Lagos, Nigeria

21-23 May 2024

ARE

Energy Access Investment Forum 2024

EAIF 2024

Organised by

Alliance for Rural Electrification

Co-hosted by

Co-Funded by the European Union

Supported by

GET.invest Mobilising Renewable Energy Investments

Under the patronage of

REA RURAL ELECTRIFICATION AGENCY

Konrad Adenauer Stiftung | Public-private dialogue on green job creation in West Africa

EAIF 2024

Moderator

Julia von Franz
Policy & Advocacy Officer
ARE

Panellists

Hon. Solomon Bulus Maren
Consultant/National Coordinator, African Parliamentary Network on Climate Action

Lukas Laible
Deputy Resident Representative to Nigeria, KAS

Kai Forster
Consultant
TEA-LP

Cyprian Okolo
Technical Sales Advisor - Western Africa, Fronius

Monica Maduekwe
Resource Mobilisation and Project Development, ECREEE

#EAIF2024 WiFi : ARE_2024

KONRAD ADENAUER STIFTUNG

Alliance for Rural Electrification

Catalysing Green Rural Job Creation with Decentralised Renewable Energies in West Africa

Julia von Franz
Policy & Advocacy Officer at ARE

Alliance for Rural Electrification

Who we ARE

The **Alliance for Rural Electrification** (**ARE**) is the global association for the decentralised renewable energy (DRE) industry, catalysing private sector-driven markets for sustainable electricity services, creating jobs and powering equitable green economies.

#1
Global electrification association

200+
Members

55+
Countries

3
Continents

ARE Members ***Systems***

Standalone

Mini-grid

ARE Members ***Technologies***

Bioenergy

Hydro

Wind

Power Components

Energy Storage

PV

Alliance for Rural Electrification

© Asantys

Catalysing Green Rural Job Creation with DRE in West Africa

With a focus on Ghana and Senegal

Alliance for Rural Electrification

DRE Bridging the Employment Gap

- A push to **achieve universal access in sub-Saharan Africa** by 2030 would **require 2.8 million jobs** (IEA, 2022)
- **Off-grid value chain** could **create at least 4.5 million jobs by 2030** (IRENA, 2021)
- **Investing in renewable energies** creates close to **3 times more jobs than fossil fuels** do (IRENA, 2021)
- **DRE creates more direct jobs** than **utility-scale renewables** (PowerforAll, 2019)
- DRE can create an **entry point** for informal workers **into the formal economy**
- **DRE** enables an **exponential number of derived jobs**

Alliance for Rural Electrification

KAS-ARE Study on Green Rural Job Creation

Objectives:

- Support the development of a global industry **standard methodology** for **calculating direct jobs** enabled by DRE
- Identify current and future **direct job creation potential of DRE** in Ghana and Senegal
- Present **evidence on job creation through DRE** as a core element of future employment and electrification policies
- **Inspire** others to conduct **further research and collaborative actions** to advance DRE

Alliance for Rural Electrification

Ghana in numbers

Ghana

86% rural urban

15,465 direct jobs in **DRE**
BAU Policy Scenario 2030

23,519 direct jobs in **DRE**
Forward-Leaning Policy Scenario

4,5 M
People w/o access

32%
of capacity from renewables

34% women*

RISE

5th in Africa
RISE overall score: 63
Assesing policies & regulation for energy access, energy efficiency & renewable energy.

85% of the population are employed by micro, small and medium enterprises (MSMEs) who mainly operate in the informal sector

*According to data collected from contributors to this study

Alliance for Rural Electrification

Senegal in numbers

Senegal

68% electrification

12,269 direct jobs in **DRE**
BAU Policy Scenario 2030

20,449 direct jobs in **DRE**
Forward-Leaning Policy Scenario

5,4 M
People w/o access

30%
of capacity from renewables

23% women*

RISE

10th in Africa
RISE score: 54
Assesing policies & regulation for energy access, energy efficiency & renewable energy.

97% of companies work in the informal sector

*According to data collected from contributors to this study

Alliance for Rural Electrification

DRE Impact on the Ground (1/3)

Case Study 1: Resilient Renewable Energy Mini-Grid - Ghana

The Challenge: population with no access to electricity and living in extreme poverty in the Ghanaian village of Ada Foah

The DRE Solution: 5 kW wind turbine and 40 kW PV solar array with 2 48 V battery storages

Project Outcome:

- **20 direct jobs created** within the community (primarily in O&M of the DRE system)
- Capacity building: **Trainings conducted** on how to operate and maintain the system to ensure direct green **job creation in the community** and promote **the transfer of technical skills**
- **200** lives positively impacted

Ryse Energy

Alliance for Rural Electrification

DRE Impact on the Ground (2/3)

Case Study 2: ASER300 – Rural Electrification Project - Senegal

The Challenge: Electrifying 300 remote rural villages with no access to electricity

The DRE Solution: Off-grid solar PV containerised systems (15 to 45 kW)

Project Outcome:

- **55 new direct jobs created** in the local Dakar subsidiary
- **95%** full-time contracts
- **90%** permanent contracts
- **99% of employees are from Senegal** and surrounding countries, including the CEO
- **12 women** above 25-years-old employed
- **Wide range of employment levels**: Managers, professionals, technicians and associate professionals, clerical support workers, plant and machine operators and assemblers and elementary occupations

FF-GRID EUROPE
energy experts

Alliance for Rural Electrification

DRE Impact on the Ground (3/3)

Case Study 3: DESFER Economic and Social Development for Women - Senegal

The Challenge: Remote rural villages in the Kaolac and Ziguinchor regions of Senegal. No access to electricity before the project

The DRE Solution: 64 kWp of solar PV capacity and energy storage (30-50 kWh)

Project Outcome:

- **4,500 local entrepreneurial jobs created for women** in 5 years
- **Type of activities created:** crop transformation to final products, electricity products reseller, electricity operators, system integrators, electricians
- Capacity building: Over 5 years **7,000 women** and **2,500 students** were **trained on** entrepreneurial skills and advanced electricity skills (solar energy installation, industrial automation, etc.)
- Community involvement: The **local bank** supported the entrepreneurs with **micro-loans** so they could start their businesses
- **70-fold increase in induced jobs**

PLAN INTERNATIONAL

Schneider Electric

Alliance for Rural Electrification

Key Findings - study

- DRE is the **least-cost electrification option** to electrify the remaining 675 million people worldwide
- DRE is a key **engine to drive green job creation** and the clean energy transition in emerging market
- DRE can create an **entry point** for informal workers **into the formal economy**
- With the right policies, DRE could create as many as **40,000 direct jobs by 2030** in Senegal and Ghana

Alliance for Rural Electrification

Key Findings – Public-Private Dialogues

Main needs

- Direct jobs
  - Training
  - Regulation
  - Cooperation
  - Funding
  - Data

- Indirect/induced jobs
  - Training
  - Funding

Opportunities

- Banks
- Private sector
- Community
- Local manufacturing
- Social inclusion
- Sustainability

Alliance for Rural Electrification

Call to action

- More ambitious target
- Supporting regulatory environment
- Adequate training
- Facilitation of access to funding
- Planning – data
- Awareness raising
- Social inclusion

Further **public-private dialogue and collaboration** enabling an upscaling of DRE to drive rural development and green job creation in West Africa.

Read the publication now

Alliance for Rural Electrification

Julia von Franz
Policy & Advocacy officer
j.vonfranz@ruralelec.org
Renewable Energy House
Rue d'Arlon 63-67
1040 Brussels
Belgium
–
are@ruralelec.org
+32 2 400 10 00

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EAIF 2024

Coffee break

We'll be back at 11:15 (WAT)

#EAIF2024

African Development Bank | Innovation and Collaboration in Technical Assistance for Mini-grids

EAIF 2024

Sustainable Energy Fund for Africa

Robert Aitken
Africa Mini-Grid Market Acceleration Programme (AMAP) Officer, SEFA

Christelle Odongo
Africa Energy Access Specialist
UNDP

#EAIF2024

WiFi : ARE_2024

Bhoomika Tiwari
Technical Advisor
GET.transform / GIZ

Samuel Sebbowa Bunnaya
Project Coordinator
AFUR

Sustainable Energy Fund for Africa

Innovation and collaboration: Technical assistance in the GMG sector

EAIF 2024

AMAP

Africa mini-grids acceleration programme

EAIF PRESENTATION

AFRICAN DEVELOPMENT BANK GROUP

SEFA Sustainable Energy Fund for Africa

AMAP context and response

The Africa Mini-grid Acceleration Programme (AMAP) provides TA support to several African countries

AMAP

The **Africa Mini-Grid Market Acceleration Program (AMAP)** is a **technical assistance (TA) program** funded and implemented by the Sustainable Energy Fund for Africa (SEFA)

7M

With $7m in funding to be disbursed over 4 years, the main objective is to accelerate **private-sector mini-grid investment** on the African continent to accelerate the energy transition

PHASE I

AMAP Phase I works to accelerate markets in the **following countries**; Mauritania, Cameroon, Mali, Angola, Chad, Mozambique and Madagascar

AMAP objectives

1

Removing market barriers

2

Providing strategic support to national agencies and institutions

3

Developing financial instruments, providing financia land legal structuring support to mini-grid developers

4

Enabling regional-level interventions across the mini-grid ecosystem

AMAP programme outline

Pillar 1

Public sector readiness

Pillar 2

Access to finance

Pillar 3

Developer support

Pillar 4

Management

AFRICA MINIGRIDS PROGRAM

Africa Minigrids Program (AMP)

EAIF 2024

Supported by: gef

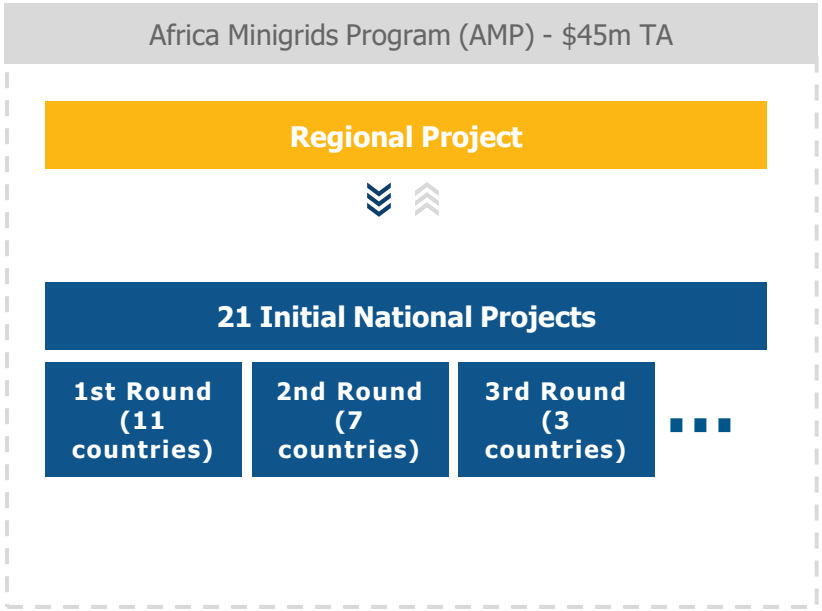
Led by: UNDP

In partnership with: RMI

THE AFRICA MINIGRIDS PROGRAM (AMP)

The AMP is a Country-led technical assistance program for minigrids.

Its objective is to support access to clean energy by increasing the financial viability, and promoting scaled-up commercial investment, in renewable energy minigrids in Africa, with a **focus on cost-reduction levers and innovative business models.**



Comprised of **country-level interventions in an initial 21 countries in Africa** and complemented by a **'regional platform'** acting as the advocacy, coordination and knowledge management hub for the program.

Implementation started in Q3 2022 and will continue until 2027.

- 1st Round - fully designed - started implementation in Q3 2022
- 2nd Round – approved by the GEF – Implementation start early 2024
- 3rd Round - under preparation - Implementation start in 2024

AMP CORE PROGRAM PARTNERS

AFRICA MINIGRIDS PROGRAM

GEF - MAIN DONOR	• Total GEF-7 funding $33.2 million (m) • $24.3m (1st Round, allocated in Dec. 2019) • $8.1m (2nd Round, allocated in Jun. 2021) • $0.8m (3rd Round, allocated in Jun. 2022)
UNDP - LEAD PARTNER	• Executing regional project • Working with national government partners in executing majority of GEF-funded national projects • Total co-financing $9.8m ($4.7m for 1st Round, $2.8m for 2nd Round, $2.4m for 3rd Round)
RMI - JOINT DESIGN/EXECUTION PARTNER	• Joint partner with UNDP for program design and execution of AMP regional project
AFDB - PARTICIPATING PARTNER	• Executing/funding ($2m) national projects in Madagascar (jointly with UNDP) and Angola • Providing parallel financing for a sub-set of AMP projects (Benin, Ethiopia, Niger, Nigeria, STP, Zambia, Regional)
NATIONAL GOVERNMENTS - IMPLEMENTING PARTNERS	• National implementation of all national projects (except Somalia and Madagascar)

AMP PARTICIPATING COUNTRIES

These 21 countries together host an estimated total of **396 million people without electricity**, or more than two thirds of the **567 million** total people without access to electricity in Sub-Saharan Africa (SDG7 Progress Report 2022).

1st ROUND: 11
GEF Dec 2019

- **Angola****
- **Burkina Faso**
- **Comoros**
- **Djibouti**
- **Eswatini**
- **Ethiopia**
- **Madagascar****
- **Malawi**
- **Nigeria**
- **Somalia**
- **Sudan**

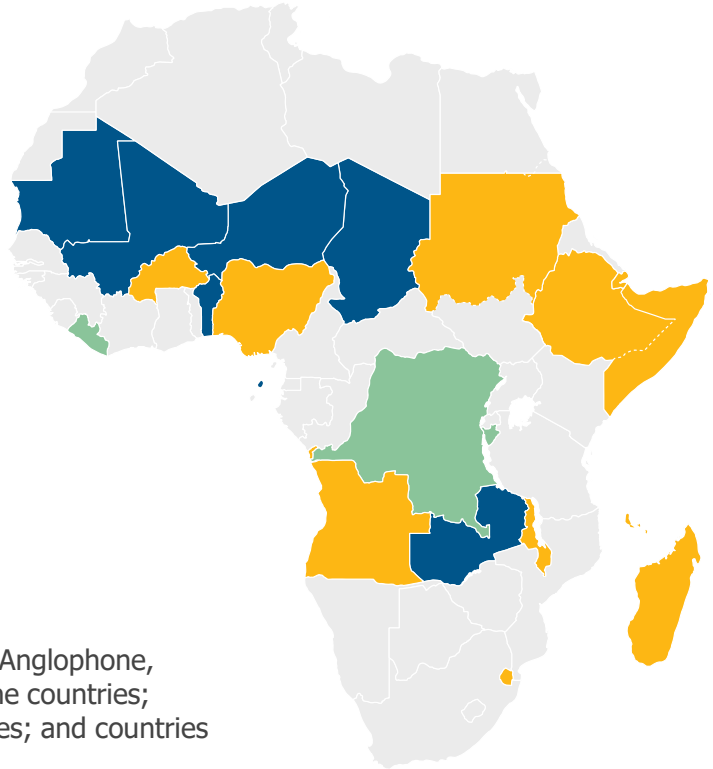
** (third-party-funded)

2nd ROUND: 7
GEF June 2021

- **Benin**
- **Chad****
- **Niger**
- **Mali**
- **Mauritania****
- **Sao Tome e Principe**
- **Zambia**

3rd ROUND: 3
GEF June 2022

- **DRC**
- **Burundi****
- **Liberia****



Large and smaller markets; Anglophone, Francophone, and Lusophone countries; Small island developing states; and countries in post-crisis context.

The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations or UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

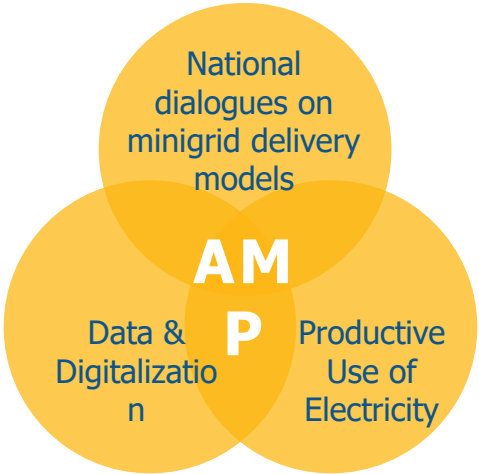
AMP - PROGRAMMATIC FOCUS/VALUE-ADD

AMP's objective of reducing minigrids costs is achieved via country-level activities across four thematic areas (components) with a focus on three Key Areas of Opportunity

National Projects Components

1. Policy and Regulations
2. Business Model Innovation with Private Sector
3. Scaled-up Financing
4. Digital, and Knowledge Management
5. Monitoring and Evaluation (M&E)

Three 'Key Areas of Opportunity' for AMP to drive minigrid cost-reduction



PROGRAM DELIVERY FRAMEWORK

AFRICA MINIGRIDS PROGRAM

The AMP will have a country-based focus, while also maximizing opportunities for South-South/Triangular Cooperation and providing backstopping through an organized "chapeau" project which will be implemented by UNDP and PMI

Minigrids ecosystem

Disseminate existing knowledge and tools with participating AMP countries

Systematically engage with and disseminate knowledge with broader minigrids sector in Africa

Regional Project – Knowledge & Coordination Platform

Component 1
Knowledge Tools

Component 2
Tailored Technical & Operational Assistance to National Child Project Implementation

Component 3
Communities of Practice

Component 4
Digital tools and solutions for minigrid cost-reduction

Component 5
Monitoring and Evaluation (M&E)

Support to national project implementation

Harnessing data and insights from national project implementation to share with minigrids ecosystem

21 Initial National Projects

Energy Access Investment Forum (EAIF) 2024

PRESENTATION

AFUR – WHO ARE WE?

- AFUR – A Pan African Intergovernmental organization established on the basis of Clause 110 of the Framework Document of the New Partnership for Africa's Development (NEPAD) now AUDA.
  - AFUR has 36 Energy Regulator Members and 5 Energy Regulator Observers
  - AFUR works to support the development of effective utility regulation across the African Continent

AFUR – WHO ARE WE?

ENERGY SECTOR
ERA Uganda – Sector Chair

TRANSPORT SECTOR
LATRA Tanzania – Sector Chair

COMMUNICATION SECTOR
TBD – Sector Chair

WATER & SANITATION SECTOR
PURC Ghana – Sector Chair

CROSS-CUTTING SECTOR
MERA Malawi – Sector Chair

PROJECTS AND INNOVATIONS OF AFUR

- Phase One Mini-grids Project; Mainstreaming Mini-grid Tariff Settlement Tools and Methodologies Across African Regulators
  - Enhanced Mini-grid Tariff Settlement Tool
  - Model Mini-grid Regulations Guidelines
- Electric Vehicle Regulations Project
- Maritime Regulations for Africa Project
- Infrastructure Asset Management Project
- Phase Two Mini-grids Project; The Africa Mini-Grid Electrification Drive

Merci beaucoup

Thank You

CONTACT AFUR:

https://afurnet.org/

BHOOMIKA TIWARI
Technical Advisor

Innovation and Collaboration

New approaches to technical assistance

GET.transform is supported by

Systematic Approach to Scaling Impact

1 Energy Transition Advisory Services

- Long-Term Energy Planning
- Renewable Energy Grid Integration
- On-Grid Regulation & Market Development
- Off-Grid Regulation & Market Development

Eco-System for the Energy Transition

2 Partnerships

Regional

- AUC, AUDA-NEPAD, AFUR, APUA
- UN ECLAC, CIER, OLADE, SICA

International

- IRENA, EU G-TAF, PFL, G-PST, GIZ

Country

- Uganda
- Mozambique
- Eswatini
- Peru
- Lesotho
- Namibia
- + Zimbabwe, Central America

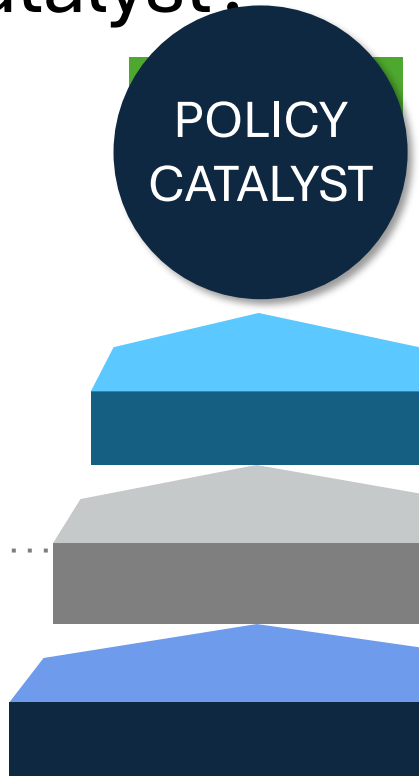
Cooperation Agreements with Governments and Implementing Agents

3 Learning & Scaling Up

- Knowledge Products
- Refining of Advisory Services
- Scaling across GIZ: Leveraged Partnerships
- Policy Catalyst

Dissemination and Replication across Partnerships

Why a Policy Catalyst?



SCALING

Scale GET.transform's impact beyond country windows

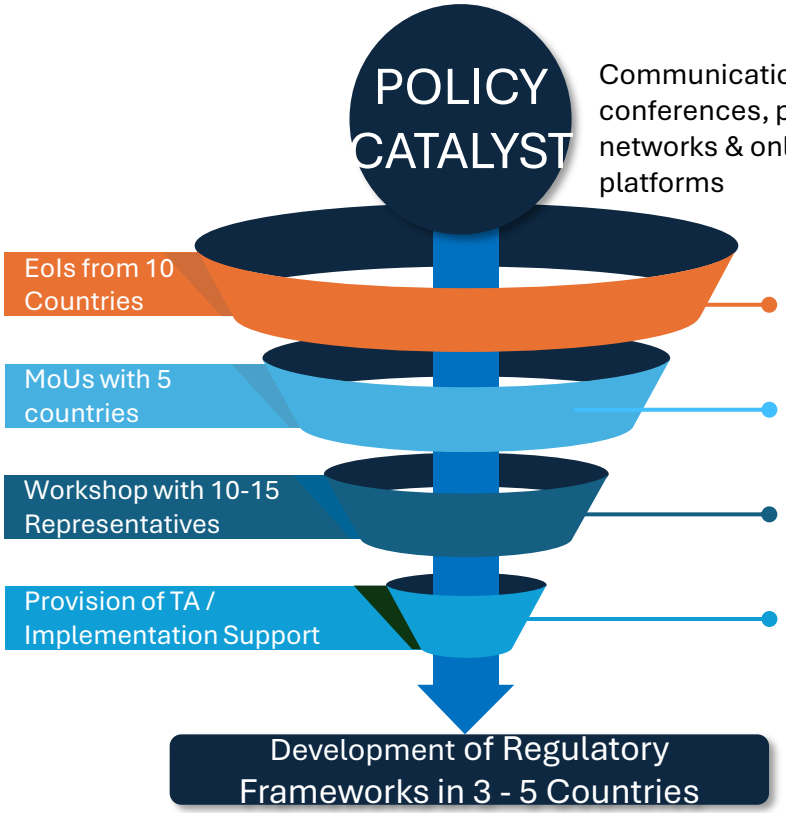
HARMONISATION

Hamonise approaches across countries and regions

SYNERGIES

Complement sector knowledge and enhance collaborative action

GET.transform Policy Catalyst



Current Look of Policy Catalyst

POLICY CATALYST THEMATIC WINDOWS

Distributed Generation

- Implemented by **SEA** in partnership with **AFUR and APUA**

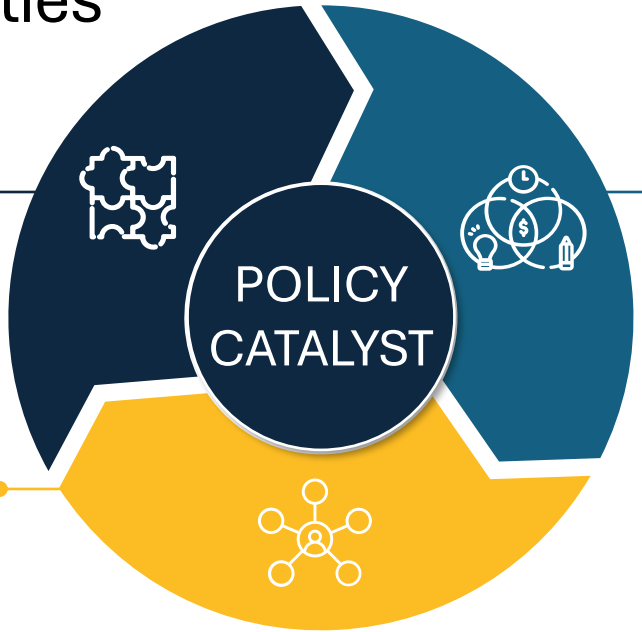
RE Effective Tendering

- To be implemented by **PFL** in partnership with **SRMI and IRENA**

Mini Grids

- Implemented by (TBD) in partnership with AFUR and others

Policy Catalyst Partnership Modalities



Implementing Partners

Training Organisations, Grantees
Policy Catalyst Consulting Pool
GET.transform Expert Pool
E.g.: SEA, ASR, PFL

Knowledge Partners

Co-Owners/co-sponsors of Studies and Templates
Repositories of Regulatory Templates/Models
Academia
E.g.: AFUR, RETA, SRMI, IFC, AfDB

Promotional Partners

Endorsing, Referring Bodies
GET.pro Instruments
Regional Organisations
Sectoral Programmes
Donors
Industry Associations
E.g.: EUD, GET.invest, AFUR, AUC

Thank You for Your Attention!

BHOOMIKA TIWARI
Technical Advisor

E-mail: bhoomika.tiwari@giz.de

GET.transform is supported by

Thank you!

Panel discussions

EAIF 2024

African Development Bank | Innovation and Collaboration in Technical Assistance for Mini-grids

EAIF 2024

Sustainable Energy Fund for Africa

Robert Aitken
Africa Mini-Grid Market Acceleration Programme (AMAP) Officer, SEFA

Christelle Odongo
Africa Energy Access Specialist
UNDP

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Bhoomika Tiwari
Technical Advisor
GET.transform / GIZ

Samuel Sebbowa Bunnaya
Project Coordinator
AFUR

Sustainable Energy Fund for Africa

EAIF 2024

Lunch Break

We'll be back at 14:30 (WAT)

Yellow lanyards: Red Restaurant (1st floor)
Grey lanayards: Sky Restaurant (lift next to reception – top floor)

#EAIF2024

GET.invest | Scaling up Finance for E-Mobility

EAIF 2024

Moderator

Ibidun Oludipe
Advisor
GET.invest

Panellists

João Duarte Cunha
Head of Division, Renewable Energy & SEFA, AfDB

Nico Peterschmidt
CEO
INENSUS

Sunnie Omeiza-Michael
Director, Research & Advocacy
Lagos Chamber of Commerce & Industry

Adetayo Bamiduro
Co-founder
MAX

Koye Alaba
Director, Financial Analysis,
GreenMax Capital Advisors

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GET.invest
Mobilising Renewable Energy Investments

Powering Electric Mobility in Nigeria

Market Insights Package
EAIF 2024

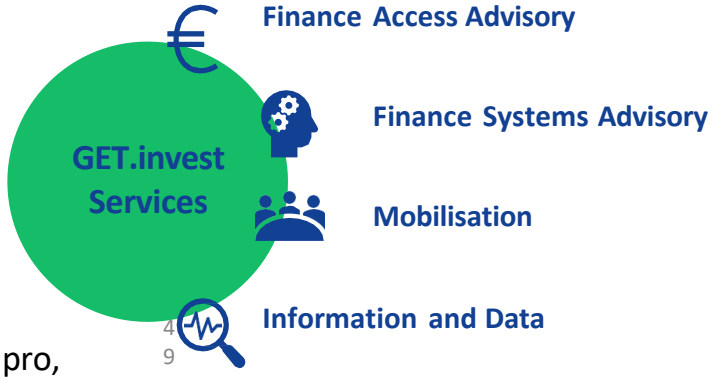
GET.invest is supported by

Contents

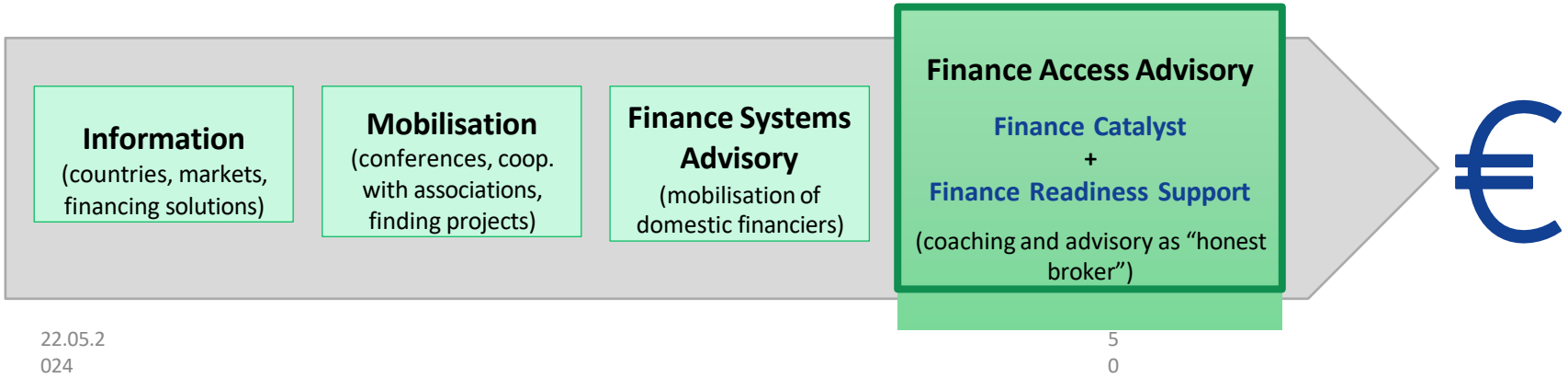
- Introduction to GET.invest and its services
- Presentation on the Market Insights Package in Nigeria

GET.invest: Overview

- **Leading European** programme **mobilising investment** in renewable energy, **building a pipeline** of investment-ready projects
- **Team Europe One Stop Shop** for Green Energy Investments
- **Supports all relevant delivery models**, incl. on- and off-grid electricity, clean cooking, productive use
- **Broad partner network** incl. financiers and associations
- **Active in Sub-Sahara Africa**, the **Caribbean** & the **Pacific**
- Implemented by **GIZ**, hosted on the multi-donor platform GET.pro, and supported by the **European Union, Germany, Norway, the Netherlands, Sweden, and Austria**.



GET.invest Scope of Services

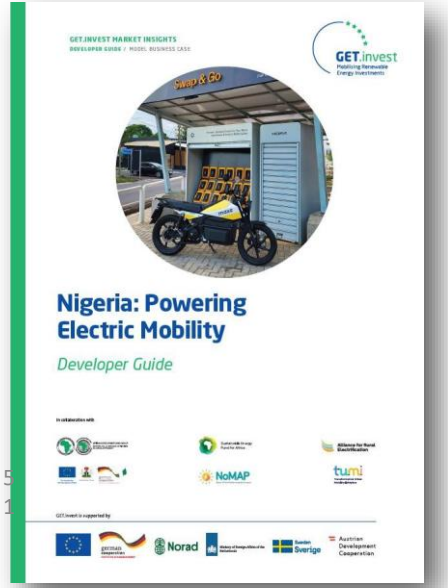


The 2023 Market Insights Packages

- Each package consists of
  - **A Developer Guide**
  - **Two Model Business Cases**

- 5 Market Insights packages:

1. **Burundi** (Small Hydropower and Rural Development)
2. **Uganda** (Renewable Energy Cooling and Processing for the Food Industry)
3. **Mozambique** (Commercial and Industrial (C&I) Solar Applications
4. **Mozambique** (Renewable Energy Independent Power Producer (IPP) Projects)
5. **Nigeria** (Powering Electric Mobility)



Market Insights

Market Insights Package: Nigeria

Powering Electric Mobility

The Developer Guide: A **manual** for the private sector to set up a business.

Sub-Saharan Africa

- Policy and regulatory framework
- Regional market characteristics
- E-Mobility Business Models
- Financing E-Mobility

Nigeria

- Electricity Sector Profile
- Market Development
- E-mobility as a Productive Use opportunity
- E-Mobility company profiles

Route-to-Market

- Investment opportunities
- Market sizing
- Business registration
- Challenges for Project Developers
- Financing landscape

Sneak Peek into the Developer Guide

GET.invest
Mobilising Renewable Energy Investments

E-Mobility Company Profiles

26 sub-Saharan Africa and **16** Nigerian companies

ANNEX 2

E-mobility Companies in sub-Saharan Africa[178]

COMPANY	COUNTRY/COUNTRIES OF OPERATION	PRODUCTS/SERVICES	DESCRIPTION	BUSINESS MODEL
AMPERSAND	Rwanda and Kenya	E-motorcycles, smart batteries and battery swap stations	Ampersand sells e-motorcycles that are slightly more expensive upfront than gasoline models. The company partners with asset finance companies to make them more accessible. Ampersand operates battery swap stations in Kigali and Nairobi. As of June 2023, the fleet reached 1,000 e-motorcycles in Kenya and Rwanda and 115,000 monthly swaps. Each battery delivers 350,000 km of range over its lifetime, and 50-110 km per swap, depending on the terrain and usage.	E-motorcycles via asset finance and battery swap stations (Battery-as-a-Service)

Financing Rounds

ANNEX 1

Financing Rounds of E-Mobility Companies in sub-Saharan Africa

ANNEX 1.

COMPANY	COUNTRY/COUNTRIES OF OPERATION	INVESTORS/FINANCIERS	DESCRIPTION
AMPERSAND	Kenya	— Ecosystem Integrity Fund (EIF) — Acumen — Hard-Edged Hope Fund — Alphamundi VC, — Societe Petrolieres du Rwanda — TotalEnergies — Beyond Capital Ventures — Africa Go Green Fund	— In 2021, Ampersand secured USD 3.5M from Ecosystem Integrity Fund (EIF), a venture capital firm that invests in early-stage companies contributing to environmental sustainability. — In January 2024, Ampersand raised USD 19.5M in equity and debt funding to expand its operations. The USD 19.5M funding round was led by EIF and joined by Acumen and Hard-Edged Hope Fund. Other investors include Alphamundi VC, Societe Petrolieres du Rwanda, TotalEnergies and Beyond Capital Ventures. — It also includes a USD 7.5M debt facility from Cygnum Capital's Africa Go Green Fund.[362]

Sneak Peek into the Developer Guide

GET.invest
Mobilising Renewable Energy Investments

Investment Opportunities

TABLE 9. Investment opportunities for e-mobility in Nigeria

MARKET SEGMENT	DESCRIPTION	INVESTMENT OPPORTUNITY
EV manufacturing and assembly	— Establishing or partnering with local EV manufacturing or assembly plants	— In 2023, the National Automotive Design and Development Company (NADDC) adopted a new 10-year Nigerian Automotive Industry Development Plan (NAIDP), which includes incentives for automotive industry manufacturers, investors and developers to scale up EV adoption in Nigeria. The plan also promotes local EV production, with tax relief for EV manufactures and licensing requirements established for auto assembly plants in the country.[137] — The plan aims to position Nigeria as a regional EV market leader and includes a target of achieving at least 30% local EV production by 2030.[138] — Additional fiscal incentives are under development, including import duty and tax exemptions for EVs and their components – measures that could significantly reduce costs for e-mobility operators in Nigeria.[139] — In July 2023, the NADDC announced that an Electric Vehicle Development Plan has entered the final stages for ratification and implementation (the plan has yet to be adopted as of mid-2024).[140]

22.05.2024

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Innovation Opportunities

BOX 8. Nigeria Energy Support Programme (NESP): MAX-Rubitec EV-mini-grid pilot project

The Nigerian Energy Support Programme (NESP) is co-funded by the EU and the German Federal Ministry for Economic Development and Cooperation (BMZ) and is jointly implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in collaboration with the Federal Ministry of Power. Under the first phase of the programme, six (6) solar PV mini-grids were developed and are providing sustainable electricity to more than 15,000 people. It is expected that NESP II will reach another 100,000 people under the Mini-grid Acceleration Scheme (MAS).

Under the NESP, the REA explored opportunities to advance the use of EVs and sustainable transport solutions in rural and peri-urban communities to ensure that the benefits of e-mobility extend beyond urban centres and reach rural areas, where over 70% of Nigerians live. In 2020, a pilot project was launched in Gbamu-Gbamu, Ogun State (one of the mini-grid sites supported by NESP during the first phase of the programme) to assess the potential for EVs to support rural economic development while also stimulating electricity demand for solar mini-grids. The pilot project involved a battery-swapping business model whereby Nigerian e-mobility company, MAX, leased electric two-wheel EVs to certified local drivers in the community, who used the vehicles to transport people and goods to hubs within a 20-km radius, using a solar mini-grid operated by Rubitec Nigeria Limited to charge the EV batteries (and consuming about 1 kWh of mini-grid electricity per daily rental). The battery swap charging model concentrated charging loads during daylight hours, which correlated well with surplus solar electricity generated by the mini-grid system. The pilot successfully demonstrated that the two clean technology solutions can complement each other to address both transportation and electrification needs in rural communities. An important finding of the study was that high vehicle utilisation is the key to strong revenues and to realising the EVs' operating cost advantage over ICE vehicles – even at the electricity prices required to sustain isolated rural mini-grids.[147] The accompanying Model Business Case on MiniGrid-Powered Rural E-Mobility Project is loosely based on this pilot and elaborates further on the financial viability of such a business model.

E-Mobility and Energy Transition

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Challenges

- **The Transport Sector** :
  - Accounts for ~25% of GHG emissions
  - Causes high levels of pollution serious health risks to population
- **Motorcycles**
  - Are the fastest-growing mode of transportation
  - Emit 3X more particulate matter than cars
  - Are the largest source of emissions and local pollutants

Opportunities

- **Emission reductions:** Reduced reliance on fossil fuels improved air quality, public health
- **Economics:** Lower life-cycle cost of EV ownership for end users
- **Job creation:** Motorcycles support the livelihoods of over 100 million people in sub-Saharan Africa
- **Market opportunity:** Global investments in electrified transport was **USD 1.8 trillion in 2023** (up 17% on the previous year)

Catalysing E-Mobility Market Growth

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100,000 EVs added within 2 years in Ethiopia due an import ban on ICE vehicles with policy and tax incentives!

Barriers

- Absence of a roadmap to guide EV development
- Limited access to financing
- Limited charging infrastructure
- Unreliable electricity supply
- Dependence on fossil fuels
- Poor road networks/transportation infrastructure

Drivers

- Integrated, long-term EV sector planning/roadmap
- Enabling policies, regulations and incentives, **tax exemptions** for EVs and batteries
- Mechanisms to promote access to financing, especially **asset financing** solutions
- Policies to limit the importation of ICE vehicles
- Trade policies and regulations to encourage domestic EV manufacturing
- Consumer awareness raising of benefits of e-mobility and cost savings of switching to an EV

ngoing Efforts for an mproved Enabling Environment

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- Energy Transition Plan
- 10-year Nigerian Automotive Industry Development Plan (NAIDP)
- Electric Vehicle Development Plan (under development)
- MAX–Rubitec EV Mini-Grid Pilot Project, Ogun State
- Husk Power motorcycle leasing/battery swapping pilot, Nasarawa State

Estimated Average Annual e-motorcycles Sales by 2030 = **215,000**

Nigeria Specific Challenges

- Lack of defined roadmap/incentives
- Outdated infrastructure, unreliable power grid
- Relatively low fuel price
- Limited access to financing, FX risks
- Conflict and security concerns
- Lack of Awareness
- Limited indigenous technical expertise

Cost Comparison Analysis

ANNUALIZED COST	E-MOTORCYCLE	ICE MOTORCYCLE
Capital Cost	€478	€177
Fuel/Charging Cost	€102	€525
Maintenance Cost	€118	€236
Insurance Cost	€36	€21
Total Annualized Cost	**€734**	**€959**

Over the average four-year life of a motorcycle, switching to an e-motorcycle results in **annualised cost savings of €224**, or **23% per year**

Market Insights Package: Nigeria

Powering Electric Mobility

1. **Urban E-Mobility Business Model Business Cases:** A **financial feasibility analysis** of the below businesses:

A hypothetical company that offers two-wheel electric vehicle (EV) rental and operates a network of smart EV battery swapping stations in urban areas in Nigeria

2. **Mini-grid Powered Rural E-Mobility Project**

A hypothetical project deploying two-wheeled electric vehicles (EVs) for mobility in a rural community in Nigeria powered by a solar mini-grid

Each MBC contains:

1. A **Financial Analysis** comparing NGN and EUR denominated debts
2. A **Sensitivity Analysis** varying rental fees against grant levels, vehicle utilisation rates, debt interest rates, CAPEX/OPEX, local currency depreciation and iInflation.

Model Business Case 1

Urban E-Mobility Business

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Key Takeaways

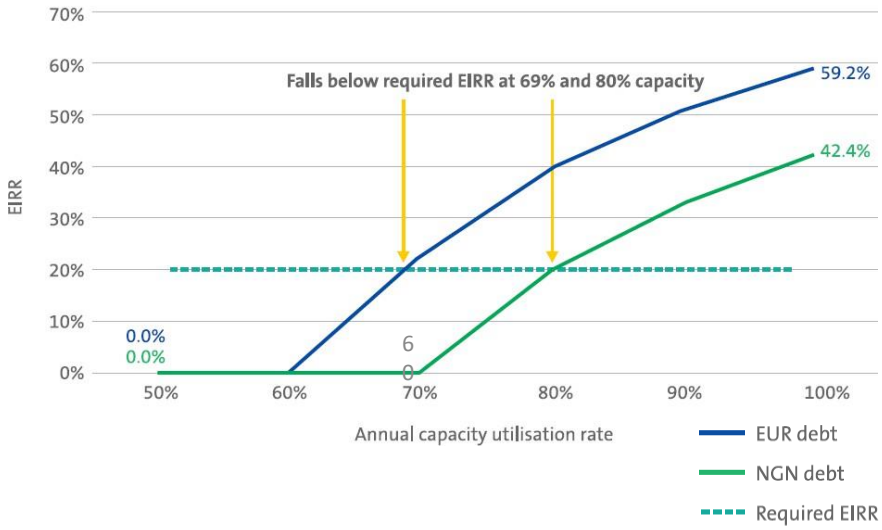
The viability of the Company will depend on:

- A consistent vehicle utilisation rate of **> 69%**
- Periodically increasing its daily rental fees to cushion currency depreciation
- Managing capital and operating costs

In terms of funding, the Company will require:

- **Grant funding** in the early years; and
- **Patient capital** due to the long period before achieving positive cash flows.

FIGURE 2. Equity IRR at various daily vehicle utilisation rates



Model Business Case 2

Mini-grid Powered Rural E-Mobility Project

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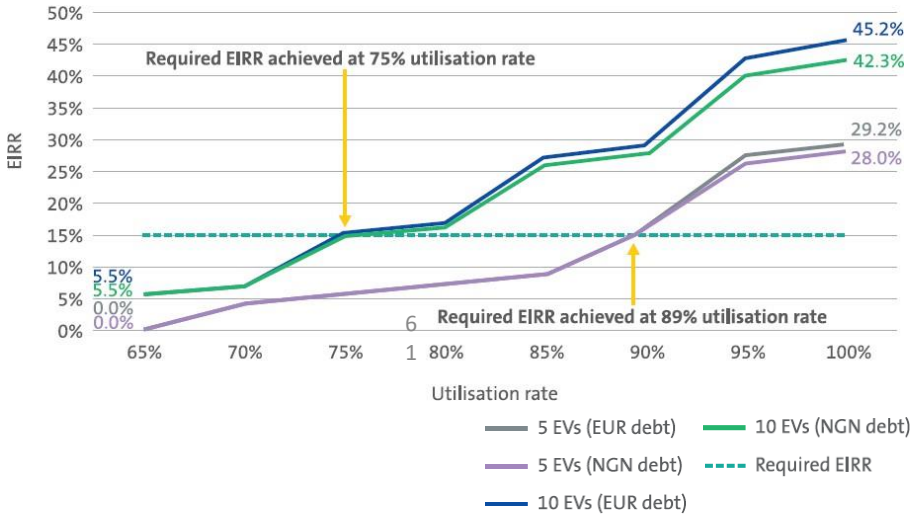
Key Takeaways

The viability of the Company will depend on:

- A consistent vehicle utilisation rate of **> 75%**
- A maximum mini-grid tariff of **EUR 0.19 (NGN 255) per kWh**
- **Grant funding** to charge rental fees that drivers will be willing to pay
- Stability of the NGN
- The ability of the EV operator to **increase rental fees**
- Managing capital and operating costs

FIGURE 3. Equity IRR at various utilisation rate and fleet size levels



Thank You For Your Attention!

IBIDUN OLUDIPE
Advisor
GET.invest
E-mail: Ibidun.oludipe@get-invest.eu

KOYE ALABA
Director, Financial Analysis
GreenMax Capital Advisors
E-mail: kalaba@greenmaxcap.com

www.get-invest.eu @GET_invest @GET.invest

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Moderator

Ibidun Oludipe
Advisor
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Panellists

João Duarte Cunha
Head of Division, Renewable Energy & SEFA, AfDB

Nico Peterschmidt
CEO
INENSUS

Sunnie Omeiza-Michael
Director, Research & Advocacy
Lagos Chamber of Commerce & Industry

Adetayo Bamiduro
Co-founder
MAX

Koye Alaba
Director, Financial Analysis,
GreenMax Capital Advisors

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Thank you!

See you at 18.00 by the pool for the **reception!**

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