Effective partnerships towards realizing the data ecosystem for sustainable development

Charles Brigham
cbrigham@esri.com

Session #5 “Towards nationally integrated geospatial information management”

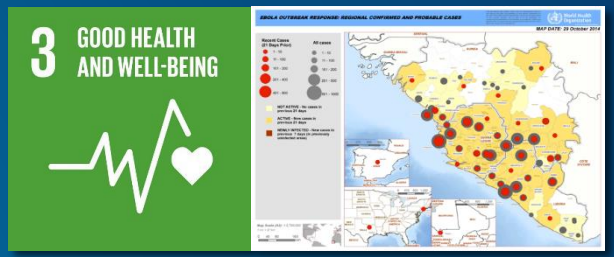
esri | THE SCIENCE OF WHERE™

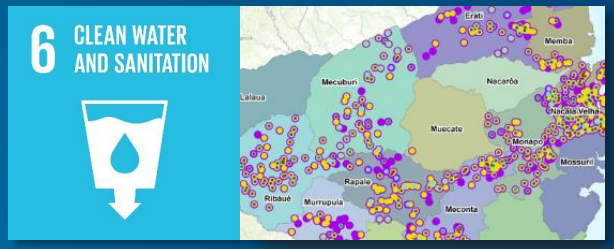
Vision

GIS

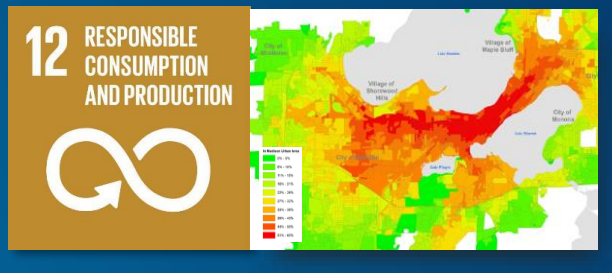
Is Enabling a
Sustainable World

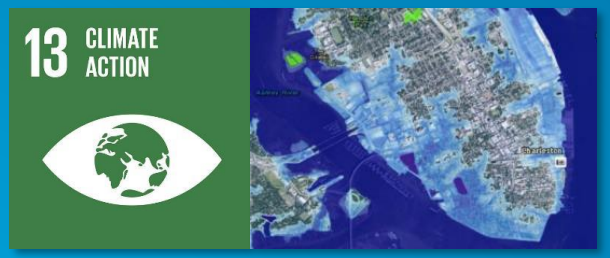
GIS in Action





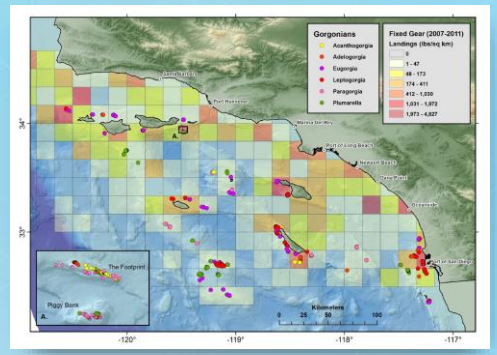
GIS in Action





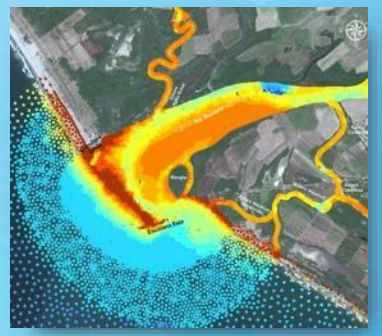
14 LIFE BELOW WATER

Coral Habitats and Fishing Density



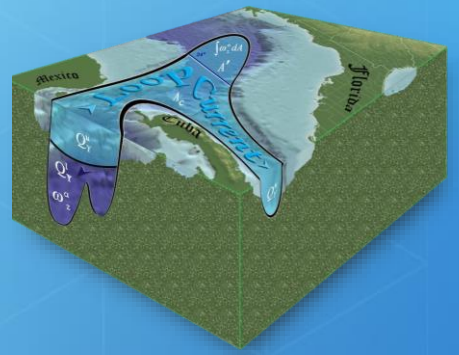
Southern California

River Discharge, Pollution Outflow



Mexico

Marine Debris Tracking



Gulf of Mexico, Loop Current

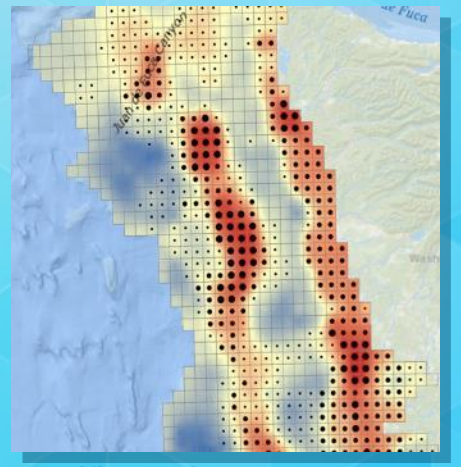
Coral Reef Monitoring

Martinique

Sea Level Rise

South Carolina

Tsunami Inundation Modeling



Pacific Northwest

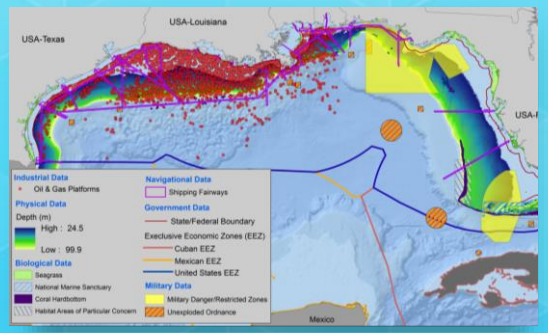
Biodiversity

Philippines

Reef Health

Cook Islands

Siting Offshore Aquaculture



Gulf of Mexico

Marine Reserve Planning

Australia

The Sustainable Development Goals

About English

Goal 03: Good Health and Well-being

Ensure healthy lives and promote well-be

SDG 3 | 3.3 | Thailand

3.3 By 2030, end the epidemics of AIDS, tu
tropical diseases and combat hepatitis,
communicable diseases.

3.3.1 Number of HIV Cases

Total Cases (latest yr. avail)

1,474

The Sustainable Development Goals

About English

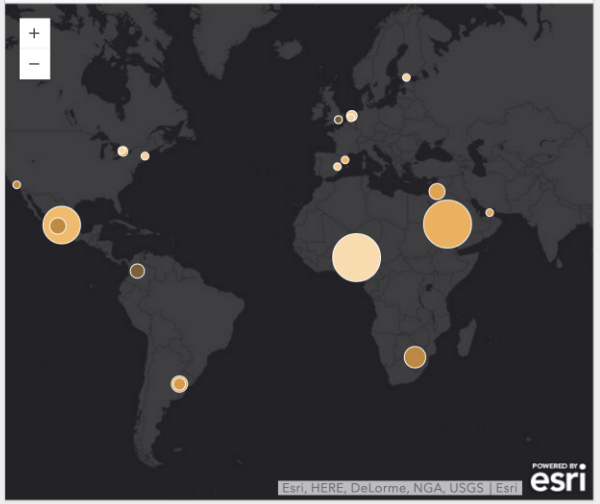
Goal 11: Sustainable Cities & Communities

Make cities and human settlements inclusive, safe, resilient and sustainable

SDG 11 | 11.1 | Global Progress | Global

11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.

11.1.1 Population Living in Slums (size) vs Total City Population (color)



Average Fine Partic. Matter (PM2.5) Concentration

20.9 %

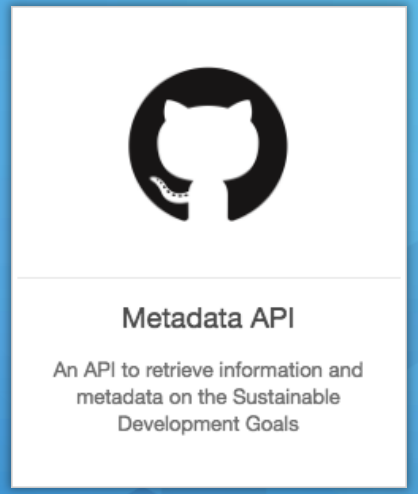
Average Public Outdoor Recreation Space

19.8 m²/capita

The Sustainable Development Goals

About English

4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
16 PEACE AND JUSTICE STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
THE GLOBAL GOALS
For Sustainable Development



/goals

parameter	type	description	example
`none`	`null`	retrives a list of all the goals	
`ids`	`Array <String>`	comma separated list of goal ids to filter by	1, 2, 3, 4
`targets`	`Boolean`	returns the associated targets for each goal	true
`indicators`	`Boolean`	returns the associated indicators for each goal or target	true
`includeMetadata`	`Boolean`	returns detailed metadata where available, for each indicator	true

example

request

`http://localhost:3000/goals?ids=5,12&targets=true&indicators=true&includeMetadata=true`

response


```
{
  "data": [
    {
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      "title": "Achieve gender equality and empower all women and girls",
      "short": "Gender Equality",
      "colorInfo": {
        "hex": "#ff3a21",
        "rgb": [
          255,
          58,
          33
        ]
      },
      "targets": [
        {
          "id": "5.1",
          "title": "End all forms of discrimination against all women and girls everywhere.",
          "goal": 5,
          "indicators": [
            {
              "target_id": "5.1",
              "has_metadata": true,
              "goal": 5,
              "goal_meta_link": "http://unstats.un.org/sdgs/files/metadata-compilation/Metadata-Goal-5.pdf
```

```
{
  "data": [
    {
      "id": "SI_POV_DAY1",
      "type": "series",
      "attributes": {
        "description": "Proportion of population below the international poverty line of US$1.90 per da
        "indicator_id": "1.1.1",
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        "show": true
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    },
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        "target_id": "1.1",
        "goal_id": "1",
        "isOfficial": true,
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    },
    {
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        "description": "Proportion of population covered by social assistance, social insurance and lab
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        "target_id": "1.3",
        "goal_id": "1",
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        "show": true
```
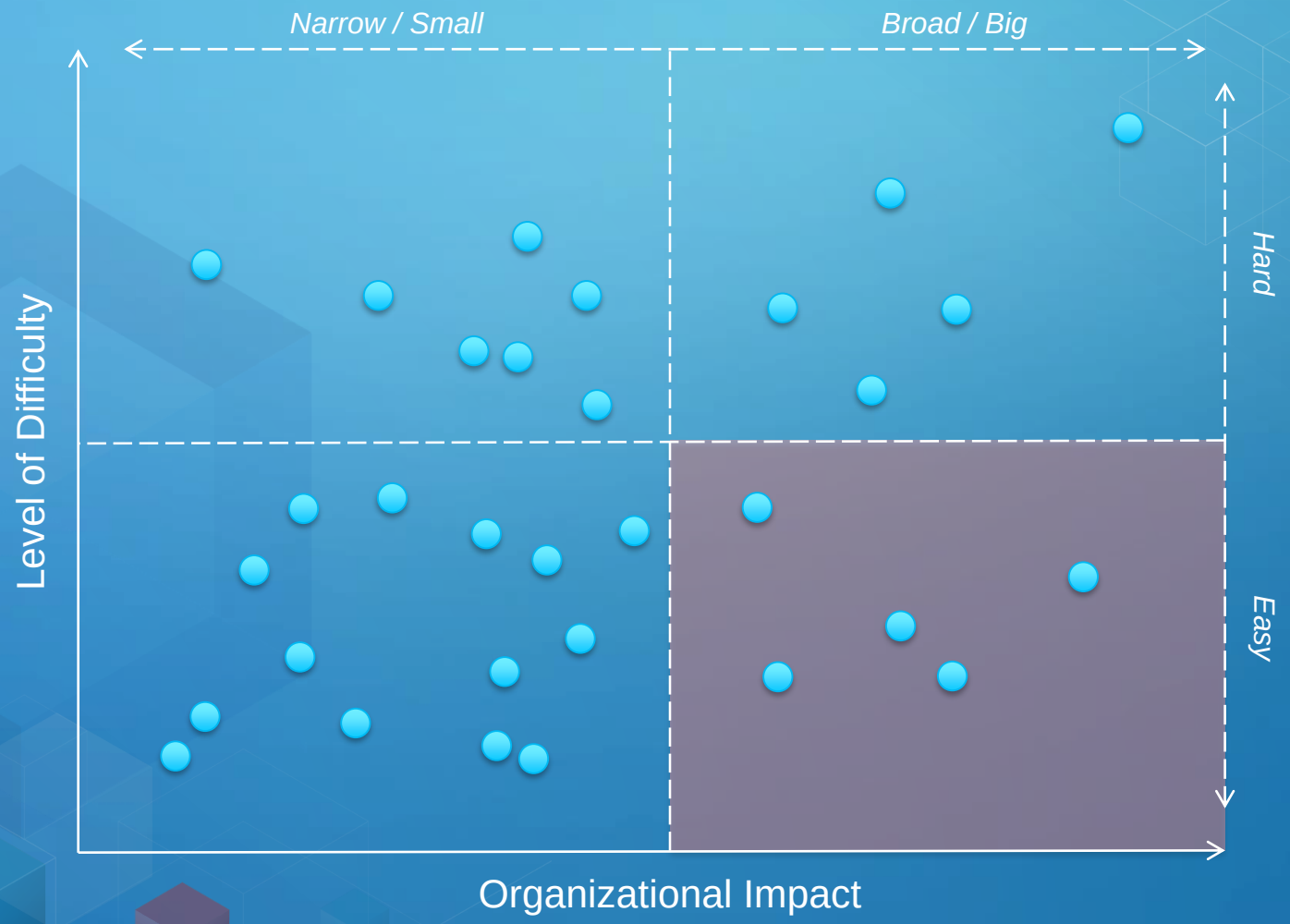

Is This Sustainable?

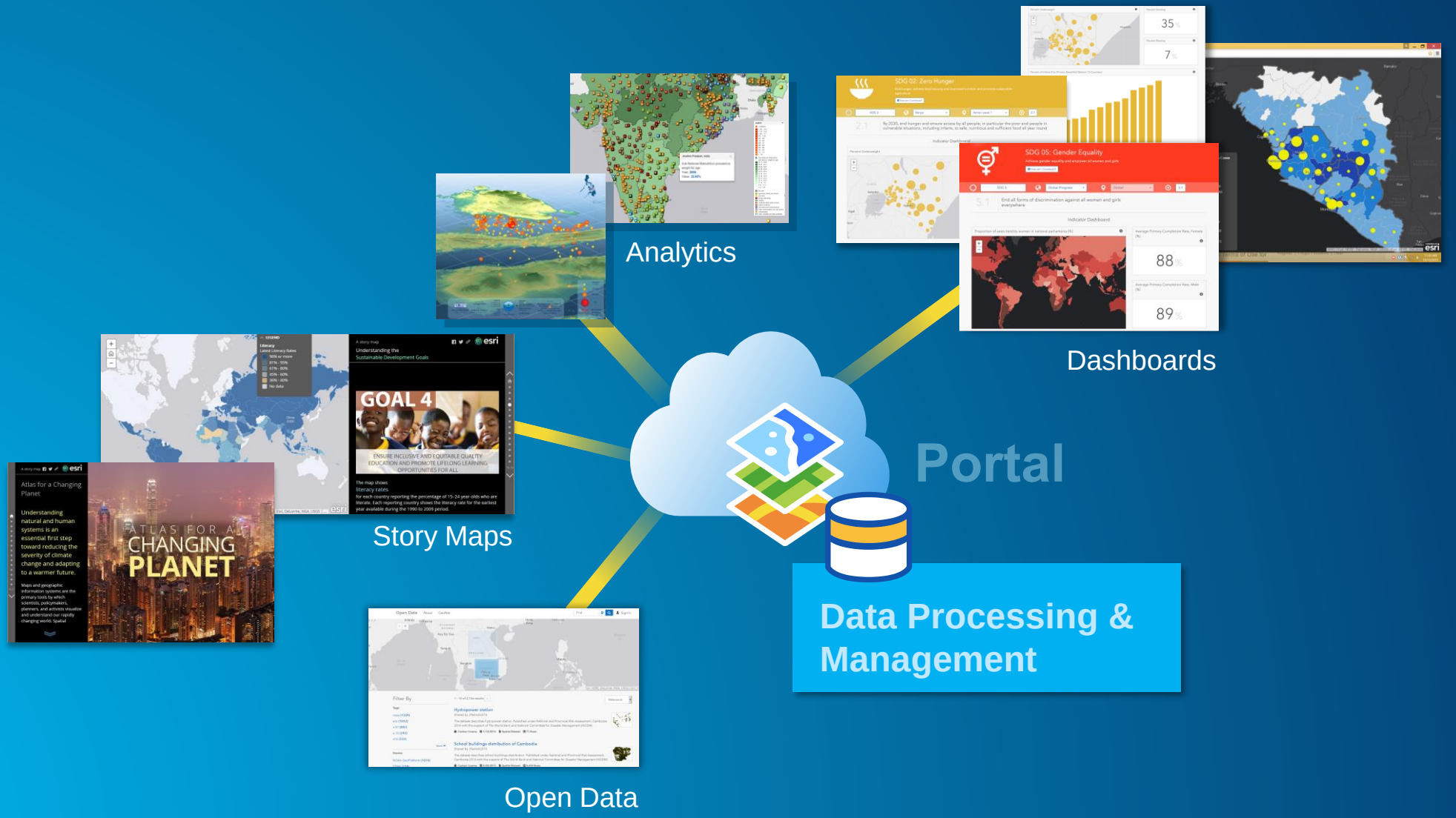
Avoid Zombie Visualizations

- **Keep Focus On:**
  - **Organizational Impact**
  - **Level of Difficulty**
  - **Single purpose**
  - **Timely**
  - **Sustainable**
  - **Adaptable**
  - **Easy**

Level of Difficulty



Configure vs Customize



A Focus on Integrating Geography

To understand our society, economy and environment

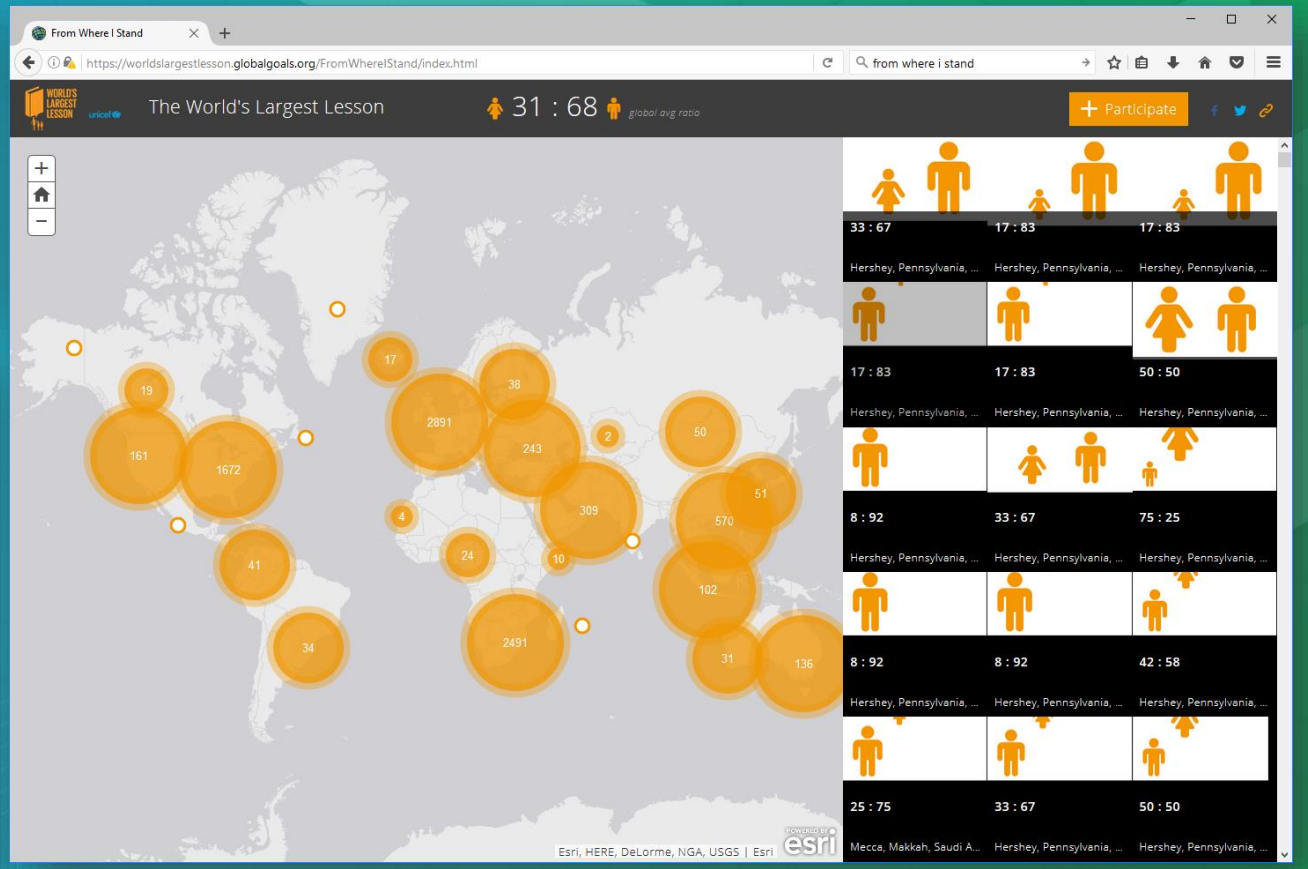
Learning by Doing

WORLD'S LARGEST LESSON

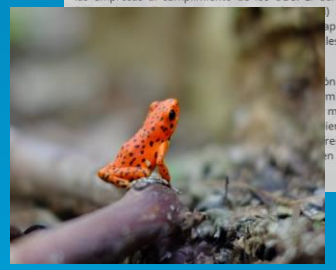
Partner: unicef

THE GLOBAL GOALS For Sustainable Development

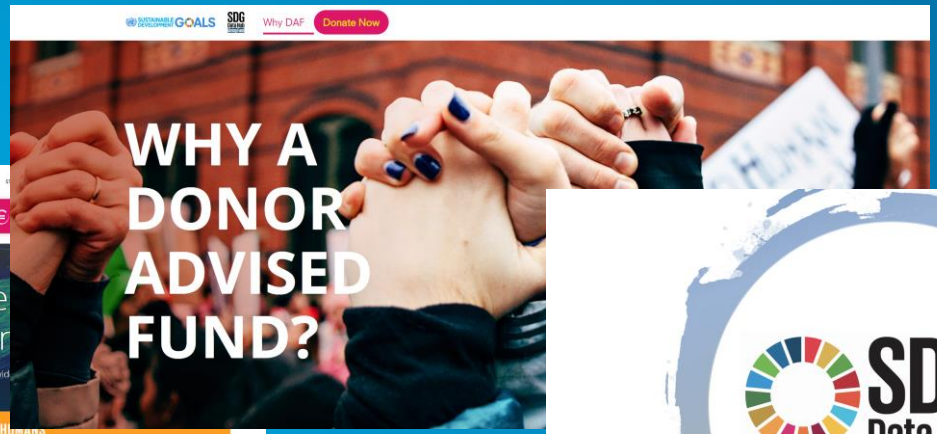
FOCUS ON GOAL 5 : A GENDER EQUALITY PROJECT FOR 2016



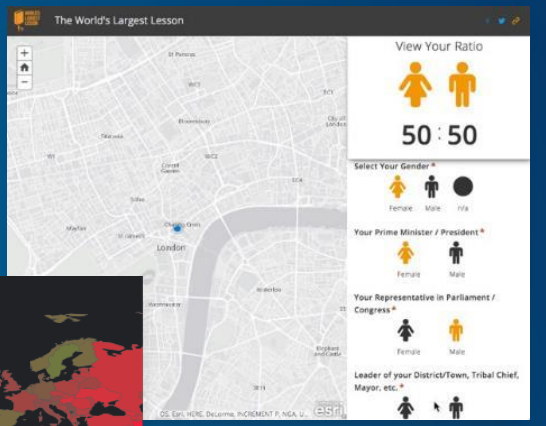
Public

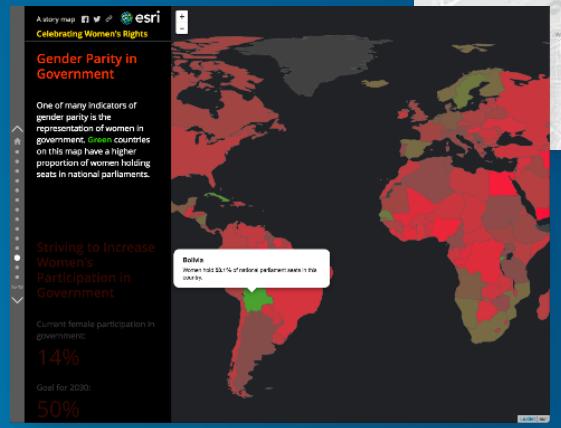


Private Sector



Stories





Learn ArcGIS Lesson Gallery Teach with GIS

Sign In English

Gallery / **Lessons**

Monitor Malaria Epidemics

Calculate Sustainable Development Goal #3.3.3: Malaria Incidence per 1,000 People. 1 hour 40 minutes

View final result | Start lesson

Learn ArcGIS Lesson Gallery Teach with GIS

Sign In English

Gallery / **Paths**

Solve Problems for Sustainable Development Goals

Use Sustainable Development Goals (SDG) and other Living Atlas data to solve real-world problems.

the Congo

Nations

ncidence

ria Atlas

Builds skills in

Data Collection & Management | Mapping & Visualization | Spatial Analytics

The Sustainable Development Goals

These 17 goals set out to end poverty, protect the planet, and ensure prosperity for all.

15 min

Story map

1

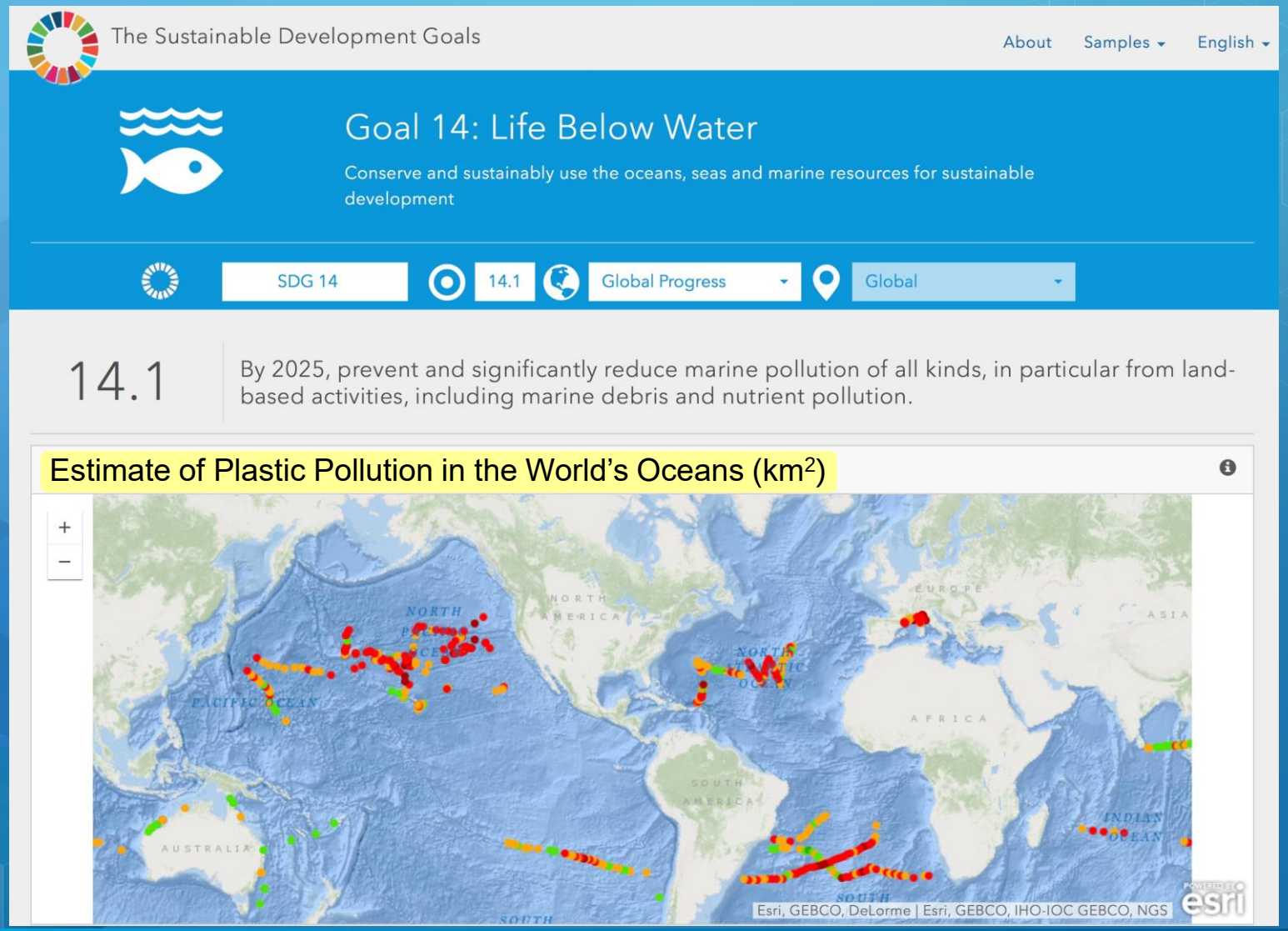
Measuring Global Hunger

Use United Nations Sustainable Development Goal data to compare hunger in the forms of

2 ZERO HUNGER

Sustainable Development Goal 14

Conserve and sustainably use the oceans, seas, and marine resources

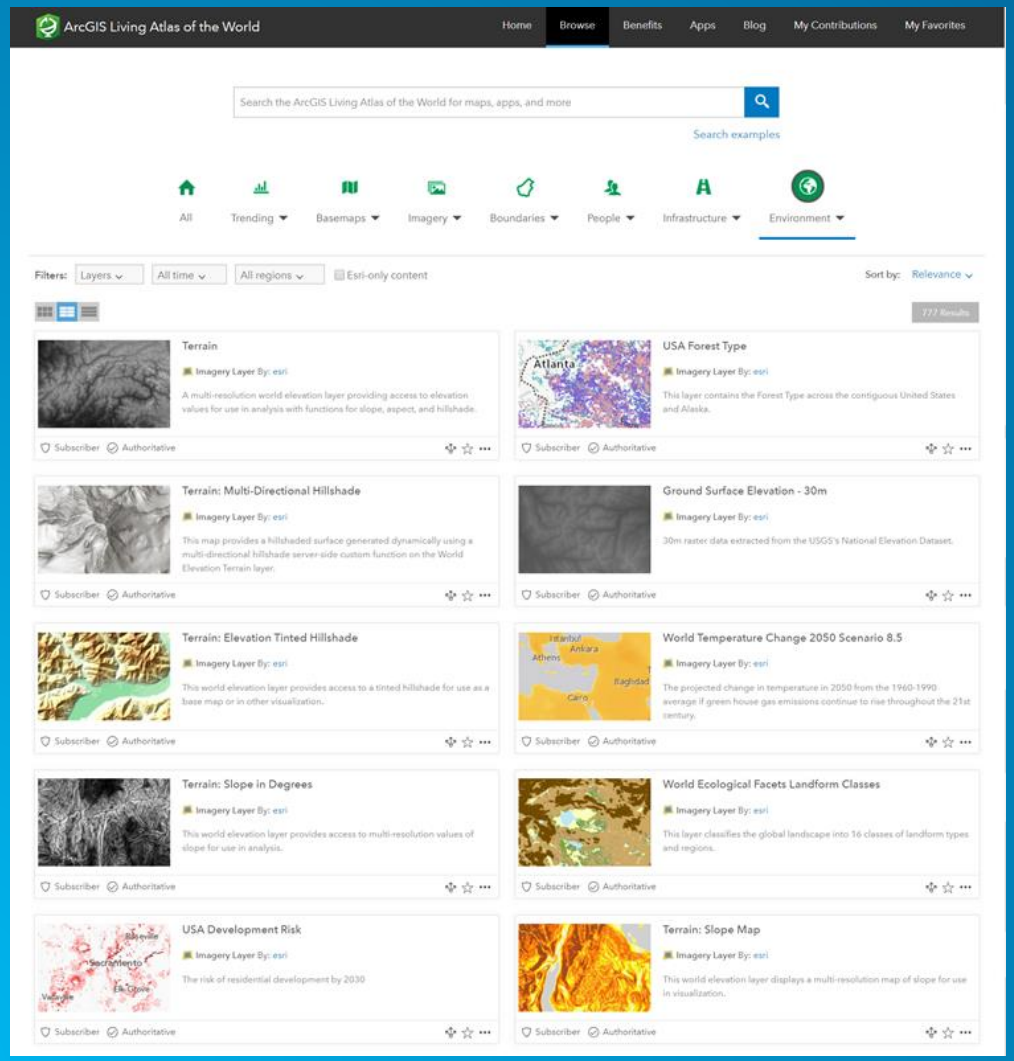


How is this done?

Components of a Geospatial Infrastructure

- A Purpose
- Collections of individual datasets from multiple organizations
- Compiled into Maps and Apps
- Organized into Catalogs (Portals)
- Shared with a Community of interested Participants and Citizens
  - Identity
  - Access Rules
  - Roles
  - Public Access

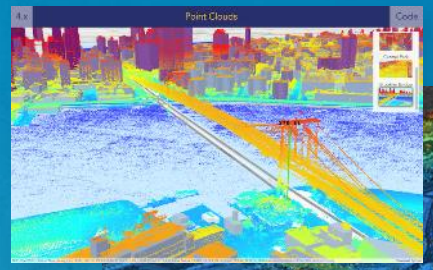
Collections of layers and datasets from multiple organizations

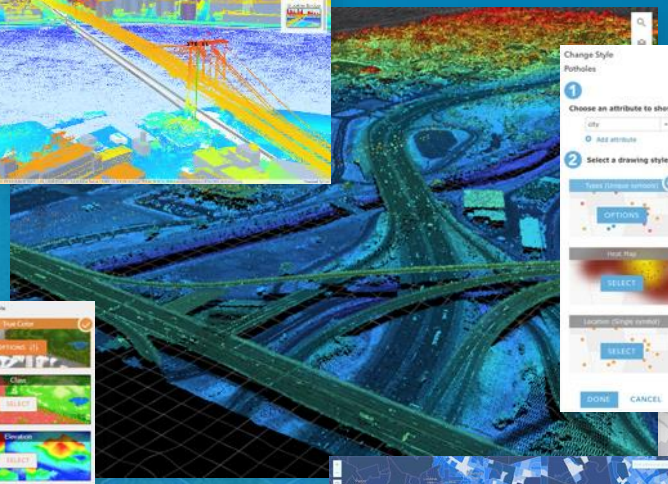


Environment, People, Imagery, Base Maps,

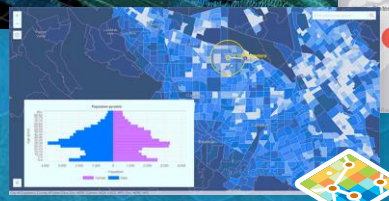
Boundaries, Infrastructure, Historical Maps,

Maps and Apps



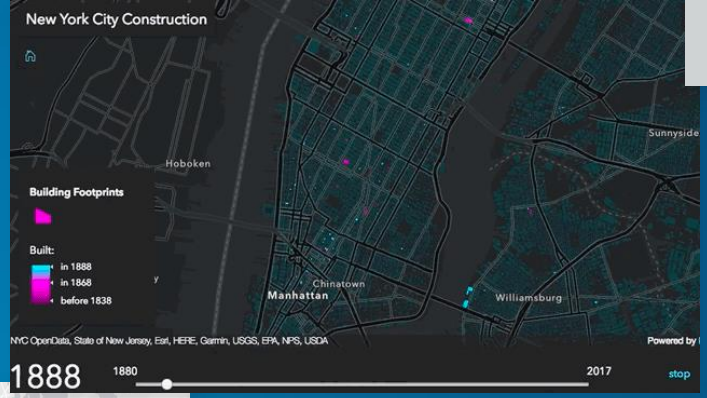


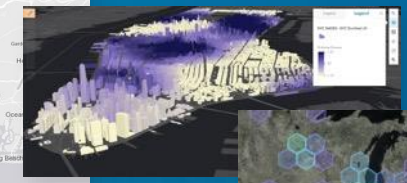
Smart 3D



Vector Feature Tiles

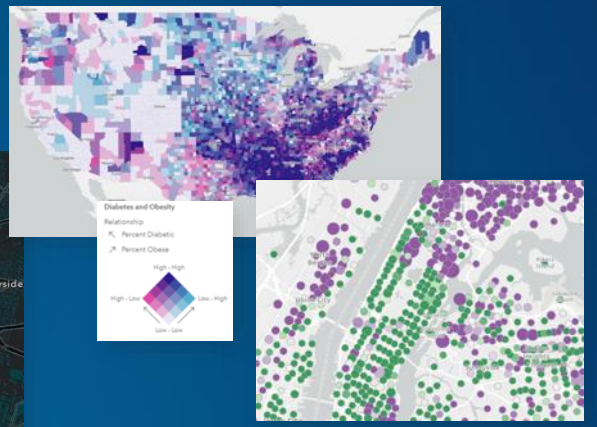
Dynamic Clustering



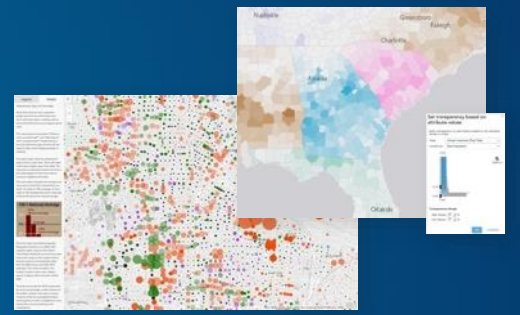


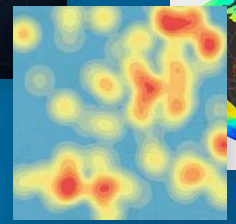
Thematic

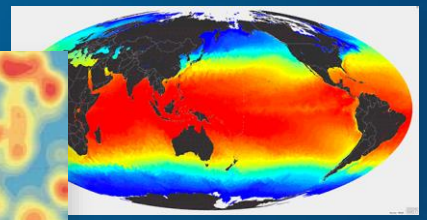
Firefly Style



Fast Performance WebGL







Time

Dynamic and Data-Driven Mapping

Apps that brings maps to life for interested users

Workforce

Navigator

Explorer

Collector

Survey123

Smart Forms

Tracker

Digital Map Book

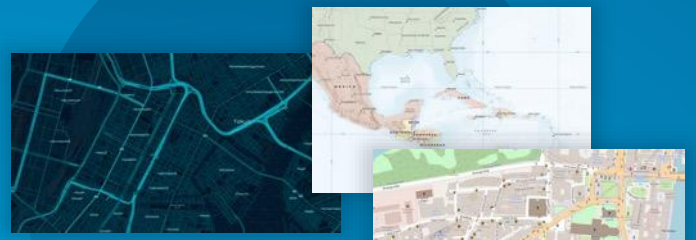
- Collecting Data
- Coordinating Work
- Navigation
- Mapping & Markup
- Tracking

Connected and Disconnected

Real-Time Dashboard

Organized into a Shared Catalog – A Portal

Basemaps



Nova

Watercolor

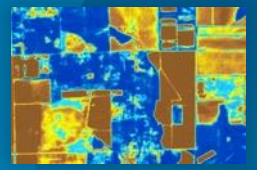
OpenStreetMap

Terrain

Antique

Imagery

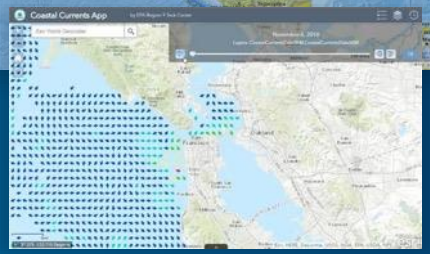
NDVI – Sentinel-2



GEOS-S & Radar

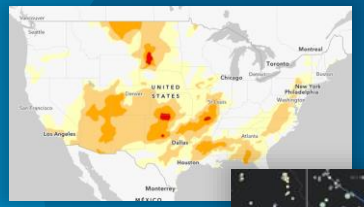
DigitalGlobe

Red Cross

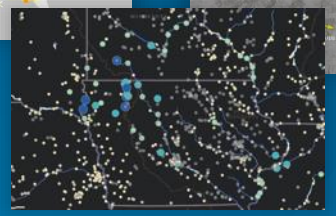


EPA

Real-Time Observations



Drought Monitor



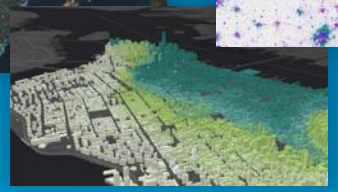
Wildfire and Wind

Stream Gauges

Demographics & Geoenrichment

Income

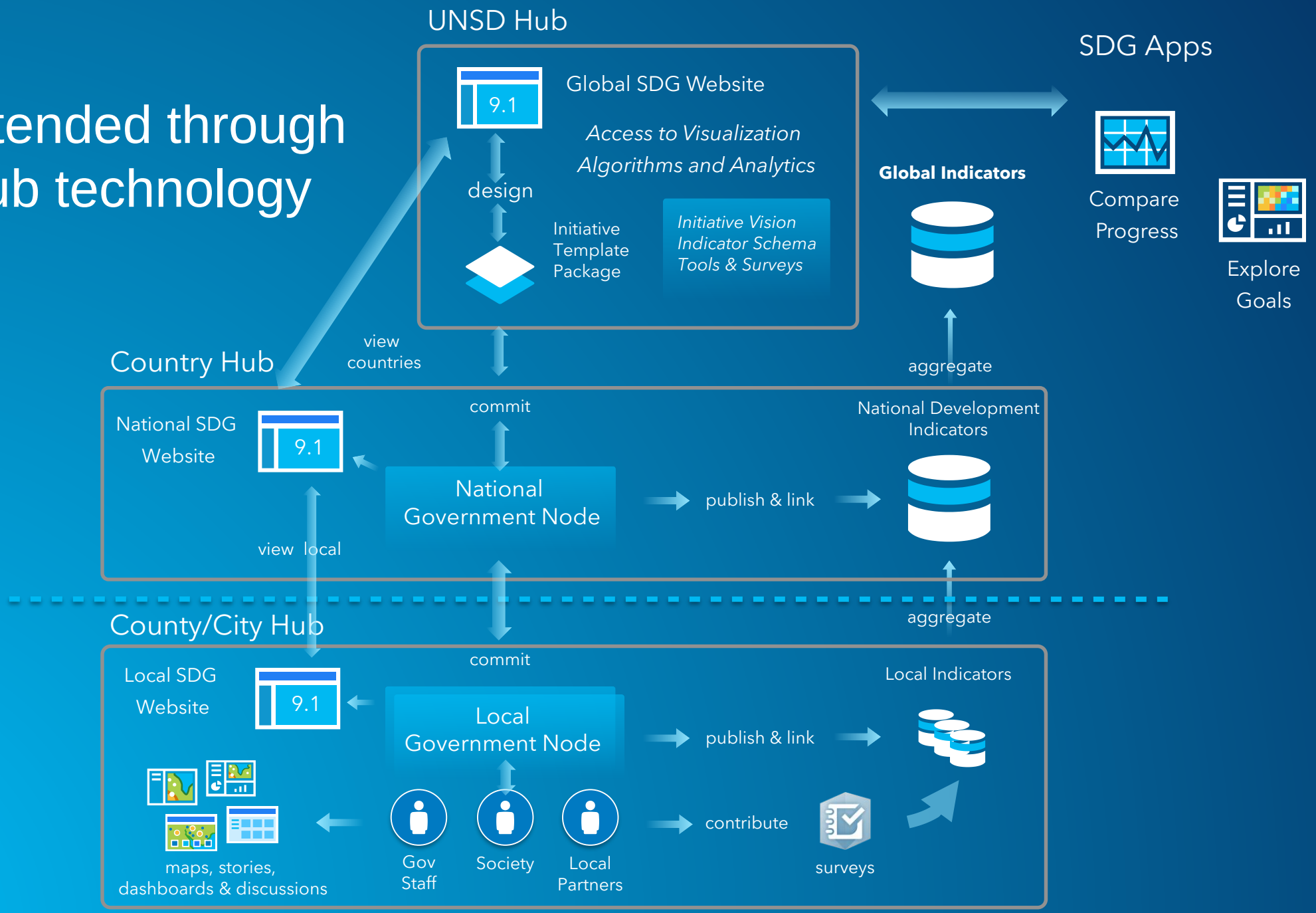
Population Change



Average Home Value

Curated and Authoritative

Extended through Hub technology



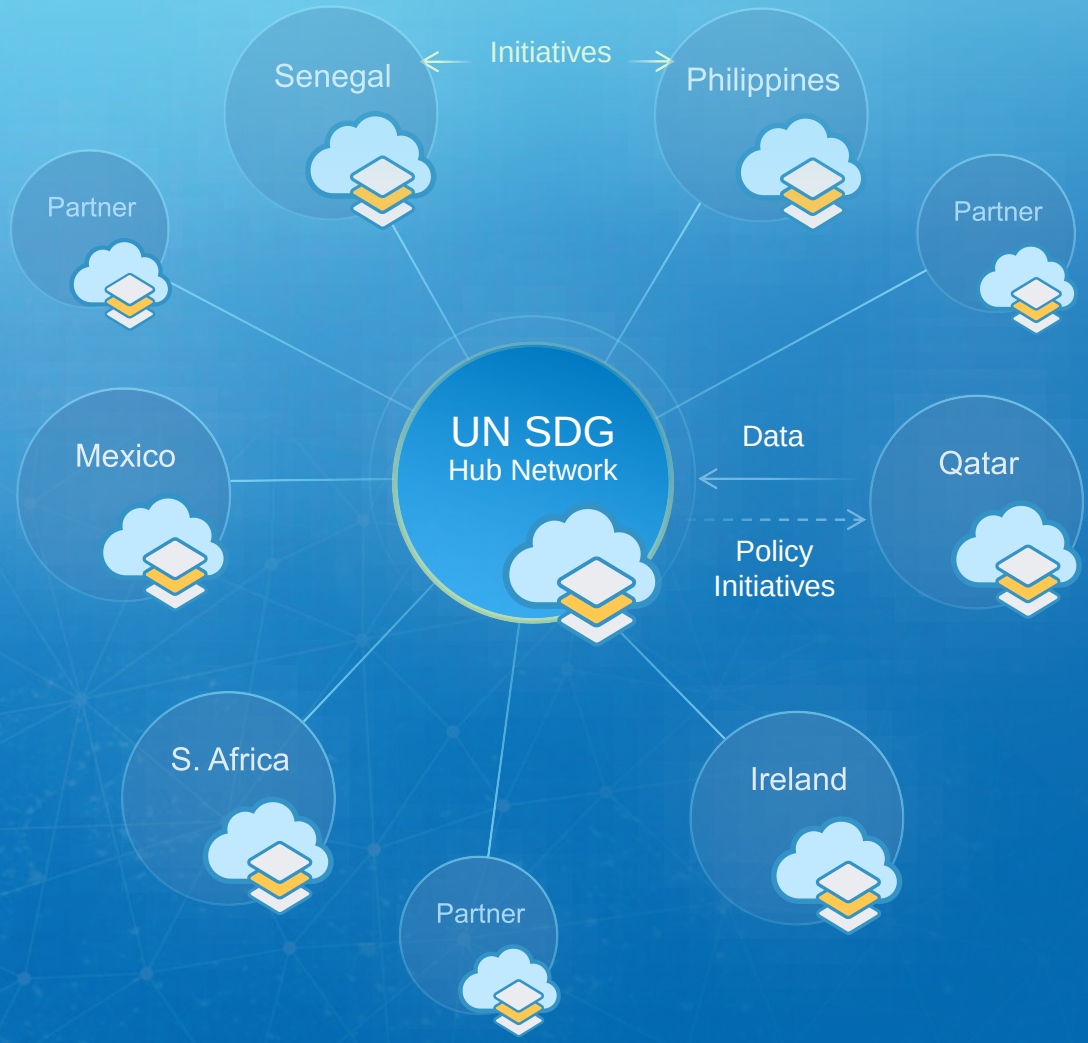
Geospatial Infrastructure Enabling a Global Network of SDG Hubs

A Global SDG Hub …

… And a Network of National SDG Hubs

Geospatial Infrastructure Has Enabled a Global SDG Hub

- A UN Network
  (Initiatives, Templates and National Data)

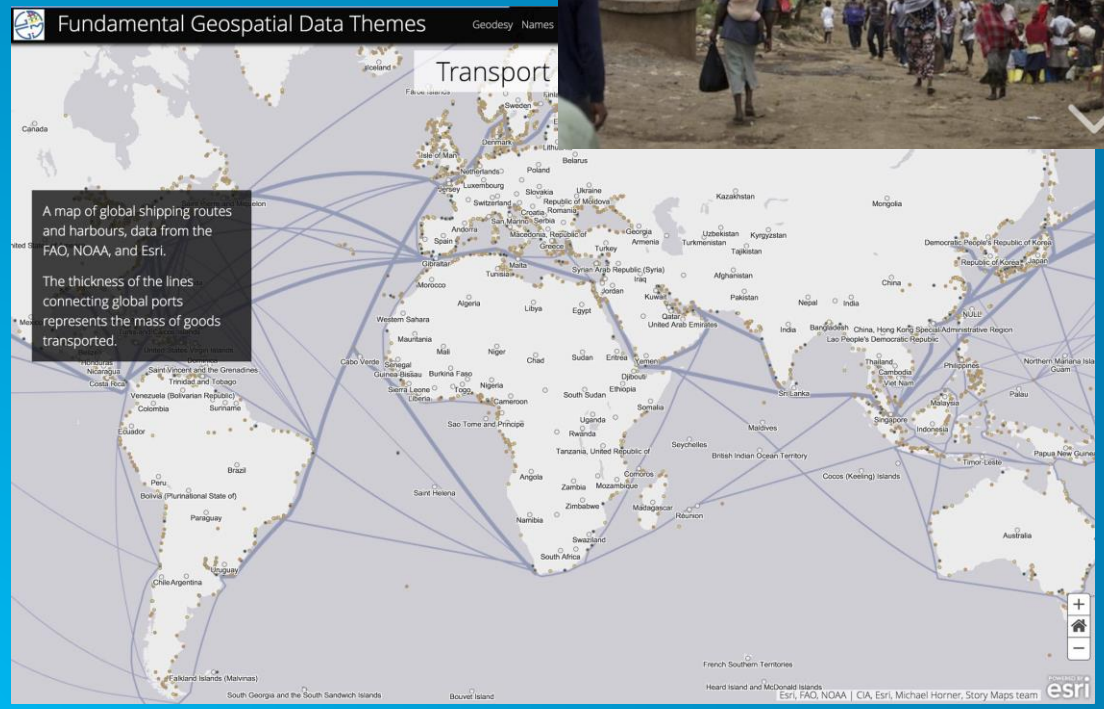


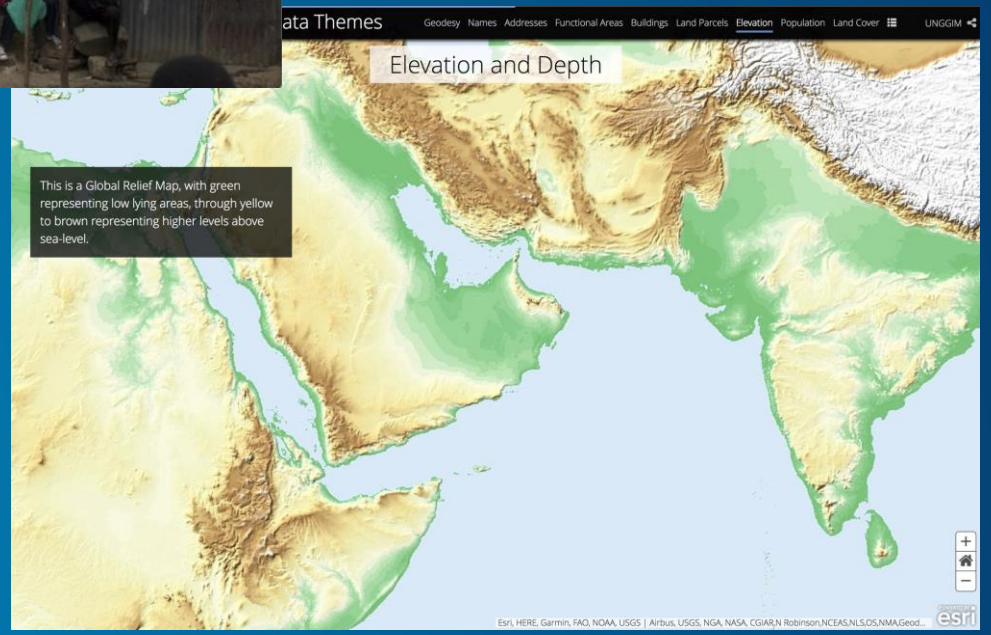
UNSD

SUSTAINABLE DEVELOPMENT GOALS
About
Data Catalog
SDG API
Contact
UN Data HUB
Welcome to the Open SDG Data Hub
To fully implement and monitor progress on the Sustainable Development Goals, decision makers everywhere need data and statistics that are accurate, timely, sufficiently disaggregated, relevant, accessible and easy to use. This open data website promotes the exploration, analysis and use of authoritative SDG data sources for evidence-based decision-making and advocacy. Its goal is to enable data providers, managers and users to discover, understand, and communicate patterns and interrelationships in the wealth of SDG data and statistics that are now available.
Explore Open Datasets by Goal
17 Goals to Transform Our World

UNSD

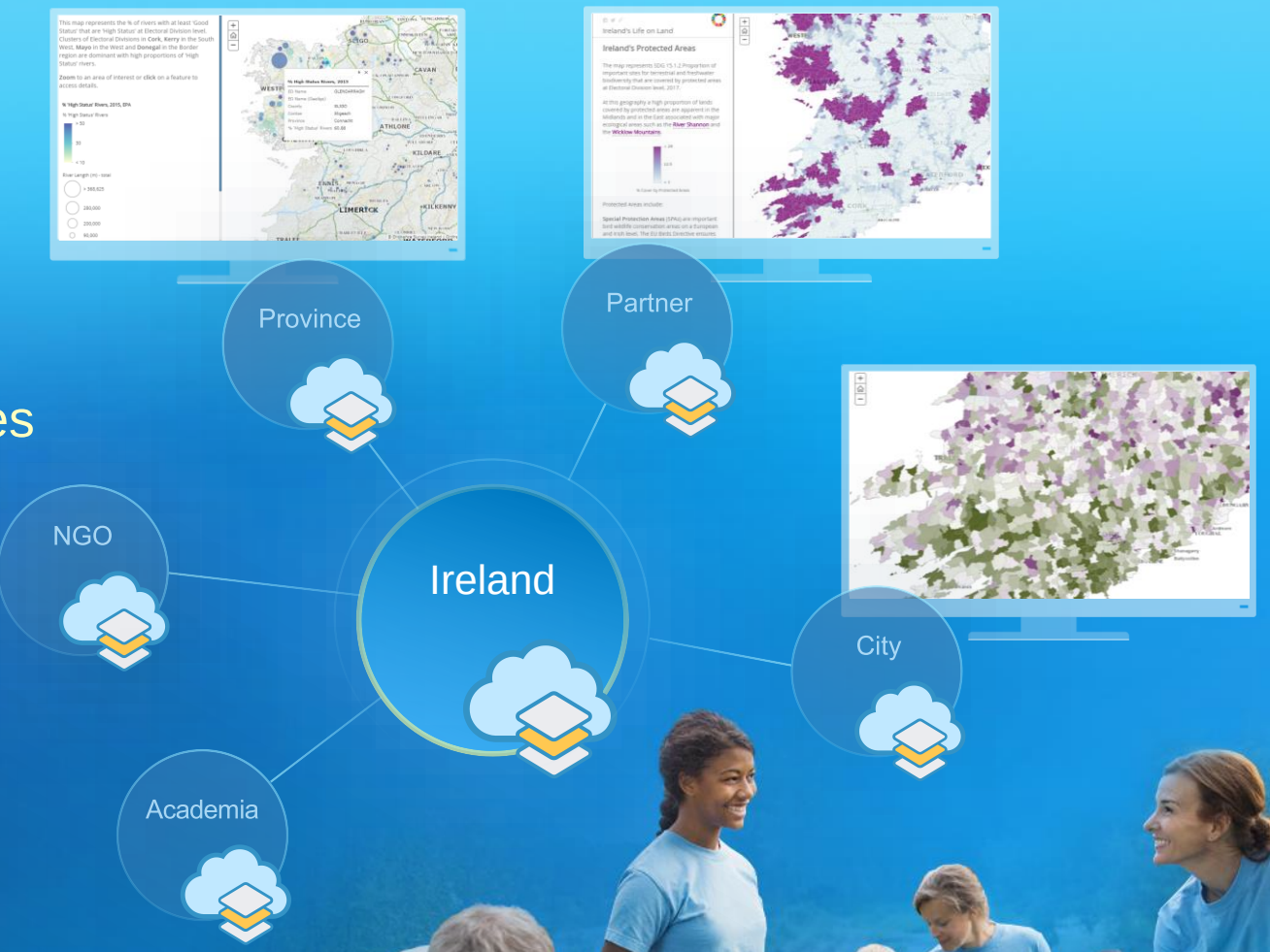
UNGGIM
Fundamental Geospatial Data Themes


Fundamental Geospatial Data Themes
Geodesy
Names
Transport
A map of global shipping routes and harbours, data from the FAO, NOAA, and Esri.
The thickness of the lines connecting global ports represents the mass of goods transported.
Esri, FAO, NOAA | CIA, Esri, Michael Horner, Story Maps team
esri


ata Themes
Geodesy
Names
Addresses
Functional Areas
Buildings
Land Parcels
Elevation
Population
Land Cover
UNGGIM
Elevation and Depth
This is a Global Relief Map, with green representing low lying areas, through yellow to brown representing higher levels above sea-level.
esri

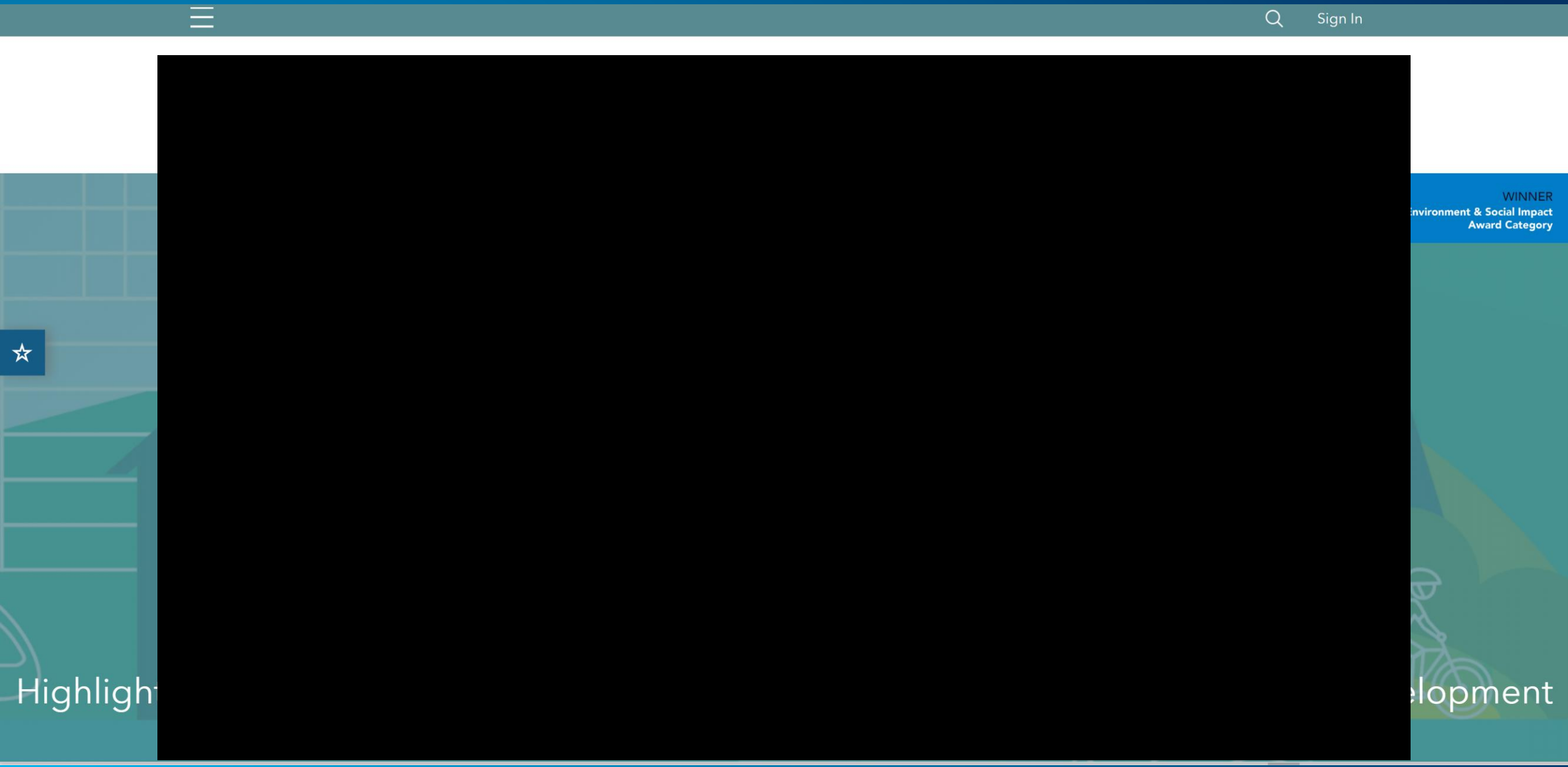
. . . and a Network of National SDG Hubs

Supporting National and Partner Initiatives

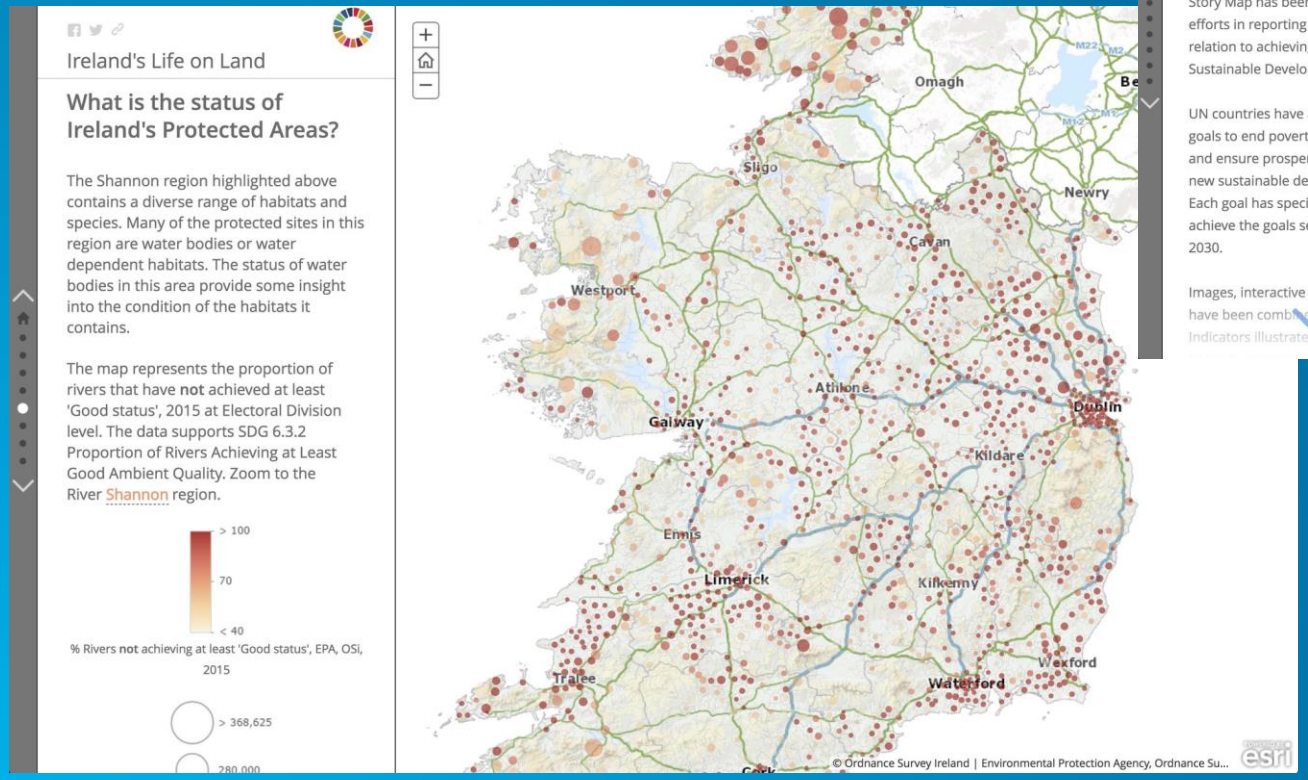


….Open for everyone, an inclusive and enabling environment

https://irelandsdg.geohive.ie/

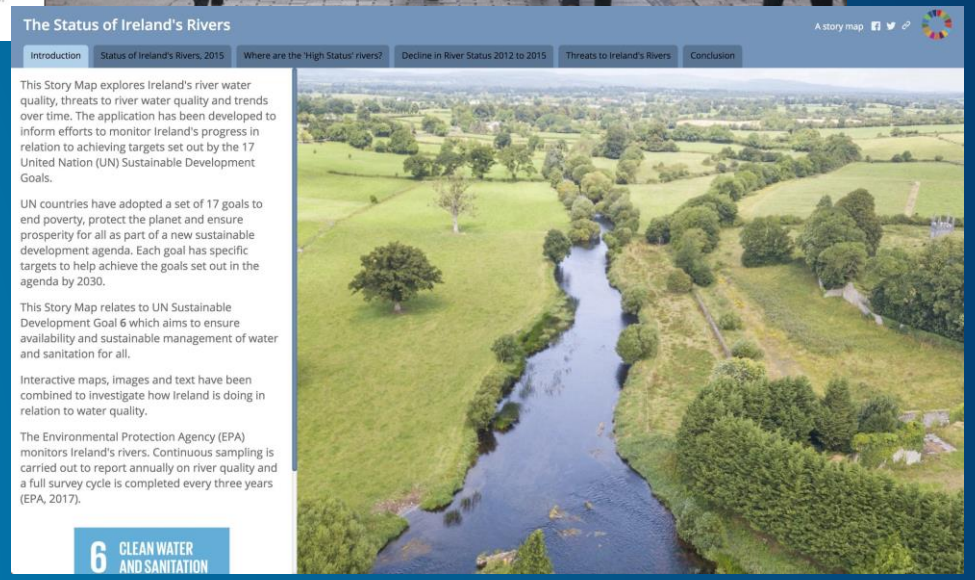


Ireland

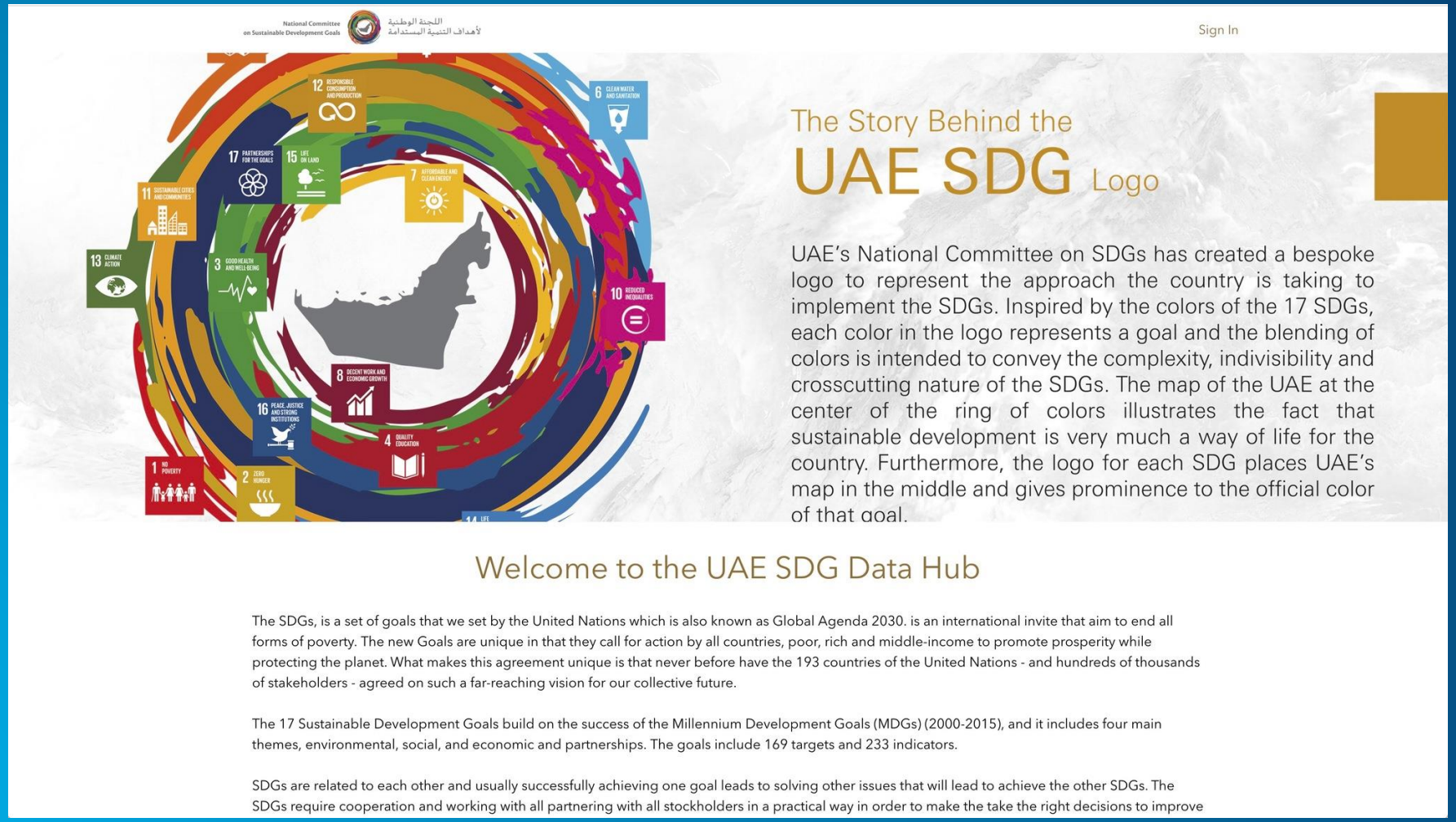

Ireland's Life on Land
What is the status of Ireland's Protected Areas?
The Shannon region highlighted above contains a diverse range of habitats and species. Many of the protected sites in this region are water bodies or water dependent habitats. The status of water bodies in this area provide some insight into the condition of the habitats it contains.
The map represents the proportion of rivers that have not achieved at least 'Good status', 2015 at Electoral Division level. The data supports SDG 6.3.2 Proportion of Rivers Achieving at Least Good Ambient Quality. Zoom to the River Shannon region.
> 100
70
< 40
% Rivers not achieving at least 'Good status', EPA, OSi, 2015
> 368,625
280,000
Omagh
Sligo
Newry
Cavan
Westport
Athlone
Galway
Dublin
Kildare
Ennis
Limerick
Kilkenny
Tralee
Waterford
Wexford
© Ordnance Survey Ireland | Environmental Protection Agency, Ordnance Su...
esri

The Changing Patterns of Unemployment and Poverty in Ireland, 2011-2017
This Story Map illustrates changes in Ireland in relation to unemployment and poverty throughout the last decade. The Story Map has been developed to inform efforts in reporting Ireland's status in relation to achieving United Nations (UN) Sustainable Development Goals.
UN countries have adopted a set of 17 goals to end poverty, protect the planet and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to help achieve the goals set out in the agenda by 2030.
Images, interactive maps, charts and text have been combined to highlight trends. Indicators illustrated below highlight

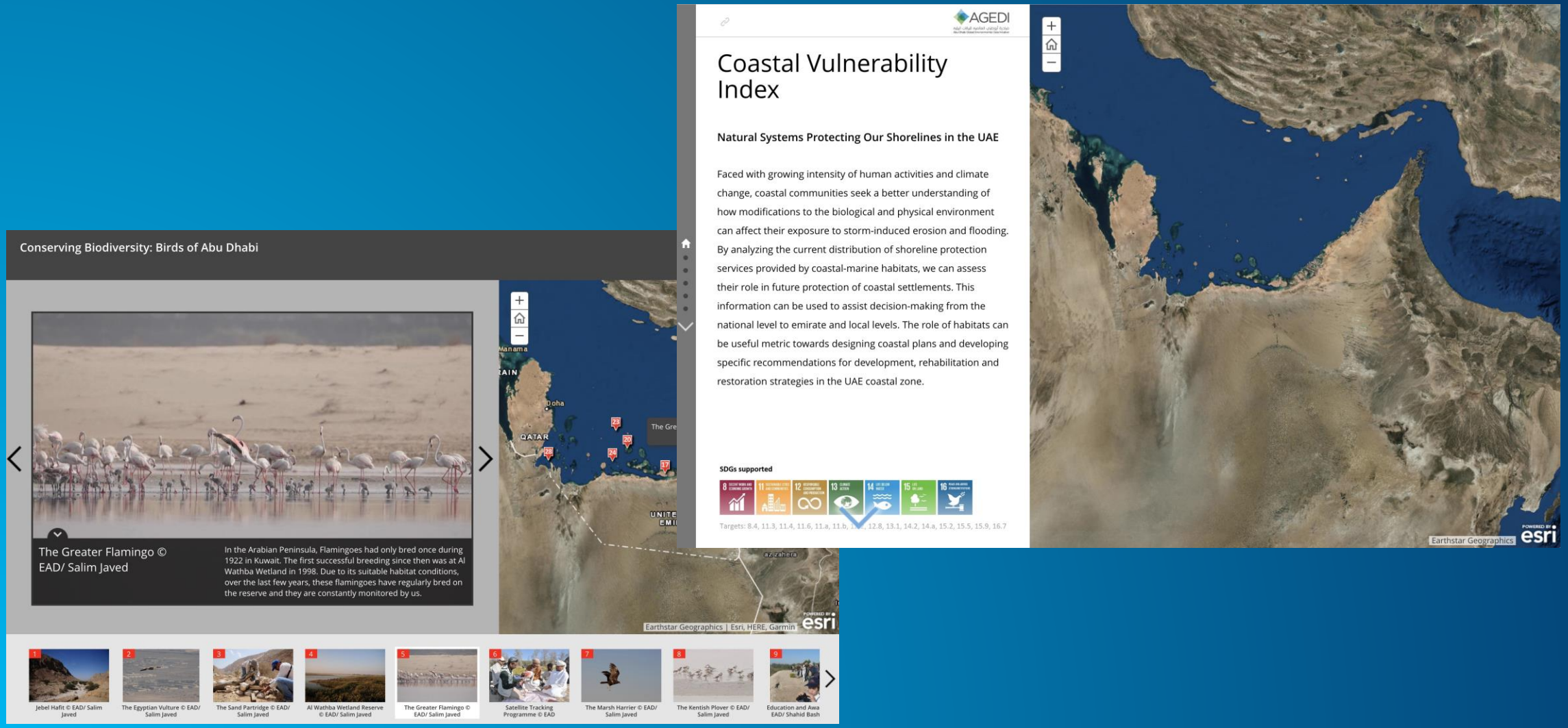
SWEATER
CHOICE
Ladbrokes


The Status of Ireland's Rivers
A story map
Introduction
Status of Ireland's Rivers, 2015
Where are the 'High Status' rivers?
Decline in River Status 2012 to 2015
Threats to Ireland's Rivers
Conclusion
This Story Map explores Ireland's river water quality, threats to river water quality and trends over time. The application has been developed to inform efforts to monitor Ireland's progress in relation to achieving targets set out by the 17 United Nation (UN) Sustainable Development Goals.
UN countries have adopted a set of 17 goals to end poverty, protect the planet and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to help achieve the goals set out in the agenda by 2030.
This Story Map relates to UN Sustainable Development Goal 6 which aims to ensure availability and sustainable management of water and sanitation for all.
Interactive maps, images and text have been combined to investigate how Ireland is doing in relation to water quality.
The Environmental Protection Agency (EPA) monitors Ireland's rivers. Continuous sampling is carried out to report annually on river quality and a full survey cycle is completed every three years (EPA, 2017).
6 CLEAN WATER AND SANITATION

United Arab Emirates (FCSA)

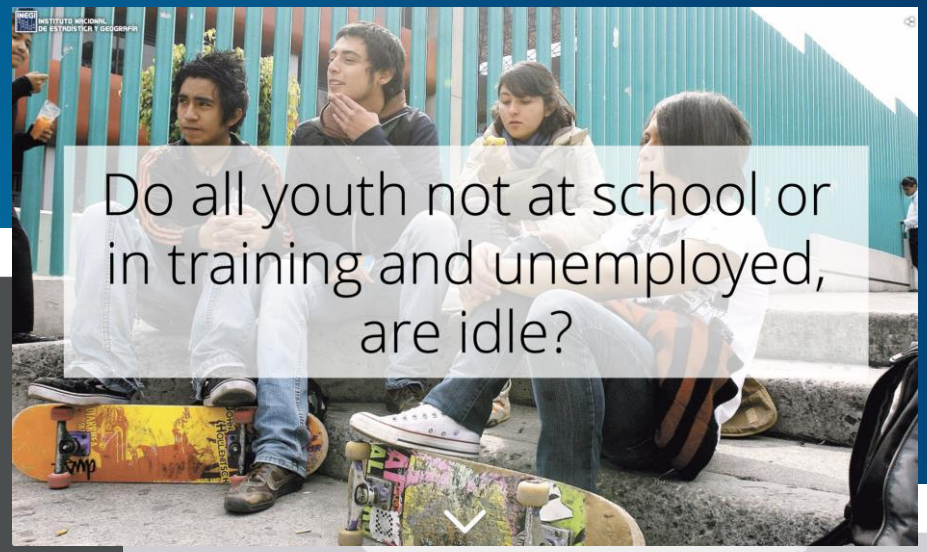


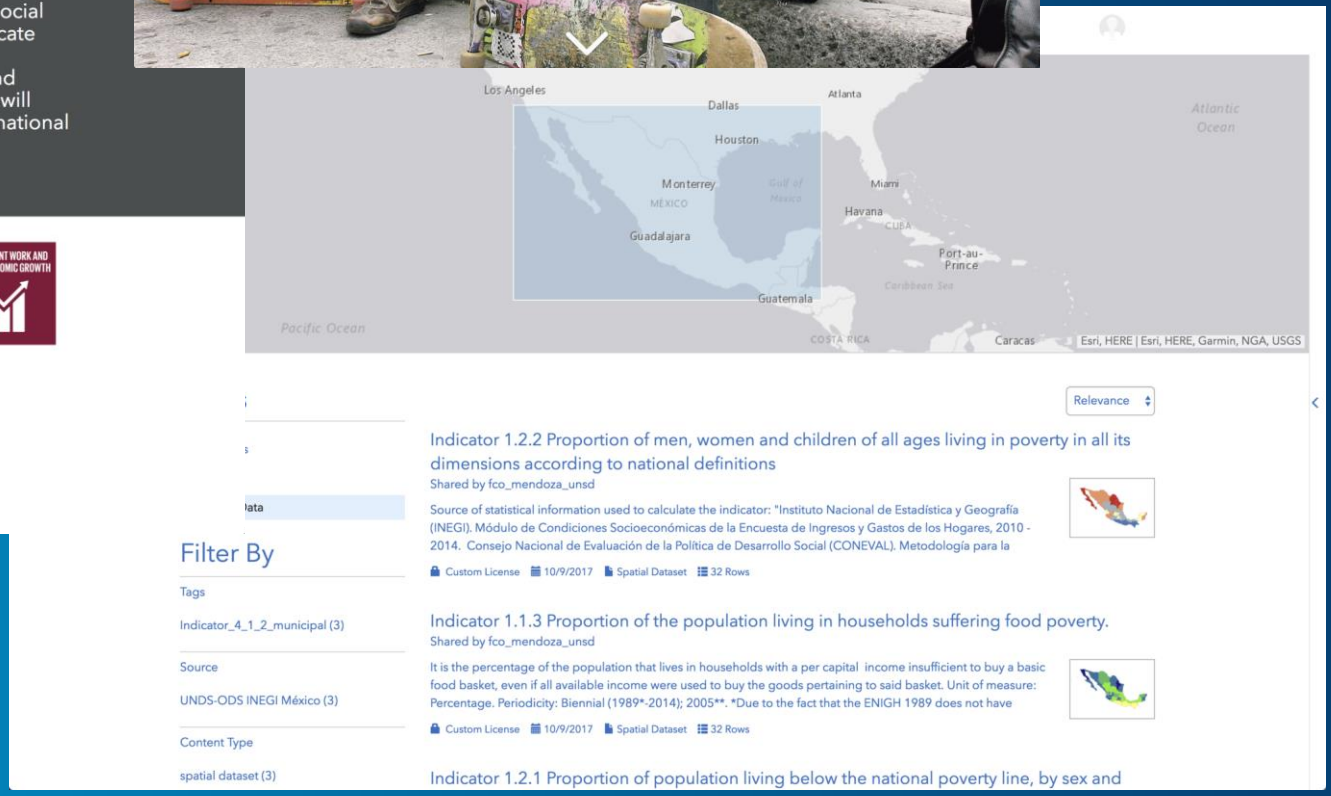
United Arab Emirates (FCSA)



Mexico

SUSTAINABLE DEVELOPMENT GOALS
SUSTAINABLE DEVELOPMENT GOALS
On 1 January 2016, the world officially began implementation of the 2030 Agenda for Sustainable Development–the transformative plan of action based on 17 Sustainable Development Goals–to address urgent global challenges over the next 15 years. This agenda is a road map for people and the planet that will build on the success of the Millennium Development Goals and ensure sustainable social and economic progress worldwide. It seeks not only to eradicate extreme poverty, but also to integrate and balance the three dimensions of sustainable development–economic, social and environmental–in a comprehensive global vision. All nations will need to build the Sustainable Development Goals into their national policies and plans if we are to achieve them.
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
11 SUSTAINABLE CITIES AND COMMUNITIES


Do all youth not at school or in training and unemployed, are idle?

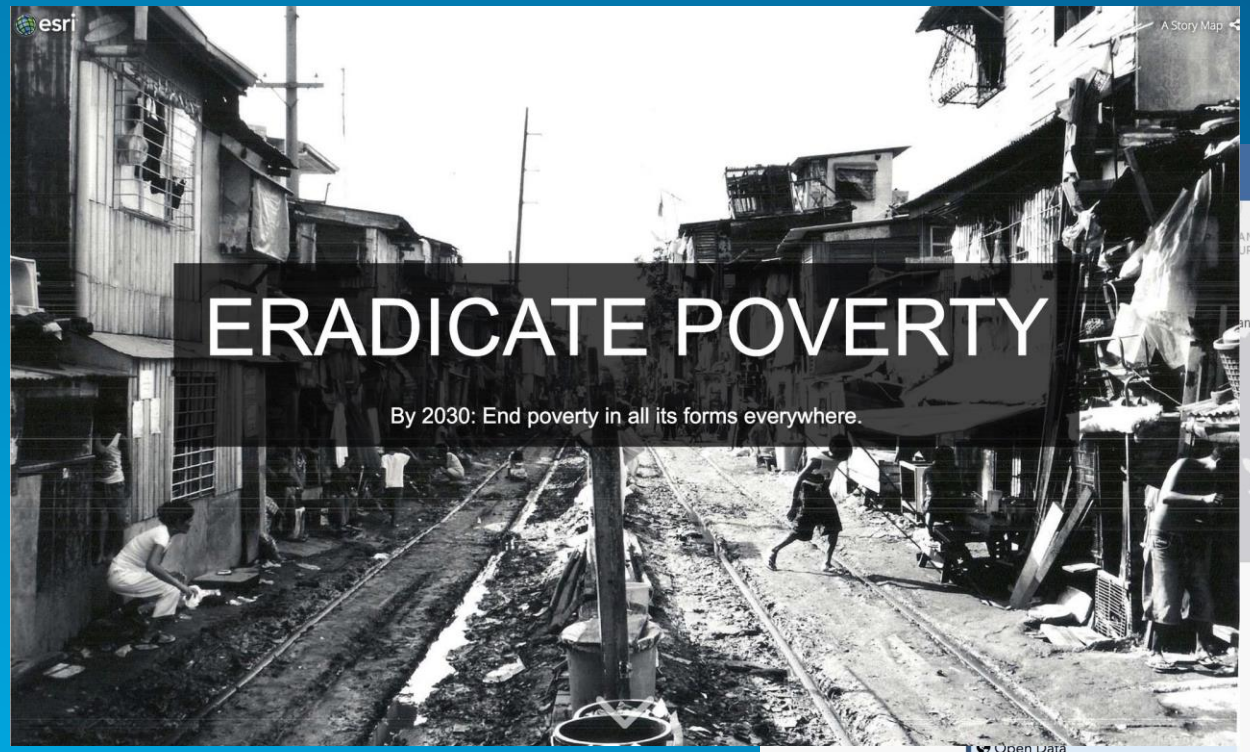

Los Angeles
Dallas
Atlanta
Houston
Monterrey
MEXICO
Guadalajara
Miami
Havana
CUBA
Port-au-Prince
Guatemala
Caribbean Sea
Atlantic Ocean
Pacific Ocean
COSTA RICA
Caracas
Esri, HERE | Esri, HERE, Garmin, NGA, USGS
Relevance
Filter By
Tags
Indicator_4_1_2_municipal (3)
Source
UNDS-ODS INEGI México (3)
Content Type
spatial dataset (3)
Indicator 1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
Shared by fco_mendoza_unsd
Source of statistical information used to calculate the indicator: "Instituto Nacional de Estadística y Geografía (INEGI). Módulo de Condiciones Socioeconómicas de la Encuesta de Ingresos y Gastos de los Hogares, 2010 - 2014. Consejo Nacional de Evaluación de la Política de Desarrollo Social (CONEVAL). Metodología para la
Custom License
10/9/2017
Spatial Dataset
32 Rows
Indicator 1.1.3 Proportion of the population living in households suffering food poverty.
Shared by fco_mendoza_unsd
It is the percentage of the population that lives in households with a per capital income insufficient to buy a basic food basket, even if all available income were used to buy the goods pertaining to said basket. Unit of measure: Percentage. Periodicity: Biennial (1989*-2014); 2005**. *Due to the fact that the ENIGH 1989 does not have
Custom License
10/9/2017
Spatial Dataset
32 Rows
Indicator 1.2.1 Proportion of population living below the national poverty line, by sex and

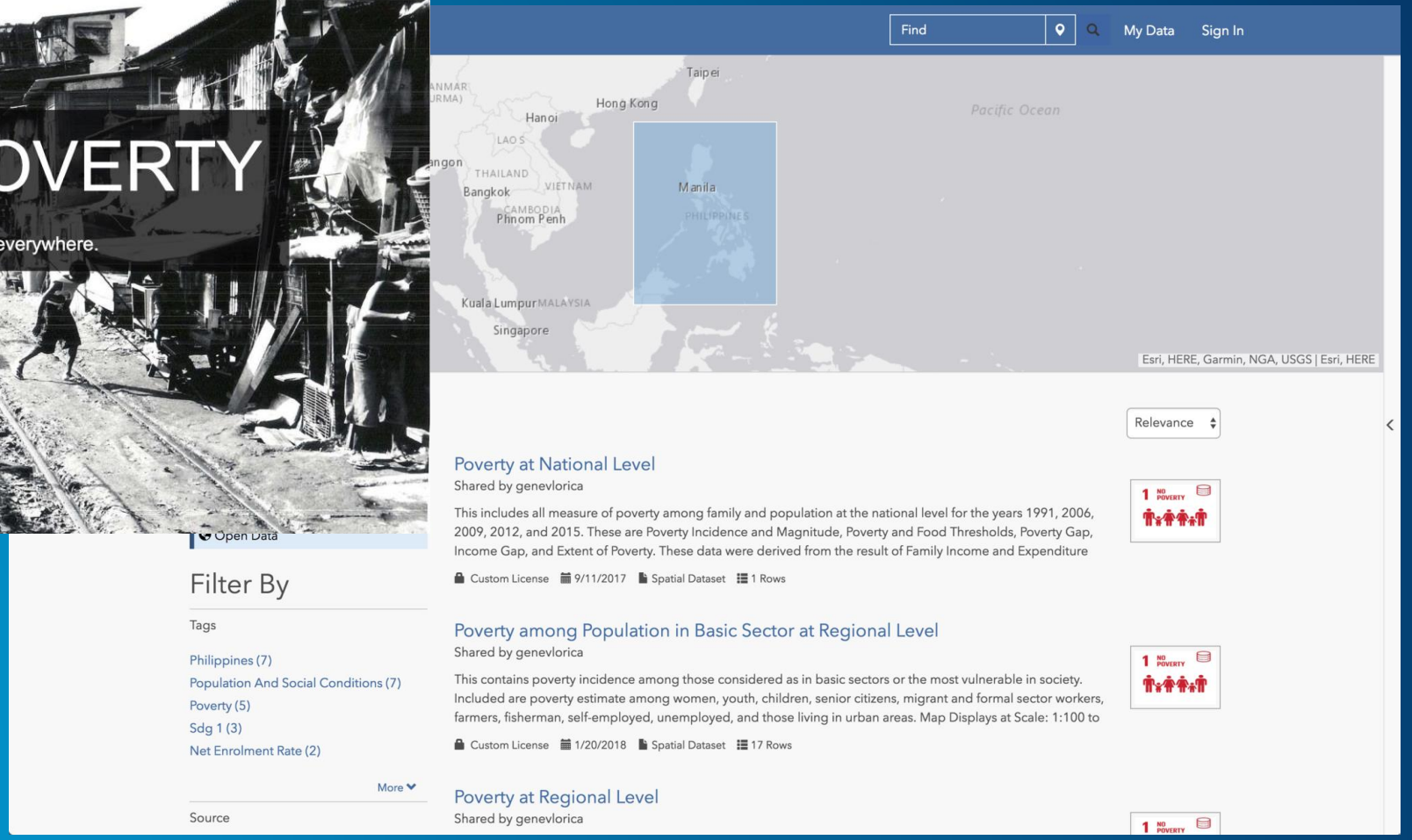
Palestine

Palestine, Sustainable Development Goals
Sign In
PCBS
Palestine SDG Site
17 Goals to Transform Palestine
Redefining value
Climate & Energy
Cities
Food & Land
Explore our data for Sustainable Development Goa
Click on an icon below to access spatial indicators relating to a particular
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
Palestine, Sustainable Development Goals
Find
My Data
Sign In
National_Poverty_Y...
> 38
25
< 12
Other
Overview
Data
API Explorer
SDG 1.2.1 Proportion of population living below the national poverty line
Favorite
Download
APIs
Showing 1 to 10 of 16
Hint: Click on to filter columns.
PCBS_Code
Name1
National_Poverty_Y2009
National_Poverty_Y2010
National_Poverty_Y2011
Shape__Area
70 Khan Yunis 44.1 40.8 53 0.0103863546735283
35 Jericho and Al Aghwar 24.4 22.3 24.4 0.0565625420832703
75 Rafah 28.2 34.1 47.2 0.00598068508008964
55 North Gaza 32.6 34.6 34.9 0.00578407756449906
10 Tulkarm 19.5 10.9 23.3 0.0236031575545894
40 Jerusalem 4.9 8 4.6 0.0332533238062069
60 Gaza 43.5 40 29.8 0.00707893701178364

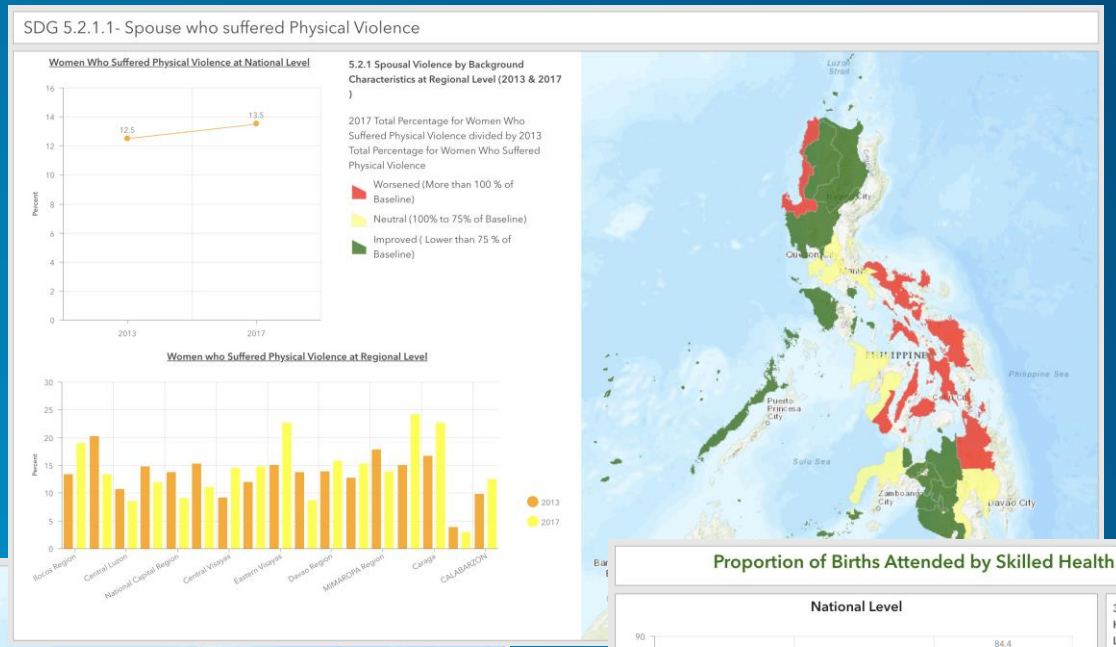
Philippines

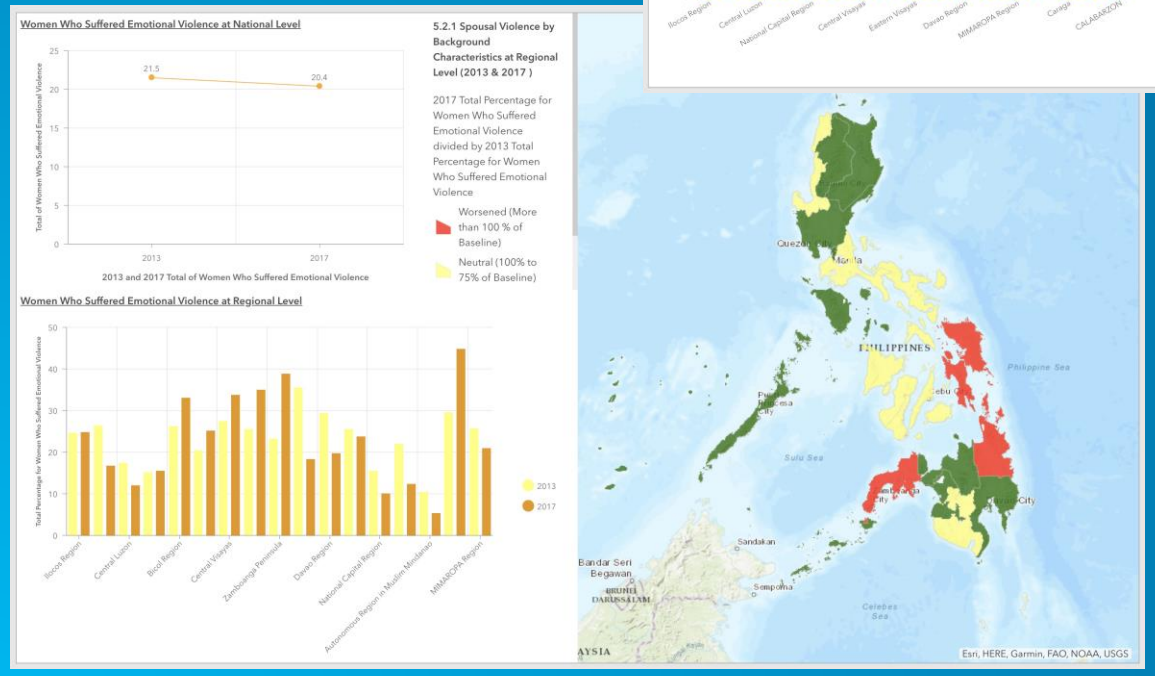
Philippines

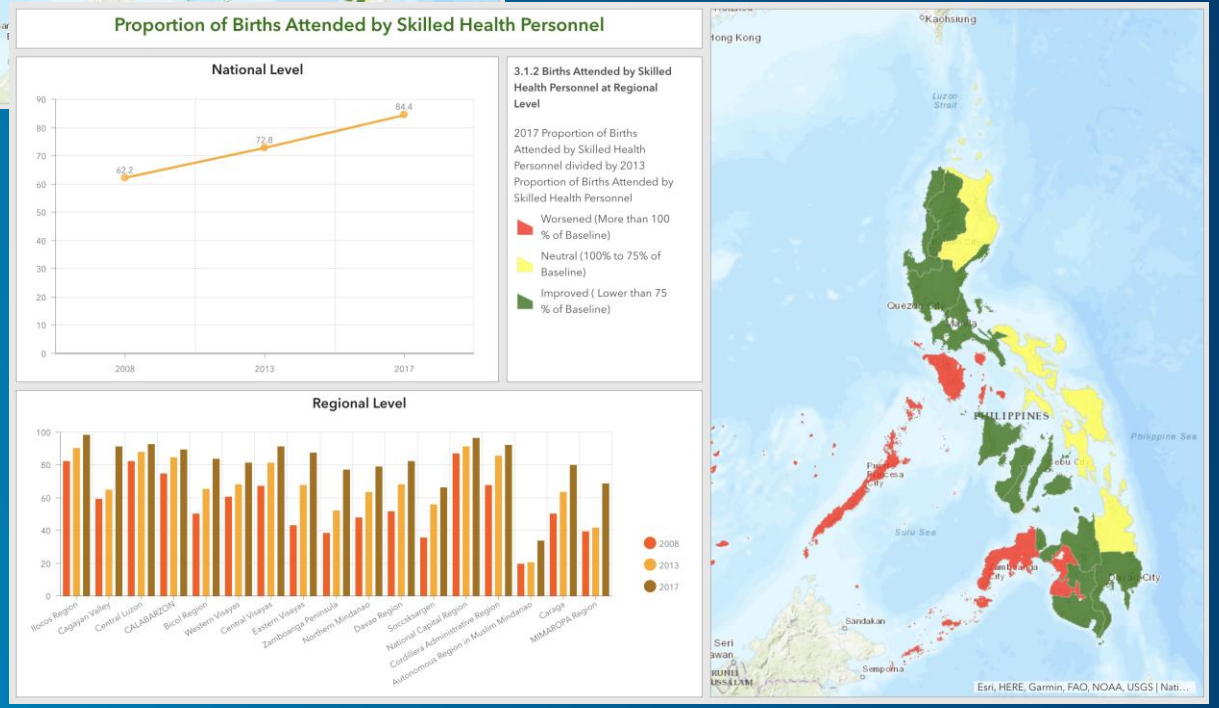




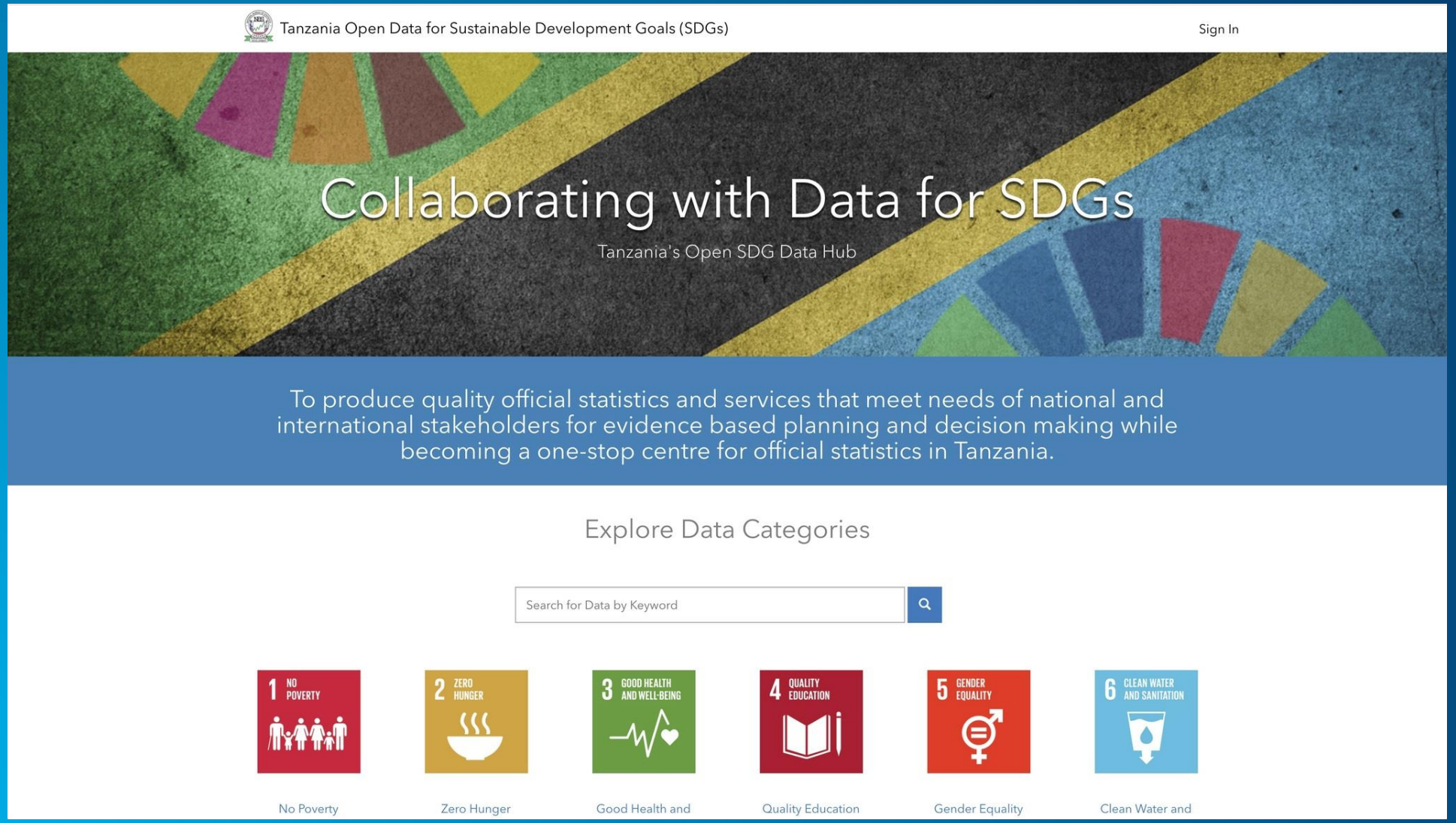
Philippines







Tanzania


Tanzania Open Data for Sustainable Development Goals (SDGs)
Sign In
Collaborating with Data for SDGs
Tanzania's Open SDG Data Hub
To produce quality official statistics and services that meet needs of national and international stakeholders for evidence based planning and decision making while becoming a one-stop centre for official statistics in Tanzania.
Explore Data Categories
Search for Data by Keyword
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
No Poverty
Zero Hunger
Good Health and
Quality Education
Gender Equality
Clean Water and

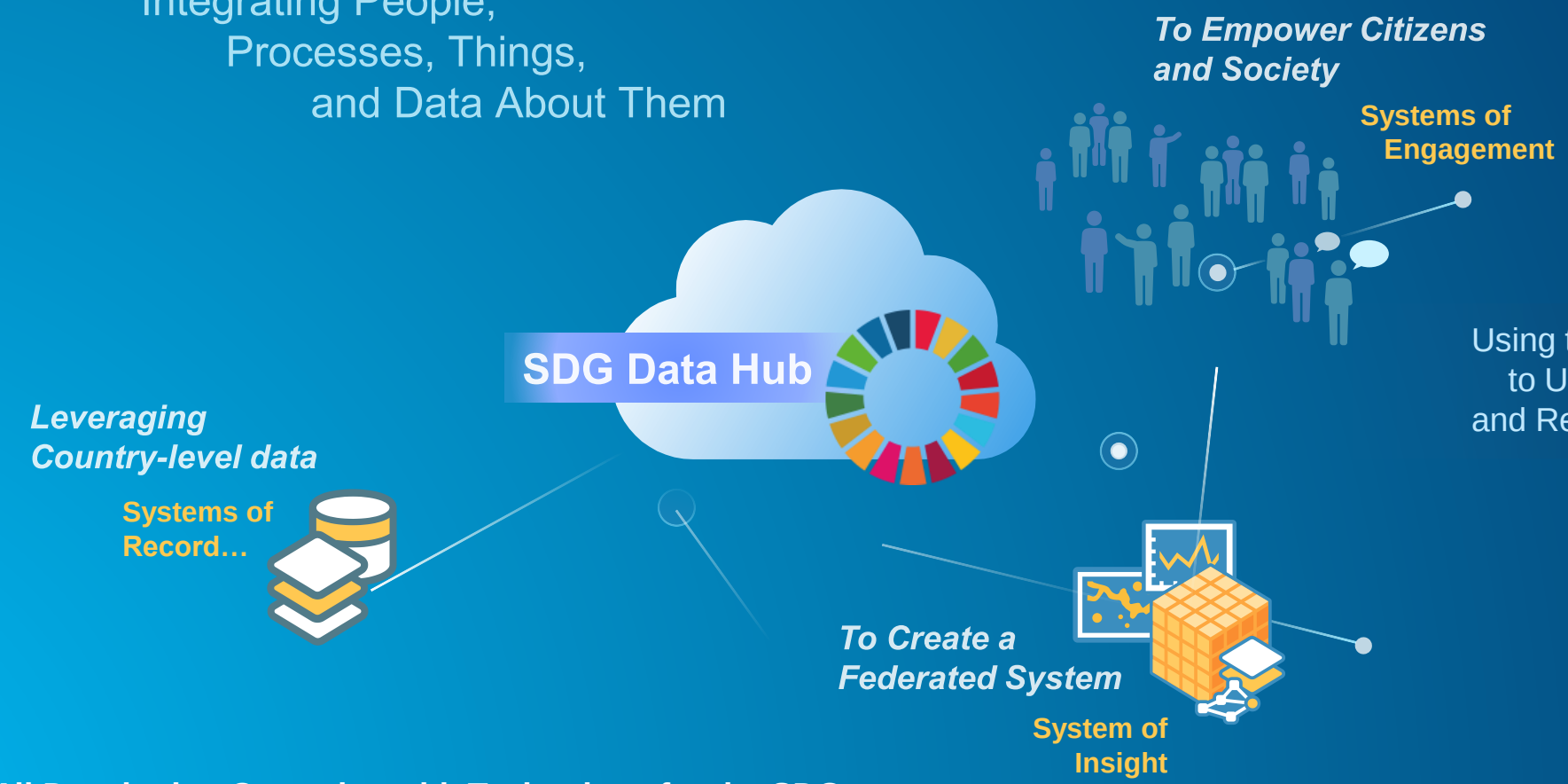
Senegal

Sénégal, Open Data Site
Sign In
Sénégal, Plateforme de suivi des ODD
17 Objectifs pour transformer le Sénégal
Sénégal, Plateforme de suivi des ODD est une plateforme publique pour explorer et télécharger des données ouvertes, découvrir et participer à la résolution des problèmes locaux importants. Vous pouvez analyser et combiner des jeux de données ouverts à l'aide de cartes.
Explorer les données ouvertes
Rechercher les données
Rechercher

Making a Commitment: UN Federated System for the SDGs

For Managing, Analyzing, and Applying Statistical and Geographic Information

Integrating People,
Processes, Things,
and Data About Them



Using the Power of Location
to Understand, Monitor
and Report on the SDGs

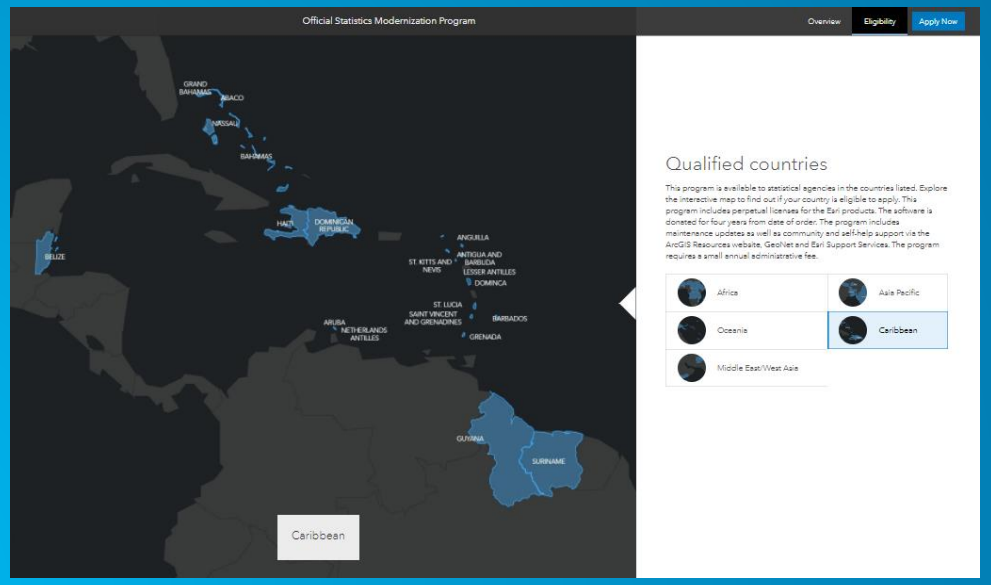
Supporting All Developing Countries with Technology for the SDGs

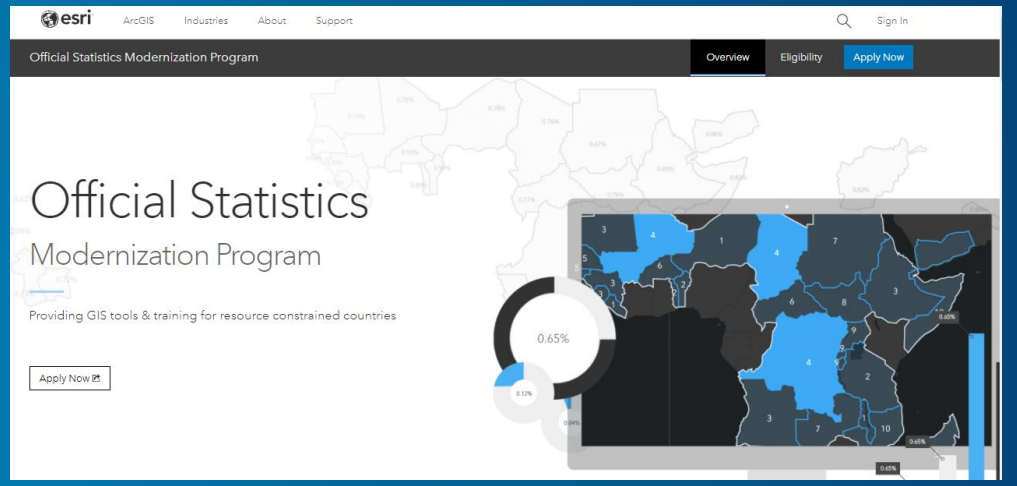
Expanded Programs

Esri Modernization Program for Official Statistics

Esri Modernization Program for Land Administration

Esri Modernization Program for Health





A Federated System for the SDGs Is Emerging

Creating a System of Systems

Making Data Available to Governments, the Civil Society and Citizens

Driven By Participating Member States. . .
. . . Country Owned and Country Led

Progress continues

Steps to success

Collect Statistical Data

Collect Geospatial Data

Generate Views for Dissemination

Publish

Share

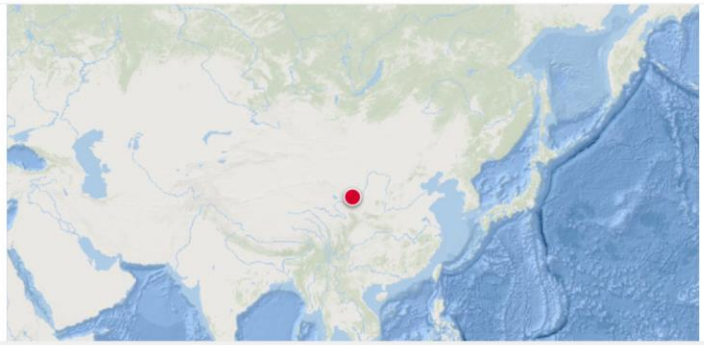
https://country-profiles.unstatshub.org

United Nations » Department of Economic and Social Affairs » Statistics Division » **Country Profiles**

SDG Country Profile | China

Select a Country

- Population and migration
- National accounts and labour market
- Trade and balance of payments
- Environment



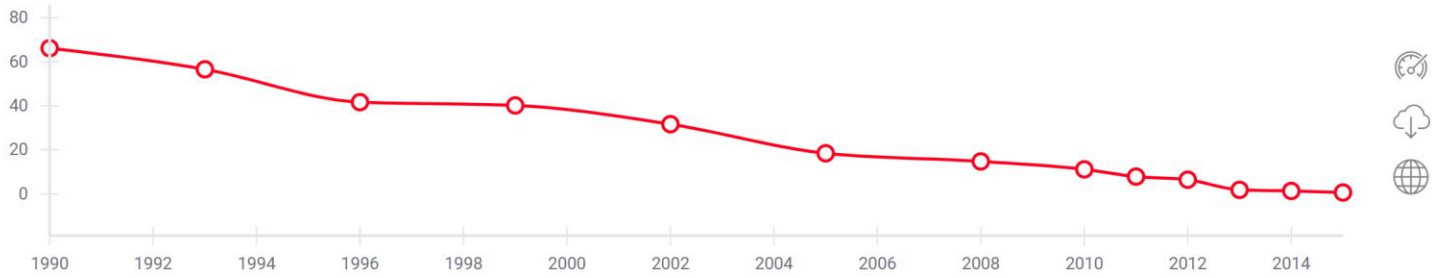
1 No Poverty
2 Zero Hunger
3 Good Health and Well-being
5 Gender Equality
6 Clean Water and Sanitation
7 Affordable and Clean Energy
8 Decent Jobs and Economic Growth
9 Industry, Innovation and Infrastructure
11 Sustainable Cities and Communities
12 Responsible Consumption and Production
14 Life Below Water
15 Life on Land
16 Peace and Justice - Strong

No Poverty

End poverty in all its forms everywhere

The proportion of the population living below the extreme poverty line was approximately **0.7** % in **2015**.

Population below international poverty line (percent)



Technology Is Not Enough. . .

- Tech-Savvy Leadership
- Understanding What's Needed
- Data-Driven Culture
- Collaboration Across Departments
- Willingness to Learn
- Citizen and Private Sector Engagement

…Good People / Good Attitude / Good Relationships

The pieces are in place…

Governance

Technology

People

esri THE SCIENCE OF WHERE™

…Creating a Platform for Managing our Future