



Designing productive use of renewable energy projects that lead to multiplier effects in rural communities

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Credits: Off-grid Energy Australia

Asia Clean Energy Forum

The Energy Access Nexus: The Multiplier Effects of Energy Access to Meet Community Needs
Manila, 8 June 2017



**Alliance for
Rural
Electrification**
Shining a Light for Progress



- Established in **2006**, the **Alliance for Rural Electrification (ARE)** is the only global business association that represents the whole decentralised **renewable energy sector for rural electrification in developing and emerging countries**.
- There are currently 1,1 billion people without access to electricity in the world, **87 % of which live in rural areas** ([SE4All, 2016](#)). ARE works to enable access to affordable, secure and clean energy and energy services for these people.
- ARE currently unites more than 110 companies active worldwide. Find out more about which ARE Members are active where with the [ARE Off-grid Matchmaking Platform](#).



Productive uses of renewable energy for rural populations

Energy Services	Income Generating Value
Battery charging	Wide range of services for end-users (phone
Drying, Smoking (Preserving with heat)	Create value-added product, preserve product to higher-value markets
Expelling	Produce refined oil from seeds
Grinding, milling, husking	Create value-added product from raw agricultural
Illumination	Reading, extending operating hours
Irrigation	Better yields, higher value crops, greater periods when the market prices are higher
Refrigeration	Selling cooled products, increasing the
Transport	Reaching markets
TV, radio, computer, internet,	Businesses, education, access to market news, suppliers and distributors.

Stand-alone systems & PURE

Decentralised electricity distribution system which provide electricity to individual appliances, homes or small productive uses such as a small business. Serve the needs of individual customers.

Pico systems



Powers individual appliances
(e.g. TV, radio, lighting)



Credits: TRINE

Home systems



Powers individual
households



Credits: Mobisol GmbH

Productive use/industrial use



Powers an individual business (e.g.
mine, clinic, hotel, factory etc.)



Credits: Rahimafrooz



- Huge potential for PURE with clean energy mini-grids (CEMG) due to excess of available local renewables (hydro, solar, biomass, wind).
- Large potential to reach anchor customers via mini-grids as higher loads means you can reach more customers and bulk productive uses.
- Opportunity to scale up as purchasing power/local demand increases



Credits: HNU



Credits: UNDP



Credits: Bornay



Ankur Scientific – Biomass gasifier for productive use in Thakurwadi, Maharashtra (India)

Renewable solution

- Ankur Scientific supplied, installed and commissioned the biomass gasification system for 100 houses in Thakurwadi (Tribal area)
- 100% producer gas genset of 10-kWe rating
- Provided training to the local villagers for them to operate and maintain the plant smoothly.
- Used locally available woody biomass in the gasifier;
- Advantages: on demand power, ease of operation and hold on process cost, no fossil fuel required

Productive use outcomes

- 70-80% of the revenue returns to the local economy.
- Rural entrepreneurship empowered.
- Small-scale employment generation.
- Char is used as fertiliser by the farmers.



Studer Innotec – Hospital gains energy independence with hybrid system in Lukla (Nepal)

Renewable solution

- Hybrid mini-grid system with solar power and micro-hydro enabling complete energy independence for the hospital.
- 10kWpV, 3,000Ah battery park, a hydraulic turbine, three XTH 8000-48 used in charging mode from the hydraulic turbine, six XTH 8000-48 3ph used in inverter mode. In addition, 2 AJ inverters are used to operate the signalisation lamps.
- The local energy manager received five days of on-site training to manage the production/consumption of energy. This installation is practically maintenance free.

Productive use outcomes

- Lukla hospital provides excellent year-around healthcare for its nearby community. People come from miles around for vaccinations, medication for children, family planning, dental care, etc.
- Local employment generation for doctors, nurses and other personnel.

PURE – ARE Case studies (3)



*"45 new mini grids in
Jharkhand State by Dec
2019"*

Mlinda: Driving women micro-entrepreneurs to leverage micro-grid electricity

Renewable solution

- 8 solar based mini grids are up and running at Gumla district, Jharkhand with an installed base of 210 kWp.
- Serving 9 villages, with an outreach to 885 rural and tribal households.
- Powering farm-based productive loads of - 93 small .75 HP electric water irrigation pumps, 14 electric rice hullers of 7.5 HP each and 11 electric lift irrigation water pumps of 7.5 HPs each + 29 energy efficient TVs and 38 energy efficient fans across 8 mini grids.

Productive use outcomes

- Incubated diverse micro enterprises: 5 Women Hulling Groups, 2 Mini Cold storages, 1 electric Oil Expeller Machine.
- Exploring hulled rice markets in Bombay, India to establish sustainable market linkage. Testing the hulled rice as 'Organic' in Govt. labs to increase its brand value to fetch better market price.
- Planning to incubate electric sewing machines and electric flour machine in our plants to increase productive load usage.

Scaling-up: Identification of new villages. First 5 villages have been identified and land lease agreements have been signed. Installation work will commence mid-June 17

Other developments from ARE



HOMSOL

IPS **EXERON**

ENGIE



Microgrid
Tourist resort
Indonesia



Stand alone Solar PV
Residen/Commercial
Tajikistan (CA)



All-in-1 power conversion
Commercial/Industrial
Nepal, Indonesia



Microgrid
Rural electrif.
Indonesia

Lessons learnt and recommendations from [ARE Energy Access Investment Forum](#) (Lisbon, 22-23 March 2017)



1. Encourage **cross-sectoral partnerships** (See [ARE partnerships](#))



2. Support governments in implementing **clear policy frameworks for off-grid solution** ([more info](#)).
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3. Mobilise more investment in **education, research, development and capacity building** see [ARE publications](#); [ARE trainings](#))



4. **Empower women and youth** as key change agents to achieve SEforAll objectives. (see [ARE position paper on Women & Sustainable Energy](#), [Young Leaders in Energy Access Awards](#))



5. Develop **innovative financing mixes** and strong investment structures to **de-risk investments** in the off-grid sector. ([more info](#))

6. Develop and **promote matchmaking** as well as **knowledge sharing tools**. (*more info* on [ARE B2B events](#), [case studies](#), [best practices](#))

Scaling up: Developing more cross-sector partnerships

Cross-sectoral cooperation needed to **scale up** productive use of renewable energy in Asia and get in additional finance.



The Alliance for Rural Electrification is therefore looking for additional **local** and **international industry partners** involved in the following sectors:

- **Agriculture / Food processing**
- **Telecommunications**
- **Health**
- **Microfinance**

Contact us



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We look forward to see you at the Asia Clean Energy Summit (ACES) in Singapore 24-26 October 2017

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