

JICA's Cooperation for Electrification and Challenges

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JICA's Cooperation for Electricity and Energy as of Jan. 2017



■ Financial Support

■ Technical Support

■ Grant Aid

■ Concessional Loan

■ Preparatory Survey

■ T/A Projects

■ Advisors

■ Plans, Trainings, etc.

Projects in bold: already committed

Projects in fine : under review or consideration

FY	2014	2015	2016	2017	2018
National Sector Strategy	Electricity M/P	M/P Follow-up		Capacity Development of Power Sector Planning (incl. financial analysis)	
Generation	50MW Gas-Fired Power Plant etc. (for Thilawa SEZ)				
(Thermal)	Urgent Rehabilitation and Upgrade for Thaketa Gas-Fired Power Plant and 4 Substations in Yangon				
(Hydro)	Baluchaung No.2 Rehabilitation		F/S	Hydro Power Rehabilitation	
Transmission		500kV Transmission Line & Substations (National Transmission Network Phase I & II)			
Distribution	Advisor to MOEP/YESC & Training Courses			Capacity Development of Transmission and Distribution Systems	
	F/S	Enhancement of Yangon Distribution Network (I)			
				Enhance. of Distribution in Other Major Cities	
				Enhance. of Yangon Distribution (II)	
Rural Electrification and Renewable (on & off-grid)	Rural Electrification under Regional Development Project for Poverty Reduction (I)				
		F/S	Rural Electrification under Regional Development Project for Poverty Reduction (II)		
		Technical Transfer for SHS			
			Solar Storage Survey		

1. [ODA Loan] Regional Development Project for Poverty Reduction Phase I

Purpose: To improve the living standards of people in States and Regions by constructing and rehabilitating key infrastructure (roads, bridges, electricity and water supply) that are urgently needed, thereby contributing to development and poverty reductions in regional areas.

Phase I: Loan Agreement signed on 7th June, 2013, 17 billion Japanese yen, **66** sub-projects being implemented in Seven Regions and Seven States (**17** for Road and Bridges, **26** for Power Supply, **23** for Water Supply)

Road and Bridge Sector

- ✓ Road improvement
- ✓ Box culvert construction
- ✓ Bridge construction or renovation
- ✓ Reinforced bridge construction

Power Supply Sector (On-Grid)

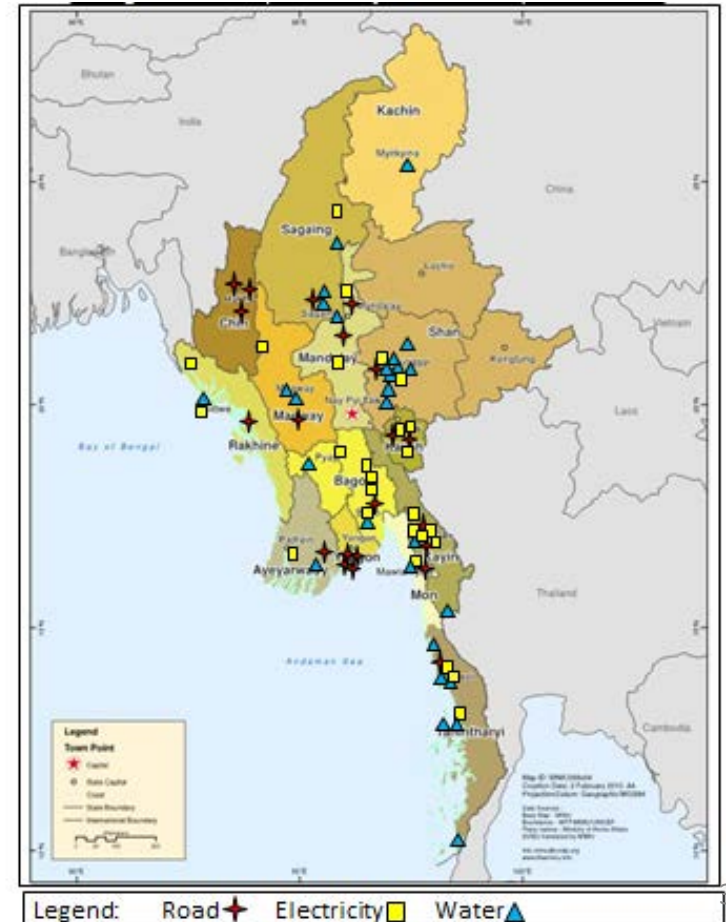
- ✓ 66kV/33kV & 66kV/11kV substations
- ✓ 33kV/11kV substations
- ✓ 66kV transmission lines
- ✓ 33kV transmission lines
- ✓ 11kV distribution lines
- ✓ 0.4kV distribution lines
- ✓ Distribution transformer

Power Supply Sector (Off-Grid)

- ✓ Diesel Generator
- ✓ 0.4kV distribution lines

Water Supply Sector

- ✓ Water Treatment Plant (WTP) (including Slow Sand filter/ Rapid Sand Filter, Chlorine facility)
- ✓ Water Pipe Line / Water Conveyance line / Water Transmission line / Water Distribution line
- ✓ Transformer 400V electrical line
- ✓ Pump, Pump House, Pump Station
- ✓ Pontoon
- ✓ Tube Well (Deep well, Dug well)
- ✓ Intake facility / Weir
- ✓ Reservoir / Clean Water Tank



<Outline>

- Executing Agency: Electricity Supply Enterprise(ESE), MoEE
- Scope: Installation of 128 diesel generators (Among them, renewal of existing DG for 100 sites, new installation 28 sites) and 400v distribution line
- Schedule: Installation works have been completed.
- Project Cost: approx. 5 mil USD
- Same tariff as on-grid (35 kyats /kWh) if fuel is supplied by ESE; on the other hand, much higher tariff (e.g. 200-500 kyats/kWh) imposed where ESE does not supply fuel.



<Issues and Challenges>

- Household connection fee (100,000 – 200,000 kyat / HH)
- For some sites, responsibility of supply of diesel oil is unclear (ESE, State&Region Gov, villagers (VEC)?)
- Possible replacement of DGs in sites where the national grid reached
- In general, local bodies (e.g. government and VEC) are “authorized” to implement off-grid; however, no financial/technical capacity transfer from the central to local bodies



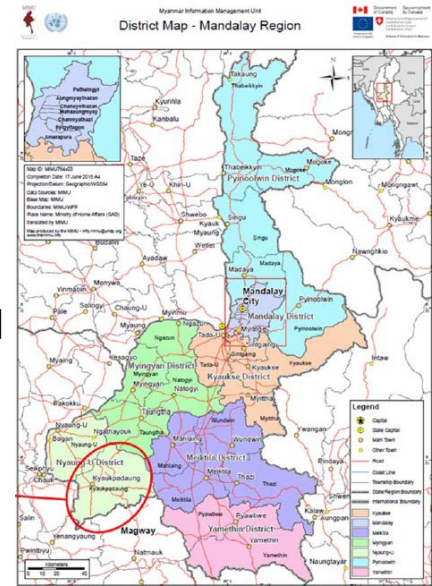
2. Technical transfer to Solar Home System

- Project Name: **Electrification of non-electricity areas and technology transfer in Yangon Region**
- Project Status: Started from Dec 2014. Installation of SHS has been completed in Dec 2015
- Target: 347 households in Myay Taing Village and Ahta Young Village, Taikkyi Township, Yangon
- Executing Agency: DRD, MoALI
- Scope of the Project
 - Technical transfer for villagers on solar panel
 - Pilot electrification project by solar panel
 - Capacity development of technical engineers
- Status (as of June 2016)
 - Basically well maintained (5 villagers who took short training in Japan play a role)
 - Reserve fund (3,000 kyats/HH/M) for outage / battery substitution was planned, but ceased



3. Study for solar storage selling business

- Study Period: Mar – Oct 2016
- Study site : Kyaukpadaung Township, Mandalay Region
- Concept:
 - To support study by Japanese firm on business feasibility for solar storage for BOP (Base of the pyramid)
 - Sales channel development with local business partner and MFI so that users could apply loan to MFI for buying solar storage
- Findings:
 - Business model applied in the study (visit village one by one) was not commercially viable
 - Outreaching customer’s education to rural area may be needed for their access to good quality/safety products
 - Limited retailers’ and customers’ and access to finance
 - Few MFIs are authorized to sell electrification solutions
 - Growing demands for electrical appliance which may in total consume 100-200W. (e.g. TV, rice cooker, small refrigerator)



4. Small studies by Private Firms on Micro Hydro

- JICA supports studies/pilot-projects proposed by Japan's private firms which have technical expertise in micro hydro with small flow and low drop in Mandalay Region
- Study includes site investigation, needs survey, matching with local partners, etc.
- More focus on “electrification” will be needed.



Micro Hydro 5kW ~ 50kW
installed in Japan



Micro Hydro 1kW ~ 15kW
installed in Japan

Policy Level

- Current GOM's visions for electrification; what is current situations on reorganizing of NEEC (National Electrification Executive Committee) and/or update of NEP?
- DRD will be a focal point for off-grid electrification; regular communication with actors institutionalized in DRD? (e.g. (1) Irrigation, Water Utilization and Management Department for hydro power on irrigation canal, (2) Department of Meteorology and Hydrology for river/stream water flow, (3) Department of Research Innovation for biomass, (4) local governments are also authorized to implement electrification investments).

Care for inclusiveness

- Support for village electrification committee from technical/management/O&M perspectives. (but, who should support VEC? DRD or local government? How about support for DRD or local government?)
- Support for non-rich users to get grid connection ("*Power to Poor*" mechanism)

Electrification by non-government actors

- Financial support for private sectors (e.g. IREDA and REC in India and IDCOL in Bangladesh)
- Promote foreign/local investment in electricity and power sector
- Deregulation of MFIs so that they can provide off-grid solution