



Myanmar: Off-Grid Renewable Energy Demonstration Project

Project Name	Off-Grid Renewable Energy Demonstration Project
Project Number	47128-001
Country	Myanmar
Project Status	Active
Project Type / Modality of Assistance	Technical Assistance
Source of Funding / Amount	TA 8657-MYA: Off-Grid Renewable Energy Demonstration Project Japan Fund for Poverty Reduction US\$ 2.00 million
Strategic Agendas	Environmentally sustainable growth Inclusive economic growth
Drivers of Change	Governance and capacity development Knowledge solutions Partnerships Private sector development
Sector / Subsector	Energy - Energy sector development and institutional reform - Renewable energy generation - biomass and waste - Renewable energy generation - solar
Gender Equity and Mainstreaming	Some gender elements
Description	<p>This capacity development technical assistance (TA) aims to support the creation of rural infrastructure, including energy access projects and will have as its main objectives: (i) to support the installation of clean energy-based systems for providing energy access (mostly solar PV and biomass-based systems) to schools and other public infrastructure in at least 25 villages, (ii) develop geospatial least cost energy access plans and an investment plan for select states and regions in the country, and (iii) to strengthen the capacity of the government institutions and the private sector to manufacture, install, operate and maintain small-scale clean energy systems. The proposed TA will be financed under the Japan Fund for Poverty Reduction Program (JFPR). The grant will finance pilot installations in the central dry zone (Mandalay region, Sagaing region and Magway region) and Chin, Kayah and Rakhine states. The Ministry of Livestock, Fisheries, and Rural Development will be the Executing Agency (MLFRD). The Department of Rural Development within MLFRD will be the implementing agency. The implementation period would be June 2014 to February 2016.</p>

Project Rationale and Linkage to Country/Regional Strategy

Myanmar is one of the poorest countries in the world with a gross domestic product (GDP) per capita of \$857, a Human Development Index (HDI) rank of 149 out of 187 countries, and 26% of its population living in poverty in 2010. The Asian Development Bank (ADB), like most other international development institutions, has not extended a loan or technical assistance to Myanmar since 1988. In response to the ongoing major reforms by the Government of Myanmar towards a democratic system and market-based economy, in early 2012, ADB adopted a phased approach to re-engagement with Myanmar. According to the International Energy Agency (IEA), Myanmar is an extreme example of energy poverty. Myanmar's average electrification rate was about 28% in 2012. Yangon City has the highest electrification rate (72%), followed by Nay Pyi Taw (65%), Kayar (42%), and Mandalay (35%). Rural areas are poorly electrified, with an average rural electrification rate of 16%. Even though electricity consumption in Myanmar has doubled in the last 10 years, in 2012, national average per capita consumption of electricity, at about 140 kilowatt-hour (kWh) per annum, is the lowest among the 10 Association of Southeast Asian Nations (ASEAN) countries and among the lowest in Asia. This low national average per capita consumption of electricity is due to low electrification rates, low industrial development and lack of investment. Lack of electricity impedes economic development and achievement of the United Nations Millennium Development Goals (MDGs).

As per data from IEA, Myanmar's primary energy supply sources are coal, oil, natural gas, hydropower, and biomass. Myanmar's primary energy supply source was biomass, followed by natural gas and oil. Coal and hydropower accounted for only small shares (0.9% and 2.4%, respectively) of total energy supply, although they are the main sources of power generation. These shares are changing, with hydropower production growing at a rate of 9.2% per annum. Investment in coal-powered plants, gas fields, and oil and gas pipelines is also increasing rapidly. Total installed power generation capacity in Myanmar in 2011 was 3,361 megawatts (MW), consisting of 2,520 MW (75%) of hydropower capacity, 715 MW (21%) of gas-fired capacity, and 120 MW (4%) of coal-fired capacity. Although the installed capacity exceeds the 2011 peak load of 1,533 MW, the available capacity is low. Particularly, during the dry season, hydropower plants cannot generate at full capacity due to low water flows. Hence, Myanmar's power grid is unreliable during the dry season.

Approximately two-thirds of primary energy in Myanmar is supplied by biomass (firewood, charcoal, agriculture residue, and animal waste). Firewood, used in both urban and rural areas, accounts for more than 90% of biomass-sourced energy, most of which is harvested from natural forests. Charcoal, which accounts for 4%_6% of total firewood consumption, is mainly used in urban areas. Due to high dependence on burning solid biomass fuels for energy in poorly ventilated dwellings causing indoor air pollution, Myanmar experiences high incidence of acute respiratory diseases and high mortality/morbidity rates. Nearly 91% of households collect firewood, 85% of households cook on open fires and only 12% of households own fuel efficient stoves. Hence, despite being home to Asia's most extensive tropical forest ecosystems, Myanmar's forests are considered to be under major threat from a combination of commercial logging and gathering of firewood.

Link to Country Partnership Strategy:

This TA addresses key medium-term goals of ADB elaborated in the interim CPS 2012_-2014 for Myanmar, namely (i) to assist the government in promoting sustainable and inclusive economic development and job creation in support of poverty reduction, (ii) enhancing connectivity_domestic and regional, rural and urban_through both hard and soft infrastructure, and (iii) help accelerate economic growth, create income opportunities, and bridge rural_urban gaps.

The TA also addresses ADB's three priority areas in the interim strategy period: (i) building human and institutional capacity in ADB's areas of focus and to help lay the foundation for medium-term engagement and effective development processes; (ii) creating access and connectivity for rural livelihoods and infrastructure development by promoting basic social services, improving rural infrastructure to boost farm productivity and incomes, lowering transaction costs, enhancing opportunities for domestic and cross-border trade and investment, and (iii) improving access to reliable and sustainable utility services.

Impact

Increased access to energy in rural Myanmar from renewable energy sources

Project Outcome

Description of Outcome

Improved capacity and commitment within MLFRD and the governments of select regions and states to design and manage rural energy access programs using renewable energy resources

Progress Toward Outcome

Implementation Progress

Description of Project Outputs

1. Renewable energy systems designed and installed in 25 villages to power community infrastructure and households.
2. Geospatial least-cost energy access and investment plans for select regions and states of the country developed.
3. Skills and abilities of staff in government entities and the private sector strengthened

Status of Implementation Progress (Outputs, Activities, and Issues)	<p>A consulting firm for the TA implementation was mobilized in January 2015. ADB consultation mission was fielded in January 2015. The EA (MLFRD/DRD) informed to ADB that the government intends to finance simple solar off-grid electrification in Rakhine State using its own funds as MLFRD has the budget and technical knowledge to implement solar home systems in Rakhine quickly. And Chin and Kayah State were dropped by the EA from the TA project sites because the local governments showed their no willingness for the TA project. Therefore, the TA will focus on the dry zone (Manday, Magway and Sagaing regions) in Myanmar.</p> <p>An inception mission was fielded in March 2015. It was agreed with the government that the TA will; (i) pilot solar mini-grid business models in Manday, Magway, and Sagaing regions, (ii) develop geospatial least-cost energy access and investment plans for Manday, Magway, and Sagaing regions and off-grid electrification regulations and guidelines, and (iii) conduct capacity buildings and provide O&M manuals for renewable energy technologies.</p> <p>Output 1: Vendors consultation meeting was conducted on 9 June 2015 and assessments for pilot project villages have been done. Procurement of pilot RE systems (solar PV mini-grid systems) for 12 villages has been completed. All 12 solar mini-grid systems have been commissioned by Q4 2016.</p> <p>Output 2: The assessment is on going and GIS experts have provided trainings to DRD and MOEP staff in March- May 2016. The development of an investment plan using geospatial mapping tool is on going. An investment forum will be held at NPT in May 2017.</p> <p>Output 3: The capacity building trainings for hydropower, Biomass and solar power have been done from February-March 2016 and on-site trainings for EA/IA staff in Q2 2016. The capacity development for relevant government agencies is on going.</p>
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Geographical Location

Summary of Environmental and Social Aspects

Environmental Aspects

Involuntary Resettlement

Indigenous Peoples

Stakeholder Communication, Participation, and Consultation

During Project Design	<p>During Phase 1 of the off-grid program (financed by an existing technical assistance program from the regional and sustainable development program), the project team had conducted field visits, focus group discussions, participant observation etc to glean stakeholder views on the project. Further, workshops and meetings were held in Naypyitaw, Mandalay and Chin to obtain local and union government agencies' views on project design, scope and implementation framework</p>
During Project Implementation	<p>The consultants' team includes specialists in community development facilitation and capacity development that will take the lead on continued engagement with the key stakeholders. Further, an individual international conflict sensitivity specialist will be mobilized to provide appropriate conflict sensitive approach/program on mitigating conflicts in the project areas, if any.</p>

Business Opportunities

Consulting Services	<p>A total of approximately 101 person-months of consulting services (36 person-months for international consultants and 65 person-months for national consultants) will be engaged through a firm. The consulting firm will be recruited in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time) through quality and cost-based selection (with a quality_cost ratio of 80:20) and using full technical proposals. International consultants will include (i) energy access planning and renewable energy technical specialist and team leader, (ii) off-grid solar photovoltaic solution specialist, (iii) biogas and biomass energy specialist, (iv) micro-hydro specialist, (v) renewable energy finance specialist, (vi) capacity development and institutional strengthening specialist, (vii) geospatial planning specialist, (viii) geographical information systems (GIS) specialist, and (ix) procurement specialist. National consultants will have expertise that complements that of the international experts, and will support them in their work. The consultants will be responsible for administration of training, seminars and conferences, and surveys, as reflected in their terms of reference. The consultants will design, procure, and install the pilot off-grid renewable energy facilities under the TA.</p>
Procurement	<p>All goods (equipment) purchased under the TA will be procured in accordance with ADB's Procurement Guidelines (2013, as amended from time to time) and will be turned over to the executing agency upon completion of the TA project. Pilot installations may include solar photovoltaic-based systems, biomass digesters and other small-scale renewable energy systems. This line item only covers hardware, transport and installation charges. All detailed engineering design and civil works will be supported by the executing agency.</p>

Responsible Staff

Responsible ADB Officer	Jung, Choon Sik
Responsible ADB Department	Southeast Asia Department
Responsible ADB Division	Energy Division, SERD

Timetable

Concept Clearance	27 Nov 2013
Fact Finding	30 May 2013 to 12 Jun 2013
MRM	-
Approval	23 May 2014
Last Review Mission	-
Last PDS Update	21 Mar 2017

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Milestones					
Approval	Signing Date	Effectivity Date	Closing		
			Original	Revised	Actual
23 May 2014	23 Jul 2014	23 Jul 2014	30 Jun 2017	31 Dec 2017	-

Financing Plan/TA Utilization						Cumulative Disbursements		
ADB	Cofinancing	Counterpart				Total	Date	Amount
		Gov	Beneficiaries	Project Sponsor	Others			
0.00	2,000,000.00	200,000.00	0.00	0.00	0.00	2,200,000.00	23 May 2014	1,009,912.77

Project Page <https://www.adb.org/projects/47128-001/main>Request for Information <http://www.adb.org/forms/request-information-form?subject=47128-001>

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