esri

THE SCIENCE OF WHERE®

GIS and the Sustainable Development Goals

Esri's GIS (geographic information system) technology plays a strategic role in collecting, managing, and sharing SDG data.

The United Nations (UN) Sustainable Development Goals (SDGs) are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, and peace and justice.

What's Inside

A Geographic Approach for a Sustainable Future

Hear from Esri president Jack Dangermond about the role geography plays in sustainable development and the SDGs: [Devex World 2020: Applying the "Science of Where" to the SDG Agenda]

A Geographic Approach for a Sustainable Future

Our world is a highly complex and interdependent ecosystem. And it's being challenged in many ways—from climate change, pollution, and the decline in biodiversity to racial injustice, unconstrained development, and social conflict.

Creating a sustainable future will require us to dramatically change our priorities, develop a deeper understanding of our world, and see the world as one single ecosystem with all its interconnections. Geography provides the science and the language to do this. A geographic approach organizes and integrates all the factors about our social, economic, and environmental systems in a holistic way that illuminates patterns and relationships. It's a way of thinking and problem-solving that provides an integrative framework for understanding and managing our world.

Esri's ArcGIS and the SDGs

Connecting Society, Environment, and the Economy with Geography

Esri® ArcGIS® technology is integrative, bringing together information about what happens in the world, where it happens, and who is affected into a single, unified view. ArcGIS plays a fundamental role in creating and sharing SDG data and informing policy formulation and decision-making around sustainable development programs and investments.

Collect and Calculate Data

Esri has developed tools to collect data on the SDGs, allowing national and local governments, local NGOs (nongovernmental organizations), and others to collect data on the ground in a scalable way. These mobile data-capture and field-mobility applications, coupled with calculation and analytic capabilities, support data indicator quality.

Share SDG Data

Facilitate the free flow of information between policy makers and other SDG partners. Esri's collaboration capabilities allow SDG stakeholders—including local, national, and global policy makers—to freely share information. GIS information is connected and integrated across networks so that stakeholders can organize and share content between individuals, businesses, and communities.

Analyze and Plan Programs

Location is a powerful lens for examining and understanding data indicators. ArcGIS lets users visualize, quantify, analyze, and report on these indicators. Decision-makers can apply these capabilities to plan sustainable development efforts and allocate resources to have the greatest possible impact.

Monitor Change and Impact

By organizing data and tools around relevant targets, goals, and supporting initiatives, stakeholders gain greater insight into the performance of their SDGs. They can measure ongoing program impact to ensure that current community needs are met in an equitable fashion, and proactively identify new needs with spatial analysis of local conditions.

Engage Stakeholders

Advocate for your cause, demonstrate SDG progress, and tell the stories of communities impacted by the SDGs with GIS. Multimedia storytelling, collaboration, and field data collection tools inspire and mobilize stakeholders, and foster grassroots community engagement.

ArcGIS and the SDGs in Action

The SDGs and Agenda 2030 Are Part of the Esri DNA

Esri works to enable people to make a positive impact and difference in the world with GIS. We are partnering with the UN, national governments, foundations, and authoritative data producers to establish alliances and develop SDG data hubs, information dashboards, and other data products to support the progress of the SDGs.

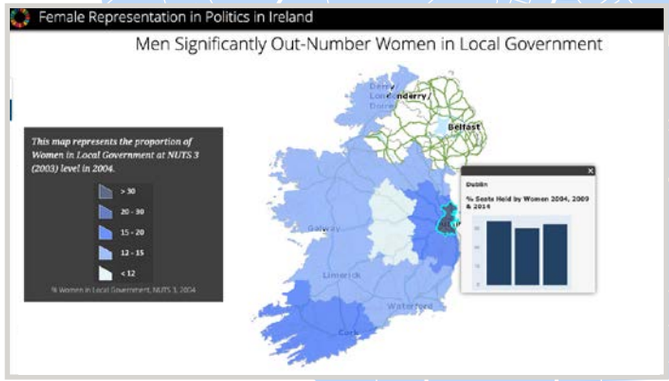
The Open SDG Data Hub

An example of this collaboration is the Open SDG Data Hub. To fully implement and monitor progress on the SDGs, decision-makers everywhere need data and statistics that are accurate, timely, sufficiently disaggregated, relevant, accessible, and easy to use. The Open SDG Data Hub helps advance the SDGs by making data and statistics available to everyone. It promotes the exploration, analysis, and use of authoritative SDG data sources for evidence-based decision-making and advocacy. Indicator data is readily available as geospatial data web services, suitable for the production of maps and other data visualizations and analyses, and easy to download in multiple formats.

Country Examples

SDG Open Data Hub: Ireland

Ireland's SDG data hub is a collaboration platform for reporting on progress toward the SDGs and sharing information on related initiatives. Ireland's progress toward each goal is measured using a set of targets and indicators agreed upon by the UN and the European Union (EU).



This app shows female representation in politics in Ireland.

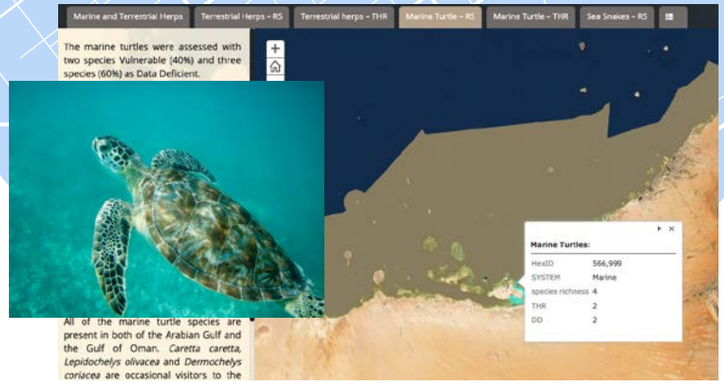
This story was created using the ArcGIS StoryMaps℠ app and showcases unemployment trends.

This app examines the quality of Ireland's rivers.

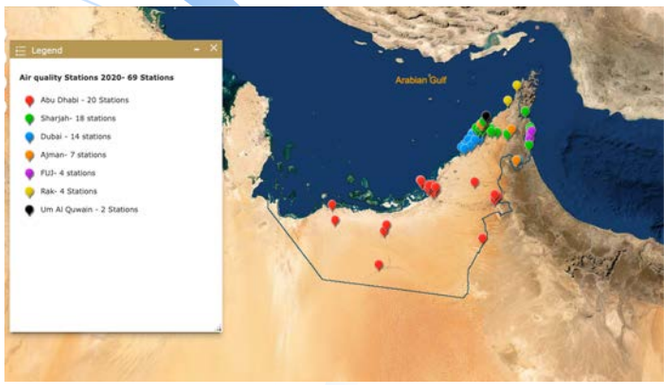
Country Examples

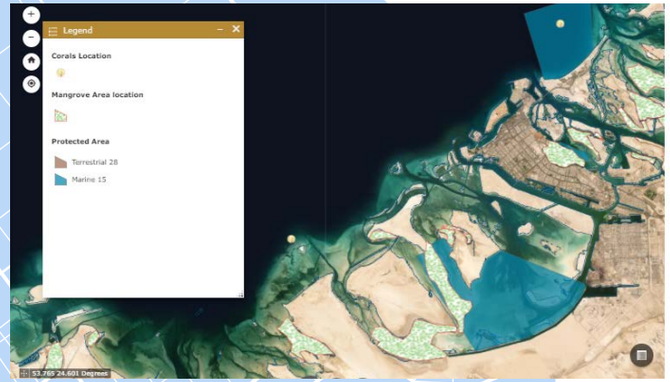
Open SDG Data Hub: United Arab Emirates

The UAE SDG Data Hub serves the purpose of tracking, monitoring, and reporting progress toward the implementation of the SDGs.



The Sustainable Wildlife Initiative of the UAE aims to ensure the sustainability of wildlife in the country and raise the public's awareness on biodiversity-related issues as well as contributions toward the achievement of international targets such as the SDGs. The initiative includes the Red List Index, which provides information on endangered animals.





From left to right, these maps show air quality, waste management, and rehabilitation of coastal and marine habitat in the UAE.

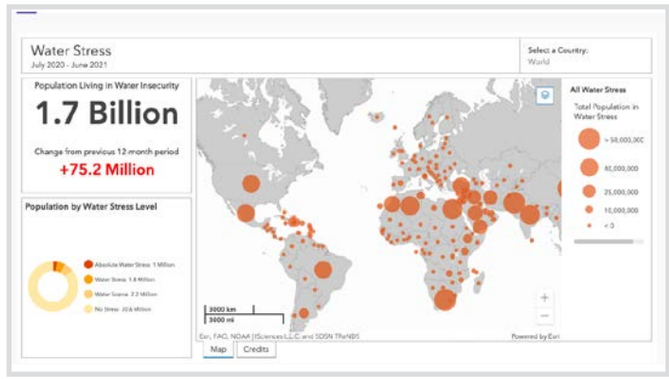
SDGs Today

SDGs Today—launched by UN Sustainable Development Solutions Network (SDSN) in collaboration with Esri and the National Geographic Society—aims to advance the production and use of real-time and georeferenced data for the SDGs with data, education, and training resources. The hub site encourages countries, institutions, and civil society members to produce, share, and engage with the data to help ensure that the global goals are met by 2030.

> "I spend day and night on [the Sustainable Development Goals] because I regard them as really our only handhold on this steep incline that we're on. Why? Because if we don't have shared goals, how are we going conceivably to work together to change in a way that we absolutely need to change?"
>
> –Jeffrey Sachs,
> President of UN Sustainable Development Solutions Network, UN SDG Advocate, and Director of the Center for Sustainable Development at Columbia University

Hear the conversation between Jack Dangermond and Jeffrey Sachs on global sustainability: SDSN—A Conversation on Global Sustainability

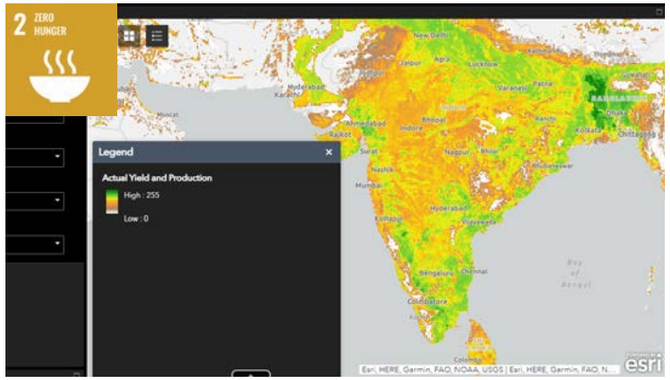
The Igarapé Institute provides an overview of the ways in which environmental crime threatens the Amazon region's forests and biodiversity. This story displays environmental crimes such as illegal gold mining along the Amazon.



This app, developed by iSciences and UN Sustainable Development Solutions Network Thematic Research Network on Data and Statistics (TReNDS), shows the populations living in areas of water insecurity. The Falkenmark Water Stress Index is a widely used metric to characterize water stress based on annual renewable water supply per capita.

Coral reefs are among the most diverse and ecologically important areas in the world, but many are threatened by rising ocean temperatures, which causes bleaching. In response to concerns about coral reef bleaching and to enhance coral reef resilience, the National Oceanic and Atmospheric Administration (NOAA) established the Coral Reef Watch (CRW) program in 2000. CRW has utilized remotely sensed, modeled, and in situ data to observe, predict, and report on the coral reef environment worldwide on a daily basis.

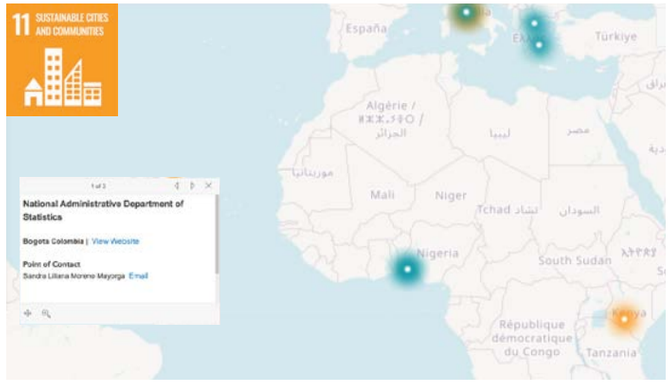
Examples of Specific Goals



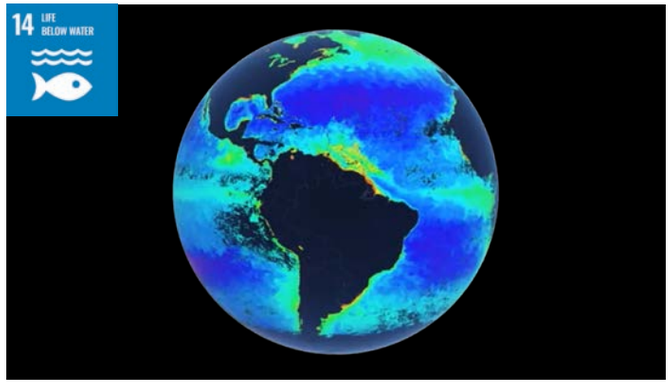
The Global Agro-Ecological Zones modeling framework and database, developed by the Food and Agriculture Organization (FAO) of the United Nations and the International Institute for Applied Systems Analysis (IIASA), assesses natural resources for finding suitable agricultural land utilization options.

The World's Women 2020 Trends and Statistics report uses an open hub site, created using ArcGIS Hub℠, to publish data, stories, and maps.

The Aloha+ Challenge is a statewide public-private commitment to achieve Hawaii's social, economic, and environmental goals by 2030. Launched in 2014, the Aloha+ Challenge identified six priority goals and local metrics that support the global SDGs. The Aloha+ Dashboard provides visibility into statewide progress and benchmark data on the Aloha+ SDGs and Hawaii's contribution to the global goals.



The Earth Observations Toolkit for Sustainable Cities and Human Settlements enables the use of earth observations to advance Sustainable Development Goal 11 and the UN's New Urban Agenda.



The collaboration between UN Environment Programme, GEO Blue Planet, NOAA, and Esri supports SDG 14.1 with a GIS methodology that employs satellite data to measure eutrophication using chlorophyll a. The information products coming from this collaboration help countries understand how much pollution is moving from land to ocean and thus guide policy making. The pictured animation shows global monthly chlorophyll a concentrations.

The GIS Community

A Geospatial Infrastructure

Geographic information system technology has evolved into a comprehensive global platform containing information coming from virtually every GIS organization worldwide. Currently, there are over 350,000 GIS organizations worldwide that support tens of millions of users applying GIS across all fields of human endeavor.

In the past decade, GIS has been transformed. Around 2010, cloud computing came online, and in recent years it has matured into a transformational Web GIS pattern. With cloud computing, if you know the web address (URL) of a layer of information (and the owner of that information has agreed to share it), you can readily add that layer to your own map and even into your own analysis simply by referencing each layer's URL.

Today, these GIS users have collectively assembled over 46 million information items for the planet—interactive maps, apps, data tables, information layers, and analytical models as well as items that implement machine learning and artificial intelligence. These items are referenced and held in a comprehensive, community-based GIS for the planet—ArcGIS Online—for which people everywhere have information access in the cloud.

SDG Resources

Esri and the SDGs

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Learn more about how Esri supports the SDGs.

Open SDG Data Hub

The Open SDG Data Hub helps advance the SDGs by making data and statistics available to decision-makers everywhere.

SDG Data Alliance—A Partnership to Support the Sustainable Development Goals and Reduce Inequalities

United Nations Global Geospatial Information Management (UN-GGIM), Esri, PVBLIC Foundation, and W.K. Kellogg Foundation are working to create an open, community-driven partnership to advance the Sustainable Development Goals. The SDG Data Alliance will provide expertise, technology, and financial support to countries for geospatial planning and SDG monitoring and reporting with a focus on reducing inequalities within and among nations.

Global Fundamental Geospatial Data Themes

Get an overview of the geospatial themes that are fundamental to the understanding of mapping and how mapping supports the SDGs.

What Is Your SDG Story?

Access resources to create an SDG story using the ArcGIS StoryMaps app. Access data, examples, and learn lessons for the 17 SDGs.

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