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INTERNATIONAL ONLINE CONFERENCE

OFF-GRID SOLAR SYSTEMS: TOWARDS SUSTAINABLE AND SCALABLE BUSINESS MODELS

26TH, 27TH, AND 28TH SEPT 2023 ● 3:00PM - 6:00PM CAT

THIS EVENT IS CO-FUNDED BY: The Rockefeller Foundation, enel Foundation, EUROPEAN UNION

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INTERNATIONAL ONLINE CONFERENCE

Off-GRID SOLAR SYSTEMS: TOWARDS SUSTAINABLE AND SCALABLE BUSINESS MODELS

September 26, 27 & 28, 2023

Open issues & key lessons learned

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Disclaimer

- This summary represents my personal views & takeaways after these two very informative days at the conference & not the official position of the ASR, GOGLA or any of its members.
(although I hope it does or will!)

An enabling environment for OGS business

Regulatory shortcomings
& requests for support

“We must find ways to scale the OGS solutions and make them accessible.
Creating an enabling environment is crucial to reach untapped markets.
To ensure lasting success, electrification planning should clearly identify areas suitable for OGS. This should be backed by regulatory and policy environment.”

(Opening remarks, Damilola Ogunbiyi, CEO of SEforALL)

Highlights – 1

- Technology innovation has been & is expected to be a key driver of the OGS sector.
- The volume, evolution & type of the demand for OGS products depends much on country conditions.
- The implications of trying to achieve sustainable & scalable OGS business models under conditions of massive needs of funding & low affordability.
- The diversity of business models in terms of payment, customer support & commitment to continuity of supply, with growing presence of PAYG as the underlying technology.
  - Customer preference for rent-to-own. But a service driven model makes life easier for the customer.
- Improve bankability & acceptance by combining with other uses
  - Internet, productive uses.

Highlights – 2

- How can regulation help?
  - Ensure product quality, there is lack of enforcement.
  - Provide certainty to investors. However, flexibility to adapt to changing conditions.
  - Electronic waste needs regulation & enforcement.
  - Navigating the regulatory & licensing landscape is difficult.
  - The need for targeted & timebound (?) subsidies. Advantages of subsidies embedded in regulated tariff design. Try to avoid market distortion. Specific subsidies for productive uses.
  - Frequent absence of OGS or even minigrid policy.
- Minimum demand level must be related to technology & affordability & prescribed in national electrification strategy, also the reliability target. Importance of demand estimation and data in general.

Highlights – 3

- Indirect harmful impact for OGS business of regulations from other sectors, like telecom, tax exemptions, data protection or financing. This also creates uncertainty. Much need for advocacy, understanding the decision-making process.
- Rural electrification plans are not followed. Much dependence from funds available from donors: health centers, schools.
- Difficult to fund electrification projects without a clear value proposition.

Controversial topics

- Electricity supply as a product or as a service. Even if seen as a product, it is used for the same purpose as the service provided by minigrids or the main grid. Should the regulatory principles be different?
- The major challenge resides in the political misalignment with sound regulatory approaches for OGS & minigrids.
  - Role allowed to private sector.
  - Level of tariff.
  - Procurement & standards.
- Governments have followed mostly a hands-off model. Concern about poor, rural, hard-to-reach customers that are not “commercial” & nobody supplies. Increasing concern about failing to meet SDG7.1. Need to segment the market.

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The Voice of the Off-Grid Solar Energy Industry

Providing Energy Access through Off-Grid Solar: **Guidance for Governments**



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The Voice of the Off-Grid Solar Energy Industry

Powering Lives and Livelihoods: Scaling Productive Uses of Renewable Energy (PURE)

Handbook for Governments & Development Partners



Remember the aims of the conference …

A sustainable OGS business model…
which must provide access to electricity forever
and…

A sustainable OGS business model...
which must provide access to electricity forever
and…

A scalable *(inclusive)* OGS business model...
which can be expanded or replicated until no one is left behind

Facts

African customers prefer to own their own source of electricity supply

Perhaps because they do not trust an external entity that will determine the price & the quality

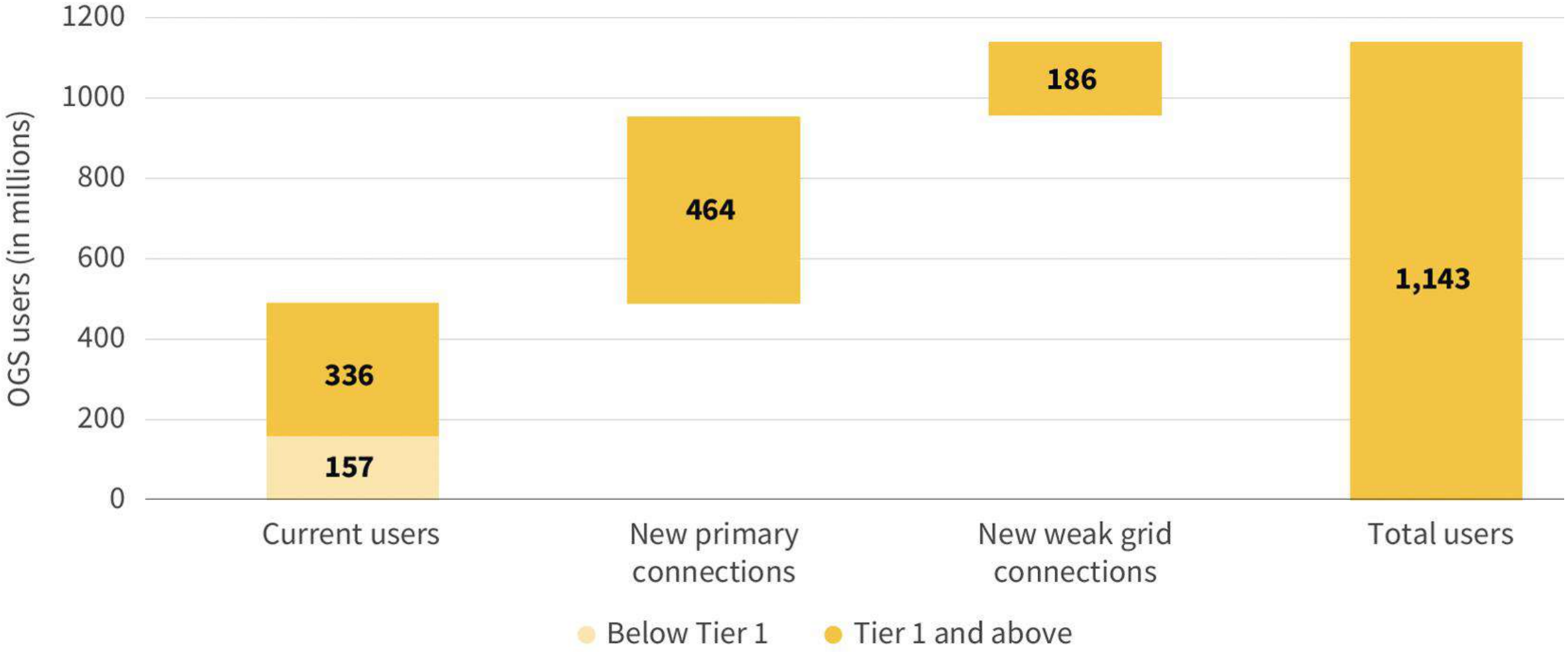
Low affordability

Per unit electricity cost with OGS (or minigrids) is today substantially higher than electricity price from the main grid & a large fraction of the population cannot afford it

The estimated contribution of the OGS sector to universal electricity access requires a massive amount of funding in terms of investment & affordability subsidies

People benefiting from Tier 1 OGS systems by 2030

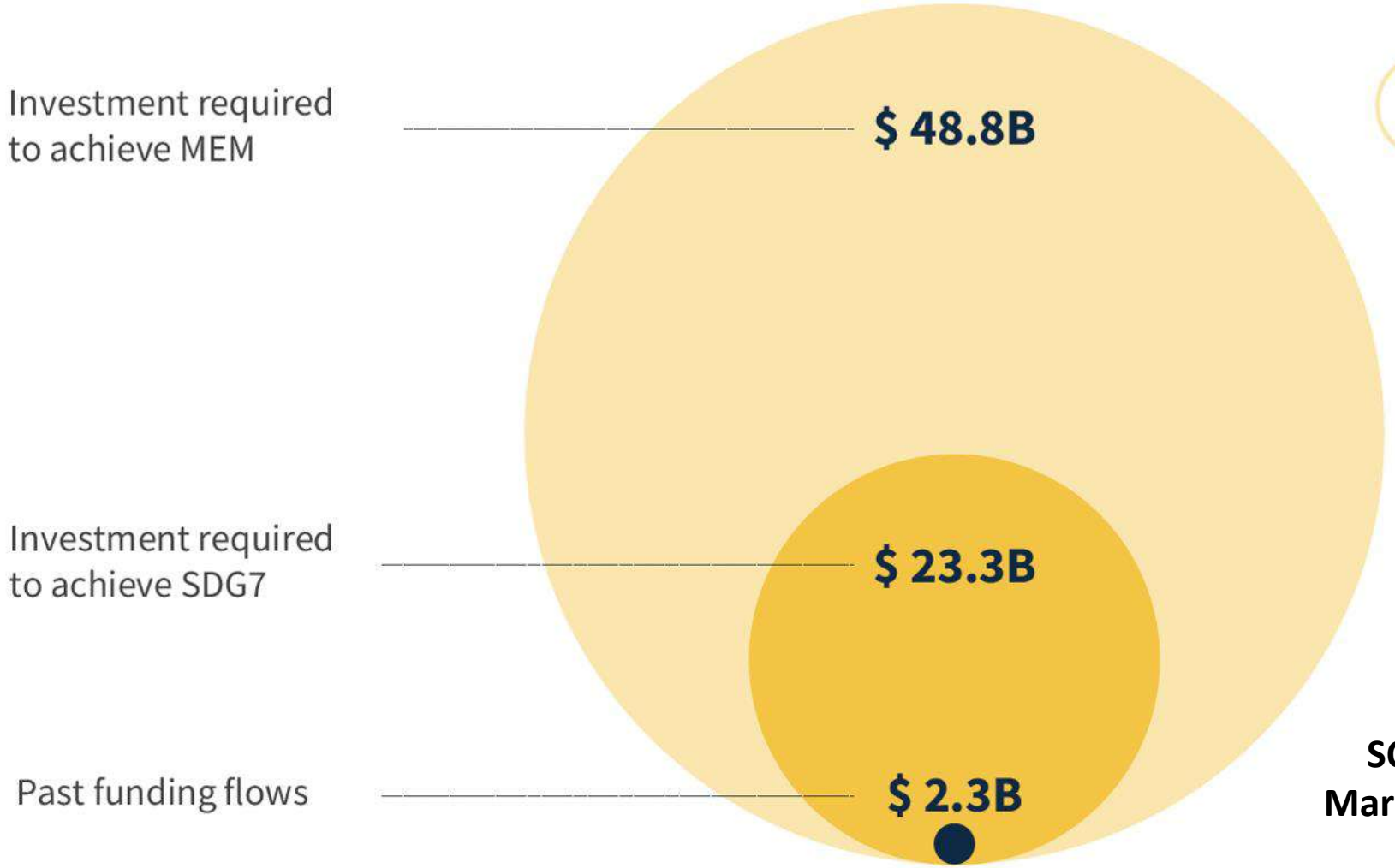
About 82% of the population without electricity access live in Africa



SOURCE: GOGLA, "Off-Grid Solar Market Trends Report 2022: Outlook"

Comparison of funding flows to date **$2.3B**, funding required to achieve SDG7 **$23.3B**, and funding required to achieve an estimated Modern Energy Minimum **$48.8B** (MEM, per-household annual consumption of 300kWh) excluding the **affordability gap**.

About 82% of the population without electricity access live in Africa



The $48.8 billion does not include the substantial amount of funding required to address the affordabili-ty gap.

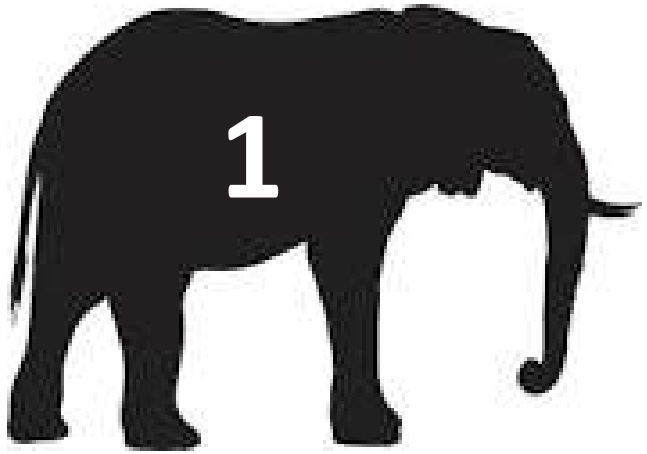
SOURCE: GOGLA, "Off-Grid Solar Market Trends Report 2022: Outlook"

The “financial problem” to be addressed

- **$18.8 billion** is needed by OGS companies *to* invest *(O&M missing)* until 2030 to achieve universal access with at least **tier 1** *(average cost $100 per system).*
  - **$4.5 billion** more is needed to address the **affordability gap**.
  - Of the total **$23.3 billion**, under current financing path the sector could raise only **$7.8 billion**, but not for the hard to electrify new customers.
- **$48.8 billion** would be needed to achieve **tier 2** *(it was assumed a modest per-household annual consumption of 300 kWh)*
  - A large **affordability gap** (not estimated yet) must be added.
- In **SSA**, add the **affordability gaps** of 72% of **health centers** & 67% of **primary schools** unelectrified, 48 million **water pumps** and other **productive uses**.

Can we propose a regulatory / business / financial approach to address this problem in its true dimension?

Implications



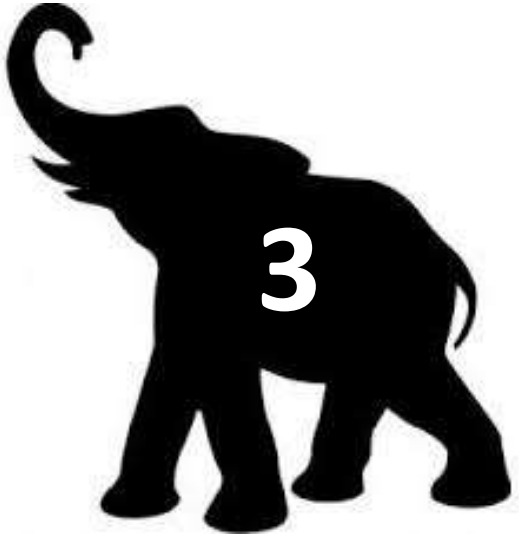
One-off initial investment grants (e.g., RBF) are useful, but may not result in sustainable OGS business models.

- A “utility-like” business model, i.e., a long-term default & last resort provider is needed => a long-term concession
  - It could work under “rent-to-own”, with some challenges
  - ”Energy-as-a-service” would be better suited to a “utility-like” approach, but it would require a careful process to build trust, via pilots & example.
- Experiences: the need for community engagement and education; the persisting 5% unelectrified in Latin American countries.



Only financially viable business models – thus based on cost-of-service regulation – will attract the required massive funding.

- A long-term & viable financial plan is needed.
- With strong support from government & DFIs to provide stability & trust of investors.
- The government must integrate the complete national electrification strategy in a single financial plan.
- Community engagement, local customer service & support to productive uses help to achieve financial viability.



When there is widespread low affordability, OGS business models without long-term / permanent subsidies cannot be financially viable.

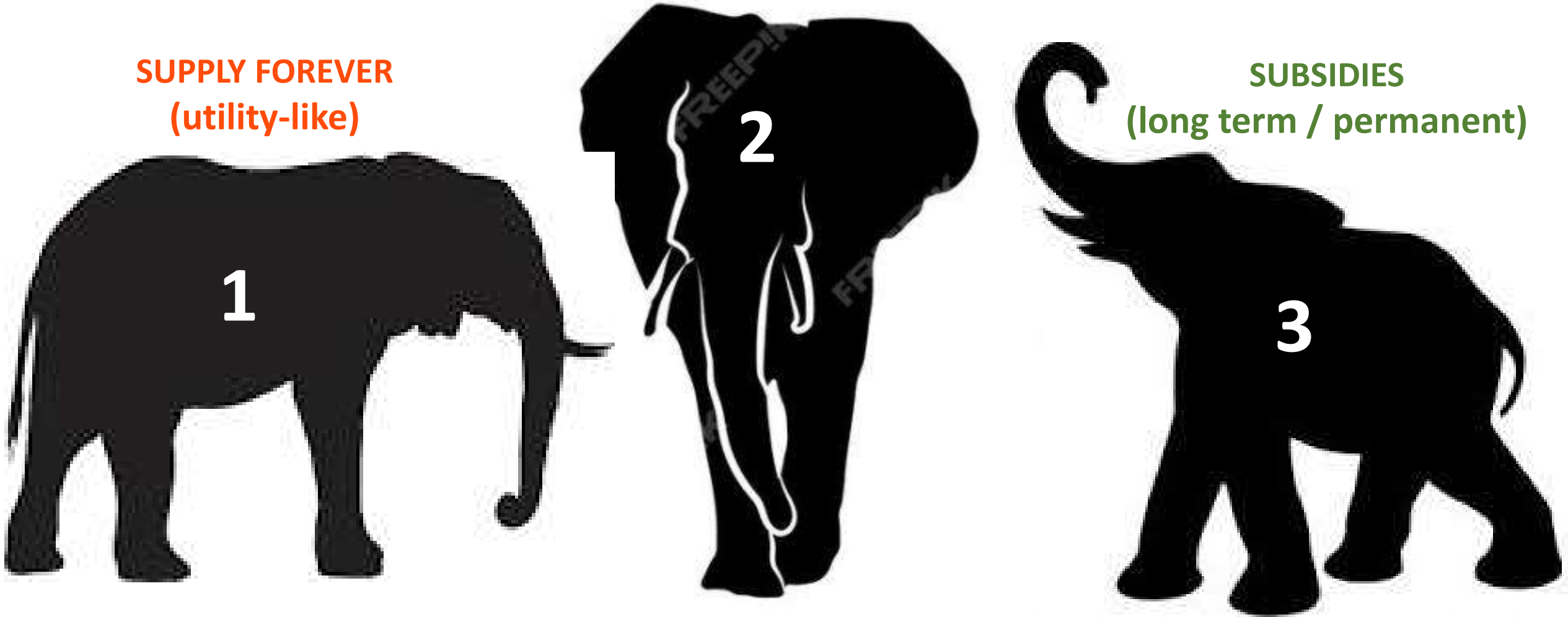
- Should the poorest citizens with the worst electricity supply pay the highest tariffs?
  - *"Each customer must pay its incurred costs"* is NOT a general principle of power sectors around the world. It is exactly the opposite. All countries use tariff cross subsidisation.
- Overall cost-of-service in the financial plan can be reached blending
  - Tariffs cross-subsidisation, grants, concessional & commercial financing, tariff evolution… and time.

An integrated approach is needed

SUPPLY FOREVER
(utility-like)

FINANCIALLY VIABLE
(cost of service)

SUBSIDIES
(long term / permanent)



How could the integral approach look like?

- A long-term “utility-like” OGS concession,
  - with obligations as default & last resort provider, minimum customer service & community engagement,
  - with contract guaranteeing “efficient cost-of-service” (or the outcome of a competitive tender) remuneration, consisting of revenues from affordable regulated tariffs & a subsidy – to the end customer or the OGS company,
  - supported by a viable long-term financial plan, which integrates all the electrification modes in a national strategy,
  - where the specific OGS model of delivery & payment could be “energy-as-a-service *(this is more consistent with the overall approach, but not strictly required)*, “rent-to-own”, cash purchase, or a mix, but in any case, with the “utility-like” commitment of a concession subject to performance targets.

Open issues to be addressed

- **Coexistence of the regulated & free-market approaches** in overlapping areas or in communities with different customer types & affordabilities.
  - Subsidies via regulated affordable tariffs must be **targeted** only to customers that need them.
- Design the path of implementation of the national electrification strategy, adapted to how long it will take to achieve universal electrification so that the financial plan is viable.



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We are here to help

The ASR aims to build the capacity in energy regulation that Africa needs to meet the objectives of the Agenda 2063











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