WHO GIS Centre for Health

Division of Data, Analytics and Delivery for Impact

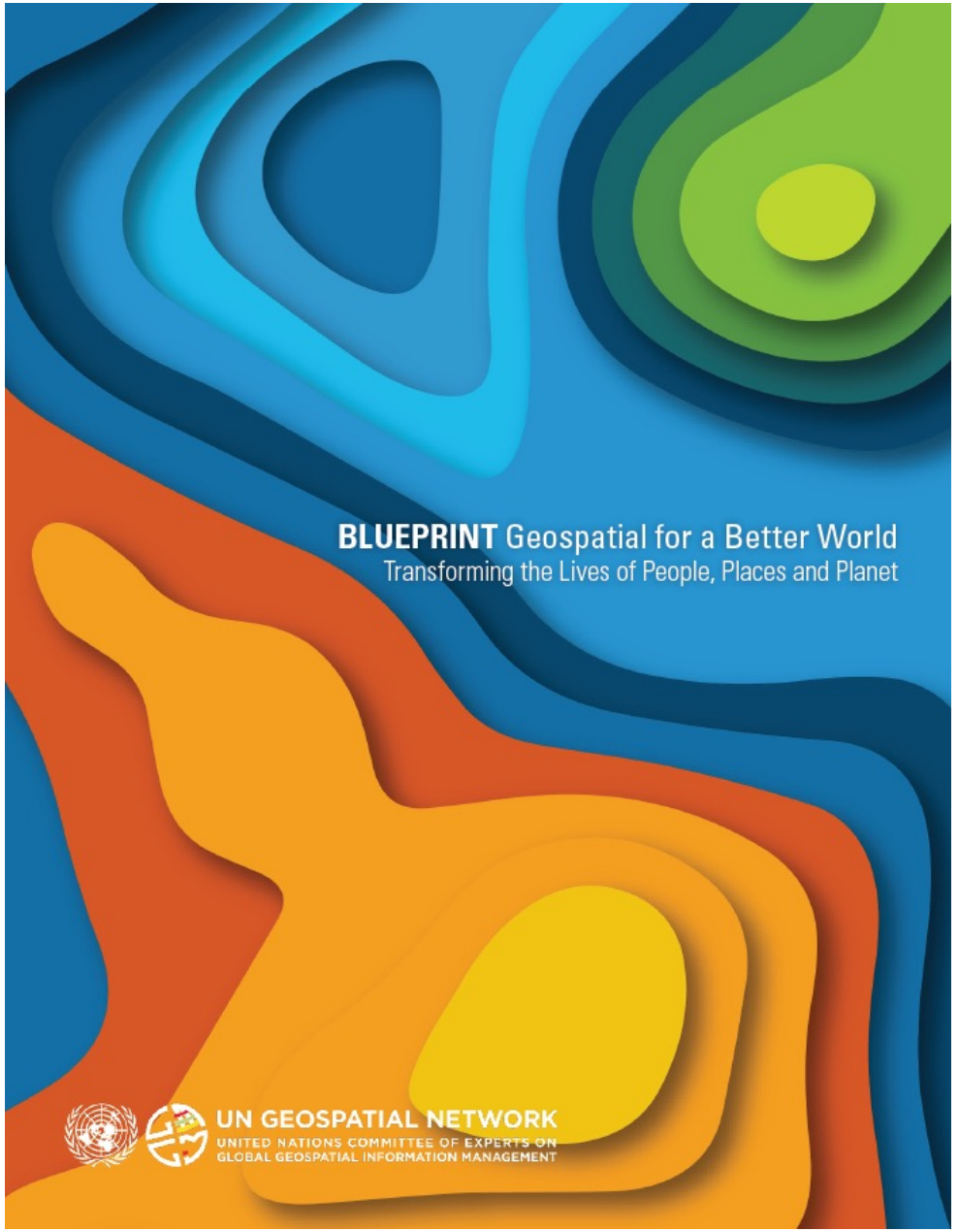
www.who.int/data/gis gissupport@who.int

Ravi Shankar

Head, GIS Centre for Health

BLUEPRINT

Geospatial for a Better World

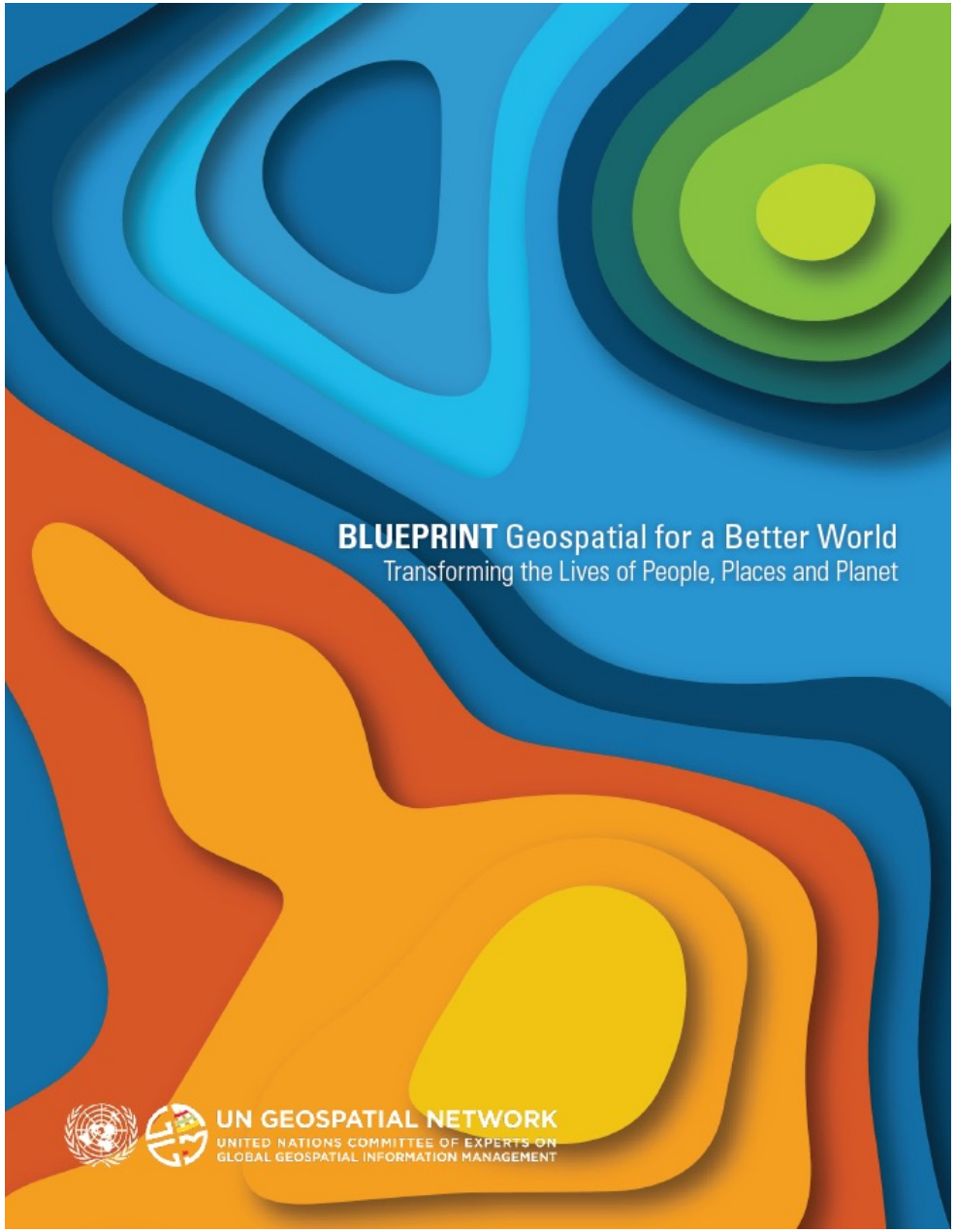


Transforming the Lives of People, Places and Planet

BLUEPRINT Geospatial for a Better World (2020- 2025)

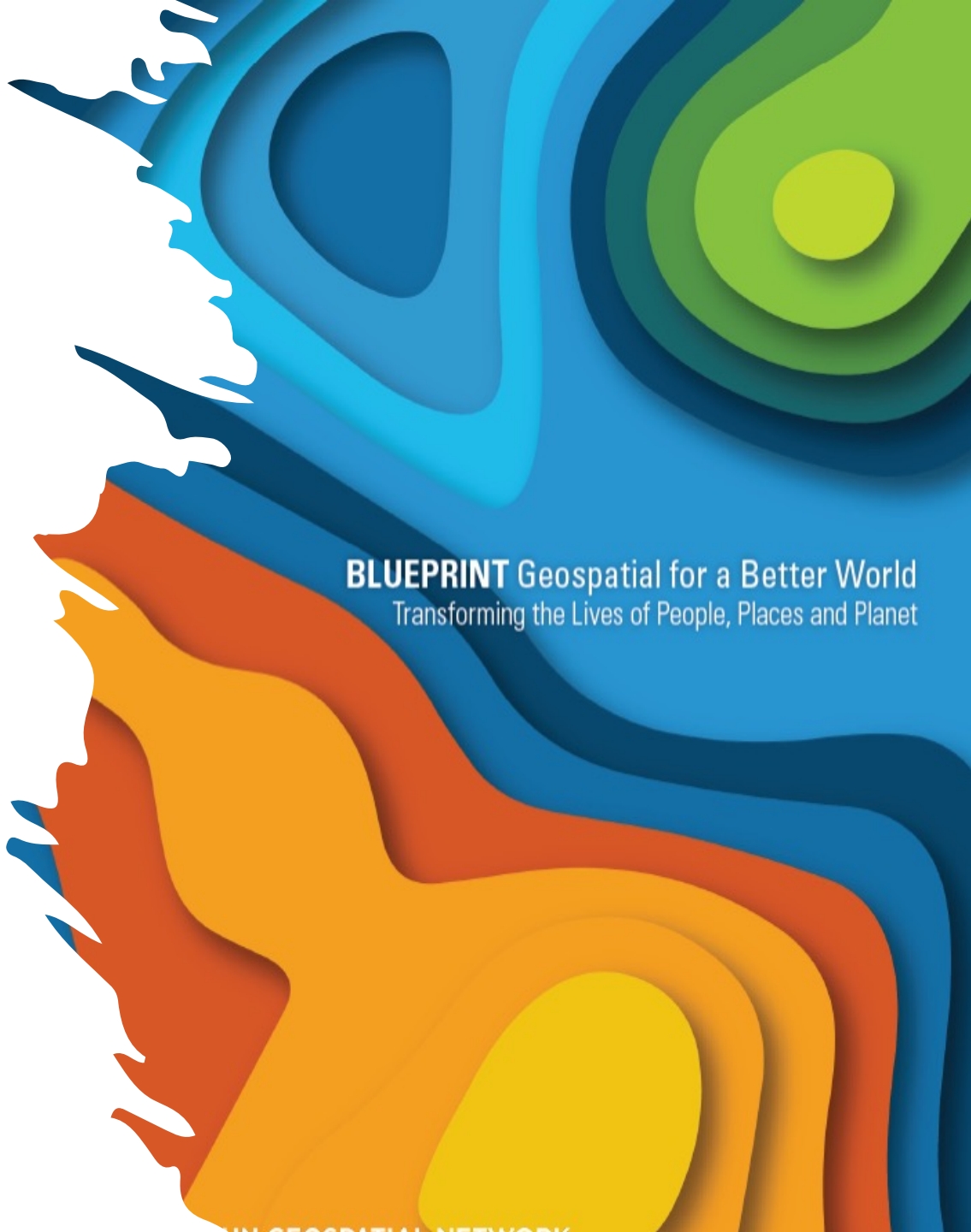
Transforming the Lives of People, Places and Planet

- **Strategic Objectives**: Focused on governance, technology, partnerships, capacity development, and outreach.
- **Transformation Pathways**: Aiming to build a robust network, deliver unified geospatial information, and foster development.
- **The Hub**: A proposed common platform for resource sharing and collaboration.



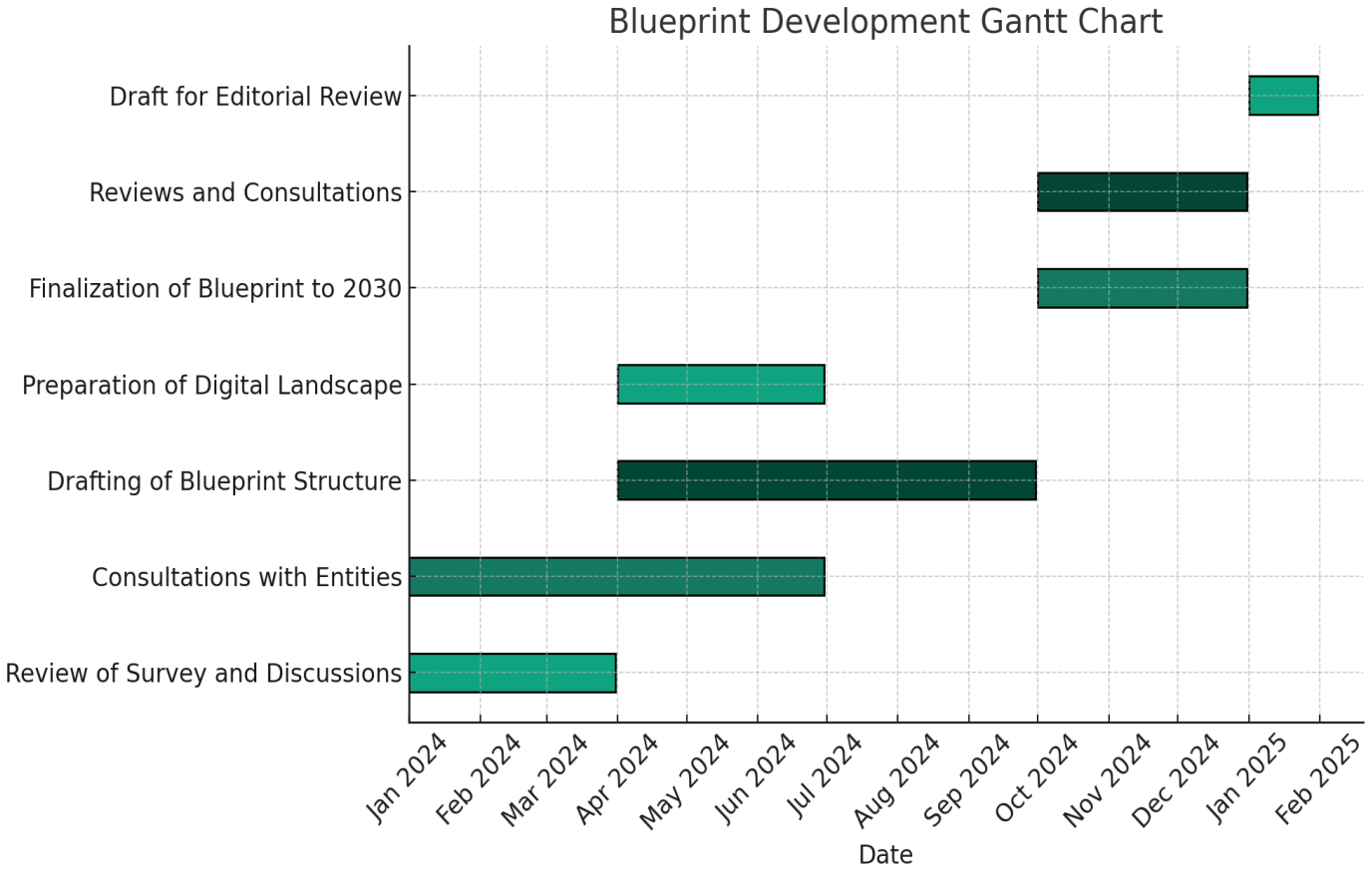
Justification for Revision of the UN Geospatial Network Blueprint (2026-2030)

- Adaptation to Rapid Technological Advancements in Geospatial Information
- Alignment with Evolving Global Geospatial Needs and Challenges
- Incorporation of Lessons Learned and Best Practices since 2020
- Enhanced Data Sharing and Collaboration Across UN Agencies
- Expansion of the UN Geospatial Network Since 2020



BLUEPRINT Geospatial for a Better World (2026-2030)

Transforming the Lives of People, Places and Planet



- *Review of survey and discussions, starting January 2024*
- *Consultations with respective entities, as per the previous Blueprint, in the first half of 2024*
- *Drafting of an overall structure for the next Blueprint, Q2 and Q3 2024*
- *Preparation of a live digital landscape for a website, Q2 2024*
- *Finalization of the Blueprint to 2030, Q4 2024*
- *Reviews and consultations, end Q4 2024*
- *Draft for editorial review and design, Jan 2025*

World Health Organization

Launch of the GIS Centre for Health

Geographic Information System

www.who.int/data/gis

9 MAY 2022

Celebrate · Inform · Envision

SCAN ME

A Service of the Division of Data, Analytics and Delivery for Impact

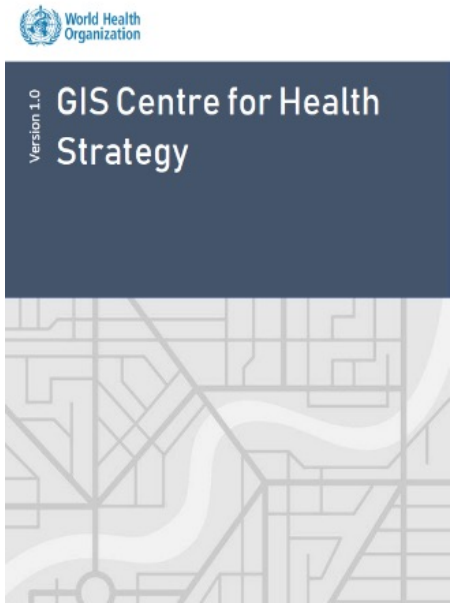
please reach out to: gissupport@who.int

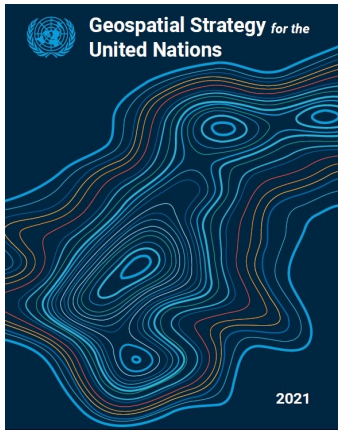
What is the WHO GIS Centre for Health?

*With a **vision** of connecting maps, apps, data, and people, the WHO GIS Centre for Health is dedicated to supporting countries in making informed public health decisions faster.*

Advocacy	Service	Capacity Development & Support
Bilateral Meetings	Technical Assistance	Workshops
Key UN Meetings	Maps	Training – Online, In-Person
Mission	Projects	Webinars
Conferences	Request	Events
Events	Conceptualization	Office Hours
Presence	Definition	Mentoring
	Planning	Missions
	Execution	

With an implementation **methodology** that combines **advocacy**, **capacity development**, **service and support**, the Centre provides technical assistance. It fosters geospatial capacities for Health at all WHO levels through the Country and Regional Offices with Ministries of Health (MoHs).





Meet the WHO GIS Centre for Health team

Ali
Monitoring and evaluation

Ana
GIS specialist, project facilitator

Anare
GIS specialist

Annette
GIS specialist

Asela
GIS specialist and data expert

Bodour
Project facilitator

Brian
Geospatial expert

Cam
GIS specialist

Carlos
Geospatial health analyst

Catherine
Project facilitator

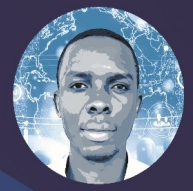
Chris
Emergency specialist, project facilitator

Cici
Geospatial data scientist

Daniel
GIS server expert

Denise
Monitoring and evaluation

Francis
GIS specialist



Gédéon
GIS specialist

Gopi
GIS specialist

Ian
GIS specialist

Inge
Training and capacity development specialist

Jaouad
GIS specialist, project facilitator

Jing
Product evangelist

Jo
GIS specialist

Jon
Partnerships

Julia
Geospatial data assistant

Kerry
Geospatial health specialist

Kshitij
Web and IT specialist

Kt
Cartographer

Luzviminda
Administrative support

Marissa
Administrative support

Mona
Project facilitator

Nadika
Geospatial health analyst

Nomsa
Business analyst

Oluwaseun
GIS specialist

Paul
GIS specialist

Prashant
GIS specialist, project facilitator

Ravi Shankar
GIS team lead

Ronald
GIS specialist

Ryan
GIS specialist

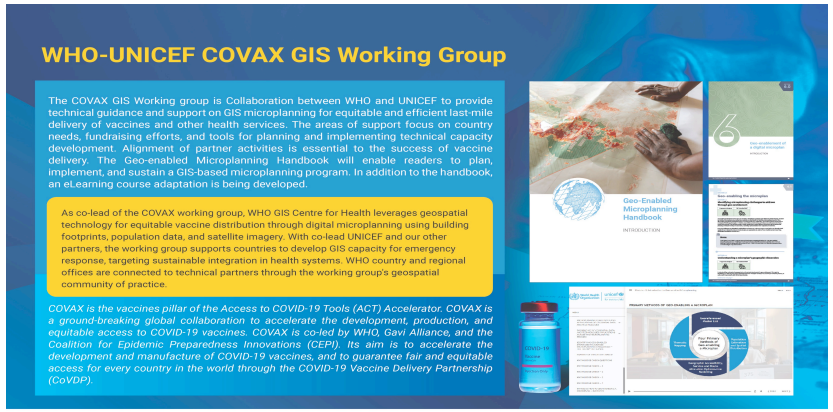
Samuel A
GIS specialist, project facilitator

Samuel O
GIS Specialist, project facilitator

Tamer
GIS specialist, project facilitator

Yamiko
GIS specialist

GIS Advocacy and communication



Areas of work: Serve, Train and Engage

Services

Licensing

Cartography + Storytelling

Weekly open office hours

Training

Custom sub-national / in-country GIS trainings

Live + self-paced Learning Series in GIS in 3 languages

Events

Hosting Open Houses

Facilitation and organisation of global events and meetings

Cultivating Knowledge

Hosting monthly Knowledge Series webinars

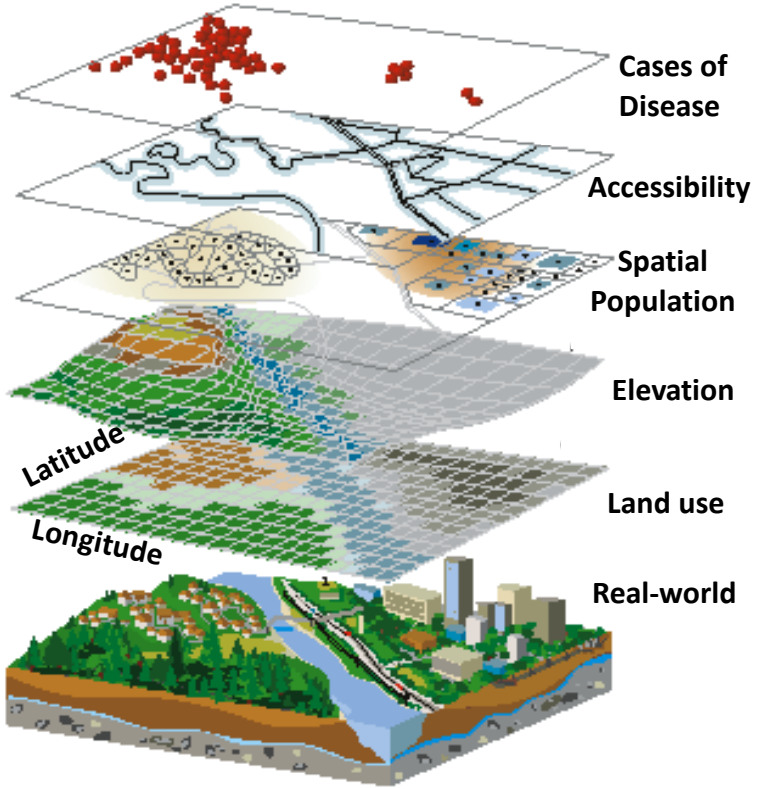
Hosting Community of Practice (2024)

Capacity Development & Support

- Workshops
- Training – Online, In-Person
- Webinars
- Events
- Office Hours
- Mentoring
- Missions

We are building a geospatial culture to serve public health from the frontlines to global analysis.

GIS Workstreams



Service

- Technical Assistance
- Maps
- Projects
- Request
- Conceptualization
- Definition
- Planning
- Execution

Geo Place

A gateway for geospatial datasets

Geo Workspace

Provide a geo-enabled workspace

Geo Mart

Provide baseline and infrastructure

Geo Hub

Visualization and dissemination

Geolocated Health Facility Data Initiative

Health Facility Master Lists

One HFML per country that is digitized, regularly updated, and made accessible by the Ministry of Health (MOH).

+

Country Capacity

MOH capacity to regularly maintain, update, use, and publicly share their HFML.

+

Global Database

Publicly available database of digitised health facility information sourced from country HFMLs.

=

Geolocated Health Facilities Data (GHFD) initiative

GHFD Initiative Strategic Framework

STRATEGIC OBJECTIVES

National Level
MOHs empowered to establish, maintain, openly share and use the HFML

Regional Level
Technical assistance available for countries to establish, maintain, share and use HFMLs

Global Level
Supporting environment in place to establish, sustain and share countries' HFMLs through the GHFD

STRATEGIC PATHWAYS

Seven strategic pathways act as enablers to support the implementation and sustainability of the project at the country level.

- Governance & Policies
- Advocacy & Communication
- Capacity
- Financial Sustainability
- Partnerships & Collaboration
- Interoperability & Data Management
- Innovation & Technology

GUIDING PRINCIPLES

- Quality
- Openness
- Empowerment
- Cost Effectiveness & Sustainability

World Health Organization

GHFD Strategic Pathways

Seven strategic pathways act as enablers to support the implementation and sustainability of the project at the country level.

Governance & Policies

- Establish a robust governance and policy framework aimed at institutionalizing the HFML
- Attain political endorsement, strengthen institutional mandate and build an open data sharing environment

Partnerships & Collaboration

Create and sustain the value of countries' HFML through a culture based on inclusion, trusted partnerships and strategic alliances that recognize the value of the GHFD as a global public good

Innovation and Technology

Ensure the most appropriate, cost-effective and interoperable technologies are tested, documented and utilized for the HFML and GHFD

Communication & Advocacy

Effective awareness raising, communication and engagement to ensure participation and contribution from all stakeholders and at all levels

Capacity

Build and strengthen knowledge, competencies and skills to support the HFML and GHFD life cycle

Financial Sustainability

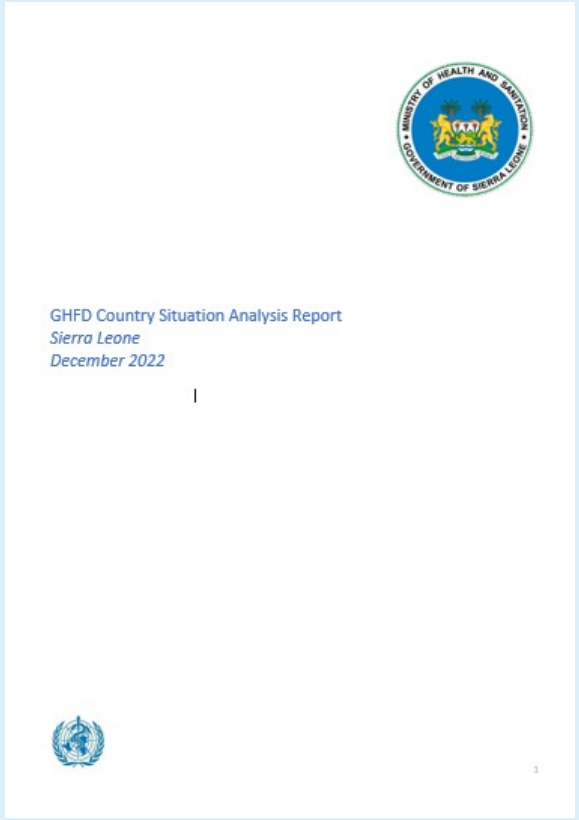
Achieve an understanding of the financial plans required to establish and maintain the countries' HFML, sustain the GHFD, and operationalize these plans

Interoperability & Data Management

- Develop a well-defined data supply chain for establishing, maintaining, regularly updating and sharing countries' HFML
- Assign a unique ID that can be linked to different data sources to improve consistency and reduce duplication

World Health Organization

Identified Key Areas of Support for Sierra Leone


GHFD Country Situation Analysis Report
Sierra Leone
December 2022

Governance and Policies

- Support the MoHS in developing an official SOP document and in enforcing the creation of relevant policies and guidelines

Partnerships and Collaboration

- Partners will have to continuously engage the MoHS on the advantages of public access of the HFML.
- Improve coordination of key stakeholders

Data Management and Interoperability

- Provide support around building a robust health facilities database that can accommodate a wider range of attributes

Innovation and Technology

- Addressing the lack of a functioning GIS setup, including software and hardware
- Improve and increase data-related accessories and equipment for data collection, management, and storing.

Capacity

- Identify possible areas of external support The MoHS is also stretched and understaffed, particularly in ICT. The WHO CO could partner with its IT department to provide external support and assistance.
- Training and support to hire an experienced, permanent GIS professional or department to coordinate all GIS related issues within the MFL's management.

Advocacy and Communication

- Raise awareness of importance of the timely sharing of information across all levels and technical expertise
- Simple, easy-to-access communication materials may also need to be produced.

Financial Sustainability

- Support subcontracting a consultant to assist or seek assistance from WHO through the GHFD initiative for writing proposals.
- Dedicated GIS resource in the MoH to maintain the datasets.

World Health Organization

TIER 1

SIERRA LEONE

WHO Region:	**AFRO**
Population:	**8.4mil**
Health facilities:	**1,558**
Health facility master list publicly available::	**Pending**
Estimated initial investment for the GHFD initiative:	**USD $143,925**

Country Situation Analysis Completed:

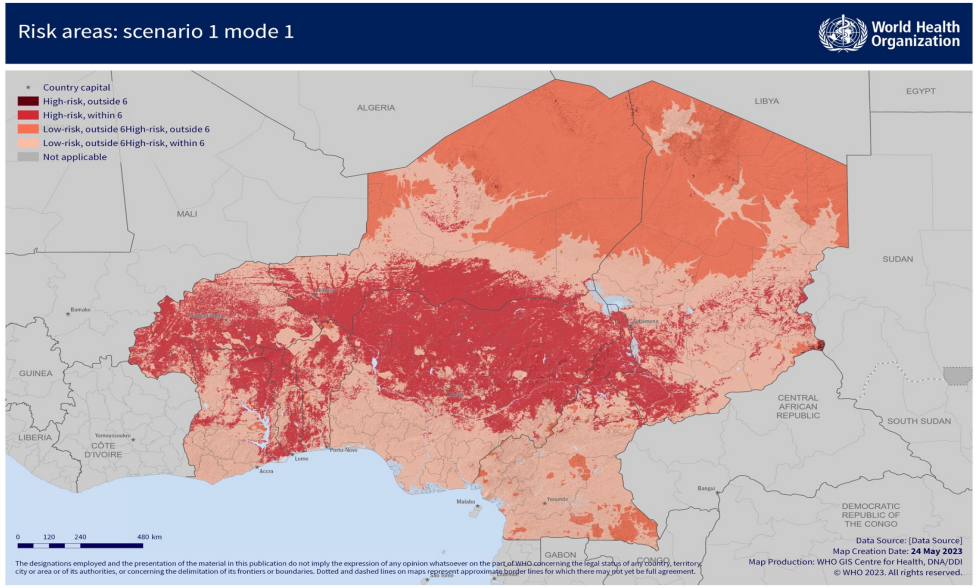
Yes | No

CSA Endorsed by Country MoH:

Yes | No

World Health Organization

AccessMoD


Risk areas: scenario 1 mode 1
World Health Organization
Country capital
High-risk, outside 6
High-risk, within 6
Low-risk, outside 6High-risk, outside 6
Low-risk, outside 6High-risk, within 6
Not applicable
ALGERIA
LIBYA
EGYPT
MALI
SUDAN
GUINEA
LIBERIA
CÔTE D'IVOIRE
CENTRAL AFRICAN REPUBLIC
SOUTH SUDAN
DEMOCRATIC REPUBLIC OF THE CONGO
0 120 240 480 km
Data Source: [Data Source]
Map Creation Date: 24 May 2023
Map Production: WHO GIS Centre for Health, DNA/DDI
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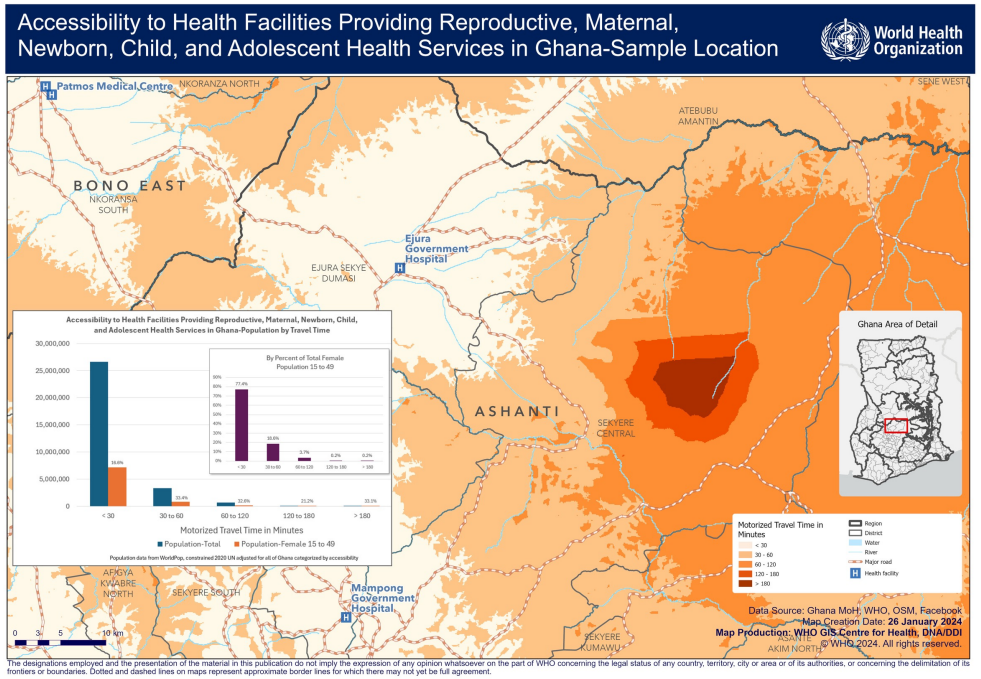
The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.


AccessMod next-generation
WHO GIS Centre for Health is working to develop the AccessMod next-generation online platform of AccessMod version 5 to support accessibility as part of the Universal Health Coverage (UHC).
Just like we use google maps for navigation to a location, AccessMod is a WHO tool developed along with partners at University of Geneva. It is used to determine accessibility to healthcare facilities, and to assist countries to examine the geographic aspects of their health system. It specifically addresses the first three layers of a well-known framework developed by Tanahashi (1978) to evaluate health service coverage (the specific three layers being: the target population, availability coverage and accessibility coverage).
AccessMod tool developed
The current standalone AccessMod tool developed in partnership with Bluesquare will be now available to users in an online version with preloaded layers essential for accessibility analysis. This means that users from a web browser could use this tool to determine the time needed to reach the nearest health facility. Decision-makers could determine the percentage of population in a target area who have access to health facilities and where to add a new health facility to meet the population needs.


Accessibility to Health Facilities Providing Reproductive, Maternal, Newborn, Child, and Adolescent Health Services in Ghana-Sample Location
World Health Organization
Patmos Medical Centre
NKORANZA NORTH
BONO EAST
NKORANSA SOUTH
EJURA SEKYE DUMASI
Ejura Government Hospital
ATEBUBU AMANTIN
SENE WEST
ASHANTI
SEKYERE CENTRAL
SEKYERE SOUTH
AFIGYA KWABRE NORTH
Mampong Government Hospital
SEKYERE KUMAWU
AKIM NORTH
Ghana Area of Detail
Accessibility to Health Facilities Providing Reproductive, Maternal, Newborn, Child, and Adolescent Health Services in Ghana-Population by Travel Time
By Percent of Total Female Population 15 to 49
Motorized Travel Time in Minutes
Population-Total
Population-Female 15 to 49
Motorized Travel Time in Minutes
Region
District
Water
River
Major road
Health facility
0 5 10 km
Data Source: Ghana MoH, WHO, OSM, Facebook
Map Creation Date: 26 January 2024
Map Production: WHO GIS Centre for Health, DNA/DDI
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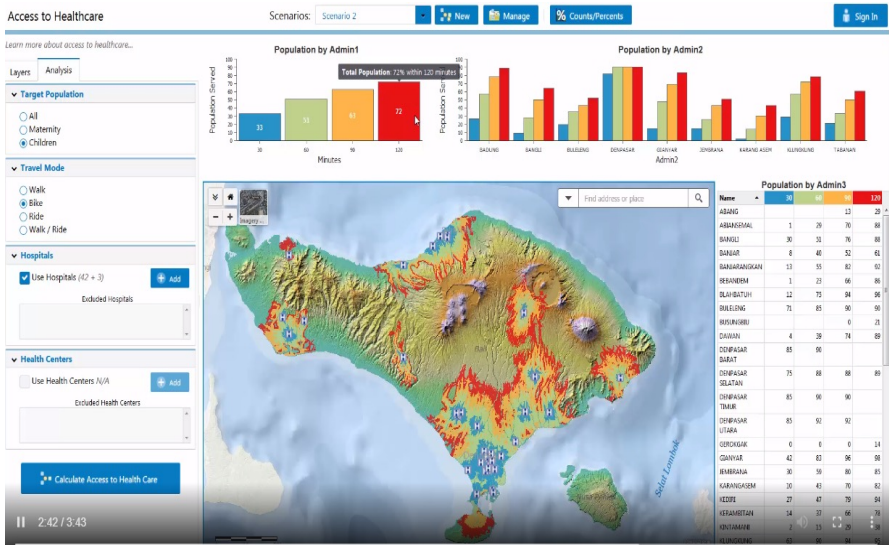

Access to Healthcare
Scenarios:
Scenario 2
New
Manage
Counts/Percents
Sign In
Learn more about access to healthcare...
Layers
Analysis
Target Population
All
Maternity
Children
Travel Mode
Walk
Bike
Ride
Walk / Ride
Hospitals
Use Hospitals (42 + 3)
Add
Excluded Hospitals
Health Centers
Use Health Centers N/A
Add
Excluded Health Centers
Calculate Access to Health Care
Population by Admin1
Total Population: 72% within 120 minutes
Population Served
Minutes
Population by Admin2
Population Served
Admin2
Population by Admin3
2:42 / 3:43

Counting deaths using High-Resolution Satellite Imagery

2016

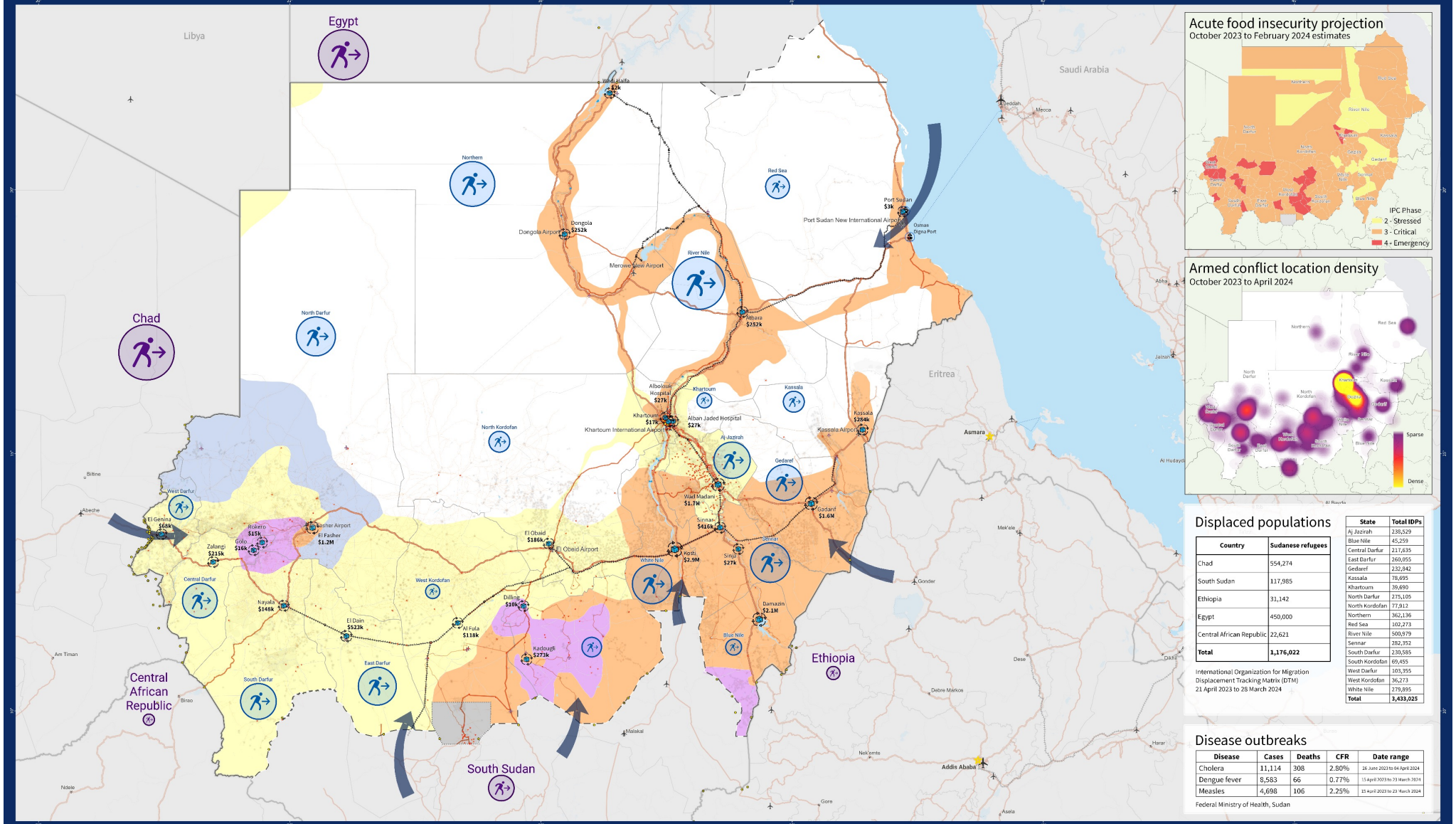
2018

2019

2020

Sudan situation overview

World Health Organization



Displaced populations

Country	Sudanese refugees
Chad	554,274
South Sudan	117,985
Ethiopia	31,142
Egypt	450,000
Central African Republic	22,621
Total	**1,176,022**

International Organization for Migration
Displacement Tracking Matrix (DTM)
21 April 2023 to 28 March 2024

State	Total IDPs
Aj Jazirah	238,529
Blue Nile	45,259
Central Darfur	217,635
East Darfur	260,055
Gedaref	232,842
Kassala	78,695
Khartoum	39,680
North Darfur	275,105
North Kordofan	77,912
Northern	362,136
Red Sea	102,273
River Nile	500,979
Sennar	282,352
South Darfur	230,585
South Kordofan	69,455
West Darfur	103,355
West Kordofan	36,273
White Nile	279,895
Total	**3,433,025**

Disease outbreaks

Disease	Cases	Deaths	CFR	Date range
Cholera	11,114	308	2.80%	26 June 2023 to 04 April 2024
Dengue fever	8,583	66	0.77%	15 April 2023 to 23 March 2024
Measles	4,698	106	2.25%	15 April 2023 to 23 March 2024

Federal Ministry of Health, Sudan

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere
GCS: GCS WGS 1984
Projection: Mercator Auxiliary Sphere
Datum: WGS 1984

Map scale (A0): 1:2,700,000
0 100 200 300 km

Boundaries
Country boundary
Sub-national first level
Sub-national second level

Populated places
National capital
Provincial capital
Populated area

Transportation
Major road
Primary road
Secondary road
Minor road
Ferry route
Railway

Ferry terminal
Railway station
Large airport
Medium airport
Other airport
Port

Conflict territories
Rapid Support Forces (Hemedti)
Rebels
SLA (Minni Minnawi), JEM (Gibril Ibrahim)
Sudanese Armed Forces (Burhan)
Armed conflict location (October 2023 - March 2024)

Displaced people
600,000
100,000
20,000

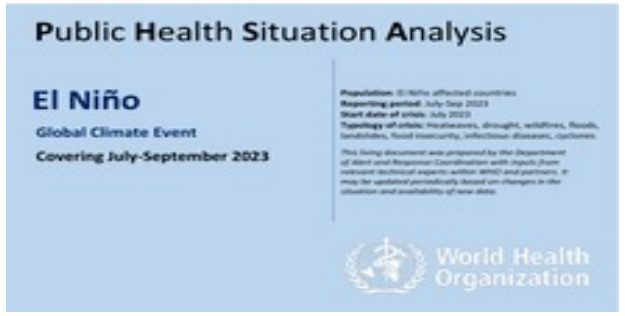
Refugees
Internally displaced people
Operations & logistics site
Incoming supplies
Water
Not applicable

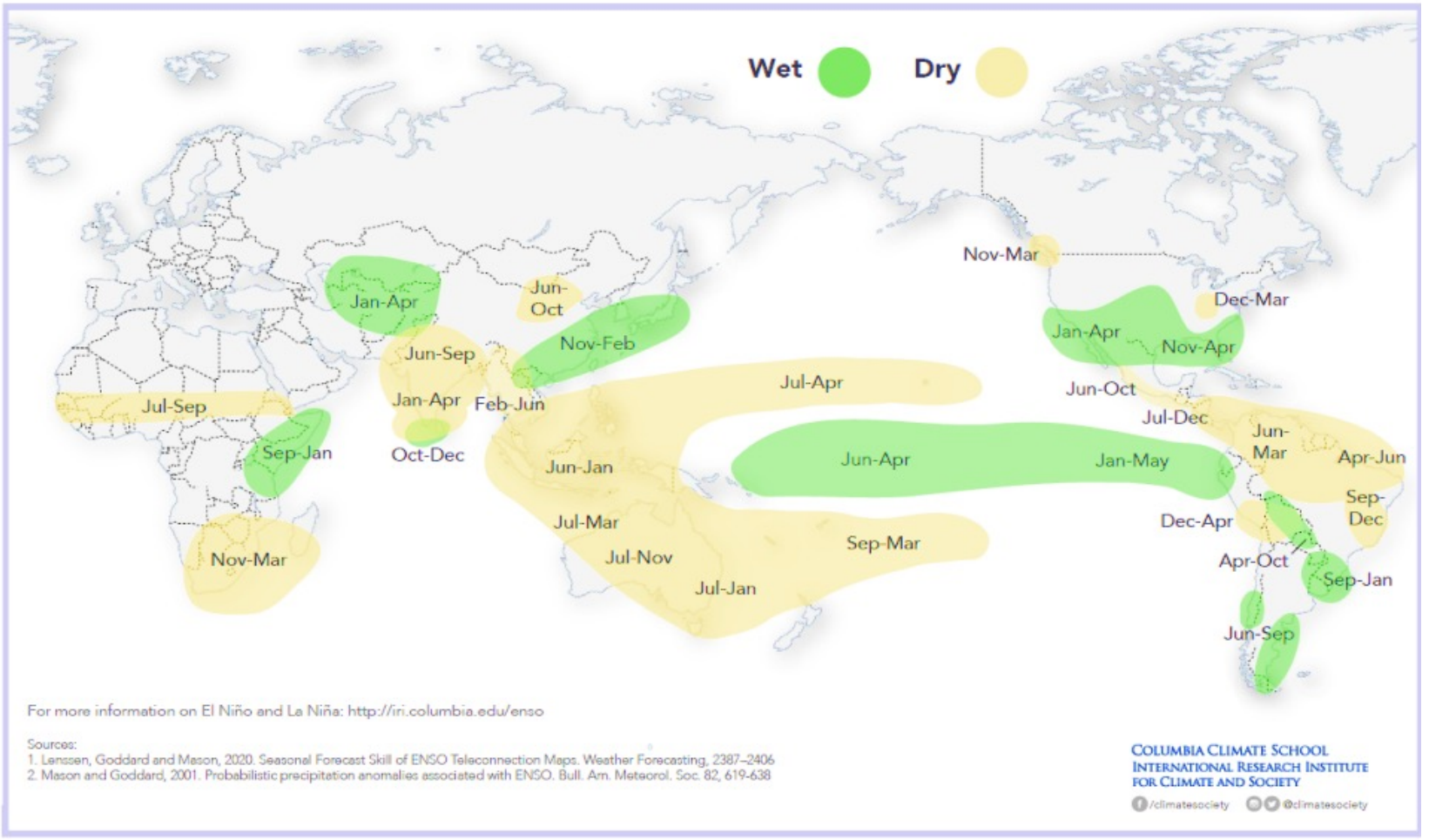
Country: Sudan
Region: EMRO
Status: Member state

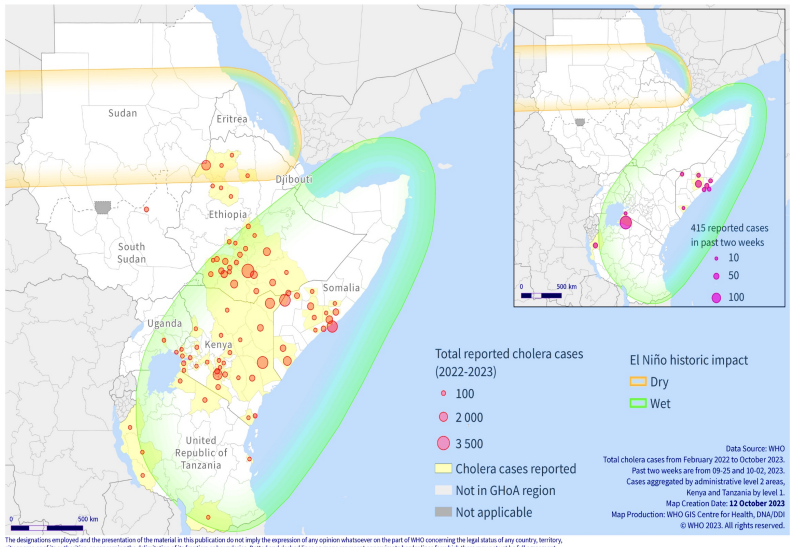
Admin. Boundaries: WHO
Refugees, Border crossings: UNHCR
Internally displaced people: IOM
Disease cases: Federal Ministry of Health, Sudan
Conflict territories: Thomas van Linge
Roads, railways, airports, seaports: OpenStreetMap
Populated places: OpenStreetMap, WorldPop
Waterbodies: OpenStreetMap
Food insecurity: IPC, Feb 2024 estimates
Map production: WHO GIS Centre for Health, DNA/DDI

Map creation date: 12 April 2024

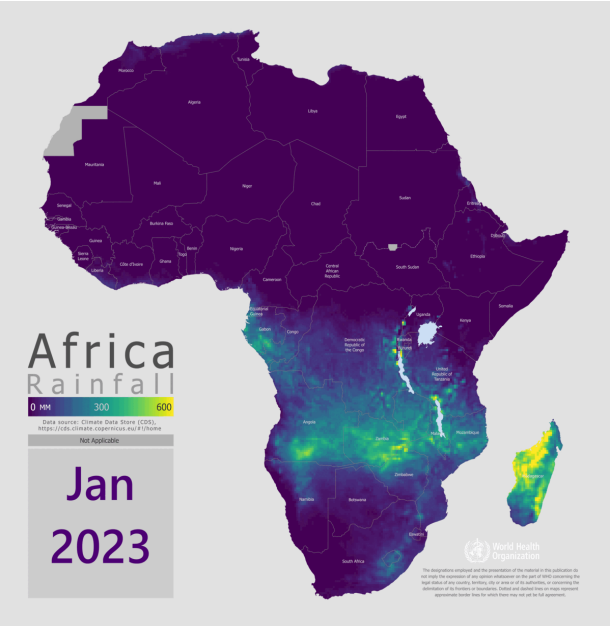
GIS for Public Health – Climate change El Niño-related climate patterns

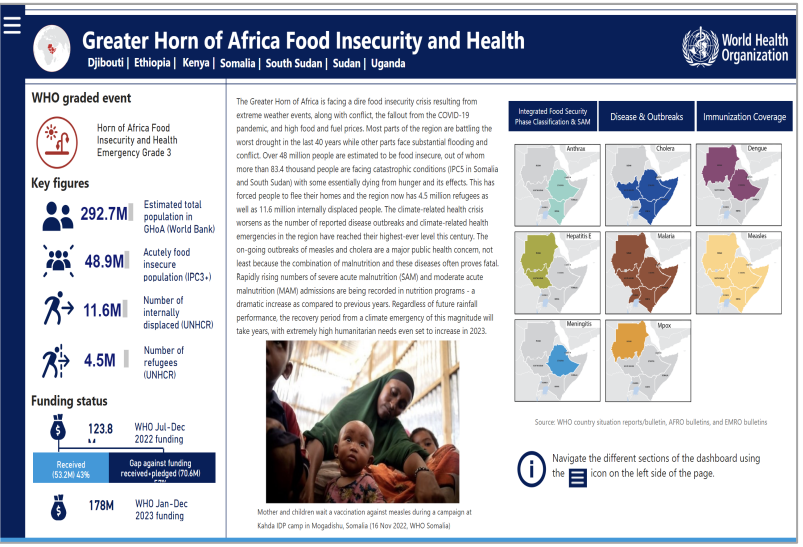


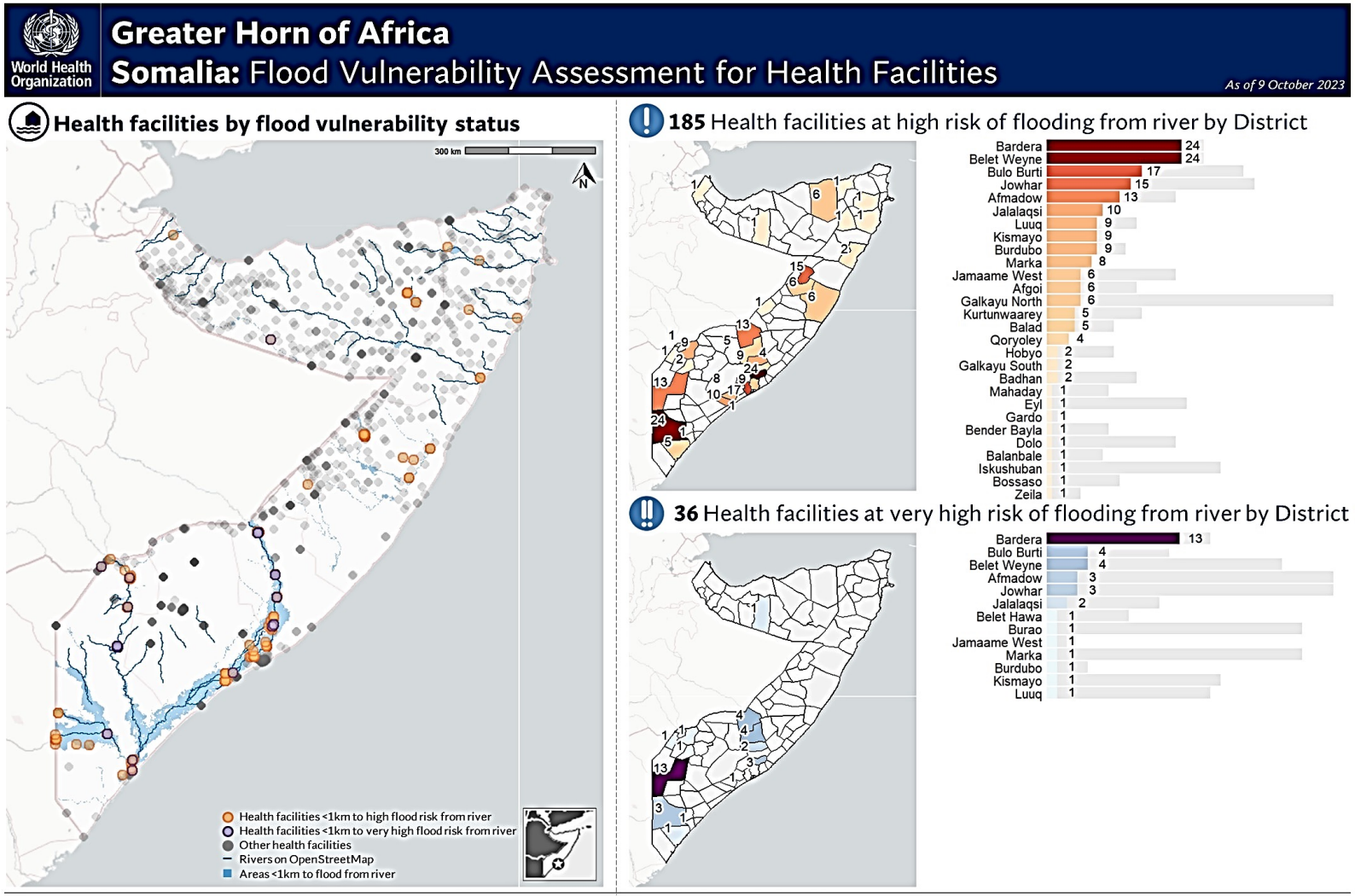


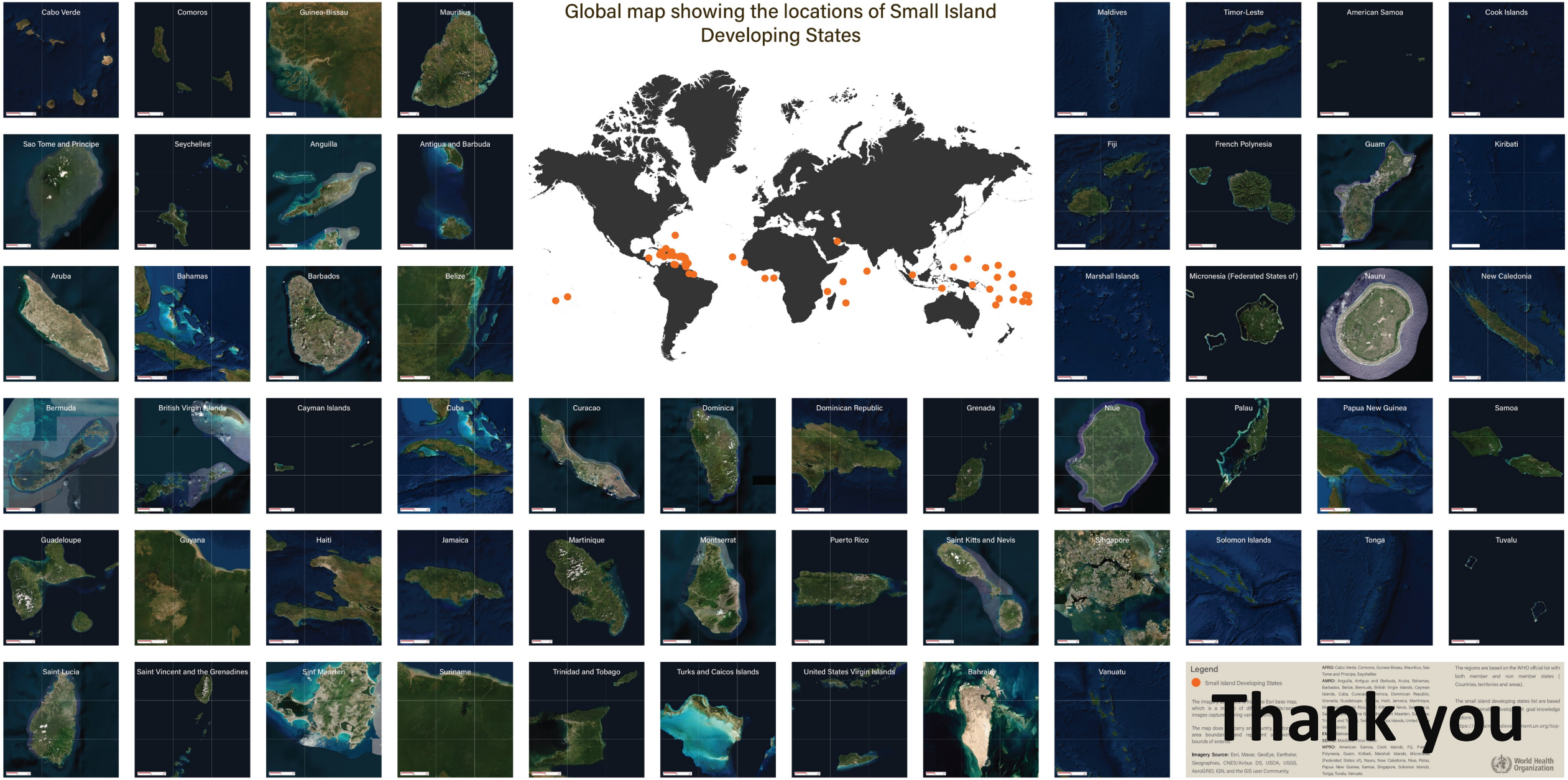


Potential impact of El Niño on Cholera in greater Horn of Africa








Global map showing the locations of Small Island Developing States
Cabo Verde
Comoros
Guinea-Bissau
Mauritius
Maldives
Timor-Leste
American Samoa
Cook Islands
Sao Tome and Principe
Seychelles
Anguilla
Antigua and Barbuda
Fiji
French Polynesia
Guam
Kiribati
Aruba
Bahamas
Barbados
Belize
Marshall Islands
Micronesia (Federated States of)
Nauru
New Caledonia
Bermuda
British Virgin Islands
Cayman Islands
Cuba
Curacao
Dominica
Dominican Republic
Grenada
Niue
Palau
Papua New Guinea
Samoa
Guadeloupe
Guyana
Haiti
Jamaica
Martinique
Montserrat
Puerto Rico
Saint Kitts and Nevis
Singapore
Solomon Islands
Tonga
Tuvalu
Saint Lucia
Saint Vincent and the Grenadines
Sint Maarten
Suriname
Trinidad and Tobago
Turks and Caicos Islands
United States Virgin Islands
Bahrain
Vanuatu
Legend
Small Island Developing States
Imagery Source: Esri, Maxar, GeoEye, Earthstar, Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS user Community.
AFRO: Cabo Verde, Comoros, Guinea-Bissau, Mauritius, Sao Tome and Principe, Seychelles
AMRO: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Cuba, Curacao, Dominica, Dominican Republic, Grenada, Guadeloupe, Guyana, Haiti, Jamaica, Martinique, Montserrat, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sint Maarten, Suriname, Trinidad and Tobago, Turks and Caicos Islands, United States Virgin Islands
EMRO: Bahrain
SEARO: Maldives
WPRO: American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, New Caledonia, Niue, Palau, Papua New Guinea, Samoa, Singapore, Solomon Islands, Tonga, Tuvalu, Vanuatu
The regions are based on the WHO official list with both member and non member states (Countries, territories and areas).
The small island developing states list are based
World Health Organization
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Thank you