

Ministry of Electricity and Energy



Challenges and Opportunities for Renewable Energy Development in Myanmar

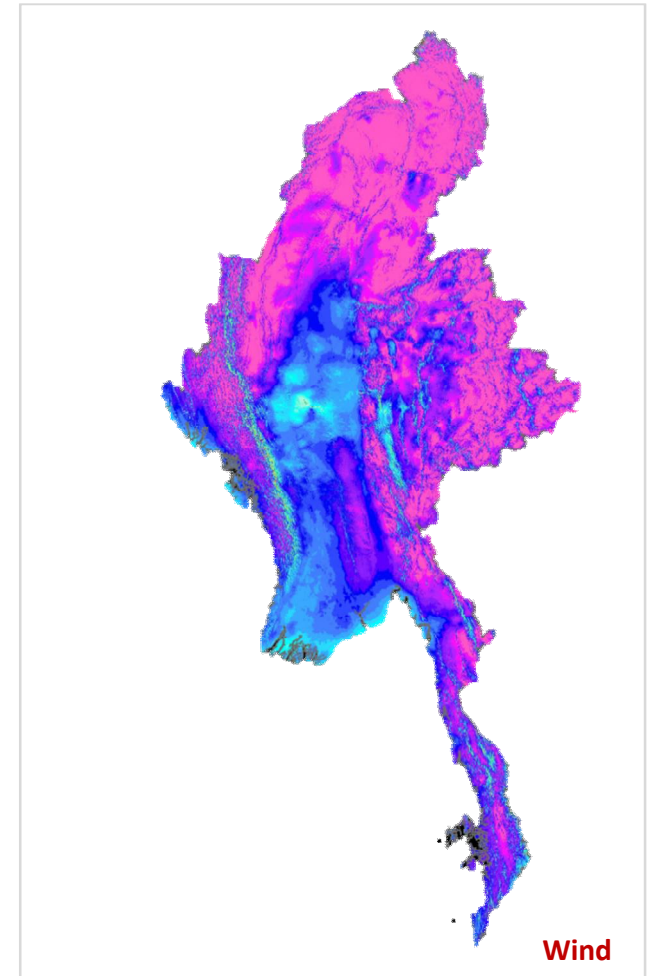
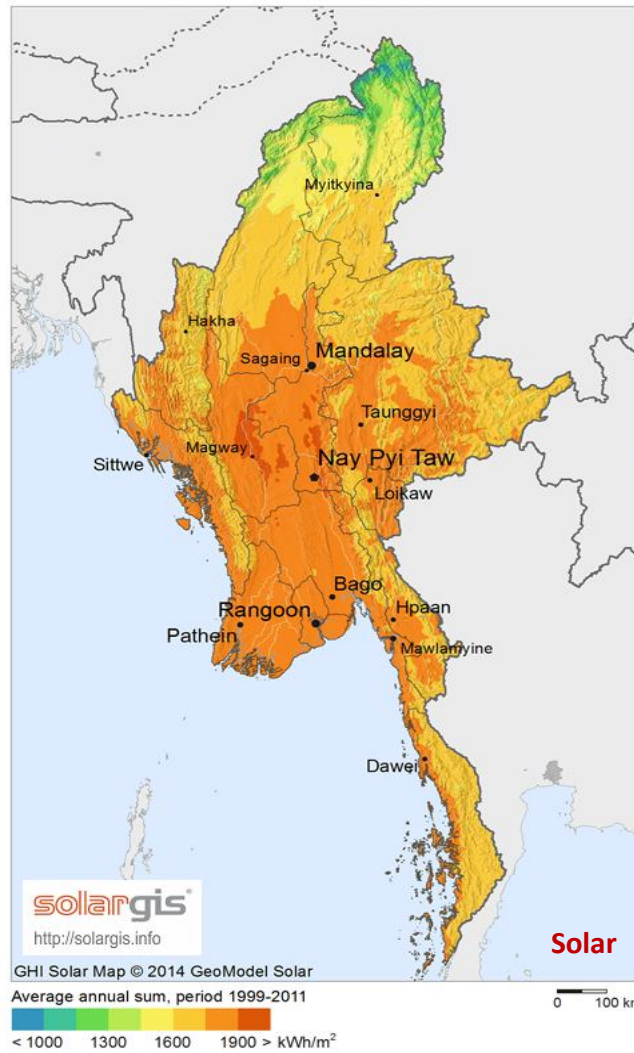
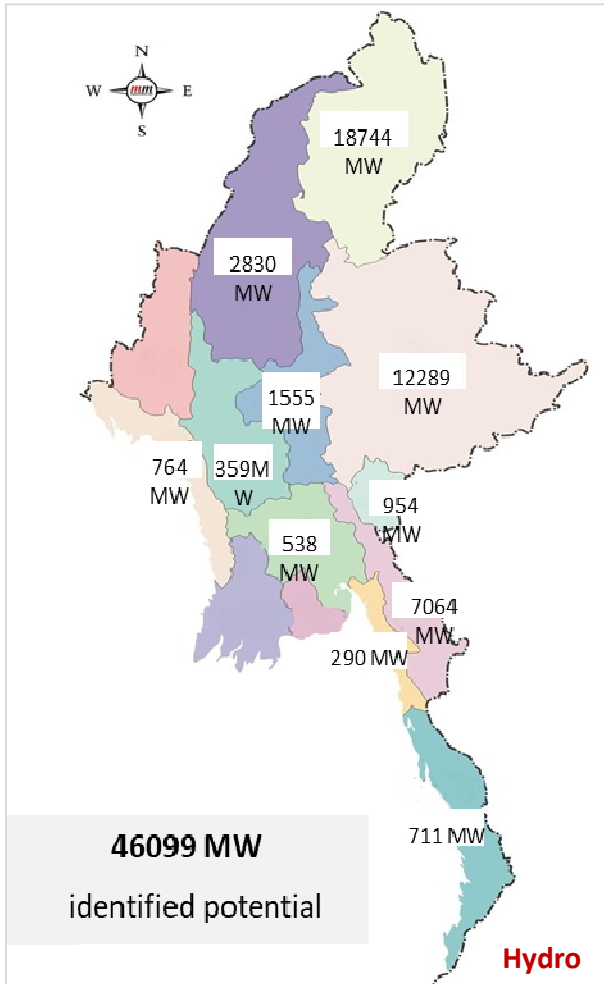
Hein Htet

Deputy Director General

Department of Electric Power Planning

22.7.2019

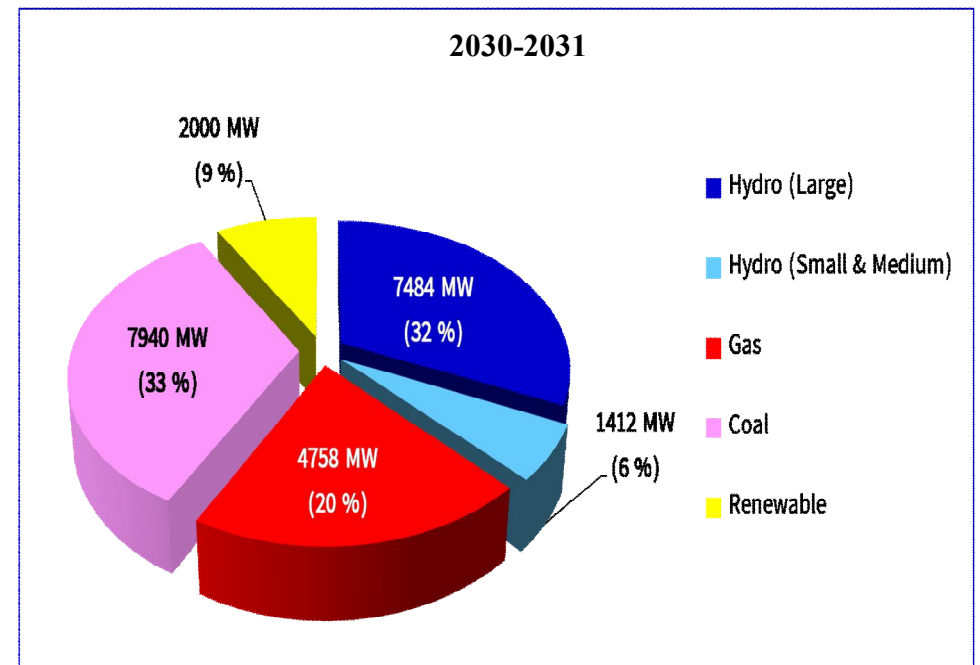
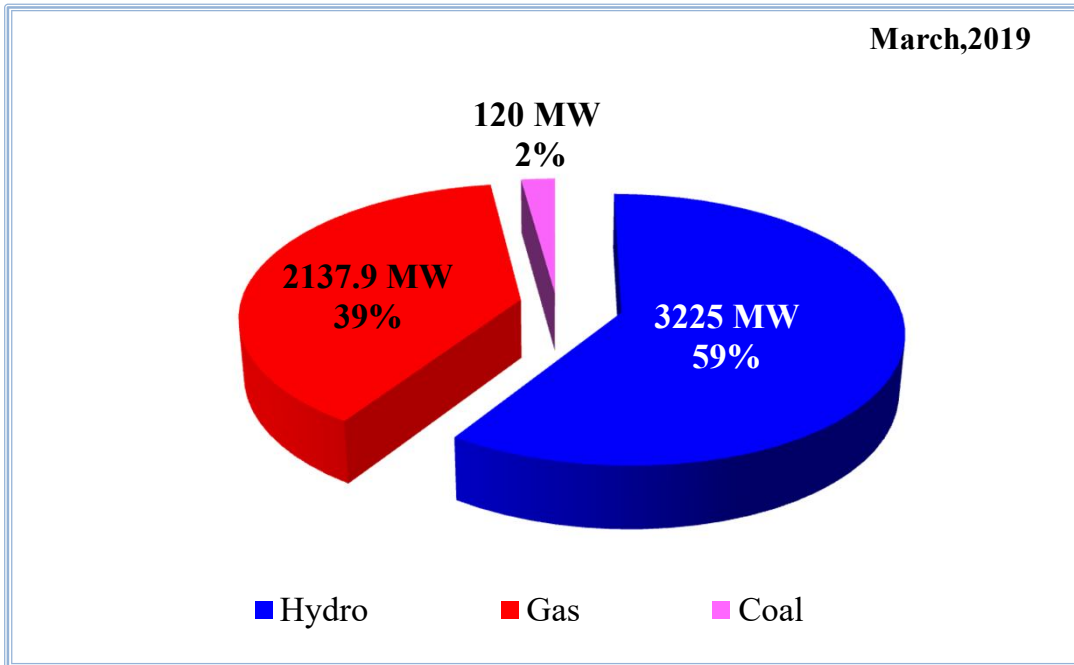
Potential Renewable Energy Resources in Myanmar



Hydropower	108,000 MW (Mega Watt)
Solar Power	51,973.8 TWh per year (Terra Watt Hour / year)
Wind Power	365.1 TWh per year (Terra Watt Hour/year)

(Source: Ministry of Energy 2013, ADB 2012 and JEPIC 2012)

Current Generation Mix and Future Perspective



Balanced Generation Mix Approach

National Electricity
Master Plan (NEMP)

23594 MW

9% Renewable with the total installed capacity of 2000 MW by 2030

38% Hydro by 2030

National Renewable Energy Committee (NREC)

Formed on 6th February 2019

Mandate to implement Renewable Energy Development Activities

Chaired by Minister of Ministry of Electricity and Energy

9 Ministries, 1 Regional Council, 2 City Development Committees, 5 Organizations included

15 Duties and Functions

8 Working Groups

First meeting on 1st March 2019

**Establishment of
National Renewable
Energy Committee**

Working Groups under NREC

- 1 Technical Working Group
- 2 Legal and Commercial Working Group
- 3 Training and Research Working Group
- 4 Mini-Grid and Off-Grid Working Group
- 5 Energy Efficiency Working Group
- 6 Renewable Energy Law Formulation Working Group
- 7 International Relation Working Group
- 8 Climate Change and Environmental Working Group

Collaboration with International Organizations

International Organizations



Framework Agreement signed on 19th July 2018



Joined on 30th October 2018

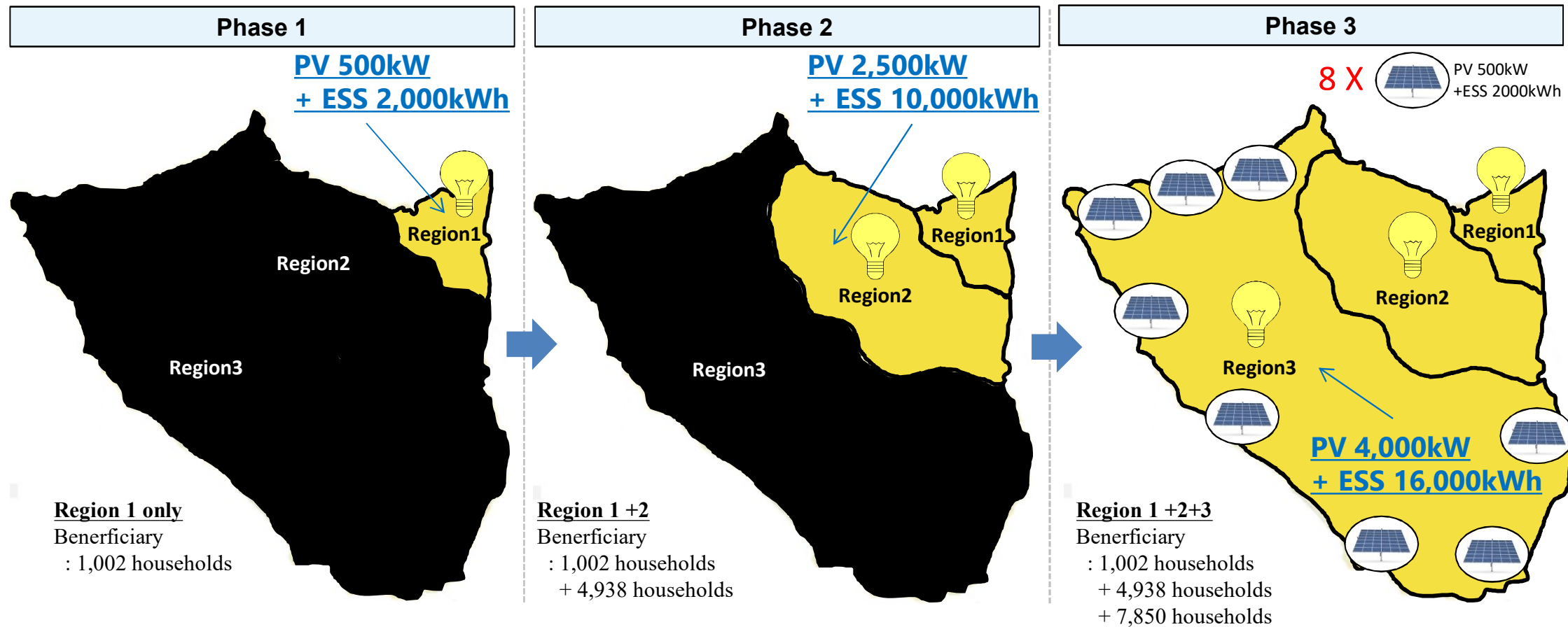
MOU

Ministry of Education, Myanmar + Ministry of New and Renewable Energy, India

DRI, Ministry of Education, Myanmar + Asia Air Survey (AAS), Japan

Ministry of Electricity and Energy, Myanmar + Embassy of Denmark

Manaung Island 24 hours Electrification Plan



Item	At Present	Phase 1	Phase 2	Phase 3
Generation Method	Fuel Diesel	PV + ESS + Fuel Diesel		
Generation Time	6H	24H		
Generation Capacity	1,250kW	1,750kW	4,250kW	8,250kW
Power Consumption / day	1,500kWh	2,000kWh	12,000kWh	28,000kWh

Solar Energy Utilization



- Sunlabob Renewable Energy Ltd
- 117 kWp Solar System at Junction City
- 92.6 kWp Solar System on Garment factory
- Located in Yangon

- Mandalay Yoma Energy
- 110 kWp Solar System
- 240 kWh ESS
- Located in Sei Taw Village, Yinmarbin, Sagaing



- SHS reached 2700 Villages in 95 townships
- Power supply to 186 schools and 524 health centers
- 8 pilot hybrid Solar Mini-grid in 2017

Floating Solar Development

Technical and Financial Assessment y
Assisted by **WORLD BANK** for
Grid Connected **PV + Hydropower**

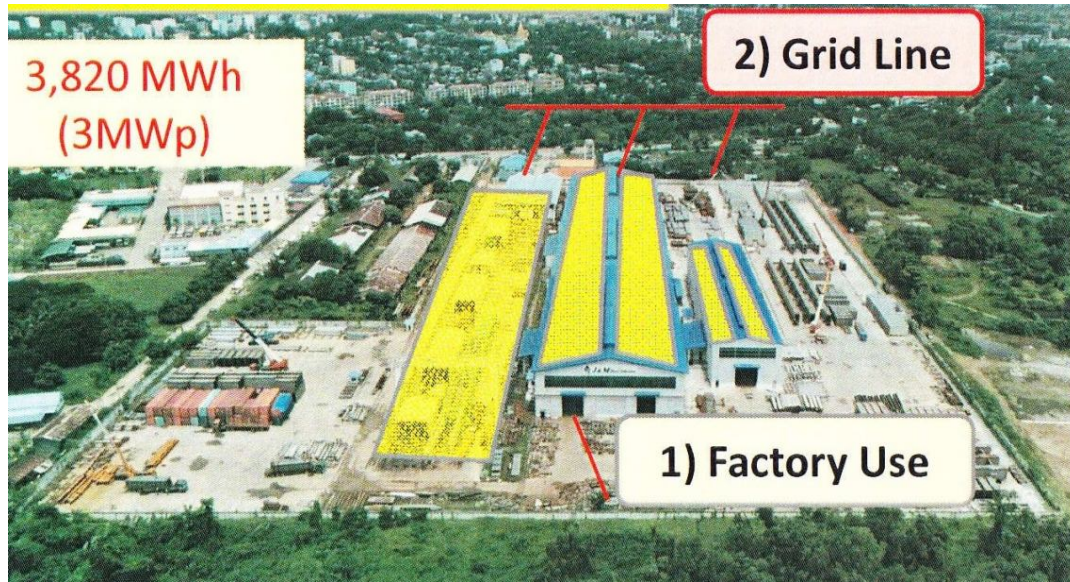
Three Hydropower Projects selected out of 29

1. **Lower Paung Laung** (Floating 30 MW+ Ground 30MW)
2. **Shwegyin** (Floating 75 MW + Ground 282.5 MW)
3. **Kun** (Floating 60 MW)

The World Bank shared
feasibility study report of these 3
projects

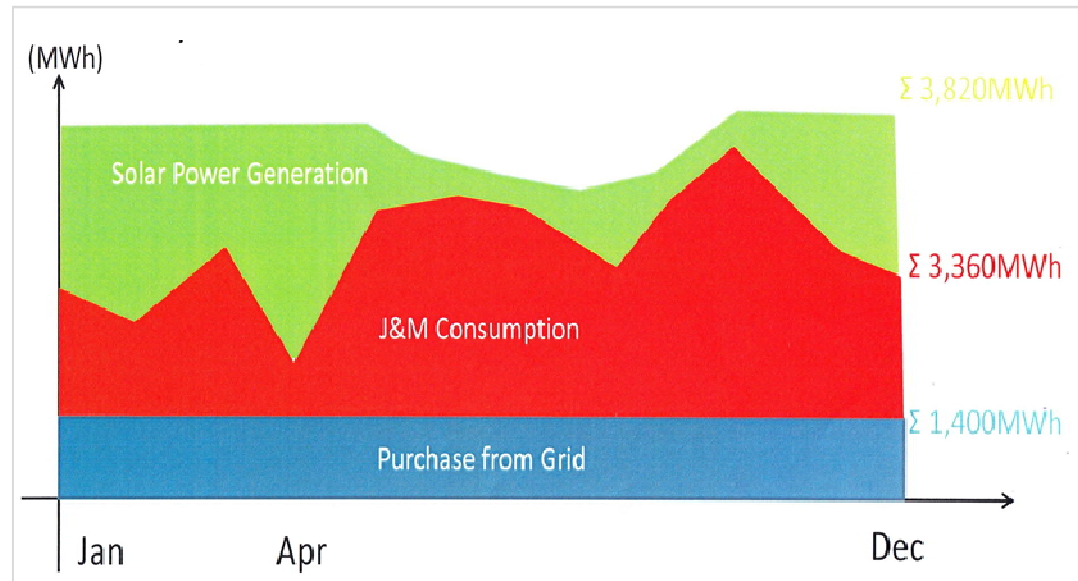


Roof-top Solar in Industry Sector



- 1st Grid Connected Roof-top Solar Power System
- Developed by J&M Steel Solutions Co., Ltd (JFE)
- 3 MW Capacity
- Located in Yangon

- Net Metering Scheme
- 3820 MWh Annual Generation
- PPA Negotiation in Progress
- Possible Expansion to 20 MW



Wind Power Development

Wind Power Project : Chaung Tha

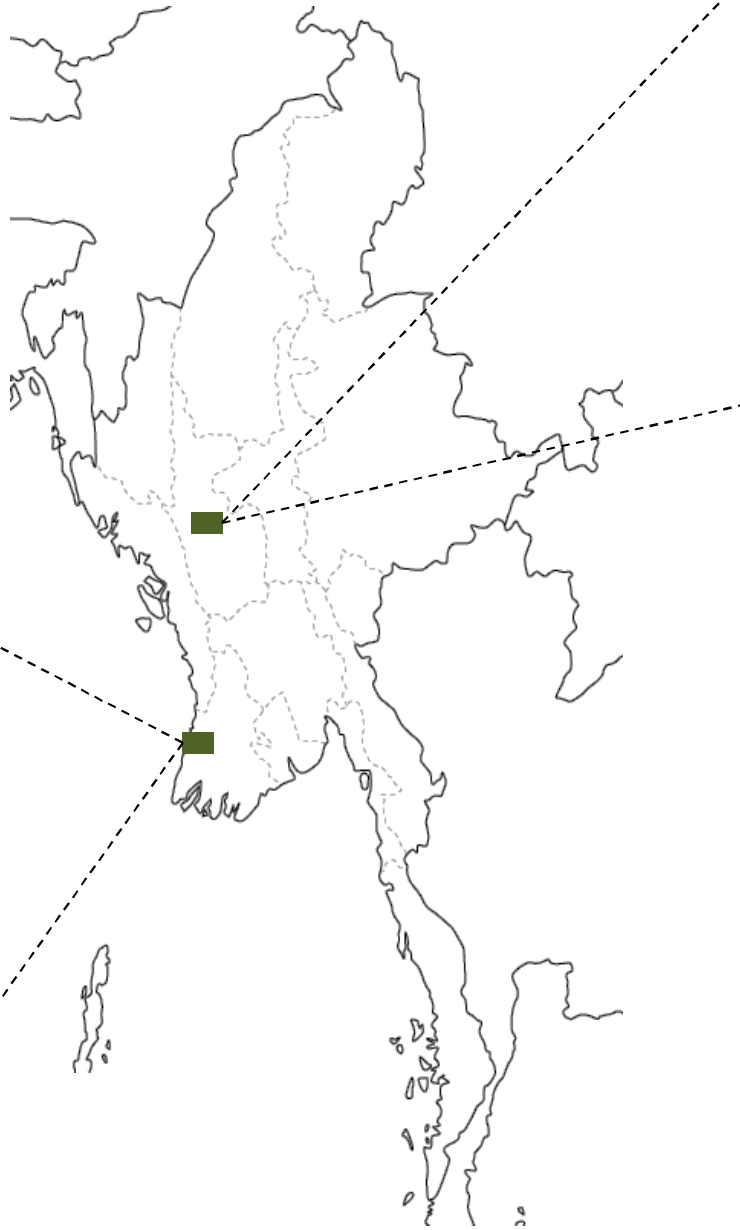
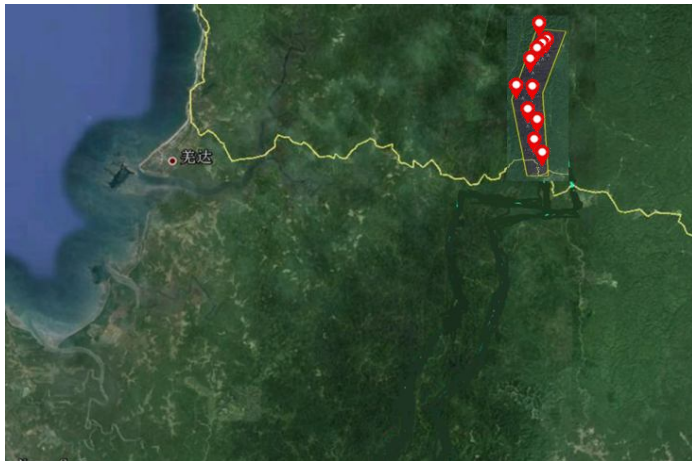


China Three Gorges Corporation

Capacity - 30 MW

Location - Chaung Tha,
Ayeyarwaddy Region

FS Status - Completed



Wind Power Project : Magway



Capacity - 263 MW

Location - Magway Region

Phase 1 - 163 MW (113+50)

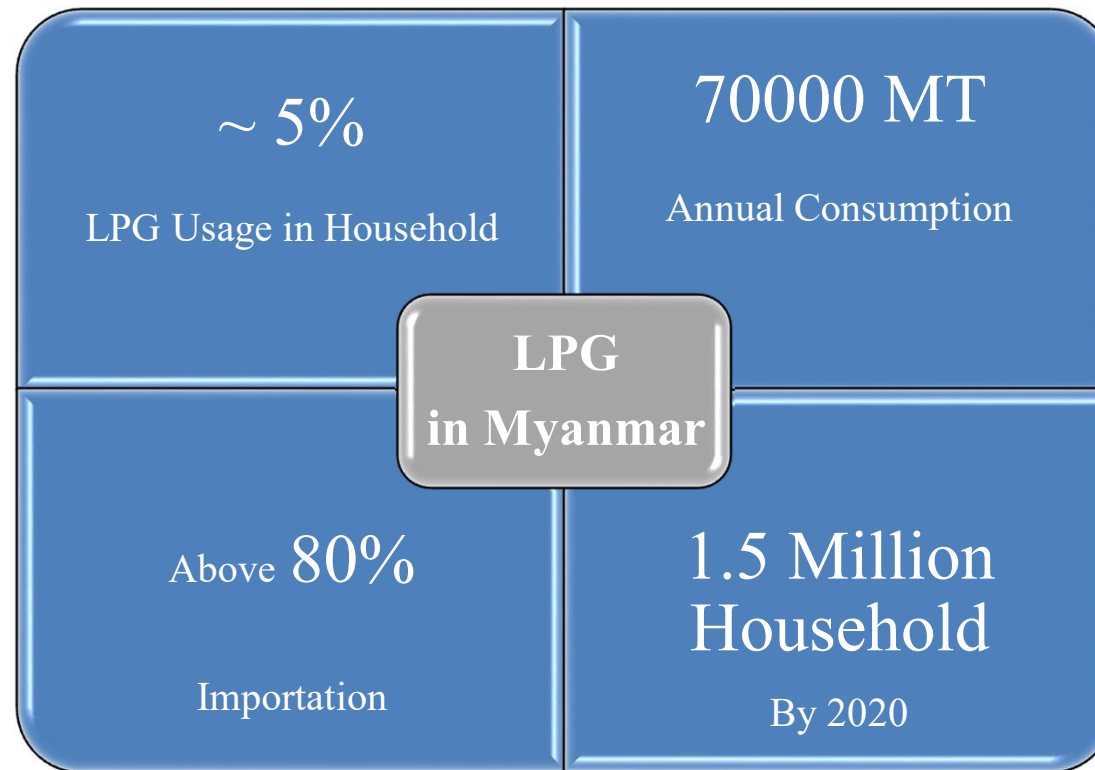
FS Status - Completed

Biomass Power Generation



- Proposal made by Great Wall Group of Co., Ltd
- 60 + 60 MW Biomass Power Generation Systems
- Located in Katha, Sagaing Region
- 100,000 acres of farming land
- Using energy grass, straw and agricultural waste as a feedstock

LPG for Household



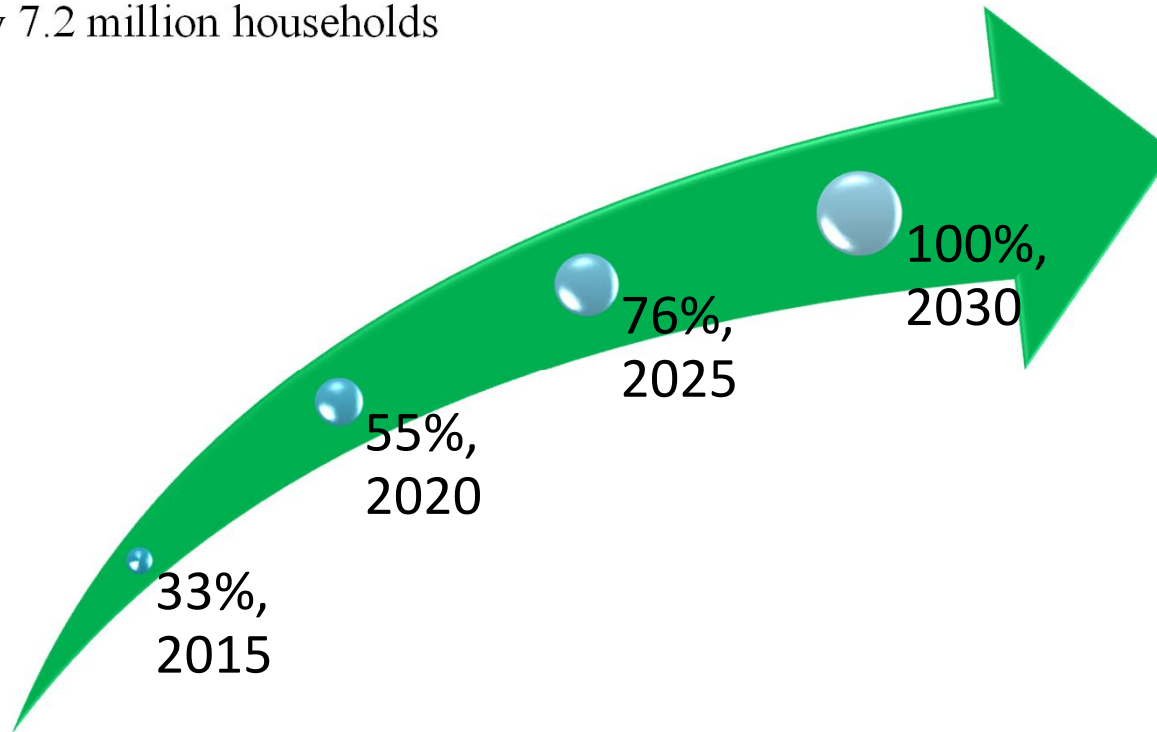
Developed by



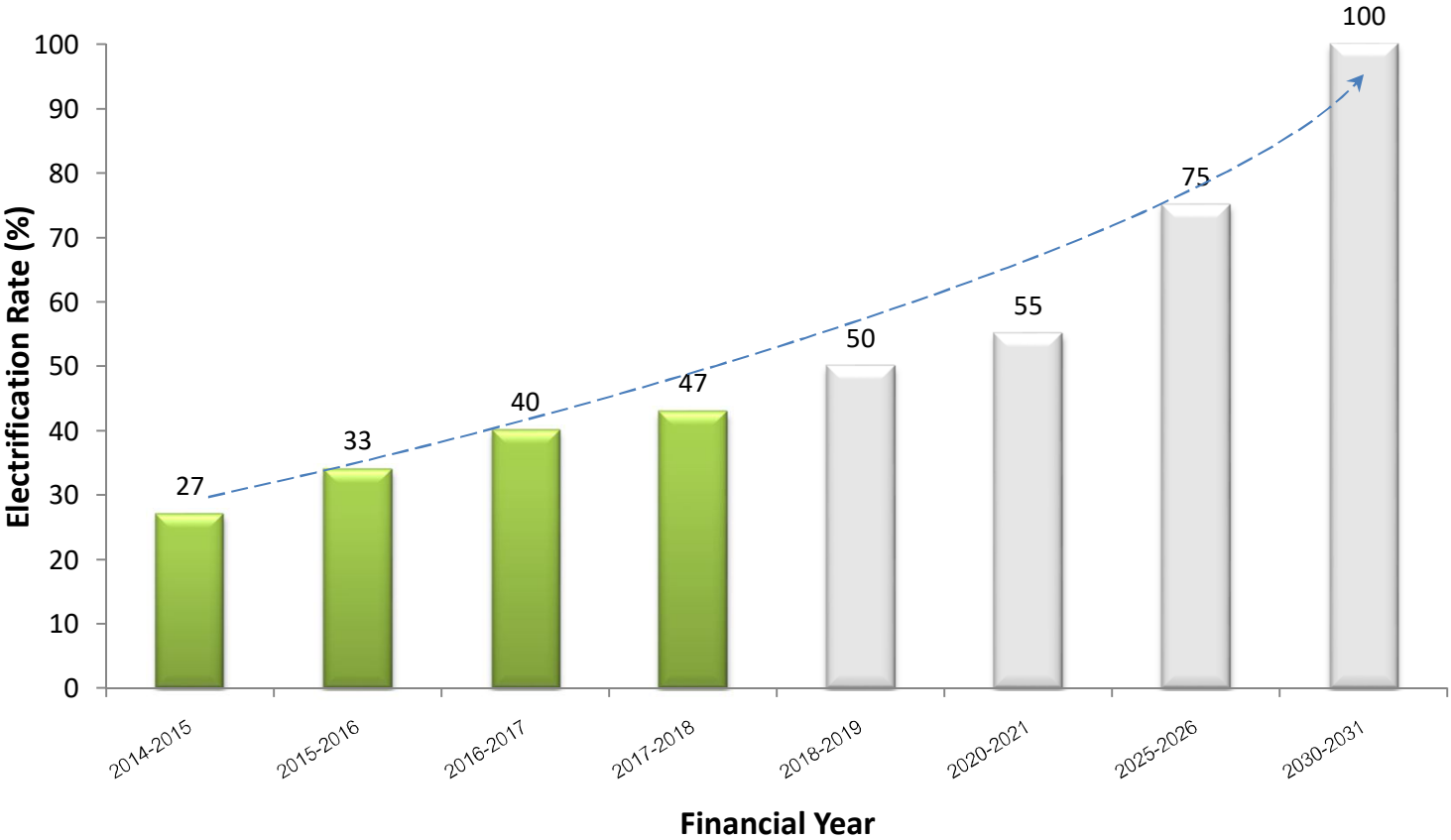
- LPG utilization in household is still low
- Parami Energy launched LPG promotion program in December 2018
- Initial Target is to distribute LPG to 100,000 household in Yangon during the year 2019
- Targeting to achieve 2 million household LPG users in Myanmar by 2020

National Electrification Plan (NEP)

- Implementation Agencies
 - Ministry of Electricity and Energy (**On-Grid**)
 - Department of Rural Development, MoALI (**Off-grid**)
- Universal access to electricity in Myanmar by 2030
- Estimated cost **US \$ 5.8 billion** (grid and off-grid)
- Electrify 7.2 million households



2030 Electrification Target



100 % Electricity Access by 2030

7.2 Millions

Households Coverage

Current Implementation of Off-Grid Electrification Programme

Off- Grid Electrification Program for 5 Years Plan (2016~2021)

Sr, no	Fiscal Year	SHS		Mini-grid		Total		Remark
		Village	Household	Village	Household	Village	Household	
1	2016-2017	2708	141465	10	1503	2718	142968	Complete
2	2017-2018	1597	86870	35	6868	1632	93738	Complete
3	2018-2019	2434	125649	100	10000	2534	133649	On Going
4	2019-2020	1500	122950	100	9095	1600	132045	Plan
5	2020-2021	1500	128550	100	7380	1600	135930	Plan
Total		9739	605484	345	34846	10084	638330	

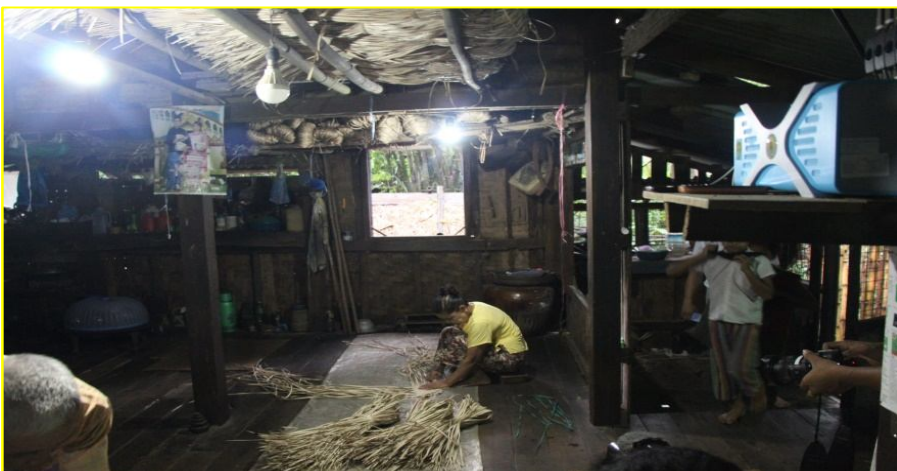
Budget Allocation for SHS

DRD Budget + World Bank's IDA Loan
+Public Contribution

Budget Allocation for Mini-Grid System

NEP budget 60% + Developer 20%
+Community 20%

DRD- NEP's Solar Home Systems



DRD- NEP's Mini-Grid Projects



63 kW Solar Mini-Grid System combined with 50 kW(Diesel Backup System)



110 kW Solar Mini-Grid System



30.72 kW Solar Mini-Grid System combined with 24 kW(Diesel Backup System)



Distribution Line and Streetlight

DRI-Research Activities

Green House Type Solar Dryer

(4 nos of projects , Boke Pyin, Ye Township, Magwe region and DRI campus)



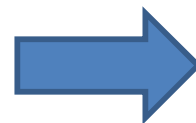
3.5 m³ family type biogas plant

(5 nos of plants, in Bogalay Township, Ayeyarwaddy Delta Region)



Cooperation with China

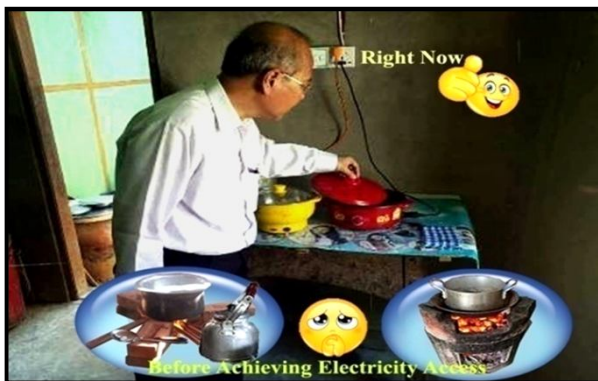
- 1.Global Environmental Institute (GEI),
- 2.Guangzhou Institute of Energy Conversion,
- 3.Chinese Academy of Science



Potential Assessment of Solar Energy Zones and Selection of Interested Area

Positive Impacts on Local Communities

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



Activities in Energy Efficiency and Conservation Sector

Energy Efficiency and Conservation Policy, Strategy and Roadmap

- Undertaken by Ministry of Industry
- focuses on four main sectors: industrial, commercial, residential and public
- targets are 12% energy consumption reduction by 2020, 16% by 2025 and 20% by 2030

Energy Efficiency and Conservation law, regulation and guideline

- Aiming to boost effective use of energy in all round sectors
- Already drafted Energy efficiency and conservation law
- Developing the Energy efficiency and conservation legal framework is in progress
- Drafting of Industrial energy conservation guideline is in progress

EE&C activities by MOI

- Improvement of Industrial Energy Efficiency (IEE) Project (2015-19) is being implemented by cooperating with UNIDO
 - Technical assistance is being provided to implement EE&C activities in Public and Private factories

- ASEAN-Standard Harmonization Initiative for Energy Efficiency (ASEAN-SHINE) Programs by cooperating with UNEP
 - Energy Efficiency and Green Building Codes will be developed
 - Minimum Energy Performance Standard (MEPS) and labeling program will be implemented.

RE Opportunity in Myanmar

- Clear renewable energy target
- High potential of renewable energy resources
- Potential market in the region
- Investment opportunities in both generation, transmission and distribution areas
- Potential market due to rapidly growing electricity demand
- Tax Incentives
- Require huge investment in offgrid areas
- Skilled workforce availability

Thank You.