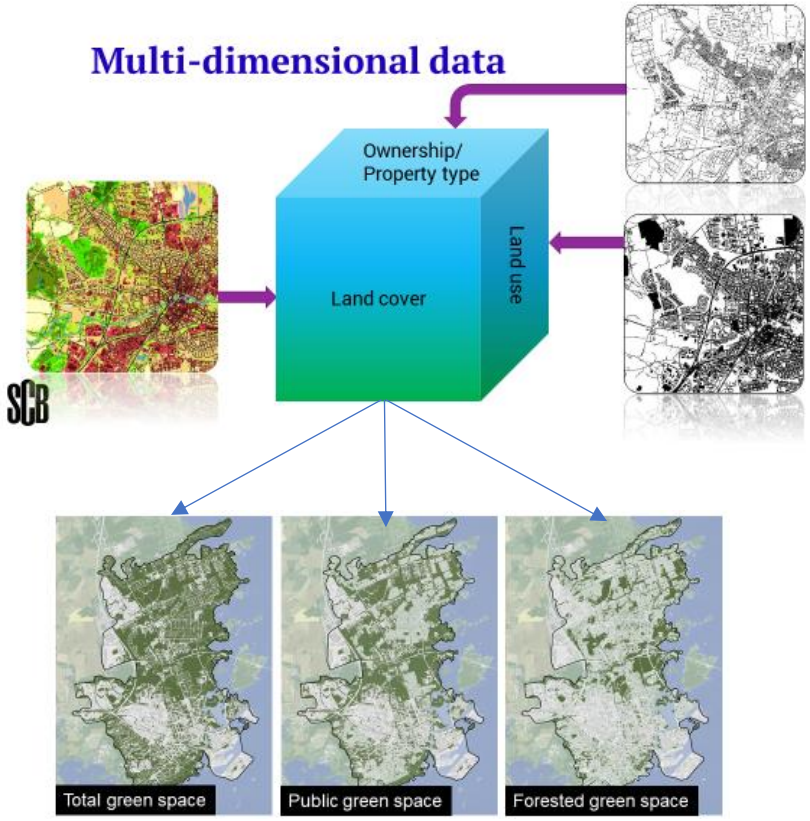
Country Use Case of EO for SDG Indicator	
SDG Indicator/Sub-indicator	**Indicator 11.7.1:** Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities ***National complementary/sub-indicator:*** Public green space as share of urban area + Share of urban population with access to public green areas within 200 metres
Country or region	Sweden
Status (please check)	X_ being used in official SDG Indicator reporting _ being verified or tested by country _ studying feasibility
Earth Observation Data Used and its links	EO based data is used to define urban green space and urban green areas. Raw data from Copernicus services (Sentinel-2) is processed together with LIDAR data and other ancillary data in a joint national initiative for a national land cover database. A consortium of government agencies collaborates in support of the production of the land cover database. Statistics Sweden is one of the stakeholders. https://sentinel.esa.int/web/sentinel/missions/sentinel-2/data-products
Additional/ Other Data Used and its links	National Road Network: http://www.nvdb.se/globalassets/upload/styrande-och-vagledande-dokument/eng/road-data-overview.pdf National Cadaster: https://www.lantmateriet.se/zh-tw/real-property/Fastighetsinformation/Fastighetsregistret/ National topgraphic data (1:10 000): https://www.lantmateriet.se/zh-tw/about-lantmateriet/Samverkan-med-andra/Kommunsamverkan/Byggnad-Adress-Lagenhet-och-Topografi/ Tax Assessment Register: https://www.lantmateriet.se/zh-tw/about-lantmateriet/Samverkan-med-andra/Fastighetstaxering/ Geocoded population data (address location).
Description of data access, processing, and analysis, including methodology that was developed, associated tools or applications, and how these are applied to compute SDG Indicator	Through the collaboration around the National Land Cover database the first step, namely mapping the urban land cover, is completed. The second step is to combine the urban land cover information with data on ownership and land use etc. The combination of data sources forms a data cube where land cover types can be linked with type of ownership or type of land use. In practice, public green space can be derived as any green spaces (wooded or non-wooded) within a cadastral parcel with public ownership and/or public usage. A cluster of adjacent green spaces, of at least 0.5 hectares, accessible for the public forms an urban “green area”. Using population data, geocoded to the level of address location, estimations can be computed on the number of people living within 200 meters from public green areas.

Work flow	
Lessons learned, any gaps, key issues and recommendations	<u>National monitoring</u> • Partnerships - key to harness the potential of EO data! • For an NSI with limited infrastructure and know-how to pre-process large amount of EO data, the collaboration on the national land cover data has been paramount • Need to re-think around tools and methods to deal with large data volumes • Open data cubes with analysis-ready (EO) data can provide additional opportunities <u>European coordination</u> The outcomes and findings of the coordinated analysis carried out on the SDG indicators by the 'UN-GGIM: Europe Working Group on Data Integration' according to the Work Plan 2017-2019 have allowed to agree on the following set of recommendations to enhance the contribution of geospatial data analysis and its integration with statistical data to address the SDG indicators: 1. Harmonize relevant geospatial data themes 2. Implement Cadastral and Land Cover data as key national authoritative data 3. Use geospatial layers generated from Earth Observation data 4. Create capacity building initiatives for NSI to take full advantage of EO based data 5. Define and implement NSDIs having in mind the requirements for statistical production 6. Implement consistent and stable sub-national spatial units 7. Develop and use population grids and other grid-based statistics

8. Adopt harmonised and comparable concepts, definitions and classifications and build consensus among Geospatial Agencies and National Statistical Institutes
9. Ensure availability and accessibility of processing workflows, including open formats of programming codes
10. Develop initiatives that promote availability, accessibility and usability of geospatial data
11. Increase the collaboration with researchers and data providers
12. Increase cooperation between National Statistical Institutes and Geospatial Agencies

Lessons learned, gaps and key issues on (1) 'concepts', (2) 'data sources', (3) 'computation and algorithm' and (4) 'challenges regarding the use of geospatial data' have been compiled for four specific SDG indicators (11.2.1, 11.3.1, 11.7.1 and 15.1.1).

11.2.1
tier II indicator

Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities

Indicator coordinator: Austria (NSI)

Contributors: Austria (NSI), France (NMCA), Ireland (NSI), Sweden (NSI), Switzerland (NSI)

11.3.1
tier II indicator

Ratio of land consumption rate to population growth rate

Indicator coordinator: Portugal (NSI)

Contributors: Finland (NMCA), Ireland (NSI), Italy (e-GEOS), Portugal (NSI and NMCA)

11.7.1
tier III indicator (currently tier II)

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

Indicator coordinator: Sweden (NSI)

Contributors: Ireland (NSI), Sweden (NSI and NMCA), Switzerland (NSI)

15.1.1
tier I indicator

Forest area as a proportion of total land area

Indicator coordinator: Italy (e-GEOS)

Contributors: Austria (NMCA), Finland (NMCA), France (NMCA), Germany (NMCA), Italy (e-GEOS), Spain (NMCA)

Supporting material about this use case. Include links, publications, etc.	<u>National monitoring</u> Website for the National Land Cover database (currently only in Swedish): https://www.naturvardsverket.se/Sa-mar-miljon/Kartor/Nationella-Marktackedata-NMD/ Implementation of the 2030 Agenda in Sweden - Statistical Review 2019, Statistics Sweden: https://scb.se/hitta-statistik/statistik-efter-amne/miljo/miljoekonomi-och-hallbar-utveckling/indikatorer-for-hallbar-utveckling/pong/publikationer/implementation-of-the-2030-agenda-in-sweden---statistical-review-2019/ <u>European coordination</u> Concerning the coordinated elaboration of the UN-GGIM: Europe Working Group on Data Integration a Final Report on 'The territorial dimension in SDG indicators: geospatial data analysis and its integration with statistical data' was published in July 2019 within the Work Plan 2017-2019. The report focuses on the contribution

	of geospatial data analysis and its integration with statistical data at a global, European and national perspective based on the analysis of four selected SDG indicators. Source: https://un-ggim-europe.org/wp-content/uploads/2019/05/UN_GGIM_08_05_2019-The-territorial-dimension-in-SDG-indicators-Final.pdf According to the Work Plan 2019-2022 the UN-GGIM: Europe Working Group on Data Integration has accepted new tasks to provide methodological, operational and technical guidance in the use of geospatial data and statistics to compute SDG indicators, with 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. The new tasks comprise (1) a benchmarking of pan-European data sources, i.e. comparative analysis between pan-European and national methodologies, data sources and results as well as (2) an integration of pan-European data sources with national data sources, i.e. analysis of the combination of pan-European with national data sources to extract new relevant information for indicators computation. The expected outputs will include: 1. The development of standard methodological/technical documents for each selected 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. Based on this, the work has started by taking the following indicators as a reference: 3.6.1 | Death rate due to traffic injuries (tier I) 6.6.1 | Change in the extent of water-related ecosystems over time (tier I) 11.2.1 | Accessibility to public transports (tier II) 11.3.1 | Ratio of land consumption rate to population growth (tier II) 11.6.2 | Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (tier I) 11.7.1 | Access to public / green areas (proxy) (tier II) 14.5.1 | Coverage of protected areas in relation to marine areas (tier I) 15.1.1 | Forest area as a proportion of total land area (tier I) 15.3.1 | Proportion of land that is degraded over total land area (tier I) 15.4.1 | Coverage by protected areas of important sites for mountain biodiversity (tier I)
Collaboration with other agencies - agency names and activities	National monitoring Agencies involved in the collaboration on the national land cover database: Environmental Protection Agency: http://www.swedishepa.se/ Statistics Sweden: https://www.scb.se/ Swedish Agency for Marine and Water Management: https://www.havochvatten.se/en The Swedish Forest Agency: https://www.skogsstyrelsen.se/en/ Swedish University of Agricultural Sciences: https://www.slu.se/en/education/

	The Swedish Civil Contingencies Agency: https://www.msb.se/en/ The Swedish Transport Administration: https://www.trafikverket.se/en/startpage/ the Swedish Board of Agriculture: https://djur.jordbruksverket.se/swedishboardofagriculture.4.6621c2fb1231eb917e680002462.html Lantmäteriet (National Mapping and Cadastral Agency): https://www.lantmateriet.se/en/ European coordination The selection and analysis of the SDG indicators should benefit from the different institutional background and technical expertise of members of the UN-GGIM: Europe Working Group on Data Integration. Additionally, this list should benefit from an articulation with the UNECE as well as the European Environment Agency (EEA) and Eurostat's SDG Working Group. Furthermore, the information exchange with the Inter- and Agency Expert Group on SDG Indicators – Working Group on Geospatial Information (IAEG SDG WG GI) will be continued. The same applies with the exchange and collaboration with the relevant global GEO initiatives and working groups, in particular, the EO4SDG initiative. On the European level, the exchange with the EuroGEO initiative has to be established as well.
Name(s) and email address of individual(s) involved in this effort. Please note the principal point(s) of contact (POCs).	National monitoring Jerker Moström, Statistics Sweden Email: jerker.mostrom@scb.se European coordination Pier-Giorgio Zaccheddu (Chair of the UN-GGIM: Europe Working Group on Data Integration), email: pier-giorgio.zaccheddu@bkg.bund.de Francisco Vala (Leader of the Subgroup I – SDG Analysis of the UN-GGIM: Europe Working Group on Data Integration), email: francisco.vala@ine.pt