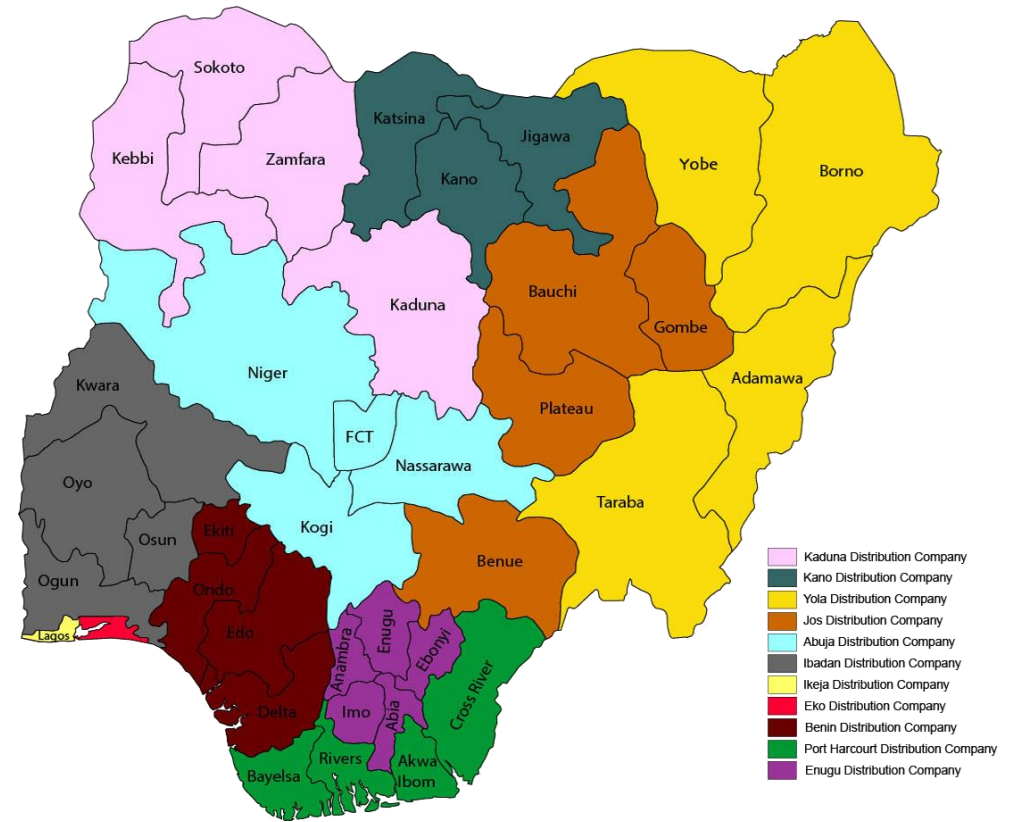


Nigeria DARES Project

INTERCONNECTED MINI GRIDS IN THE WORLD BANK PORTFOLIO



THE WORLD BANK

IBRD • IDA | WORLD BANK GROUP

Africa

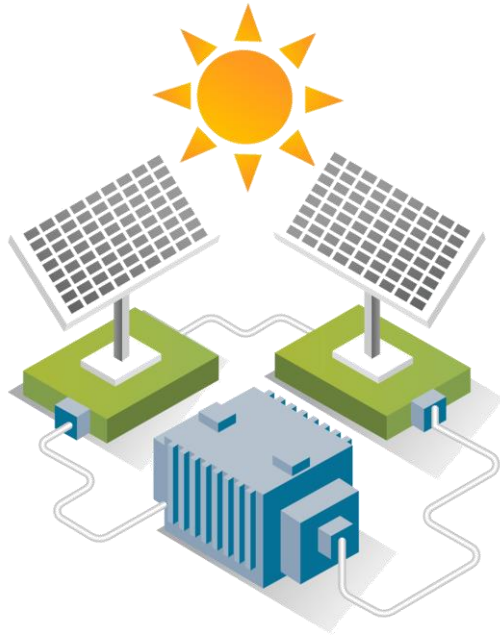
ASHISH SHRESTHA (Energy Specialist, ESMAP World Bank)

COLLINS OBI (Energy Specialist, World Bank)

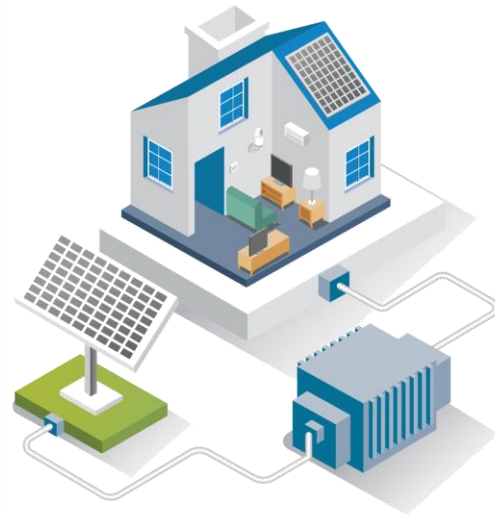


Nigeria Distributed Access through Renewable Energy Scale-up (DARES)

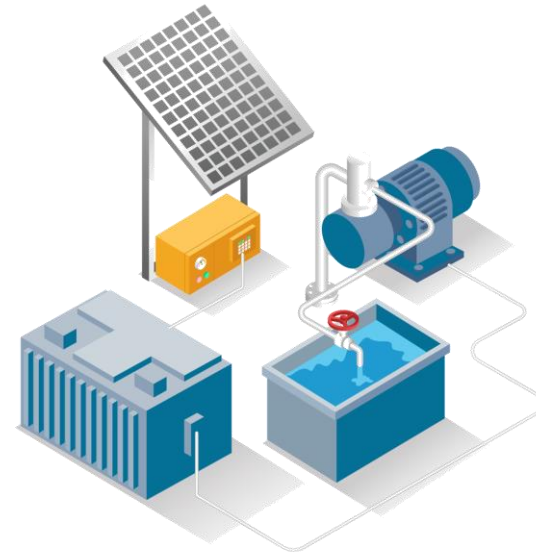
*A bold push to move the needle significantly on **electricity access** in Nigeria*



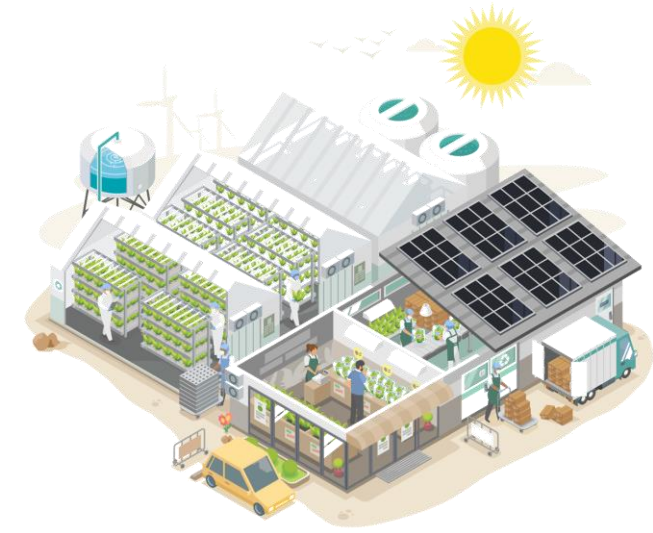
Mini Grids



Solar systems



Productive Uses

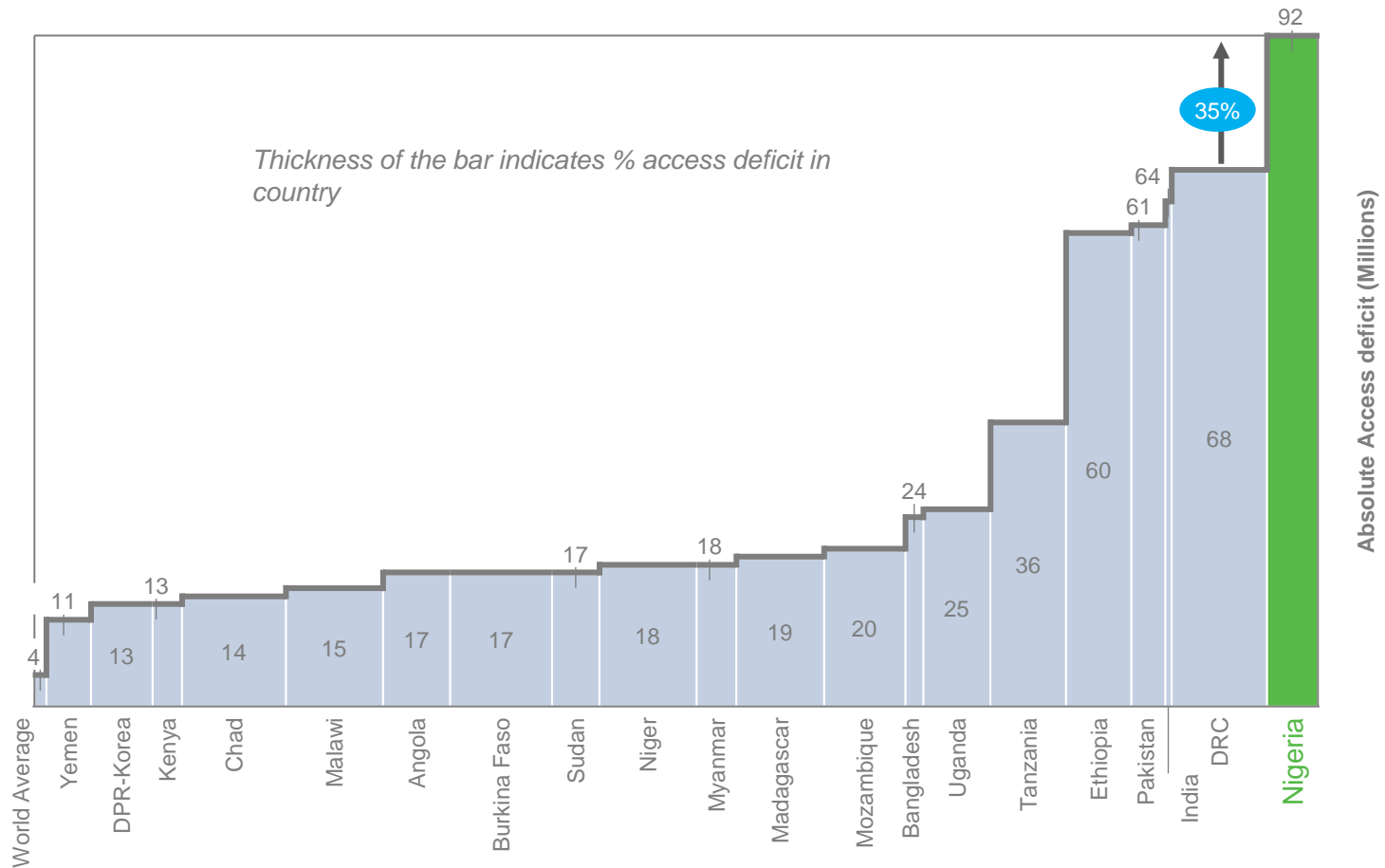


Urban access



Nigeria has the largest number of unelectrified people globally

- Electrification (1.1% pa since 2010) has not kept pace with population growth (3% pa)
- Nigeria now has 35% more unelectrified people than the 2nd most unelectrified country
- **Economic losses from unreliable electricity supply are estimated to be around ₦7-10 trillion (~US\$25 billion) annually or 5-7 percent of the GDP**



And electrification is essential for their welfare in many dimensions



prerequisite and catalyst for **improving living and working conditions**



helps people lift themselves out of **poverty** and enhances their prosperity, health, safety, educational, and entrepreneurial opportunities



advances **gender equality** and social, economic, and political equality goals






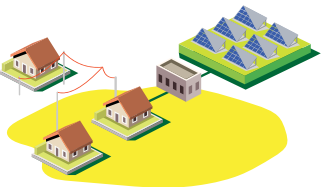


diminish environmental degradation and is critical to achieving net-zero emissions in a just and inclusive way



NEP laid the foundation for a private-sector led approach to help Nigeria reach universal access

Impact



Development Objective	Increase access to electricity services for households, public institutions, and underserved micro, small and medium enterprises.			
Implementing Agency	Rural Electrification Agency			
Components*	 Solar Hybrid Mini Grids		 Solar Home Systems	 Energizing Education
	Solar Hybrid Mini Grids for Rural Economic Development	COVID19 Response for Health Facilities		
				
Allocation (IDA)	US\$44 million	US\$30 million	US\$73 million IDA	US\$147 million
Modality	Results based; Private sector led	Emergency response	Results based; Private sector led	Long-term performance contract Public sector led
Expected Results	60,000 households 2,300 MSME	100 health facilities	1 million households 5,000 MSME	7 universities and 2 teaching hospitals
Implementation Progress	Close to 300,000 people benefiting from electricity from 153 mini grids projects commissioned.	All 100 facilities have been electrified.	Sales have exceeded the target, with over 5.4 million people benefiting.	All contracts awarded; Work underway.

Lives of around **6 million** Nigerians impacted

Every dollar of investment has leveraged **\$1.50** of private capital

Over **100** qualified companies - global market leaders with Nigerian footprint and local firms

Mainstreamed digital solutions to reduce overhead and transaction time



A results-based, private sector led model has been the key driver for success

Payment to the private sector on partial capex happens after verification of results

FINANCIER



US\$/Naira loans

4

DEVELOPER



Equipment
Payment

5

OEM



REGULATOR



2

License/Permit
And Tariff application

Exclusivity
Agreement

1

Grant
Agreement

3



4

MINI-GRID COMMUNITY



WORLD BANK



Project
Agreement

TESTING, INSPECTION



6

Verification

6

Electricity

Tariff payment

6

DEVELOPER



Performance
Based
Grants

7

Performance
Based
Grants

Loan repayment

7

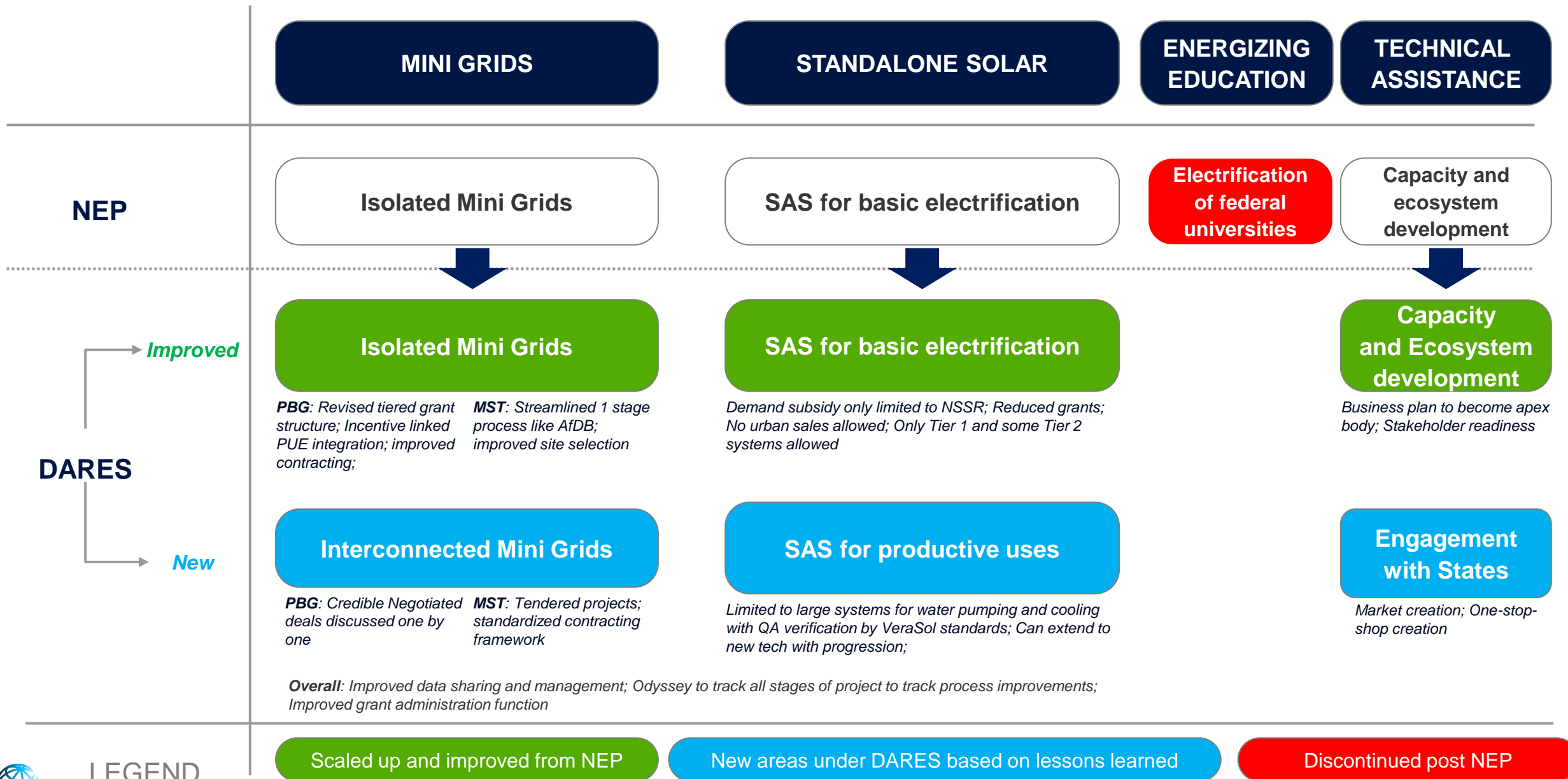
FINANCIER



Performance
Based Grants

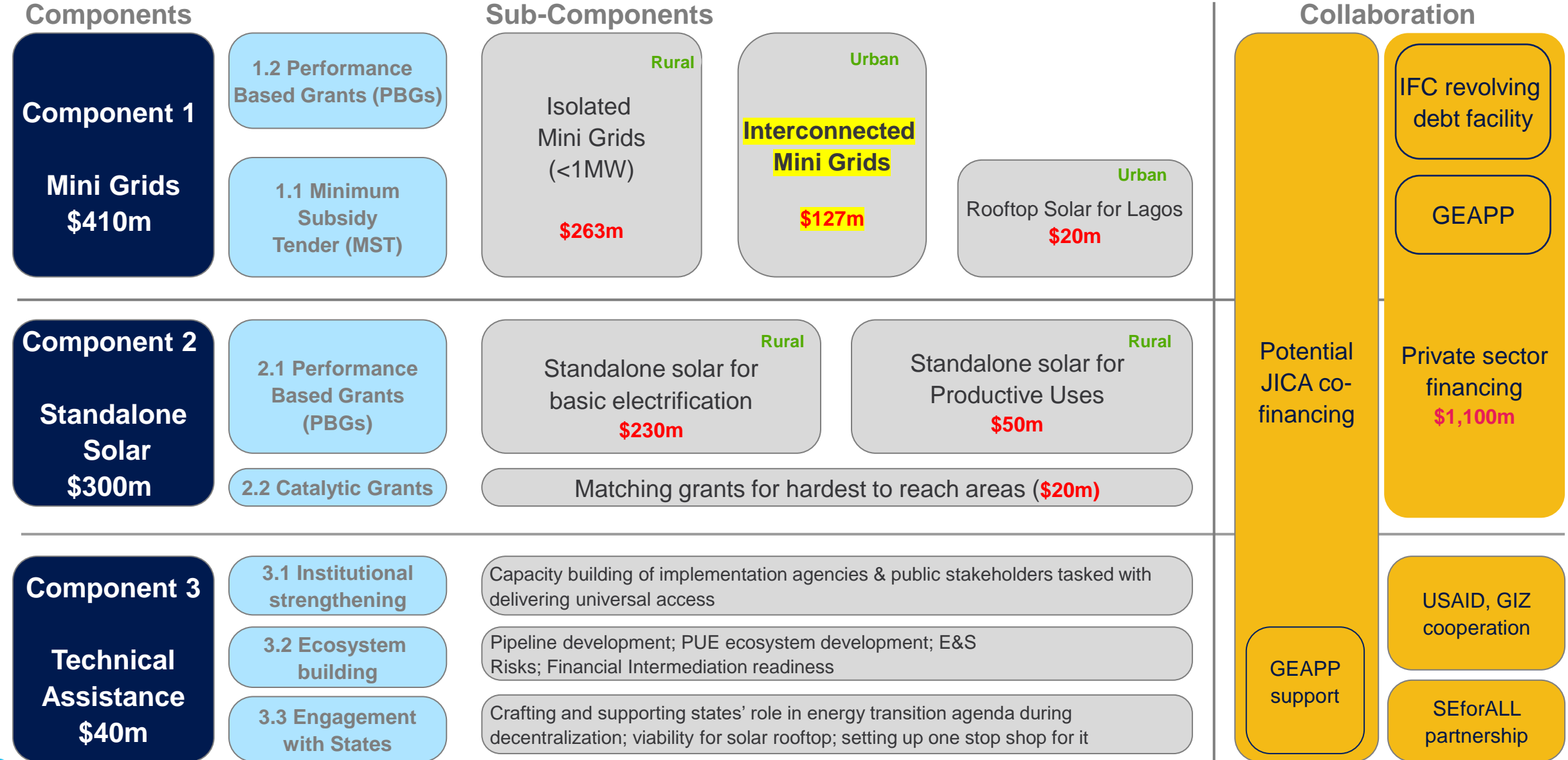
7

Nigeria DARES will **SCALE-UP** successful activities under NEP; **IMPROVE** some based-on lessons learned and **EXPAND** to new strategic priorities



LEGEND

Interconnected mini grids is a new component introduced in DARES with significant resources to scale up deployment



DARES will scale up support for mini grids in unserved locations while introducing new approaches to improve reliability in underserved areas (actual Band C and below areas)

\$410m allocated to scaling up mini grids in Nigeria

Isolated Mini Grids (USD 263m)

Interconnected Mini Grids (USD 127m)

Component 1- Mini Grids

Objective	Last-Mile Access	
Target	1,100 mini grids	
Approach	Performance based grant (PBG)	Minimum Subsidy Tender (MST)
Geographic Scope	Rural and remote areas	Areas not served through PBG window
Site Selection	Developer led	REA led aggregated demand
Subsidy type	Per connection	
Subsidy Determination	Differentiated pre-determined subsidy based on location and socio-economic conditions	Competitive price discovery through reverse-auction
Proposed Milestones	Subsidy payment based on milestones: Milestone 1: Customer connections Milestone 2: Certain capacity utilization factor after 1 year of commercial operations	
Project Size	Mini-grids of up to 1MW	

Objective	Energy transition & improved reliable supply	
Target	125 mini grids	
Approach	Performance based grant (PBG)	Minimum Subsidy Tender (MST)
Geographic Scope	Urban, peri-urban areas defined as band C and below by the DisCos	
Site Selection	Developer led	REA and Disco co-led aggregated demand
Subsidy type	% of Capex	
Subsidy Determination	Pre-determined subsidy (based on ongoing experience)	Reverse-auction on the % of CAPEX required in subsidy
Proposed Milestones	Subsidy payment based on milestones: Milestone 1: Connection to grid Milestone 2: Certain capacity utilization factor after 1 year of commercial operations	
Project Size	Mini-grids of up to 1MW Embedded Generation/Franchising of up to 5MW	

Analytical work is ongoing to determine the optimal subsidy amount and validate experience of other development partners



DARES seeks to support the financial and operational viability of the DISCOs through private sector led efforts, creating a win-win situation for the utility, developer and customers

BETTER CUSTOMER SERVICE



- Reduced customer defection due to improved hours of supply to customers
- Developers integrate resilient backup supply solutions through batteries, UPS systems and generators to ensure high reliability and quality supply to anchor customers
- Developers leverage DISCOs customer relationship to access larger group of customers with existing demand

LOSS REDUCTION AND COST REDUCTION



- Elimination of Losses in ring-fenced clusters as collection risks is transferred to the third-party whilst DISCOs are paid 100% for energy delivered to the project cluster.
- Improved revenue protection via metering and close policing of energy consumers in project areas
- Customer becomes more cost and energy efficient

IMPROVED ENERGY INFRASTRUCTURE



- DISCOs benefit from the developer's investment to improve distribution network in project areas and meter customers especially in areas that are not PIP investment focus areas or “non-manageable” locations
- Developer leverages DISCOs network and improve project cost profile and margins

INCREASED REVENUE



- DISCOs earn a distribution network usage fee for mini-grid electricity sold on its network.
- DISCO benefit from franchise fees and other regulatory approved revenue streams as assets becomes revenue generators

EMISSIONS REDUCTION



- Providing reliable power supply to the community clusters and businesses will eliminate the need for self-generation via small highly polluting fossil fuel generators

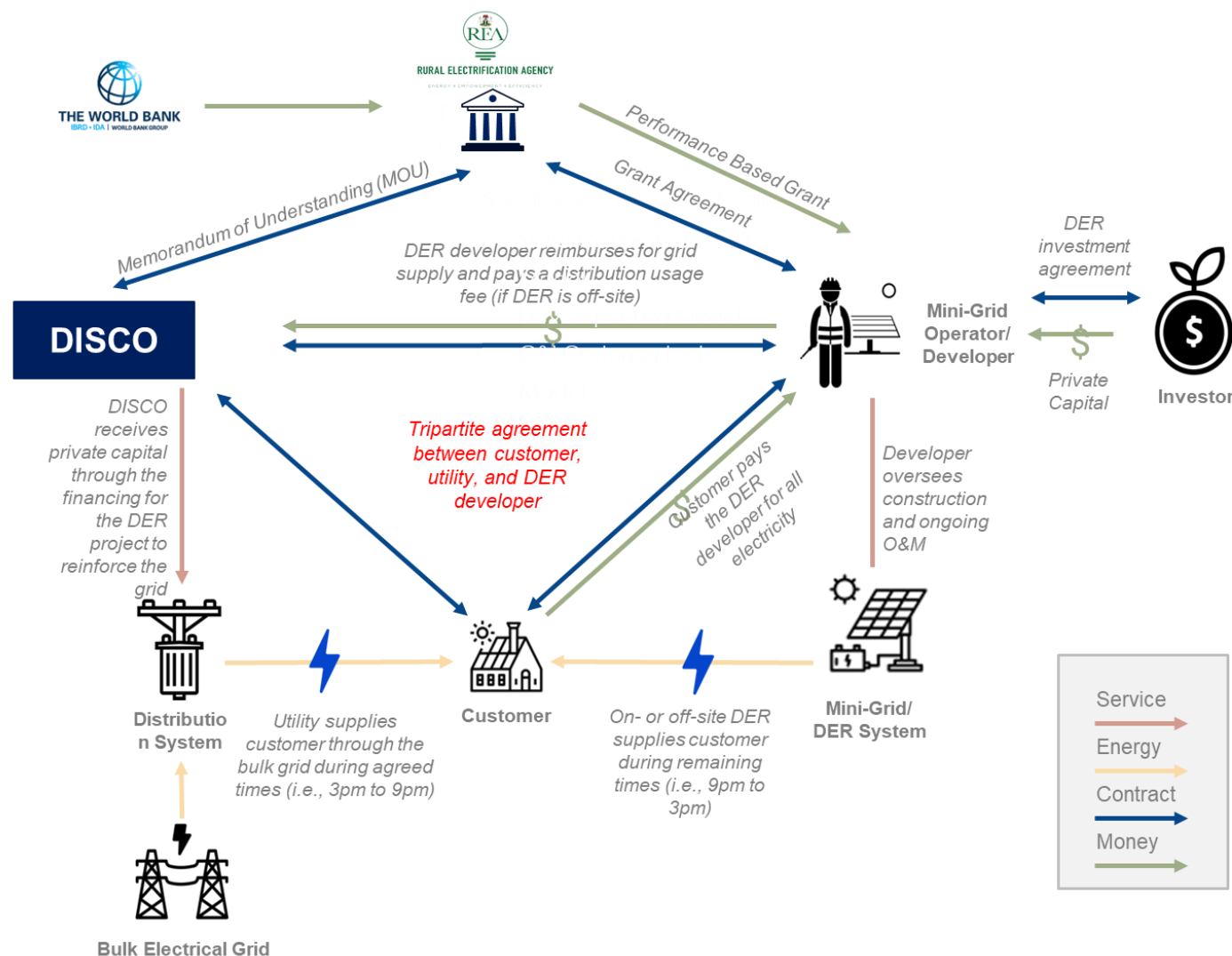
STRUCTURE

Tripartite agreement between DisCos, Developer and Consumers with REA providing support based on Minimum Subsidy Tender (MST) and CAPEX Performance Based Grant (PBG)



Key Points

- **NDA/MoU** between **REA** and participating **DisCos** to agree on **MST** and site preparation
- Selected developers enters a **Tripartite agreement** with the **DisCos** and community
- REA enters a **grant agreement** with **Developers**
- **Finite duration:** the tripartite agreement would have an initial term of between 10- 20 years
- **Focus on network gaps**, by targeting areas that are not prioritized in DisCo's PIP or investment planning
- **Developer earns revenue**, and reimburses DisCos for grid supply



MINI GRIDS

INTER-CONNECTED

<1MW



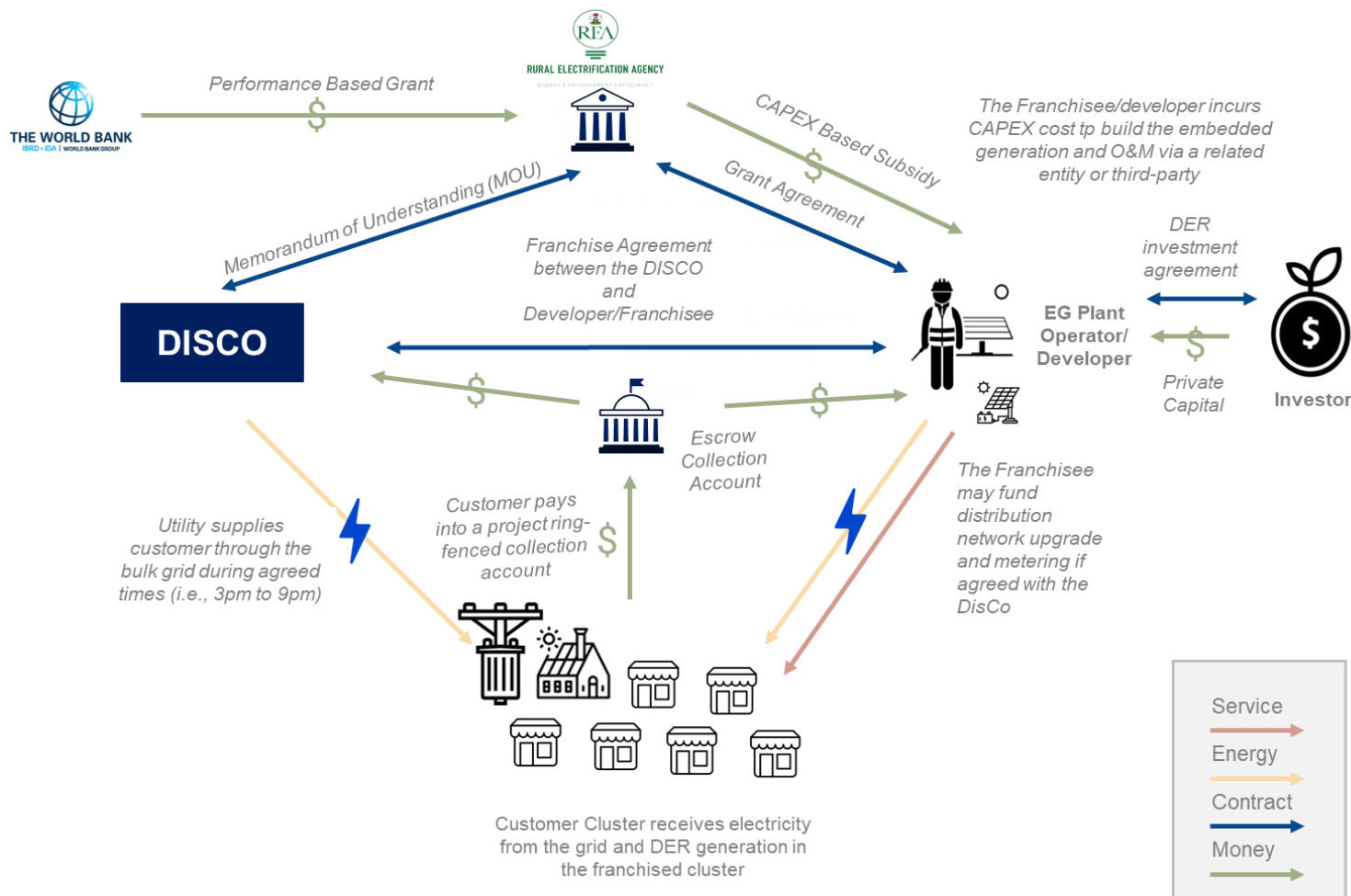


STRUCTURE

Franchise agreement between DisCos and Developer with REA providing support based on MST

Key Points

- Key steps remain similar to other urban mini grid process except-
- Selected developers enters a **Franchise Agreement** with the DisCos
- Customer pays cluster tariff to a **ring-fenced collection account**
- **DISCO and Developer** earns revenue from the **collections account** after deductions of reimbursements necessary.
- **Upgrades to DISCO's distribution system** via hardware financed by the DER developer private capital
- **Finite duration:** the franchise agreement could have an initial term of between 10- 20 years



MINI GRIDS

INTER-CONNECTED

>1MW



Planned steps and responsibilities for interconnected mini grid as envisioned in DARES



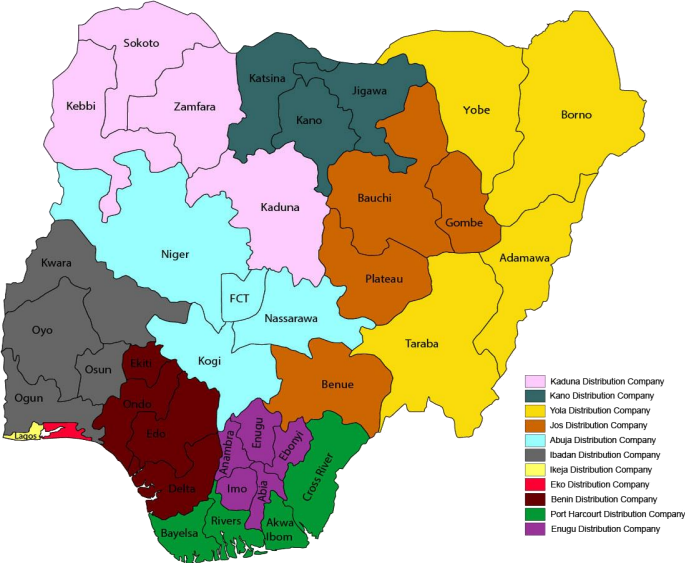
Responsible entity:

- WB/FGN
- REA
- DisCo
- Developer
- Combined



10 of 11 DISCOs in Nigeria have indicated interest to participate in the DARES program with over 600 sites across 33 States submitted for technical assessments

S/N	Electricity Distribution Company (DISCO)	State Location of sites	Number of Sites
1	Ikeja DISCO	Lagos	7
2	Abuja DISCO	Kogi, Niger, Nasarawa, FCT	24
3	Kano DISCO	Katsina, Kano, Jigawa	30
4	Benin DISCO	Delta, Edo, Ondo	50
5	Yola DISCO	Adamawa, Borno, Yobe, Taraba, Gombe	85
6	Ibadan DISCO	Kwara, Ekiti, Kogi, Niger, Ogun, Osun, Oyo	102
7	Port-Harcourt DISCO	Cross River, Akwa Ibom	16
8	Enugu DISCO	Abia, Anambra, Imo, Ebonyi, Enugu	180
9	Jos DISCO	Plateau, Gombe, Benue, Bauchi	47
10	Eko DISCO	Lagos	75
	Total	33 States	616



.....the opportunities for private sector investment in Utility-Enabled DREs are significant



Summary of tasks to be delivered under the technical assistance support to DISCOs via the Rural Electrification Agency (REA) for the sites provided

ACTIVITIES/TASKS**	INDICATIVE TIMELINE
Task 1- Mobilization, Kick-off meeting, Data Collection and Analysis	Month 1
Task 2 - Network Audit, Survey and Modelling	Month 2
Task 3- Energy Demand Assessment and System Design	Month 4
Task 4 – Economic and Financial Analysis	Month 5
Task 5- Preliminary Environmental and Social Impact Assessment	Month 5
Task 6 – Implementation plan and Procurement Support	Month 6
Task 7 – Final Report	Month 7

** Technical assessment commenced mid-April 2024 and it is open to all interested DISCOs in Nigeria. However, Phase 1 of the activity is focused on 7 DISCOs with over 300 sites under assessment while the sites for the remaining 4 DISCOs will be assessed in Phase 2.



Q
U
E
S
T
I
O
N
S
?





Thank You

