The Private Sector's Role in Rwanda's Path to Universal Access to Electricity.

By

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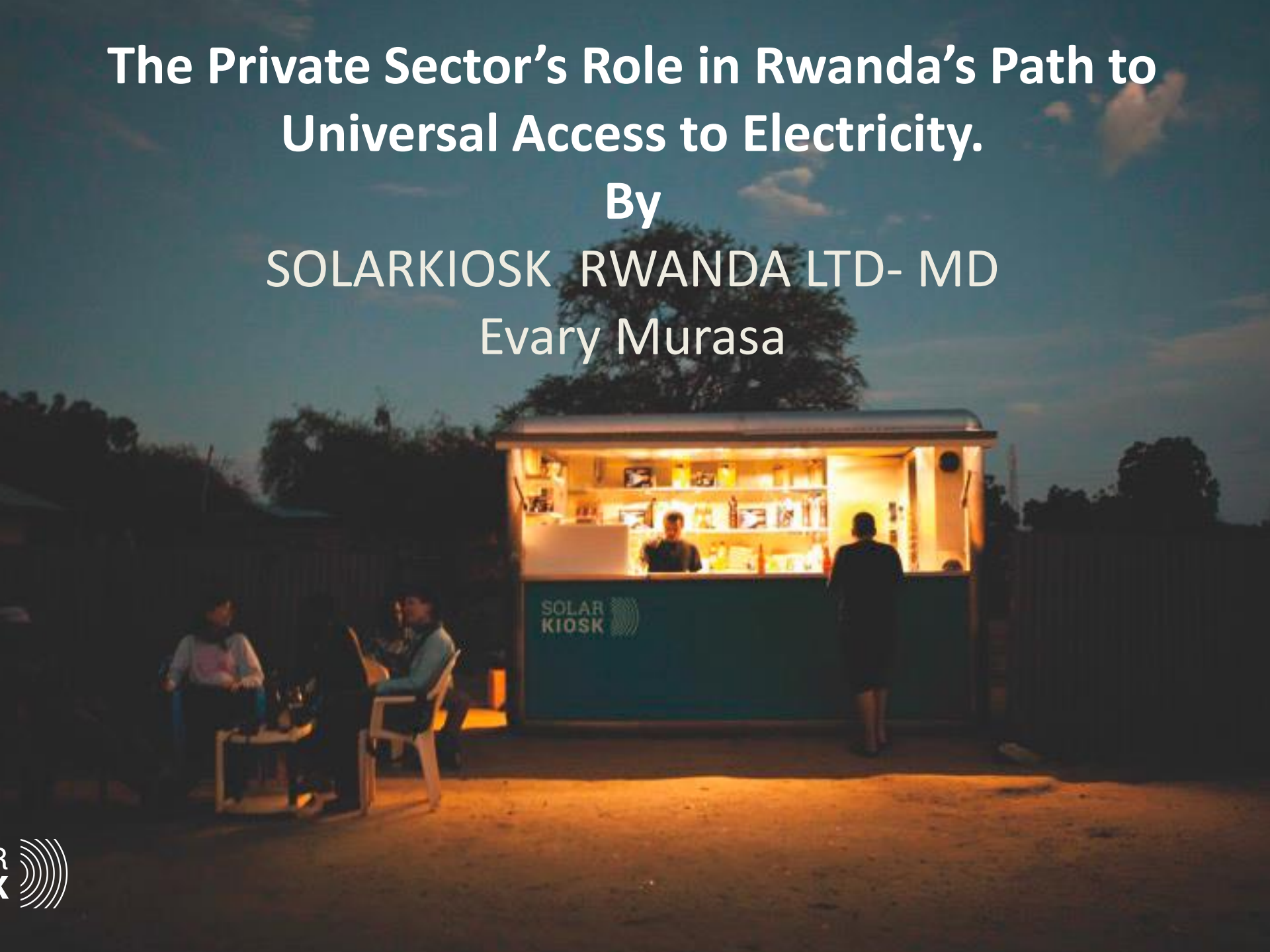
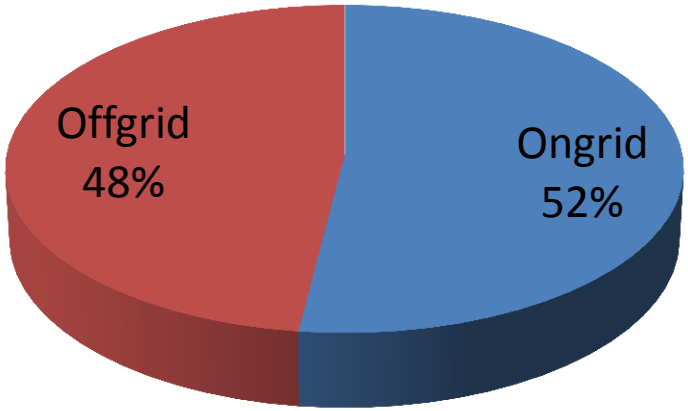


Rwanda Overview:

- Population Size : **Above 12M**
- Access to Electricity :51%
  - Grid ~37 %,
    - Target: 52%
    - **15% market Potential**
  - Off grid ~ 14%
    - Target 48%
    - **34% Market Potential**
- Target : 100% by 2024
  - 48% Total Grid +Off grid Market Potential
- **Installed Capacity: 218MW**
  - **Hydroelectric: 98MW**
  - **Thermal: 103MW**
  - **Solar: 12MW**
- Households without Power: 1.7 million
  - **Target: Universal access by 2024 (52% on-grid, 48% off-grid)**

Rwanda Grid Vs Offgrid Market



Roles and Responsibilities Of the Private sector

1) **<u>Compliance</u>** :
   - For standalone solar systems,
     - **Product Requirements :**
       - Must be Lighting Global Certified or another appropriate standard
       - Three (3)lamps of at least 120 lumens each, operating at least four (4) hours per day;
       - A mobile phone charge supply for at least one (1) hour per day,
       - A radio charge supply for at least 6 hours per night
     - **Warranty Requirements**
       - A minimum of three (3)years warranty
       - Availability of spare parts and Technical service for a minimum 5 years after the installation of the system.
   - For mini-grids, conform to standards set by the Rwanda Standards Board-commit to a minimum service and warranty polices
   - Report to EDCL quarterly, providing sales and other relevant information

Specifications :

Table-Minimum requirements for different components of the Solar Home System

No	Equipment	Technical specifications
1	**Lamp**	
1.1	Type	Light Emitting Diode (LED)
1.2	Minimum number of lumens per lamp	120 lm
1.3	Minimum Power consumption[1]	1 W
1.4	Minimum system life time	20,000 hours
2	**Solar PV Panel**	
2.1	Cell type	Crystalline or Poly Si
	Minimum System Voltage[2]	12V
2.2	Minimum Watt Peak	12 Wp
3	**Battery**	
3.1	Type	Deep cycle, maintenance free
3.3	Minimum Battery Storage Capacity	30Wh or 3Ah/12V
3.4	Maximum Depth of Discharge (DoD)	80%

Quality requirements

Quality standards, warranty requirements, and performance targets are used to interpret the measurements and observations made about a product.

The Institution in charge of Standards shall ensure that products of the Solar Home systems comply with the requirements of :

- **RS IEC/TS 62257-9-5,**
- **RS IEC/TS 62257-12-1,**
- **RS IEC 62124,**
- **RS IEC 61215,**
- **RS IEC 62093,**
- **RSIEC 62509,**
- **RS IEC 61951,**
- **RS IES 60896and**
- **RS IEC 61960**

– Aproof of conformity must be issued by accredited body and recognized under IEC Conformity Assessment and / or Lighting Global

Specific standards applied to different system types.

No.	Corresponding Equipment	Standard (Test method and Minimum requirement)
1	Quality requirements for equipment less than 350 W	RS IEC/TS 62257-9-5 Lighting Global Pico PV Quality Standards LG Solar Home System Kit Quality Standard
2	Component based Solar Home system	RS IEC 61215 (PV Module) RS IEC/TS 62257-12-1 (Lamps) RS IES 60896 (Lead Acid Battery) RS IEC 61960 (Lithium Batteries) RS IEC 61951-2 (Nickel Metal Hydride Batteries) RS IEC 62509 (for Charge Controllers) RS IEC 62109-1 and RS IEC 62109-2 (PV Inverters reliability test) RS IEC 62124 (Stand Alone System Design Verification)

Type Approval

Firms that wish to import Solar Home Systems that do not fall within the range specified in requirements due to emerging technologies but meet the minimum service level requirement are required to :

- submit the product specifications
- request for exceptional approval and
- Justification to RSB prior to its importation.
- Exceptional approval, if granted, allows any firm to import,
- market or sell Solar Home Systems with the exceptionally approved product specifications in Rwanda, and
- makes the exceptionally approved product specifications eligible for support under the Rural Electrification Program

Private Sector Challenges and Interventions

Challenges :

1) Limited financing for off grid companies
2) Misalignment of power supply and demand
3) Limited affordability by consumers

Interventions :

1) Clear Electrification strategy by policy makers to define off grid from on grid areas – to align supply with demand
2) Establishment of Unique financing models including but not limited to :
   1) Rwanda Energy fund and
   2) RBF

   To create access Finance
3) Direct subsidies from the government to abject poor category -to tackle affordability bottlenecks

Thank you for your time and Attention !