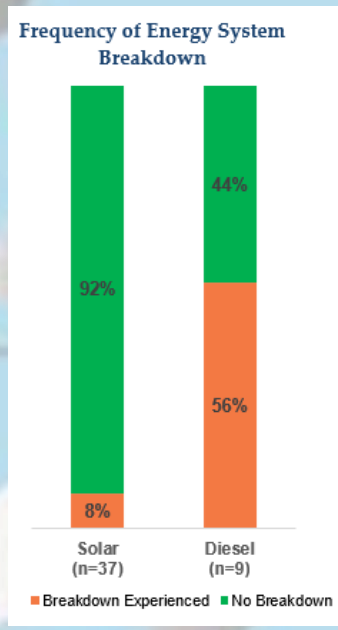
Operation & Maintenance in

Solar Powered Water Schemes

-A quick overview-

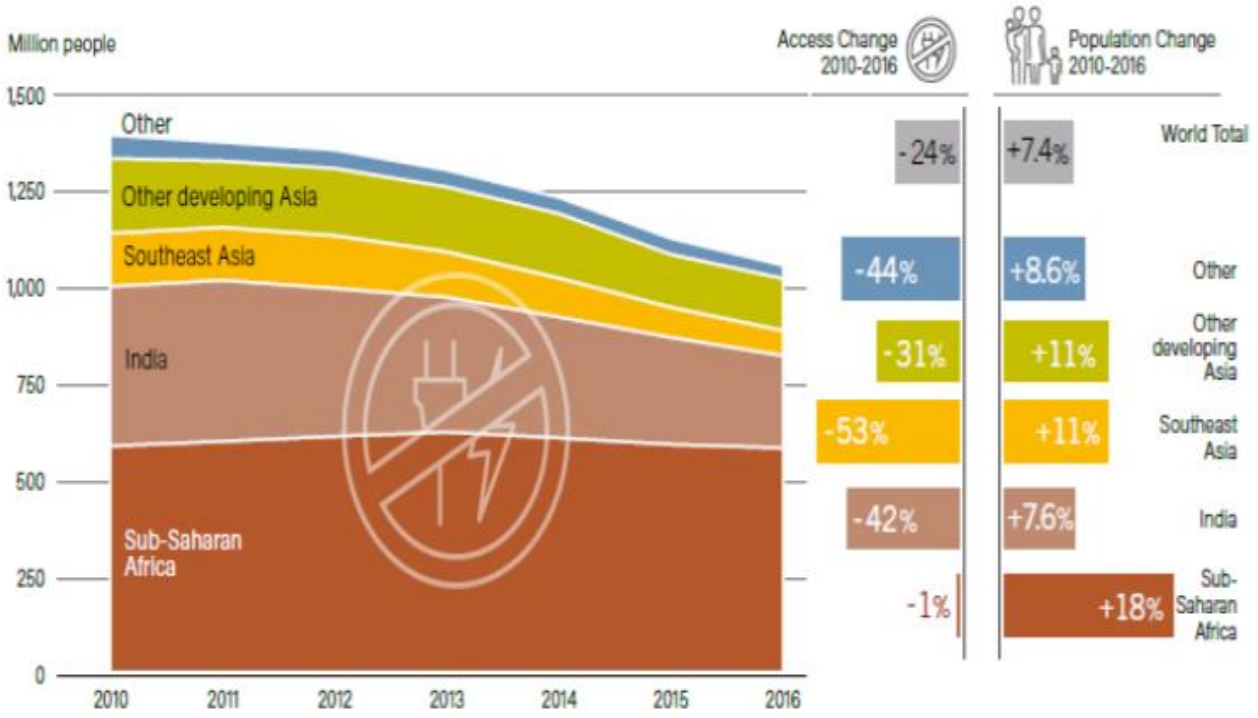
Some figures on the use of SPWS

- ✓ In 2019, +1,600 water schemes solarized by WASH organizations in 42 countries. GLOSWI interest from 270 organizations in 91 countries.
- ✓ Regions and countries moving at different speeds.
- ✓ Some emergency contexts have gone almost fully solar in recent years (Nigeria, Uganda, Yemen, Bangladesh).
- ✓ Some countries have embraced adoption of SPWS at community level.
- ✓ Country assessments show functionality rates of 92% an 88%.

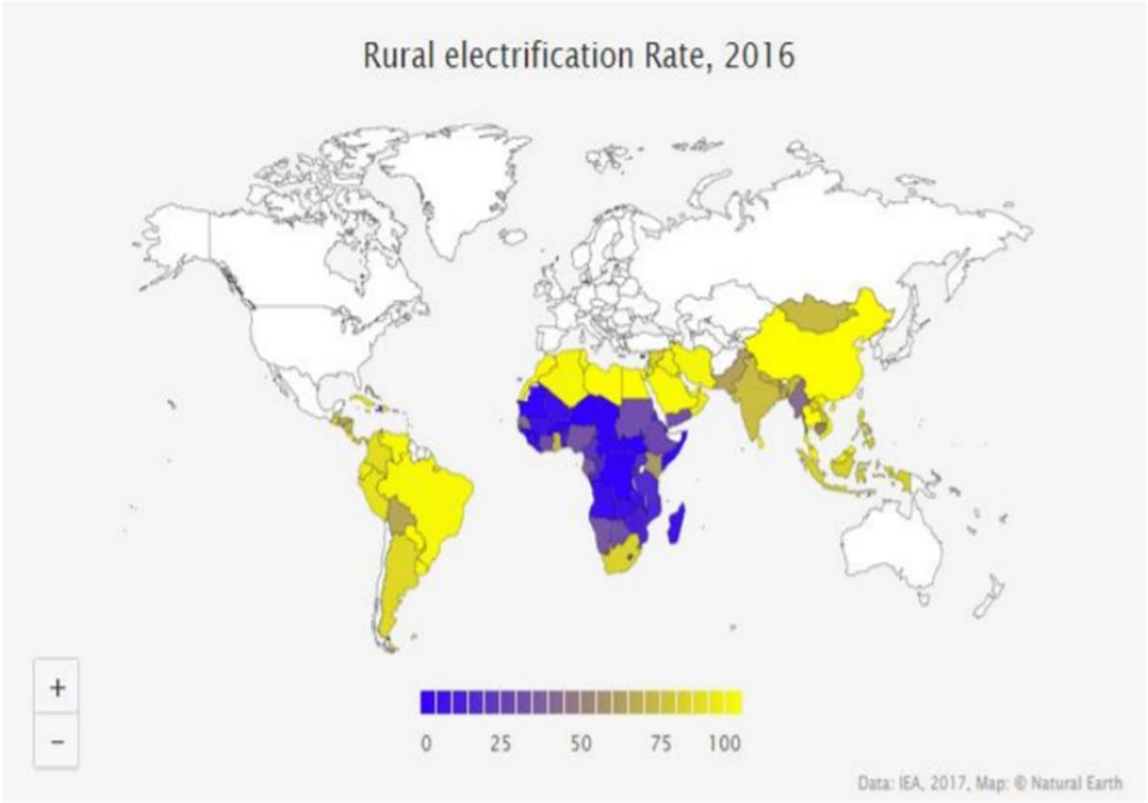


Source: GLOSWI Kenya Assessment.

Access to Electricity: the energy-water nexus



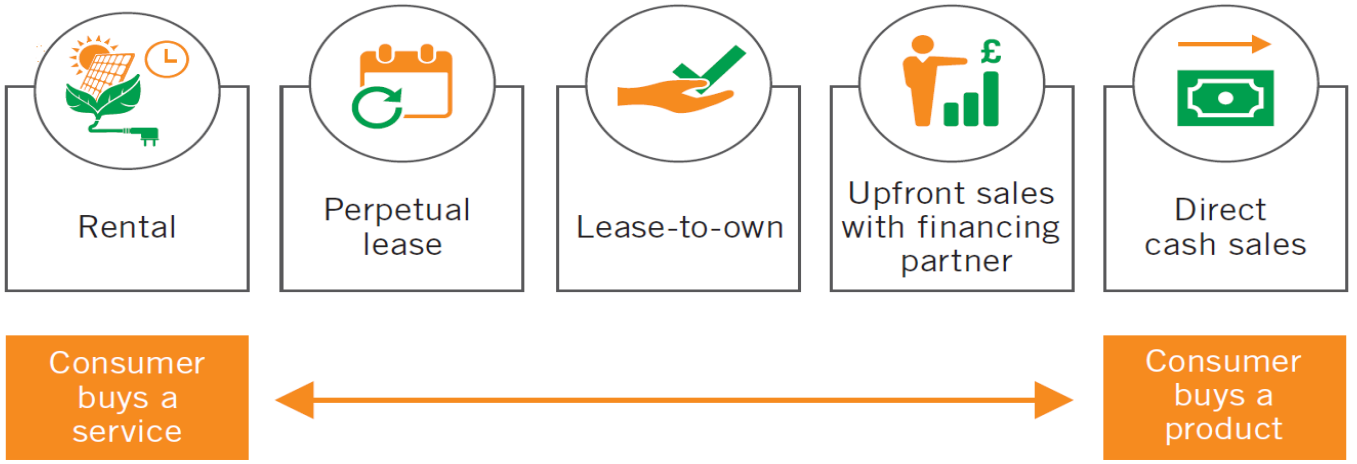
Population without access to electricity, by Region or Country 2010 – 2016 (Source: REN21, 2018)



Source: IEA, 2017

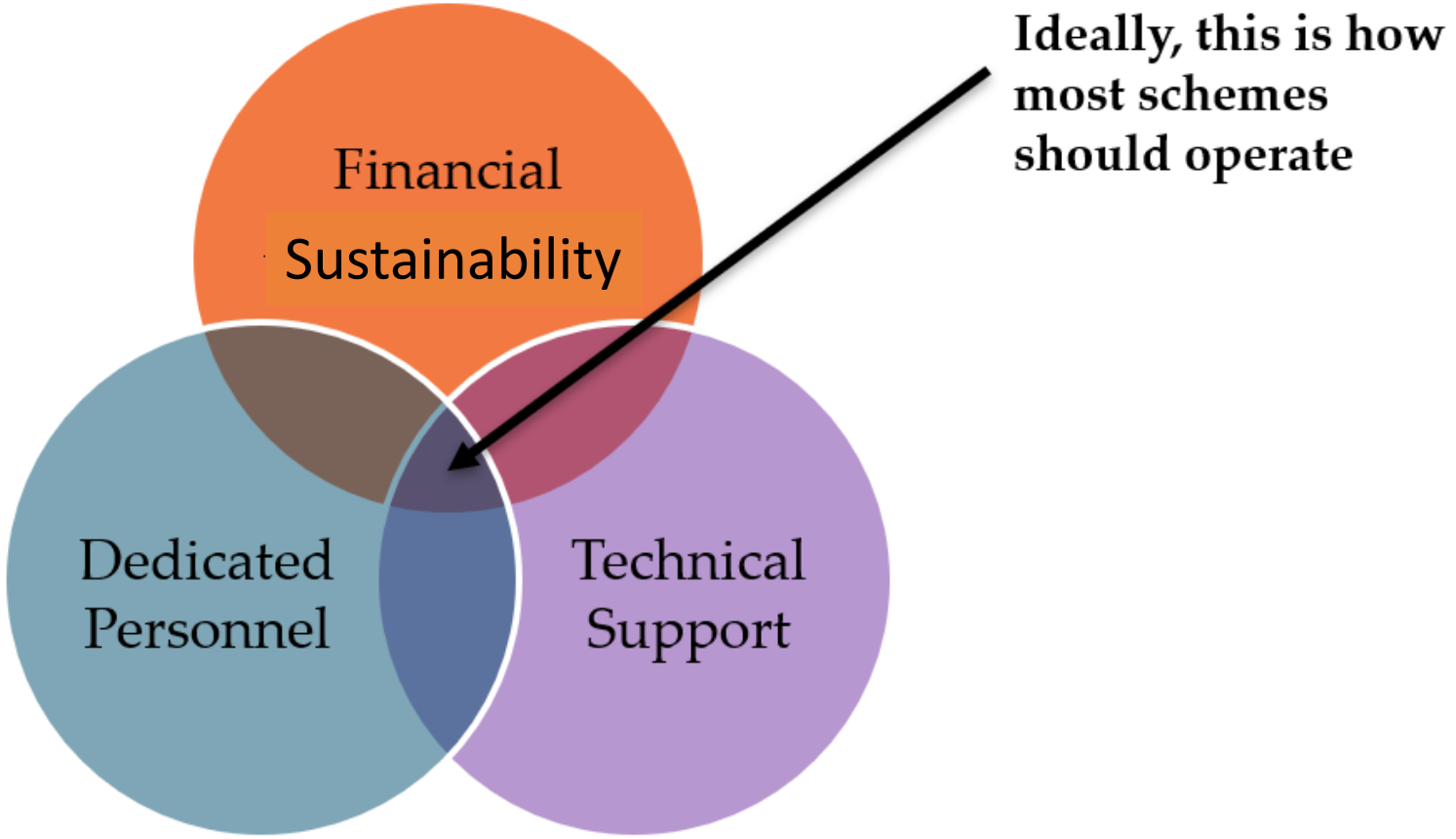
- A billion people living in off-grid areas + another additional billion living in weak-grid areas.

There is no 1-size-fit-all models for SPWS



Model	Main Strength	Main Weakness
Government implemented and managed water schemes (water for free)	Quality of installation and access to technicians	Bureaucracy leads to long duration of systems downtime
Private sector implemented and managed model (water at a cost)	Quality of installation and access to technicians	Difficulties to collect water fees as agreed with users
UN/ NGOs implemented and managed model (eg camp settings)	Continuous oversight to ensure functionality	Dependency on external funds
Community water users group managed model	Varied success rates with overarching communalities for successful schemes	

Key Attributes for successful O&M models in SPWS

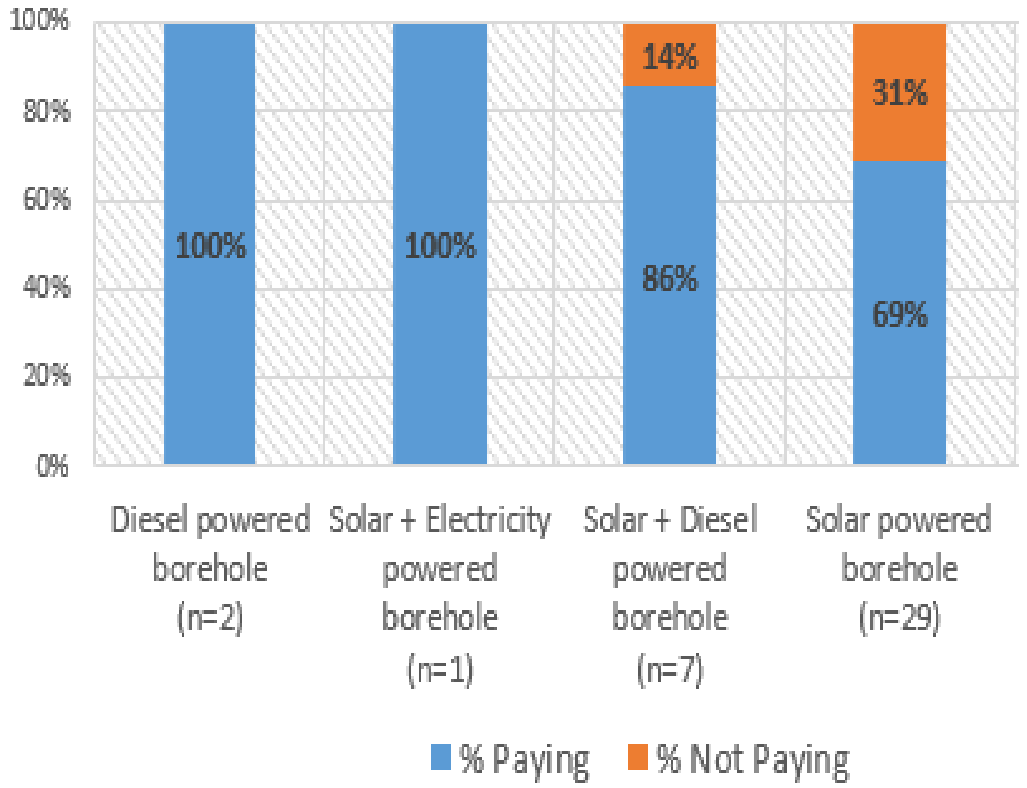


Financial Sustainability

- Minimal recurrent costs in operating solar systems, but significant one-off costs to ensure their continued long-term operation.
- Deliberate narrative shift needed on payment for water at solar powered water supply systems.
- Difficulty for communities to save money overtime when there are no recurrent costs associated to operation – accountability is critical

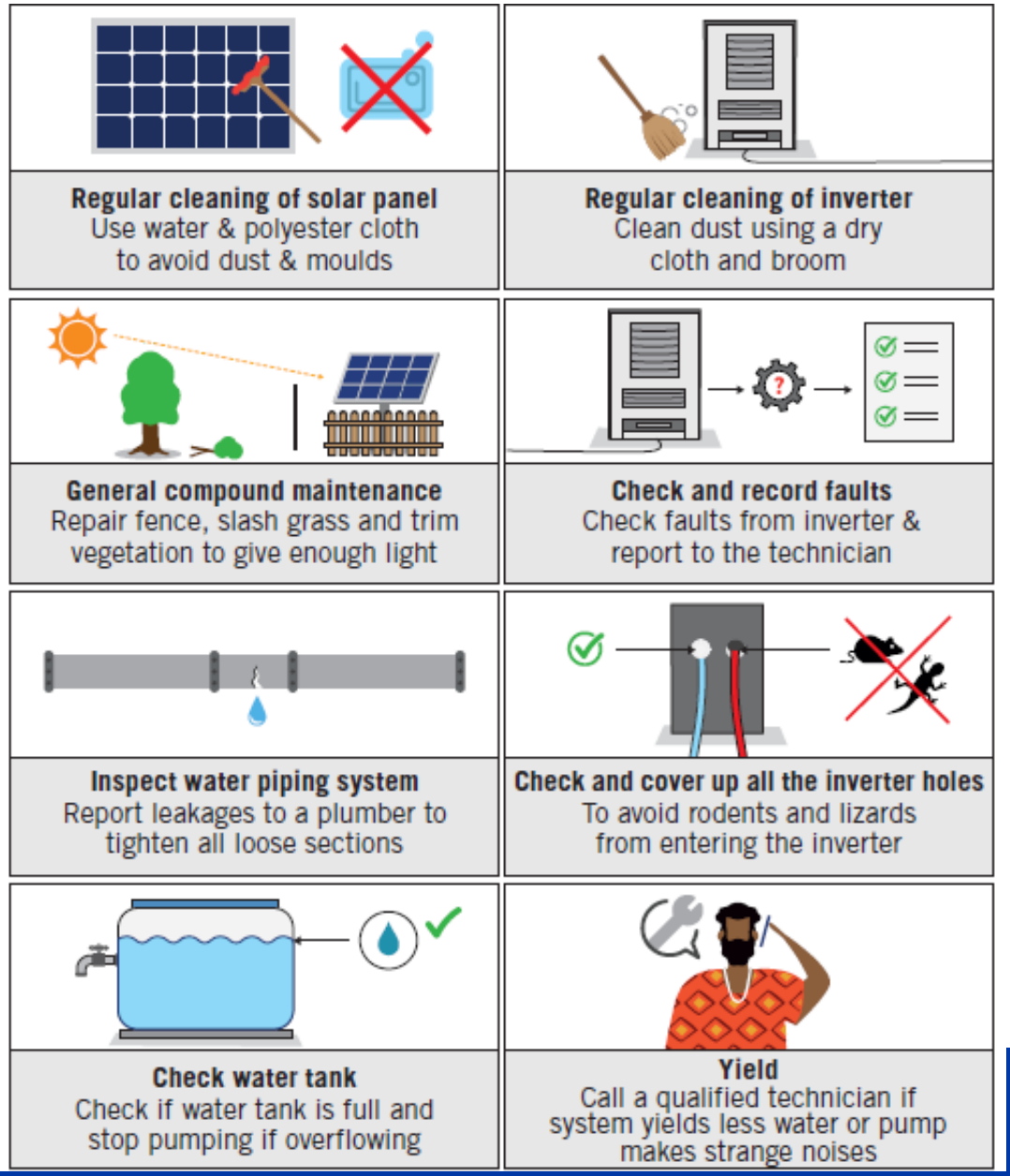
Payment for water at mechanized systems

Source: GLOSWI Kenya Assessment.



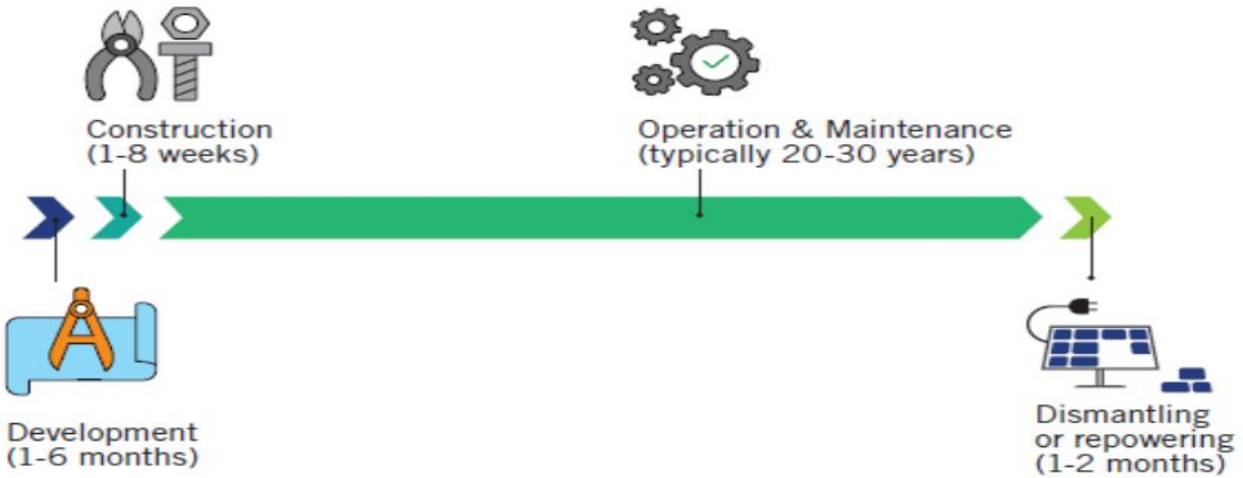
Dedicated Personnel: Operation & Routine Maintenance

- Simple activities that can be carried out at community level and that will ensure good functional order when performed on a regular basis.
- Need to training Water Users for operation and routine maintenance (77% to 90% of NGOS surveyed doing it).
- Access to panels and cleaning tools provision need to be discussed.



Technical Support: Preventive & Reactive Maintenance

- Unrealistic believe that trained communities alone can handle maintenance (>50% of NGOs surveyed).
- Good planning & right conditions can lead to high functionality without the need of external funding.
- After-sale maintenance agreements considered best practice ,especially when there is lack of available technical expertise to provide repairs, and specialized services but rare to find (15% of NGOS surveyed).
- Preventive maintenance should be an integral part of O&M plan, but often absent.



Take away messages

- Dedicate time and resources to articulate well O&M roles and responsibilities in contractual agreements at the design stage – bring in Technical Knowledgeable actors.

- Need to ensure costs related to O&M are well understood by all parties – plan how this will be met at the design stage.

- Ensure through trainings Routine Maintenance as the first critical step toward long term sustainability.

- Make sure Warranties are clear and well known. Use of remote monitoring technology can help for better O&M in certain situations.

Thank you for your Attention!!

Comments, suggestions -> Alberto Ibanez Llario, allario@iom.int
Find assessments and other resources at www.thesolarhub.org