaflets synthesising and illustrating the approaches analysed and the main results.

The outcome and findings from subgroup I "SDG Indicator Analysis" and subgroup II "Methods of Data Integration" will be conciliated and a conclusive report for future actions will be prepared.

Work outline

A work outline structured around three main phases is proposed. For each phase a set of main activities/tasks to be achieved is proposed.

Phase 1

ORGANIZE

Until 31 May 2020

- Prepare a concept note to kick-off the subgroup activities and for the ExCOM
- Set up a wiki page to support the work to be developed as a shared platform of information
- Prepare a scoping paper reflecting on the work to be carried out, including the main phases and activities to be developed
- Consolidate the first list of SDG indicators for which integration between geospatial and statistical data is relevant – focus on EO contribution and on environment-related indicators
- Define an assessment matrix to synthesize the national reporting situation on the selected indicators and to identify indicators that subgroup members would like to contribute to
- Define a template framework for indicator analysis based on a standard and pre-defined set of technical/ analytical dimensions

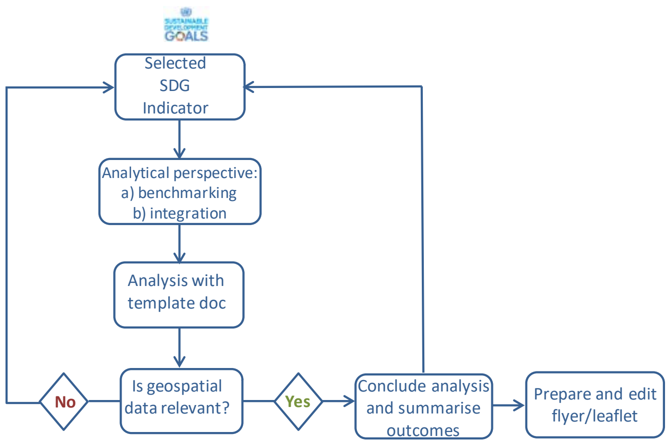
Phase 2

SELECT AND ANALYSE

Until 31 March 2021

- Select a first slot of SDG indicators based on the results of the assessment matrix
- Identify the analytical perspective regarding the a) benchmarking analysis and b) the combined analysis between pan-European and national data sources
- Nominate indicator coordinators for each selected SDG indicator
- Use the template framework for indicator analysis
- Compile and review solutions and provide normative guidance on the integration of geospatial and statistical data for SDG indicator computation

Phase 2 should be carried out cyclically as indicators are selected by the subgroup for analysis, as follows:



Phase 3

DOCUMENT

Until 31 December 2021

- Summarise main outcomes and findings as an input for the flyers/leaflets
- Produce flyers/leaflets illustrating the approaches / solutions analysed and the main outcomes and findings - assess the editorial perspective
- Conciliate outcomes and findings with subgroup II for a conclusive report for future actions

Planning

The following timeline is proposed and displayed in the attached Excel-Sheet:

201901_UNGGIM-Eur
ope_WG_DataIntegra

Participants

Function	Name	Country	Affiliation	
Subgroup leader	Francisco Vala	PT	INE Portugal	NSI
Chief editor	Cátia Nunes	PT	INE Portugal	NSI
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	Birkan Erguc	TR	Turkish Statistical Institute	NSI
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	Ekkehard Petri	EU	Eurostat	
	Esa Tiainen	FI	National Land Survey of Finland	NMCA
	Fabio Volpe	IT	Geo Content Innovation at e-GEOS	
	Heather Porter	UK	ONS	NSI
	Hugo Poelman	EU	DG-REGIO	
	Igor Kuzma	SI	SURS - Statistical Office of Slovenia	NSI
	Ingrid Kaminger	AT	Statistics Austria	NSI
	Jerker Moström	SE	Statistics Sweden	NSI
	Milutin Radenkovic	RS	Statistical Office of the Republic of Serbia	NSI
	Nuno David	PT	DGT	NMCA
	Olav Eggers	DK	National Survey & Cadastre	NMCA
	Patrick Knöfel	DE	BKG	NMCA
	Pasi Piela	FI	Statistics Finland	NSI
	Katja Hilgert	DE	BKG	NMCA
	Sabine Afflerbach-Thom	DE	BKG	NMCA
	Stefan Jensen	EU	EEA	
	Pier-Giorgio Zaccheddu	DE	BKG	NMCA

Annex 1

1st WG report on SDG indicators - Template for indicator analysis ('one-pager')

1. CURRENT REPORTING SITUATION
Responsibility: (Identify the agency responsible for the indicator and the situation regarding the ESS and NSS projects (including dissemination) and /or INSPIRE conformance)
Indicator disaggregation: (List the indicator disaggregation by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts to support the monitoring of the implementation of the SDGs)
Frequency of dissemination: (Describe the time interval at which information is disseminated over a given time period)
Timeliness: (Length of time between data availability and the event or phenomenon they describe. Describe the average production time for each release of data)
Data sources: (List the data sources and themes or variables in use, including conditions of access, timeliness and frequency of dissemination, situation regarding the ESS and NSS projects (including dissemination) and /or INSPIRE conformance)
Geospatial data analysis and integration: (Describe spatial analysis methods, procedures and computations, including regarding data integration)
Data quality requirements: (List in general terms the requirements for the sources and themes in use with relevant parameters: Resolution, completeness, logical consistency, positional accuracy, temporal accuracy etc. List if certain international standards are being followed, including classifications/nomenclatures. Data quality should allow computing results to the needed level of resolution and disaggregation). Please take into account the EURO-SDMX Metadata Structure (ESMS) 2.0
Current use of geospatial data for the indicator: (Describe the current use of geospatial data, as suggested by the existing metadata – the "as-is" situation)
2. SUGGESTED METHODOLOGY
GAP analysis: (Describe what changes in use of **applied methods** are needed to go from the suggested/current procedure for monitoring the indicator, to a future procedure which better fulfils the reporting requirements - going from the "as-is" situation in the present metadata proposal to a "to-be" situation)
3. SUGGESTED GEOSPATIAL DATA INTEGRATION
GAP analysis: (Describe what changes in use of **data** needed to go from the suggested/current procedure for monitoring the indicator, to a future procedure which better fulfils the reporting requirements - going from the "as-is" situation in the present metadata proposal to a "to-be" situation)
List required geospatial data: (Develop a list from the GAP analysis, which lists the geospatial data sources and themes which are required to support the to-be situation, including INSPIRE conformance)
Data quality requirements: (List in general terms the requirements for the suggested sources and themes with relevant parameters: Resolution, completeness, logical consistency, positional accuracy, temporal accuracy etc. List if certain international standards should be followed including classifications/nomenclatures. Data quality should allow computing results to the needed level of resolution and disaggregation). Please take into account the EURO-SDMX Metadata Structure (ESMS) 2.0
Data availability: (List the data availability for the suggested sources and themes or variables: 1) Geographically: national/regional/global (as well as comparability across countries), 2) Source: Accessible through services or download, 3) Commercial/legally: license conditions - are data free or are there restriction on use; 4) Timeliness; 5) Frequency of dissemination)
Data collection: (Describe how the geospatial data for the indicator can be collected/made available, and issues to overcome – are there many sources to collect from, do they need to be integrated and normalized etc.)
Geospatial data analysis and integration: (Describe which analysis, procedures and computations are needed to provide the results needed to support the reporting requirements - "to-be" situation)

Annex 2

Working Group on Core Data – Core Data Themes

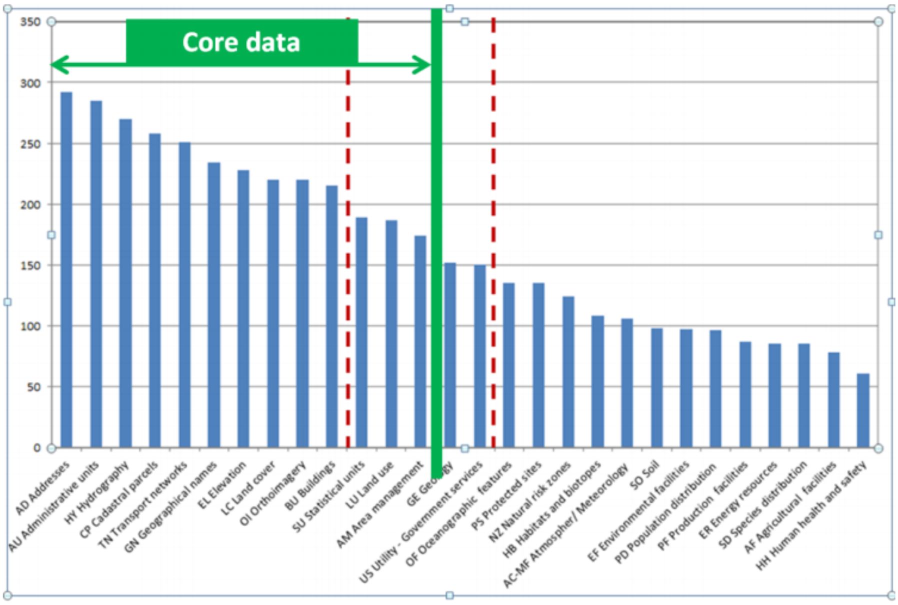

Figure 6: the selected core themes

The selected data themes are the following:

- In annex I : Addresses, Administrative Units, Hydrography, Cadastral Parcels, Transport Networks, Geographical Names;
- In annex II: Elevation, Land Cover, Orthoimagery;
- In annex III: Buildings, Statistical Units, Land Use, Area Management.

Source: Working Group A (2016), Core Data Scope - First Deliverable of Task 1.a (Version 1.2), p. 15