Nigeria-Use of GRID3 routine immunization maps for improving ITN campaign outcomes: Future perspectives

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Background

Background

- Traditionally ITN campaigns used hand drawn maps generated during microplanning, however hand drawn maps have limitations that affects micro planning outputs and the campaign implementation

- NMEP and its Implementing Partners (IPs) in partnership with International Federation for Red Cross and Red Crescent(IFRC) and Geo-Referenced Infrastructure and Demographic Data for Development (GRID3) plan to develop and utilize digital maps based on geospatial data

- This was piloted in Kano state microplanning in 2022 and subsequently deployed for Osun, Adamawa and Kwara states microplanning in 2023

- Digital maps developed from micro planning activity will allow for the visualization of population distribution in relation to distance to identified distribution hubs (DH), adequately account for communities and settlements and improve the uptake of ITNs and coverage during distribution
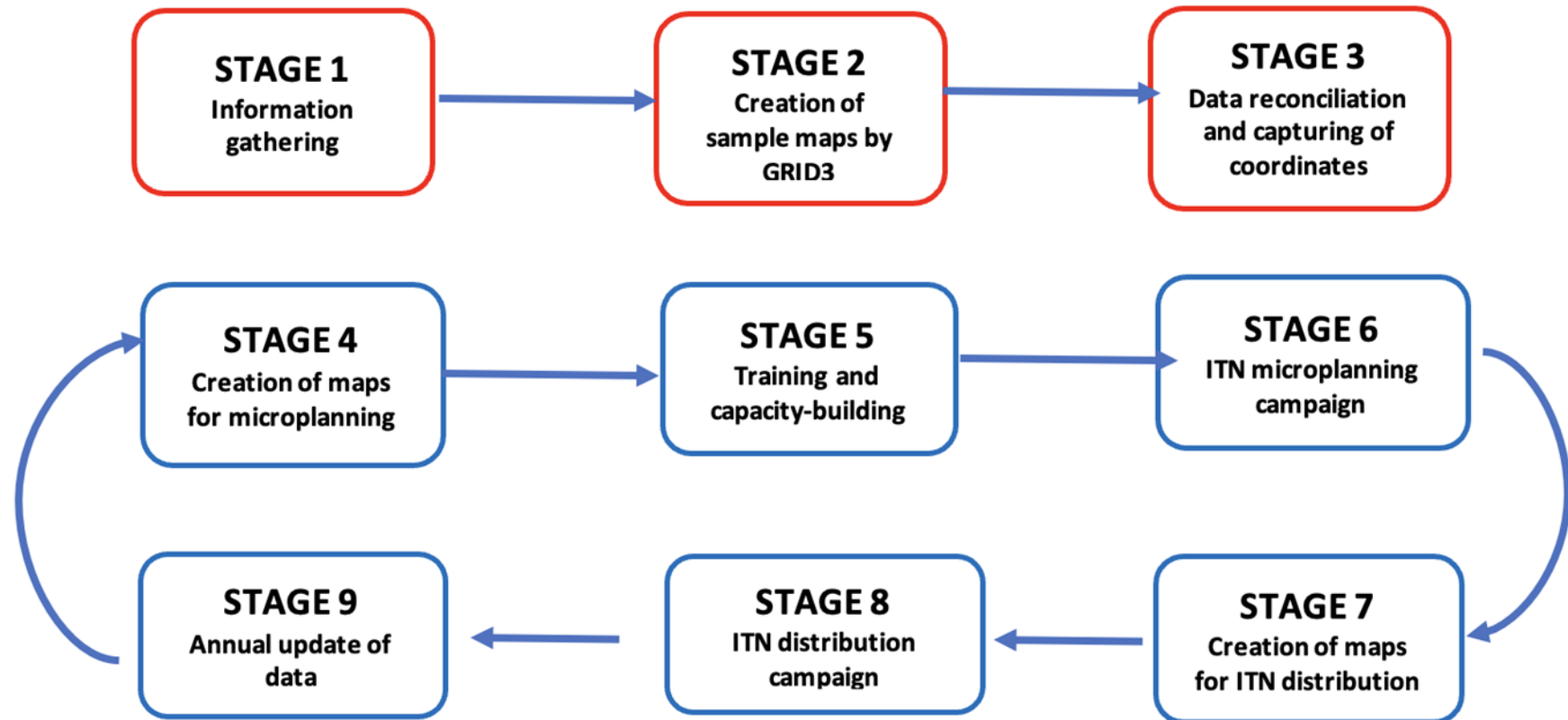
Previous Maps
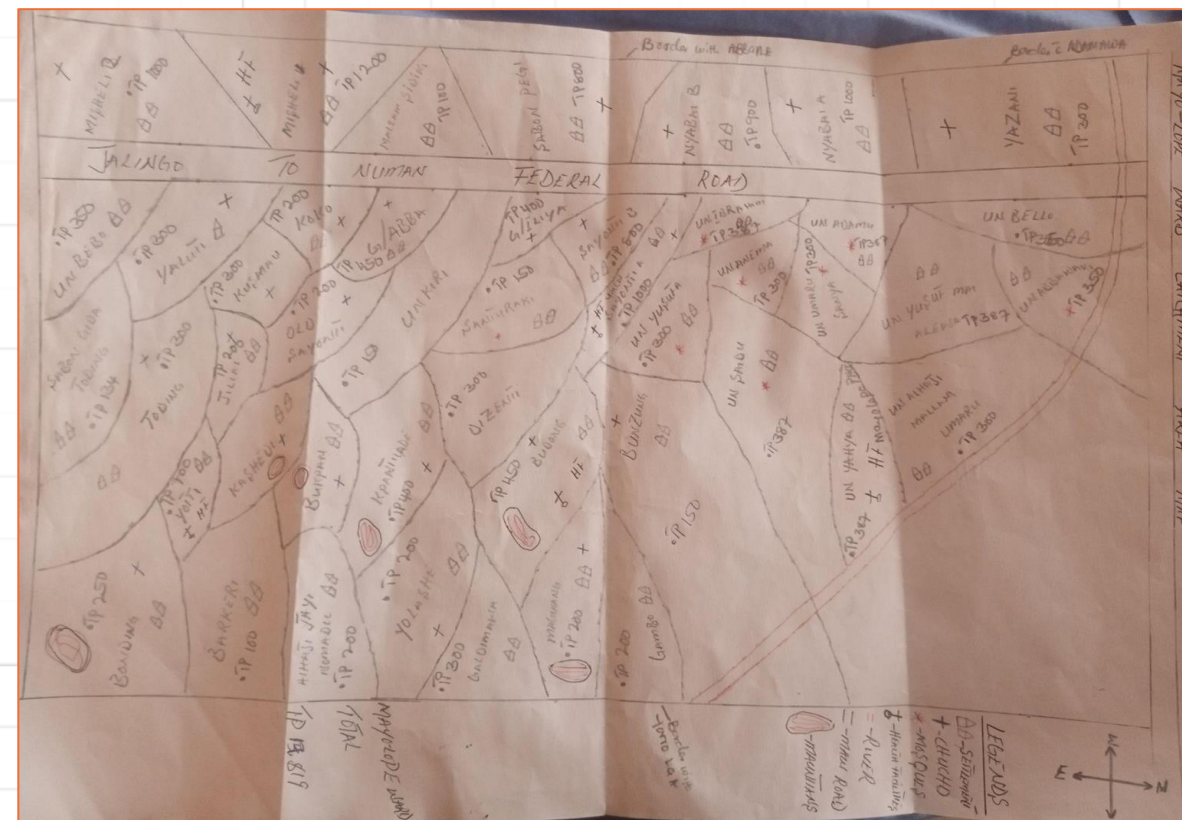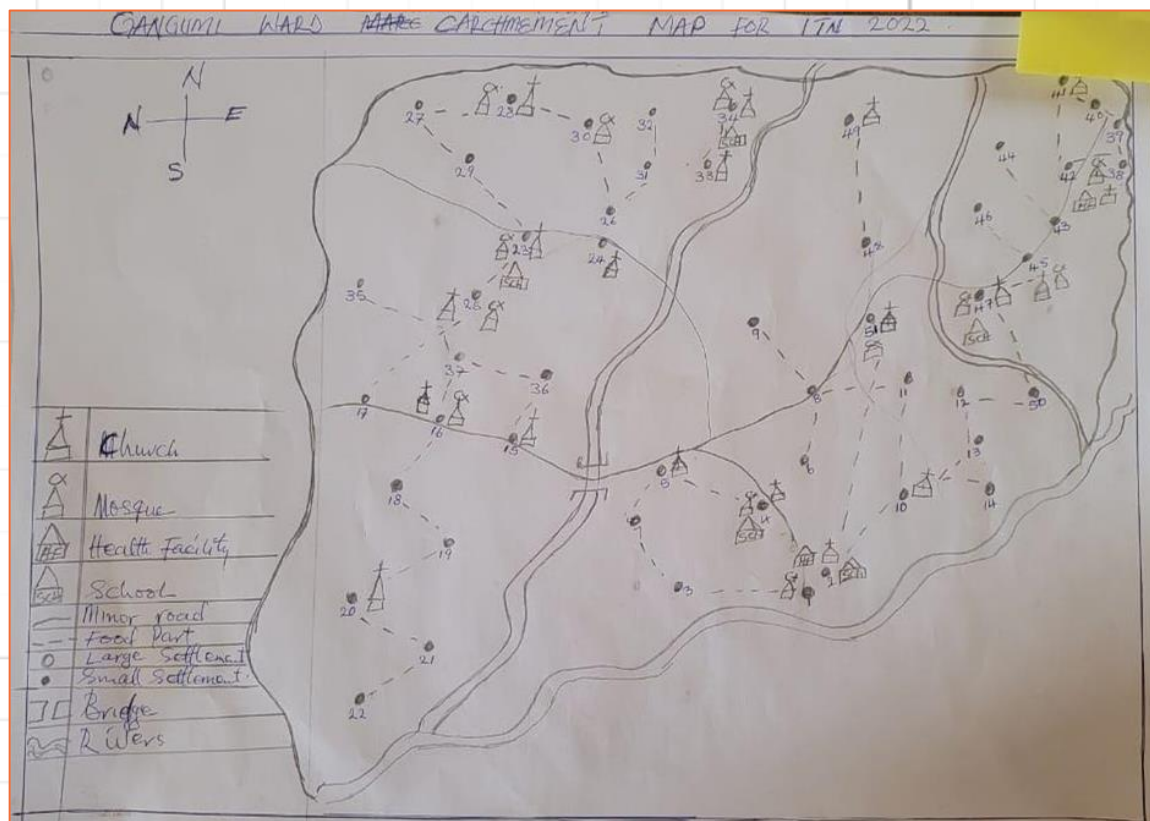
Process

- Data from previous campaigns (settlements, population, distance from LGA store, No of Distribution Points -now Hubs) with settlement details was shared with GRID3.
- GRID3 matched them with their database to add spatial data for the development of maps.
- GRID3 shared a draft of the maps for consideration with three options that contain either population raster, settlement travel time or service area.
- A map with a combination of all three was selected for the Kano digital micro-planning and improvements were made for subsequent campaigns in other states.
- 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
- 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

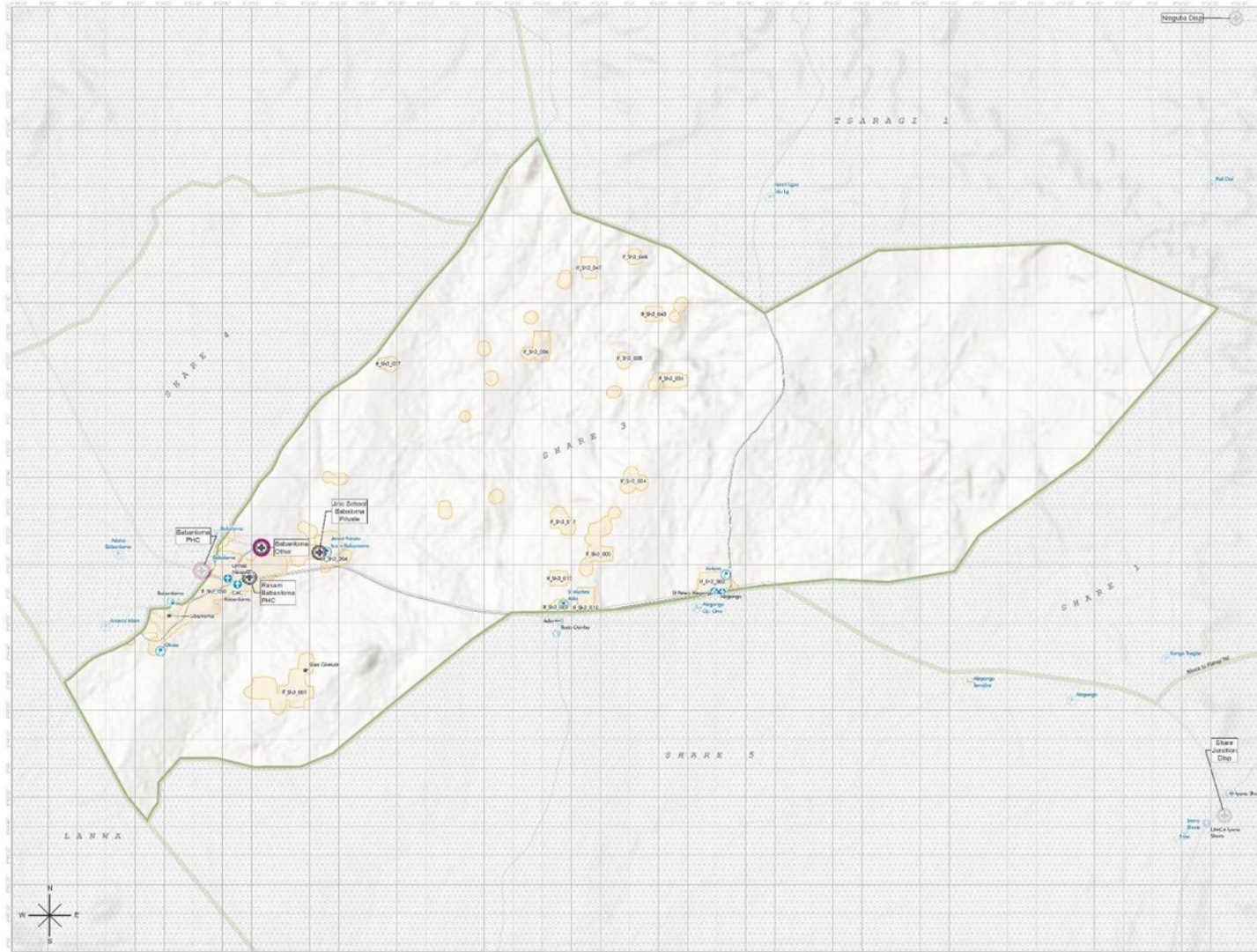# Flowchart of ITN digital geospatial maps mass campaign in Nigeria

Achievements

Updated Map

Map Elements

Legend

Symbol	Description
⊗	Distribution hub (1)
⊕	Health facility (3)
✚	Church
☾	Mosque
⚑	Primary school
⚑	Secondary school
▭	Settlement extent
●	Sett (no match P3B)
●	Sett (match P3B)
▬	Primary road
—	Tertiary road/track/path/other

Summary statistics for Share 3 Ward, Ifelodun LGA

Ward	Est Tot Pop	Est # HHs	Est #ITNs	Est #DHs
Share 3	9,015	1,803	5,009	3

Data source: Population (2020) total based on NMEP's P3B template

Ward	Est Tot Pop	Est # HHs	Est # ITNs	Est # DHs
Share 3	4,581	917	2,545	2

Data source: GRID3 Population Estimates v 2.0, 2021

Settlement Table

SHARE 3 WARD, IFELODUN LGA, KWARA STATE

Settlement Names with Estimated Population and Insecticide-Treatment Bednets (ITNs

Population (P3B, 2020) = Estimated population based on NMEP's P3B microplanning template.
Prop Population (GRID3) = Proportional allocation of population estimates based on settlement point location within a settlement extent.
Estimated number of insecticide-treated bednets (ITNs) is according to the following formula:
ITNs = population / 1.8
Depending on the estimation used for population the number of ITNs may change.

Note: * Indicates that multiple settlement names in the P3B data match to one settlement in GRID3.
Prop Population (GRID3) = no data means no match.
Prop Population (GRID3) = 0 means the location of the settlement point is outside of the settlement extent or within a settlement extent that is not classified as residential.

Data sources: Population (2020) total based on NMEP's P3B template; GRID3 Population Estimates v 2.0, 2021

Settlement name (P3B)	Settlement name (GRID3)	Match with GRID3	Population (P3B, 2020)	Prop Population (GRID3)	# ITN (P3B)	# ITN (GRID3)	Settlement ID
Gaa Ajibola	Gaa Okelute	YES	455	274	253	152	If_Sh3_001
Sekojo	Aiyekojo	NO	236	No data	131	No data	
Aiye Legbo	Aiyekojo	NO	255	No data	142	No data	
Oba Gbenga	Ogba	NO	261	No data	145	No data	
Fadeyi 3	Gaa Eyin Ola	NO	325	No data	181	No data	
Olore	Olora	NO	694	No data	386	No data	
Oniju	Oloju	NO	407	No data	226	No data	
Oshoja	Oloju	NO	601	No data	334	No data	
Egunoko	Ilegboloko	NO	187	No data	104	No data	
Awuwo	Amuyo	NO	509	No data	283	No data	
Orilowo	Oloko	NO	430	No data	239	No data	
Onibode	Oke Ode	NO	269	No data	149	No data	
Osomu	Ile Osomu	NO	305	No data	169	No data	
Adanlawo	Lakanla	NO	268	No data	149	No data	
Olobandu	Bolorundure	NO	387	No data	215	No data	
Ogunde	Oponda	NO	236	No data	131	No data	
Apake	Apakere	NO	222	No data	123	No data	
Adako	Tako	NO	407	No data	226	No data	
Ajoo	Aalo	NO	180	No data	100	No data	
Agun	Balogun	NO	193	No data	107	No data	
Fadeyi 1	Bayero 1	NO	327	No data	182	No data	
Fadeyi 2	Gaa Esiniyi 2	NO	273	No data	152	No data	
Arusa	Arugbo	NO	253	No data	141	No data	

Accessibility
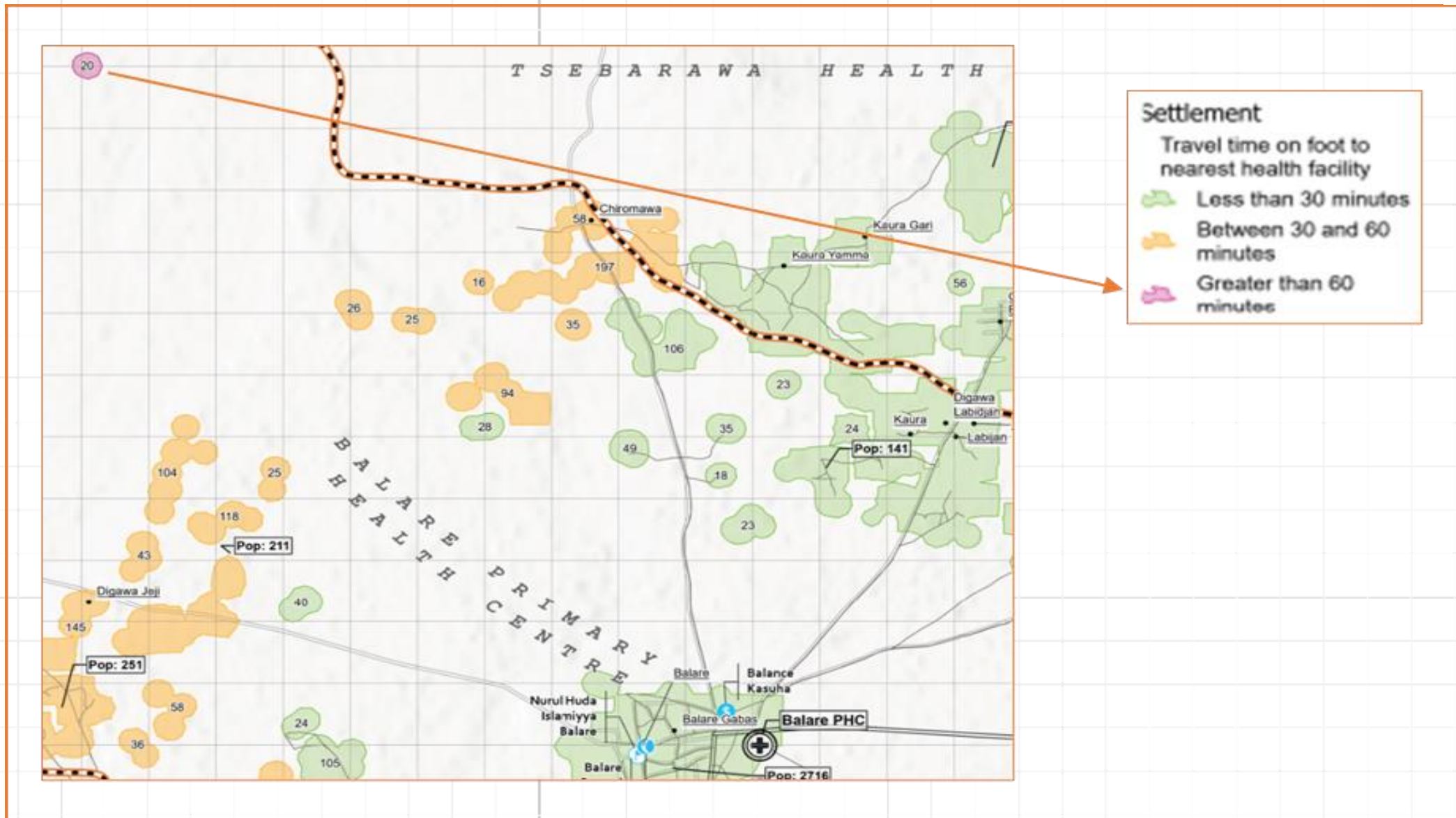
Training on the use of maps

- State training of trainers (STOT) on the use of the base maps during microplanning. The trained personnel cascaded the training for LGA level personnel who will directly interact and use the digital maps

- At the end of the ward level micro planning exercise, each LGA submitted the digital maps and settlement list table with required modifications to be made on the final map to be used for the campaign activity

Implementation maps at DH level

DUPPEN PRIMARY SCHOOL DH, BINYERI WARD, MAYO-BELWA LGA
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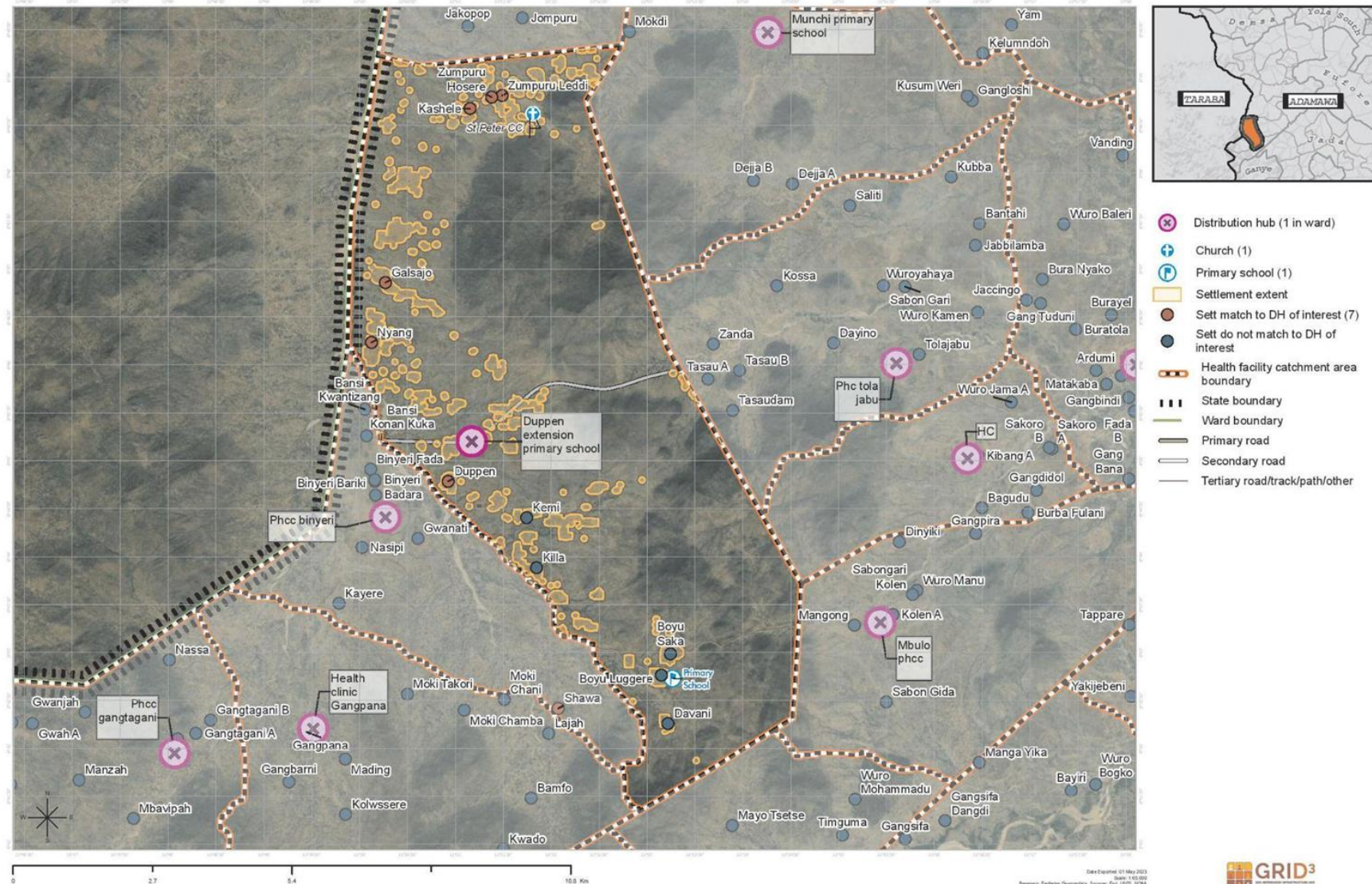
Key Achievements

- The digital maps were **integrated** successfully into the micro planning exercise, effectively eliminating the need for hand drawn 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 at **100% for DH** and minimum of **80% for settlements** and will be used to update the maps

- The ward focal persons were able to easily use the RR collect form developed for **capturing** the **geo coordinates** of DHs and new settlements

- An **online training** of the national team on development of digital microplanning maps was successfully done.

- **Successfully developed implementation maps at DH catchment level**

Challenges

Challenges

- **Mix-up** of **settlement names** and **health facilities** among wards, and between LGAs **on the maps.**
- There is variation in defining settlements.
- There was **limited 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, especially in areas in large land mass and hard to reach areas.
- The Ward focal persons were expected to use their **personal devices** for the RR collect forms but some of the WF **struggled** to use the App.
- Some support was gotten from the LGA team and this improved community ownership, but some geo coordinates of settlements and distribution hubs were not captured within the **time frame**.
- The team did not get to utilize the **distance feature** of the digital base maps because of **incomplete data** .
- **Multipart** polygons in the implementation maps due to **non contiguous** nature of the settlements from the finalized microplanning template.

Lessons Learned and Recommendations

Lessons Learned

- The reviewed digital based maps will serve as a **good foundation** for use in subsequent micro planning activities in the state.

- 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 **settlement definition** 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.

- With the base map as reference, issues of **missed settlements** greatly minimized, ensuring proper coverage during implementation

Lessons Learned

- Training methodology was a combination of presentation, **hands on practical** and a teach back session.
- Training materials included presentations and a **step-by-step guide**, **case by case scenario guide**, with sample maps and tables for reference.
- In some cases, the settlement **population estimates** from **GRID3** did not provide the **required** support in the micro planning process. This is due to the huge **disparity** between the population from GRID3 and the micro planning template (p3b) the population is either **too low** or **high** in some instances when compared with other data sets for **triangulation**.
- The **two days** set for **capturing** the geo coordinates of settlements and DHs is **not enough** for some wards due to their large number of settlements and DHs or the spatial extent of the wards are very large to be covered in the stipulated two days.
- Any geo coordinate not captured during the micro planning can be captured during implementation.
- Explored **increasing** the number of days for capture and allocating **extra funds** for the logistics of -to-reach areas.

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 as well as recommendations for future roll out in other states.

- With the future improved and more accurate maps, the **allocation of DHs to settlements** during micro planning will be **optimised with GIS tools** i.e. walking distance feature for cluster formation.

- **Updated maps** from micro planning will be used during implementation to guide the **development of work plans** for the mobilization and distribution team, route and transport plan for logistics.

- Form **strong collaborations and an integrated system** with health campaigns and agency

Next Steps and Way Forward

- Plans for **transfer** of knowledge and explore the possibility of **integration** of the digital maps into the ICT4D system

- Improve campaign coverage by utilizing digital maps as base/reference maps during implementation.

- Utilize digital maps to quickly identify implementation bottlenecks in combination with coverage data and deploy targeted support on the field.

- Build the capacity of National and State personnel to utilize GIS tools to improve the quality of campaign implementation with sustainability in view for future campaign.

- Provide a comprehensive guideline for proper geospatial **data archiving** for use in future campaigns

THANK YOU FOR LISTENING!

Acknowledgements