SABAH RE² roadmap

Enabling Policies for Mini-Grid Expansion

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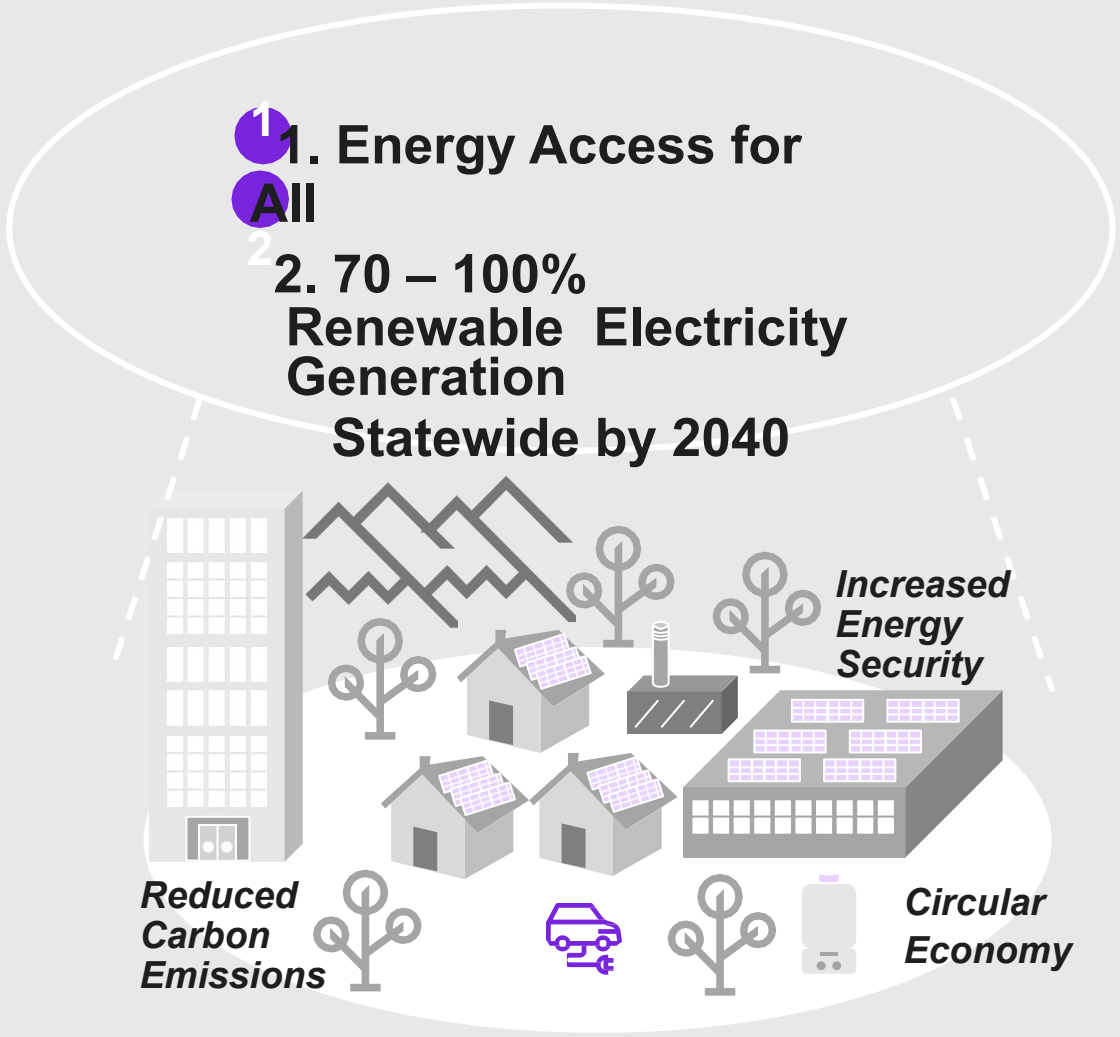
Sabah is faced with a unique opportunity to deploy renewable energy approaches in line with SDG 7's goal to ensure access to affordable, reliable, sustainable and modern energy for all

Our Mission



Our Vision for Sabah

Milestones

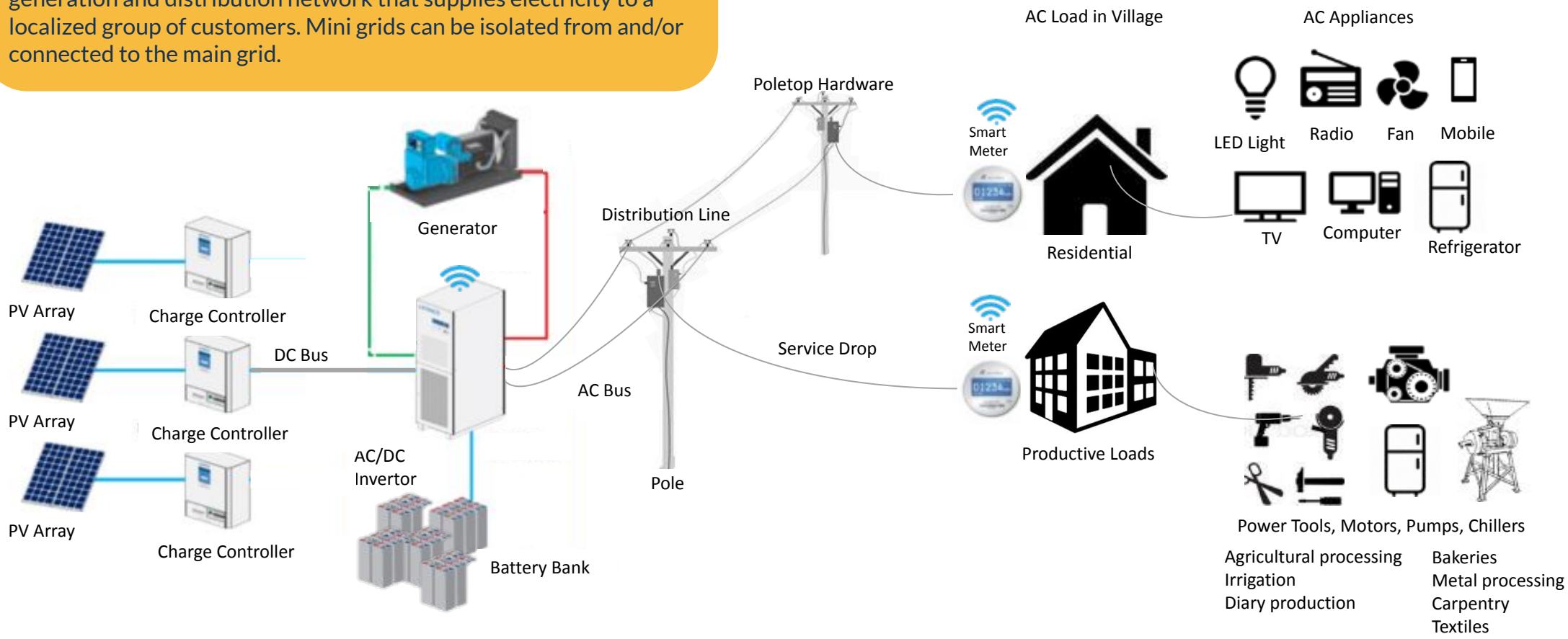
1 Energy Access for All
- Identify communities seeking electrification and establish buy-in
- Identify financial investment pathways
- Build technical and institutional network and capacities
- Integrate electrification into village development plans

2 70 – 100% Renewable
- Alliance with government & NGOs for policy support and advocacy
- Transfer utility to state-owned enterprise
- Pass legislation to encourage renewable energy development
- Support the labor transition as fossil fuel subsidies are phased out

Last Session Recap: What is a Mini Grid?

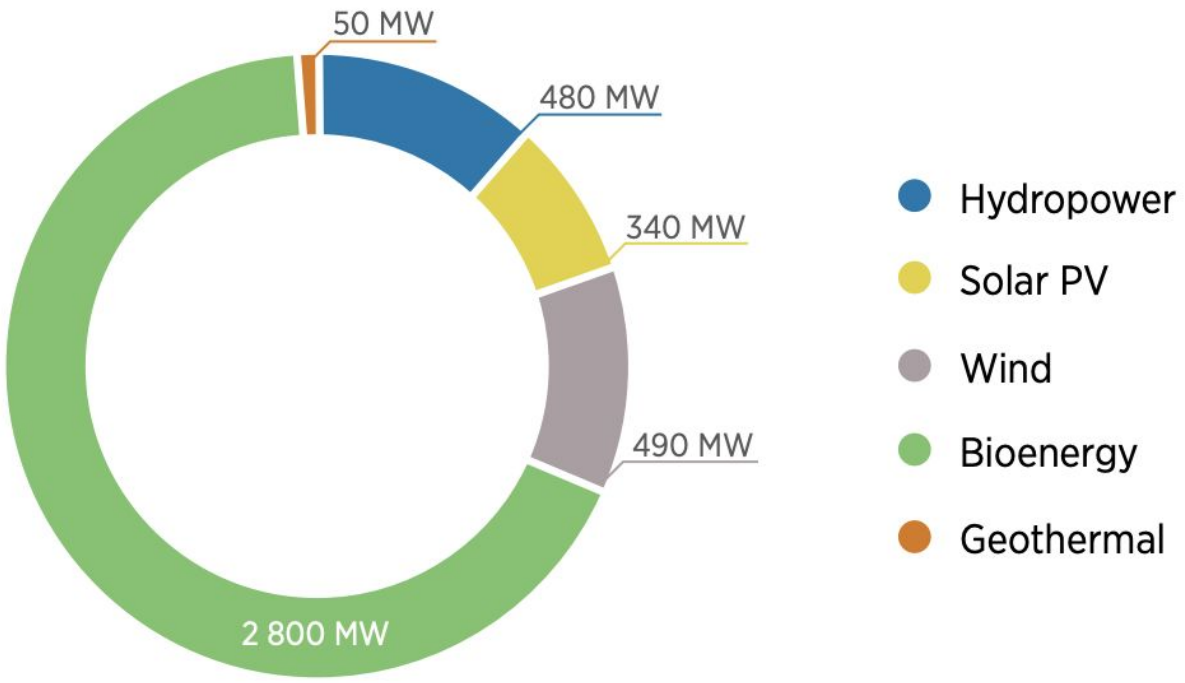
example 1

A **mini grid**, sometimes called a micro grid, is an electricity generation and distribution network that supplies electricity to a localized group of customers. Mini grids can be isolated from and/or connected to the main grid.



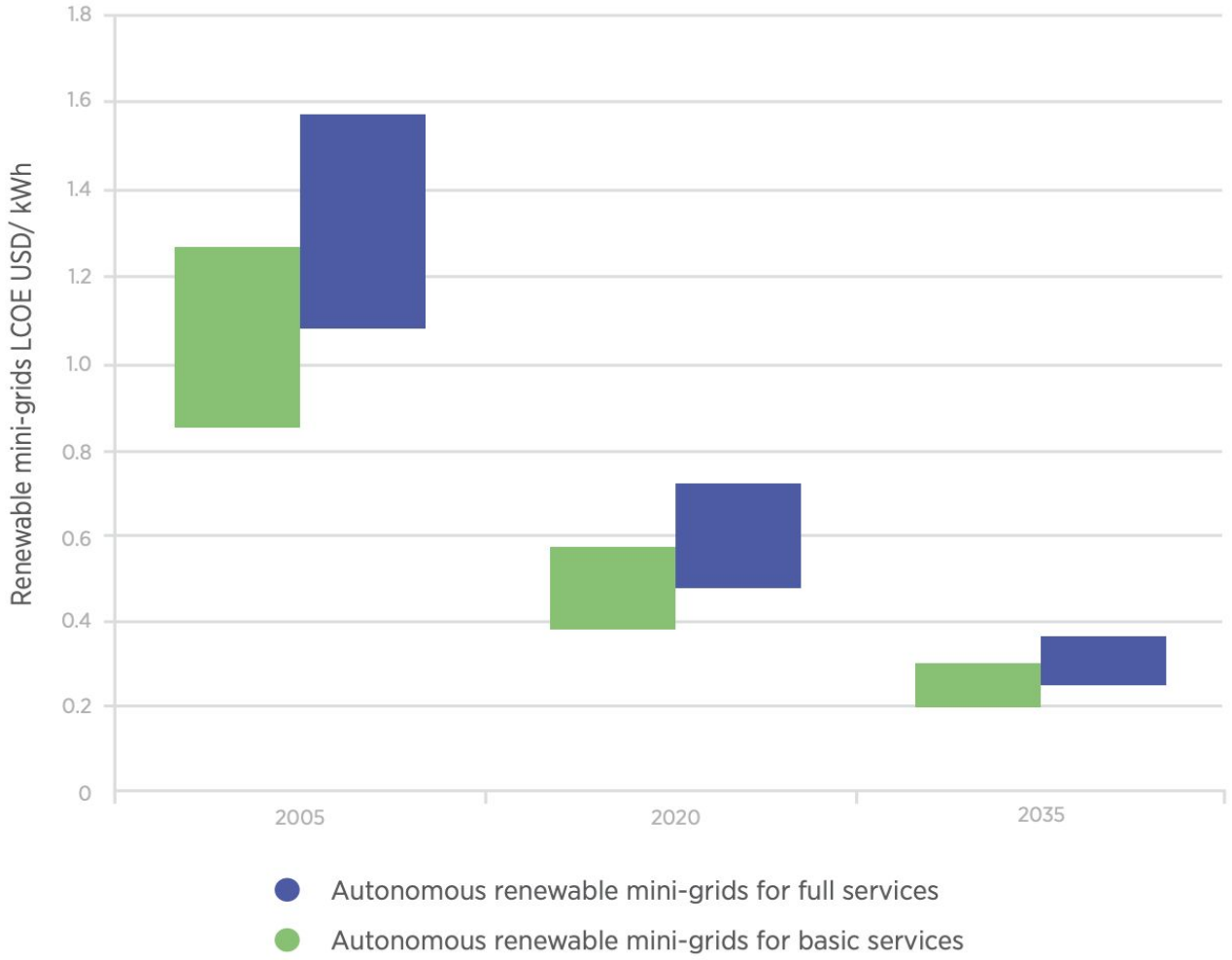
Solar Hybrid Generation System | **Distribution System** | **Smart Meters** | **Efficient Productive Loads**

Today's renewable Mini Grids



Note: MW = megawatts.
Based on: (IRENA, 2018a).

Renewable mini grids are becoming economically viable



Unsubsidised cost ranges for renewable mini-grids from 2005 to 2035 for a 100% renewable energy community system

Community-Based Mini-Grids

Lessons Learned In Real World Mini-Grid Implementation

- Investing in anchor loads are key
- Need to invest in technologies that facilitate load management.
- State engagement and capacity can provide energy to the poorest customers.
- Training and education of the local population creates local ownership and opportunities for scaling-up.
- Quality power increases customer willingness to pay.

How Do We Replicate Success at Scale?

- The aim is to create an **enabling environment** for successful mini-grid roll-out.
- We can come to understand and support the **technologies** available in creating **efficient, reliable and safe** mini-grids
- We need to recognize the role of **communities**, not just as consumers but as **contributors** to the energy ecosystem
- The process of **tariff-setting** can be used not just as a means to recover costs, but to incentivize improved management and load distribution
- Identifying an analytical framework where reliable off-grid electricity supports rural income generating activities through **productive end use**
- We also want to take into account the **planning** of grid expansion, while recognizing how mini-grids can also play a role in strengthening the main grid
- This is where policy, and regulatory frameworks can come in

General Policy and Regulatory Conditions

- Legal and Licensing Provisions
- Cost Recovery and Tariff Regulation
- Risks Posed by the Arrival of the Main Grid
- Measures to Facilitate Access to Finance

Mini-Grid Policy and Regulatory Solutions

Institutional

- Defined Roles: Ownership, Deployment, Operations, and Maintenance
- Regulations and Licensing
- Community Involvement and Capacity Building
- Monitoring and Verification

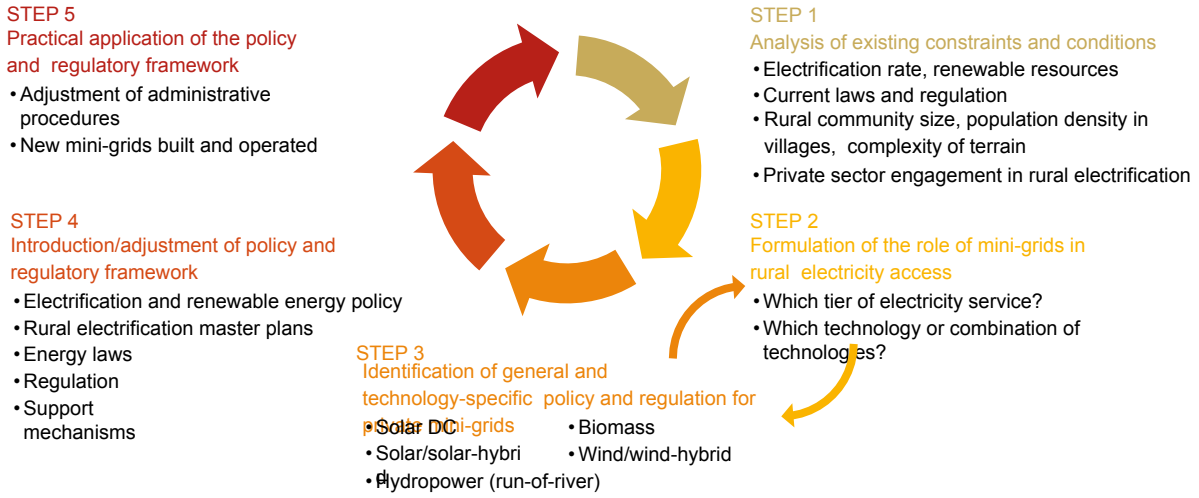
Technical

- Standards: Quality of Equipment, Construction, and Service
- Grid Interconnection and Islanding: Mini-Grids as part of the Larger System
- Resource Surveys and Potential Site Studies

Financial

- Public Support: Capital and Ongoing Subsidies and Incentives
- Financing: Loans, Banking, Channeling Aid and Grants
- Revenue streams: Retail and Wholesale Tariffs

Policy Development Cycle for the Mini-Grid Sector -



There are a variety of policy options used around the globe to encourage the reduction of carbon emissions

Mandates

Example: 25% renewable electricity generation by 2025, 50% by 2030, 75% by
2035, and 100% by 2040

Pros:

– Ensures renewable energy targets are met through wide-spread obligations

– Little cost to government and relatively straightforward to implement

Cons:

– If targets are not met, there is no mechanism in place to hold the state to these promises

Carbon Tax

Example: Tax retailers for each ton of CO2 emitted annually above a certain limit

Pros:

– Generates revenue for the state to re-invest in building renewable energy infrastructure and development

Cons:

– Limits retailers in how they can adjust their carbon emissions and hurts small businesses who can not afford the tax

Market Based Programs

Example: Require certain industry retailers to buy credits for each ton of CO2 emitted annually above a certain limit

Pros:

– Puts money in the pockets of renewable energy retailers who can sell their credits

– Encourages job creation as well as new market entrants

Cons:

– Complex to design and implement

Government Incentives

Example: FiT, tax credits, grants, low-interest financing, etc.

Pros:

– Direct incentive for investments into renewable energy research, development, and infrastructure

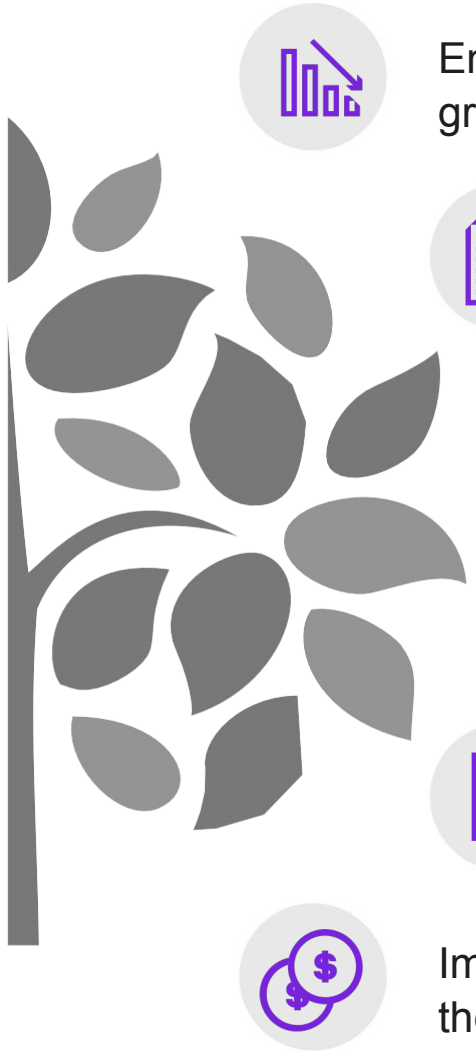
Cons:

– Costs the state (and taxpayers) money, especially challenging after COVID

③ **Government Support**

The successful transition to renewable electricity generation requires legislation

Sabah Legislation Recommendations for the Transition to Renewable Energy



Encourage private investments in renewable energy generation and greater energy security by **gradually removing the fossil fuel subsidy**

Set mandates for 100% renewable energy generation by 2040, with achievable steps in-between

Implement green credit market-based incentive program for utility and forestry industry

Impose green and renewable energy requirements for new residential and industrial construction

Develop a government financing or grant program to encourage renewable energy research as well as the development of co-owned mini grids for remote areas

Improve communication and coordination amongst ministries and include the above in the **12th Malaysian Plan and Budget for 2021**

③ **Government Support**

Top 3 Challenges

Community Ownership

Changing mindsets of the community

Policy on Energy and Policy on Environment

Public acceptance

Lack of locally available financing

require skilled staff to operate

Mini Grid Standards

Mini Grid Code

Long term maintenance of mini-grids

Regulations on mini-grid maintenance

Geographical condition of the village

Deploying RE that doesn't create ecological and environmental problems

Community Based Energy Policy

Environmental policy

What to do with mini-grids when main grid arrives?

Licensing

PAST | PRESENT | FUTURE

Top 3 Opportunities

A lot of experience in the region (Indonesia, Sri Lanka, Nepal)

Creation of new RE industry, and more jobs

Tourism

Socio-economic development

Creating jobs within communities

Curb urbanisation

Capacity building

more future trained community in operating RE

Better education of rural students

More CSR

Private/NGO/ GLC - FUNDING, CSR (less charity, more help with community development and sustainable development)

potential funding from federal

Positive relationship between civil society and government =D

Payment for Ecosystem Services for watershed forestry

Integrating water catchment protection as incentive for MHP development

Watershed are protected

Environmental policy

Catchment management (local authorities)

New invention

Local technology development

Closing the digital and energy gap in off-grid settlements