



# **The 2017 ESMAF Knowledge Exchange Forum**



## **Off-Grid Electrification in Myanmar**

**30-November-2017**

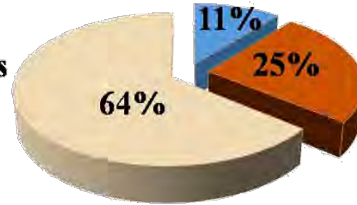
**London**

# Current Situation of Rural Electrification in Myanmar

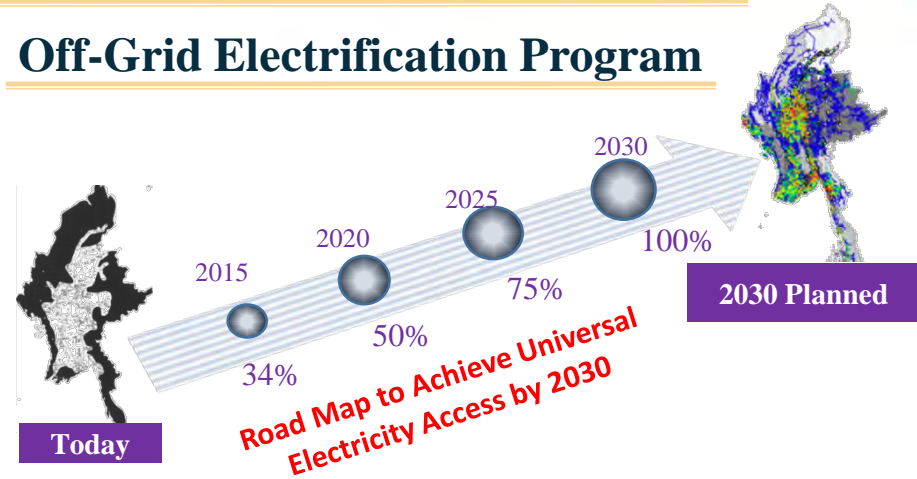
- Total Villages in Myanmar - 63899
- 70%HH Electrified villages - 22908  
(Electrified Villages by DRD - 6908)
- Non-electrified villages - 40991

## Rate of 70% HH Electrified Villages

- 70% HH Electrified Villages by DRD
- 70% HH Electrified Villages by others
- Non- Electrified Villages



## Off-Grid Electrification Program



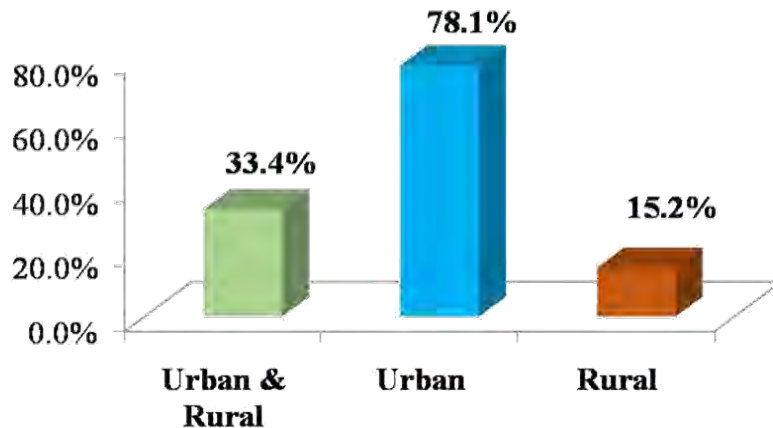
### Objective

- To achieve Universal Access to electricity by 2030

### Objectives of Off-Grid Electrification in NEP

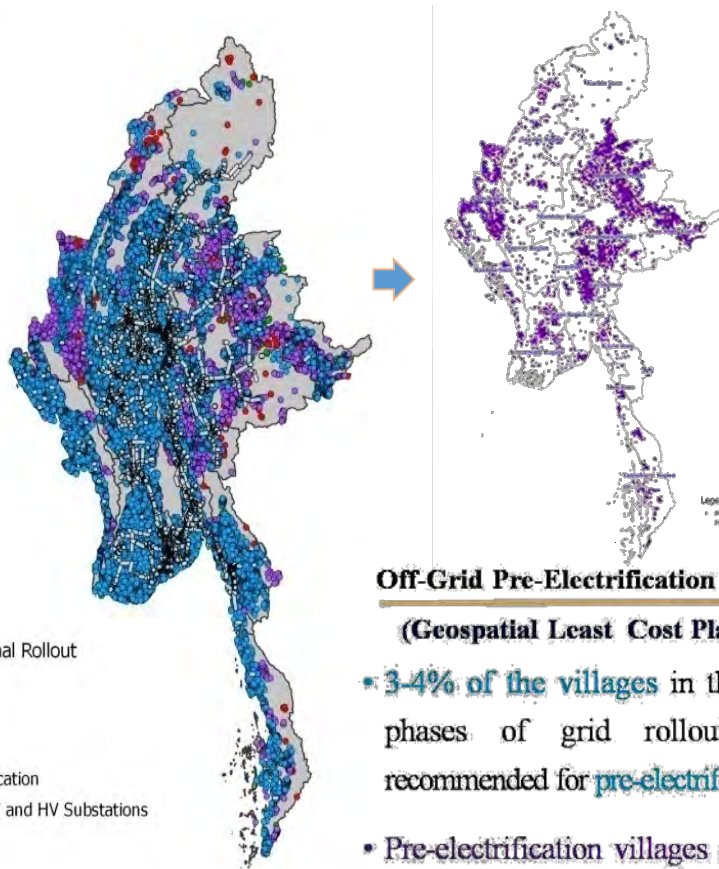
- To increase electricity access in rural areas
- To implement the pre-electrification system in the remote villages
- To make better electrification system by the public contribution
- To improve the public-private-people partnership

## Proportion of Population in Households with Access to Electricity (Census Data)





## Geospatial Least Cost Planning



Myanmar National Rollout

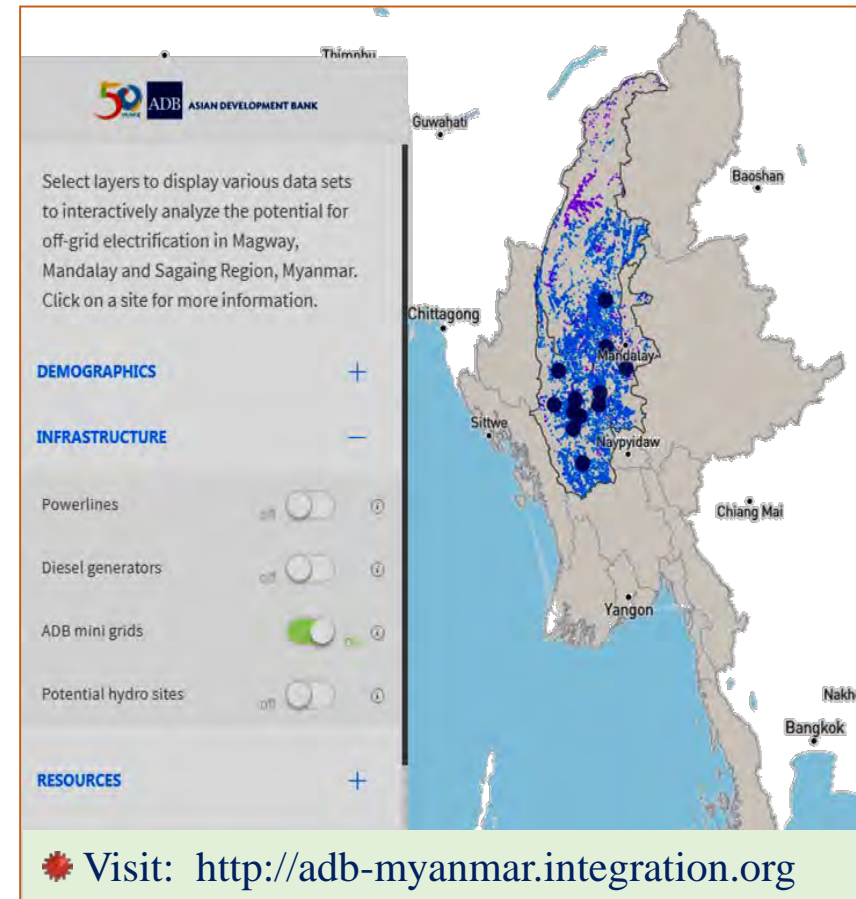
- On-grid
- Mini-grid
- Off-grid
- Pre-Electrification
- Existing MV and HV Substations

### Off-Grid Pre-Electrification Plan (Geospatial Least Cost Plan)

- 3-4% of the villages in the last phases of grid rollout are recommended for pre-electrification
- Pre-electrification villages shown in purple
- Shan, Chin, Kayah and Kachin States represent major areas for pre-electrification

### Off-Grid Pre-Electrification Map

## Myanmar Off-Grid Analysis by ADB (Sagaing, Magway & Mandalay Region)



## Yearly Plan of Off- Grid Electrification for 5 Years (2016-2021)

Sr.	Fiscal Year	SHS		Mini-Grid		Total		Estimated Cost (Million \$)	Remark
		Village	HH	Village	HH	Village	HH		
1	2016-2017	2708	141465	10	1081	2718	142546	34.910	Complete
2	2017-2018	1199	110000	34	5184	1233	115184	24.954	On Going
3	2018-2019	1500	133275	100	11050	1600	144325	50.508	Plan
4	2019-2020	1500	122950	100	9095	1600	132045	46.355	Plan
5	2020-2021	1500	128550	100	7380	1600	135930	46.394	Plan
<b>Total</b>		<b>8407</b>	<b>636240</b>	<b>344</b>	<b>33790</b>	<b>8751</b>	<b>670030</b>	<b>203.121</b>	



### Implementations under NEP in (2016-2017) FY

#### ☑ Solar Home System

- (7) State & Regions, (95) Townships
- (2708) Villages , (141465) Households

#### ☑ Mini-Grid System

- (4) States, (5) Townships
- (8) Project Sites, (10) Villages, **(1539) Connections**  
**{1081 HH, 103 PF, 320 SL, 35 Productive End Uses}**



- Developer's Operation Period - 6~10 years

(based on tariff rate)

- Tariff Rate

- 350 Kyat ~ 500 Kyat

## Financing and Subsidy Policy

● 2012-2013 FY~ 2015-2016 FY -100% Government's Subsidy in cooperation with International Organizations

● 2016-2017 FY (NEP)

- Solar Home System

● (85%~90%) (NEP Budget)

● 10%~15% (Public Contribution)

- Mini-Grid System

● 60% by NEP Budget

● 20% by Developers

● 20% by Community

100%



### Funding Resources

▣ World Bank's IDA Loan - USD (90) Million (2016~2021)

▣ Government's Yearly Budget - USD (15) Million (Average)

▣ KfW's Grant - Euro (9) Million (2016~2019)

▣ GIZ's Grant - Euro (2) Million for TA (2016~2018)

▣ Italy Soft Loan - Euro (30) Million (2018~2021)

▣ ADB's Grant - USD (2) Million (2015~2017) (Complete)

▣ JICS's Grant - JPY (994) Million (2014~2017) (Complete)





# Technical Changes in Off-Grid Electrification Myanmar

## SHS Before 2016

- ❑ 80Watt Solar Module -1Pc (5yrs Warranty).
- ❑ Battery (12V/65AH) -1Pc (1.5yrs Warranty)
- ❑ Controller (10A/12V) -1Pc (3yrs Warranty).
- ❑ Inverter (12V/ 300W) - 1Pc (3yrs Warranty).
- ❑ LED Bulb (3W) - 2Pcs
- ❑ LED Tube Lamp (10W) - 1Pcs
- ❑ Cable (8m, Length) -4 Sets
- ❑ **Service Level**  
- LED Bulbs, Phone Charging, TV (25W)(3hr)

## SHS After 2016

- ❑ 60Watt Solar Module -1Pc (10yrs Warranty)
- ❑ Battery (12V/40AH) (Lead Acid)/ -1Pc (3yrs Warranty)  
(12V/23Ah) (Li-ion)
- ❑ Controller (5A/12V) -1Pc (3yrs Warranty)
- ❑ LED Bulb (12V/3W) - 5Pcs (3yrs Warranty)
- ❑ Cable (8m, Length) -4Sets (3yrs Warranty)
- ❑ **Service Level**  
- LED Bulbs (5hr), Phone Charging (2.5hr),  
15W DC TV (3hr), Fan (3hr)

## Service Level by Mini-Grid under NEP

- ✿ Lighting
- ✿ TV, Sound Box , Mobile Phone Charger, AC Fan
- ✿ Refrigerator
- ✿ Productive Uses(up to 1KW)

## Technological Development of Solar Home System (Before 2016 Vs After 2016)

- ❑ More Compactable
- ❑ Better Technical Assurance and Quality Assurance

## Technological Development in Mini-Grid System

- ❑ Better Quality (Being Grid Ready Standard)
- ❑ More Systematically (Using Smart Meter and Pre-paid System)
- ❑ More effective and sustainable



## Positive Impacts on Local Communities

- ☐ Supporting to Promote Education and Health (Public Facilities: School, Health Center, Religious Building, Streetlight, etc.)
- ☐ Utilizing More Electrical Appliances (Mobile Phone, TV, Refrigerator, Sound Box, etc.) and Productive Uses (Water Pump, Forage Chopper, Mill, Welding and Lathe, etc.)
- ☐ Reducing the Expenditure and also Environmental Impacts



## Positive Impacts on Local Communities





## Challenges

- ☐ Lack of Rules and Regulations for Mini-Grid System
- ☐ Weakness of Feasibility Study
- ☐ Inadequacy of Community Awareness
- ☐ Incentive to promote Private Sector Participation



## Lesson Learned

- ☐ Communication with Community, Installer, Other Stakeholders, etc.
- ☐ How to Provide Electricity for Poor People
- ☐ Capacity Development to Staffs, Private Sector and Community





## Way Forwards

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- ▣ Developing the Rules and Regulations for Mini-Grid System
- ▣ Promoting Private Sector Participation
- ▣ Rewarding Incentives the Developers
- ▣ Enhancing to Implement Mini-Grid Projects in Cooperation with International Development Partners
- ▣ Linking with the other Development Partners at Mini-Grid Project Areas for Comprehensive Productive Uses and Economic Development



## Invitation/ Further Enquiries

- Invite the developers to cooperate with us
- Enquiry : <http://www.drdmyanmar.org/index.php?page=bmV3ZGV0YWwlsJmlkPTE0OQ==>
  - **CfP2 Main Document:** <http://tiny.cc/cfp2main>.
  - **Company Registration Form (English):** <http://tiny.cc/nepdevregENG>
  - **Company Registration Form (Myanmar):** <http://tiny.cc/nepdevregMM>
  - **DRD-Identified Sites:** <http://tiny.cc/drdidentified>
- Contact us: [nepcommunicationteam@gmail.com](mailto:nepcommunicationteam@gmail.com)
- Visit: <https://m.facebook.com/National-Electrification-Project168693857494440>



**Thank You for Your Attention!**