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GIS for a Sustainable World:
Building a Resilient Future

May 10 - 11, 2022 | InterContinental, Geneva, Switzerland

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Community Lightning Talks and Panel Discussion on Localization

Patrick Meier, Moderator

GIS for a Sustainable World Conference

Presenters

- Snakebite Information and Data Platform
  - *Dr. Prashant Hedao, World Health Organization (WHO)*
- Local Community Mobilization and Partnerships
  - *Nasilele Amatende Mwiimbwa, Humanitarian OpenStreetMap Team (HOT)*
- Lebanon Neighborhood Profiles
  - *Dr. Nanor Karageozian, UN-Habitat*
- Satellite Imagery to Support Vanuatu's Electoral Project
  - *Ayeisha Sheldon, UNOSAT*
- Comoe National Park - Ivory Coast
  - *Ivano Porfiri, gisAction*

Snakebite Information and Data Platform

Prashant Hedao, World Health Organization (WHO)

WHO Snakebite Information and Data Platform

-- Prashant Hedao
WHO GIS Centre for Health

World Health Organization

WHO NTD Team:

David Williams, **Bernadette** Abela-Ridder, **Rafael** Ruiz De Castenada, **Mike** Turner, **Beth** Moos

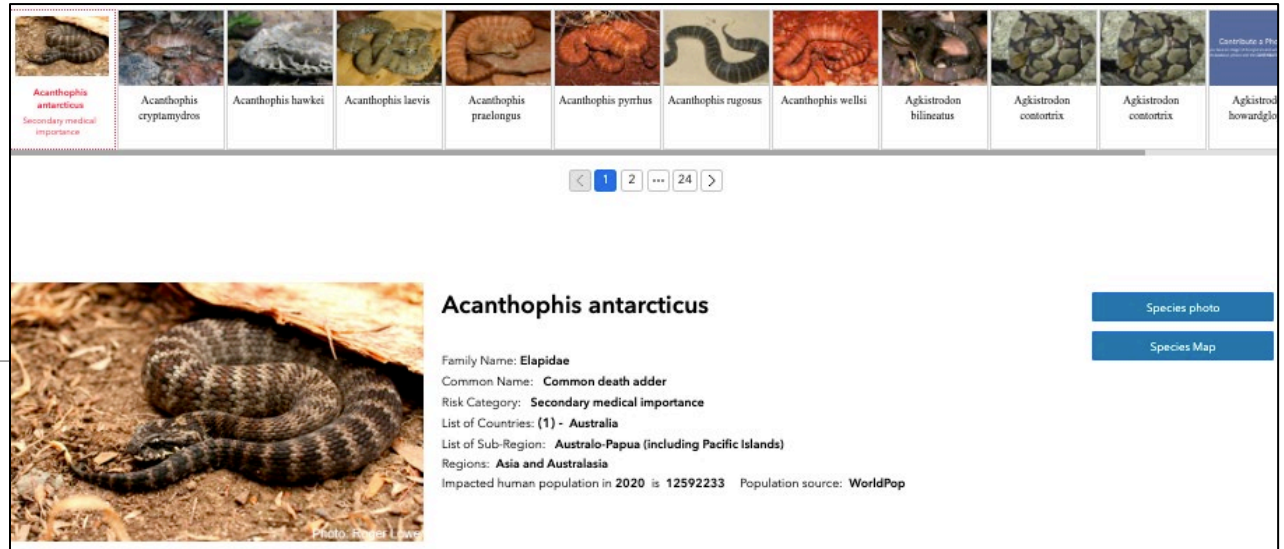
WHO GIS Centre for Health:

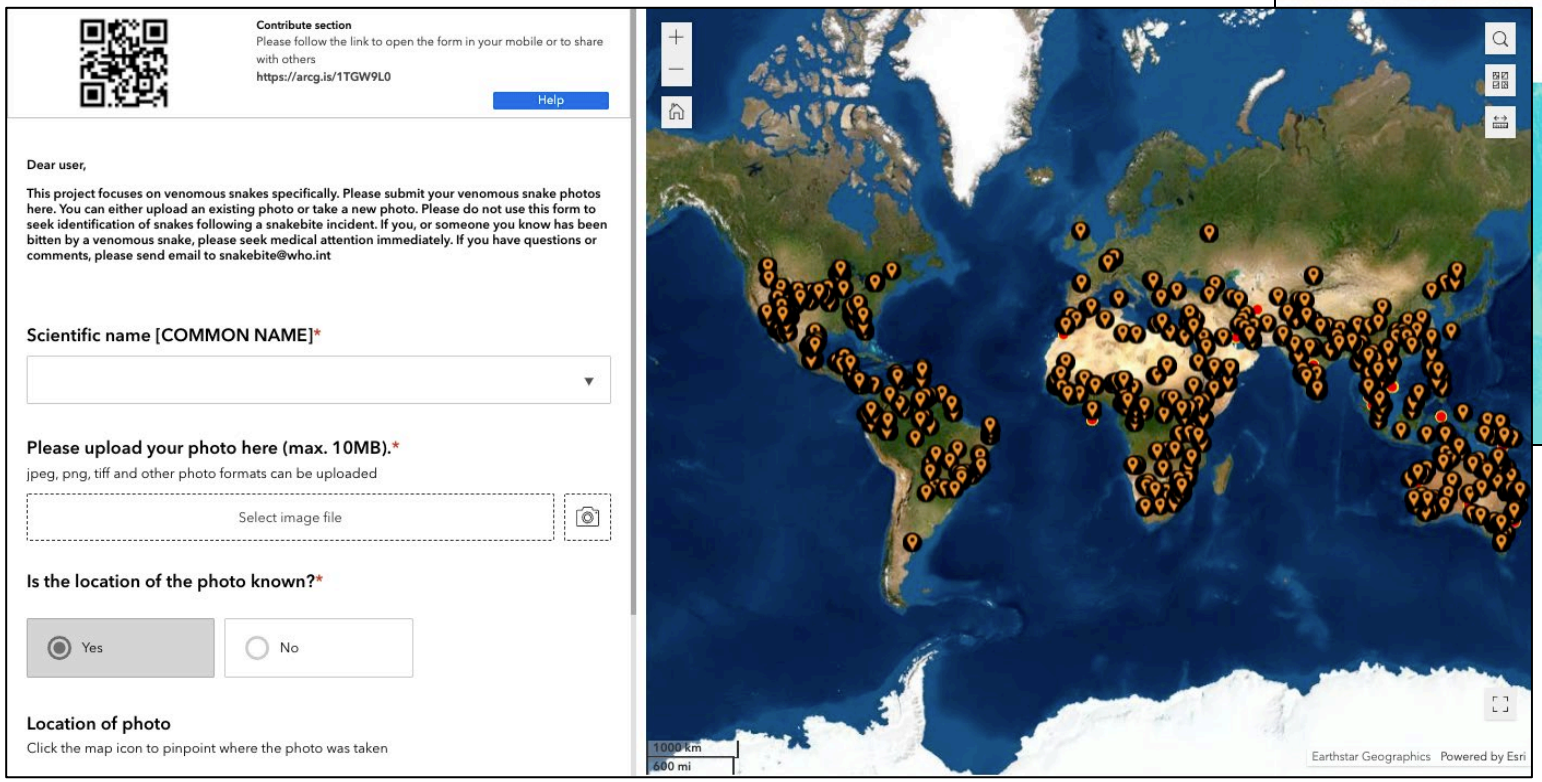
Ravi Shankar, **Prashant** Hedao, **Anna** Pintor, **Asela** Bandara, **KT**, **Daniel** Obare, **Sam** Aiyeoribe, **Julia** Coronel, **Kshitij** Bhatt, **Inge** Van Alphen

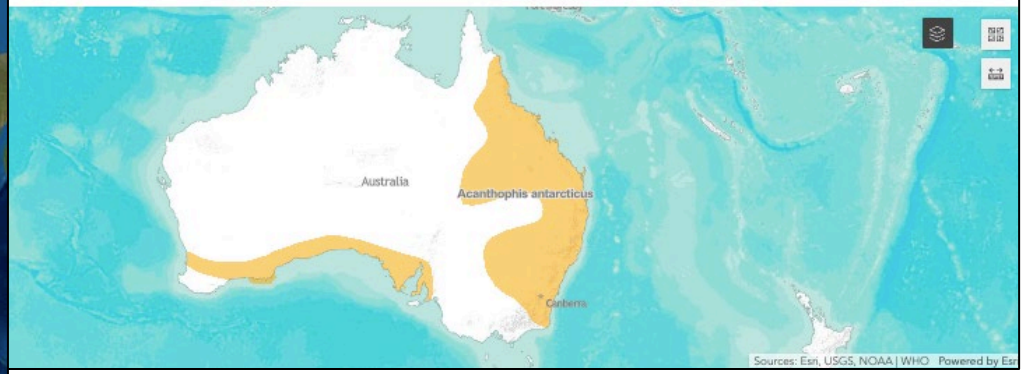
World Health Organization

Phase I of the platform was released in September 2021.

Phase II (ongoing) and it includes 7 countries each in West and East Africa where priority health facilities will be analyzed for accessibility and antivenom stockpiling.







www.who.int/snakebite-data-platform

Carpet Vipers of genus ***Echis*** are a major cause of snakebite in West Africa

EchiTAb antivenom specific to carpet viper bites is one of the very few antivenoms that is currently approved by WHO – many others are still being assessed.

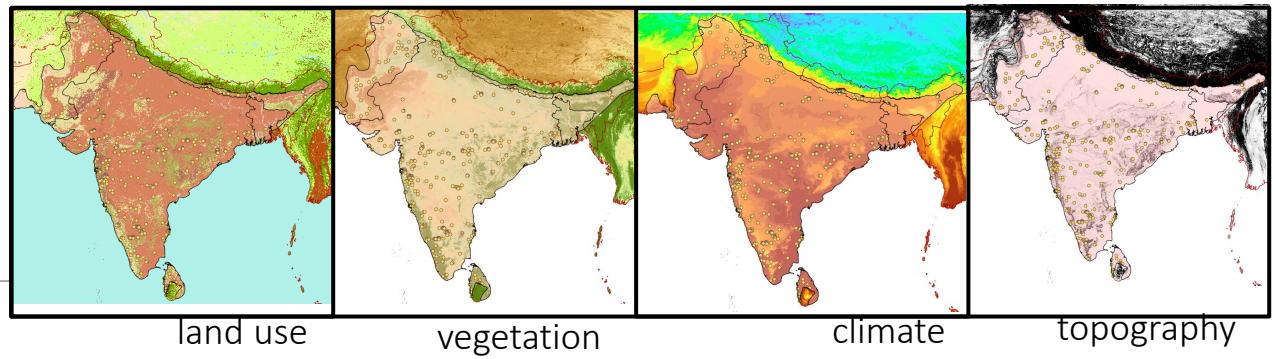

Photo: David Williams

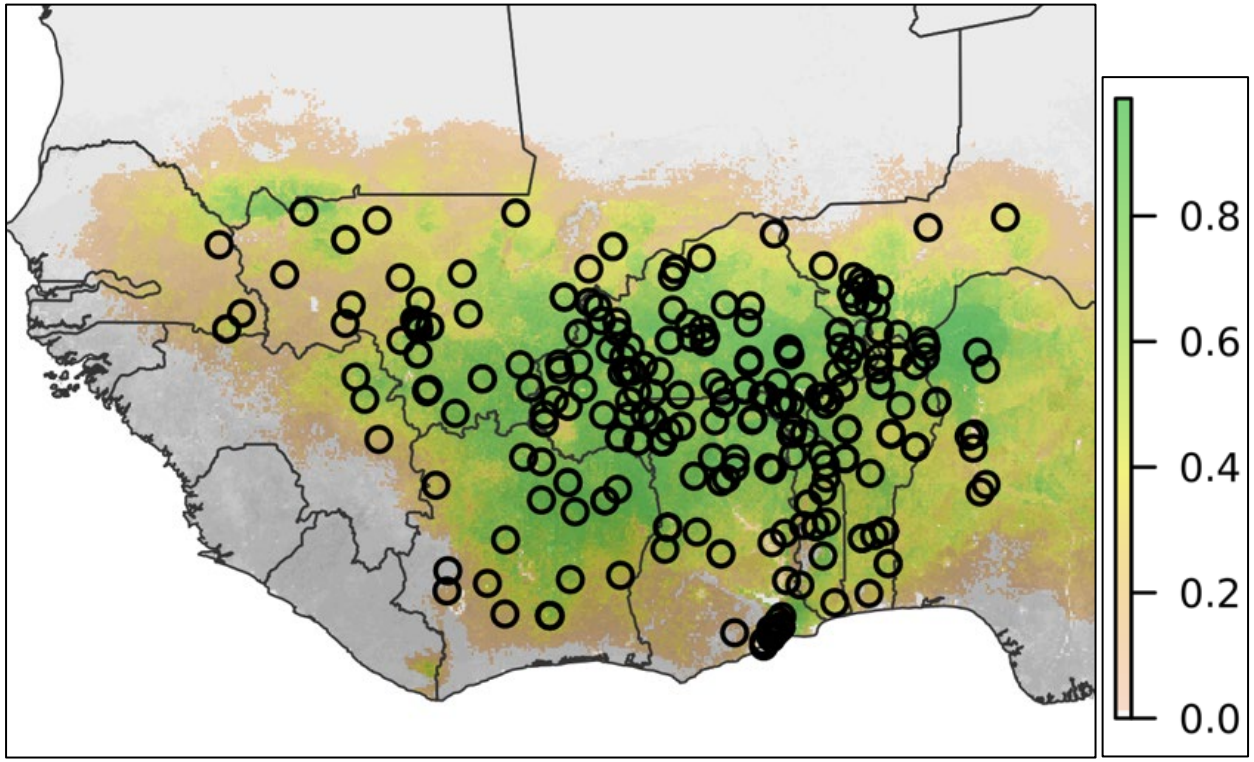
- Finding the right locations to reach the maximum number of people in West Africa affected by *Echis*
- Develop a methodology that can later be applied to other snakes and regions.
- Impacted population: @**350 million**


Photo: David Williams


Photo: Wolfgang Wüster

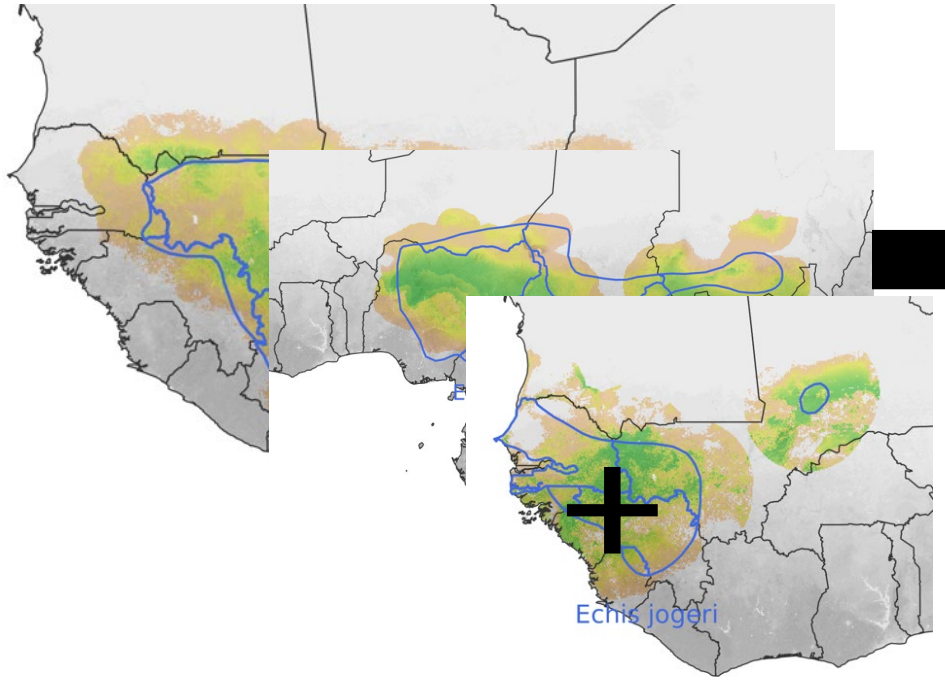
- **WorldClim** climate data – temperature, rainfall, etc.
- **Topography** on topographic ruggedness, slope, etc.
- **Soil** characteristics based on **ISRIC** for soil type, percent clay, organic carbon, bulk density, etc.
- **Lithology** based on **GLiM** polygons (Global Lithology map database)
- **Vegetation** layers for vegetation fraction photosynthetic active radiation, dry matter productivity, etc.
- **Landcover** for vegetation types, agriculture, water, bare land, urban, etc.
- **Water** courses based on **WWF's HydroATLAS**

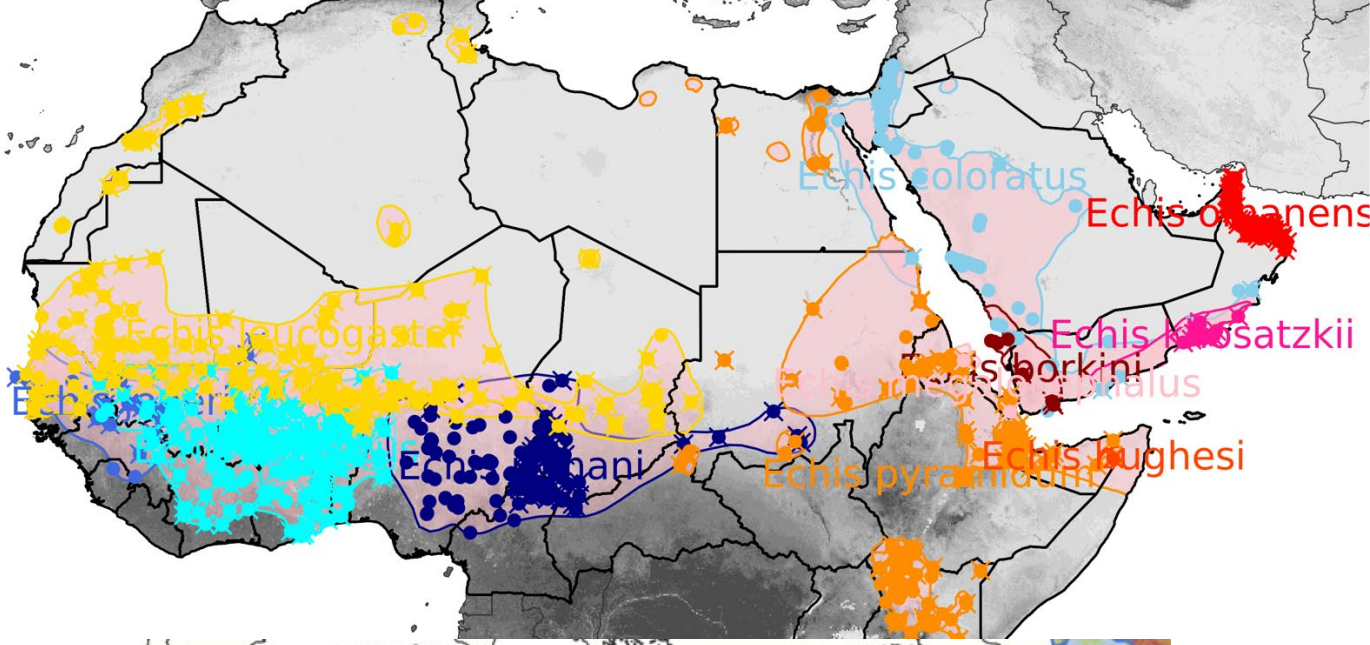


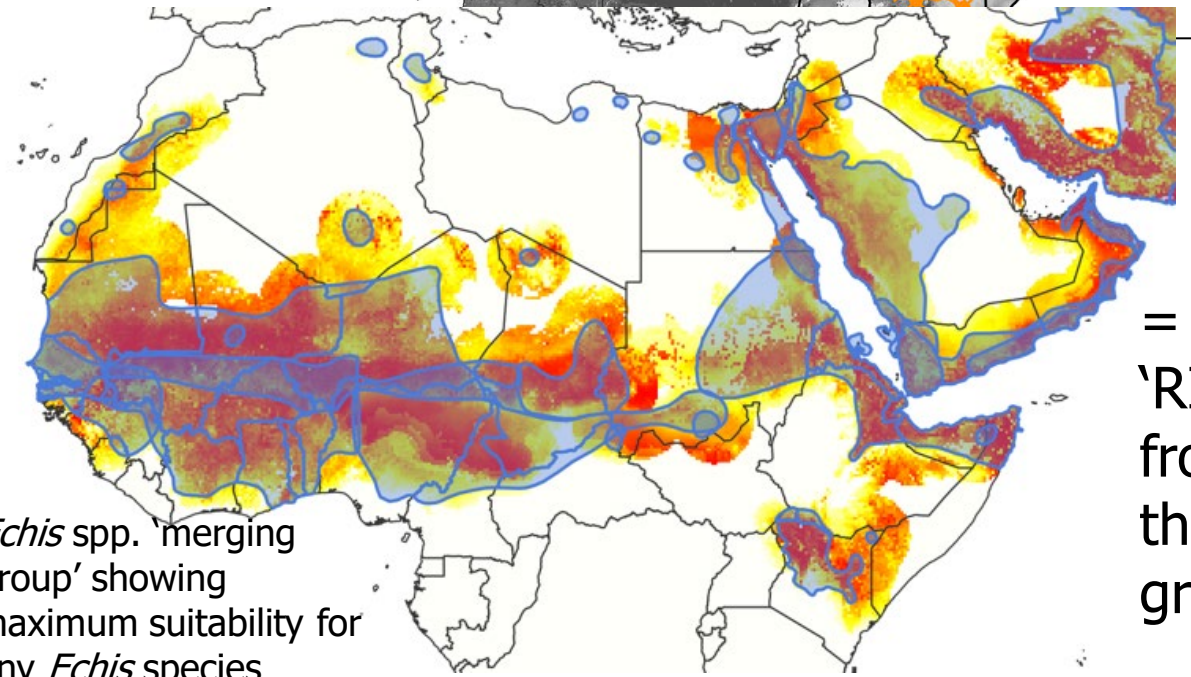


Species Distribution Models (SDMs)

- The more suitable the habitat for a snake species, the more abundant the species and the **higher the snakebite risk**
- Maximum suitability for any Echis spp. shows **where antivenom for this group may be needed**



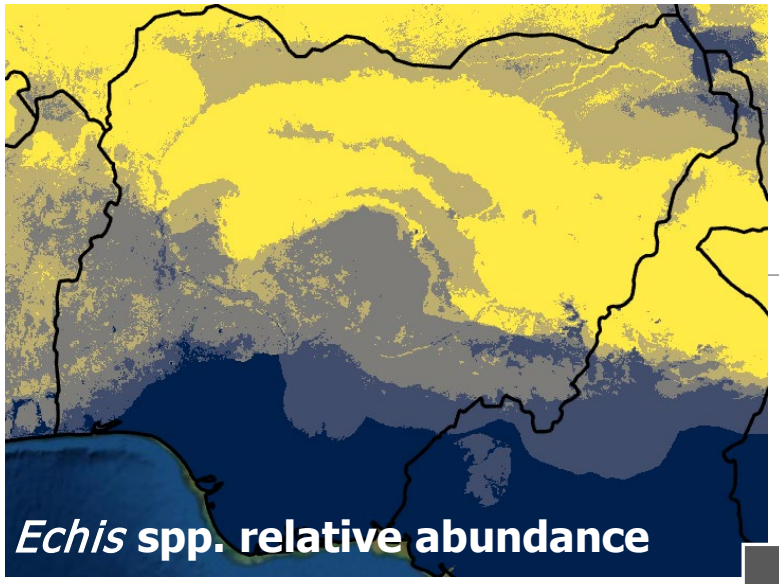


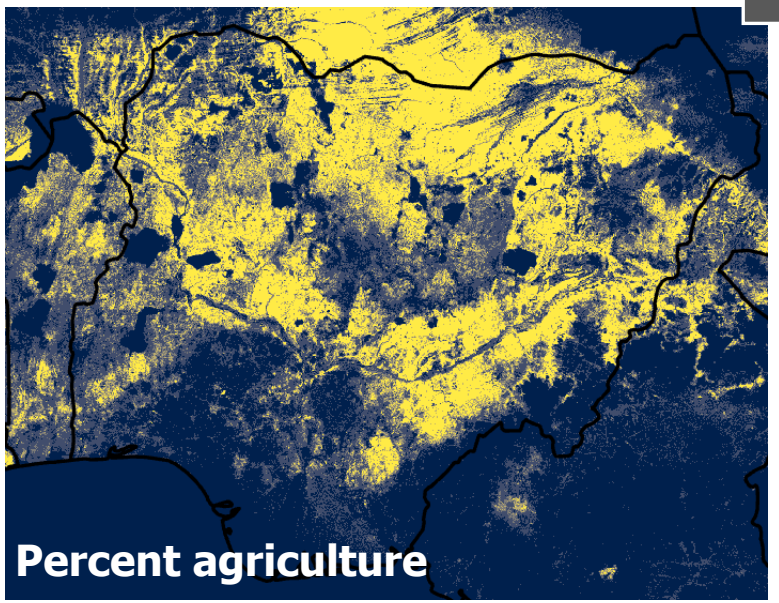


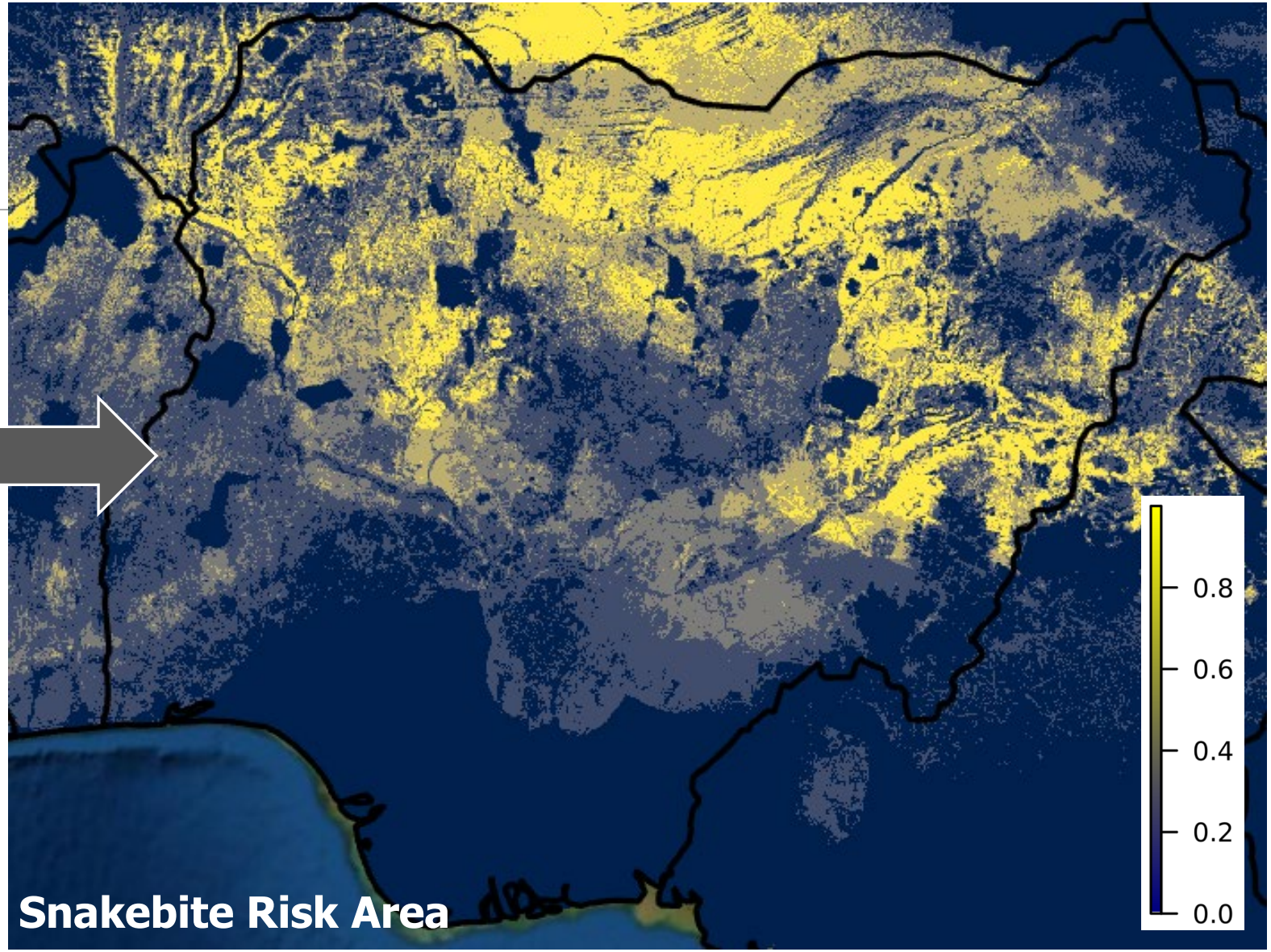
Echis spp. 'merging group' showing maximum suitability for any *Echis* species

= 'RISK' from this group

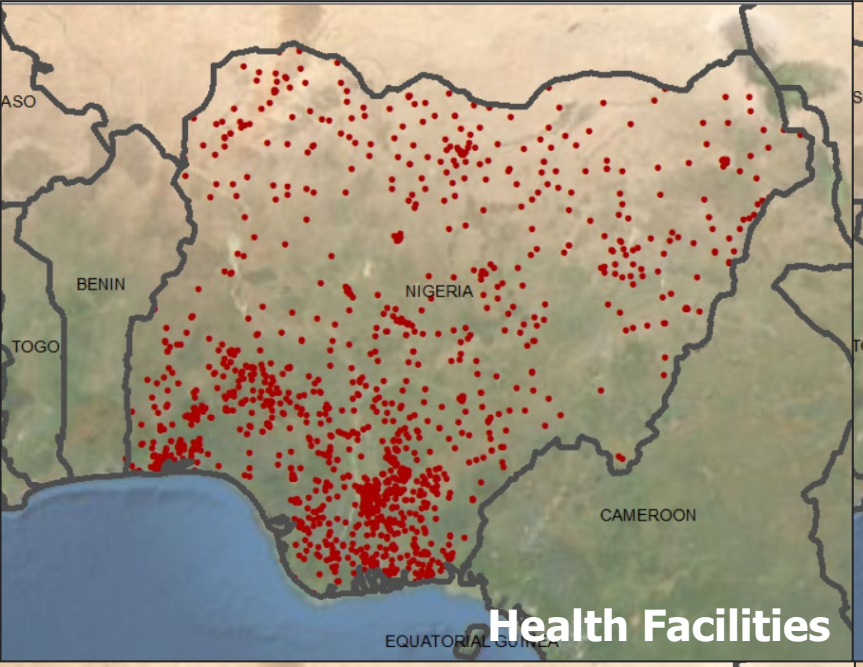
Snake Abundance

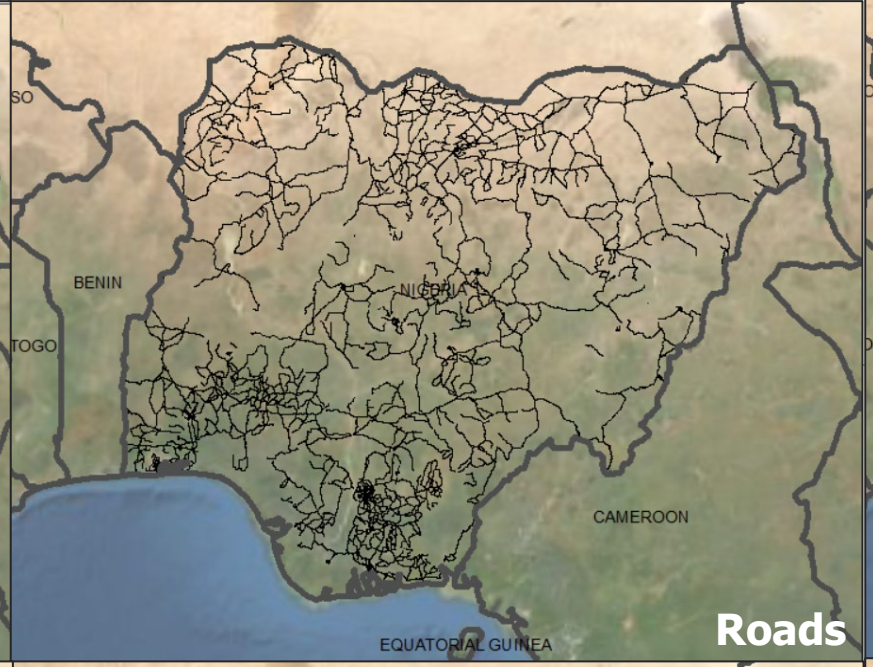


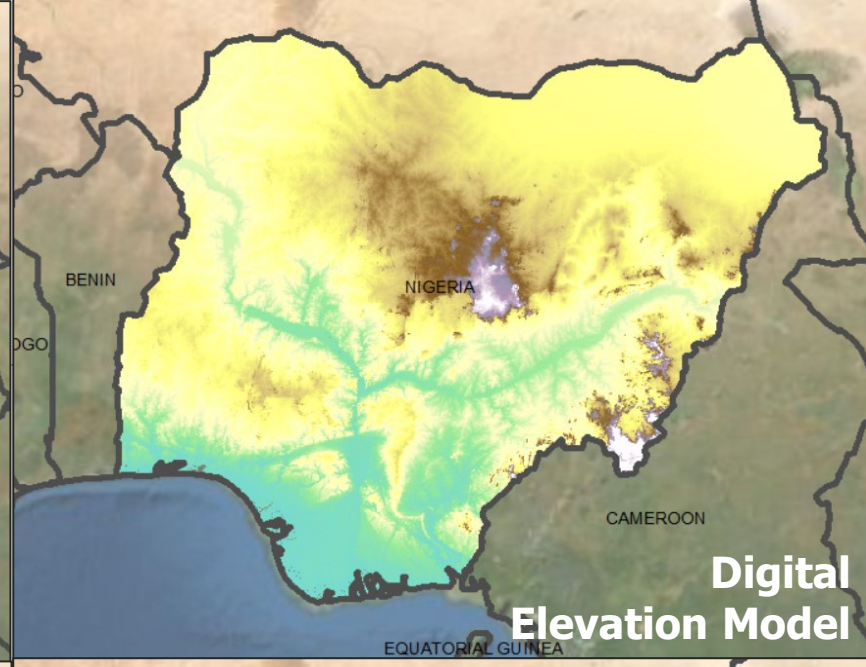


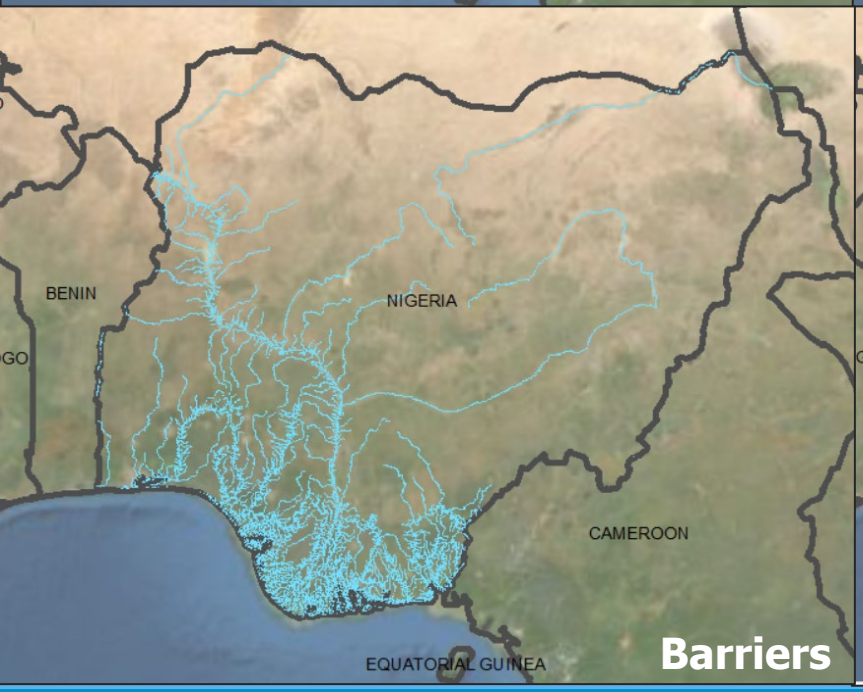


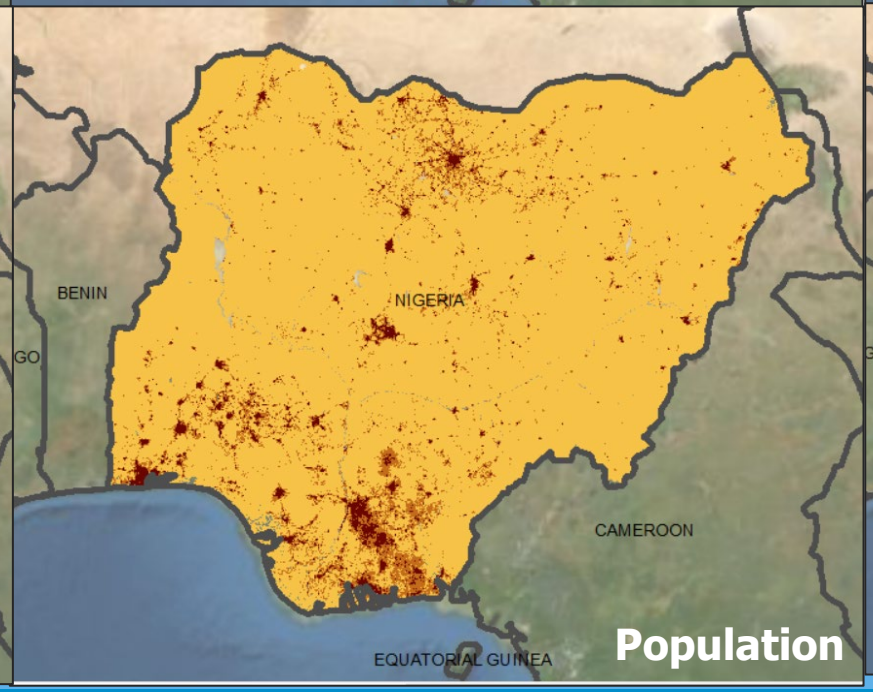
Snakebite Risk - where do humans and snakes interact?

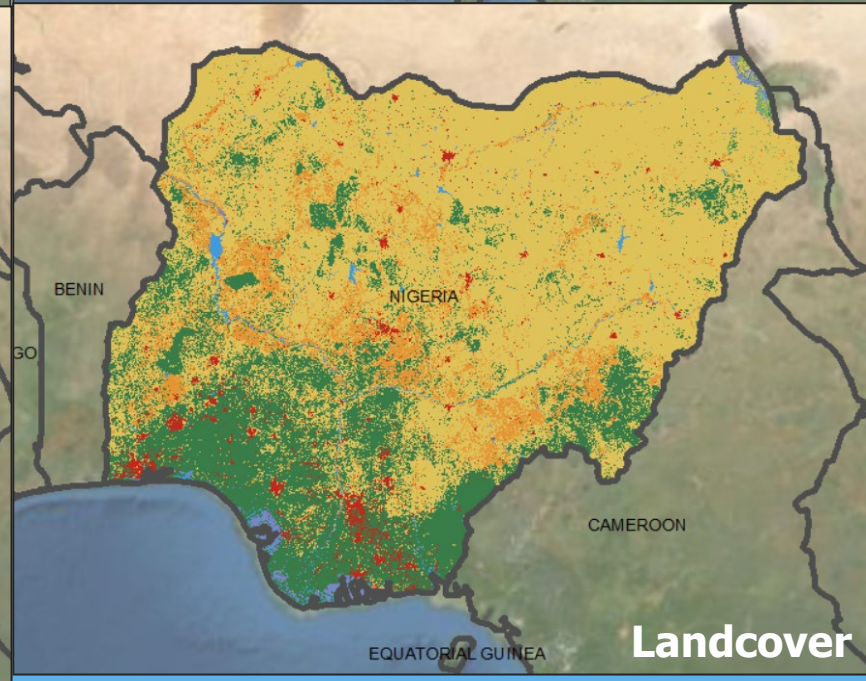












Data Sources: Accessibility Modeling

Walking mode only

Health facilities ***accessibility analysis*** Nigeria: (created in ***AccessMod*** software) based on:

- ***Digital Elevation Model*** topography would influence (positively or negatively the speed of the travel).
- ***Landcover*** - Trees, grass, flooded vegetation, crops, built areas, etc.
- ***Road network*** (Open Street Map) - Primary, Secondary Tertiary with speeds
- ***Health Facilities***
- ***Water courses*** based on WWF/USGS' HydroATLAS.
- ***WorldPop*** (constrained) estimated total number of people in 100x100m.

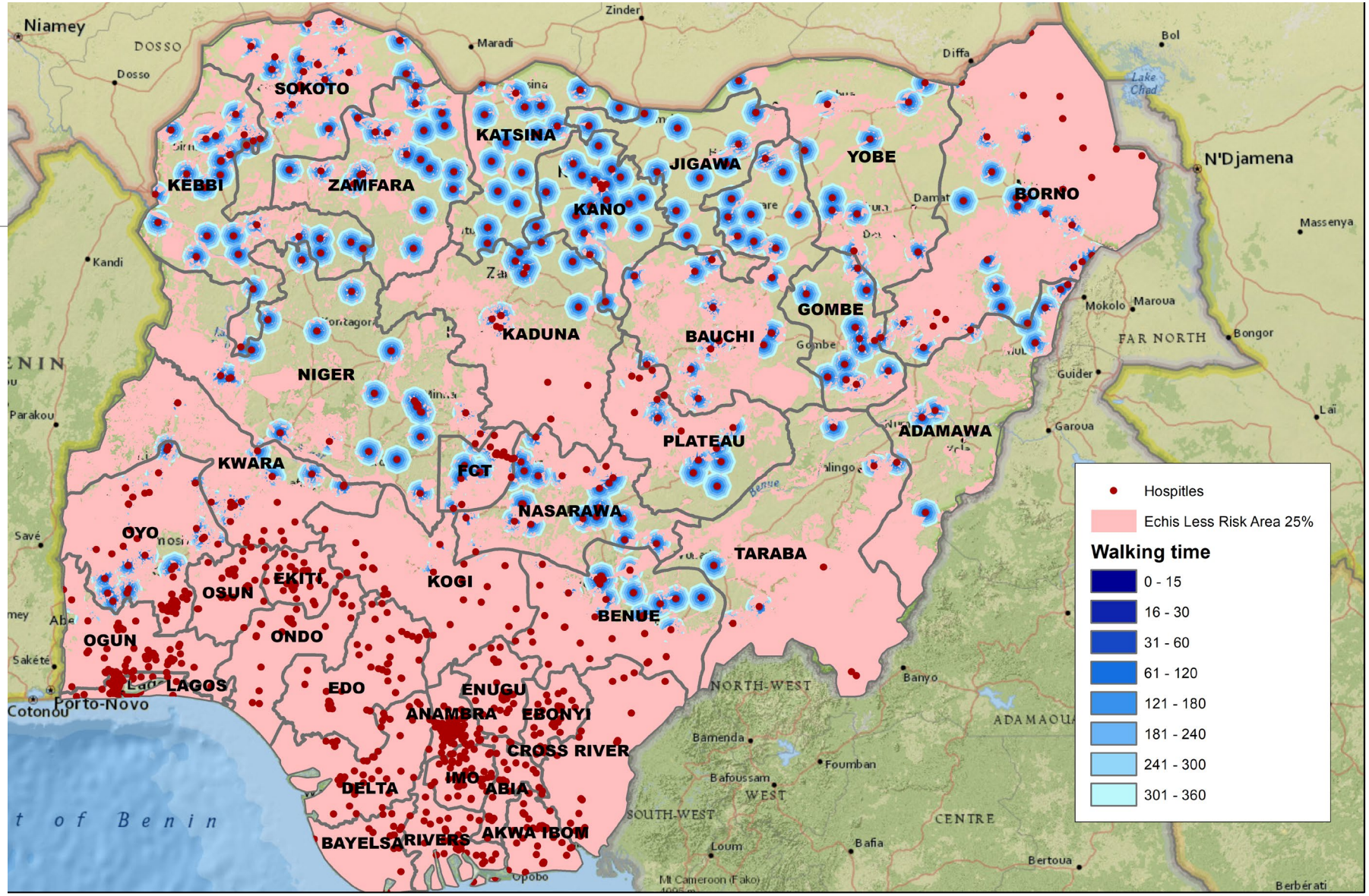
Class	Label	Speed	Mode
1	Water	0	Walking
2	Trees	2	Walking
3	Grass	3	Walking
4	Flooded vegetation	2	Walking
5	Crops	3	Walking
6	Scrub/shrub	3	Walking
7	Built Area	3	Walking
8	Bare ground	3	Walking
1000	Trunk	5	Walking
1001	Motorway	5	Walking
1002	Primary	5	Walking
1003	Secondary	5	Walking
1004	Tertiary	5	Walking
1005	Unclassified	5	Walking

Area in risk of Snakebite:
772,426 km²

Population in Risk Area:
46,799

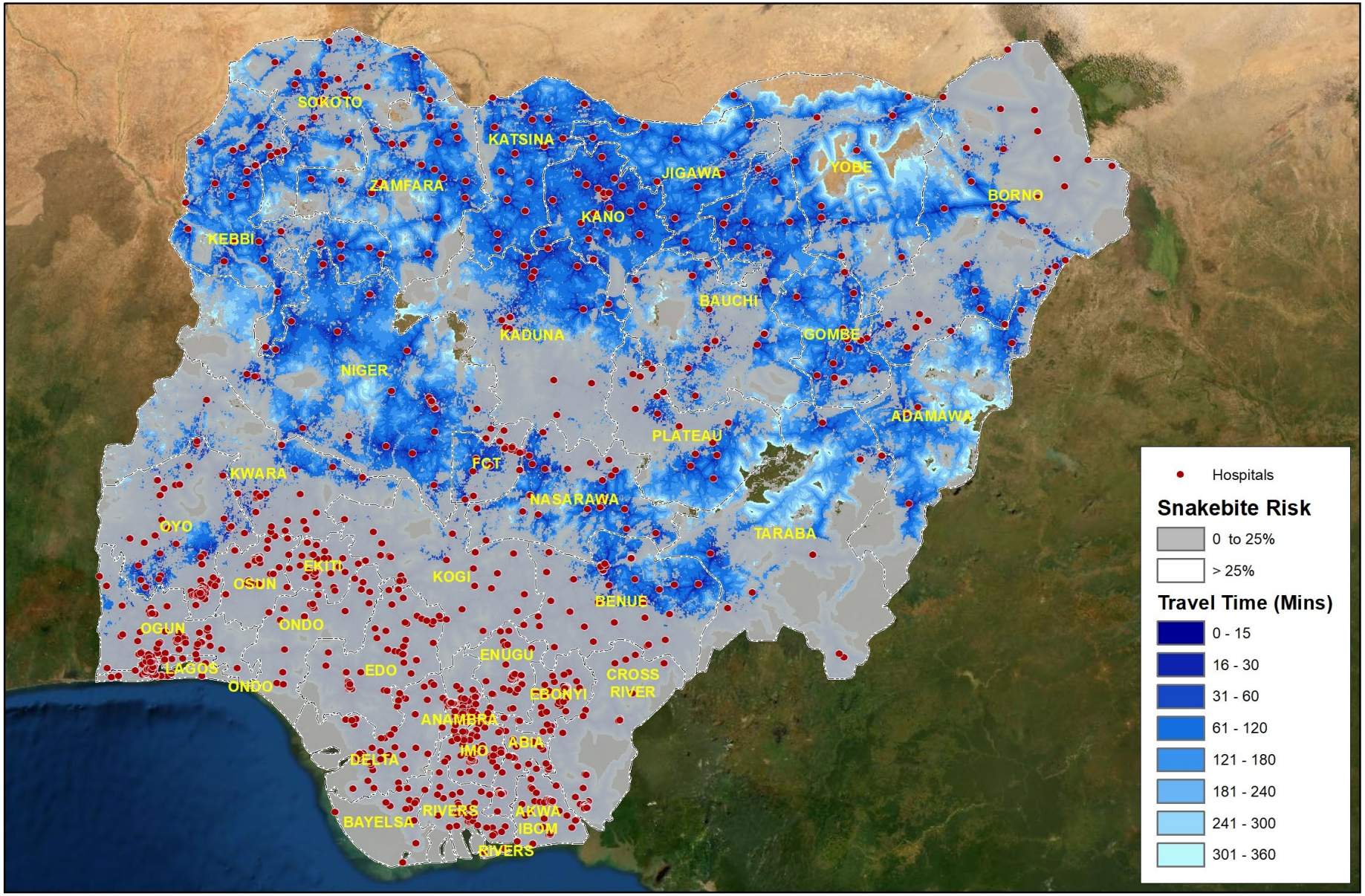
Area within 6hrs zone:
274,540 km²

Population within 6hrs zone:
27,494

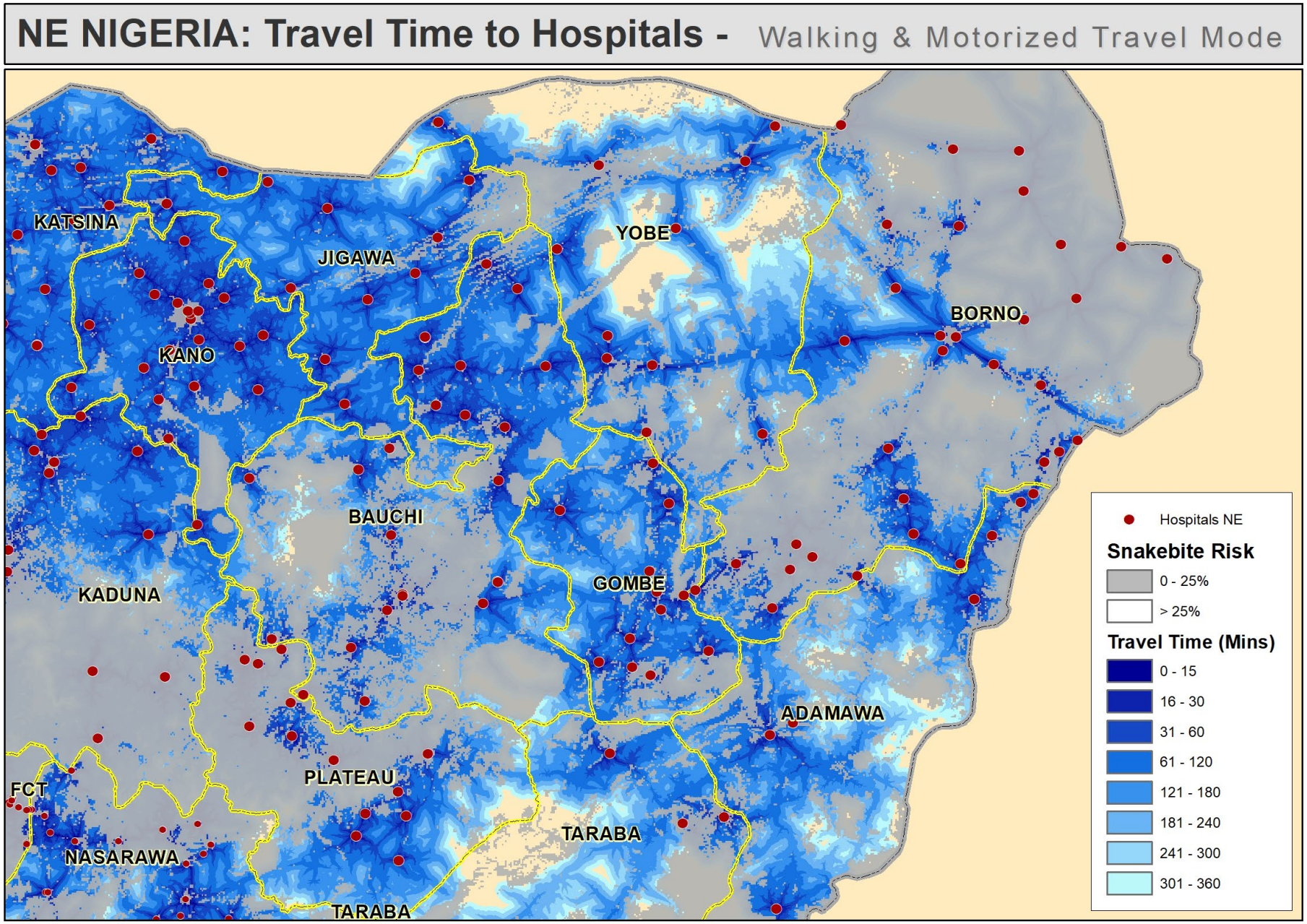


Walking Mode – Time to Hospitals

NIGERIA: Travel Time to Hospitals - Walking & Motorized Travel Mode



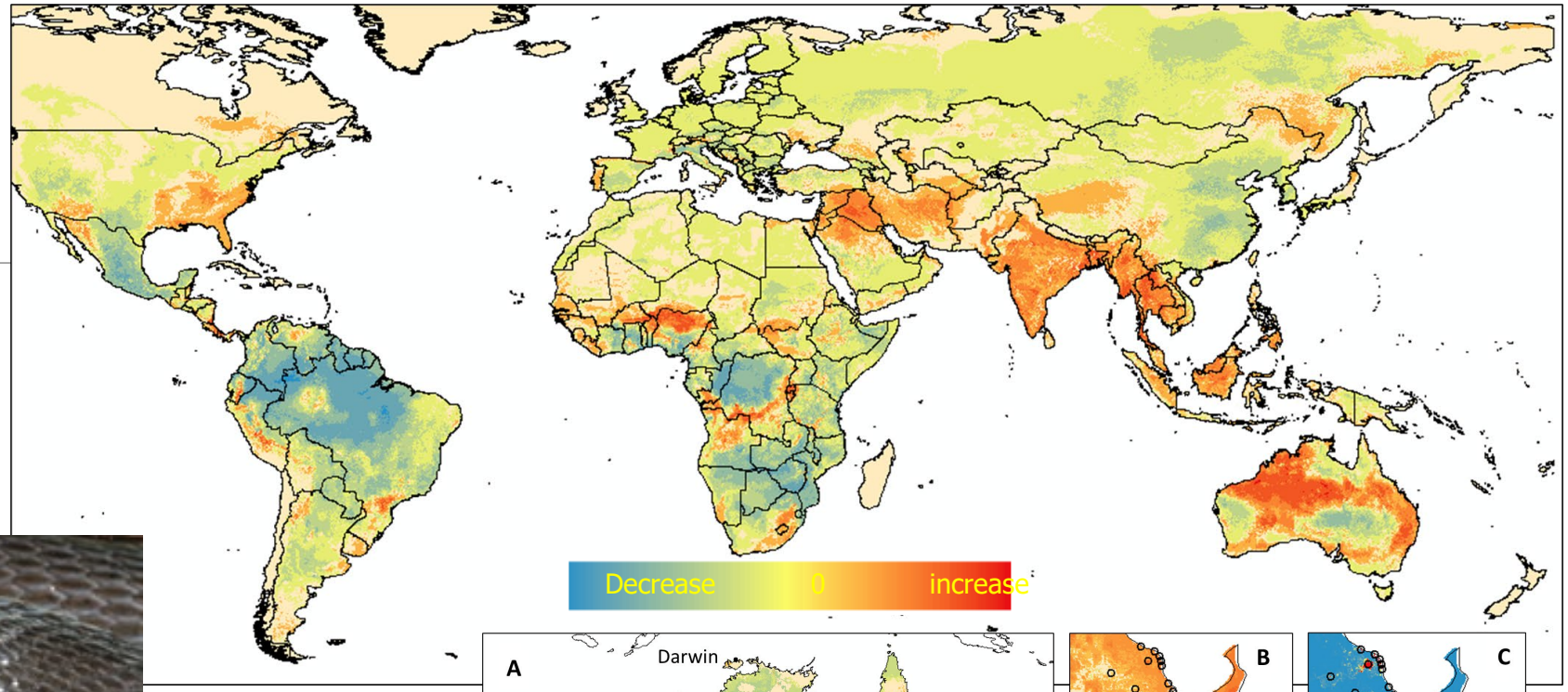
Walking & Motorized - Time to Hospitals

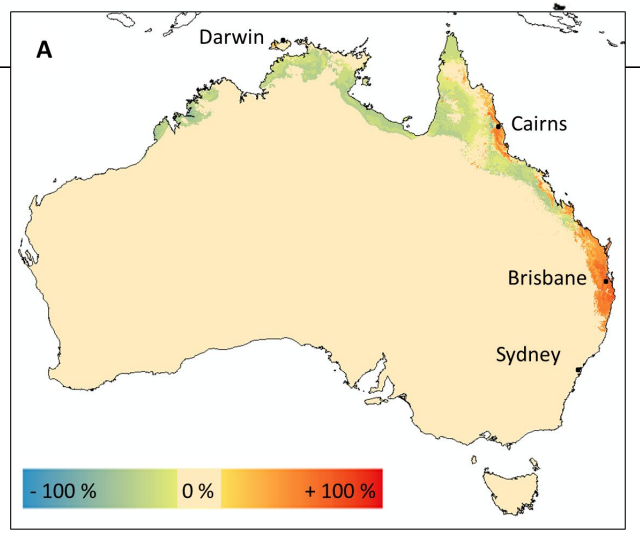


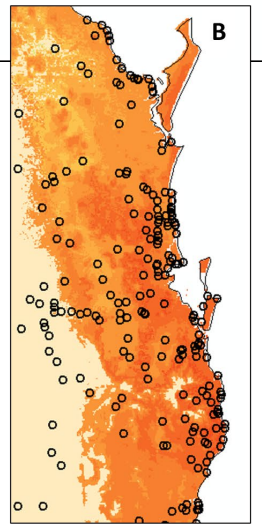
Percent agriculture

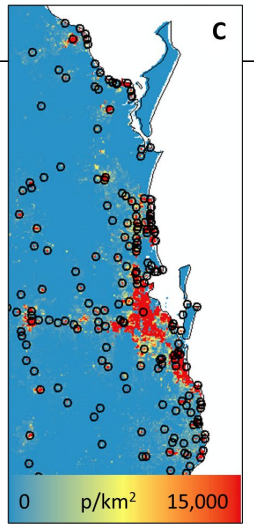
Climate change is likely to lead to shifts in snake species' distributions, potentially exposing more people to more snakes

Coastal Taipan
(Oxyuranus_scutellatus)









Snake Range Distribution Changes

WHO Snakebite Information and Data Platform

gissupport@who.int

World Health Organization

Thank you

Local Community Mobilization and Partnerships

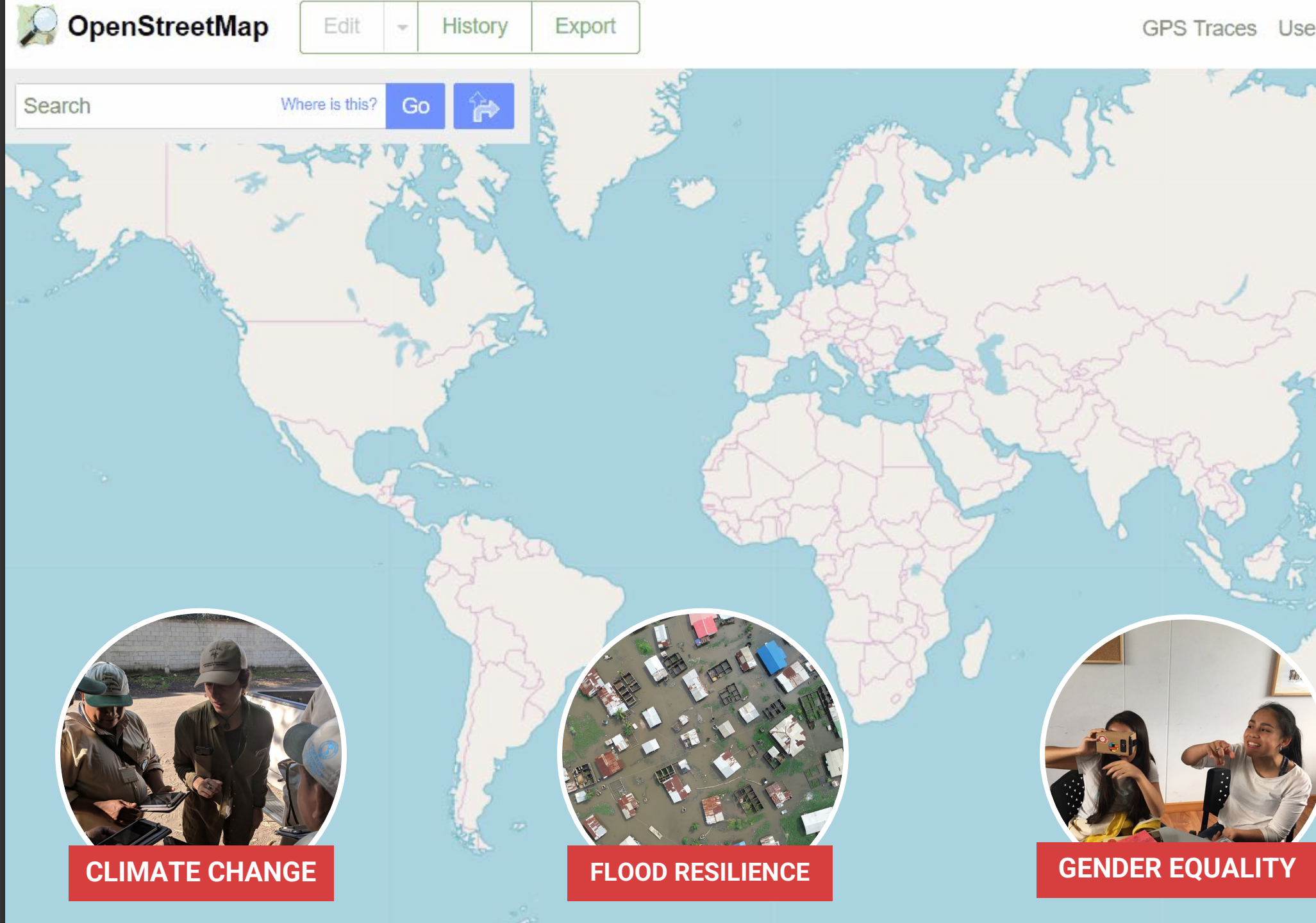
Nasilele Amatende Mwiimbwa, Humanitarian OpenStreetMap Team (HOT)

OpenStreetMap

is a collaborative project to create a free editable map & source of geospatial data.

Humanitarian OpenStreetMap Team

working with partners to ensure map data is accessible and used in decisions that save and improve lives



CLIMATE CHANGE

FLOOD RESILIENCE

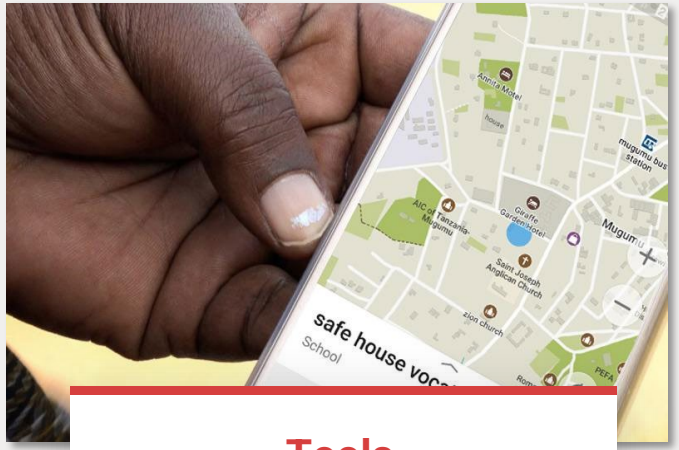
GENDER EQUALITY

Our Model

Local people & local tools: add knowledge

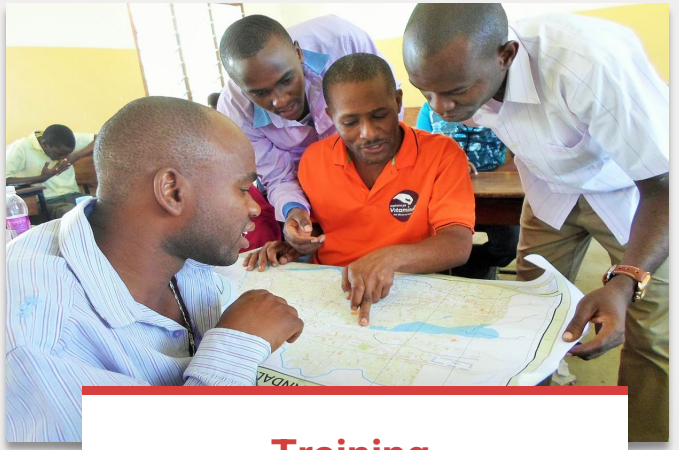
Community Participation

with locally appropriate methods



Tools

locally made or already owned, low tech apps



Training

leave behind capacity for mapping to continue


FACILITIES NYAGATEMBE VILLAGE, KANABA SUBCOUNTY, KISORO DISTRICT - JANUARY 2021
Legend
Village
Water
School
Police Post
Place of Worship
Government Office
Building
Village
Main road
Minor road
Path
The Scaling Missing Maps in Africa's Great Lakes Region project aims to promote and increase the use of open geospatial datasets in the public health surveillance sector. MOT carried out data collection, training of community health staff and worked with the district health personnel to develop information products to support community health surveillance across Kisoro District.
Data Sources
Created: 08/2021
Map design licensed CC-BY 4.0
Produced by Humanitarian OpenStreetMap Team
29.76

Supporting the movement: regional hubs operational in Dakar, Nairobi, Manila

Link: priority country list

Ibrahima Cisse

Monica Nthiga

Nama Budhathoki

Open Mapping Hubs

1. **Connect** NGOs, Governments and local communities so that they can **use open data in decision-making**

2. Work with partners to **create free and shareable data** in OpenStreetMap

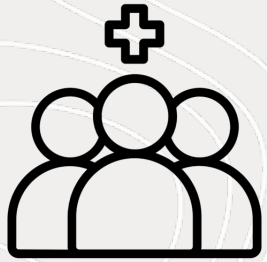
3. Inspire and mobilize an **OpenStreetMap movement** across the region, supporting the growth of vibrant OpenStreetMap communities and ecosystems

Where can we make a difference?

We can support you to access and use OpenStreetMap data in response to major global challenges

Created by Mavadee from Noun Project

Disasters & Climate Resilience



Created by Ladalle CS from Noun Project

Public Health

Created by Leonardo Schneider from Noun Project

Gender Equality

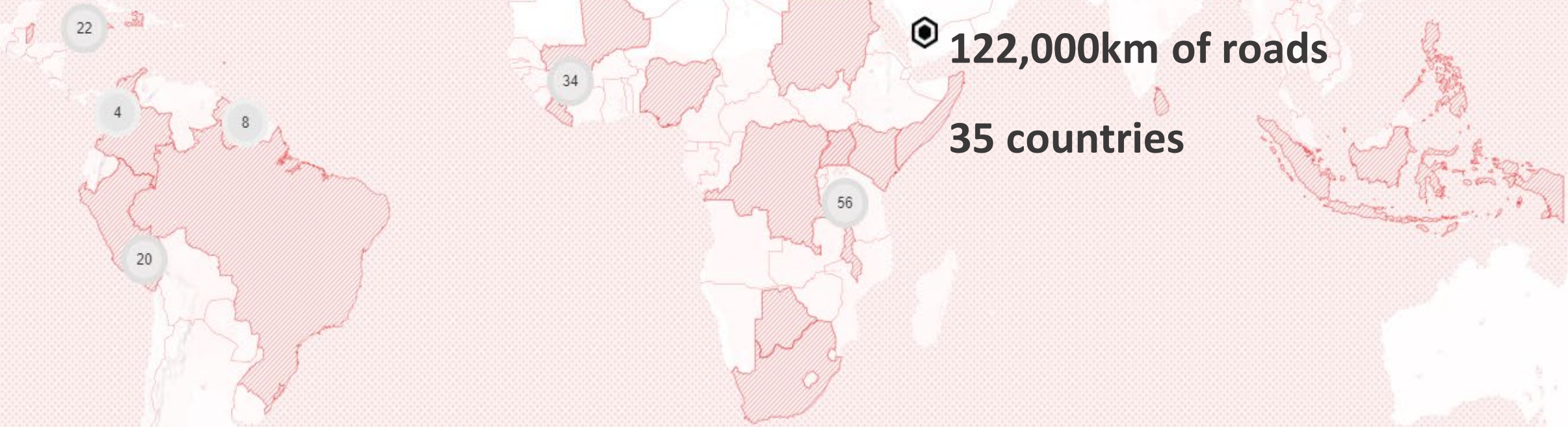
Created by Creative Mania from Noun Project

Sustainable Cities & Communities

Created by John Kock from Noun Project

Displacement & Safe Migration

MAP DATA & COVID-19 RESPONSE



26,000 volunteers

4.8 million buildings

122,000km of roads

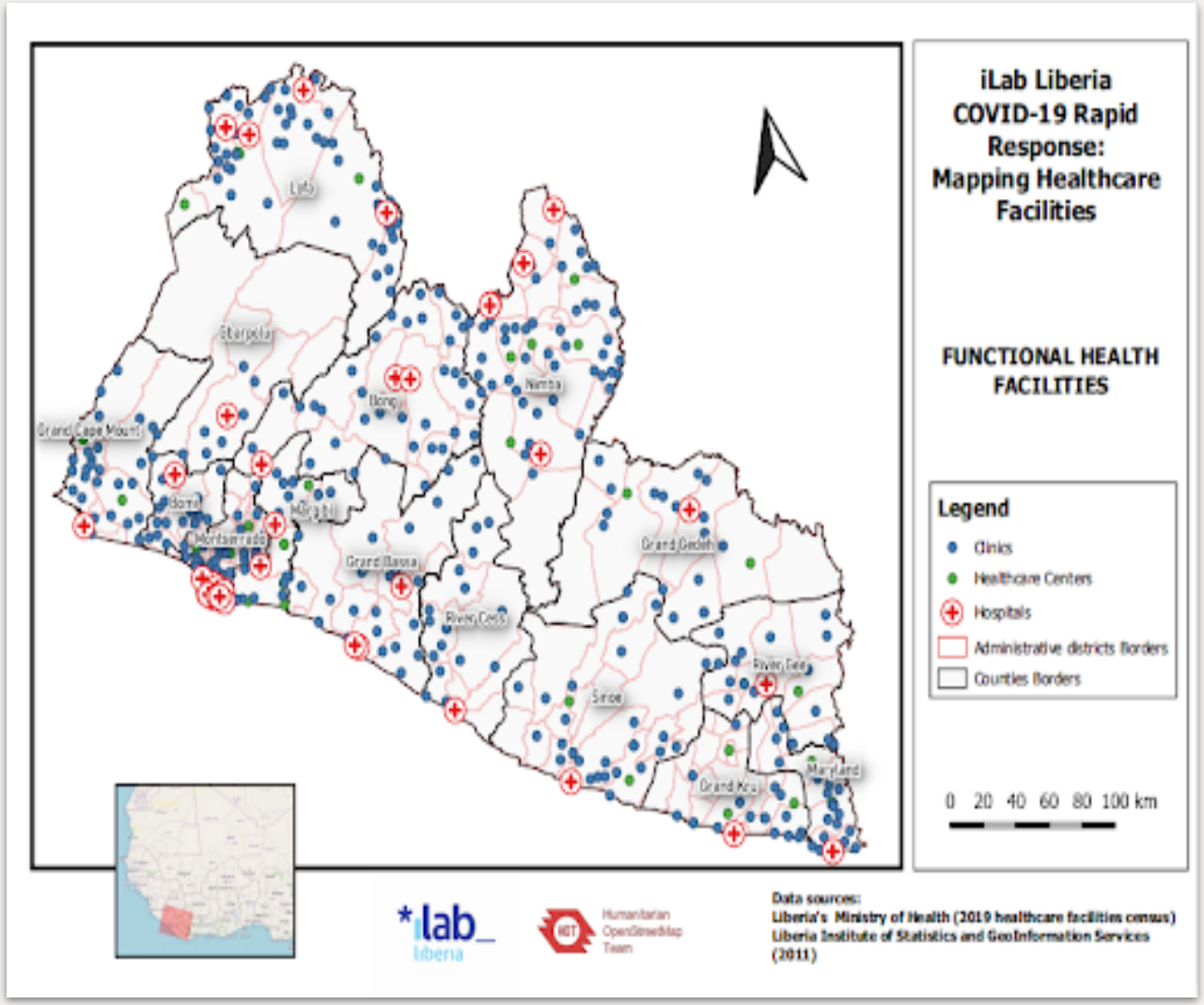
35 countries

Map data supported the needs of Red Cross, UN OCHA, World Bank, Caribbean Disaster / Emergency Management Agency, and many more local organizations

Liberia: Mapping Healthcare Facilities for COVID-19

24 hospitals
750 clinics
20 healthcare centers

⇒ Datasets available for public use



The map data informed the government ministries, local NGOs, and local communities on where to locate healthcare services and where to get tested, quarantined, or treated. **The additional data was a vital component to Liberia's awareness and prevention campaigns.**

PUBLIC LAB MONGOLIA

Cultivate healthy environment and resilient communities through open data

Settlements

- Urban – partially mapped, need update
- Semi urban – partially mapped
- Rural – mostly unmapped

Humanitarian OpenStreetMap Team

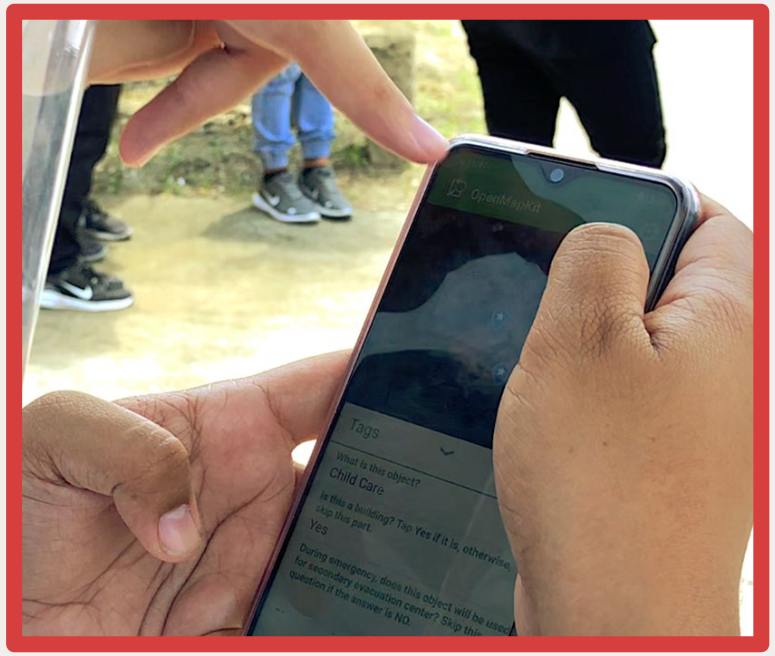
PUBLIC LAB MONGOLIA

OpenStreetMap can be used with other tools and data layers to solve challenges

- Crowd-sourcing via ArcGIS Online
- Field data collection of health services
  - including pharmacies, hospitals, clinics, labs etc.,
- Input into OSM
- Improving Ulaanbaatar's baseline data on OSM via mapathon events

partnerships@hotosm.org

We work with local groups and organisations to create free, detailed, up-to-date maps



NGOs & Governments, get in touch:

- If you would like to request OpenStreetMap data to use in your local humanitarian/development program
- Training on data collection to support a local program
- Understand how to manage and integrate OpenStreetMap data and open tools into your work
- Support and advice with your IM & GIS capacity so that you can use open data in your work


HOT
QUESTIONS

Satellite Imagery to Support Vanuatu's Electoral Project

Ayeisha Sheldon, UNOSAT

Satellite Imagery to Support Civil & Voter Registries Verification and Validation

United Nations Satellite Centre (UNOSAT)

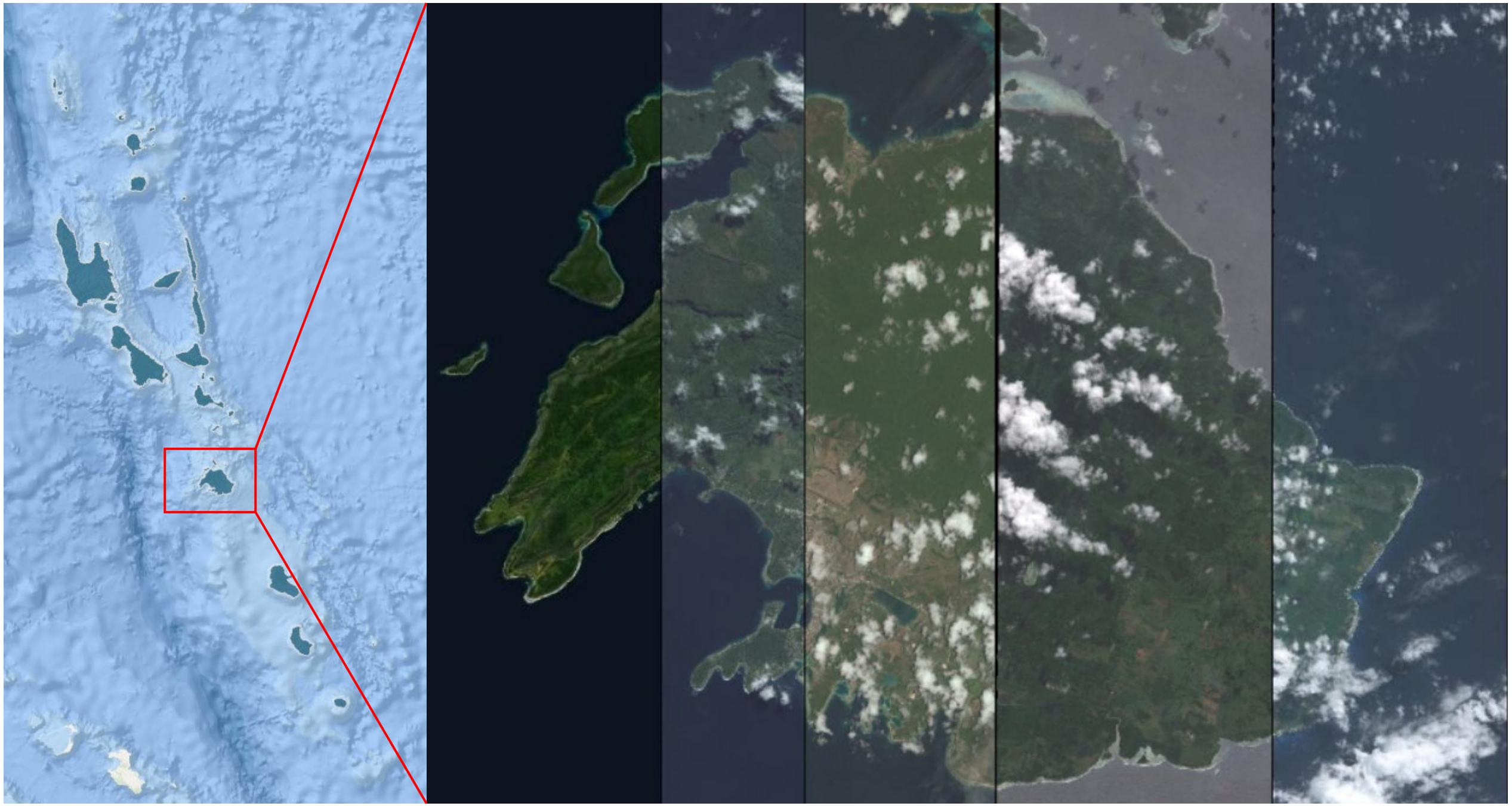
Ayeisha Sheldon, Geospatial Analyst

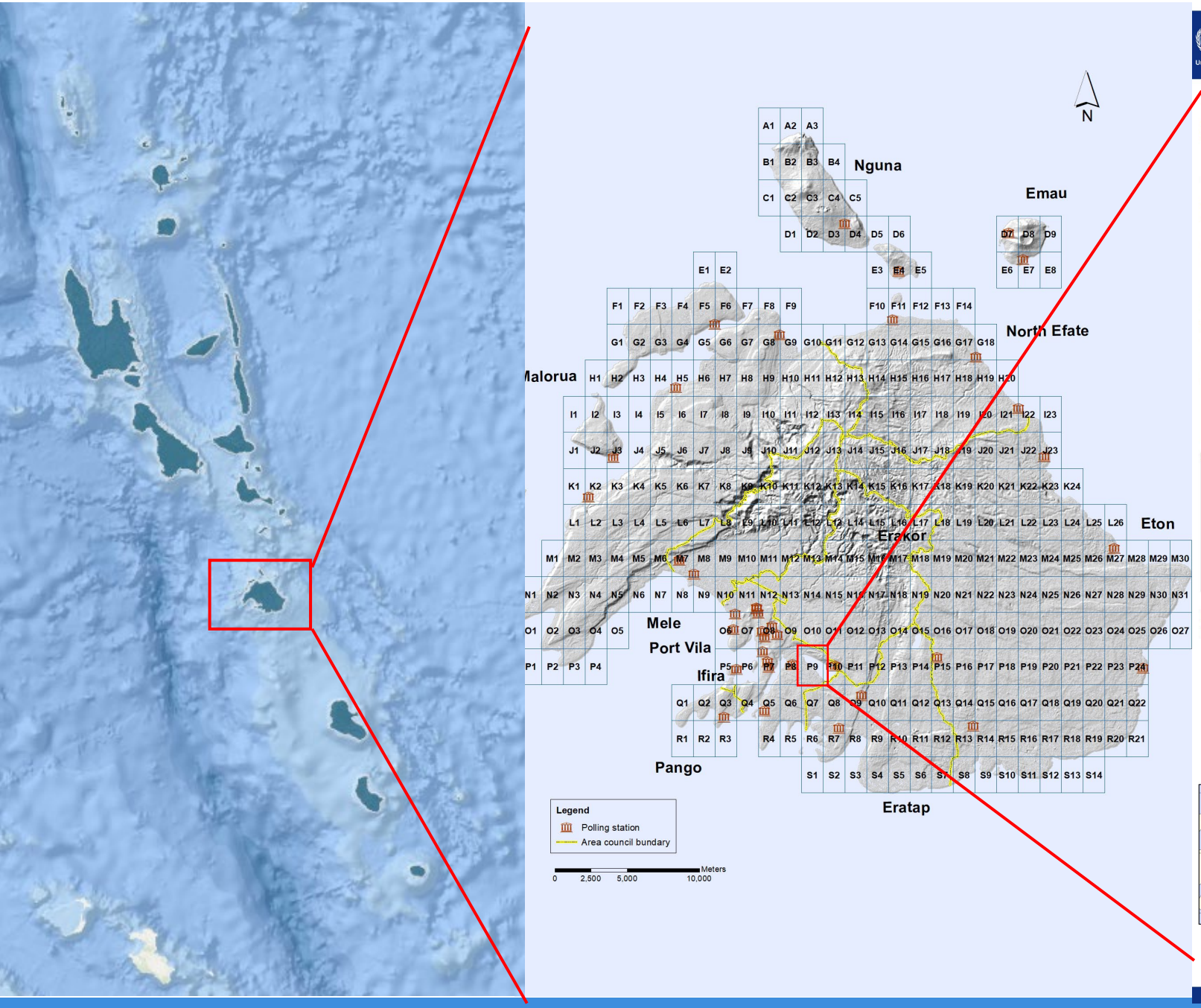
GIS for a Sustainable World Conference, 11 May 2022


ELECTORAL OFFS
Voted:
Yes

Project overview

- Technical support to UNDP for Vanuatu Electoral Environment Project (VEEP)
- Very High Resolution (VHR) satellite imagery was acquired to provide baseline data, to be used for civil and voter registries verification and validation process.
- The project was scaled up to cover more provinces and produce several other map products





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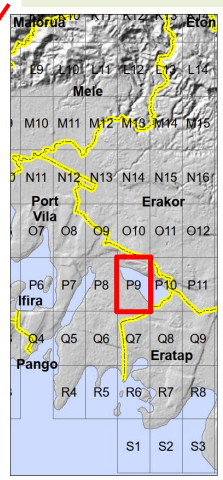
ALTAS SHEET: P9

Efate/Shefa/Vanuatu

VEEP - Vanuatu Electoral Environment Project (16 November 2020)

Census
OT20200901VUT

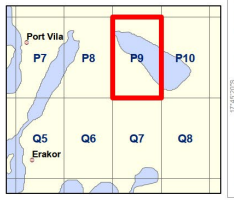
UNDP UNOSAT



Notes:

Pop. estimate P9= 957
Bldg. count P9= 555

Legend
Polling station
Structure/House
Settlement
Road
Area council bundary
Map sheet extent



Analysis conducted with ArcGIS v10.8.1

Coordinate System: WGS 1984 UTM Zone 59S
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter

Satellite Data : WorldView-3
Building Data : UNOSAT/OpenStreetMap
Road Data : UNOSAT/ OpenStreetMap
Other Data: USGS, UNCS, NASA, NGA
Analysis : UNITAR - UNOSAT
Production: UNITAR - UNOSAT

Map Scale for P9= 7,500
0 37.5 75 150 225 300 Meters

The depiction and use of boundaries, geographic names and related data shown here are not warranted to be error-free nor do they imply official endorsement or acceptance by the United Nations. UNOSAT is a program of the United Nations Institute for Training and Research (UNITAR), providing satellite imagery and related geographic information, research and analysis to UN humanitarian & development agencies & their implementing partners. This work by UNITAR-UNOSAT is licensed under a CC BY-NC 3.0

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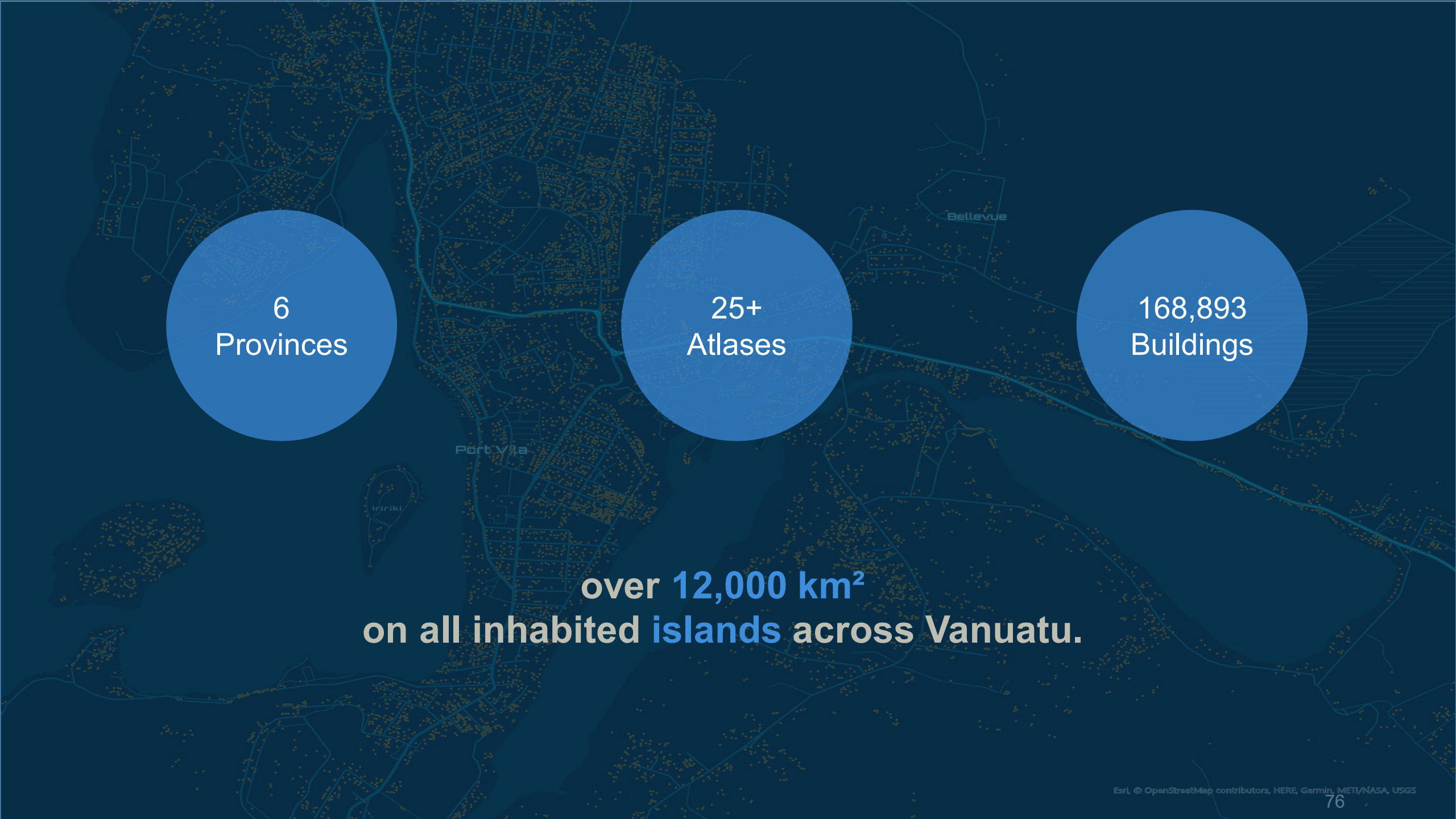
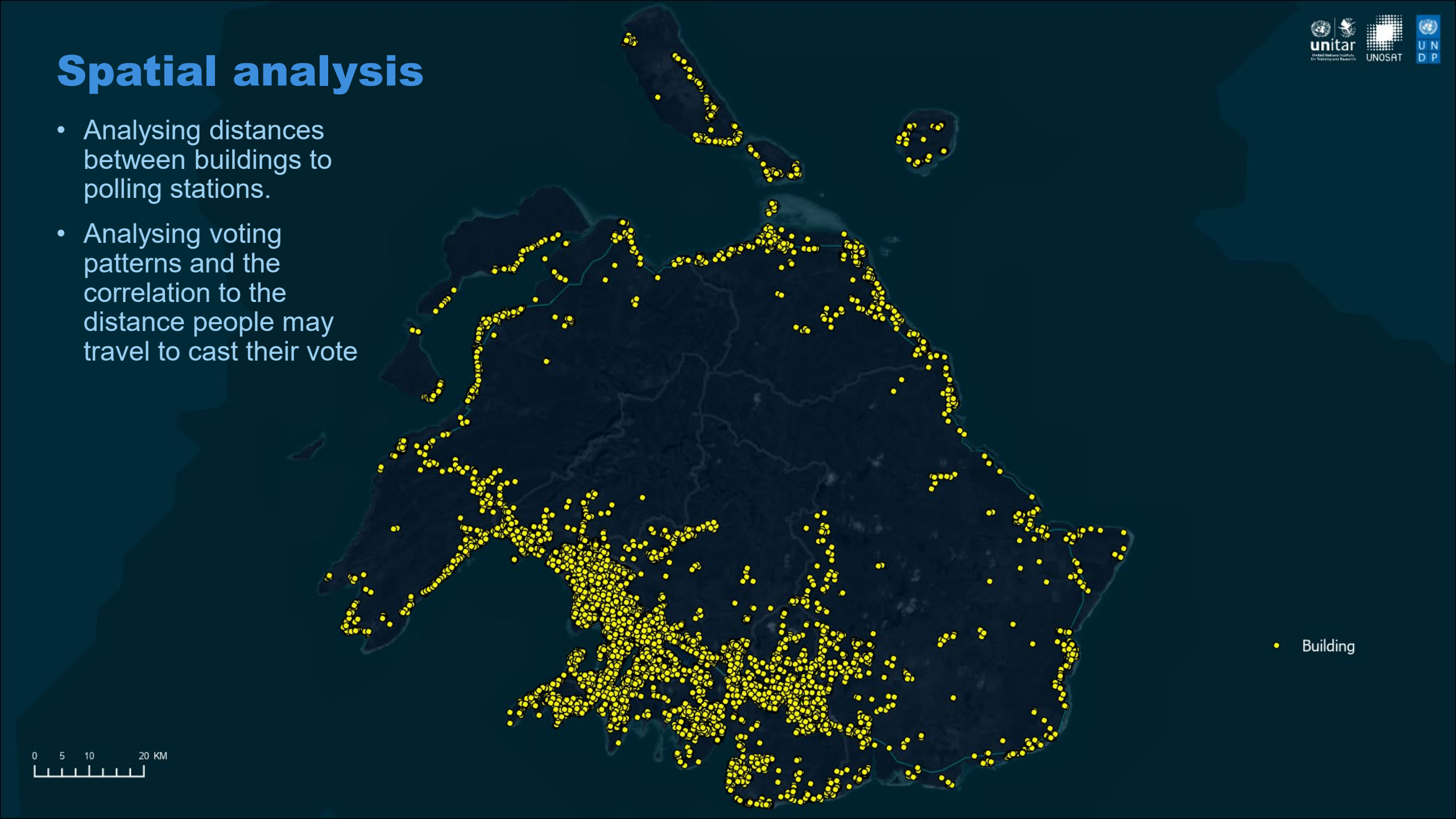
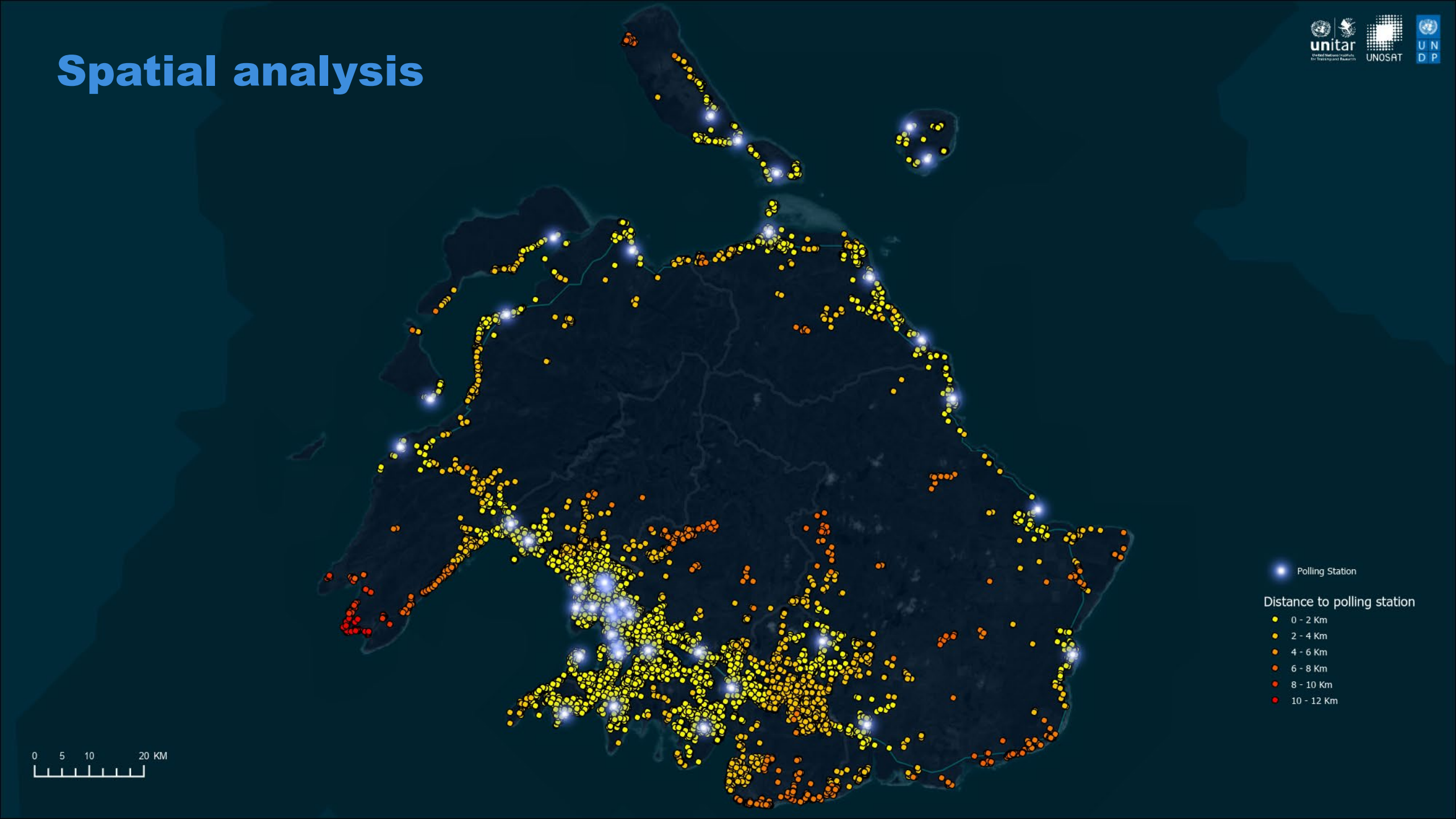

6
Provinces
25+
Atlases
168,893
Buildings
Bellevue
Port Vila
Iririki
over 12,000 km²
on all inhabited islands across Vanuatu.
Esri, © OpenStreetMap contributors, HERE, Garmin, METI/NASA, USGS

Spatial analysis

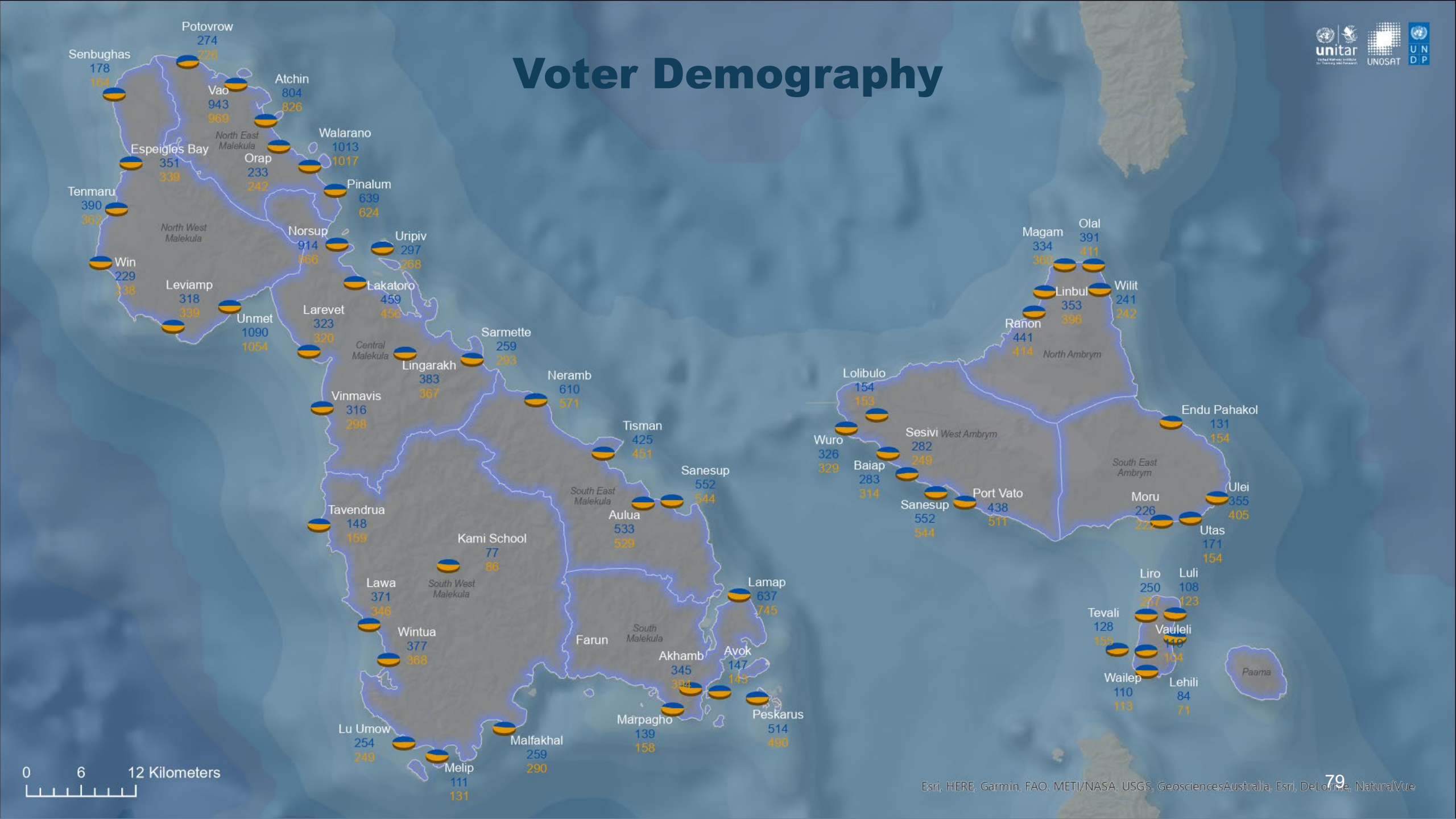
- Analysing distances between buildings to polling stations.
- Analysing voting patterns and the correlation to the distance people may travel to cast their vote



Spatial analysis



Voter Demography



Village Data

1 Saratamata
2 Halalulu
3 Nanako
4 Saranamundu
5 Lohone
6 Namberukwonge
7 Lovibuke
8 Tavala
9 Sarauivi
10 Loone
11 Natakaro
12 Nangweagwea
13 Saratangualu
14 Saralokambu
15 Tavalavuti
16 Nataluhangele
17 Vilakalaka
18 Vinangwangwe
20 Urebulu
21 Lovusitarivue
22 Lovusikavige
23 Saranangwae
24 Loone Kukwehu
25 Saratangaulu
26 Solkave
27 Walaha
28 Naliliu
30 Nanigama
31 Lovunmaqwe
34 Vatumemea
35 Vondadori
36 Lovondakairu
37 Navonda
38 Atavoa
40 St bananas
41 Lovuintokohui
42 Lolosigei
43 Lovunvili
44 Naqwea
45 Arorogo

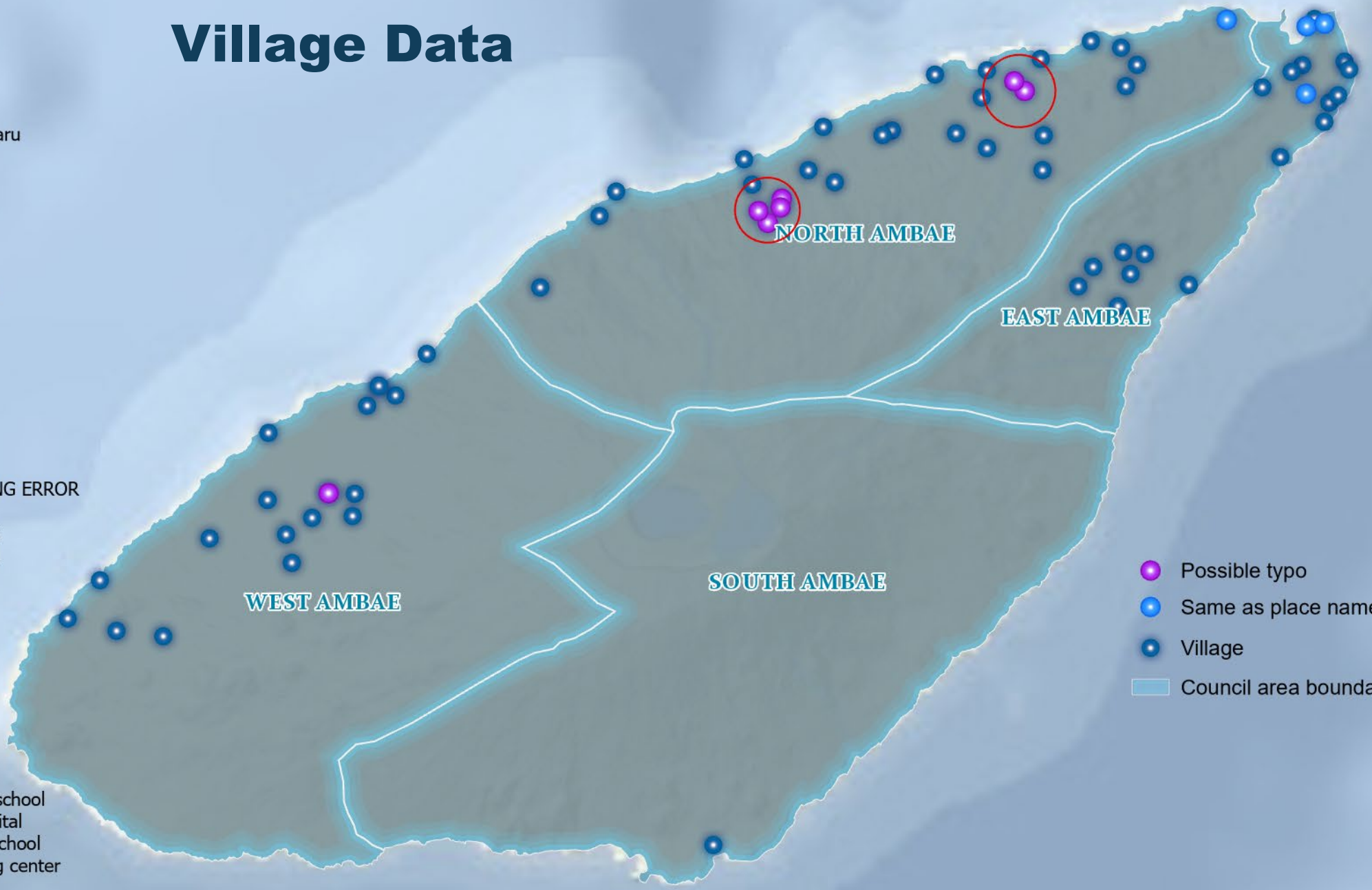
46 Nagnire
47 Waluriki
48 Nawegu
49 Waileni
51 Wainasasa
52 Lovuimagwearu
53 Lolorugu
54 Lovuibini
55 Lolopuepue
56 Lolovenue
57 Lovuitugnu
58 Lovusinava
59 Lologarabuhi
62 Lolobue
63 Tahimamavi
64 Tengkeru
65 Black stone
66 Qatamwele
68 Lovuivetu
69 Lolosori

POSSIBLE TYPING ERROR

13 Saratangualu
25 Saratangaulu
19 Qwatamele
66 Qatamwele
60 Saraivire
61 Saraivulu
50 Vuiberugu
67 Vuimberugu

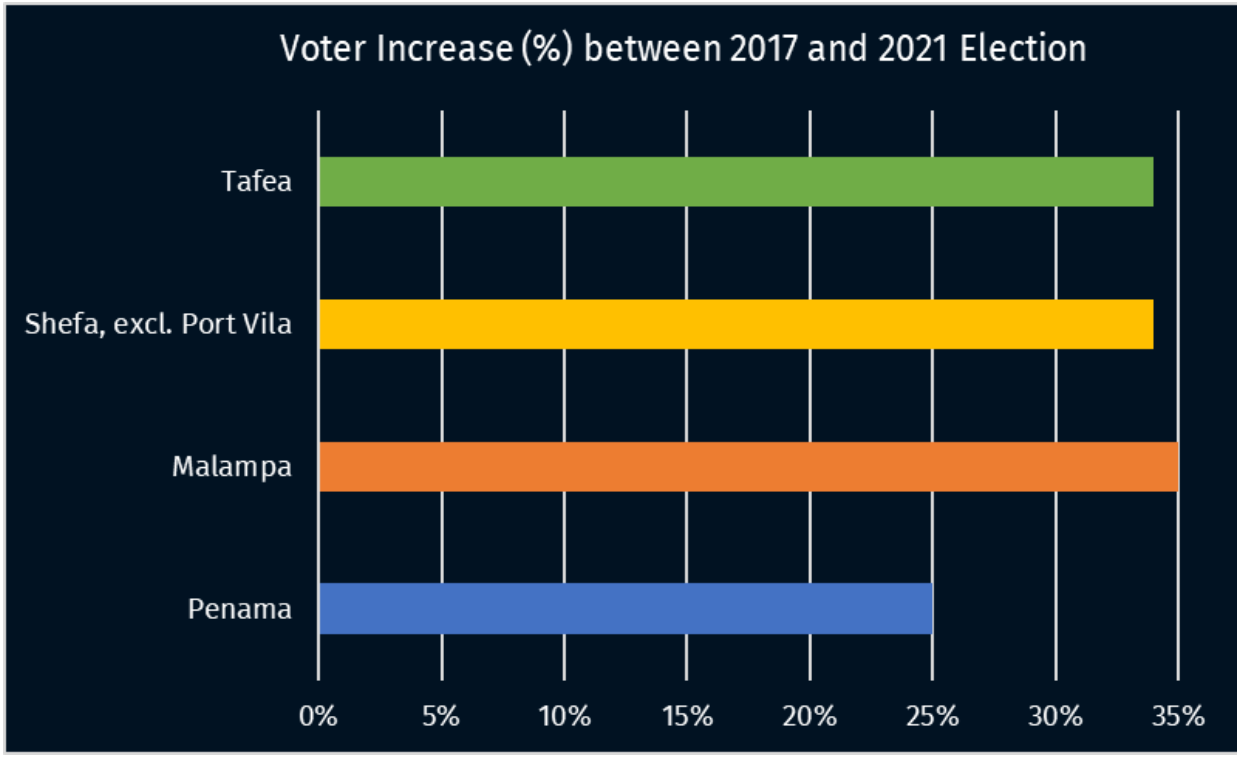
PLACE NAMES

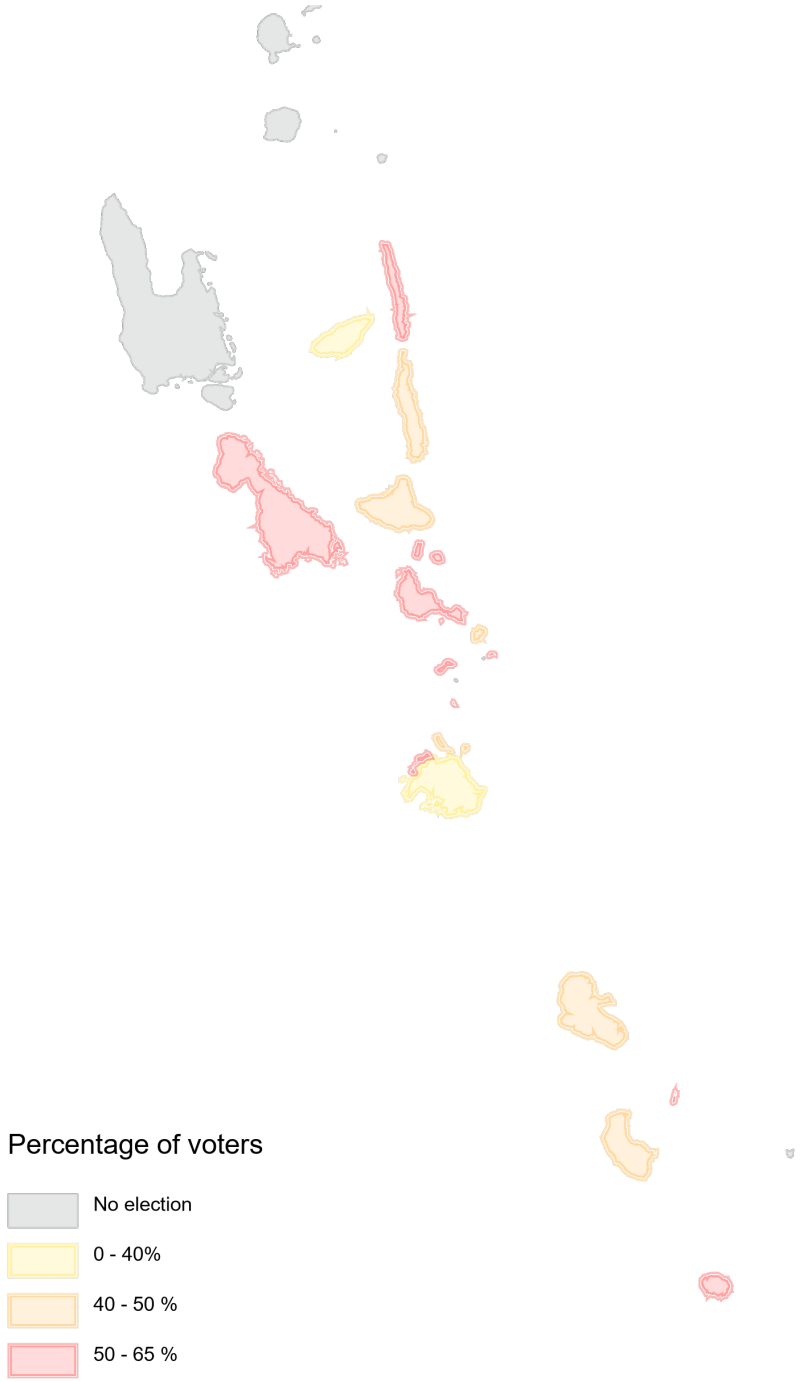
29 Vureas high school
32 Lolowai hospital
33 Ambaebulu school
39 Torgil training center



2021 Provincial Election Results

2021 Provincial Election Results





Vanuatu 2021 Provincial Elections Results from Penama, Malampa, Shefa and Tafea

The dashboard visualises election results for Vanuatu Provincial Council Elections held on 21 May 2021 in Penama, Malampa, Shefa and Tafea Provinces. It was created by the United Nations Satellite Centre for The Vanuatu Electoral Environment Project (VEEP), a United Nations Development Programme (UNDP) initiative to assist the Republic of Vanuatu in the planning and implementation of democratic elections. This is done by supporting the Vanuatu Electoral Office (VEO) in their efforts to supervise the registration of electors and conduct smooth elections for parliament, province, and municipal councils.

UNOSAT

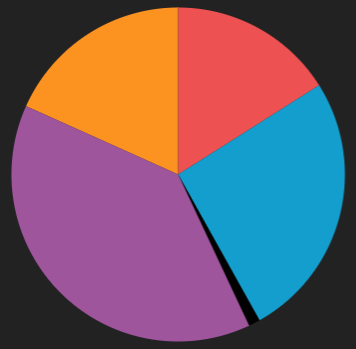
UNDP

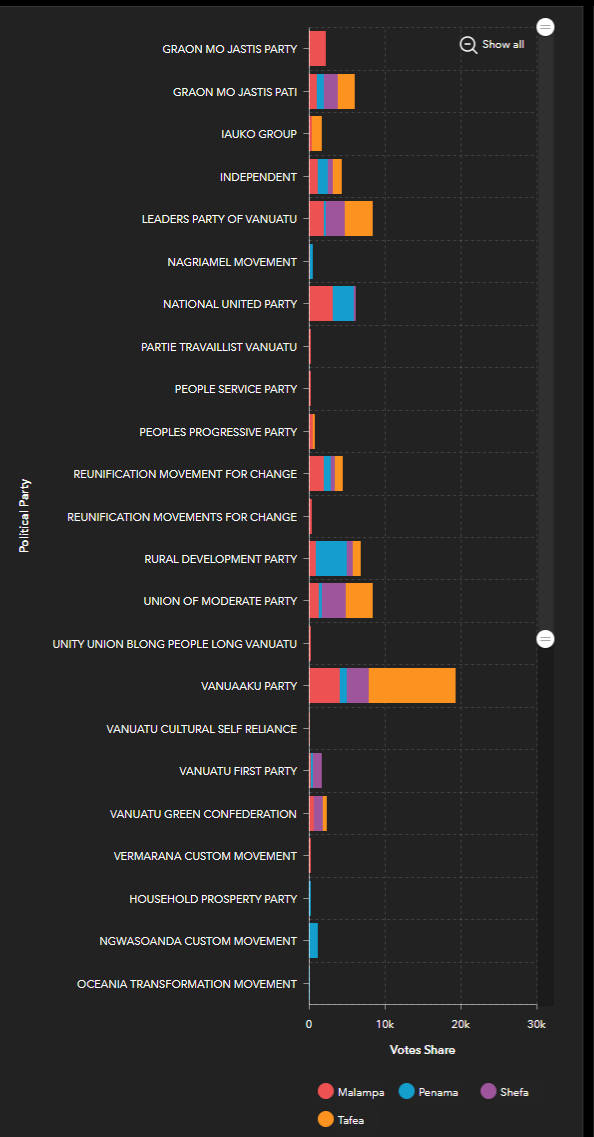
83.5k
Total Votes

46%
Tournout

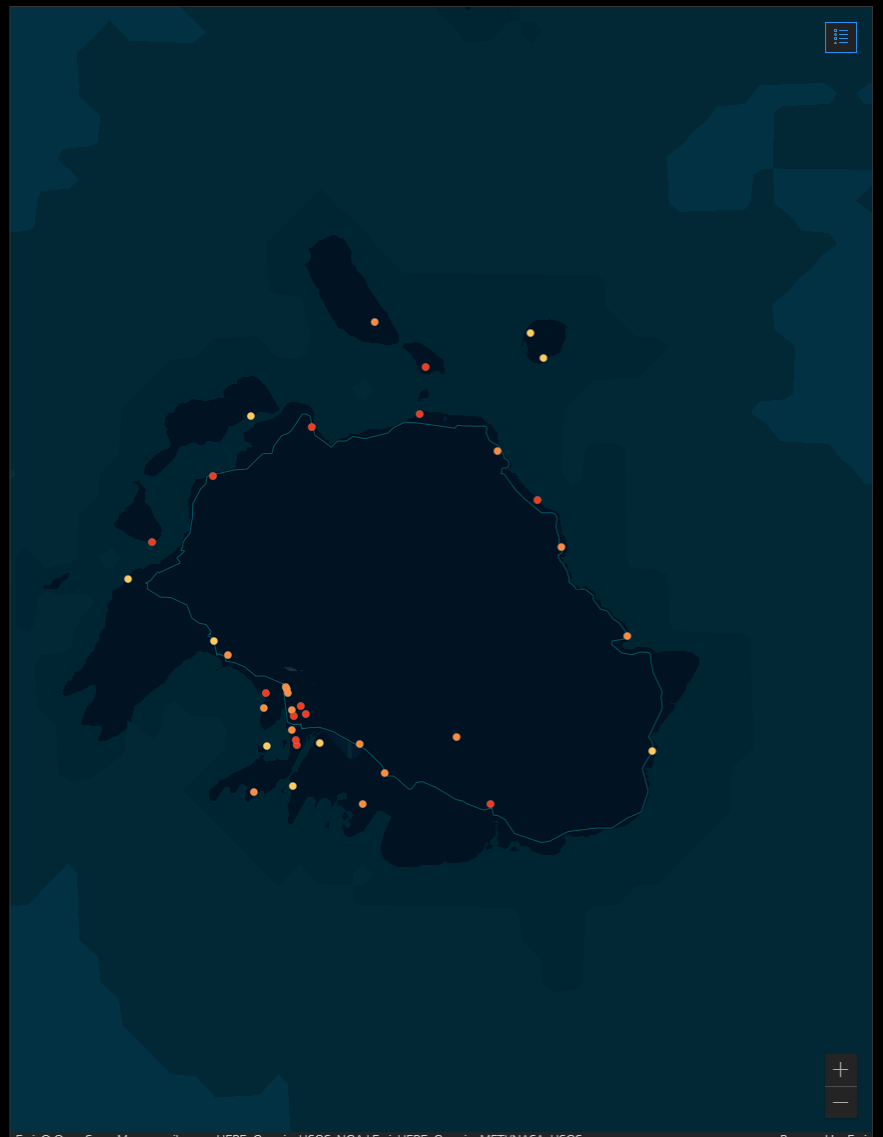
179,684
Registered Voters

% Votes per Province

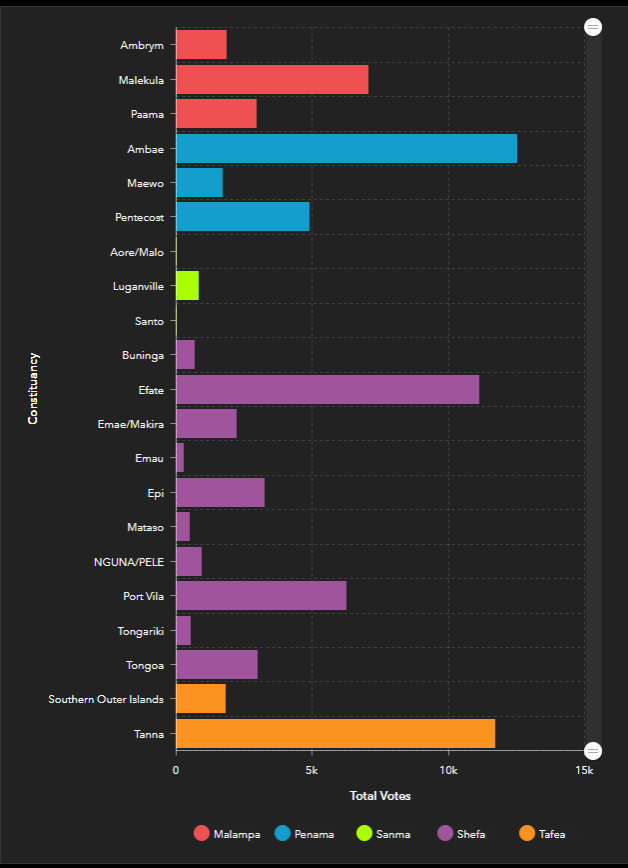




Party votes Per Province | Party Votes Map



Votes per polling station | Votes per constituency



301
Candidates

74
Seats

4 (1.3%)
Female

297 (98.7%)
Male

Candidate Age

18-30	30-50	50-70	70+
6	178	111	2

Project Impact

- The collaboration resulted in the creation of robust and much-needed datasets
- Maps and data already being used beyond the scope of this project.
- Such as disaster preparedness and response, and several governmental planning operations such as the COVID-19 vaccination campaign.

Satellite Imagery to Support Vanuatu's Electoral Project

UNOSAT supported UNDP with geospatial analysis for the validation of civil and electoral registries in Vanuatu.

UNOSAT & UNDP
May 19, 2021

Scan the QR code to view the interactive StoryMap

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