



The Alliance for
Malaria Prevention

GEO ENABLED MICROPLANNING FOR INSECTICIDE-TREATED NET (ITN) CAMPAIGNS

Webinar
October 2022





Geo-enabled Digital Microplanning for ITN: Improving population estimates and ensuring access for improved campaign outcomes

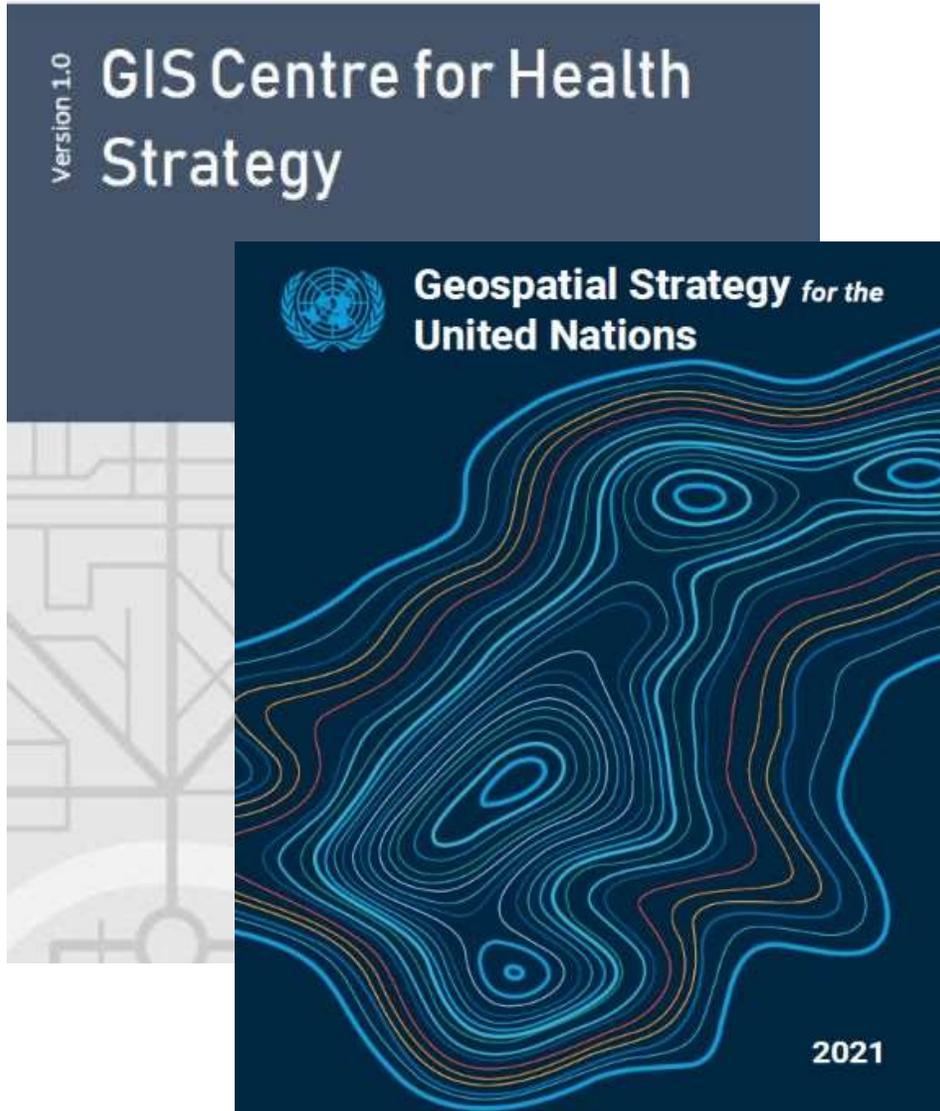
WHO GIS Centre for Health

4 October 2022

| Outline

- Global coordination for geo-enabled microplanning (10 minutes)
- Geo-enabled microplanning handbook (5 minutes)

The GIS Centre for Health



By connecting maps, apps, data and people, the WHO GIS Centre is dedicated to supporting countries to make informed public health decisions.

Goal 1

Maximize the value from geospatial data and technologies.

Goal 2

Foster meaningful partnerships for technical exchange and effective implementation.

Goal 3

Improve access to geospatial data, tools, & best practices.

Strategic pathways

Governance & policy

GIS Data management

Sustainability

Innovation

Capacity

Partnership & collaboration

Communication & Advocacy

COVAX Geospatial Health Community of Practice (CoP)

Serve as a venue of knowledge exchange between country implementers, implementation partners, donors and providers of geospatial solutions by:

1. Strengthening **global coordination** of technical assistance to countries related to the sustainable deployment of geospatial solutions
2. Promoting alignment of geospatial services and solutions to **gaps and needs experienced by health programs** at country and global level
3. Promoting alignment between geospatial services and solutions to the **support strategies and principles** promoted by UNICEF, WHO and development partners

WHO & UNICEF COVAX GIS Working Group Technical Partners

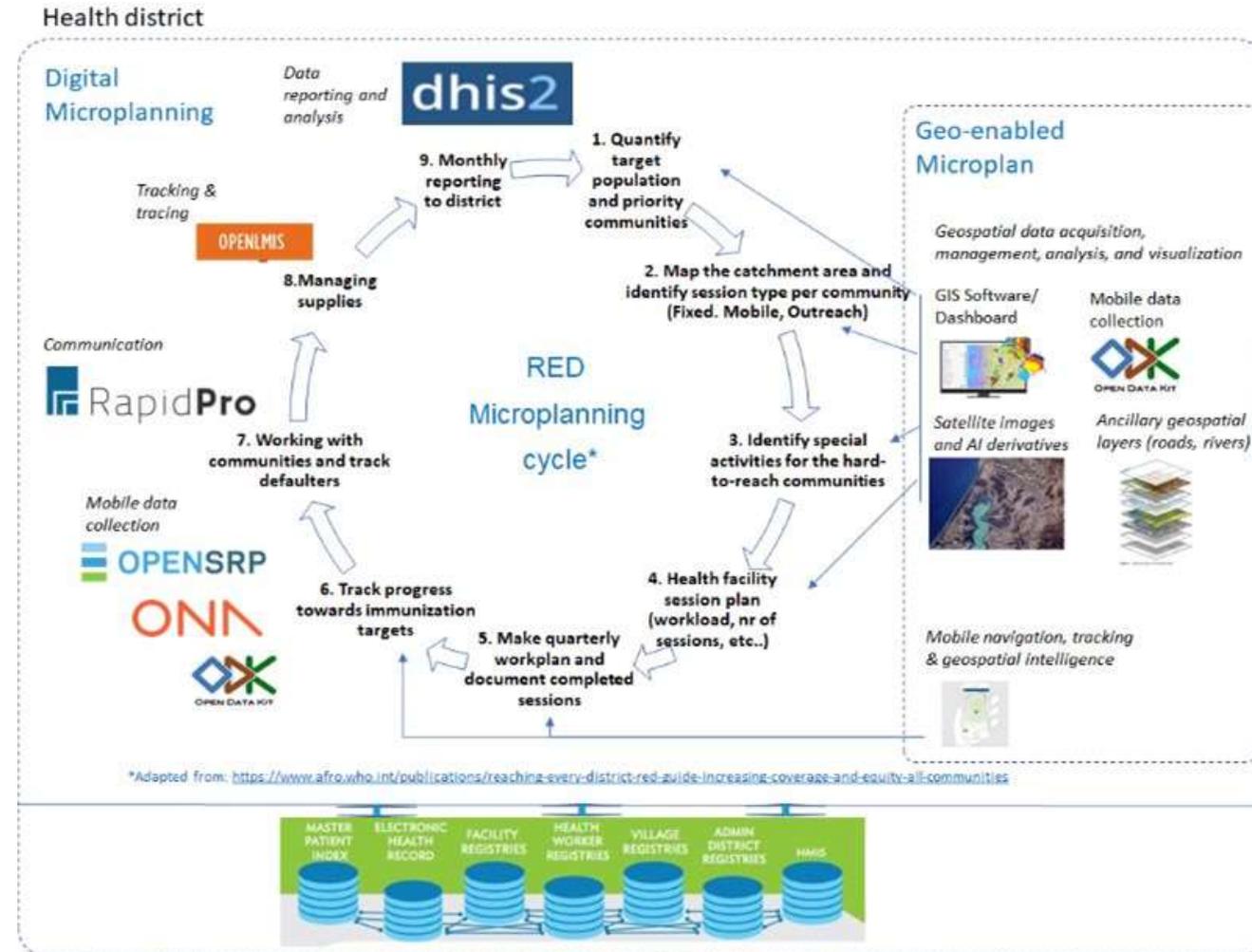


Geographic Accessibility Modelling

Microplanning: a set of decision-making steps and tools to ensure that health services reach every community.

Microplanning is used to identify priority communities, address barriers to access and utilization, and to develop workplans with solutions.

Microplans are characterized by the use of data locally (district and health facility level) and are minutely detailed, in contrast to traditional national health plans (macroplans).

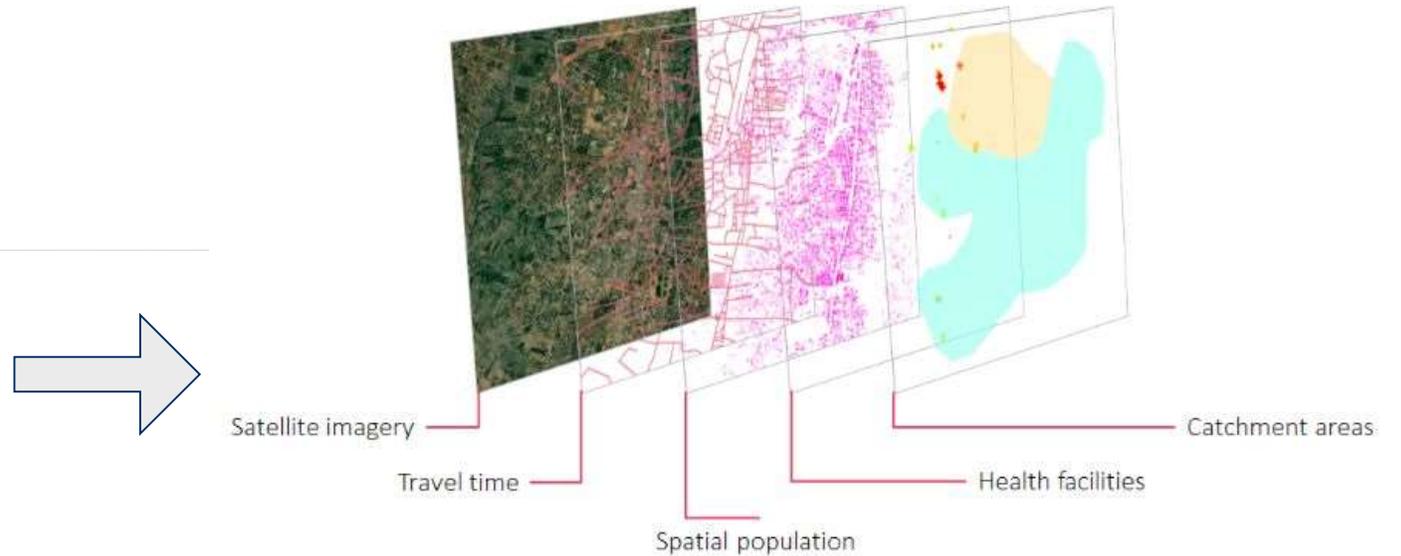


Geo-enabled Microplanning

“Geo-enablement” is the application of geospatial data and technologies to the microplanning process.



Microplanning using sketch maps and non digital tools



A data-driven and digitally enabled microplan using geospatial data and technologies



Population estimation and spatial distribution

In geo-enabled microplanning, population estimation is the use of statistical models, remote sensing datasets and sampled census information to create spatially accurate and precise estimates of population density and distribution.

Population estimates are used to create **population denominators** for the community to be served.

- How many ITNs are needed at each distribution point?
- How large of a staff is needed to cover the distribution catchment area?

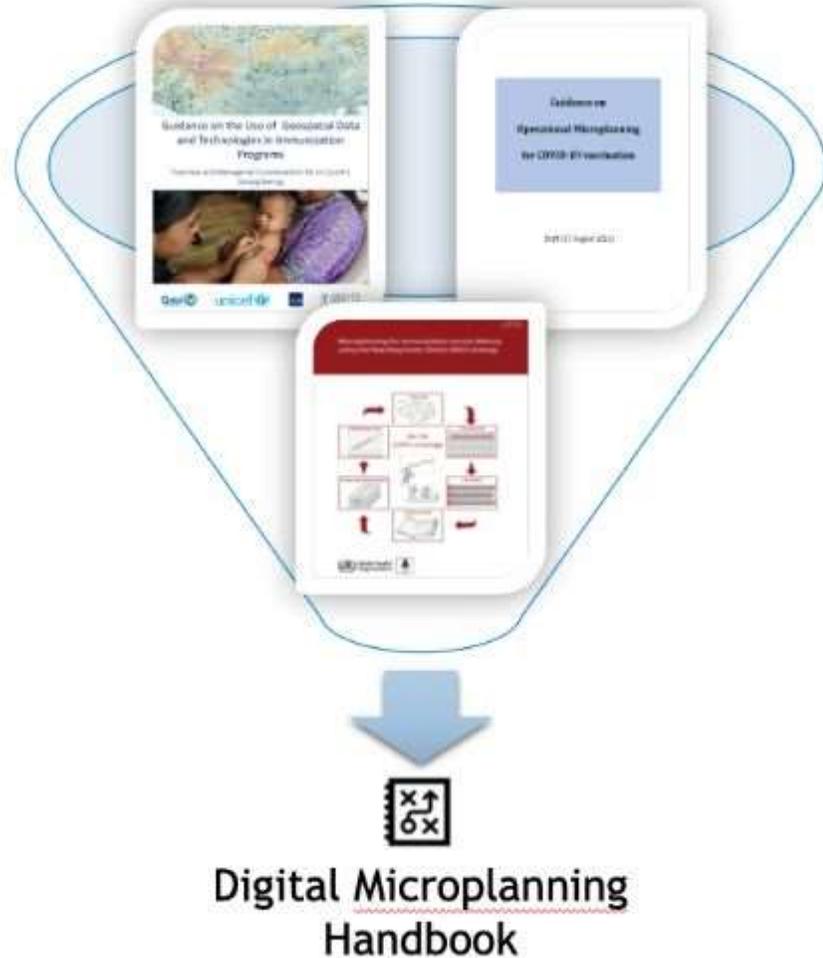


Settlement and Remote sensing data



Statistical models

Geo-enabled Microplanning Handbook



- This handbook will enable the reader to plan, implement, and sustain a digital microplanning program.
- Handbook builds on existing guidance by adding more detailed specifics on how to plan for and implement *geo-enabled, digital microplans*
- *Much of the handbook content comes from already published sources, bolstered with writing produced by selected technical experts.*
- Sponsored by WHO-UNICEF COVAX GIS Working Group Core Partners

Contributors

The WHO-UNICEF COVAX GIS Working Group, with support from the Bill & Melinda Gates Foundation, have coordinated the writing of this handbook as a practical guide to help readers develop and implement geo-enabled microplans.

113 co-authors and reviewers have contributed their knowledge and expertise to the document since the first workshops began in August 2021.

Coordinating organizations:

- WHO GIS Centre for Health
- UNICEF
- CDC
- Gavi
- The Global Fund
- World Bank
- DevGlobal Partners
- Health GeoLab Collaborative

Funding Organizations:



Participating organizations:



The Geo-Enabled Microplanning Handbook (coming soon)



The term "microplanning" is used to describe health services delivery planning at the local or point-of-service level.

These services include:

- 1. Immunization campaigns, including polio (house-to-house) and facility-based campaigns such as measles, yellow fever, meningitis, etc.
- 2. Routine Immunization (RI) activities, including outreach services
- 3. Mass Drug Administration (MDA) efforts such as the use of azithromycin for NTDs
- 4. Distribution of bed nets (malaria)
- 5. Mother & Child Health Weeks

6.1

SECTION 6.0

Geo-enabling the microplan

SECTION 6.1

Identifying microplanning challenges to address through geo-enablement

Programme Designer	GIS Technical Staff

The challenges faced during the non-geo-enabled microplanning process may either be already known, common for routine interventions (e.g. routine immunization); anticipated, for first-time interventions (e.g. first time distributing insecticide treated bed nets); or in emergencies (e.g. outbreak). Teams should document known or anticipated challenges through an inclusive consultative process using workshops, key informant interviews, and/or focus groups. This process should include stakeholders across different levels who will be involved in planning and implementing the microplan, including representatives from targeted communities.

Once the challenges are identified, stakeholders and teams can reference Figure C and Table A to identify which applications of geospatial data and technologies are appropriate to address these traditional microplanning challenges through geo-enablement.



Note:

That Figure C and Table A may not cover all challenges encountered during the non-geo-enabled microplanning process. If additional challenges have been identified, then the exercise should aim at defining if there is a geographic dimension to them. If this is the case, then it is likely that geospatial data and technologies may address them.

Coming soon: E-Learning for Geo-enabled Microplanning

The screenshot shows the World Health Organization's e-learning platform. The top left features the WHO logo and name. The top right displays 'Module - 2: Introduction to Geo-enabled Microplanning' and 'HELP EXIT'. The main content area is titled 'COMPONENTS FOR DEVELOPING AN EFFECTIVE GEO-ENABLED MICROPLAN' and is labeled '6 of 26'. Below the title, it states: 'To develop an effective geo-enabled microplan, the following information is required:'. A left-hand menu lists various course sections, with the current section highlighted. At the bottom, there is a progress bar and navigation icons for back, forward, and search.

World Health Organization

Module - 2: Introduction to Geo-enabled Microplanning

HELP EXIT

COMPONENTS FOR DEVELOPING AN EFFECTIVE GEO-ENABLED MICROPLAN 6 of 26

To develop an effective geo-enabled microplan, the following information is required:

MENU

- WELCOME
- GEO-ENABLED MICROPLANNING – COURSE INSTRUCTIONS ✓
- COURSE OUTLINE ✓
- MODULE OBJECTIVES ✓
- WHAT IS 'MICROPLANNING'? ✓
- COMPONENTS FOR DEVELOPING AN EFFECTIVE GEO-ENABLED MICROPLAN ✓**
- INFORMATION NEEDED FOR DEVELOPING AN EFFECTIVE GEO-ENABLED MICROPLAN ✓
- DEVELOPING AN EFFECTIVE GEO-ENABLED MICROPLAN – LACK OF CRITICAL INFORMATION AND CONSEQUENCES
- DEVELOPING AN EFFECTIVE GEO-ENABLED MICROPLAN – LACK OF OTHER CHARACTERISTICS AND CONSEQUENCES

|| _____ ↻ 🔊 ⚙️ < PREV NEXT >

- 9 self-guided modules
- 5-6 hours of content in 2-3 languages
- Content flagged by audience role
- Initially to be hosted on UN Agora LMS

Thank you!

<https://www.who.int/data/GIS>



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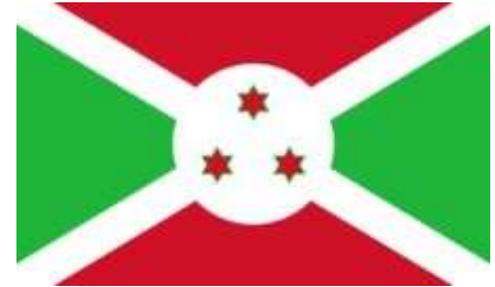
Webinar
October 2022



REPUBLIQUE DU BURUNDI



MINISTERE DE LA SANTE PUBLIQUE
ET DE LA LUTTE CONTRE LE SIDA
DIRECTION GENERALE DES SERVICES DE SANTE
ET DE LA LUTTE CONTRE LE SIDA
DIRECTION DES PROJETS ET PROGRAMMES DE SANTE
PROGRAMME NATIONAL INTEGRE DE LUTTE CONTRE LE PALUDISME



Geo enabled microplanning for ITNs distribution mass campaign in Burundi– Pilot Project

Presentation Plan

- Background of the pilot project
- Key deliverables
- Sample of Hand-drawn vs improved map
- Population estimate analysis & distribution sites
- Lessons learned and recommendations
- The tools used
- Questions & Answers

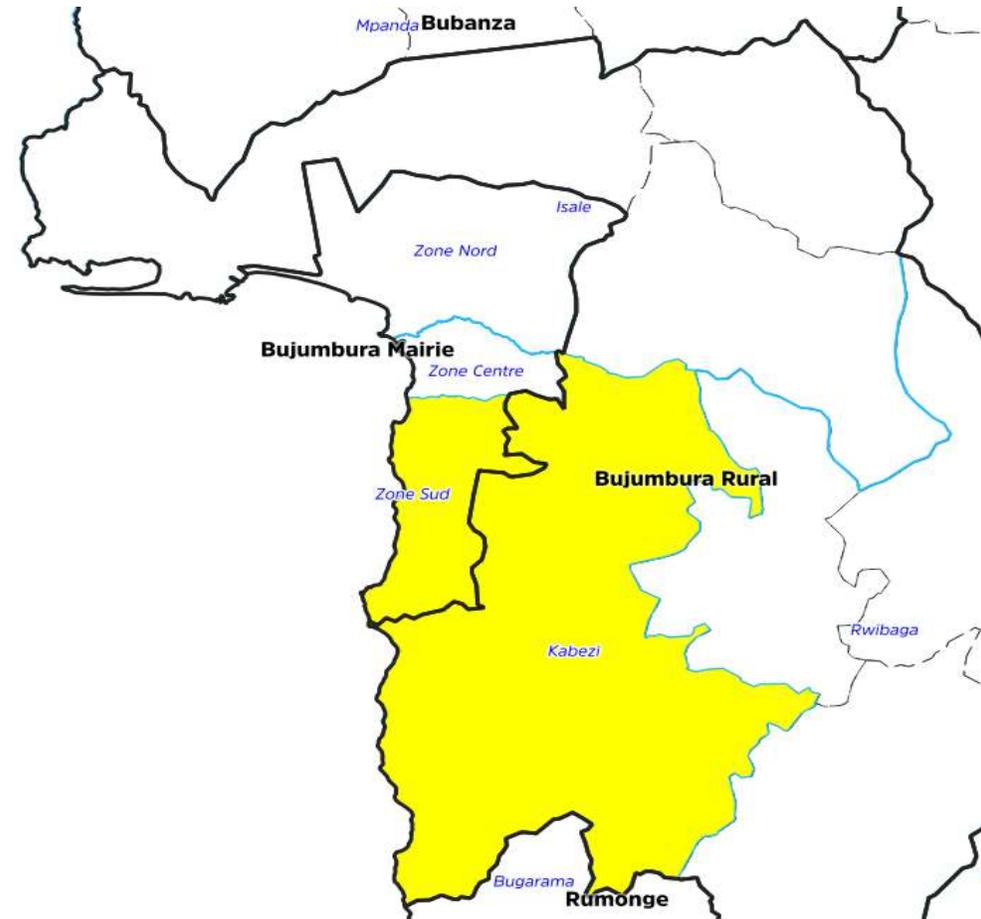
Background of the pilot project

1/2

- Interest in digitalization
- Two districts, Mairie Sud, Kabezi
- Digitization using GIS tools to produce improved and accurate maps

Background of the pilot project

2/2





Key deliverables

1

Develop data, maps, apps, and other information products in line with digital microplanning objectives

Key deliverables

2

Plan, prepare, and lead a pilot workshop in target health districts to conduct microplanning for the upcoming LLIN campaign using GIS maps and data

Key deliverables

3

Prepare a report and a technical summary on the pilot including lessons learned and recommendations for how to expand nationally



Population estimate Analysis & distribution sites

1- 1584 Households per distribution site

2- Distribution site buffer zone – 3Km

Aire Responsabilité	World Pop	Households	Nombre de sites_2019	Nombre de sites_2022_SIG	Nbre sites CDM_2022	Gaps
MUSAGA	104927	22324.89362	14	14	11	3
Kanyosha	91500	19468.08511	12	12	10	2
Ruziba	58257	12395.10638	6	8	6	2
Kinindo	41900	8914.893617	4	6	4	2
Busoro	28958	6161.276596	3	4	3	1
Total						
Total	325542		39	44	34	10



Challenges, lessons learned and recommendations

- Conflicting areas of jurisdiction – Need for arbitration
- Capacity building in GIS and related tools
- Online GIS app can be difficult to access (ArcgisOnline)
- Public online datasets are reliable sources and good point to start with
- Population estimate analyses



The tools used

1/2

- GIS applications:
 - ✓ ArcGIS Online Proprietary licence, under WHO licence
 - ✓ QGIS 3.22 Open source software

- Datasets
 - ✓ Administrative basemap dataset
 - ✓ Population estimated dataset
 - ✓ Health center dataset
 - ✓ Settlement dataset



The tools used

2/2

- Satellite imagery
 - ✓ High resolution satellite image of the areas of interest (Maxar)

- Storage, sharing of collected data and documents
 - ✓ Dropbox (basic)

- Workstations
 - ✓ Laptop (Dell, HP, Mac)

Merci de votre attention



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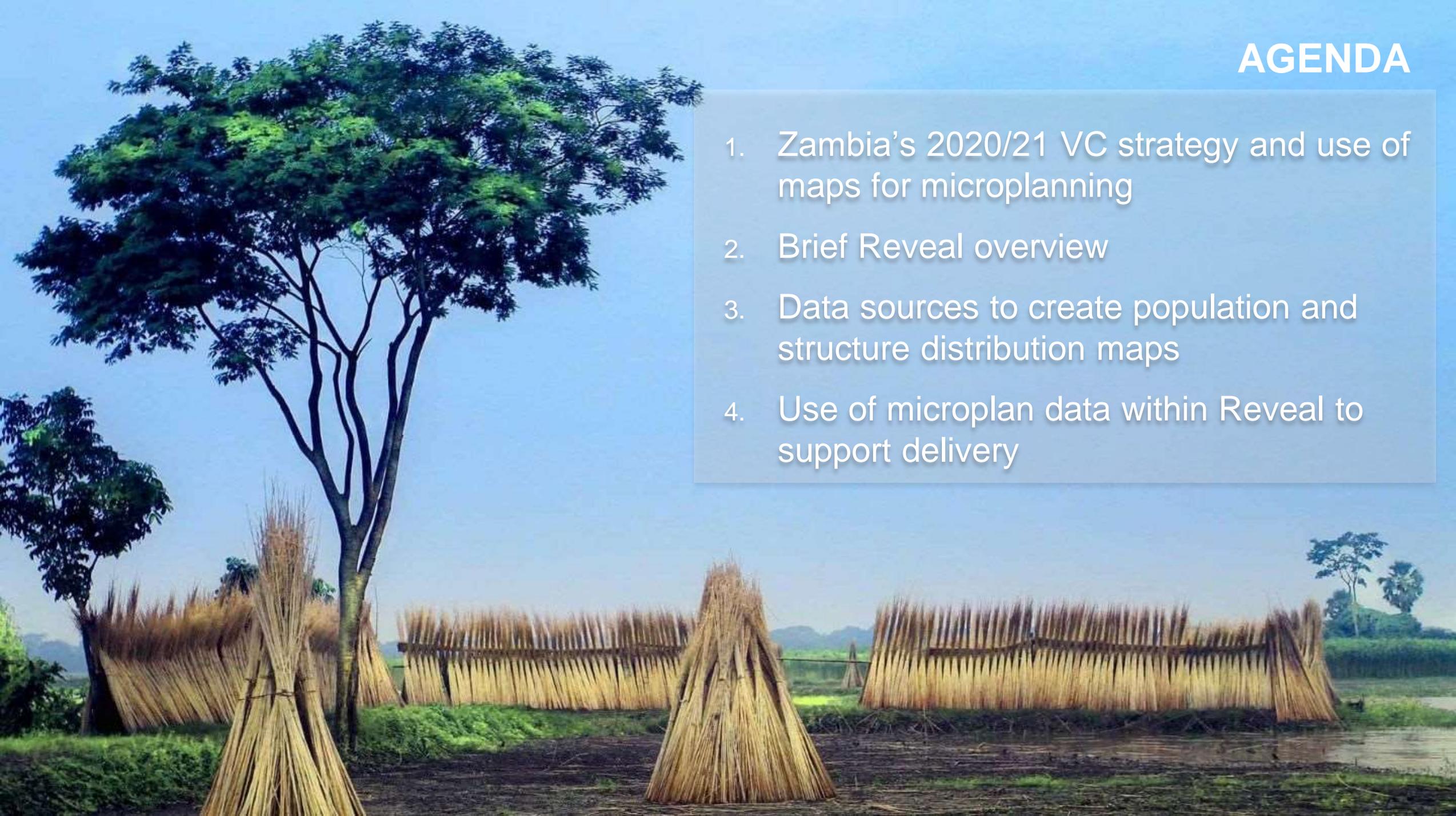




Using spatial data to inform Zambia's IRS and LLIN campaign planning and roll out

AGENDA

1. Zambia's 2020/21 VC strategy and use of maps for microplanning
2. Brief Reveal overview
3. Data sources to create population and structure distribution maps
4. Use of microplan data within Reveal to support delivery



1: Zambia's VC strategy and map roll out



Effective planning for the VC program in Zambia

Zambia:

- Indoor residual spray (IRS) and LLINs are the primary malaria interventions.
- The program policy aims to achieving 100% VC coverage through a mosaic approach.
- Extensive planning processes are required to deliver IRS every year and LLINs every 3 years to safeguard communities.

Challenges experienced in planning:

- Denominator is not often very accurate which impedes resource planning
- Implementing this mosaic approach of 50% IRS and 50% LLIN was difficult.

The solution: Maps with the right data

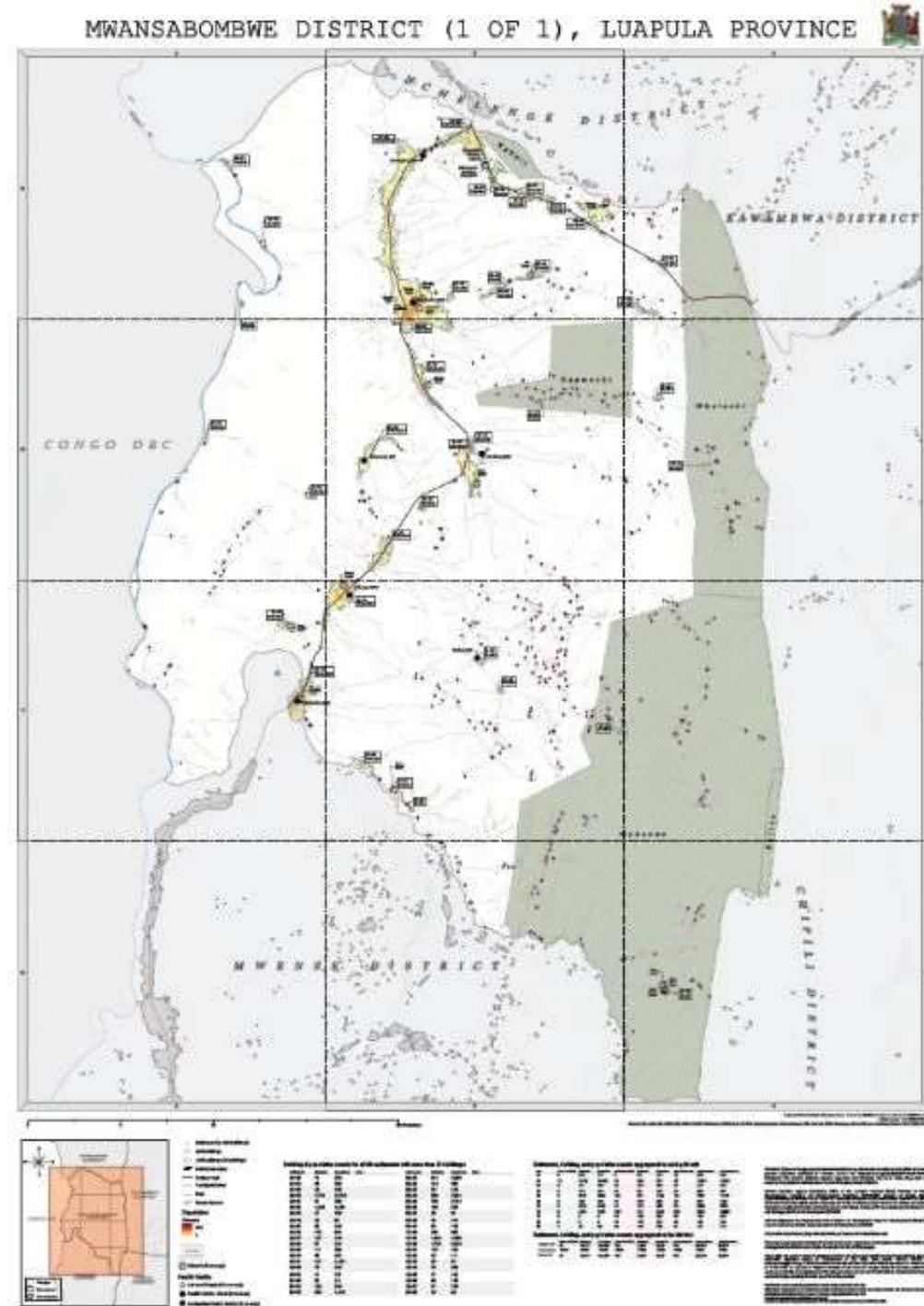


Objectives:

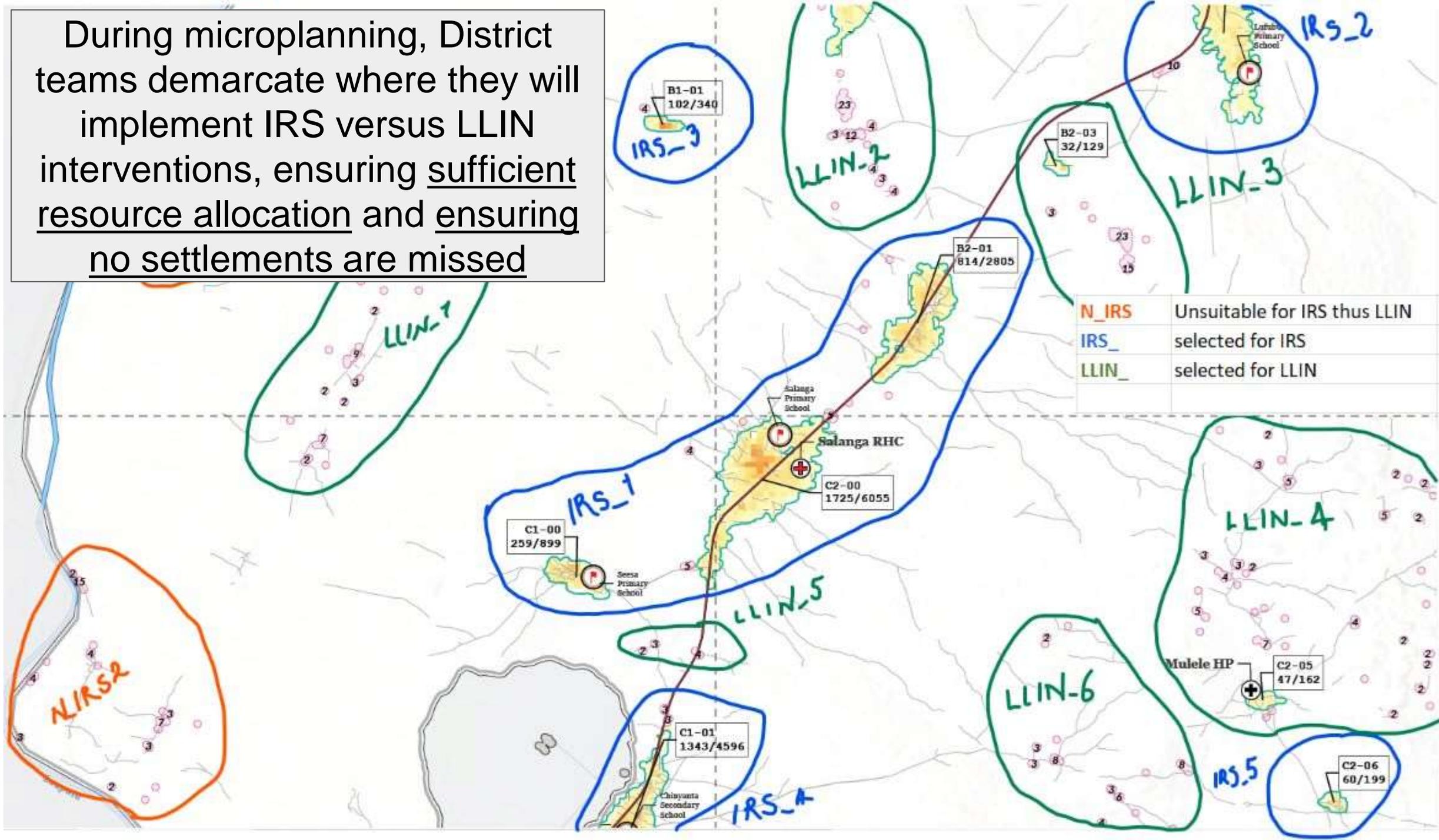
1. Apply the GRID3 products to create planning maps
2. Develop and implement a planning template to compliment the maps
3. Use the microplanning map data within Reveal in 14 districts to guide IRS delivery

Implementation scale:

Detailed maps with structure counts and population were printed and sent to all 116 districts across the 10 provinces in Zambia for vector control planning.



During microplanning, District teams demarcate where they will implement IRS versus LLIN interventions, ensuring sufficient resource allocation and ensuring no settlements are missed



DISTRICT:	Kaoma
Total residential structures as per map	32,724
RESOURCES ALLOCATED	
MOH allocated structures:	34,073
RESOURCES SELECTED	
Total IRS structures demarcated:	9,583
Remaining to reach allocation:	24,490
Current % selected of allocation:	28.12%

Cells in yellow require manual input. Do not change any other cells as th

District Template No. (see the title and reference the map orientation)	Manually demarcated IRS area label	Above 25 Count of Structures	Below 25 Count of Structures	Total Residential Structures	Cummulative Total Residential Structures	HFC
1 of 1	IRS_1	242	0	242	242	Kasabi
1 of 1	IRS_2	789	223	1,012	1,254	Mwanambuyu
1 of 1	IRS_3	208	0	208	1,462	Kalwalo
1 of 1	IRS_4	835	0	835	2,297	Kabilamwandi
1 of 1	IRS_5	769	0	769	3,066	Nalulembwe
1 of 1	IRS_6	200	73	371	3,437	Mayukwayukwa 2
1 of 1	IRS_7	1,608	59	1,667	5,104	Longe HP
1 of 1	IRS_8	949	63	1,012	6,116	Kasimba RHC
1 of 1	IRS_9	542	213	755	6,871	Mayukwayukwa 1
1 of 1	IRS_10	404	104	508	7,379	Mangango ZNS
1 of 1	IRS_11	270	41	311	7,690	Nyango RHC
1 of 1	IRS-12	1,713	27	1,740	9,430	Mangango HAHC
1 of 1	IRS_13	112	41	153	9,583	Kashamu RHC
1 of 1	IRS_14					

Summary of planning outputs highlight gaps and encourages discussions and corrective decisions

SUMMARY OF RESOURCES REQUIRED			
DISTRICT	Mpika	Difference to allocation	%
IRS structures selected	16,615	-167	-1.0%
LLIN population selected	104,656	1,020	1.0%
LLIN need (using 1.8 pop/net)	58,142		
LLIN need with a 10% buffer included	63,956		

SUMMARY ACCOUNTING FOR ALL STRUCTURES ON THE MAP		
Are there any areas that have been left out during planning?		
DISTRICT	Mpika	Percentage
Total residential structures within district	45,466	
Total structures selected for IRS	16,615	36.5%
Total structures selected for LLINs	27,771	61.1%
Total structures in remaining gap areas	0	0.0%
Structures not accounted for	1,080	2.4%

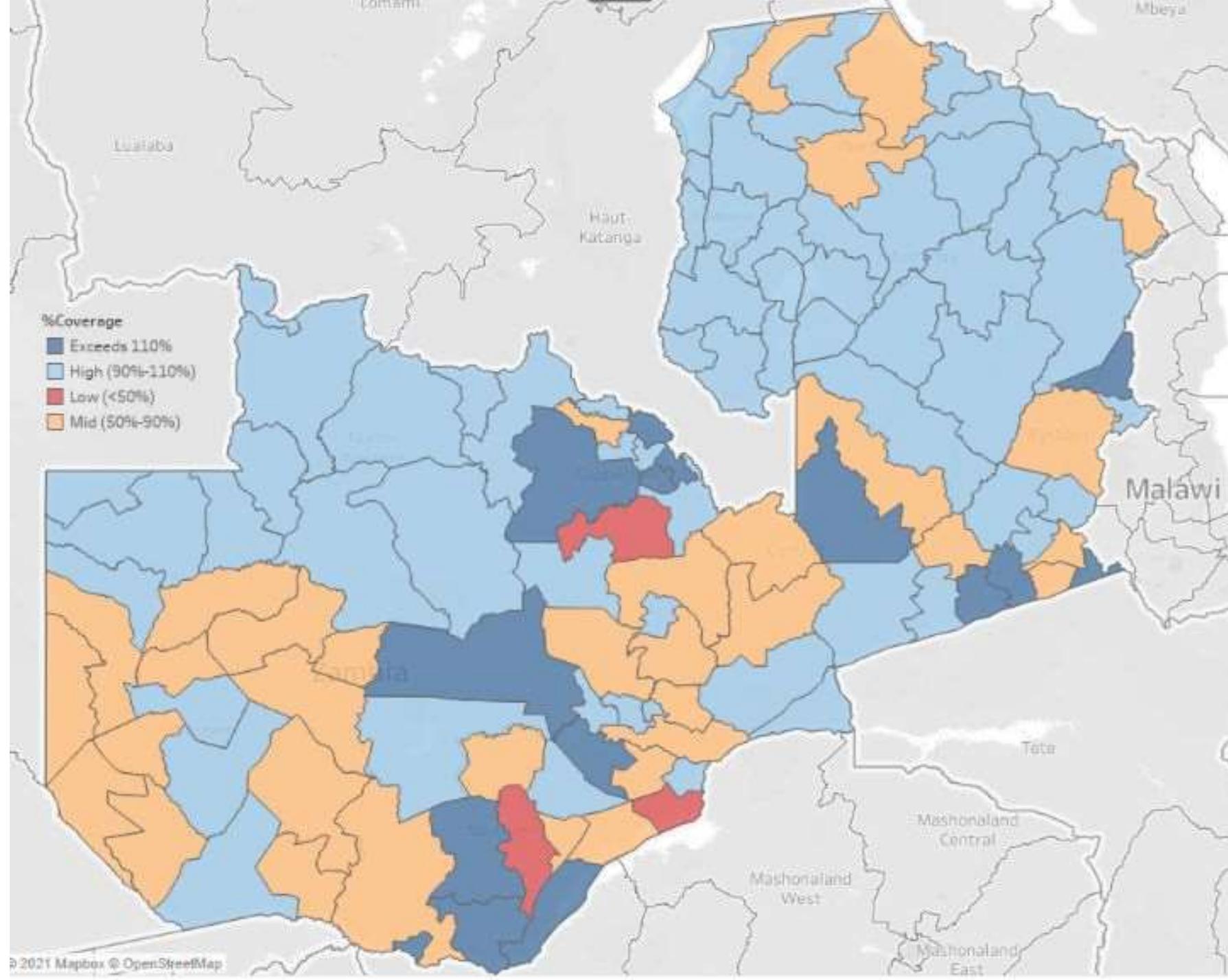
ACTION: If your resources allocated are very different (>5%) to what you have planned for, is NMEP aware of the changes they need to make to this allocation?

1. Answer (Y/N) No
2. Who did you inform/discuss with?
3. What is the expected response?

ACTION: If you have more than 5% structures not accounted for it means you have not demarcated all 'Remaining GAP Areas'. This is essential so that you can inform the NMEP how many structures, and where, will be missed because you do not have enough resources. Please do this.

1. Do you have remaining gap areas? No
2. If yes, have you requested additional resources?
3. If yes, who did you request this from?
4. What is the expected response?



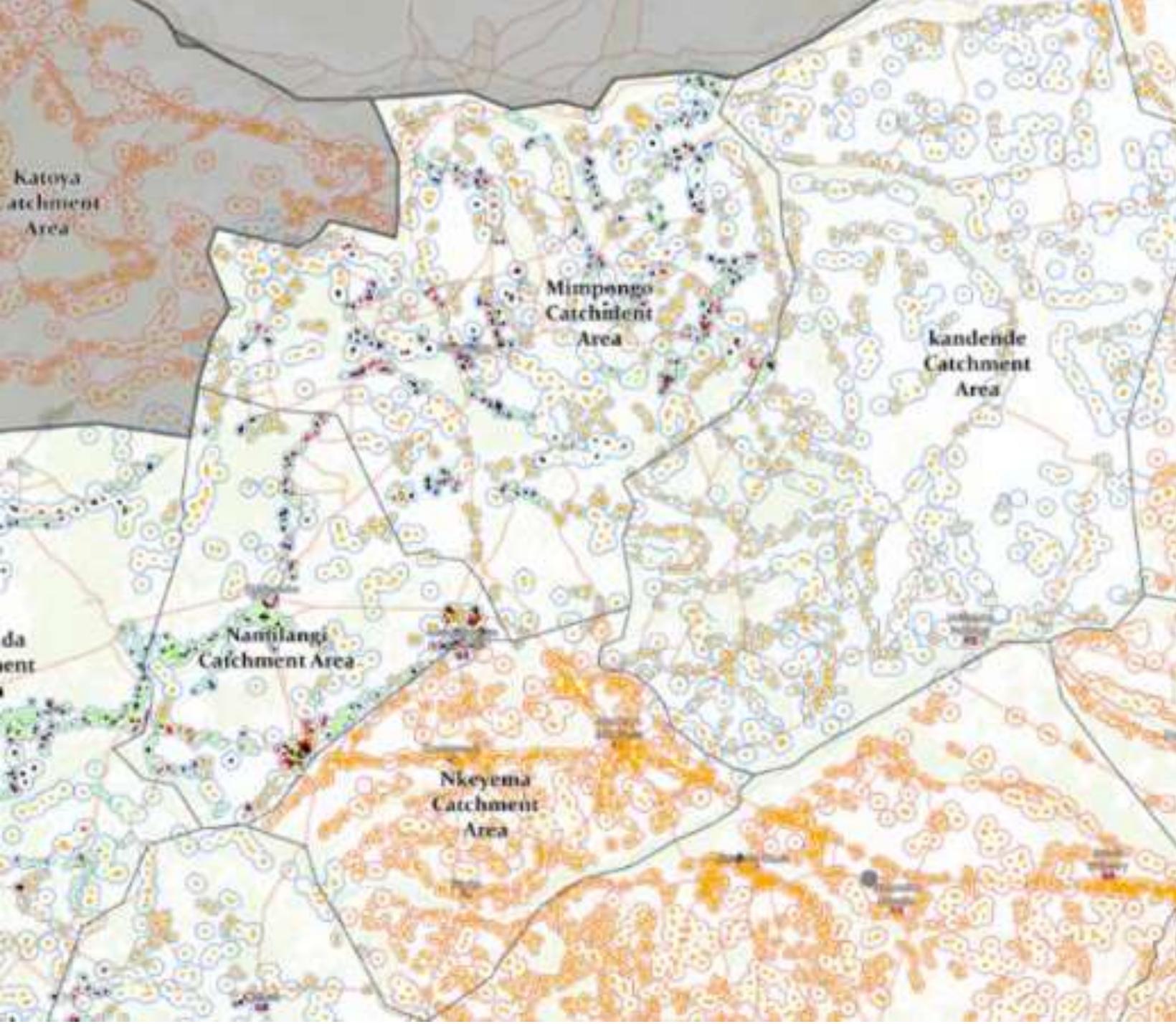


Lessons learnt

- **Use maps much earlier to inform initial allocation during macroplanning**
 - Use prioritization and historical data to inform allocation priorities across the country
 - Make adjustments to allocation during microplanning if justified by districts
- **Health Facility boundaries were important to guide accurate Health Facility level quantification and targeting and integration with DHIS2**
 - There were no HF level boundaries in 2020
 - In 2021, Health Facility catchment boundaries were created and added to the microplanning maps
- **Using physical maps presented challenges that could be solved by conducting the whole microplanning process online**
 - Minimise logistics and improve data integration
- **Maps helped to understand the accuracy of traditionally used population data (Headcount and CSO data)**
 - Was a helpful validation tool that fostered increased discussion about population accuracy
 - In future, need to better understand the accuracy of all of these data sets

2021 & 2022 microplanning map updates

- Maps show where they targeted and where they sprayed last year to inform this years IRS vs ITN plans
- Health facilities added
- Improved targeting accuracy and alignment with allocated resources



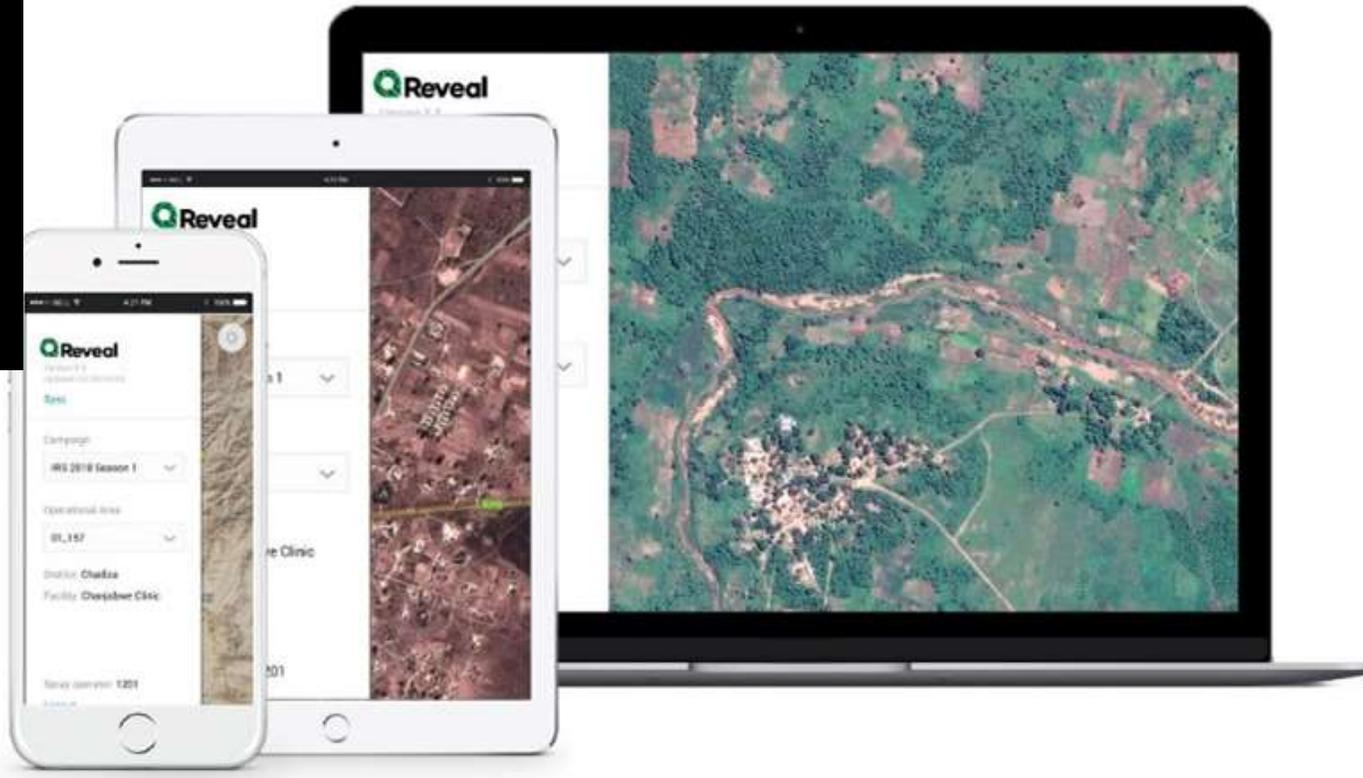
2. Brief Reveal overview





Reveal

REDEFINING PRECISION

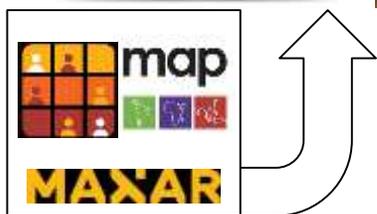
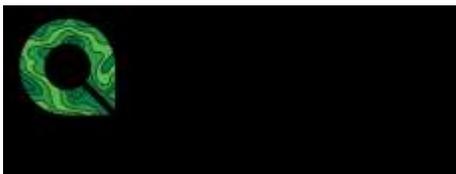


- Open source “Digital Global Good”
- Uses spatial intelligence to drive delivery of life-saving interventions



REVEAL: PLAN, GUIDE, AND TRACK DELIVERY TO THE LAST MILE

1 SETUP & PLANNING



Outcome: Established denominator. Aligned strategy for HR and commodities. Paper based or digital mapping process.

2 NAVIGATE & DELIVER



Outcome: Execution of plan. Interventions delivered even to last mile communities.

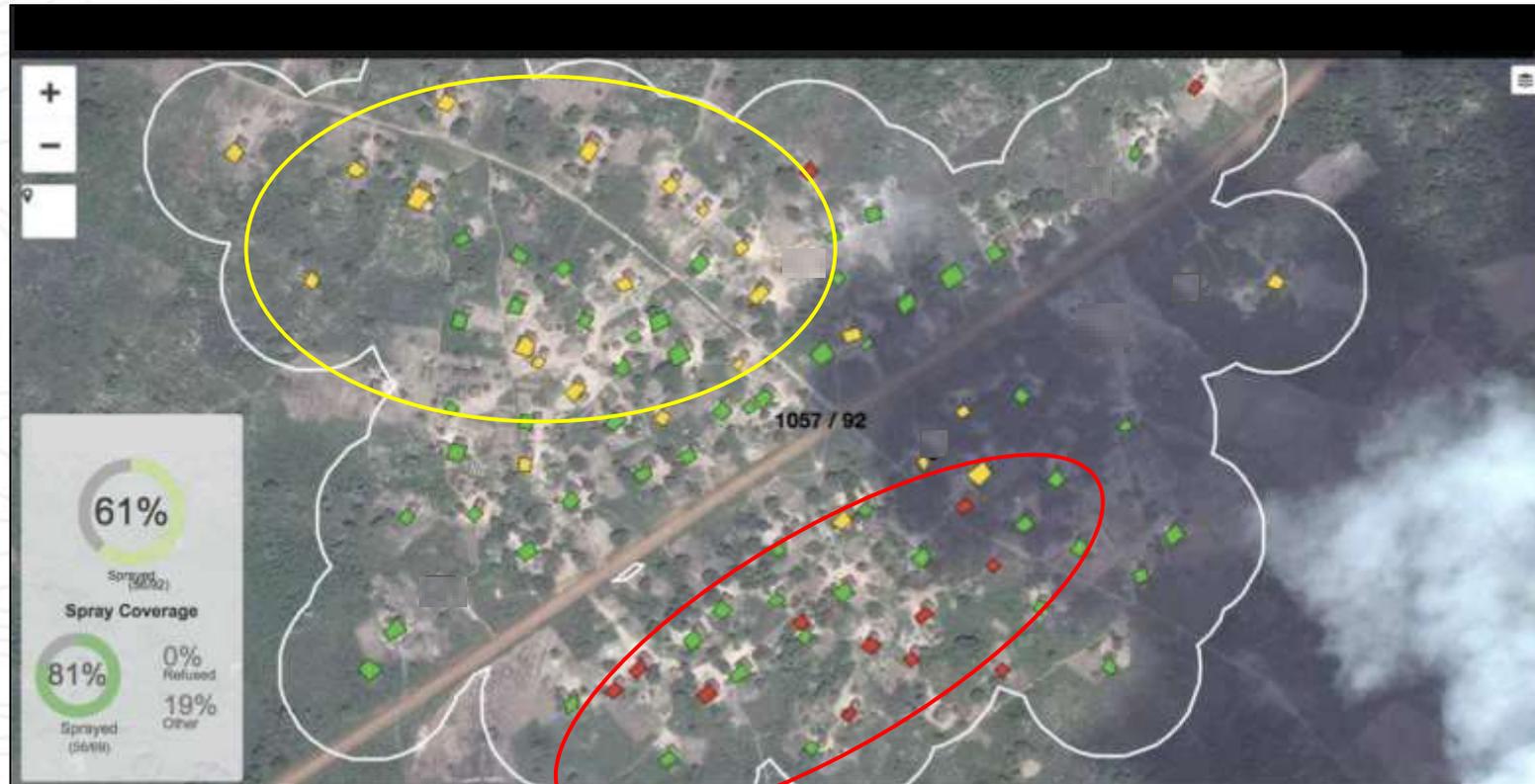
3 MONITOR & RESPOND



Outcome: Visualize true coverage, data-driven guidance, directed mop-ups. Integrates with DHIS2.

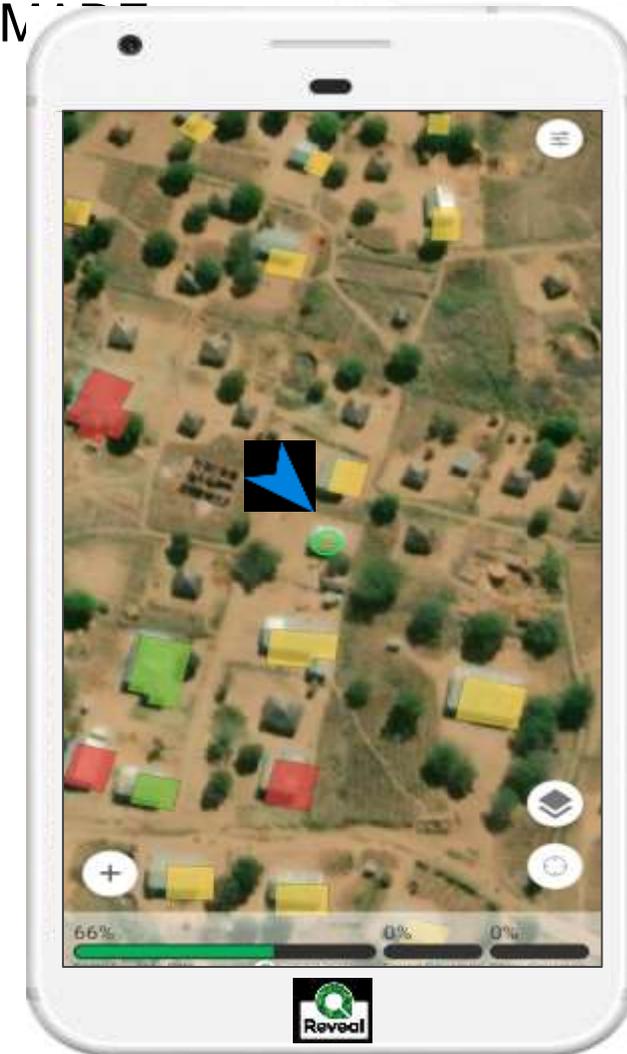
REVEAL ENSURES THAT NO ONE IS MISSED:

FIELD TEAMS USE REVEAL TO NAVIGATE TO TARGETS AND CAPTURE DATA ABOUT INTERVENTION DELIVERY. DATA DRIVEN DECISIONS ARE MADE



- Household not yet visited
- Received all interventions
- Refused any intervention

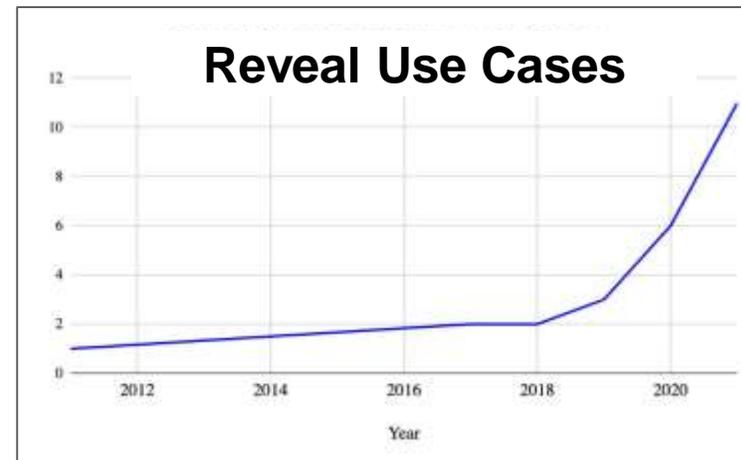
Actions: direct teams to NW quadrant; provide SBC to areas south of the road



REVEAL HAS GROWN INTO NEW COUNTRIES AND USE CASES

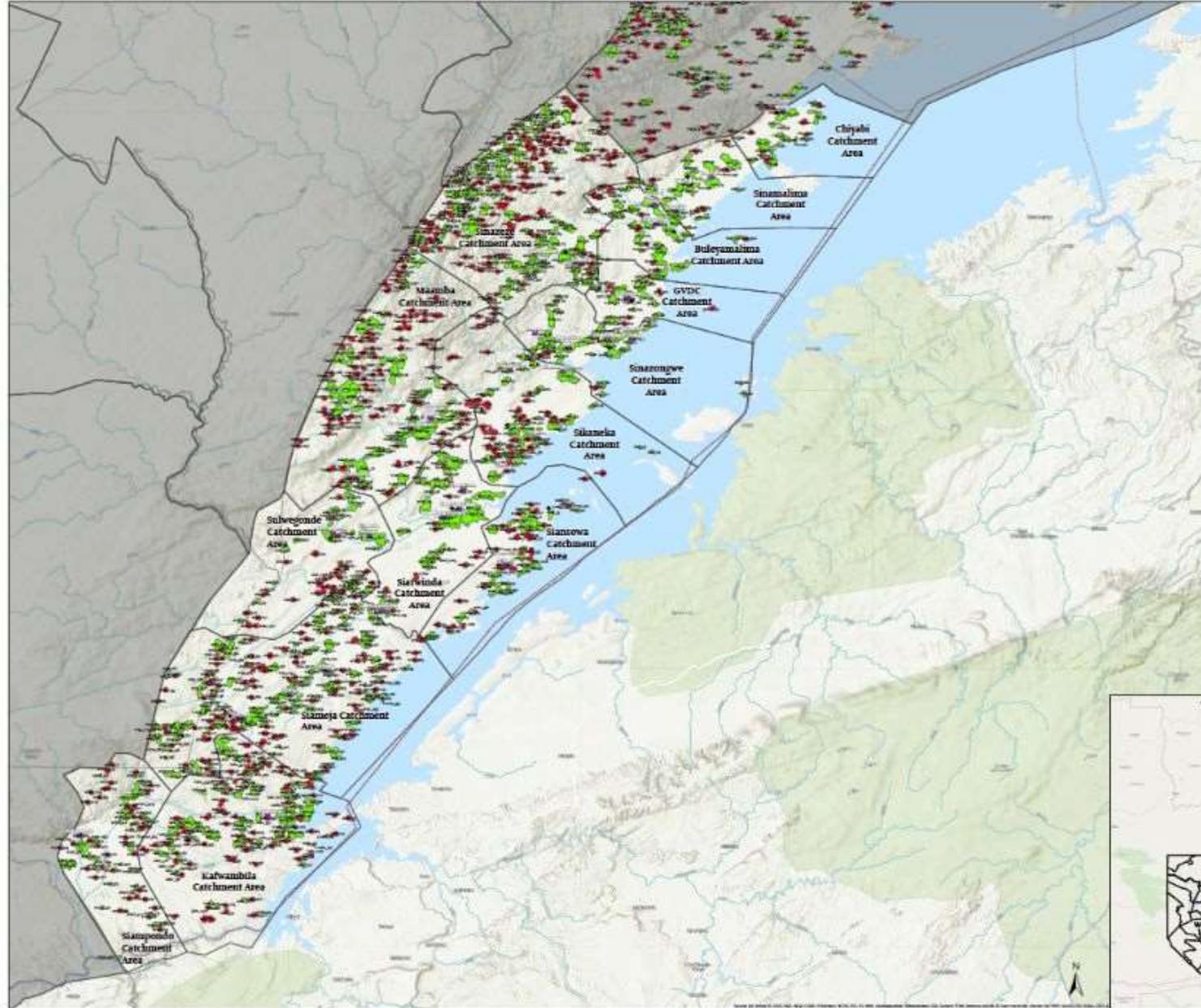


- Common documented themes we're looking to solve:
 - A big disconnect between campaign planning & deployment that prevents impact
 - Drive for integration amongst campaigns
- Malaria Use Cases:
 - Indoor residual spray, Seasonal Malaria Chemoprophylaxis, Mass Drug Administration, SBCC, Focal IRS, Focus Investigations, ITNs
- *NTD Use Cases: Learning Agenda*
 - MDA (Oncho, Schisto, LF, STH, SCH)
- *Vaccination Use: Learning Agenda*
 - Target zero-dose children



3.

**Data
contributing to
planning maps**



Health Facility Name	Population	Number of Structures	Number of Health Workers	Number of Health Workers per 10,000
Chiyahi Health Centre	1,000	1,000	10	100
Sinazongwe Health Centre	1,100	1,100	11	110
Sinamalala Health Centre	1,200	1,200	12	120
Buleyamalama Health Centre	1,300	1,300	13	130
GVDIC Health Centre	1,400	1,400	14	140
Sinazongwe Health Centre	1,500	1,500	15	150
Sinamalala Health Centre	1,600	1,600	16	160
Buleyamalama Health Centre	1,700	1,700	17	170
GVDIC Health Centre	1,800	1,800	18	180
Sinazongwe Health Centre	1,900	1,900	19	190
Sinamalala Health Centre	2,000	2,000	20	200
Buleyamalama Health Centre	2,100	2,100	21	210
GVDIC Health Centre	2,200	2,200	22	220
Sinazongwe Health Centre	2,300	2,300	23	230
Sinamalala Health Centre	2,400	2,400	24	240
Buleyamalama Health Centre	2,500	2,500	25	250
GVDIC Health Centre	2,600	2,600	26	260
Sinazongwe Health Centre	2,700	2,700	27	270
Sinamalala Health Centre	2,800	2,800	28	280
Buleyamalama Health Centre	2,900	2,900	29	290
GVDIC Health Centre	3,000	3,000	30	300
Sinazongwe Health Centre	3,100	3,100	31	310
Sinamalala Health Centre	3,200	3,200	32	320
Buleyamalama Health Centre	3,300	3,300	33	330
GVDIC Health Centre	3,400	3,400	34	340
Sinazongwe Health Centre	3,500	3,500	35	350
Sinamalala Health Centre	3,600	3,600	36	360
Buleyamalama Health Centre	3,700	3,700	37	370
GVDIC Health Centre	3,800	3,800	38	380
Sinazongwe Health Centre	3,900	3,900	39	390
Sinamalala Health Centre	4,000	4,000	40	400
Buleyamalama Health Centre	4,100	4,100	41	410
GVDIC Health Centre	4,200	4,200	42	420
Sinazongwe Health Centre	4,300	4,300	43	430
Sinamalala Health Centre	4,400	4,400	44	440
Buleyamalama Health Centre	4,500	4,500	45	450
GVDIC Health Centre	4,600	4,600	46	460
Sinazongwe Health Centre	4,700	4,700	47	470
Sinamalala Health Centre	4,800	4,800	48	480
Buleyamalama Health Centre	4,900	4,900	49	490
GVDIC Health Centre	5,000	5,000	50	500

Legend

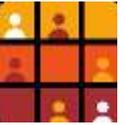
- Neighbouring Districts
- Health Facility Catchment Boundaries
- Health Facilities
- Rivers
- Roads
- Schools

Communities

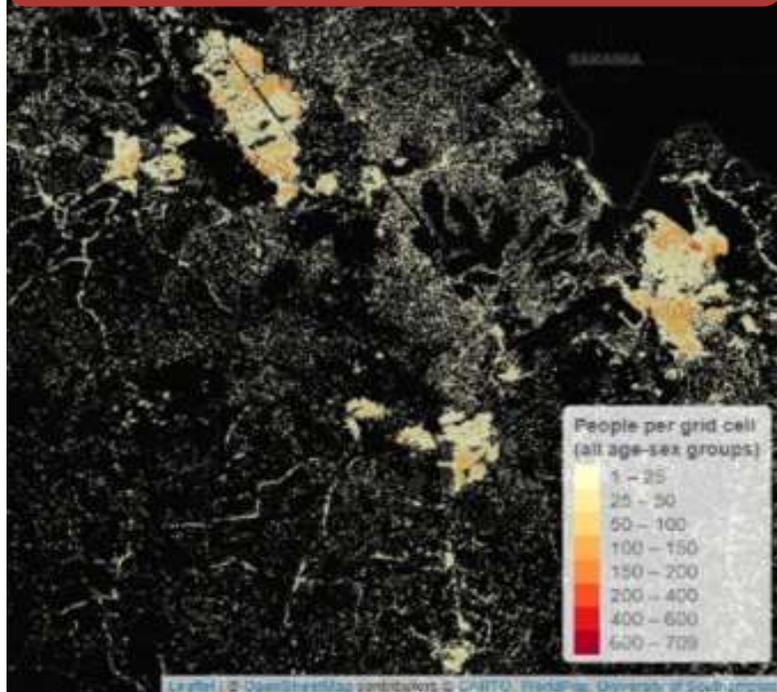
- < 10 Structures
- ≥ 10 Structures



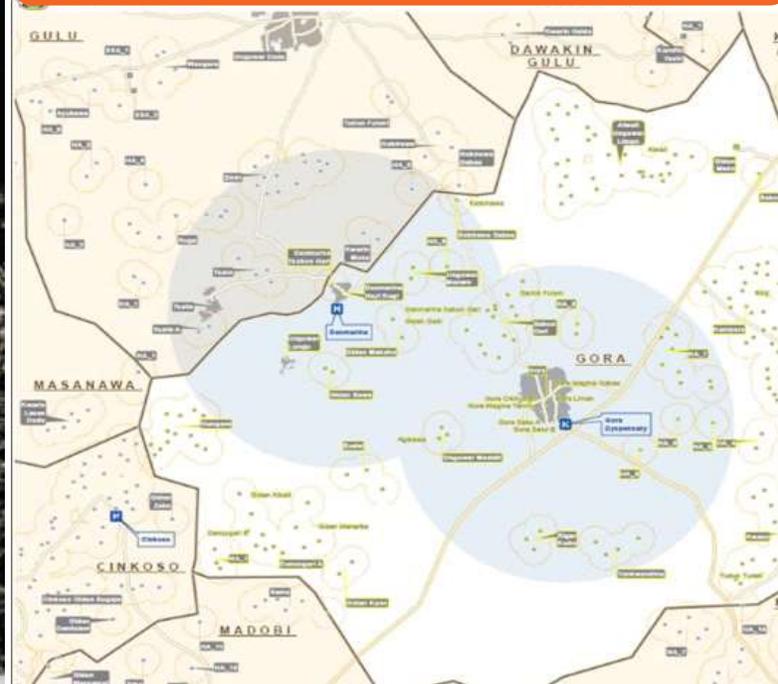
GRID3 core geospatial layers



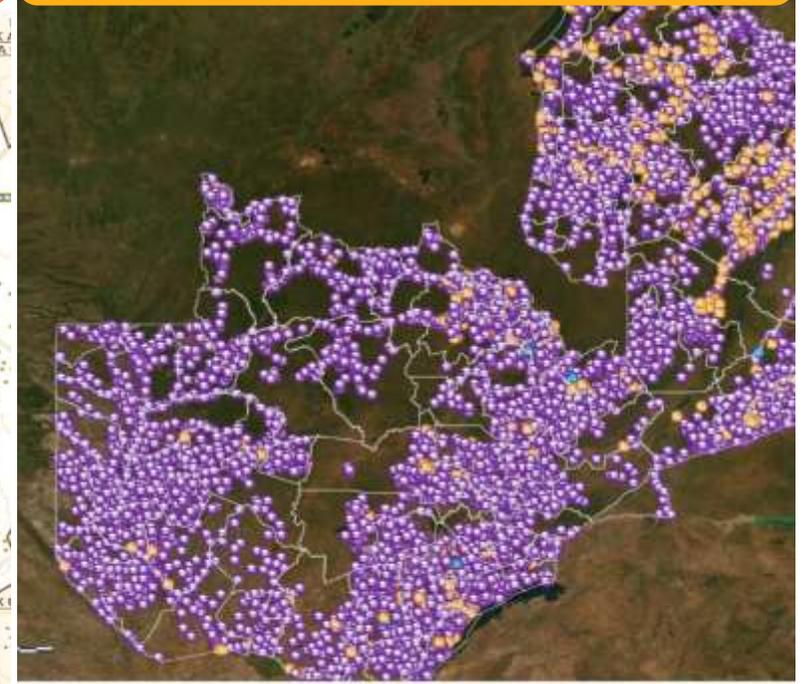
Population



Administrative maps



Infrastructure



- ❑ High Resolution Population estimates (100m x 100m)
- ❑ Settlement place names
- ❑ Settlement extents

- ❑ Harmonized Administrative Boundaries
- ❑ Operational Boundaries
- ❑ Catchment Areas

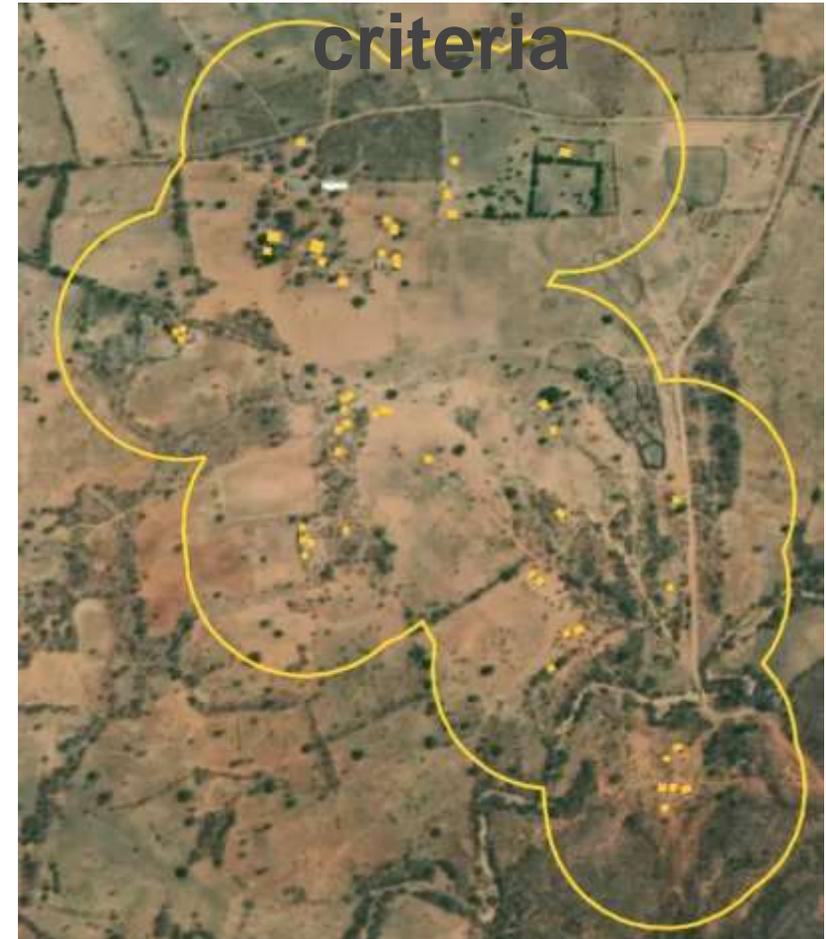
- ❑ Points of Interest
- ❑ Health Facilities
- ❑ Schools

GRID3 settlements are derived from Maxar-Ecopia Building Footprints



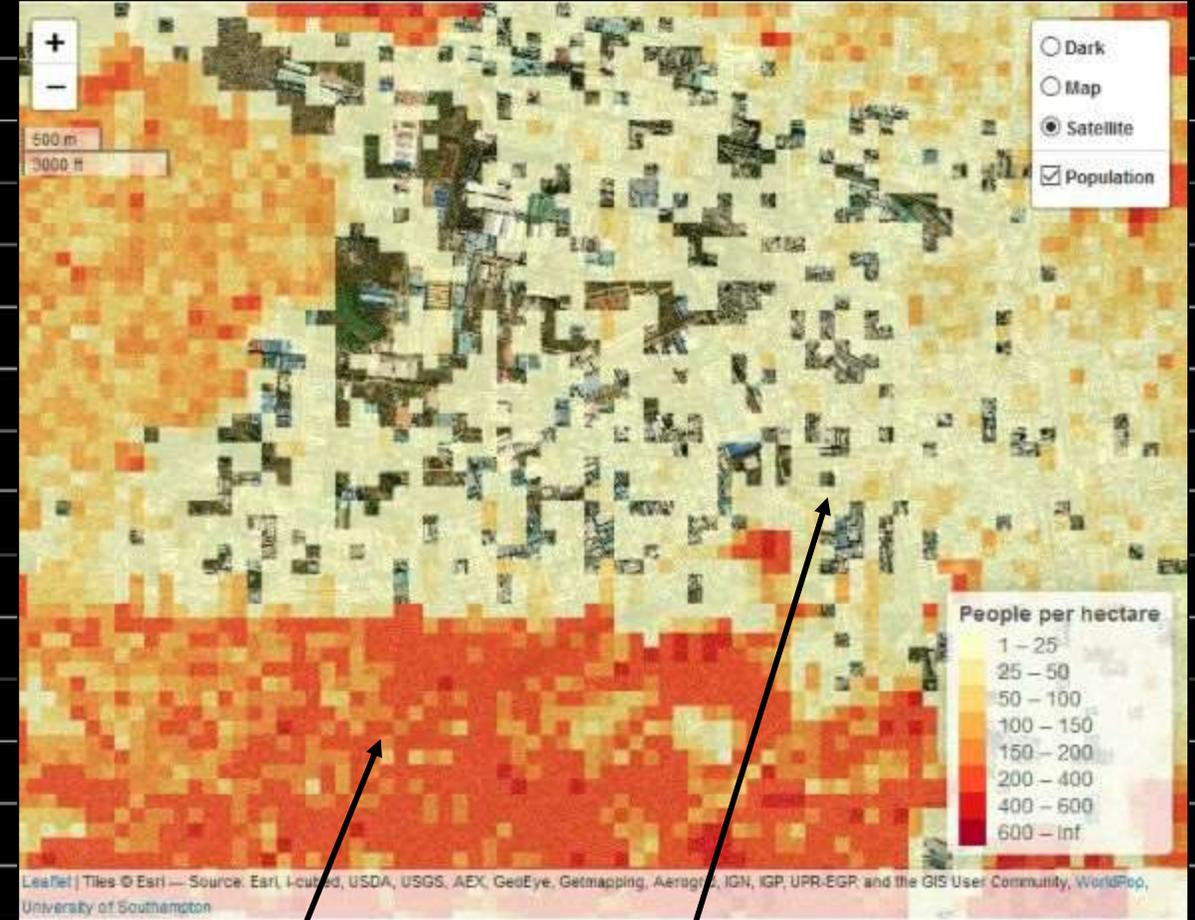
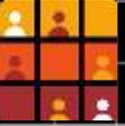
Settlement extents are classified into built up area, small settlement area and hamlet. Where available population estimates are aggregated to the polygon areas

Settlements can also be derived from manual enumeration or google footprints using different criteria



Modeled population estimates

Population estimates (predictions) for each 100m grid cell across Zambia



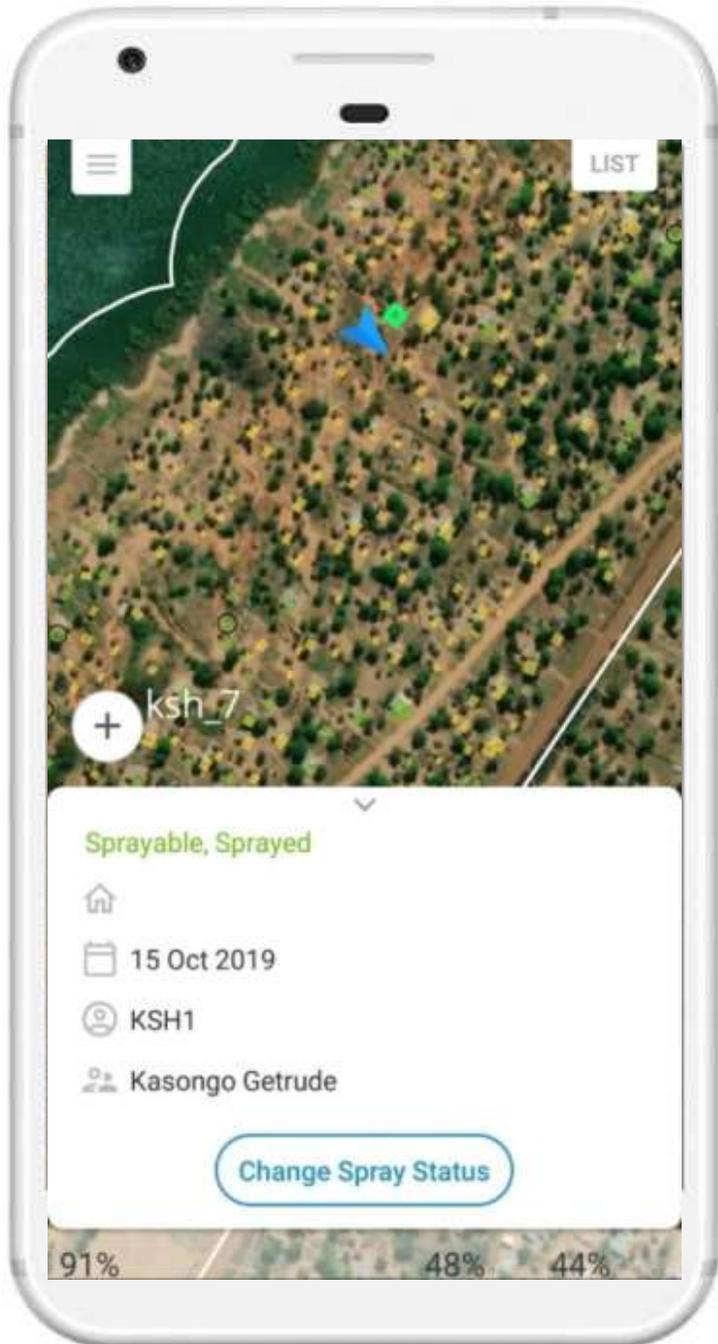
Good contrast in predicted population counts between areas of dense residential buildings & industrial areas

Residential structure versus all buildings

- GRID3 settlement counts include **'all buildings'** whereas most health interventions are delivered to **'residential structures'** only.
 - Overestimation of need
 - So we needed to adjust 'all building' counts per settlement to 'residential structure' counts per settlement. How?



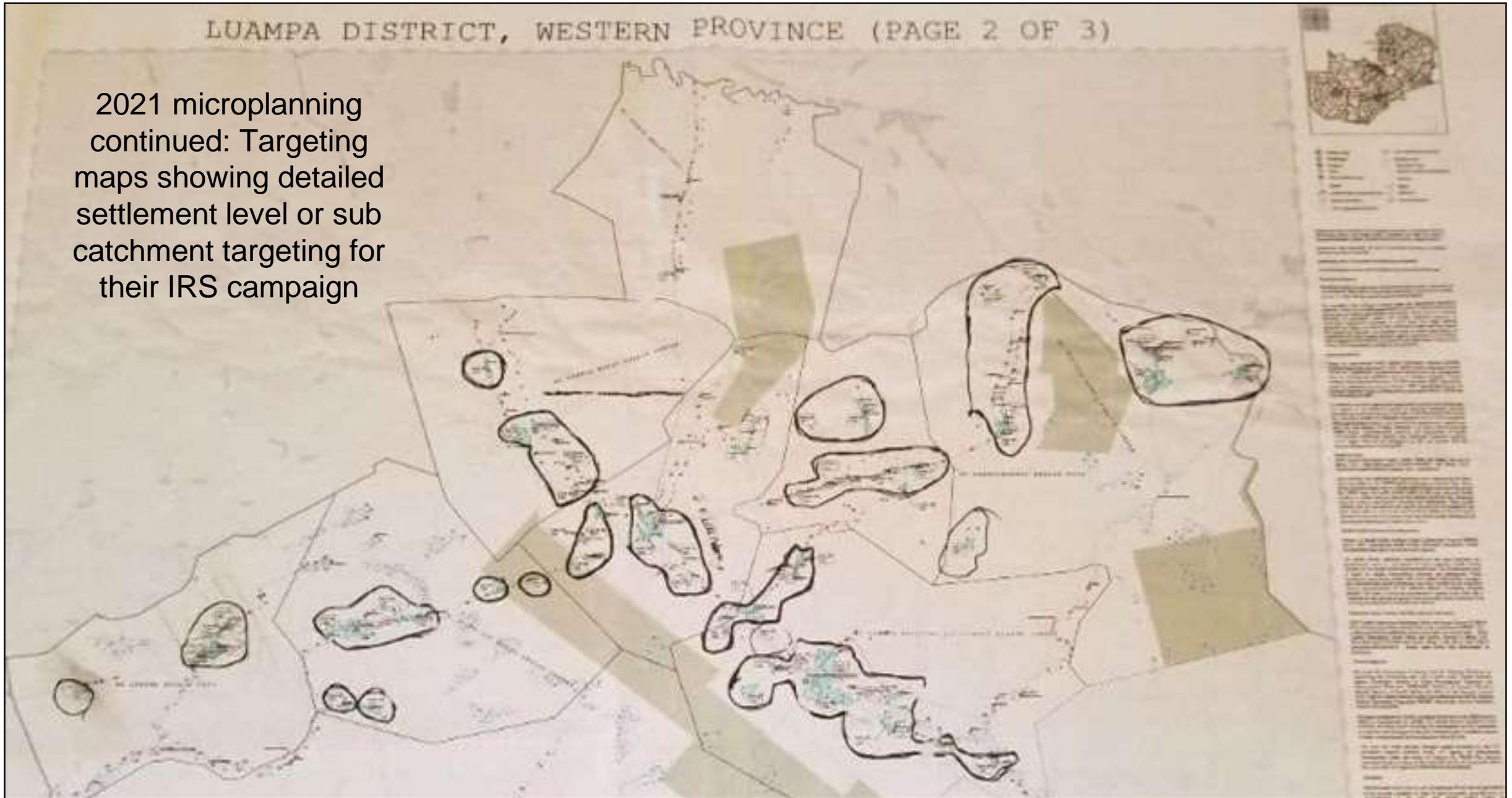
Field verified geospatial data collected through Reveal during the previous years IRS campaigns in select districts helped us model the ratio of AI building footprints to residential structure footprints.



4: Use of microplan outputs in Reveal for delivery



2021 microplanning continued: Targeting maps showing detailed settlement level or sub catchment targeting for their IRS campaign



Plan Simulation

Hierarchy:

Geographic Level:

Location:

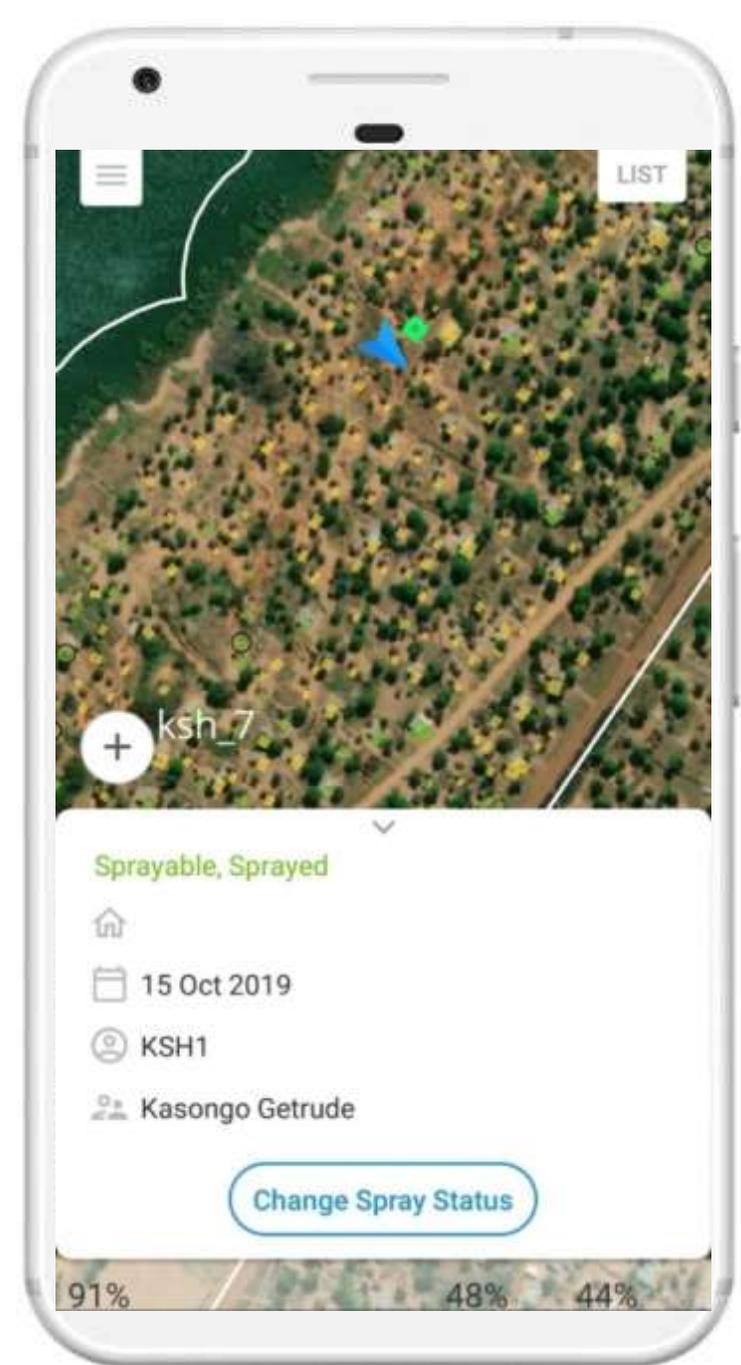
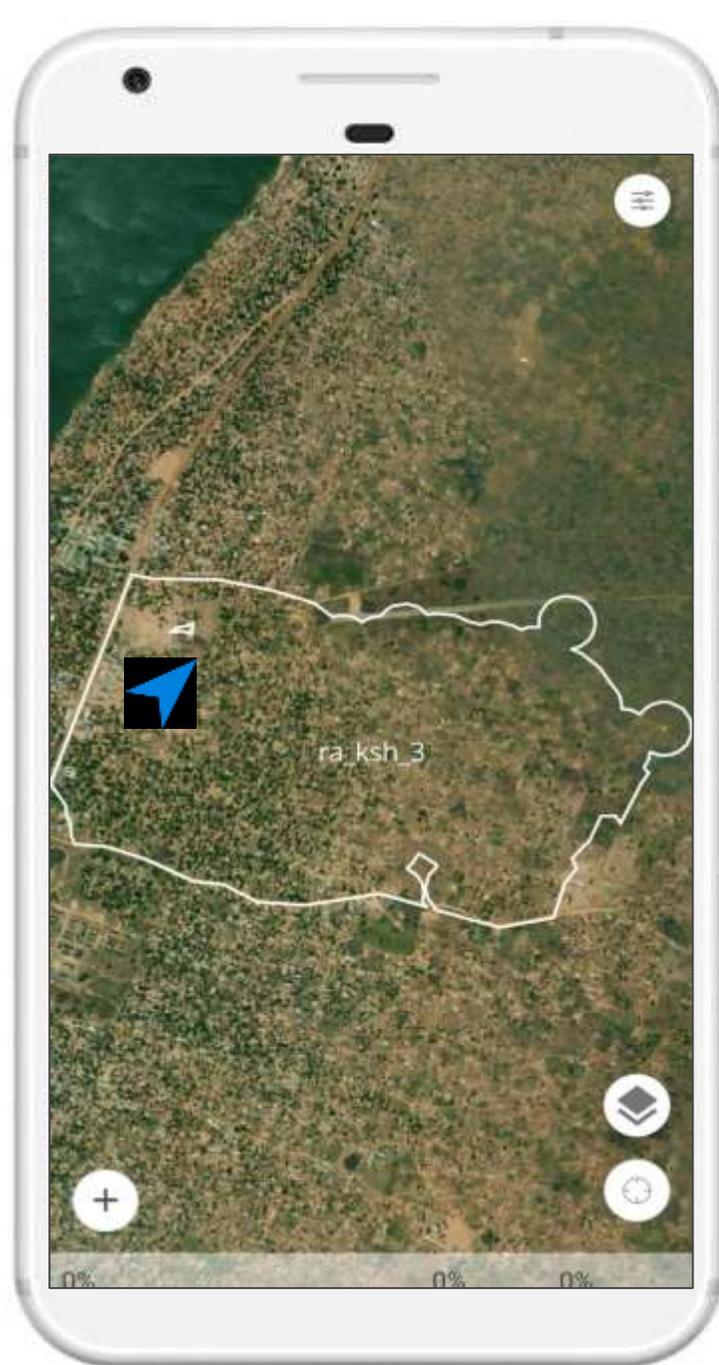
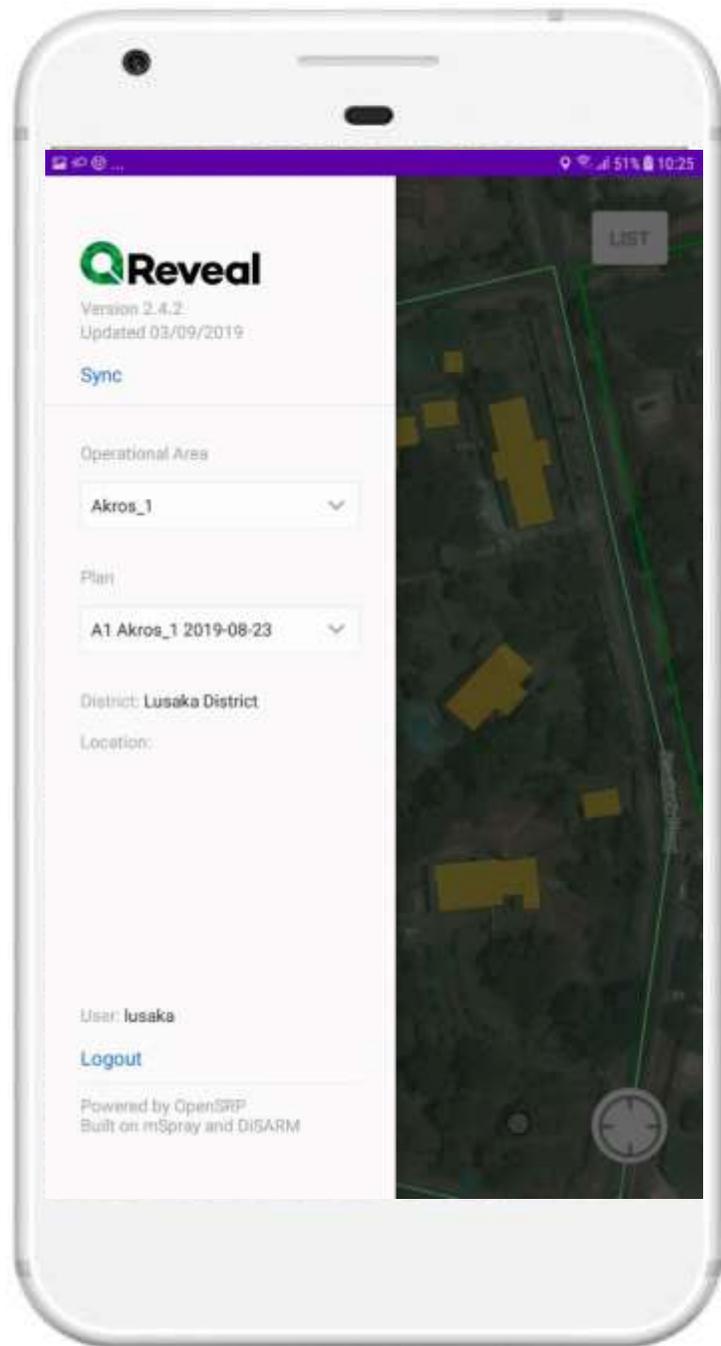
Entity: Person Location

Entity properties

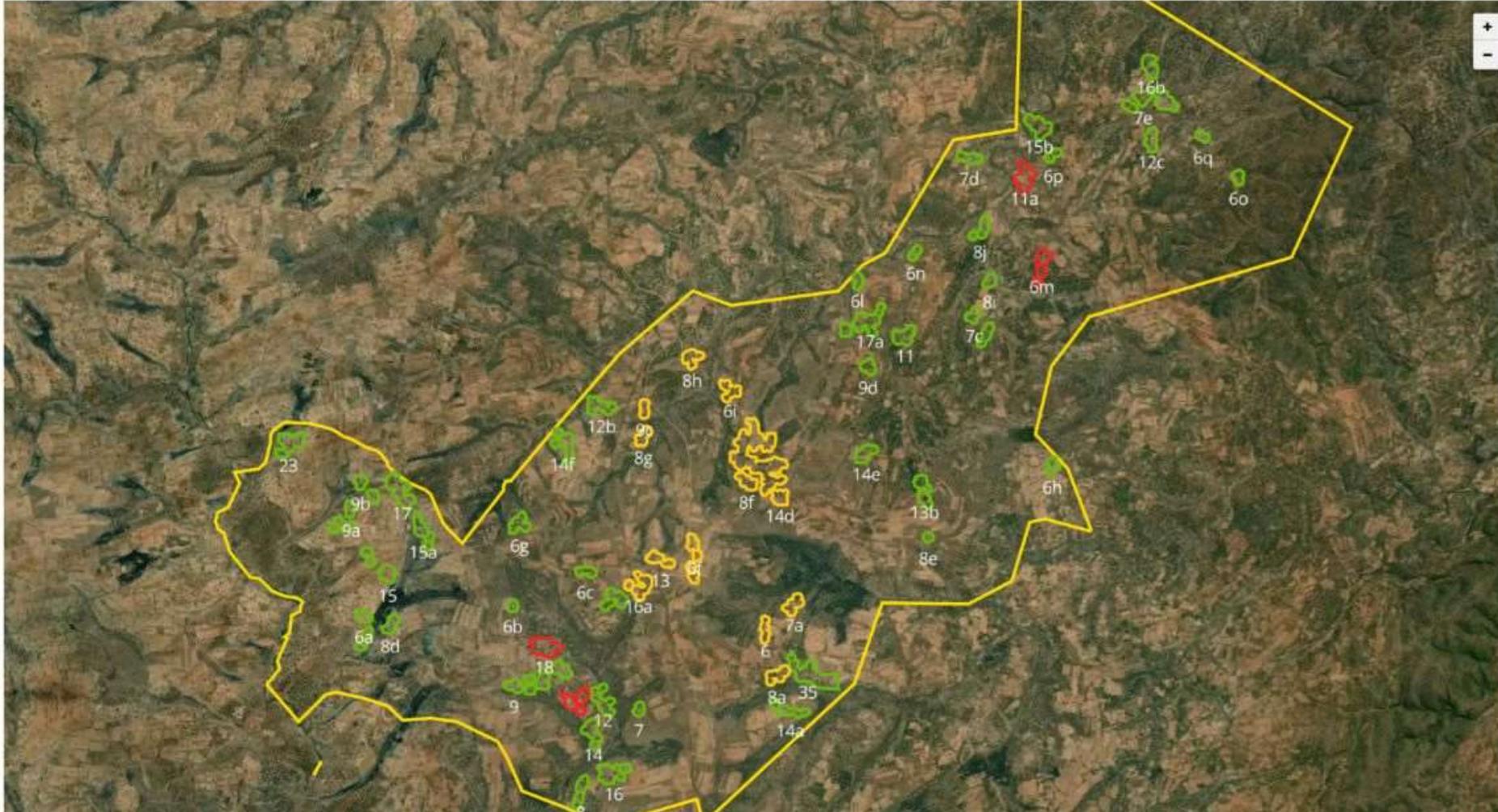
vax_status

+
Clear All
+ -





Macepa IRS-Lite 2021 Plan: So Siasikabole Health Post



So Siasikabole Health Post

Legend

- Sprayed
- Not Sprayed
- Not Visited

Spray Coverage (Effectiveness)

Percent of Total Structures Sprayed

Progress: 1073 of 1429 structure(s) (75%)

Targeted Spray Coverage (Effectiveness)

Percent of Targeted Structures Sprayed

Progress: 1073 of 1429 structure(s) (75%)

Found Coverage

Percent of found structures over targeted

Progress: 1128 of 1429 structure(s) (75%)

Spray Success Rate (PMI SC)

Percent of structures sprayed over found

Progress: 1073 of 1128 structure(s) (95%)



Spray Effectiveness

49%

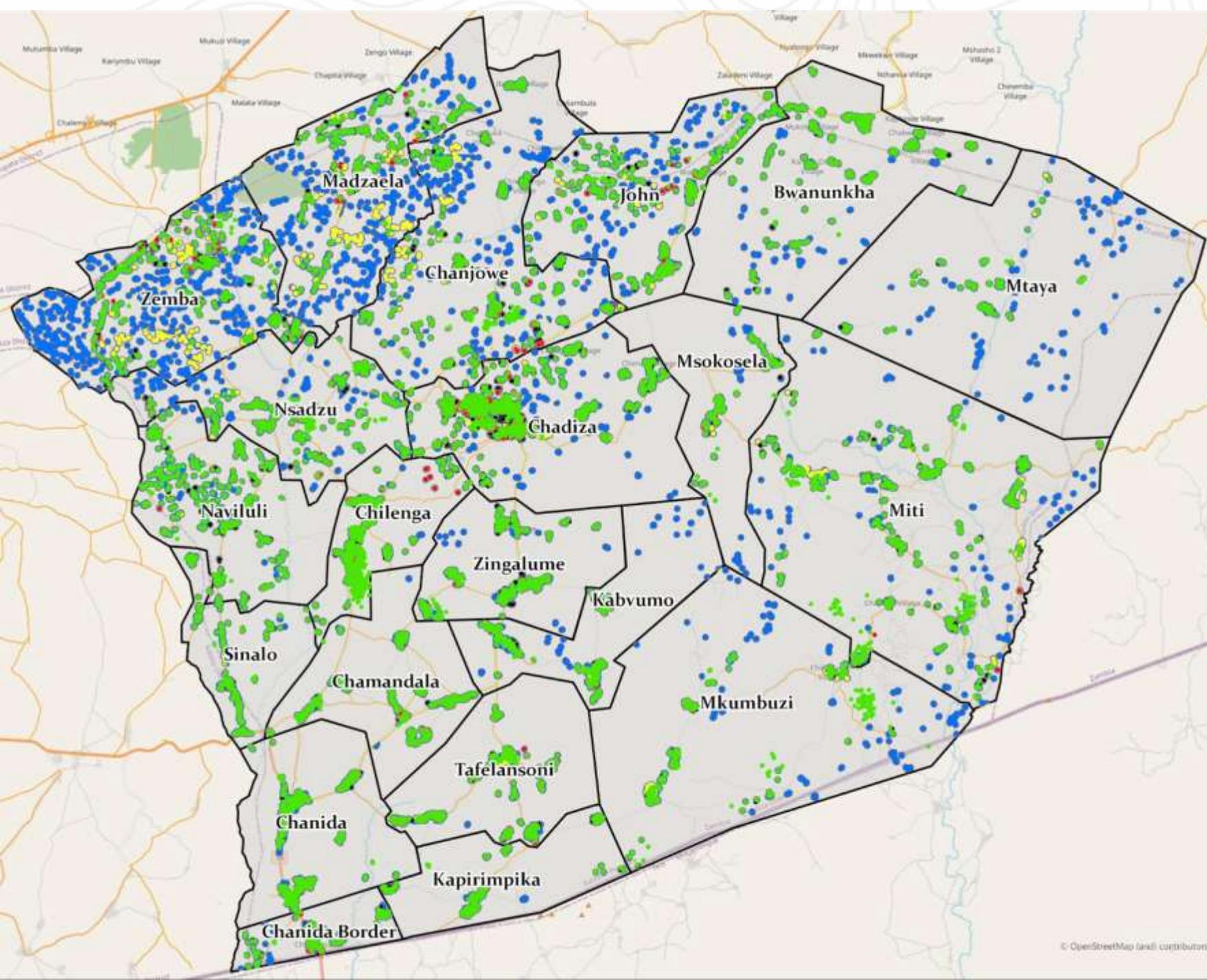
Sprayed
(67/136)

51%

Found Coverage
(69/136)

97%

Spray Coverage
(67/69)



Chadiza

Found coverage: 81.6%

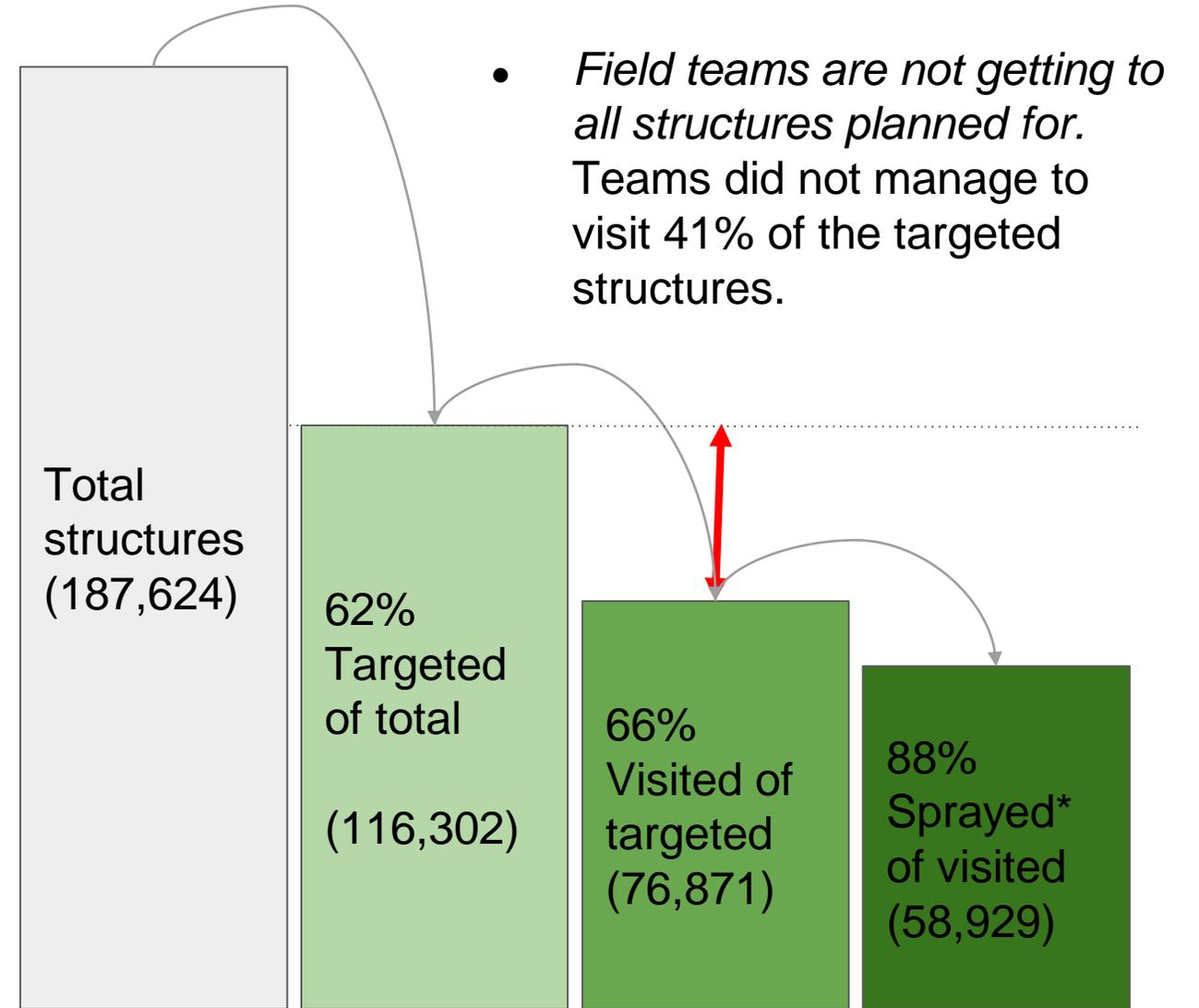
Intervention coverage: 76.9%

Acceptance rate: 94.1%



Total structures targeted vs structures visited

- *Field teams are not getting to all structures planned for. Teams did not manage to visit 41% of the targeted structures.*



*Structure-level data (not by spray area)

What is preventing field teams from visiting the structures they originally planned to delivery services to?

High level takeaways

- Using a combination of satellite derived population datasets and digitized field verified data can guide net quantification without registration
- Taking the microplanning process online through Reveal, replacing paper based and excel planning tools, will help solve logistical and data integration challenges
- Door to door net delivery recorded through a digital platform like Reveal can enhance outputs:
 - Help understand whether field teams are sticking to the plan or not
 - Improve monitoring of real time coverage and direct appropriate responses, and
 - Will provide significant field verified structure level data to improve the usability of satellite derived population and structure data
- Combinations of different mapping and mobile tools can be used across a country to match available resources
 - Zambia implemented satellite derived maps in all 116 districts, a lite touch mobile data collection approach in 14 medium priority districts and a more granular intensive digital approach in 9 priority districts.
- The use of spatial data helps inform decisions throughout end to end campaigns and should be used where possible

Questions?

For further info contact:

Ketty Ndhlovu - Sicalwe, NMEC Zambia, Principal Insecticide
Treated Nets Officer:

ndhlovu.ketty@gmail.com

Derek Pollard, Akros, Health Systems and Malaria
Implementation Advisor, Reveal implementer

dpollard@akros.com





The Alliance for
Malaria Prevention

GEO ENABLED MICROPLANNING FOR INSECTICIDE-TREATED NET (ITN) CAMPAIGNS

Webinar
October 2022





Using Maps for ITN Microplanning campaign in Kano State, Nigeria

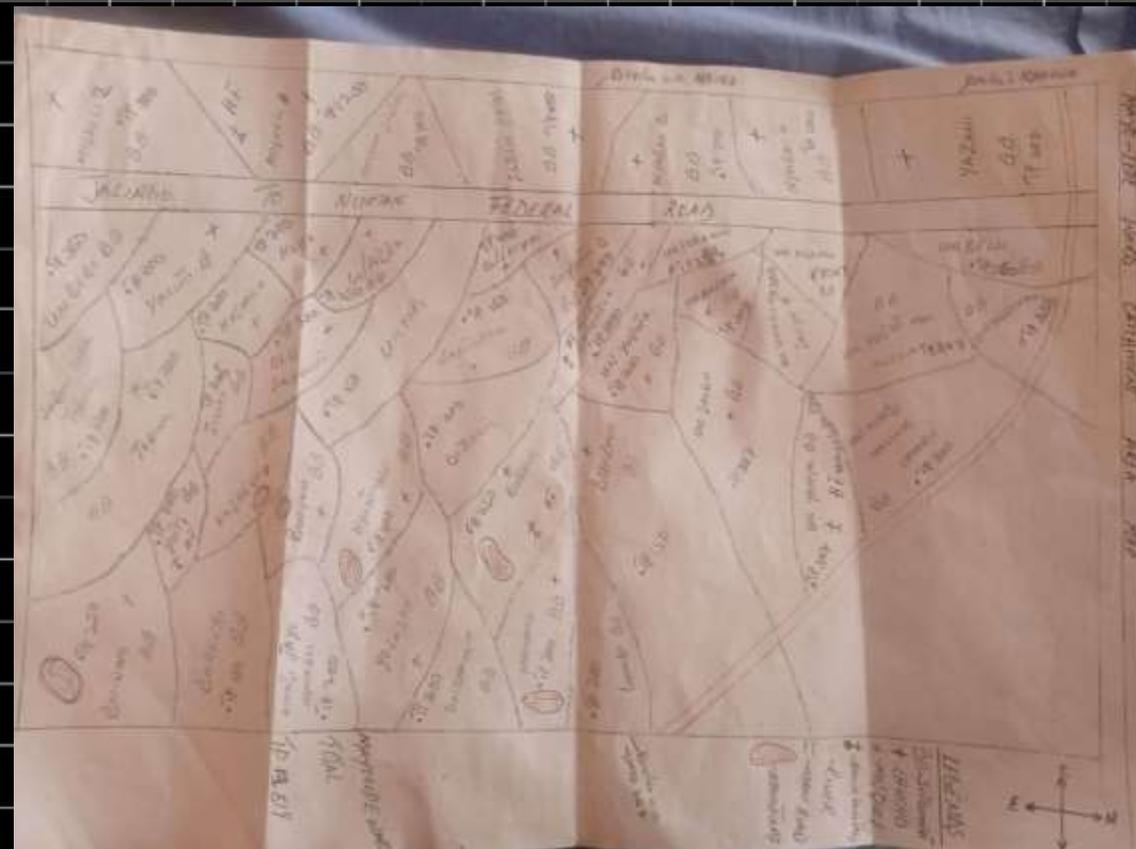
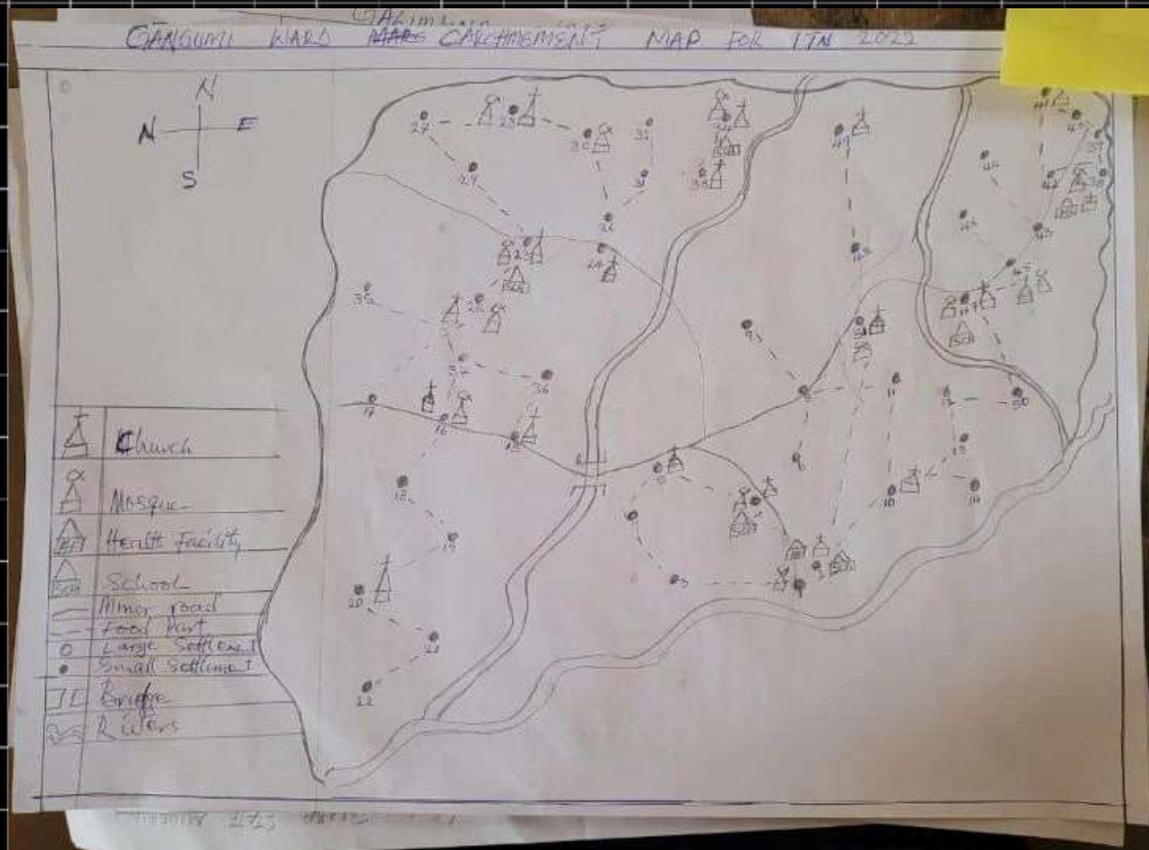
Dr Farouk Umar (GRID3)

Fatima Ali (National Malaria Elimination Program, Nigeria)



Background

Previous maps



Background

- Data from the 2019 Kano ITN campaign was shared with GRID3, with settlement details (settlements, population, distance from LGA store, No of Distribution Points (now Hubs) - this was used to
 - Compare our settlement extent layer with the presence of household points
 - Run a spatial average of household points to represent village location, as centroids
 - To compare the total number of bed nets distributed per village against the total estimated population using GRID3 pop estimate
- GRID3 shared a draft of the maps for consideration with three options based on population raster, settlement travel time and service area . A map with a combination of all three was selected for the Kano digital micro planning as a base map



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Our goal - to reduce malaria burden to pre-elimination levels and bring malaria-related mortality to zero*

85



Background- preparations

- The maps were updated to give a unique code to each settlement's extent, i.e. first two letters of the name of the LGA and the first two letters of the name of the ward, followed by the extent number
- Distribution hub (DH) catchment forms were updated to accommodate population extent and list of settlement in the catchment of the DHs
- Development of the Kobo collect form to capture geo-coordinates of new or missed settlements/communities and for private DHs (that is not a health facility)
- Generation of the maps and tables consisting of settlements list which were printed and reviewed
- The maps and settlement list table were generated for each ward in the state



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Updated microplanning maps



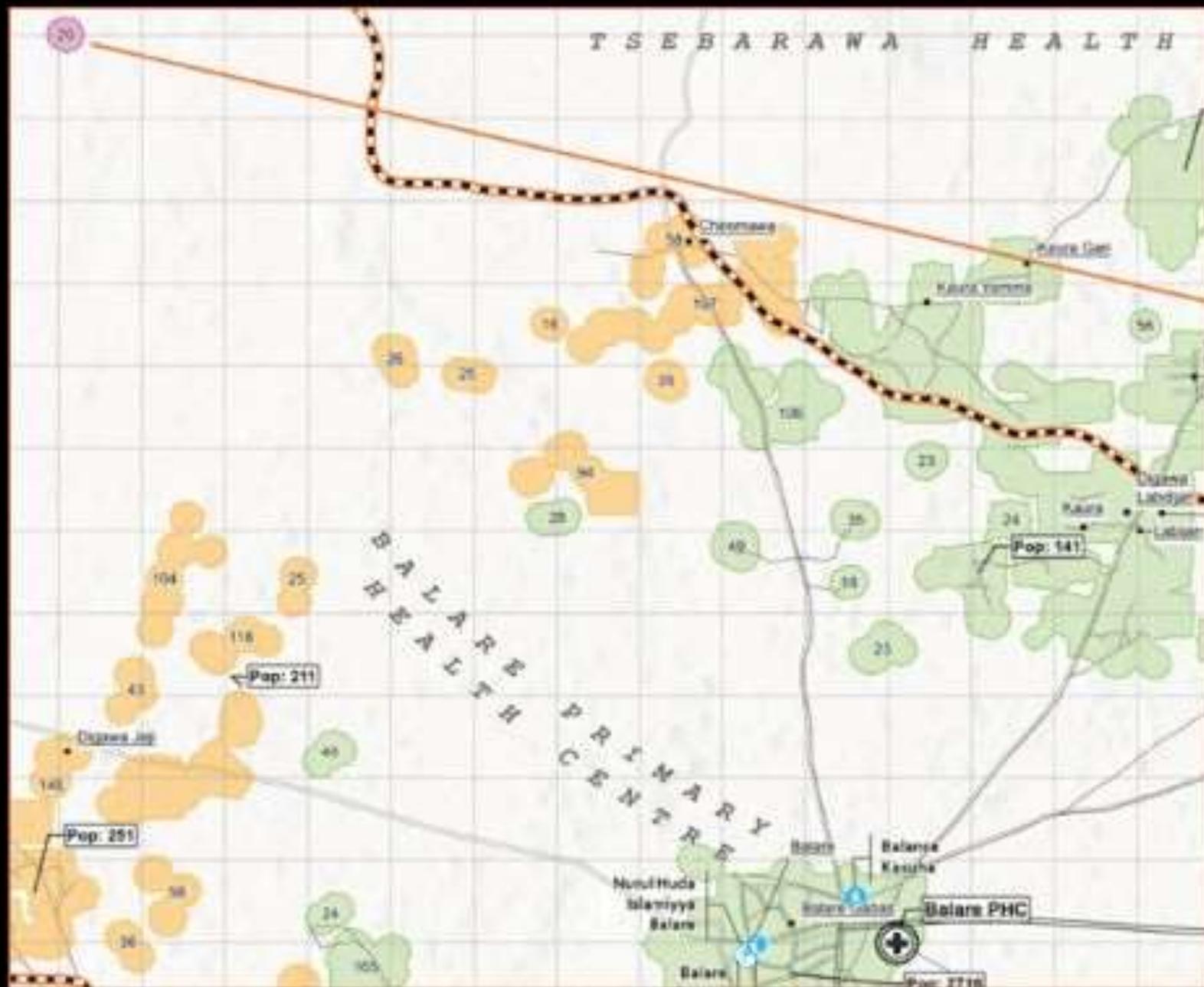
Identification of population data on the maps



Health Facility Catchment Area	Estimated Population*	Estimated # HHs	Estimated # ITNs	Estimated # DH
Balare Primary Health Centre	14,824	2965	8236	3
Fulatan Health Post	8,295	1659	4609	2
Tsebarawa Health Post	6,441	1288	3579	1

Ward	Estimated Population*	Estimated # HHs	Estimated # ITNs	Estimated # DH
Balare	29,451	5,890	16,362	7

LGA	Estimated Population*	Estimated # HHs	Estimated # ITNs	Estimated # DH
A/qingl	276,932	55,386	153,851	64



Settlement

Travel time on foot to nearest health facility

- Less than 30 minutes
- Between 30 and 60 minutes
- Greater than 60 minutes

Identification of health facilities and health catchment areas on the maps



Health facility catchment area boundary

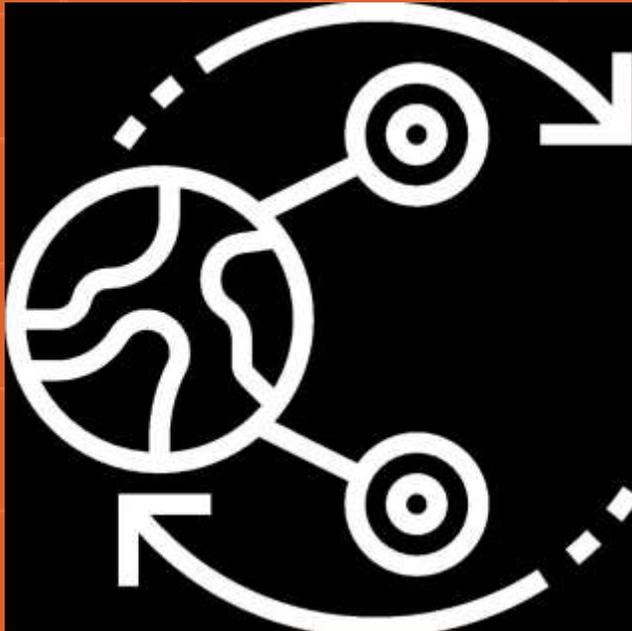
Primary health care facility (3 in ward)



Using GRID3 maps for ITN distribution campaigns

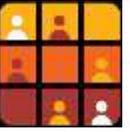


Using the maps to identify the main problem for low distribution of bed nets

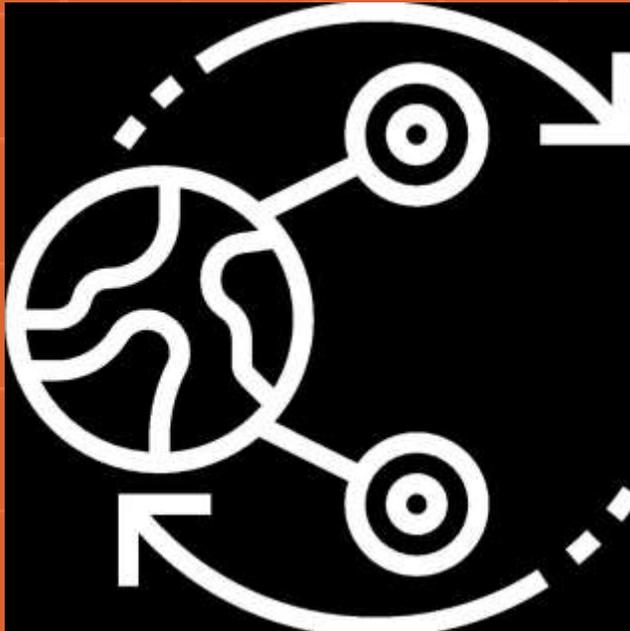


Problem identification

- Look at the legend on the map and check how the settlements inside the catchment are distributed. Are they compactly distributed or sparsely distributed? Sparsely distributed settlements are more rural and maybe more costly to access.
- Count the number of colour-coded red settlements; if there are a significant number of red (or yellow) settlements in your health facility catchment area, this may indicate an issue with accessibility (i.e. the distribution points are too distant from the population/not easily accessible).
- Note if the catchment has a water body that is a barrier to reaching settlements.

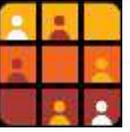


Using the maps to identify solutions to the identified problem/s

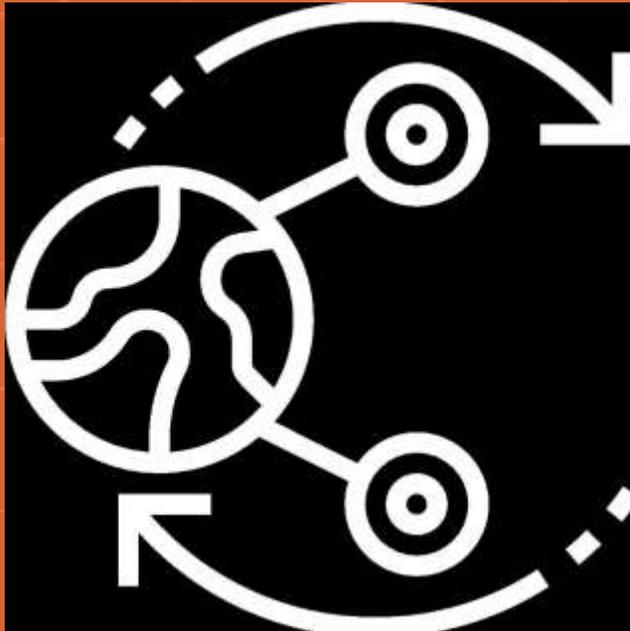


Steps to propose distribution points to reach settlements between are more than 30 minutes from a health facility:

- Use the indicated population estimate for each settlement (displayed as black numbers labelled on top of the settlement extents)
- Check if the settlements are in clusters that have a relatively high population
- Place one distribution point as close to the cluster of settlements with relatively high population estimates. Further, ensure that the proposed point is accessible by road.

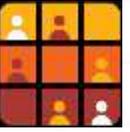


Using the maps to identify solutions to the identified problem/s



Steps to propose distribution point/s to reach settlements (colour-coded red) located more than 60 minutes from a health facility:

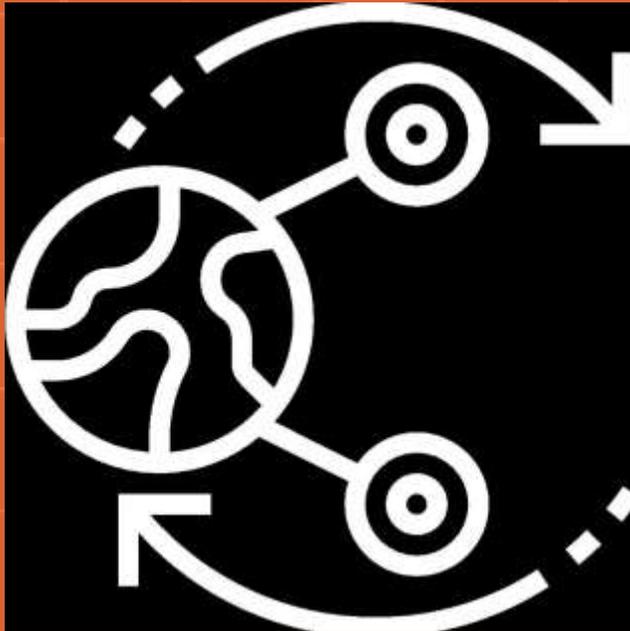
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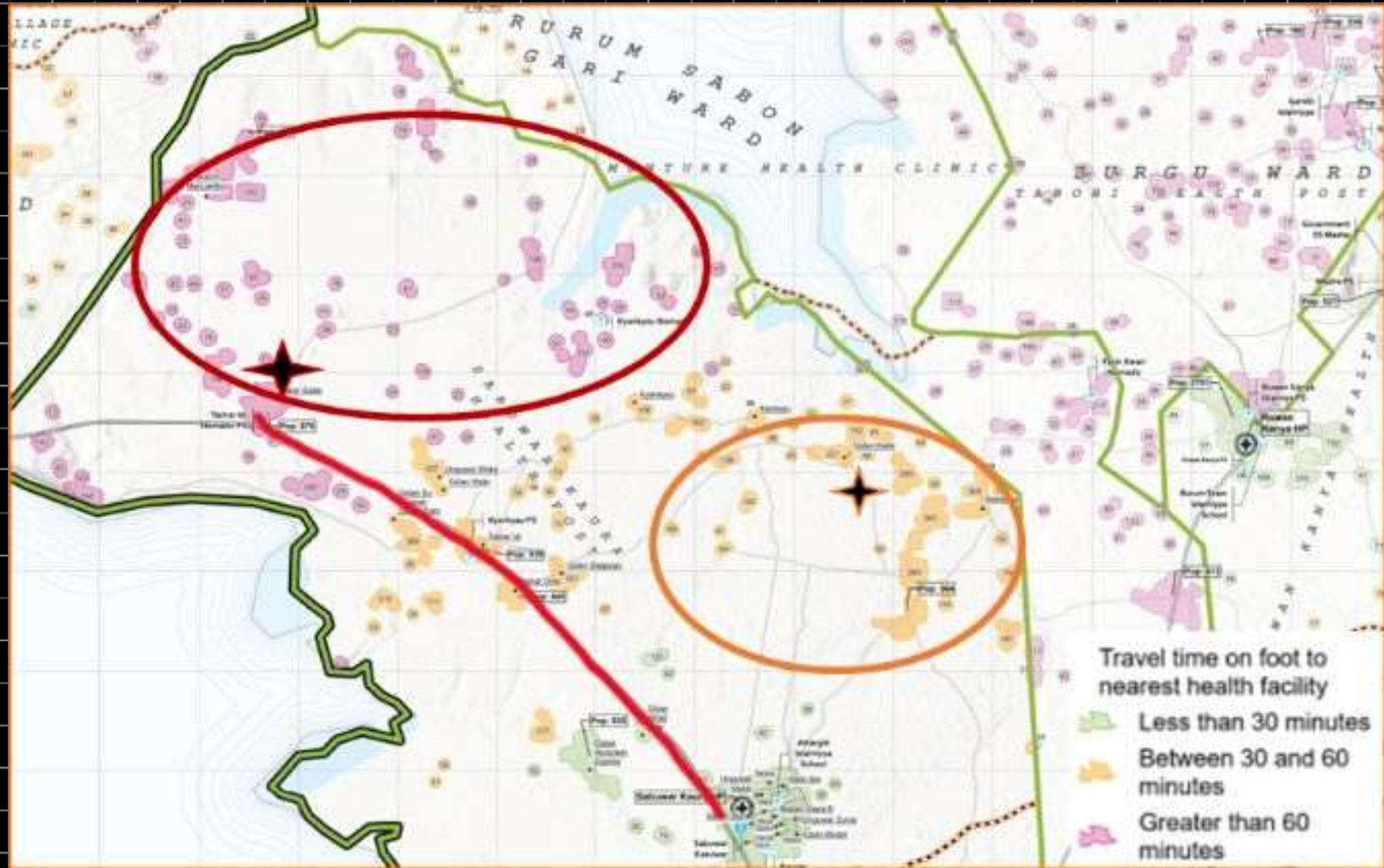
Measuring the distance to target settlements

Steps to estimate the distance from the nearest health facility to the proposed distribution point

- Scale a string (scaled from the scale bar) to measure the distance.
- Bend the string to represent the path taken to transport the ITN distribution team from the nearest health facility to the proposed distribution point



Path from the health facility to the proposed distribution point being measured





Successes and lessons learned

Training process

- State training of trainers on the use of the base maps, how to update and review the maps, how to download and use the Kobo collect forms to capture the geo-coordinates of DHs, health facilities and new settlements was conducted
- Cascade training at the LGA level of the LGA team, ward focal persons and ward community development representatives.
- At the LGA level the team were able to review the base maps, update it with information such as confirming the names, location and number of settlements, confirming each extent as a settlement with people living there or not, confirm health facilities, indicate the new DH or new settlements (if any) and hard to reach areas.
- At the end of the ward level micro planning, each LGA submitted their maps and settlement list table at the state level data collation and validation meeting



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Our goal - to reduce malaria burden to pre-elimination levels and bring malaria-related mortality to zero*



Key achievements

- The digital maps were integrated successfully into the micro planning exercise, the end users found it easy enough to understand and use, effectively eliminating the need to draw new maps at every micro planning in the state.
- The end users of the digital maps, the Ward focal persons and Officers in charge of health facilities were able to easily identify with the digital maps and make modifications or corrections, especially on their ward boundaries and settlements in the context of the ITN campaign
- The geo-coordinates of the Distribution hubs (DHs) and new/missed (or uncaptured) settlements were successfully recorded and will be used to update the maps
- The ward focal persons were able to easily use the Kobo collect form developed for recording the geo coordinates of DHs and new settlements



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Lessons learnt

- The digital maps were updated, and corrections were made where applicable and this will serve as a good foundation for use in subsequent micro planning activities in the state
- Issues of missed settlements greatly minimized, ensuring proper coverage during implementation
- The final updated maps will make it much easier to identify and monitor DHs during implementation
- The National team was able to work with the ward focal persons to resolve the issue of the definition of a settlement especially in metropolitan LGAs.
- The process allowed for an opportunity to compare the list of settlements from the digital maps by GRID3 and the settlements lists from the ward focal persons.



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Challenges

- Mix-up of settlements and health facilities among wards, and between LGAs on the base maps
- There were no funds for the logistics of the Ward focal persons as they went out to get the geo coordinates of the new settlements and/or DHs, however support was gotten from the LGA team and this improved community ownership
- The team did not get to utilize the distance feature of the digital base maps.



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Next steps and way forward

- The experiences and lessons learnt will be used to develop a precise work process and detailed SOP for national team and ward and LGA level end users
- Update base maps with the following information; geo coordinates of the DHs, new settlements, warehouses, health facilities and training locations from kobo collect
- The updated maps will be designed to have catchment areas based on the DHs, using settlements as clustered on the P3b template, as well as resolved boundary issues
- Settlement list and population tables will be updated based on the micro planning feedback from the ward focal persons
- Plans for transfer of knowledge and explore the possibility of integration of the digital maps into the ICT4D system



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Our goal - to reduce malaria burden to pre-elimination levels and bring malaria-related mortality to zero*



THANK YOU FOR LISTENING!



*Our vision - a malaria free Nigeria;
Our goal - to reduce malaria burden to pre-elimination levels and bring malaria-related mortality to zero*





For more information, contact us: fumar@grid3.org

For project updates and announcements, visit us online at:



[@GRID3Global](https://twitter.com/GRID3Global)



www.grid3.org

Or follow our partners on Twitter at @Flowminder, @WorldPopProject, @PopDevUNFPA, and @CIESIN



The Alliance for
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GEO ENABLED MICROPLANNING FOR INSECTICIDE-TREATED NET (ITN) CAMPAIGNS

Webinar
October 2022





Geospatial data
support for public
health campaigns

A pilot *Integrated Humanitarian Data Package* to support effective and equitable Covid-19 vaccine delivery in South Sudan

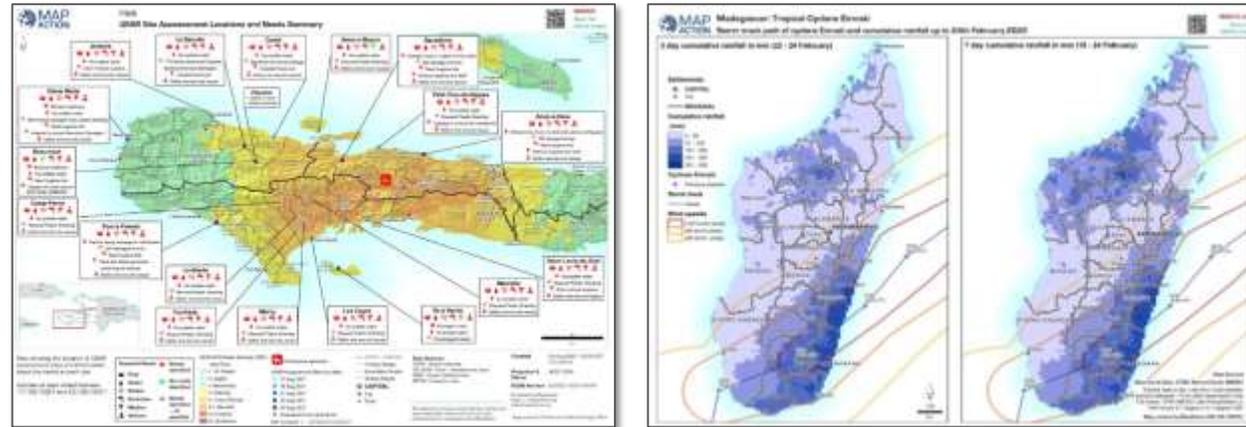
Geo-enabled microplanning for ITN campaigns

4 October 2022

Nick McWilliam

MapAction introduction

Established to support emergency response...

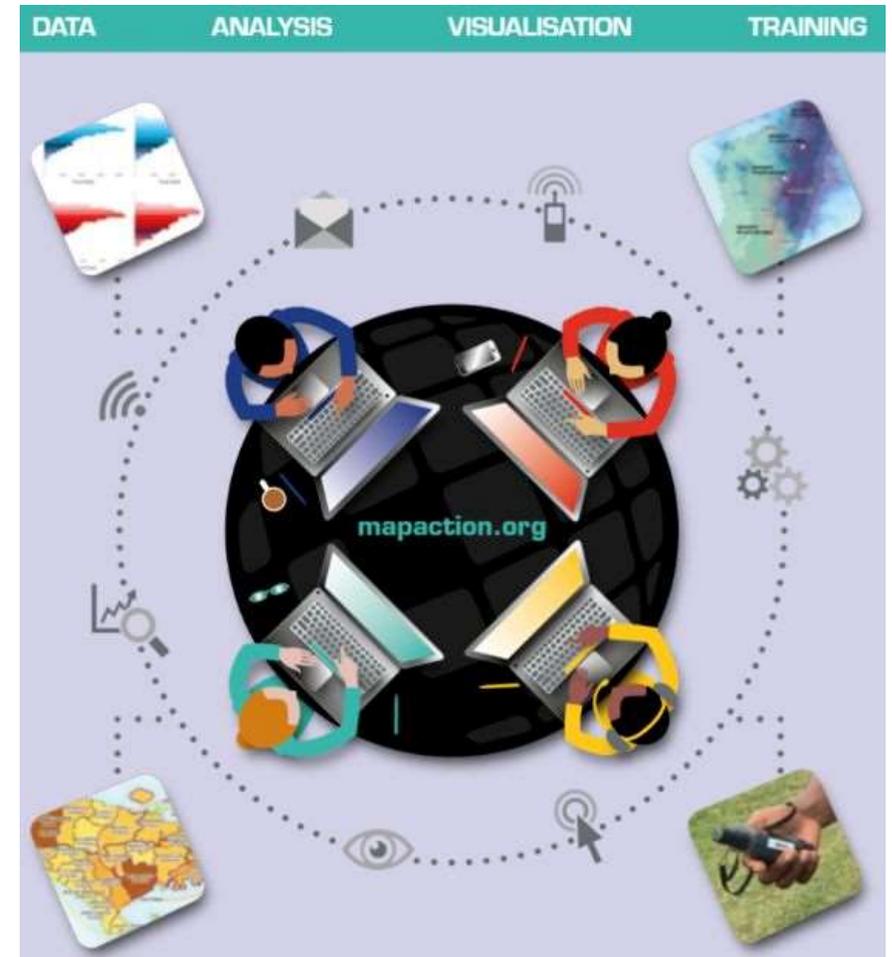


- UK-based NGO
- Over 130 emergency activations
- 70 specialist volunteers + consultant pool

...increasing emphasis on training, capacity building, and disaster preparedness

MapAction introduction

“Enable organisations to use maps and data in effective and innovative ways to assist all aspects of humanitarian and health work”



Context: equitable global Covid vaccination

Source:

[Our World in Data](https://ourworldindata.org)

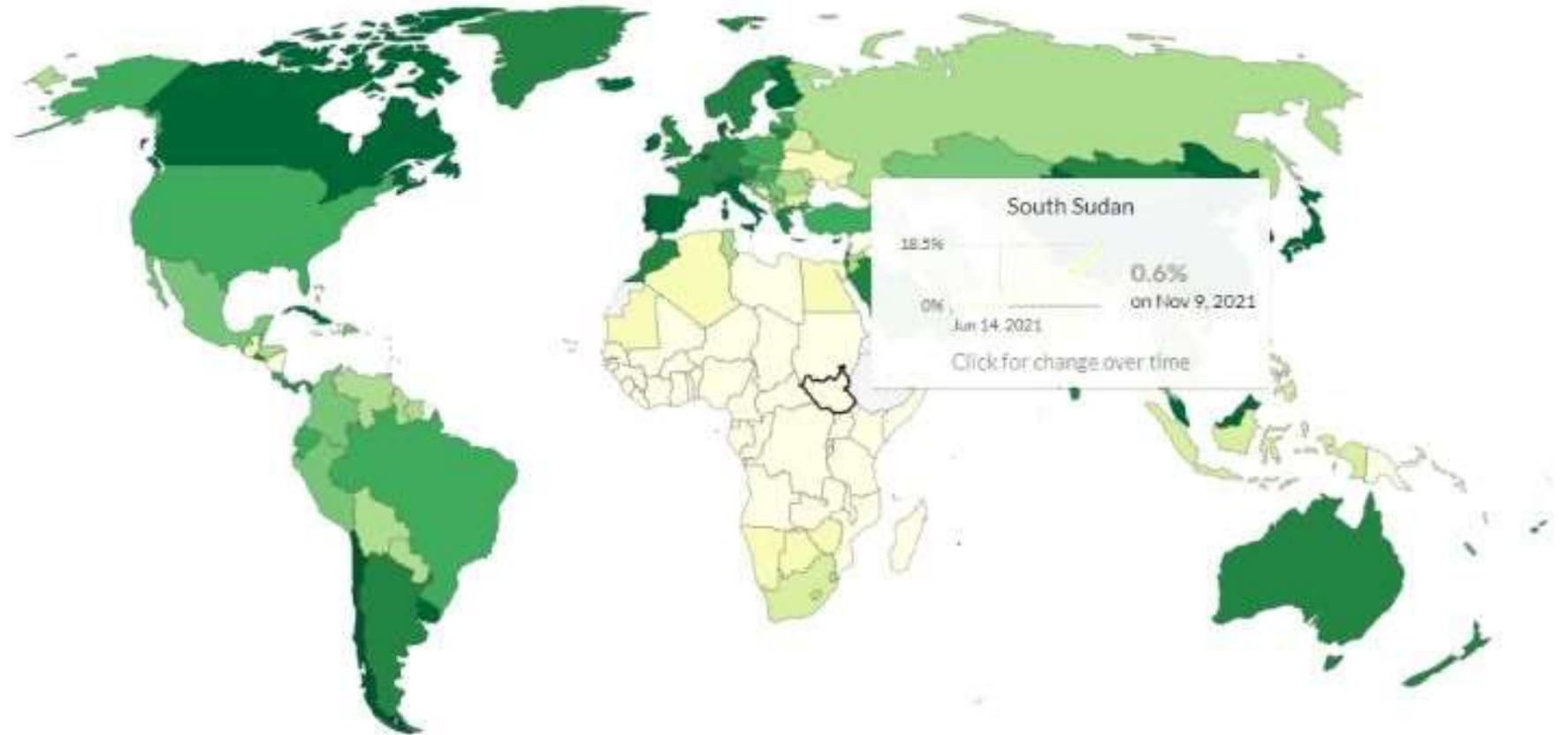
10 Nov 2021



Share of people who completed the initial COVID-19 vaccination protocol, Nov 10, 2021
Total number of people who received all doses prescribed by the initial vaccination protocol, divided by the total population of the country.

Our World
in Data

World



Source: Official data collated by Our World in Data - Last updated 3 October 2022

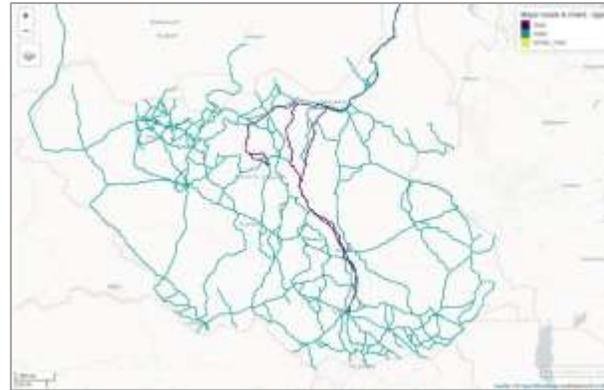
Note: Alternative definitions of a full vaccination, e.g. having been infected with SARS-CoV-2 and having 1 dose of a 2-dose protocol, are ignored to maximize comparability between countries.

OurWorldInData.org/coronavirus • CC BY

Context: geospatial data

Geospatial support for immunization

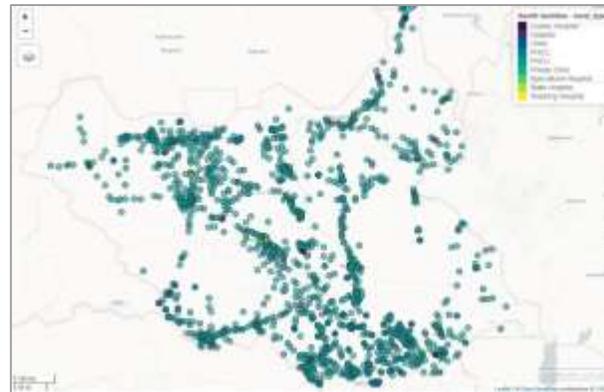
Transport & logistics



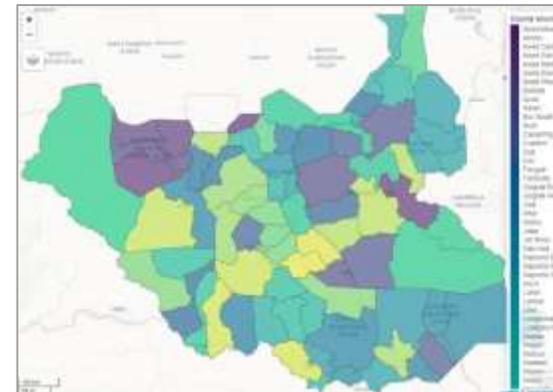
Population



Health infrastructure



Administration



Photographs: GAVI

Problem definition

Data underpins microplanning



“The tool is only as good as the underlying data”
*Presentation to WHO COVAX
GIS Working Group*

Problem definition

The data 'bottleneck'

Typical data preparation steps...	
✓	Identify candidate data sources for each theme
✓	Evaluate each candidate (completeness, accuracy, consistency, timeliness, licencing)
✓	Select most 'fit for purpose' dataset for each data theme
✓	Data cleaning (gaps, duplicates, consistency, geometry, projection)
✓	Apply data model (layer names, field names, data dictionary, codes)
✓	Consistent metadata
✓	Placename codes (p-codes)

...and resulting costs

- › Barrier to geospatial adoption
- › Very limited scope for automation
- › Cost and time of skilled staff
- › Opportunity cost for staff
- › Delayed results
- › Duplicated effort and inconsistent results between agencies

Problem definition

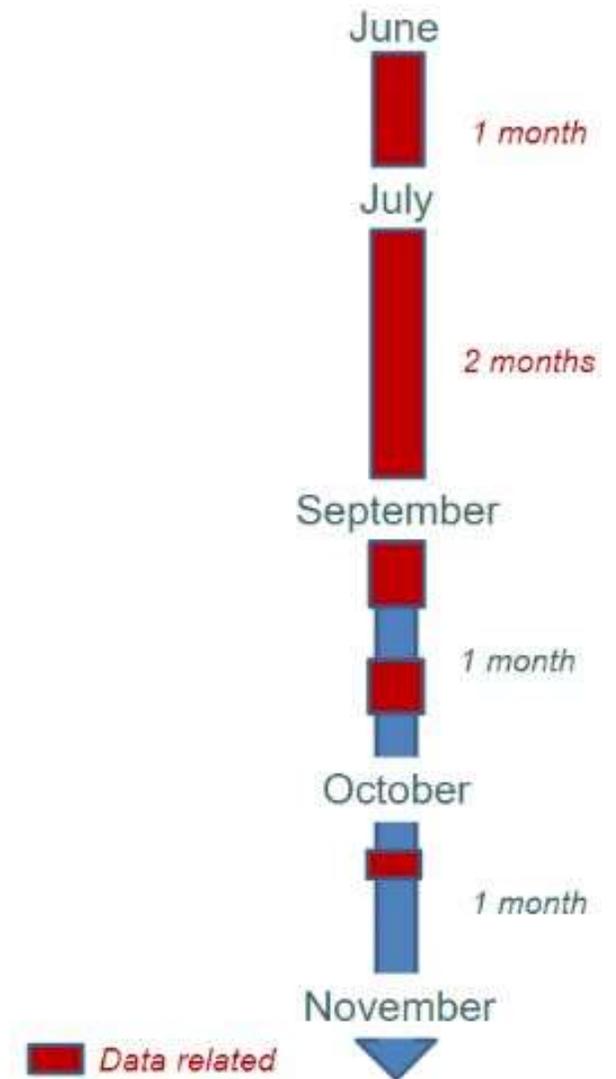
How much time is needed for data prep?

Data preparation for an analysis of geographic accessibility to COVID-19 services in South East Asia

“It still takes up to 70-80% of an entire project’s time to address data-related issues to conduct this type of analysis.”

“Lesson: Importance of data preparedness and data quality”

Presentation to COVAX GIS Working Group July 2021



Solution: IHDP

Integrated Humanitarian Data Package

A 'ready to go' package of selected, consistent and checked geographic data, with supporting documentation and tools, designed to meet the needs of a specific humanitarian or public health use case



Key characteristics

- Layers selected for needs of *a specific use case*
- Cleaned, checked and enriched geographic data
- Consistent data model (layer names, field names)
- Consistent documentation and metadata

Solution: IHDP

What are the benefits?

- *Readiness*: data ready for use, reducing delay for end users
- *Efficiency*: public health professionals can focus on their work
- *Value*: reduce duplication of time, expertise and money
- *Accessibility*: lower technical and capacity barriers to data use
- *Consistency*: between partner agencies
- *Adaptability*: for different use cases
- *Scalability*: can be applied to any geographic area

Why a pilot project?

- Funding for a pilot project from Calleva Foundation
- Background of immediate needs (March 2021)
- Demonstrate the potential for an immediate and scalable contribution
- Learning for future work



South Sudan Pilot IHDP

Why South Sudan?

- Covax AMC vaccine allocation, March 2021
- Vaccine roll-out starting
- Background of chronic humanitarian needs
- Challenges in spatial data infrastructure

24 March 2021

PRESS RELEASE

SOUTH SUDAN RECEIVES FIRST BATCH OF COVID-19 VACCINES THROUGH THE COVAX FACILITY

"Today is a historic day for South Sudan and its fight against COVID-19," said Patience Musanhu, Gavi Senior Country Manager for South Sudan. "This delivery is the product of an unprecedented global partnership to ensure every country has access to COVID-19 vaccines. These vaccines are safe, they are effective, and they will be an important tool in the fight against this disease."

[READ MORE >](#)

112	Somalia				
113	South Africa ⁴	AFRO	SFP	AZ	2,426,400
114	South Sudan	AFRO	AMC	SII/AZ	732,000
115	Sri Lanka	SEARO	AMC	SII/AZ	1,440,000
116	St. Kitts and Nevis	PAHO	SFP	AZ	21,600

South Sudan Pilot IHDP

Implementation process



* Data needs based on:
Leveraging geospatial technologies and data to strengthen immunisation programmes: rapid guidance for investment planning. Gavi, UNICEF & HealthEnabled, April 2021.
Guidance on developing a national deployment and vaccination plan for COVID-19 vaccines. WHO and UNICEF, Nov 2020.

Using Geospatial Technologies to improve immunisation coverage and equity: A landscape analysis and theory of change. Gavi, UNICEF and HealthEnabled, Sept 2020.
Guidance on the Use of Geospatial Data and Technologies in Immunization Programs. UNICEF, Gavi, ADB and Health GeoLab Collaborative, Oct 2018.

South Sudan Pilot IHDP

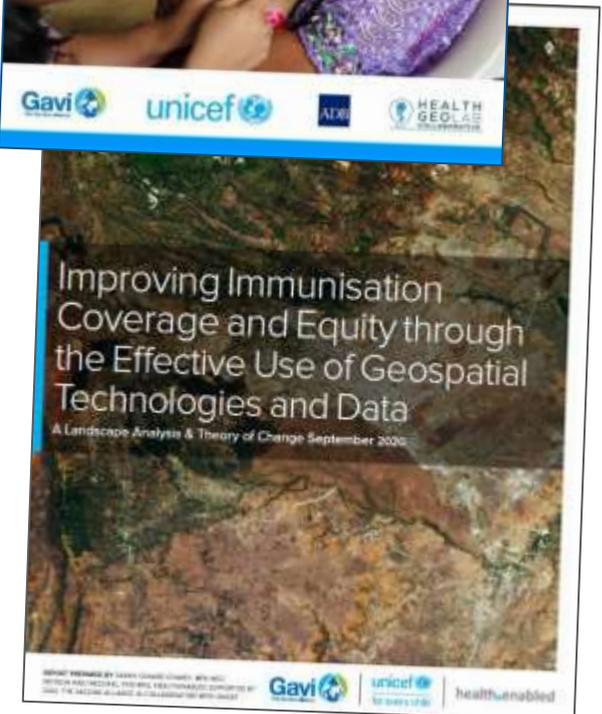
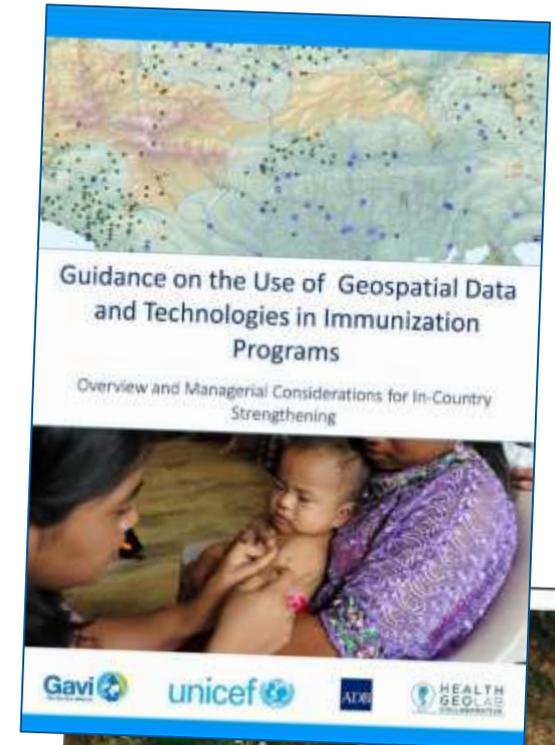
Data package contents

Contents based on known data needs for an immunization campaign use-case:

- Published UNICEF-WHO literature
- National Deployments and Vaccination Plan (NDVP)

Data themes focussed broadly around:

- Demographics: target populations
- Public health infrastructure
- Transport & logistics
- Administrative units



South Sudan Pilot IHDP

Partners and work packages



MapAction

Coordination. Support to other work packages. Data packaging and dissemination.

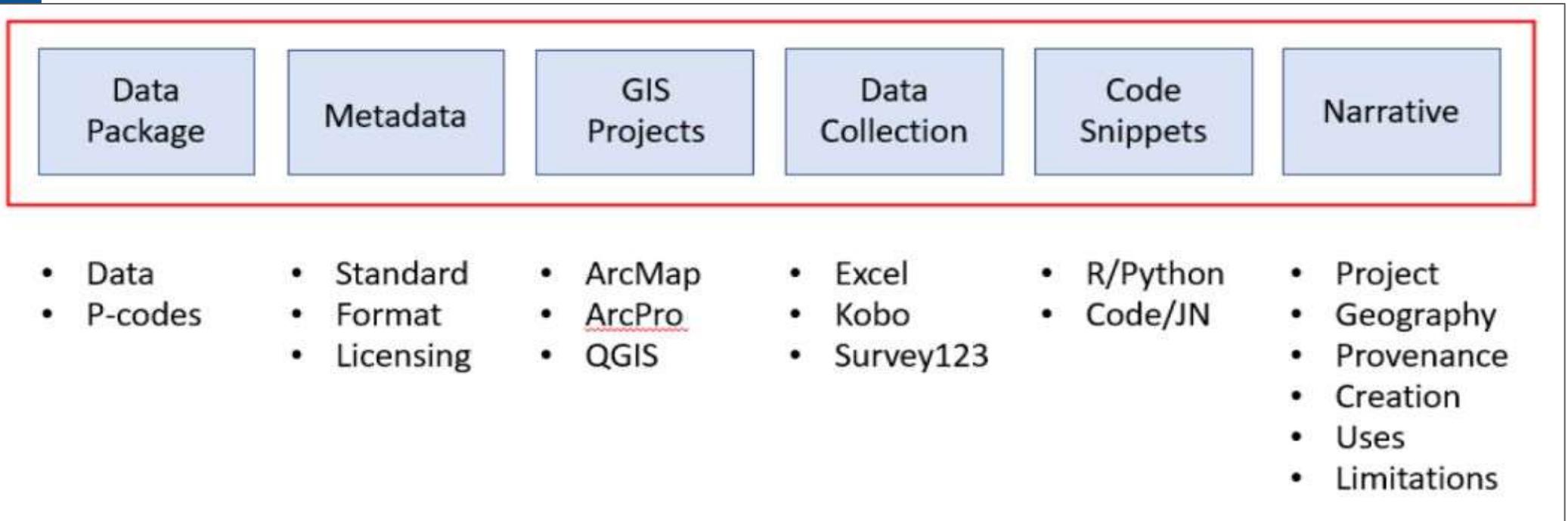
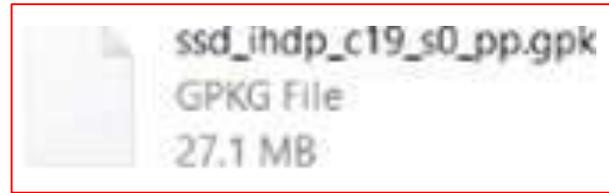
CartONG

Identify, assess and collate existing data resources; develop a replicable data model. Mapathons to fill in sparsely mapped areas in OpenStreetMap.

OpenMap
Development
Tanzania with
Humanitarian
OpenStreetMap

Generate, validate and share basemap data, focussing on transport and building / population data in Western Equatoria state

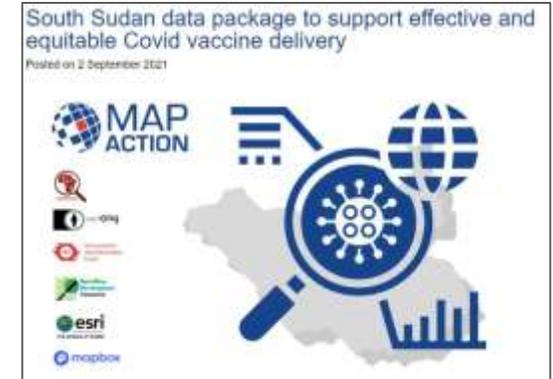
Data package structure



South Sudan Pilot IHDP

IHDP in practice

- IHDP published July 2021
- Visit to Juba Nov 2021
- Widespread engagement with national planning mechanisms
- Continuing work with Ministry of Health, WHO Country Office, and Southern Sudan Healthcare Organisation
- Developing integration with DHIS2 geospatial apps



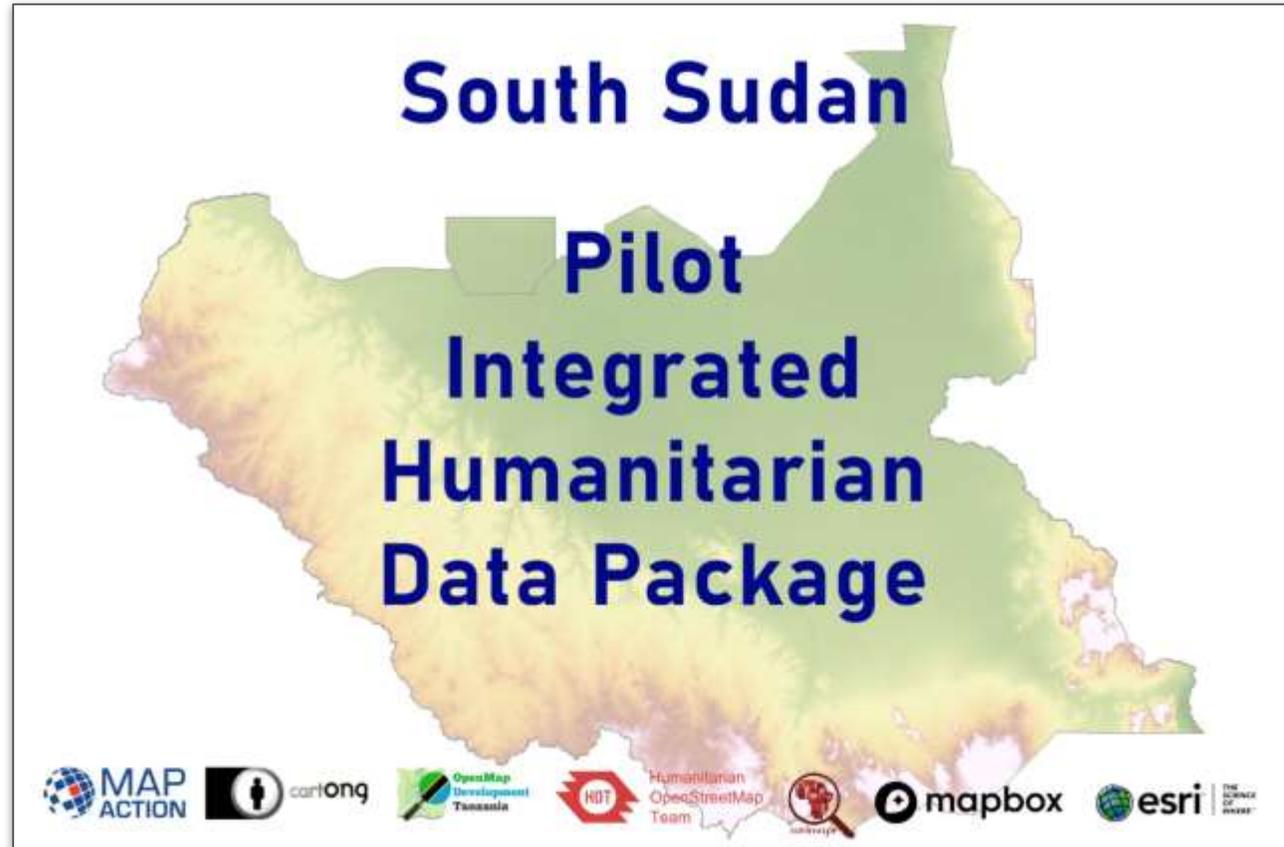
Search for: ihdp africa geoportal



On-going and planned activities

- KoBo training with National Anti-Malaria Programme (PNILP) in Burundi to support ITN distribution, August 2022
- Develop the use of DHIS2 geospatial capabilities
- Funding for further geospatial and capacity building support for health campaigns, over 2-3 years

Thank you!



nmcwilliam@mapaction.org | info@mapaction.org



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