# One UN Geospatial Situation Room

*People, Places and Planet*

**UN GEOSPATIAL NETWORK**
UNITED NATIONS COMMITTEE OF EXPERTS ON
GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

# ONE UN GEOSPATIAL SITUATION ROOM

**CONCEPT DOCUMENT 2.0**

## 1. Background

Data, including geospatial, are the foundation for monitoring, understanding, and developing insights that can support the mandates of the United Nations and accelerate the achievement of the goals of the 2030 Agenda for Sustainable Development.

The One UN Geospatial Situation Room fulfills one of the key mandates of the UN Geospatial Network to "ensure the availability and accessibility of coordinated geospatial information and related systems to create quality, timely and reliable products and effective services to support Member States and United Nations mandates on local, national, regional and global issues, including the Sustainable Development Goals."

In August 2022, the initial concept of the One UN Geospatial Situation Room was noted by UN-GGIM.

In-line with the Networks' Strategy and the Blueprint, the One UN Geospatial Situation Room aims to build the geospatial component of the UN Secretary-General's Data Strategy, as welcomed by UN-GGIM in 2022 (decisions 12/104).  The Network will continue its consultations with the geospatial community to further  develop the concept and related content of the One UN Geospatial Situation Room.

The present document is an enhanced and amended version of the One UN Geospatial Situation Room concept document of 2022.

## 2. Implementation principles

In accordance with the Masai-Nairobi Declaration on the One UN Geospatial Situation Room and Valencia Declaration on UN Maps, the implementation the One UN Geospatial Situation Room is the delivery mechanism to bring coherence on data governance and federated data services in the United Nations Secretariat, Specialized agencies, Funds and Programmes and include priorities as:

### One Map

- Launch and maintain collectively the One UN Geospatial Situation Room, our collective Geospatial data hub platform for humanity.
- Leverage the power of Geolocated data for supporting decision-making and action, and further bring to bear its Priority Themes for added value services.
- Use One Map (powered by UN Maps services) as the enabling power of one geospatial unifying map services of our world geographies and places for impact at global, regional, national, and local levels.
- Agree to pool resources, activities, and initiatives from across the 40 UN entities to identify how the One UN Geospatial Situation Room can be implemented.

**One UN**

- Contribute to Global Agendas, as the Agenda 2030 and the Sustainable Development Goals [1], the Paris Agreement on Climate Change [2], and the Sendai Framework for Disaster Risk Reduction 2015-2030 [3].
- Establish synergies across the UN Geospatial Network leveraging the guidance of UN-GGIM and contribute to the implementation of the Integrated Geospatial Information Framework.
- "Deliver as One", in accordance with the mandates of the 40 entities across the whole UN system, its Secretariat, Funds Agencies and Programmes, and Specialized Agencies which compose the United Nations Geospatial Network for the benefit of Members States,
- Use a forward-looking Future's approach, leveraging the enabling power of Data, Digital and Communication, Strategic Foresight and Behavioral transformation as essential drivers for "Our Common Agenda" and aligning with the Summit of the Future of the UN to be held in 2024.

**One Humanity**

- Organize ourselves around the Nexus approach to ensure cross-cuting and added value approach across the five pillars of the United Nations (Peace and Security, Sustainable Development, Humanitarian Action, International Rule of Law and Human Rights).
- A common agreement for action is to pool resources, activities, and initiatives from across the 40 UN entities of the UN Geospatial Network to identify how these synergies can be exponentiated.
- The *Nexus* approach will allow for cross fertilization of synergies across the different areas of the United Nations. But more importantly, it is focused on the impact on the ground, directly impacting of the lives of People, Places and Planet.
- To collaborate with the private sector, the academic world, geospatial societies, the other international organizations, and non-governmental organizations, as well as civil society to deliver geospatial for a better world, transforming the lives of People, Places and Planet and serve Humanity.

**In implementing the One UN Geospatial Situation Room:**

- *Is guided by frameworks of* UN-GGIM, mandates of respective entities of the United Nations system, priorities set by the SG Data Strategy and Global agendas, as adopted by Member States, including 2030 Agenda for Sustainable Development
- *Is guided by the Fundamental Geospatial Data Themes* to organize its content, and further complements in accordance with relevant topics for the United Nations mandates.
- *Organizes data services* based on current mandates, advancement on interoperability, relationship with Member States for ensuring the interoperability, standards and availability of data and technologies.
- *Is guided by the strategic pathways of the IGIF* for the implementation of its priority themes in organizing data themes and related capacity development for Member States, in particular developing countries

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1   Agenda 2030 and the Sustainable Development Goals
2   Paris Agreement on Climate Change
3   Sendai Framework for Disaster Risk Management 2015-2030

# 3. High level Architecture

The One UN Geospatial Situation Room resides at the intersection of the global agendas, priorities of the United Nations on data and the UN-GGIM guidance and frameworks. The One UN Geospatial Situation Room are guided by the priorities of the 17 Sustainable Development Goals (no poverty, zero hunger, good heath, education for all, gender equality, economic growth, clean water, infrastructure, reduced inequalities, peace and justice, climate, life on land and below water) which guide the Priority geospatial data themes requirements. The overall intersections of these wider priorities, data needs and guidance of UN-GGIM are summarized in Figure1 – One UN Geospatial Situation Room: High-level Architecture and Priorities.



Figure 1 – One UN Geospatial Situation Room: High-level Architecture and Priorities
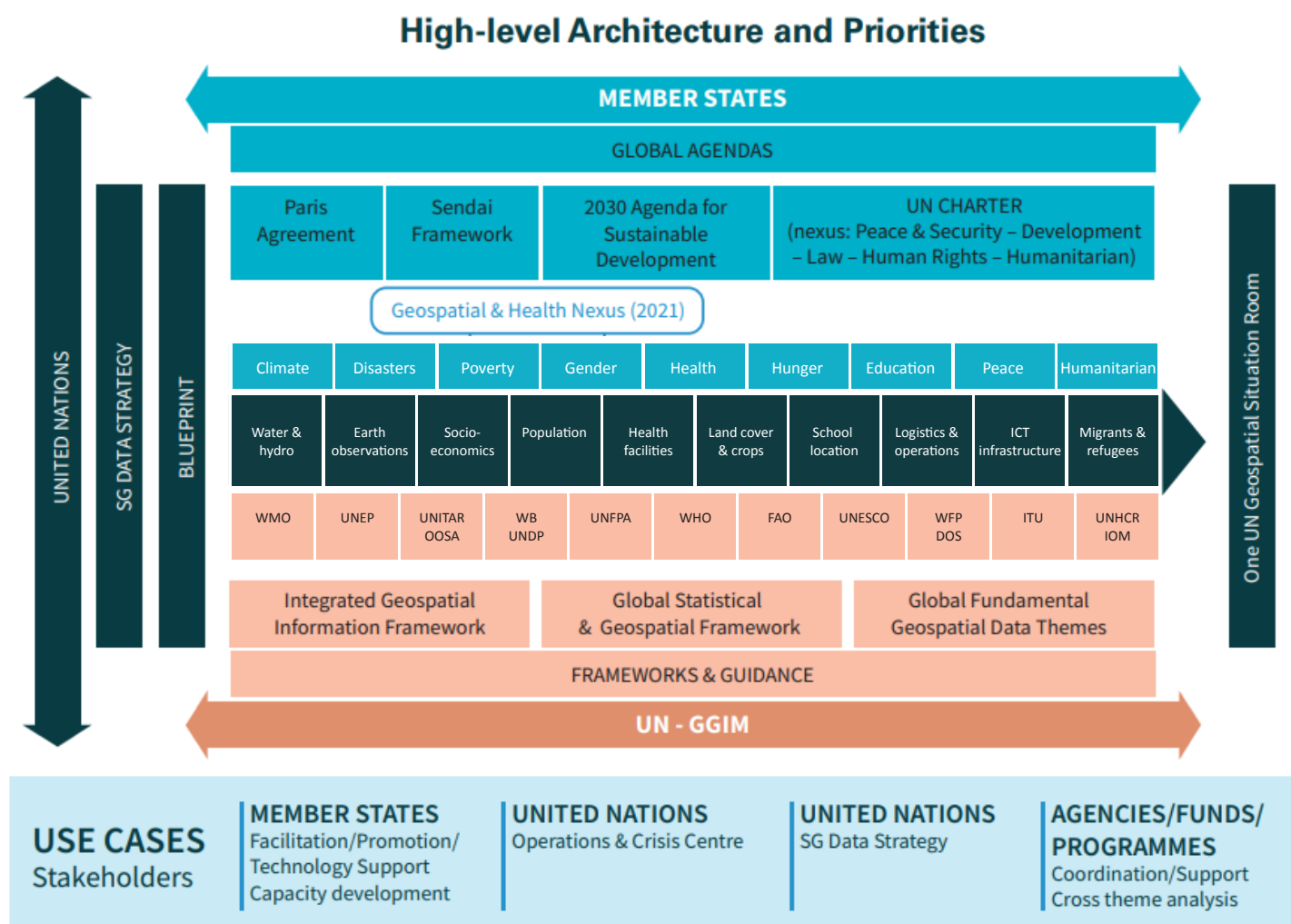
# 4. Priority Data Themes

The current One UN Geospatial Situation Room implemented the concept of 2022, and is further priority datathemesguided by the [14 Fundamental Geospatial Data Themes](#) developed by UNGGIM. The One UN Geospatial Situation Room will be organized as:

1- **Global Geodetic Reference Frame**
2- **Addresses** (Universal Postal Union & ISOTC211)
3- **Buildings and Settlements** on Internally Displaced People, Returnees and Missing Migrants (IOM), and Refugees (UNHCR)
4- **Elevation and Depth**
5- **Functional Areas**
6- **Geographical Names** on geo-enabled Names (UNGEGN with UNSD/UNGIS)
7- **Geology and Soils** on soils (FAO)
8- **Land Cover and Land Use** on land cover (FAO / ISO-TC211), vegetation (FAO), and crops (FAO)
9- **Land Parcels**
10- **Physical Infrastructure** on schools (UNESCO), health centres (WHO) and ICT infrastructure (ITU)
11- **Population** on population (UNFPA), drugs and crime (UNODC), poverty (UNDP) and socio-economics (World Bank)
12- **Orthoimagery** on satellite imagery (UNOOSA/UNITAR)
13- **Transport Networks** on logistics and operations (WFP/DOS)
14- **Water** (& the Environment) on climate (WMO), water reservoirs (FAO) and the environment (UNEP)

The list of Priority geospatial data themes is not exhaustive and only includes current priorities that will be expanded upon in the near future, as part of the scalable and phased approach implementation plan.

## 3- Buildings and Settlements on Migrants (IOM), Refugees (UNHCR), Internally Displaced People (UNHCR)

Internally displaced persons (IDPs): Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border [Guiding Principles on Internal Displacement, UN Doc E/CN.4/1998/53/Add.2.] (IOM, 2016). Returnee: any person who was displaced internally or across an international border, but has since returned to his/her place of habitual residence (IOM, 2004).

Refugees are people fleeing conflict, persecution and human rights abuses who have crossed a border into another country. Asylum-seekers are individuals who have sought international protection and whose claims for refugee status have not yet been determined. Internally displaced people (IDPs) have been forced to flee their homes, however, unlike refugees, they remain in their own country.

### Internally Displaced People, Returnees and Missing Migrants

Quality, accessible, reliable, and timely geospatial data are essential to inform policies and actions in a humanitarian crisis. In today's complex and fast-changing world on the move, harnessing the power of geospatial data is key for sound policy and decision-making in the field of migration.

Geospatial Data is completely linked to the field of migration and internal displacement, which are entirely location-based. For this reason, the Displacement Tracking Matrix (DTM) under the Global Data Institute (GDI) of the International Organization for Migration (IOM) is a producer and consumer of geospatial data and services to systematically collect, manage, analyze, and disseminate geospatial information on human mobility patterns across the globe.

The Displacement Tracking Matrix (DTM) is a comprehensive set of tools used to gather and analyse data to disseminate critical multi-layered information on mobility, vulnerabilities and needs of displaced populations. DTM provides IOM and other stakeholders with evidence-based data so they can make informed decisions about aid and recovery planning in affected communities. Additionally, DTM systematically manages geospatial information on human mobility patterns across the globe. With more than 11,000 IOM and partners' data collectors and over 500 technical experts serving in 95 countries as of December 2022.

Geospatial tools have a broad range of applications for IOM and in particular DTM, including improving operational efficiency through more informed programmatic planning and implementation using geospatial analytics. This is most evident in humanitarian responses within IOM in which accurate, reliable, and up-to-date data on displacement dynamics have lifesaving consequences. For external partners and audiences, GIS online visualizations often help display key results and indicators on easy-to-read map products.

The Missing Migrants Project is an initiative implemented since 2014 by IOM to document disappearances of people during their migratory journeys towards international destinations worldwide. The geo-locations are key to showcasing the impact on vulnerable people who left their homes in search of a better life. The project recently reached the grim milestone of 50,000 deaths during migration, but the many data challenges of documenting deaths during irregular movements means many more remain unrecorded. Each location represents an incident, each number represents a person, as well as the families and communities that they leave behind.

Missing Migrants Project data are used as Sustainable Development Goal (SDG) Indicator 10.7.3 on the "[n]umber of people who died or disappeared in the process of migration towards an international destination" and Global Compact for Safe, Orderly and Regular Migration (GCM) Objective 8.

Priorities are ruled by what we see happening but special attention for IOM's geospatial teams will go to 1) Enhance the availability and use of geospatial data to achieve positive impacts for migrants and societies 2) Provide live feeds of migration trends and other relevant data into the UN Network Geospatial Data Hub 3) Strengthen evidence-base geospatial data on migration and displacement globally 4) Coordinate and share IOM efforts on geospatial analytics and methods with all UN agencies. A key IOM goal is to improve the evidence base for good migration governance in support of sustainable development, effective humanitarian action and peaceful societies, and to support implementation, monitoring and reporting by relevant stakeholders on their actions in support of relevant international frameworks.

## Refugees

UNHCR protects people forced to flee their homes as well as stateless persons. We deliver life-saving assistance in emergencies, safeguard fundamental human rights, and help find long-term solutions so they can find a safe place to call home. The UN Refugee Agency, UNHCR, collects and collates data relating to persons who are forcibly displaced, returnees or stateless:

4  Displacement Tracking Matrix (DTM) https://displacement.iom.int/

UNHCR understands the importance of the Geographic Information Systems (GIS) and mapping and started investing resources on its further in-house democratization from the early 90s. The GIS team, part of the UNHCR Global Data Service maintains the GIS infrastructure and global geodatabase. We understand that sharing adds values to data. Therefore, we offer access to a variety of geoservices of data pertaining to refugees and other people of concern to UNHCR mostly accessible through https://data.unhcr.org/en/geoservices/

## 6-    Geographical Names on geo-enabled names (UNGEGN with UNSD/UNGIS)

Geographic names provide a basis from which to integrate data at a specific geographic location and at a specific geographic scale (i.e., a region, country, city, or other types of geography) and are one of the 14 Global Fundamental Geospatial Data Themes. The United Group of Experts on Geographical Names (UNGEGN) World Geographical Names Database is a repository of the short and full names of countries (193 UN member states and two non-Member States observers), their capitals, and major cities (with population over 100,000) in a multilingual, multi-scriptural and geo-referenced format. Authoritative city endonyms are provided mainly by national name authorities and sound files are being added to assist users with pronunciation.

The need for an authoritative depository of geographic names under the purview of the Group of Experts is a topic with a long and storied history within UNGEGN. For example, at its 22nd session in July 2004, the Group of Experts recommended the development of an authoritative database on country and major city names .

As the Group of Experts implements its strategic plan and programme of work for the period 2021-2029, the WGN Database offers the technological foundation with which to manage an authoritative depository of geographic names, not just for cities and countries, but also to help the Group to demonstrate how geographical names connect people to geographic location and why geographical names matter as part of the broader recognition of culture, heritage and language.

At its 2023 session, the Group of Experts adopted Decision 3/2023/17 and formally launched the redeveloped World Geographic Names Database. To date, the Database contains toponyms, endonyms, and exonyms of features detailing over 2,700 country names, some 6,100 names for 3,362 cities, with more than 970 audio files. The future for the WGN Database is to incorporating semantic web technologies to link the database to a broader data ecosystem provided by the One Geospatial Situation Room.

## 7-    Geology and Soils on soils (FAO)

**Soils**

Soil is a complex mixture of minerals, organic matter, water, air and living organisms, playing a crucial role in sustaining plant life and supporting terrestrial ecosystem services. The FAO works closely with countries to address global soil-related challenges and achieve the SDGs. FAO's  Global Soil Partnership is developing GloSIS, a global soil information system, along with country-driven (bottom-up) data products including like global maps of soil properties global soil property maps. Additionally, FAO has been actively involved in the development of the Harmonized World Soil Database (HWSD), which provides essential soil information at a global scale. SoilSTAT, an innovative platform, is also being developed to monitor soil health worldwide, using soil health indicators and a global soil health index. These initiatives are backed by a comprehensive global capacity development program, ensuring effective soil information management and sustainable land use planning.

## 8- Land Cover and Land Use on land cover and land use (FAO / ISO-TC211), Vegetation (FAO), and Crops (FAO)

**Land cover and land use**

With land and water resources for food and agriculture at breaking point, and critical global challenges for sustainable development, monitoring land cover/land use faces many challenges. Timely, robust, and reliable information on land and water resources is critical for every nations. There has been significant advancement in the field of remote sensing, information technology and data analysis. However, using the data for sustainable development action has been hindered by lack of integration, interoperability, connectivity, and consistency between land monitoring programs. Land cover and land use is one of the 14th fundamental data theme layers in United Nations. FAO and ISO have been working together for the last two decades in developing and updating international standards. In 2020, Land Cover and Land Use Advisory Group 13 (ISO TC211/AG13) has been established to advice ISO TC211 for standard development and implementation in UN and other agencies. With thousands of land cover legends around the world, integrating and using local and global land cover and land use information are challenging. A UNFAO international Land Cover Legend Registry has been created to provide access to legends developed using recognized international standards i.e., ISO 19144-2. Relying on existing monitoring programs, strengthening partnerships, contributing to common reference systems, developing capacities for international standard-based quality data, and benefiting from technological innovations, can accelerate the achievement of the SDGs.

**Vegetation**

Vegetation is a sub-category of land cover and land use. It refers to the study and/or mapping of the plant growth forms covering the Earth's surface. It can include natural/seminatural and/or cultivated vegetation. Natural vegetation is defined as an area where the vegetation is not planted by humans but influenced by human actions. Cultivated vegetation is defined as an area where the natural vegetation has been removed or modified and replaced by other types of vegetative cover of anthropogenic origin. This vegetation is artificial and requires human activities to maintain it in the long term.

**Crops**

Crops are the sub-category of cultivated vegetation. Crops refer to cultivated plants that are grown on a large/small scale for human or animal consumption, industrial use, or other commercial purposes. These plants are intentionally planted, managed, and harvested to produce food, fiber, or other products. The phenological appearance of crops can be regularly modified by humans, for example tillage, harvest, and irrigation. All vegetation that is planted or cultivated with an intent to harvest is included in this class, for example wheat fields, orchards, rubber, and teak plantations.

## 10- Physical Infrastructure on schools (UNESCO), health centers (WHO), and ICT infrastructure (ITU)

**School Location**

School location data and other geospatial information help ministries of education around the world to plan, manage, and improve their education systems. Educational planning approaches draw on geospatial data to enable governments to achieve national objectives and Sustainable Development Goals, and ensuring that the delivery of educational services through educational facilities meet the demand and expectations of communities.
Different initiatives aim at collecting school location data, with or without the involvement of

ministries of education, and too many of these initiatives do not rely on clear processes for compiling, managing, disseminating, and governing this information. Moreover, when school location data is collected through ad hoc activities or by multiple stakeholders, the data becomes hardly interoperable with other national education datasets and sustain the illusion that the availability of school location data is an end in itself, and not an integer component of the education data architecture for system management.

Focus areas include: standards for collecting school location data; data validation and quality assurance; ownership and governance; dissemination and maintenance of the dataset. The UN-GGIM invites all UN Member States and agencies to collaborate in co-designing standards in school location data, from improving its collection, management, dissemination, and governance.

**Health centres**

From delivering primary care in rural communities and urban centres to addressing health crises like pandemics, each country needs accurate and reliable data to plan and deliver quality health services. Ministries of Health can benefit from leveraging geospatial data to better plan, monitor and implement timely health interventions, inform decision-making, and collaborate across sectors and regions to better serve communities. However, many countries currently miss these benefits because they lack a single source of standardized and regularly updated health facility data. The Geolocated Health Facilities Data (GHFD) initiative supports countries that need assistance updating, geolocating, digitizing, and/or openly sharing the health facility master list (HFML) for their country. As a global public good, the final product will be the world's first central and accessible public database of health facility names, locations and types. https://www.who.int/data/gis/ghfd

**ICT infrastructure**

Two main challenges persist to advance the world's digital transformation, including connecting the 2.7 billion offline people : universal and meaningful connectivity. ICT infrastructure mapping is key to identify where digital connectivity is not available to develop public policies and investments decisions towards achieving universal access. GIS tools (e.g. ITU Broadband Maps) assist to achieve this goal. Promoting ICT infrastructure open data (e.g. mobile coverage, fibre networks) helps unlocking the potential of geospatial activities for social good and advanced connectivity through innovative solutions. This can only be achieved through closer partnerships to increase awareness, capacity in producing and sharing data, and international harmonization. The ITU develops recommendations, the equivalent of international standards, on radio wave propagation prediction methods for the planning of radio communication services and elimination of harmful interference. These predictions use digital terrain elevation models and features on the surface of the Earth to ensure optimum and efficient use of the radio spectrum and administrations should produce and regularly update (in cooperation with relevant organizations) those datasets, making them freely available to the ITU as resolved by Resolution ITU-R 40-4. The ITU hopes to have available open and quality geospatial data on ICT infrastructure, worldwide DEM and ground cover for its analysis and responding to its mandate.

## 11- Population on population (UNFPA), drugs and crime (UNODC), socio-economics (World Bank) and poverty (UNDP)

**Population**

UNFPA is the United Nations sexual and reproductive health agency. Our mission is to deliver a world where every pregnancy is wanted, every childbirth is safe and every young person's potential is fulfilled. UNFPA lead support to census, a census involves the complete enumeration of the population in

a country, territory or area, and should be conducted at least once every 10 years. It generates a wealth of data, including numbers of people, their spatial distribution, age and sex structure, as well as their living conditions and other key socioeconomic characteristics. These data are critical for good governance, policy formulation, development planning, crisis prevention, mitigation and response, social welfare programmes and business market analyses. UNFPA provides technical and financial support to ensure that censuses are of high quality, uphold international principles and standards, and produce data that are widely disseminated and utilized for development.

UNFPA Population data portal is the ultimate data source and tracker for population and development data. It combines the newest population data on topics like sexual and reproductive health and reproductive rights, family planning, maternal health, or gender-based violence gathered from a multiple sources.

**Drugs and Crime**

High quality statistics on drugs, crime and criminal justice constitutes essential evidence to inform policy-making and valuable sources of knowledge in drugs and crime domains, including to inform the Sustainable Development Agenda, especially on SDG16 Peace, justice and strong institutions.

UNODC, jointly with national authorities, collects data through specific data collection systems like illicit crop and mining monitoring surveys, victimization, corruption and drug use surveys as well as the Drug Monitoring Platform (https://dmp.unodc.org/) which is a multi-source system for collecting, visualizing, and sharing drug data aimed at providing access to near real-time data on drug trafficking trends .

The statistical data that UNODC collects, analyses and shares is available in its data portal ([https://dataunodc.un.org/](https://dataunodc.un.org/))
- Drug use and treatment
- Drug trafficking and cultivation
- Intentional homicide
- Violent and sexual crime
- Corruption and economic crime
- Prisons and prisoners
- Access and functioning of justice
- Firearms trafficking
- Trafficking in persons
- Wildlife trafficking
- SDGs

UNODC uses GIS and geospatial analysis, satellite imagery and field surveys to monitor trafficking flows and organized crime threats, including on drugs, firearms, smuggling of migrants, trafficking in persons, illegal mining, wildlife crime and other crimes that affect the environment. The reports about these monitoring activities are available online and increasingly through web maps:
- [https://www.unodc.org/unodc/en/crop-monitoring/index.html](https://www.unodc.org/unodc/en/crop-monitoring/index.html)
- [https://www.biesimci.org/index.php?id=84](https://www.biesimci.org/index.php?id=84)
- [https://www.unodc.org/res/som/index.html](https://www.unodc.org/res/som/index.html)
- [https://dmp.unodc.org/](https://dmp.unodc.org/)

The increase in available geospatial data will greatly improve crime convergence analysis, as done for the Amazon in the World Drug Report 2023: [https://www.unodc.org/res/WDR-2023/WDR23_B3_CH4_Amazon.pdf](https://www.unodc.org/res/WDR-2023/WDR23_B3_CH4_Amazon.pdf)

## Socio-economics

The global poverty rate has declined in recent years—a testament to the success of development efforts by the international community to end extreme poverty and promote shared prosperity. However, recent gains are also threatened by global challenges: tightening macroeconomic prospects, fiscal strains on governments, natural disasters, slow income growth for the poorest, record levels of displacement, and ongoing conflict and fragility. The World Bank Group works closely with partners to support inclusive and sustainable economic growth, promote more and better investments in people, and build resilience. The World Bank Group has unique assets in financing and knowledge, which can be leveraged to further progress toward sustainable development goals and address global challenges. Recent advancements in geospatial data collection, data access and discoverability on the Development Data Hub, data integration, and analysis provide new opportunities and insights using timely and high-quality socio-economic information, strengthening the portfolio across organizational sectors.  Geo-spatial activities comprise five key areas: (i) operations with financial products and services, (ii) policy advice and innovative knowledge (iii) strategic partnerships, (iv) global research and standards and (v) training, capacity building and dissemination of geospatial knowledge product activities. The UN GGIM invites for collaboration and coordination between the UN entities and other stakeholders to provide open, high-quality geospatial data related to socio-economic information.

## 12- Orthoimagery on satellite imagery (UNOOSA/UNITAR)

### Satellite imagery

Not many datasets are global in nature, collected in a homogenous manner and dates back over 40 years. Satellite imagery is one of a very few such datasets. Now, with the 2030 Agenda for Sustainable Development such data are needed like never before: global data for global goals.

In addition, the data are objective and can now be provided almost in real time. Application areas are highly diverse including food security, climate change adaptation, environmental studies, ship monitoring, health, humanitarian assistance, disaster risk reduction, protection of human rights, peace and security, education, protection of cultural heritage, project monitoring and much more.

More and more satellite data are becoming free open-source witch facilities easy access to numerous application areas.  Artificial intelligence and machine learning are widely used for satellite imagery analyses. However, care much be taken to ensure good training dataset to make sure end products are of good quality. Application areas are agriculture, deforestation, refugee camp mapping, mapping of city and flooding to mention a few.

In addition, comes and increased use of drones. Which can often be complementary to satellite imagery. Drones need permission to fly, while satellite do not, however once permission to fly is granted, drones can capture geospatial information at much higher resolution than satellites.

## 13- Transport Networks on Transports (WFP/DOS)

### Transports, logistics and operations

Transportation data is key for the fleet management, routing, journey planning, and related transport information systems. The Logistics Cluster is part of the cluster system established by the Inter-Agency Standing Committee (IASC). Due to its expertise in humanitarian logistics, the IASC designated the World Food Programme (WFP) as the Logistics Cluster's global lead agency. It is a community of partners, whose purpose is to support global, regional and local actors in overcoming logistics

constraints to the delivery of global humanitarian assistance. The delivery of humanitarian assistance and end-to-end planning requires the knowledge and ability to assess, understand routes and supply chain. The Department of Operational Support of the Secretariat support the deployment of peace operations and likewise ensures supply chain management for its operations.

The geospatial information related to the logistics and road networks is critical for the safe conduct of operations and delivery of humanitarian. The initiative of the Humanitarian Topographic Atlas or UN Maps both aimed at ensuring detailed topographic mapping and routing abilities are available in these challenging environments for supporting people in peace or humanitarian operations.

## 14- Water (& the Environment) on climate (WMO), on the environment (UNEP), and on water reservoirs (FAO)

### The environment

We are now living in a time of unprecedented climate emergency and environmental crisis, facing critical consequences of rising temperatures, climate change, environmental pollution, species extinction and natural resources destruction. The climate crisis has already become one of the biggest humanitarian challenges. The solutions needed to address the climate challenge require strong science-based decision-making and powerful action towards transformational change for the lives and health of people, places and planet. At the same time, there has never been an epoch in human history with such digital capacity, where and when the use of emerging technologies such as information and communication technologies; human computer interfaces; big data; internet of things; machine intelligence and Geospatial can empower humans towards transformational change.

The United Nations Secretary-General has asserted that climate change and the environment represent one of the biggest challenges for humanity and consequently the availability of quality, timely and disaggregated data is fundamental to support nations in the achievement of Agenda 2030 and the Sustainable Development Goals.

The United Nations Environmental Assembly, in March 2019, through its Ministerial Declaration and Resolutions provided a clear and strong mandate to work with the UN system entities, and for the United Nations Environment Programme (UNEP) to have a global environmental data strategy by 2025, with progress reports to Member States by 2021 and 2023 and 2025. This can be achieved by harnessing big data on the environment for sustainable development, peace and security and humanitarian action, and by providing a digital transformation platform, the World Environment Situation Room (UNEP´s Data, to support decision-making and action for tackling environmental challenges.

We aim to integrate our operational big data platform, available on https://data.unep.org interoperating with the One UN Geospatial Situation Room and providing transparent access and use of environmental data for accelerating the implementation of Agenda 2030 and the SDGs. The platform´s environmental data architecture is categorized into SDG´s and Statistics, Multilateral Environmental Agreements (Conventions) indicators, Assessments, Geospatial, Publications, Global Environmental Monitoring (Air, Water, Oceans, Land and Biota) and Foresight. UNEPs data action priorities are focused on Disaster Risk Management (particularly for climate resilience and anticipatory action) as well as environment and security.

**Water management, resources and availability**

Water management aims to enhance sustainable water resource use in agriculture and rural areas, focusing on food security and mitigating water-related disasters. FAO employs geospatial data to assess water use efficiency, monitoring consumption patterns and irrigation effectiveness at different scales (AQUASTAT, AQUAMAPS, WaPOR). They develop drought monitoring systems to identify vulnerable regions and enable timely interventions. Geospatial analysis maps water productivity in agro-ecological zones, empowering policymakers and farmers to make informed decisions. Integrated watershed management is supported using geospatial tools to identify erosion-prone areas and propose conservation measures. FAO conducts groundwater mapping to understand aquifer characteristics and risks. They also analyze flood-prone areas for disaster preparedness. Geographic Information System (GIS) based decision support systems help in water management and agricultural planning. Remote sensing data, like satellite imagery, aids in monitoring water bodies and land use changes. FAO's geospatial work is crucial for evidence-based policymaking, improving water management, agricultural productivity, and achieving SDGs, notably SDG 2 and SDG 6.

# 5. Service Delivery and Use Cases through Nexus

As supported in an overarching Architecture and following implementation by Priority geospatial data themes, the One UN Geospatial Situation Room is focused on a delivery model with Use Cases which demonstrate its relevance. The One UN Geospatial Situation Room purpose is to provide added value data and inter-disciplinary analysis for strategic foresight, use cases and decision-making. As such, each service delivery should be a nexus, a connection, linking two pillars or more of the United Nations Charter pillars  as Peace and Security, Sustainable development, Human rights, International Law and Humanitarian aid.

The overarching delivery model will provide nexus analysis and visualization on specific scenario to the One UN Geospatial Situation Room with delivery approach and stakeholders summarized in Figure 2 –One UN Geospatial Situation Room: Service Delivery and Use Cases through Nexus, on the following page.

The One UN Situation Room will focus its services according to several Priority geospatial data themes in the Hub (as described in the previous diagram) and using a delivery modality of strategic analysis and scenarios or Use Cases.

In a first phase of implementation, there will be 2 Core Services and a set of Use Cases:

**Core Services are to** (1) support and enable the UN Data Hub, described in the SG Data Strategy, with geospatial services and backbone across the UN system; and (2) provide thematic data, analytics, and dashboards to the UN Operational Crisis Control Centre across the nexus, using the synergies across UN system from the UN Geospatial Network.

**Use Cases are to** (1) develop and facilitate geospatial capacity development activities for Member States, in particular, for low-and-middle incomes countries, as they relate to the Priority geospatial data themes; and (2) ensure the availability of cross-pillar analytics and contribute to the wider data ecosystem for the benefit of lead Offices, Departments, Specialized agencies, Funds and Programmes of the UN System.

The different use cases will use a Nexus approach, intending to deliver their services not for one, but a combination of various UN pillars as peace, humanitarian aid, sustainable development, international rule of law, and human rights.

Figure 2 - One UN Geospatial Situation Room: Service Delivery and Use Cases
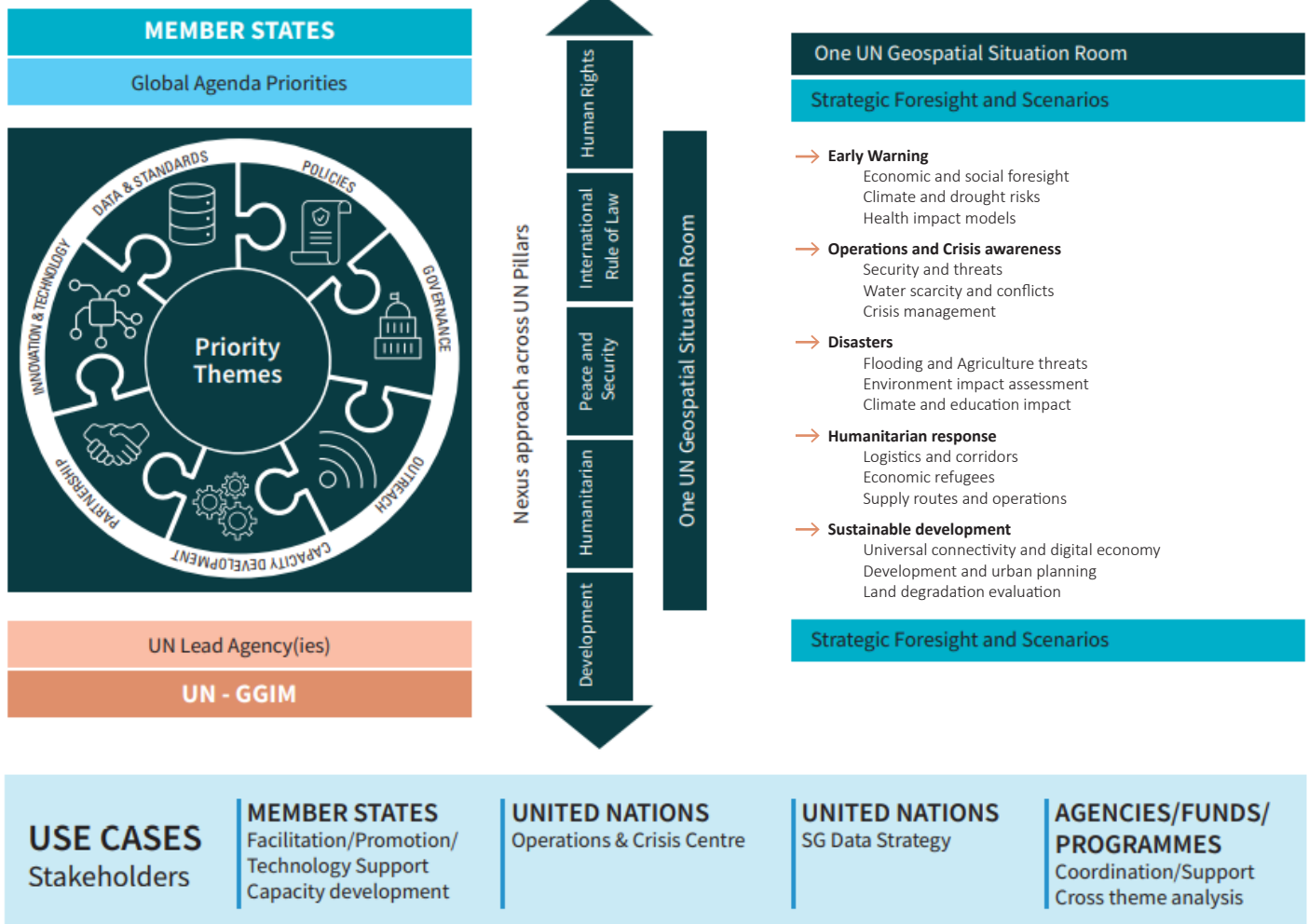
## Nexus Areas

The Nexus are intersections of priorities and data The following nexus are to be:

1-   **Early Warning**
2-   **Operations and Crisis awareness**
3-   **Disaster**
4-   **Humanitarian response**
5-   **Sustainable development**

The nexus are meant to transform priority data themes into actionable geospatial knowledge for people, places and planet:

**1-   Early Warning
      (WMO, UNEP, UNDRR...)**

Early Warning is the most effective and efficient way of saving lives and properties of vulnerable communities to natural and human created disasters, climate, and environmental disasters but also more generally disaster risk management. A global initiative to ensure that everyone on Earth is protected by early warnings by 2027 is being fast-tracked into action on the ground. A recent record-breaking tropical cyclone in Southeast Africa once again shows the paramount importance of these

services to save lives and livelihoods from increasingly extreme weather and climate events. To aid this work, UN Secretary-General António Guterres has convened an Advisory Panel of leaders of UN agencies, multilateral development banks, humanitarian organizations, civil society, insurance, and IT companies on 21 March. The aim is to inject more political, technological, and financial clout to ensure that Early Warnings for All becomes a reality for everyone, everywhere.

The months ahead will see stepped up coordinated action, initially in 30 particularly at-risk countries, including Small Island Developing States and Least Developed Countries. Additional countries are expected to be added as this vital work with partners gathers pace, scale and resourcing. At the same time, the UN's existing actions and initiatives to save lives and livelihoods and build resilience across a wide range of other countries will continue and be reinforced, ensuring the Early Warnings for All campaign turns its pledges into life-saving reality on the ground for millions of the most vulnerable people.

At this thirteenth session, UN-GGIM is considering a report on 'geospatial information for sustainable development and climate resilience that highlights the many dimensions, opportunities and challenges arising in the area of geospatial information for climate resilience, proposing recommendations for the Committee to consider so that the role of geospatial information in national and global efforts for climate resilience is strengthened. The establishment of this early warning Nexus aims to bring coordination and coherence to the UN's existing actions and initiatives to save lives and livelihoods and build resilience across a wide range of countries. This will help enhance existing programmes, ensuring the Early Warnings for All campaign turns its pledges into life-saving reality on the ground for millions of the most vulnerable people.

Nexus applications of early warning systems could include Economic and social foresight, climate and drought risks, or health impact models

## 2- Operations and Crisis management (OCC, DOS, WFP…)

When a situation arises, or a crisis hits, collecting data, analysing it and supporting the decision-making process on the adoption of measure can be life saving. Geospatial information and spatial planning is key in the context of crisis management and emergency responses or operations can play an important role in preventing or mitigating the consequences of crisis situations, in responding to a crisis situation, and also alleviating devastating consequence to affected area. Indeed, one of the primary aim of the One UN Geospatial Situation Room is to provide cross-cutting and contextual information for decision-makers in the Organization. The One UN Geospatial Situation Room also aims at addressing the need for a common operational understanding across all United Nations entities in situation when coordinated decisions and actions can saves lives, protect places, and safeguard our planet.

Coordinated and curated geospatial information services that provide a common understanding of a situation using standardized services and knowledge across the sectors, from health to agriculture, from security to the environment, or from human rights to climate change, and across organizations are key for better support to people in moments that matter most.

Nexus applications of operations and crisis management could include security and threats, water scarcity and conflicts, or crisis management and situation awareness.

## 3- Disaster
## (UNDRR, ESCAP, UNOOSA, UNITAR…)

The frequency of natural hazards has been on the rise globally in the last several decades. Whether it's the devastating floods that struck India with increasing intensity in 1993, 2007, 2012, 2013, 2015 and 2018 or the 10% increase in the drought frequency in the North Bengal of Bangladesh over the periods of 1979–20183. The increasingly frequent natural disasters are a reminder of the urgency of building and maintaining resilience against future catastrophes.

Geospatial information and satellite imagery has been successfully used by the spacefaring nations globally to continuously monitor areas with high disaster risk and frequency of disasters to generate enhanced risk analytics like monitoring, forecasting and disaster early warning, surveillance, and impact assessment. This frequent and targeted monitoring using geospatial information and satellite imagery is transforming disaster risk reduction and thus addresses some of the deep uncertainties in managing systemic risk.

However, the high disaster risk and low-capacity countries remain highly vulnerable to disaster risks mainly due to their inability to continuously monitor and maintain vast national territories with high disaster risks. Access to satellite imagery could help improve their ability to generate the necessary risk analytics for disaster risk management.

To address this data gap, United Nations entities in collaboration with Member States are building a bridging mechanism to enable the flow of critical satellite imagery within the Asia and the Pacific region from spacefaring countries to the high disaster risk and low-capacity countries which lack the resources to procure the satellite imagery for continuous monitoring of high-risk areas..

The bridging mechanism follows the UN Secretary Generals' Data Strategy by ensuring greater data accessibility and sharing internally and externally and contributes to implementing the Plan of Action and Regional Roadmap by enabling research and knowledge sharing and capacity-building and technical support and the Sendai Framework for Disaster Risk Reduction 2015-2030 by promoting the collection, analysis, management and use of relevant data and practical information and ensure its dissemination, taking into account the needs of different categories of users, as appropriate. The focus on disaster response will also endeavor to coordinate its activities with the WG on Disasters of UNGGIM and leverage its frameworks.

Nexus applications of operations and crisis management could include flooding and Agriculture threats, environment impact assessment, and climate and education vulnerability.

## 4- Humanitarian response
## (WFP, UNHCR, IOM, OCHA, UNICEF…)

One of the purposes of the United Nations, as stated in its Charter, is "to achieve international co-operation in solving international problems of an economic, social, cultural, or humanitarian character." Humanitarian problems can be mutli-facetted, coordinated, system-wide approach to humanitarian relief is essential in providing assistance quickly and efficiently to those in need, targeted population can include children, women, the sick, the hungry, refugees or others. Geospatial information can provide the ability to respond effectively to humanitarian crisis across the world. Efficient management and rapid analysis of geospatial data is crucial for humanitarian agencies performing field operations on a global scale. For example, the UN World Food Programme has developed an automated system for collecting, analysing and mapping geospatial and socio-economic data related to natural hazard events. This application is called ADAM (Automated Disaster Analysis and Mapping). By leveraging geospatial information, the United Nations and humanitarian

organizations can enhance their ability to address crises effectively, allocate resources efficiently, and make data-driven decisions to alleviate suffering and ensure no one is left behind.

Nexus applications for humanitarian response could include evaluating logistics and corridors for aid delivery, assessing economic impacts on refugees and migrants, and ensuring optimal coverage of services for the sick and the hungry.

## 5-   Sustainable development
##      (UNDP, WHO, UNESCO…)

Geospatial information can support the implementation of the Sustainable Development Goals in monitoring and facilitating decisions on development initiatives. Supporting national capacity development remains critical in delivering better, more reliable, accessible and interoperable data and analytics. Respective entities of the United Nations are conducting geospatial capacity development across ministries such as agriculture, health, education, space, mapping, census, the environment, or disasters, the coordination of integrated capacity development for the benefit of countries, in particular developing countries can be a key for the implementation of the United Nations Integrated Geospatial Framework and therefore the advancement of the Sustainable Development Goals.

Nexus applications for sustainable development could include universal connectivity and digital economy, development and urban planning, or land degradation and food system threats.

# 6. Implementation Plan

In agreement with the Blueprint of the UN Geospatial Network, the implementation is leveraging the strategic pathways:
- **Governance**, with data spokes with United Nations entities as detailed in the aforementioned Priority Data Themes
- **Policies**, guided by UN-GGIM frameworks, United Nations policies including on the principle that the "the work of the United Nations should be open and transparent, except insofar as the nature of information concerned is deemed confidential" in accordance with the guidelines on Information sensitivity, classification and handling
- **Data & Standards**, with themes as detailed in the aforementioned Priority Data Themes, in close collaboration with international standards organizations to ensure interoperable and accessible services. Activities contributing to the development of standards, such as contributions by respective United Nations entities to the development of ISO's Land Administration Domain Model, Land Cover Land Use and addresses systems, should be fostered.
- **Innovation & technology** is implemented through a federated data architecture approach leveraging respective United Nations entities services, the management of the front end is entrusted with the Secretariat.
- **Capacity building** activities are conducted in agreement with governance for the benefit of countries in particular developing countries.
- **Partnership** the One UN Geospatial Situation Room is implemented in collaboration with the overall geospatial community of UN-GGIM including Member States, regional committees, thematic networks and others.

Finally, the implementation of the One UN Geospatial Situation Room is rooted in an integrated approach as the combined value of respective geospatial data and services from Untied Nations allow for better understanding for decision making.

UNOPS WMO OHCHR unitar

ICAO·OACI·ИКАО OCHA UNODC ILO WHO

UNESCO UNEP WFP OIOS

UNOOSA IFAD UNHCR UN HABITAT ESCAP

ESCWA UN WOMEN IOM ECLAC

OSAA UNDSS UNFPA ECE UNIDO

UNDP FAO FIAT PANIS UNDRR ITU

unicef WORLD BANK INTERNATIONAL SEABED AUTHORITY UNCCD ECA

IAEA OLA

## SECRETARIAT

DESA
STATISTICS
DIVISION

OICT
GEOSPATIAL
INFORMATION SECTION

## UN GEOSPATIAL NETWORK
UNITED NATIONS COMMITTEE OF EXPERTS ON
GLOBAL GEOSPATIAL INFORMATION MANAGEMENT