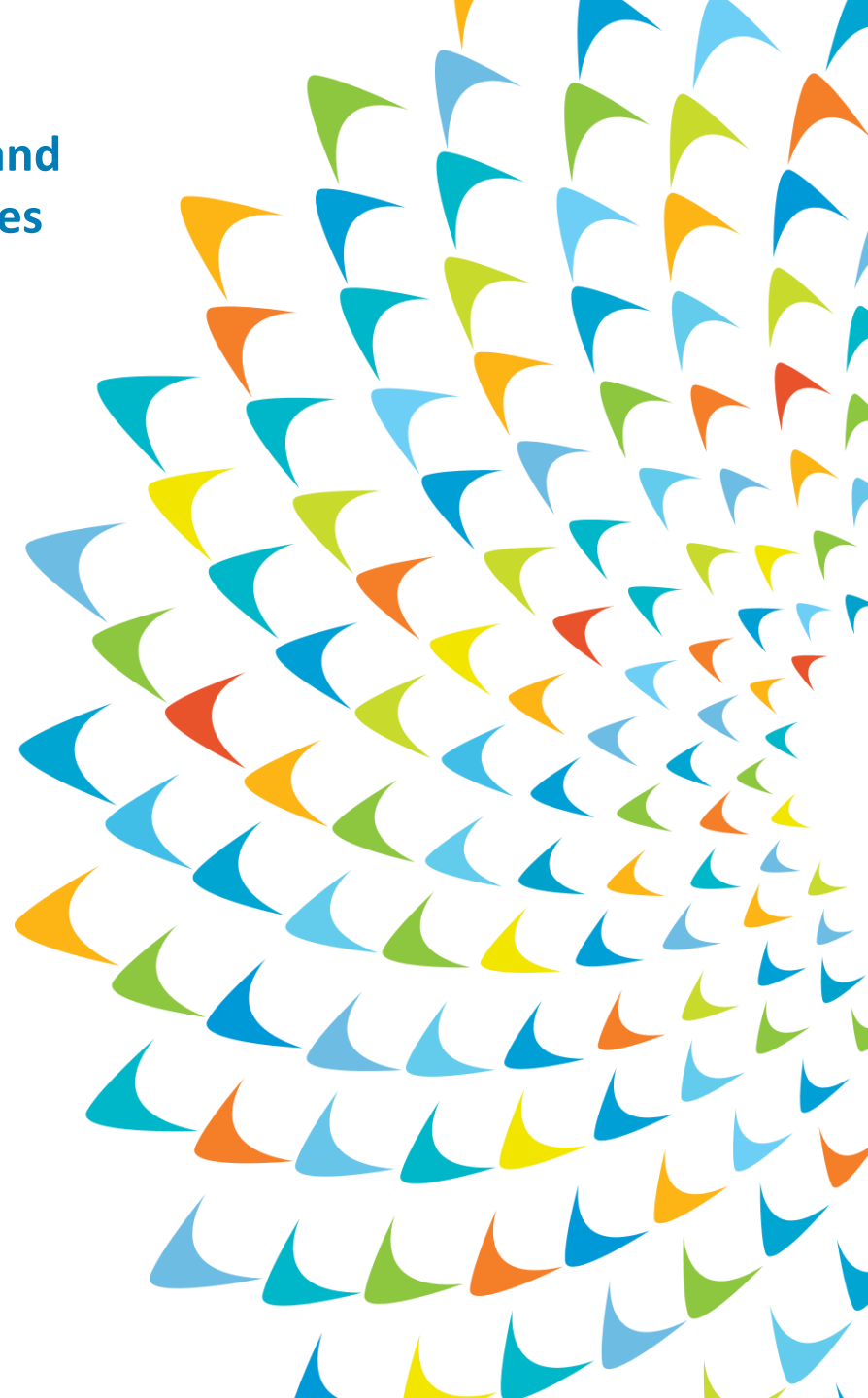




Mini-grids B2B Forum
Session IV: Scaling clean energy and
hybrid mini-grids in the Philippines

ADB ENERGY ACCESS ACTIVITIES

Susumu YONEOKA
Energy Specialist (Smart Grids)
SDSC-ENE, SDCC
Asian Development Bank





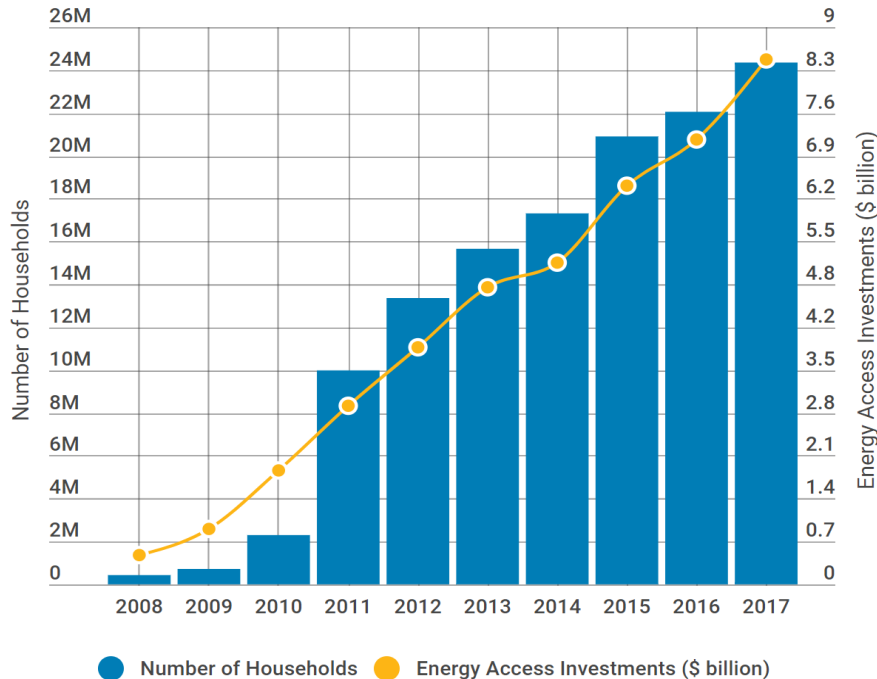
Investment Gap Persists

- From 2013 to 2014, public and private, international and domestic finance commitments for electricity to the 20 high-impact countries in Asia and Africa averaged **US\$19.4 billion a year** (SEforALL, 2015).
- This falls far short of the **US\$ 45 billion annual investment required to achieve universal energy access by 2030** (IEA 2015).



ADB Energy For All Initiative

INTERNAL



Impact of ADB's Energy Access Investments
(2008 – 2017 cumulative)

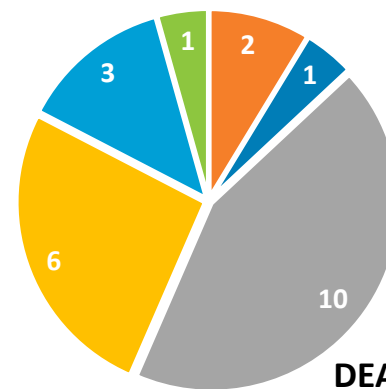
EXTERNAL

BUSINESS ACCELERATION

150+ companies supported

INVESTMENT FACILITATION

Total investment of USD 24.5 million secured for 23 clean energy SMEs



AVERAGE TICKET SIZE

Equity USD: 1.4 million
Debt: USD 1 million
Convertible Note: USD 1 million

DEALS CLOSED PER COUNTRY

■ NEP ■ CAM ■ IND ■ PHI ■ BAN ■ PAK





Challenges for Deployment in Asia

Technical Barriers

- Lack of technical know-how, O&M
- Lack of standards lead to use of poor quality equipment
-

Market & Commercial Barriers

- Limited affordability of consumers
- Low density areas/ dispersed population/ low load requirements
-

Financial Barriers

- No proven track record of successful projects
- Lack of financial capacity of project developers
- High transaction cost for small scale operations
- Limited financial viability/ profitability
- Small-size transaction not attractive to investors/ finance institutions

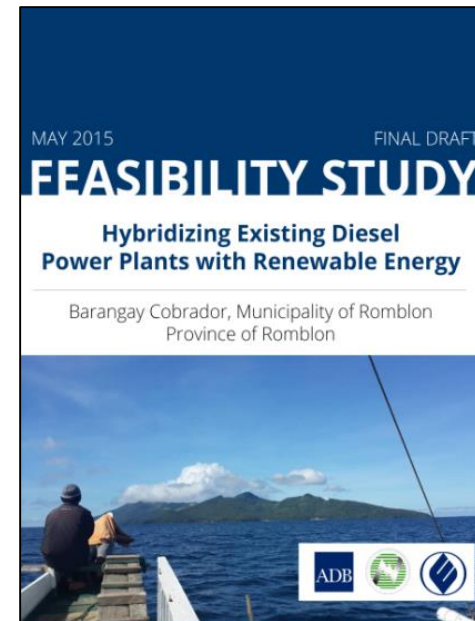
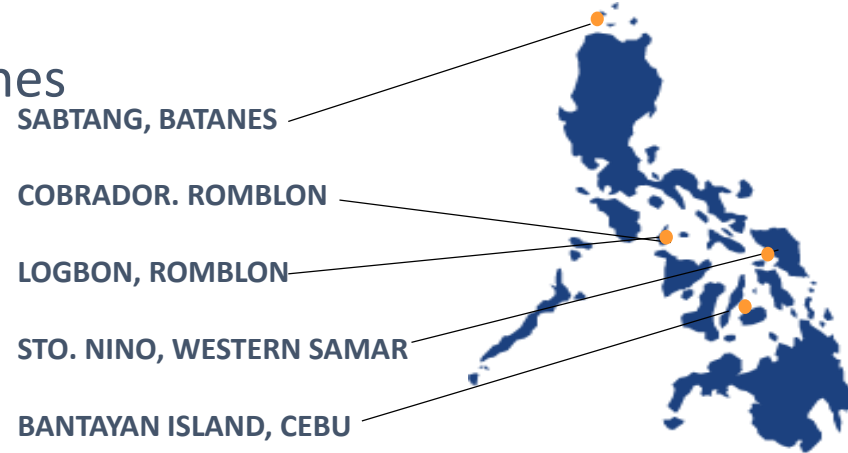
Policy & Regulatory Barriers

- Lack of policy for private sector participation
- Lack of coordination among government agencies causing lengthy permitting process
-



Mini-Grids FS in the Philippines

- Collaboration with NEA and KEA
- 5 sites in remote islands in the Philippines
- Designing of least cost renewable energy option
- **Hybridization of existing diesel mini-grids** with renewable energy to
 - increase efficiency
 - improve reliability
 - reduce fuel costs
- Proof of financial viability
- Business model **for replication** through electric cooperatives/other private investors and potential scale up through ADB





Mini-Grids for Electrification

PILOT: Cobrador Solar PV Hybrid System (Completed)

- Hybridizing diesel generator with 30 kW solar PV and 198 kWh ESS (lithium-ion batteries)
- Extension of power service from 8h to 24h per day; connecting all 244 households
- Power for households and productive uses (boat making, refrigeration for fishing, tourism)
- Collaboration with NEA and electric cooperative for replication of business model in other islands
- Operation & maintenance by an electric cooperative + access to government incentive schemes to lower electricity tariff





Mini-Grids for Electrification

PILOT: Malalison Island Solar Hybrid and Pre-paid Metering System with Private Sector Joint Venture Model

- 50 kW solar PV hybridized with 50 kW diesel and 238 kWh ESS
- Increase capacity and enhance service from 4 to 24 hours/day
- Pilot test the use of pre-paid metering to improve collection efficiency and manage electricity consumption
- Pilot test EC-private sector partnership in off-grid electrification
- Uses modular system for future expansion
- Serves as model for replication in other areas





Capacity Building/Knowledge Sharing

Workshop on Strengthening the Capacity of Electric Cooperatives (EC) to Develop RE Mini-grids and Distributed Power Generation Projects)



Asian Clean Energy Forum 2018

Deep Dive Workshop

Developing Sustainable Mini-Grids

TRACK 1: Energy Efficiency

TRACK 2: Renewable Energy

TRACK 3: Energy Access

TRACK 4: Navigating the Future



**ASIA
CLEAN ENERGY
FORUM 2018**

Harnessing Innovation to Power the Future

Manila, Philippines 4-8 June 2018





Thank you.

