

ENGAGING THE STATE: NIGER STATE MINI-GRID DEVELOPMENT PERSPECTIVES

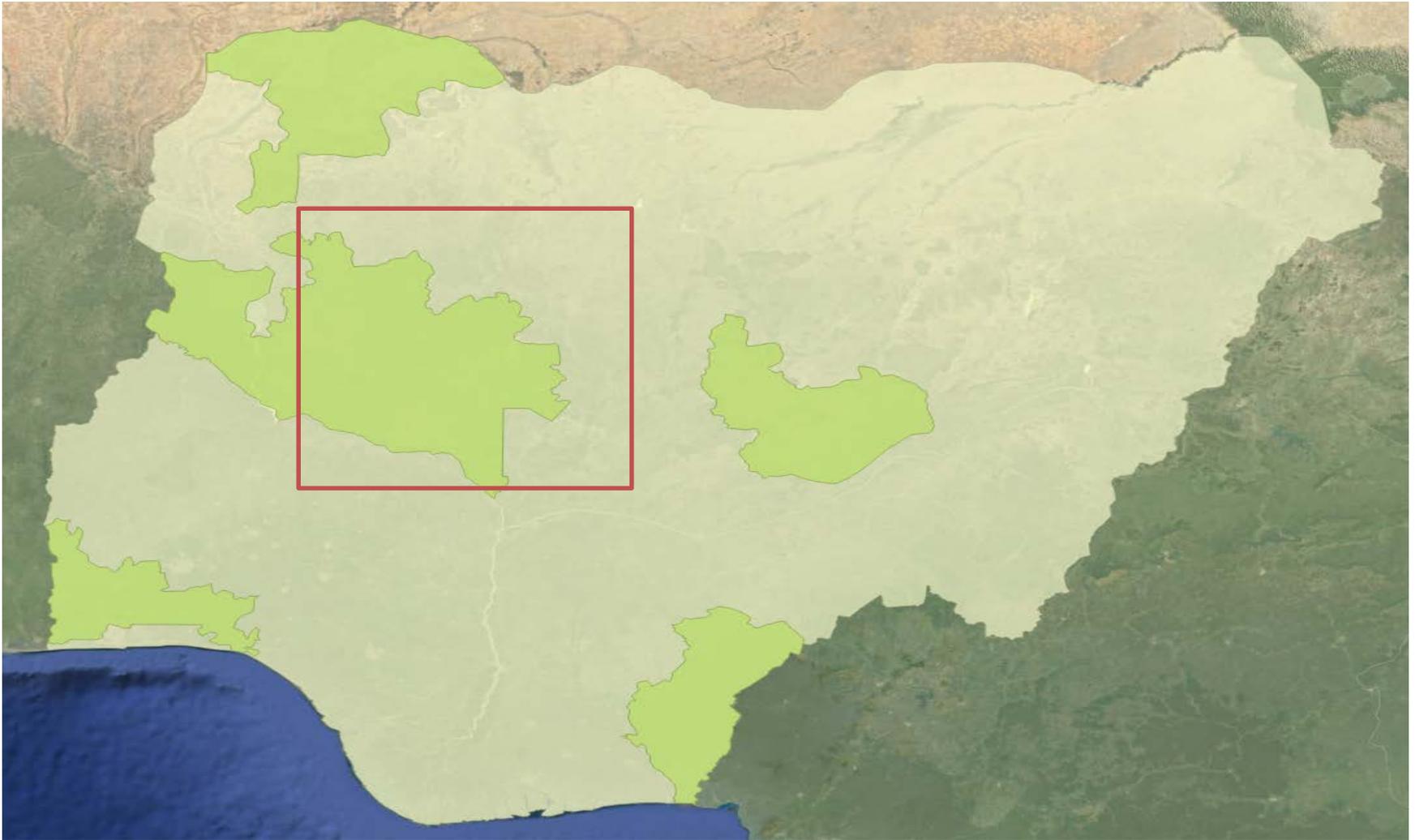
**Presentation by Dr Mustapha Ibrahim Lemu at
the Mini Grid Action Learning Event: Up-scaling
Mini Grids for Least Cost and Timely Access to
Electricity (4TH – 8th December, 2017 at Sheraton
Hotel, Abuja)**

INTRODUCTION

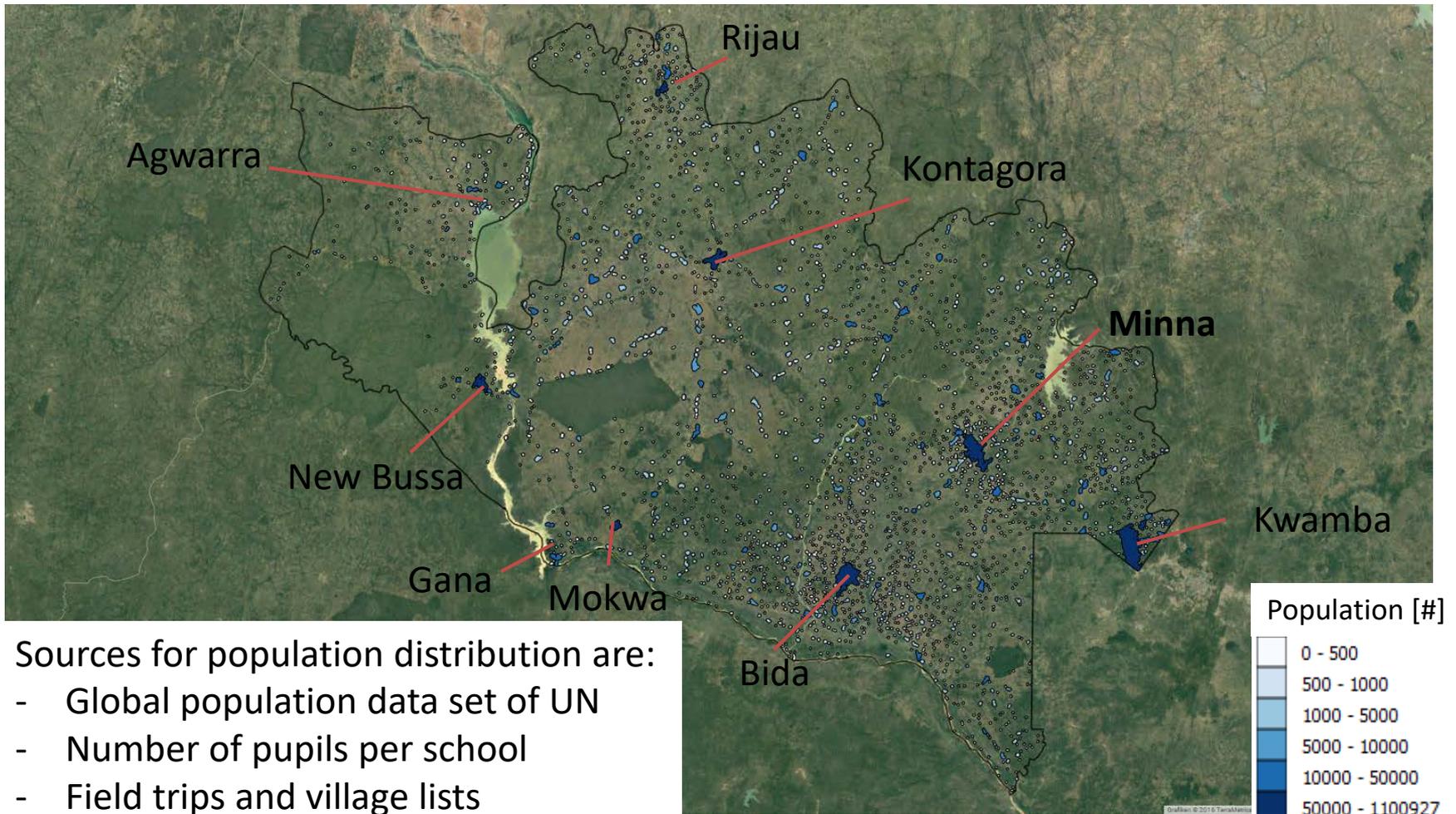
- This is the story of Niger State's Renewable Mini-Grid Development from ground zero to planning, data generation, policy and operational documentation and implementation
- The presentation highlights the current status, challenges and prospects of Renewable Mini-Grids development in Niger State (Nigeria)
- The State is making a case as a fertile ground for sustainable engagement with international initiatives and private sector renewable mini-grid investor developers

**NIGER STATE, NIGERIA
BASIC INFORMATION**

LOCATION



POPULATION CENTRES



Sources for population distribution are:

- Global population data set of UN
- Number of pupils per school
- Field trips and village lists
- NBS data on ward level

SOCIO-ECONOMIC FEATURES

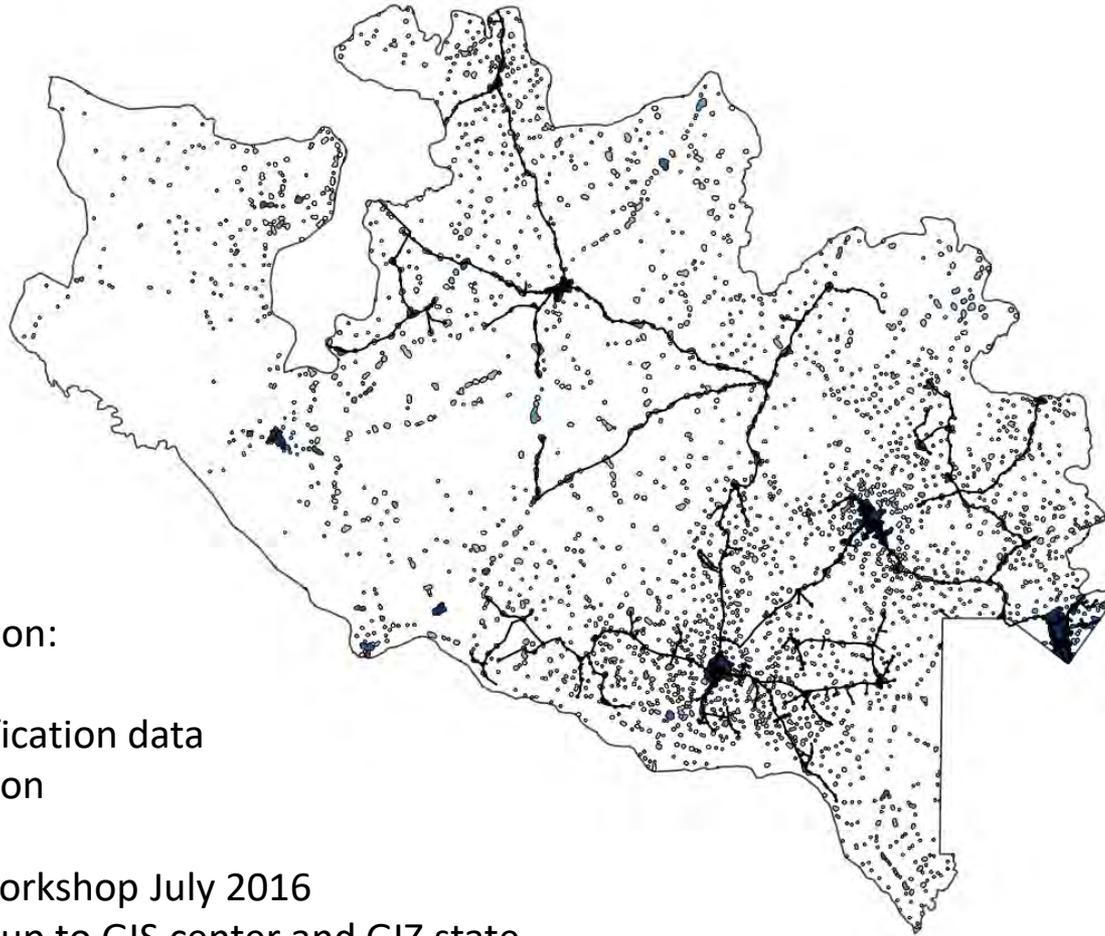
- **Created in 1976; Capital City, Minna; Pop. = about 5 million; Density = Sparse; % Econ. Active = 50%**
- Ethnic Composition = 25 Groups (main groups = Nupe, Gbagi, Hausa)
- **Land Mass = 8.6m hectares; About 9.3% of Nigeria's Land Mass; 8 main rivers; % Irrigable = 80% (25%)**
- Main Economic Activities = Agriculture (Farming, Fishing and Livestock)
- **Solid Minerals = Gold, Talc, Kyanite, Kaolin, Graphite, Ball Clay, Silica Sand etc.**
- Transportation: Road, Air, Rail and Water (Baro Seaport)
- **Security and Weather: Peaceful and Friendly**

(Source: Niger State Vision 2030 Document)

CURRENT ENERGY STATUS

- Houses Kainji, Jebba, Shiroro and Zungeru (UC)
- Medium Electrification Rate = 52%
- Number of Clusters Identified = 2,694
- Population within Identified Clusters = 4.67m (94%)
- Clusters Connected to Grid = 456 (17% of Clusters; 2.66 million people; 53% of population)
- 76,000 within Grid Area not Connected
- Demand of Connected Clusters = 212 MW
- Electricity Consumption = 450 GWh/year (underestimated – Households/SMEs)

CURRENT GRID VISUAL



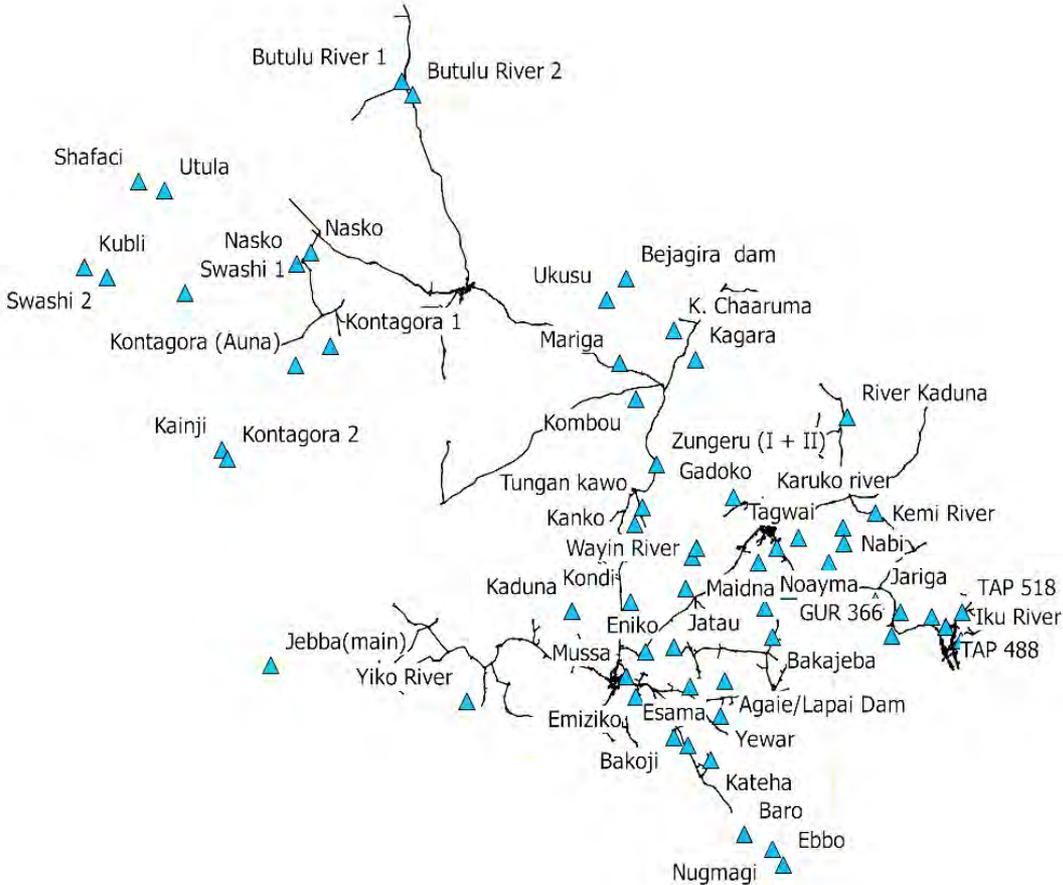
Grid data based on:

- Night lights
- MDG electrification data
- Road extension

Validation by

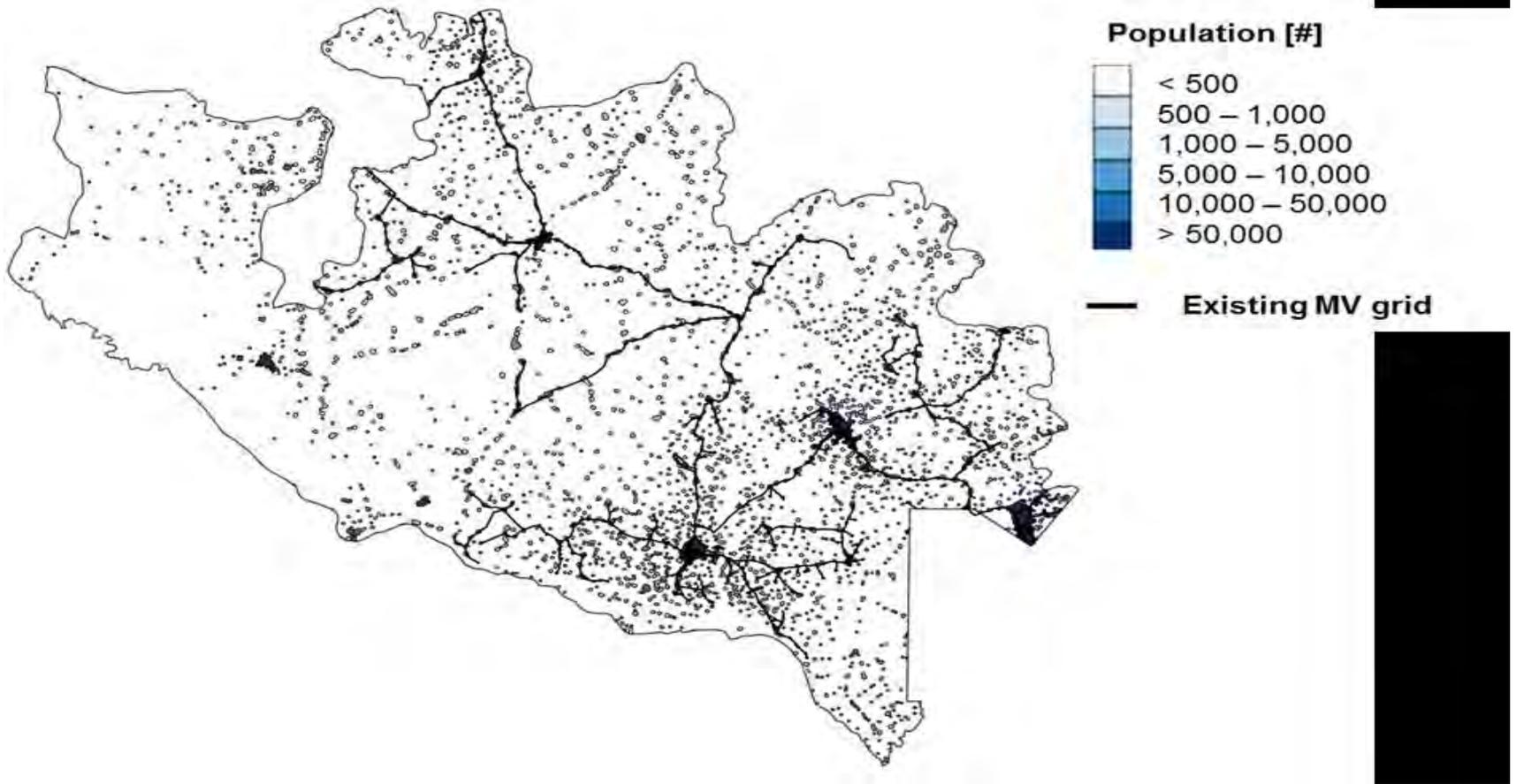
- Modelling Workshop July 2016
- Email follow up to GIS center and GIZ state advisor

POTENTIAL HYDRO POWER SITES



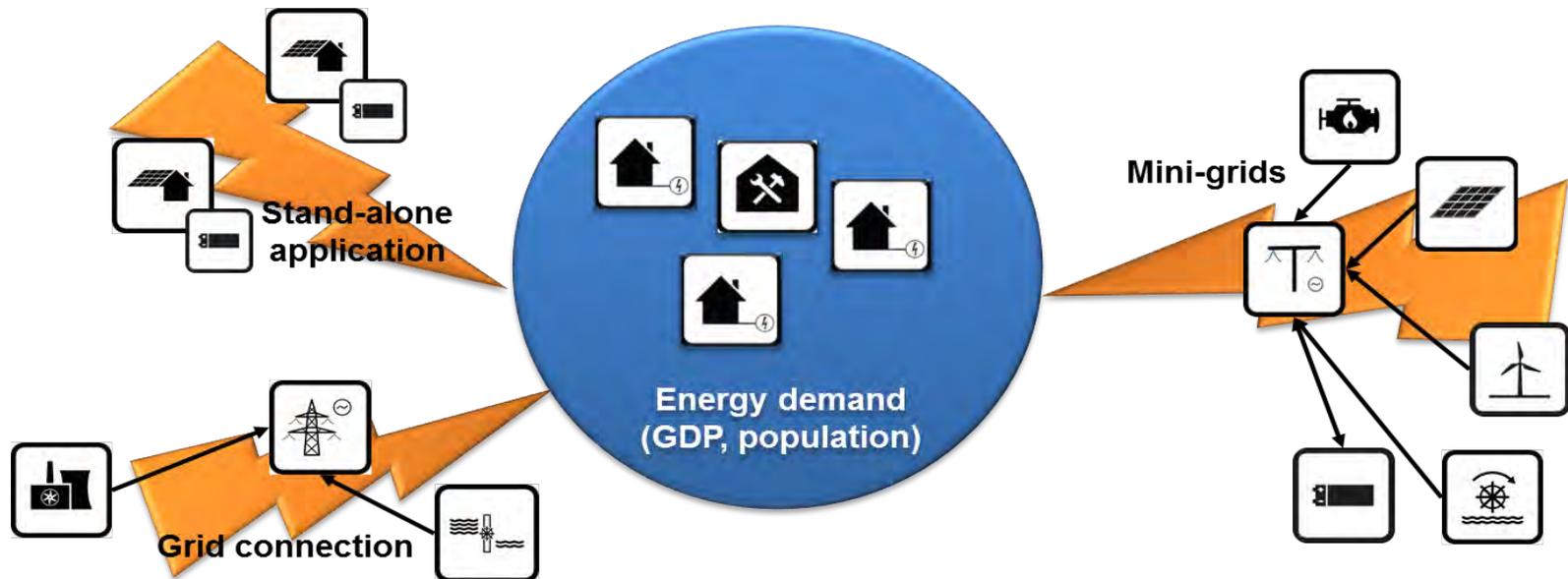
NIGER STATE RURAL RENEWABLE ENERGY ELECTRIFICATION PLAN

WHERE WE WERE

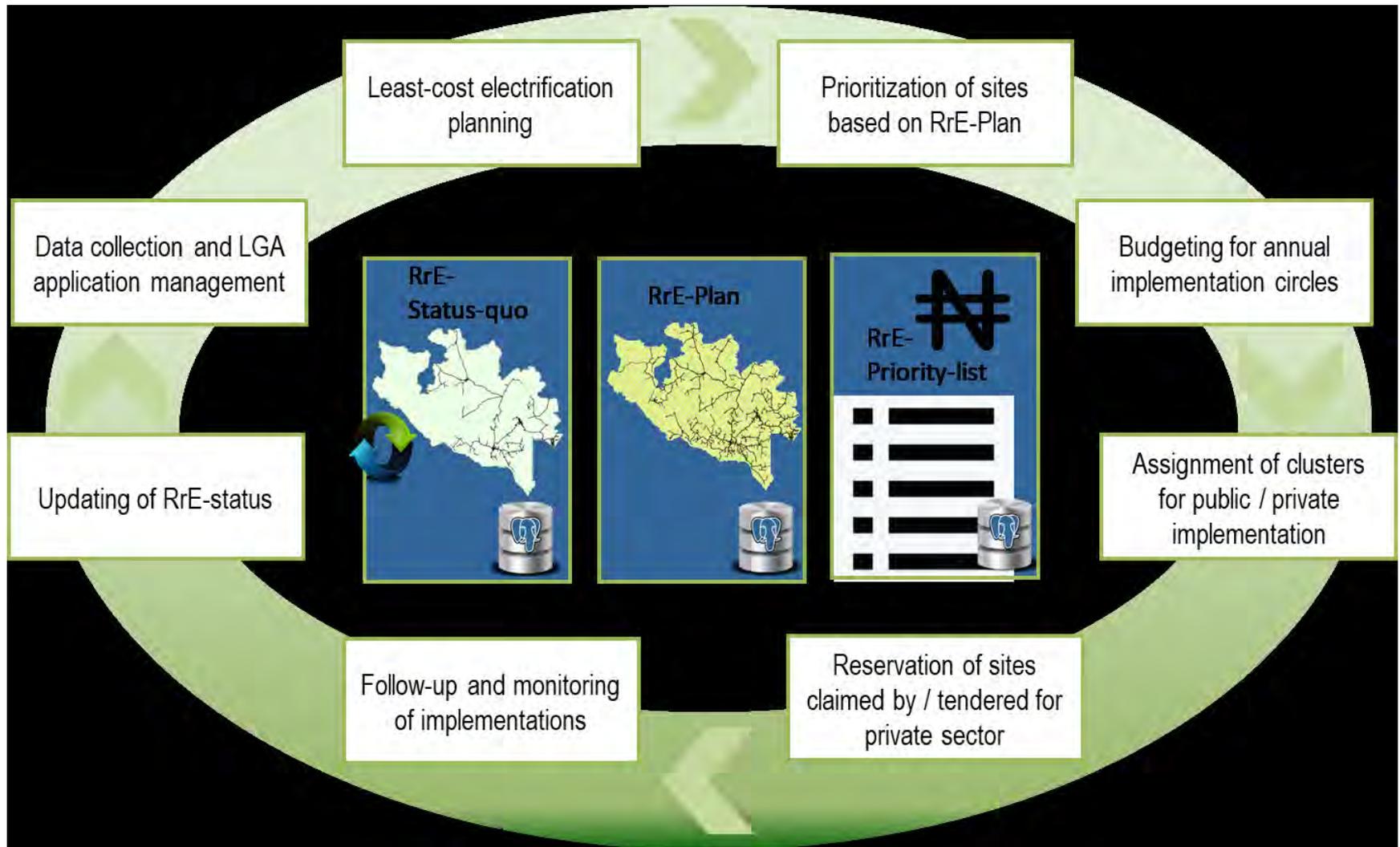


The Mix

The chosen path to 100% electrification for the state is an optimal mix of National Grid (Revive/Extend), Mini-Grid and Stand Alone Systems



THE APPROACH



PHASE BY PHASE PROGRESSION

PHASE ONE: 2018 - 2022

	Grid	Mini-grid	Small-scale
Clusters	456 (densification)	81	612
People	76,000 (densification)	583,000	348,000 (incl. outside clusters)
Capacities	Tbd	33 MW peak load	Tbd

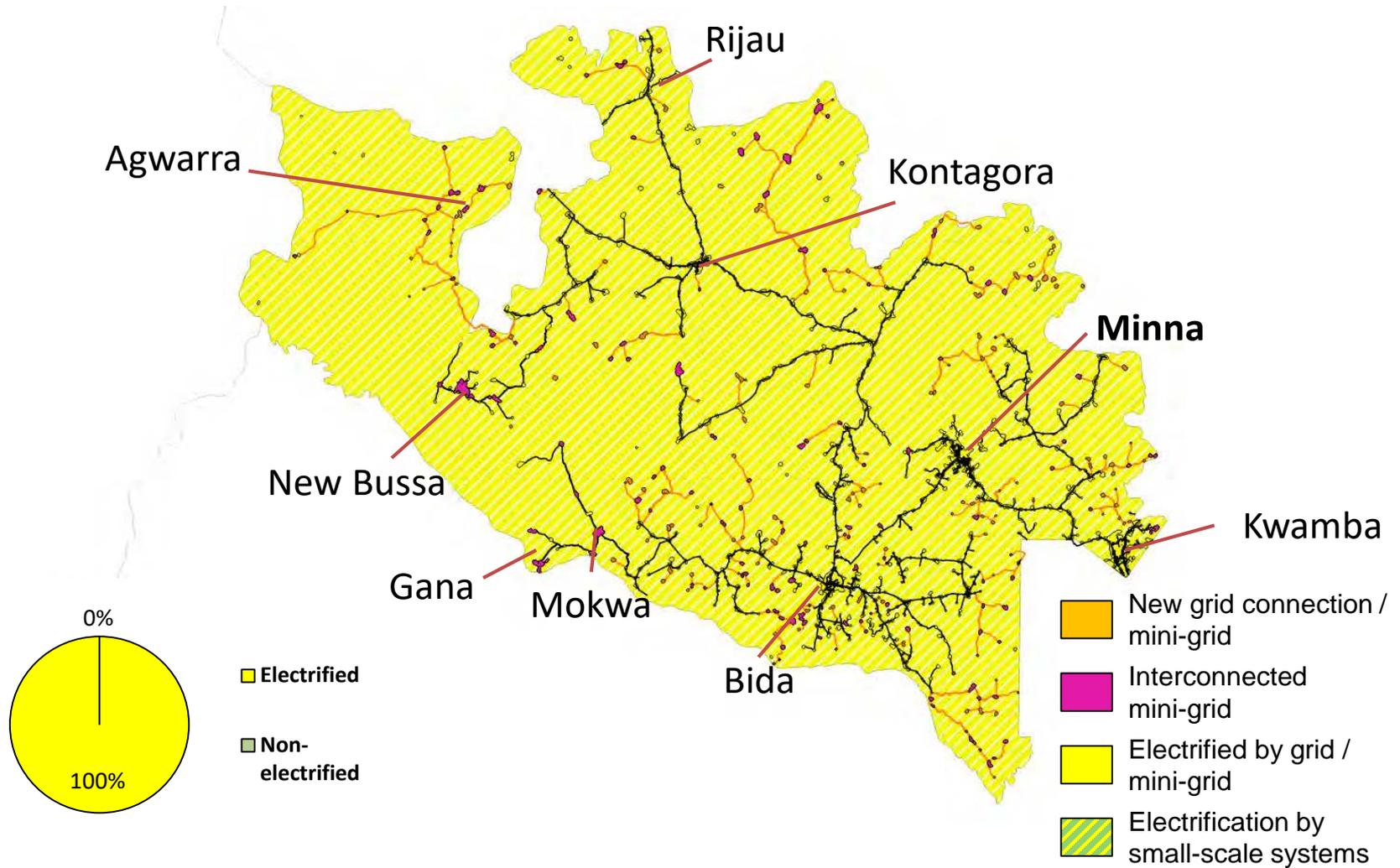
PHASE TWO: 2023 - 2027

	Grid	Mini-grid	Small-scale
Clusters	143 (39 interconnected)	80	612
People	623,000 (369,000 interconnected)	208,000	348,000 (incl. outside clusters)
Capacities	48 MW peak load	10 MW peak load	Tbd

PHASE THREE: 2028 - 2030

	Grid	Mini-grid	Small-scale
Clusters	221 (97 interconnected)	12	613
People	611,000 (378,000 interconnected)	15,000	349,000 (incl. outside clusters)
Capacities	41 MW peak load	1 MW peak load	Tbd

THE FINAL PICTURE



THE ROAD TO 100% ELECTRIFICATION IN NIGER STATE: THE SUMMARY

Current Situation

- 57 % Electrification Rate
- 2.58 million people are directly connected to the grid
- 0.08 million people living in grid connected areas without household connection
- 2.34 million people living without grid connection in rural areas
- Insufficient central power generation infrastructure leads to regular outages and suppressed demand

RrE Plan to target 100% electrification rate

- 76,000 people reached by grid densification
- 1,234,000 people reached by grid extension (including 747,000 people in interconnected mini-grids)
- 806,000 people are initially reached by mini-grids and later on interconnected (aside from 37 clusters)
- 1,045,000 people are supplied by small – scale systems

**PILOT IMPLEMENTATION
GULU & TUNGGAN JIKA**

GULU GENERAL HOSPITAL

- There are two mini-grids and one facility unit solar projects in the state
- The Bisanti Project was funded by Bank of Industry and is a project slated to be visited by the participants. It has been hitch free operational since September, 2015
- Abdus-Salam Abubakar General Hospital, Gulu is a 48 KW Mini-grid solar facility unit project implemented by the State Government
- It has been completed and is currently under test operation awaiting commissioning

ABDUSSALAM ABUBAKAR HOSPITAL, GULU



TUNGAN JIKA SOLAR MINI GRID

- It is the pilot project under the NESP slated for completion by December, 2017
- Agrarian community with a population of about 600 households with 300 signed on (2,100 people), 27 productive users, and 52 commercial users. 2 schools, 2 hospitals, 2 mosques, 2 churches, 23 Mills and Agricultural Workshops, 2 Metal Welders including 1 filling station and 2 Bakeries
- The mini-grid has a total capacity of 100 KW scalable to 1 MW
- Town Distribution completed and household connection on-going
- Fixed tariff is =N=140 per Kw with option of variable tariff of 120 daytime and 200 night time
- Currently at 70% completed; full power station to be ready for commissioning by 20th December, 2017
- Nayo Tropical Technologies with support from NESP and Niger State

TUNGAN JIKA MINI GRID



OPERATIONALIZING THE PLAN

**Selection of Prospective
Communities, Government
Support and Facilitation**

CRITERIA FOR COMMUNITY SELECTION

- Community must be within identified clusters
- Accessibility by road or rail
- Commercial viability (households, commercial and productive users)
- Community buy in and contribution (e.g. land and security)
- Environmental compliances

POLICY FRAMEWORKS

- Niger State Policy on Decentralized Renewable Energy
- Niger State Rural Electrification Plan
- Niger State Guidelines for Mini Grid PPP Development
- There are other supplementary documentations to ease PPP Mini – Grid

PHASE ONE COMMUNITIES

Eighty seven (87) communities are slated for the first phase using the preceding criteria. The annual distribution is given in the table.

S/N	YEAR	NO.	LIST OF COMMUNITIES
1	2018	18	Kurebe, Wabi, Sabon Gari, Shagunu, Makondo, Shafini, Mazakari, Gwam, Ishau, Manta, Kanfanin Madakara, Efa, Shaku, Kpashimi, Saganuwa, Edotsu, Ndako Gitsu, and Muregi
2	2019	18	Gbogifu, Mayaki, Yati, Ketso, Tagagi, Mashena Tifin, Goto Sarki, Gotorishi, Ibro, Chikuba, Kwake, Kolho, Kumbashi, Muburiya, Fanga, Kpayeta, Algeta, and Danko
3	2020	17	Mazakuka, Janmaku, Getegi, Likkyauli, Ukru, Wuregi, Karibo, Kurmin Giwa, Tungan Barau, Amale, Mashina Tako, Nuwakota, Ndalada, Zago -Lapai, Wanigi, Kaniyan, Yanke, and Etsu Abu
4	2021	17	Ndamama, Yikagi Gbangba, Boku, Gupanti, Jipan, Tsarati, Bassa, Barakwai, Zinari, Pyata, Dakolo, Kwankwaso, Yumu, Adogo Mallam, Tungan Ango, Lagun 2, and Ula Kame
5	2022	17	Yanda, Adidi, Egba, Sokon, Bidafu, Nuwan kota, Evuntagi, Lagun 1, Kushiri, Dangunu, Mangoro, Makusidi, Akare, New Kabule, Shata, Poto and Kukau
TOTAL	5 Years	87	Communities Drawn from the 3 Senatorial Districts of Niger State

NIGER STATE GOVERNMENT SUPPORT

- Provides land through community donation
- Tax relief based on application and approval (processes in action)
- Relevant data shall be available to potential investors at nigerstate.gov.ng, or nigisservices.com or written request through the Focal Ministry (Ministry of Works)
- Funding window through Rural Electrification Fund (REF)

STATE GOVERNMENT INVESTOR FACILITATION

- The State Working Group on Renewable Energy Development
- The Public Private Partnership Agency is quite active in investor facilitation
- The Renewable Energy Unit in the Department of Energy and Power
- The Renewable Energy Investor Facilitation Team in the Department Energy and Power

ROLE OF STATE GOVERNMENT IN INVESTOR COMMUNITY RELATIONS

- Introduce the investor to the prospective communities
- Liaise and facilitate positive investor community engagement
- To mediate between investor and community during and when there are disagreements
- Help strengthen community confidence in the ability of the investor to deliver
- Monitor standards and compliances with agreements

STATE GOVT ENGAGEMENT WITH OTHER STAKEHOLDER AGENCIES

- Niger State is actively engaged with Rural Electrification Agency (REA) and Federal Ministry of Environment
- The State Ministry of Environment is a member of the State Working Group
- Other stakeholder agencies are also members of the State Working Group and the Coordination Group (AEDC, Planning Commission, Ministries of Justice, Finance, Commerce and Industry, Agriculture, Water Resources, PPPA etc.)

CONCLUSION

- Niger State has clear road map for the PPP driven development of Renewable Energy Mini Grids. Prospective Investors are very much welcome
- For further contacts

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