Training Course on GIS for Sustainable Development Goals (SDGs) Monitoring

Professional Development Training Course Outline

Category	GIS	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In an era defined by global challenges, from **climate change** to **poverty** and **inequality**, the **United Nations Sustainable Development Goals (SDGs)** provide a universal blueprint for a more sustainable future. Effective monitoring and evaluation are paramount to achieving these ambitious goals by 2030. Geographic Information Systems (GIS) offer a **transformative spatial intelligence platform**, enabling **data-driven decision-making** and **impact assessment** for development initiatives. This course leverages cutting-edge GIS technology to equip participants with the skills to **visualize, analyze, and report on SDG progress** at local, national, and global scales, bridging the gap between data and actionable insights for **sustainable development**.

Training Course on GIS for Sustainable Development Goals (SDGs) Monitoring delves into the **practical application of geospatial data and tools** for **SDG localization and tracking**. Participants will gain expertise in **spatial data management, advanced GIS analysis, remote sensing for environmental monitoring**, and the creation of compelling **geospatial dashboards and story maps**. By focusing on real-world **case studies** and **hands-on exercises** with industry-standard and open-source GIS software, this course empowers development professionals to harness the power of **location intelligence** for more effective **resource allocation, policy formulation, and evidence-based interventions** towards a resilient and equitable world.

Programme Curriculum

Training Course on GIS for Sustainable Development Goals (SDGs) Monitoring

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Course Objectives

1. Master fundamental GIS concepts and their direct application to Sustainable Development Goals (SDGs).
2. Develop proficiency in spatial data acquisition, cleaning, and integration from diverse sources for SDG indicators.
3. Utilize remote sensing and Earth observation data for environmental monitoring and natural resource management relevant to SDGs.
4. Perform advanced spatial analysis techniques including hotspot analysis, network analysis, and site suitability for SDG localization.
5. Design and create thematic maps, interactive web maps, and geospatial dashboards for compelling SDG progress reporting.
6. Apply GIS for vulnerability assessment and disaster risk reduction (DRR) aligned with SDG 11 (Sustainable Cities) and SDG 13 (Climate Action).
7. Leverage GIS for urban planning and infrastructure development to support SDG 9 (Industry, Innovation, and Infrastructure) and SDG 11.
8. Implement GIS for food security analysis and agricultural productivity monitoring under SDG 2 (Zero Hunger).
9. Integrate demographic and socio-economic data with geospatial information to analyze inequalities and access to services (relevant to SDG 1, 3, 4, 5, 6, 7, 10).
10. Explore the use of open-source GIS software (e.g., QGIS) for cost-effective SDG monitoring solutions.
11. Develop skills in geospatial data storytelling to effectively communicate SDG impact to stakeholders and policymakers.
12. Understand the role of GIS in climate action, biodiversity conservation, and ecosystem management
13. Formulate data-driven strategies and policies for accelerated SDG achievement through geospatial insights.

Organizational Benefits

- Improve the accuracy, efficiency, and visual appeal of SDG progress reports using advanced mapping and visualization.
- Make informed decisions on resource distribution and project implementation based on spatial analysis of needs and impact.

- Identify critical intervention areas, track program performance, and assess the spatial reach of development initiatives.
- Provide robust geospatial evidence to inform and strengthen national and local policies for sustainable development.
- Foster greater transparency in development efforts by visualizing and sharing progress with stakeholders and the public.
- Develop an in-house team with specialized skills in GIS for sustainable development, reducing reliance on external consultants.
- Facilitate better integration of data and initiatives across different sectors and ministries working on SDGs.
- Utilize GIS for proactive identification of vulnerabilities and potential risks related to environmental changes or socio-economic shifts.

Target Audience

1. Development Professionals and Project Managers.
2. Government Officials and Policy Makers.
3. Researchers and Academics.
4. Monitoring and Evaluation (M&E) Specialists.
5. Data Analysts and Statisticians.
6. UN Agency Staff and Bilateral/Multilateral Development Agency Personnel.
7. GIS Practitioners.
8. Consultants.

Course Outline

Module 1: Introduction to GIS and the SDGs Framework

- Understanding the **SDGs: A Global Imperative**.
- Introduction to **Geographic Information Systems (GIS)**: Concepts and Components.
- The **Role of Location Intelligence** in Achieving Agenda 2030.
- Overview of **Geospatial Data Sources** for SDG Monitoring.
- **Case Study:** Mapping global progress on SDG 1 and identifying data gaps.

Module 2: GIS Software Fundamentals

- **QGIS Interface and Basic Operations**: Navigating, Data Loading, and Symbology.
- **Vector Data Management**: Points, Lines, Polygons.
- **Raster Data Handling**: Imagery, DEMs, and Grids.
- **Coordinate Systems and Projections**: Ensuring Spatial Accuracy.
- **Case Study:** Visualizing national infrastructure development (SDG 9) using open-source road network data.

Module 3: Spatial Data Acquisition and Management for SDGs

- **Field Data Collection with GPS and Mobile GIS Apps**.
- **Data Cleaning, Validation, and Georeferencing**.
- Integrating **Census Data, Survey Data, and Administrative Boundaries**.
- Introduction to **Geodatabases and Data Models** for SDG Indicators.
- **Case Study:** Collecting and mapping household-level data for access to clean water and sanitation (SDG 6) in rural communities.

Module 4: Remote Sensing for Environmental SDG Monitoring

- **Principles of Remote Sensing**: Satellite Imagery and Aerial Photography.
- **Image Interpretation and Classification** for Land Cover/Use Mapping.
- **Normalized Difference Vegetation Index (NDVI)** for Agricultural Monitoring.
- Monitoring **Deforestation and Forest Degradation** (SDG 15) using satellite data.
- **Case Study:** Assessing changes in forest cover to monitor progress on SDG 15.1.1

Module 5: Advanced Spatial Analysis for SDG Insights

- **Geoprocessing Tools**: Buffer, Overlay, Clip, Intersect.
- **Spatial Join and Attribute Joins**: Combining Diverse Datasets.
- **Density Analysis and Hotspot Mapping** of Socio-Economic Issues.
- **Network Analysis**: Accessibility to Services (Healthcare, Education).
- **Case Study:** Identifying spatial disparities in access to primary healthcare facilities (SDG 3) in urban areas.

Module 6: GIS for Poverty and Inequality

- **Poverty Mapping Techniques**: Combining Geospatial and Statistical Data.
- Analyzing **Spatial Patterns of Income Inequality**.
- Mapping **Vulnerable Populations and Disadvantaged Areas**.
- Assessing **Access to Basic Services** for the Poor.
- **Case Study:** Developing a multi-criteria poverty index map for a sub-national region to inform targeted interventions.

Module 7: GIS for Food Security and Sustainable Agriculture

- Mapping **Agricultural Land Use and Crop Yields**.
- Analyzing **Food Deserts and Food Accessibility**.
- Monitoring **Drought and Water Scarcity Impacts** on Agriculture.
- Assessing the **Spatial Distribution of Smallholder Farmers**.
- **Case Study:** Identifying areas prone to food insecurity using climate data, land use, and population density for early warning.

Module 8: GIS for Health and Well-being

- Mapping **Disease Incidence and Health Hotspots**.
- Analyzing **Access to Healthcare Facilities and Services**.
- Geospatial Approaches to **Epidemic Preparedness and Response**.
- Visualizing **Environmental Health Risks**
- **Case Study:** Mapping the spatial distribution of malaria cases and health clinic locations to optimize intervention strategies.

Module 9: GIS for Education and Gender Equality

- Mapping **School Locations and Enrollment Rates**.
- Analyzing **Access to Quality Education** based on Distance.
- Geospatial Assessment of **Gender Disparities in Education and Resource Access**.
- Identifying **Areas of High Gender-Based Violence Risk**.
- **Case Study:** Analyzing the spatial accessibility of schools for girls in rural areas to identify barriers to education.

Module 10: GIS for Water and Sanitation

- Mapping **Water Resources and Water Quality**.
- Analyzing **Access to Improved Water Sources and Sanitation Facilities**.

- Monitoring **Water Stress and Scarcity**.
- Identifying **Areas Vulnerable to Waterborne Diseases**.
- **Case Study:** Assessing the spatial distribution of safely managed drinking water services and identifying underserved populations.

Module 11: GIS for Sustainable Cities and Infrastructure

- **Urban Growth Monitoring and Land Use Change Detection**.
- **Green Infrastructure Planning and Urban Greening**.
- Analyzing **Transportation Networks and Public Transit Accessibility**.
- **Slum Mapping and Informal Settlement Upgrading**.
- **Case Study:** Using GIS to plan new public transportation routes to improve accessibility for low-income residents in a growing city.

Module 12: GIS for Climate Action and Disaster Risk Reduction

- Mapping **Climate Vulnerability and Hazard Zones**.
- Analyzing **Exposure and Sensitivity to Climate Impacts**.
- GIS for **Disaster Response and Damage Assessment**.
- Developing **Early Warning Systems** using Geospatial Data.
- **Case Study:** Identifying areas at high risk of flooding and planning evacuation routes in a coastal city.

Module 13: GIS for Life Below Water and On Land

- Mapping **Marine Protected Areas and Coastal Ecosystems**.
- Analyzing **Ocean Pollution and Marine Biodiversity Hotspots**.
- GIS for **Wildlife Habitat Conservation and Protected Area Management**.
- Monitoring **Land Degradation and Desertification**.
- **Case Study:** Tracking illegal fishing activities and mapping coral reef health in a marine conservation area.

Module 14: Data Visualization and Geospatial Storytelling

- **Cartographic Principles** for Effective Map Design.
- Creating **Interactive Web Maps and Dashboards**
- **Geospatial Story Mapping**: Communicating Complex SDG Narratives.
- **Infographics and Data Narratives** for Policy Briefs.
- **Case Study:** Developing an interactive story map showcasing a community's progress towards specific SDGs, highlighting challenges and successes.

Module 15: GIS for SDG Reporting, Policy, and Future Trends

- Aligning GIS Outputs with **National SDG Reporting Frameworks**.
- **Integrating Geospatial Information into Policy Formulation**.
- Exploring **Advanced GIS Technologies**: AI, Machine Learning, Big Data for SDGs.
- **Ethical Considerations** in Geospatial Data for Development.
- **Case Study:** Presenting a comprehensive geospatial assessment of a country's SDG progress to national planning authorities.

Training Methodology

This training course employs a **blended learning approach**, combining:

- **Interactive Lectures:** Theoretical foundations and conceptual understanding of GIS and SDGs.

- **Hands-on Practical Exercises:** Extensive use of industry-standard (ArcGIS Pro) and open-source (QGIS) GIS software for real-world application.
- **Case Study Analysis:** In-depth examination of successful GIS implementations for SDG monitoring from various regions and sectors.
- **Group Discussions and Collaborative Problem-Solving:** Fostering peer learning and critical thinking.
- **Demonstrations:** Live demonstrations of complex GIS workflows and advanced functionalities.
- **Individual and Group Projects:** Applying acquired skills to a self-selected SDG monitoring challenge.
- **Q&A Sessions:**Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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