

### Outcome 1:

**National Workshop:** RERL supported Nepal Micro Hydro Development Association (NMHDA) to organize national workshop on “Public Private Partnership approach for development of Mini/Micro Hydro and Micro Utility Model” on 13 January 2017. The main objective of the workshop was to orient energy sector actors particularly micro hydro installers and consulting firms on private sector led energy service company (ESCO) model. Presentations were made on successful privately owned and community owned projects.

**Financial & Economic Analysis of MHPs:** The community managed systems use the common resources and its management is affected by social, political, economic structure in the society. It is envisaged that the quality and reliability of energy supply is key to sustainability of the technological options adopted for enhancing energy access. The sustainability of the system and its economic viability depends upon the amount of return and contribute to the livelihoods that it can generate from providing energy services. In this regards, AEPC/RERL and SEforALL are collaborating with University of New South Wales (UNSW), Australia for carrying out the study.

The study will help to provide basis for devising suitable policies and strategies for AEPC to clearly spell out the tiered energy access concept and provide support to rural communities and households to engage in economic activities and help uplift their livelihood.

The consultant has submitted the Inception Report and carried out pre-test of the questionnaires in Malekhu Khola I MHP, Dhading.

**Country Programme Document (CPD):** RERL provided inputs to develop UNDP’s Country Programme Document (CPD) for 2018-2022 on activities related to renewable energy and inclusive economic growth. In the new document, energy is seen as a vehicle for improving resilience against natural disasters and climate change effects and means for enhancing livelihoods in rural areas through economic activities.

**Concept of Best Available Technology (BAT):** RERL is supporting AEPC to develop concept on Best Available Technology for rural areas. BAT is mentioned in the recently approved RE Subsidy Policy and Subsidy Delivery Mechanism for identification of the most suitable RE alternative. The new concept looks at the energy services required at a particular location and identifies the least cost option. Previously, projects were identified based on available resources. RERL has submitted the concept note to AEPC.

**Green Climate Fund (GCF):** RERL supported AEPC to prepare concept paper on developing renewable energy systems in the country with GCF financial support. The concept note includes different renewable energy systems both for on-grid and off-grid solutions.

**Grid Connection of RE:** AEPC/RERL drafted Standards and Technical Specifications for Grid Interconnection of Micro Hydro Plants (MHP) in 2014. The document has been shared with Nepal Electrification Authority (NEA) officials for finalization.



Thus it is decided to wait for stakeholder consultation meeting which will be held immediately after completion of Syaurebhumi 23kW interconnection project.

AEPC/RERL, Department of Electricity Development Authority (DoED) and NEA are working together to prepare guidelines for Detailed Feasibility Study of grid connected large solar PV systems ((MW scale). solar projects. A committee with representatives from the three organizations will finalize document.

RERL has provided technical support to AEPC for feasibility study of grid interconnection of 4 MHPs; (i) Thaligad 30kW, Darchula (ii) Agrigad 25kW, Darchula (iii) Putpute Khola I 44 kW and (iv) Putpute Khola II 98 kW, Syangja. RERL is also supporting AEPC to pilot grid interconnection of two MHP projects; (i) Syaurebhumi 23kW Nuwakot and (ii) Leguwa Khola 40 kW Dhankuta. Procurement process for grid connection of these has been completed and contract between AEPC and the vendor has been signed. A team of experts from AEPC/RERL, NEA and the vendor visited Saurebhumi and finalized the equipment for grid connection and protection based on the technical standards agreed by the NEA Board.

RERL assisted SASEC to finalize technical specification and Bill of Quantity for control and protection system for interconnection of the proposed 200 kW Giri Khola Mini Hydropower Project, Jumla with the existing NEA owned 120 kW Jumla Mini Hydro. Surplus energy from Giri Khola MHP will be supplied to Jumla Bazaar.

Hydro Power Empowerment Network (HPNET) is a forum mainly of practitioners, hydropower policy maker and hydropower regulator in South Asia and South East Asia. RERL has been engaged with HPNET for more than 2 years in several activities. RERL has prepared Frequently Asked Questions (FAQ) to be published in HPNET website focusing on various misconception to grid interconnection of MHP.

**Asia-Pacific Regional Meeting on Sustainable Energy for LDC countries:** Regional meeting on Sustainable Energy for Asia-Pacific LDC countries was jointly organized by the UN Office of the High Representative for LDCs, LLDCs and SIDS (UN-OHRLLS) and the Government of Nepal, with support from UNDP Nepal Country Office on 22 and 23 March 2017 in Kathmandu. The SEforALL team provided substantial inputs in preparation and organization of this meeting with inputs on program details and logistic arrangements. The Regional Meeting was aimed at building national leadership on energy sector and creating stronger multi-stakeholder partnerships to improve access to finance. The SEforALL implementation agenda, SDG7 implementation process, financing, project development skill and open discussion among key stakeholders were the major highlights of the program. The workshop brought together the energy sectors key stakeholders from Asia Pacific LDC countries, international organizations and the private sector to share knowledge and experience and disseminate best practices from around the region.

### Outcome 2:

**Financial Closure and Ground Breaking Ceremony of Simrutu Khola Mini Hydro Project:** RERL is working with SASEC to support the community to develop the 200 kW Simrutu Khola Mini Hydro Project, Rukum which will provide electricity to more than 2,000 rural households as well as powering rural enterprises. The total project cost is NPR. 87.04 million, out of which NPR. 57 million is GoN subsidy, community has raised NPR 20 million as equity and Civil Bank has approved NPR. 10 million credit facility for five years. RERL supported CREF for establishing credit guarantee mechanism for the project and SASEC/AEPC is



providing credit and subsidy. Hydro Energy Concern Private Limited has been selected to construct the project on turnkey basis. The contractor is fully responsible to construct the civil works, supply and install electro-mechanical equipment and transmission and distribution networks.

RERL in close coordination with CREF and AEPC/SASEC will support the Simturu communities for institutions strengthening, promotion of productive energy use activities, and project management for sustainability.

Mr. Jaya Dev Joshi, Minister of Population and Environment, laid the foundation stone of the project on 21 January 2017.

**Technical Support to NEA's 61MWp Solar Project:** RERL has been supporting Nepal Electricity Authority (NEA) on promotion of MW scale projects in Nepal. RERL provided technical inputs for preparing Request for Proposal (RfP) and bid evaluation, including finalization of the energy tables of the submitted proposal.



**Technical Support to 4 Solar Mini Grid Sites:** RERL is supporting AEPC and SASEC for development of solar mini grid projects in different parts of the country. RERL support includes site selection, finalization of feasibility study, bid document preparation (especially technical specifications) and on-site monitoring during the installation. AEPC/SASEC/RERL are working on (i) Darchula Mini Grid Project of 34kWp (ii) Bajhang Parakatne Mini Grid of 22kWp (iii) Hariharpur Gadhi Sindhuli Mini Grid Project of 35kWp (iv) Ramite Khola Mini Grid project Morang of 30kWp.

**Support to AEPC/WB ABC Project:** RERL has been providing technical support to World Bank and AEPC on implementation of Anchor-Business-Customer (ABC) projects. RERL provided Geo-coded information of energy infrastructure projects in Nepal and helped select candidate sites for implementation. The WB is also considering grid interconnection of Renewable Energy Technologies under the project.



**Solar PV powered Fuel Pumps:** RERL has prepared the concept note on powering Fuel Pumps Stations in Nepal by Solar PV. The concept note has been submitted to Nepal Oil Corporation, Ministry of Commerce and Supplies.

**Detailed Feasibility Studies of Solar PV systems:** On AEPC's request, RERL is carrying out detailed feasibility study of potential mini grid, institutional solar and solar pumping sites in Baitadi district. Similarly, RERL is also carrying out DFS of potential mini grid sites in Ward no. 1 and 2 of Kimri VDC and Ward no. 4 and 5 of Rowa VDC, Mugu. It is expected that solar mini grid will help to fulfil the electricity demand of local community and also support to establish productive energy use powered from solar energy.



**Telkuwa Solar Pumping:** With the financial and technical support of RERL, Telkuwa Krishi Company, a Special Purpose Vehicle owned by beneficiary farmers and a private company, completed installation of the 4 kWp Telkuwa Solar Irrigation Project on 2 February 2017. Telkuwa Krishi Company will support the farmers for agriculture modernization and marketing of their produces.



**Raksirang MUS Project:** AEPC/RERL is supporting the Chepang Community of Raksirang VDC, Makwanpur to install solar pumping systems for water supply and irrigation. The project is funded by UNESCAP and implemented by a Special Purpose Vehicle the Raksirang Urja Bikas (RUB) Company Pvt Ltd, jointly owned by Saral Urja and the beneficiary communities. The construction of the physical infrastructure will begin in QTR II.

**Assessment for Institutional Solar PV System for Snake Bite Treatment:** Mortality and injury to both humans and livestock due to bites of venomous snakes is a serious public health problem in the Terai Region. In this context, with the aim of reducing fatalities from snake bites. RERL has initiated a pilot institutional solar system for storing anti venoms equipped with refrigeration and an oxygen concentrator. RERL has carried out field assessment of potential sites in Morang and Dhanusha districts.

**Assessment for Institutional Solar PV System for Energy for Education:** After the successful completion of Energy for Education (E4E) in Dhading and Parsa districts, RERL carried out an assessment to support E4E in Dhanusha district too. After the completion of the E4E project, pupil from disadvantaged groups will get an opportunity to learn using modern education system like audio visual equipment, internet and e-classes.

**Development of Software:** AEPC/RERL is developing a software/application tool “Rooftop Solar Estimator”. The app will help calculate the potential areas for development of rooftop solar PV systems in a given locality. It is expected that rooftop solar will alleviate the existing power deficit in residential, commercial and industrial buildings and promote cost effective opportunity to generate their own electricity and make them less dependent on the national grid.

In order to improve the quality of pre-feasibility and reconnaissance survey, AEPC/RERL is developing “Renewable Energy Survey Tool”. This android based tool is compatible to operate in smart phone, tablet and computer.

**Earthquake Rehabilitation:** So Far 151 number of systems has been installed under EQ Rehabilitation Work. The demand collection from 11 districts and its verification has been conducted in Q1 which resulted to 80 no. of systems to be installed in quarter II. The purchase order for 80 number of systems has been already approved by UNDP and will be forwarded to vendor by first week of April 2017.

With RERL’s financial and technical assistance communities have rehabilitated 32 earthquake damaged MHPs so far. Rehabilitation work is on-going on 13 MHPs.



**Outcome 3:**

**Commercial Operation of MHP:** In order to enhance the institutional capacities of the large-scale micro hydropower projects for commercial operation, RERL is supporting the beneficiary communities for institutionalization of their organization in Achham, Bajura, Baglung and Dolakha districts. This initiative has been implemented in 22 large scale micro hydropower projects. Business management training and exposure visit program was conducted in Dolakha district. One day orientation program was completed on commercial operation for large scale micro hydro projects in Baglung district.

**House Wiring Training:** With support of RERL, two weeks long training on house wiring was conducted from 16 - 30 March 2017 in Rukum district. The training was aimed to develop technical manpower to undertake house wiring in the 200 kW Simrutu Khola Mini Hydropower Project catchment area. Altogether 15 participants from the beneficiary communities participated in the training.

**Cooperative Management Training:** In order to build the capacity of Mini and Micro Hydropower Management Committee members for cooperative management, RERL conducted two trainings on Cooperative Management in Rukum from 5 - 9 March 2017 in Simrutu VDC and 10 - 14 March 2017 in Solabang VDC. A total of 55 people participated in Simrutu Khola training of whom 16 were female.

**Cooperative Account Management System and Computerized Billing System Training:** AEPC/RERL provided a week long training to 16 managers from 14 MHPs for cooperative account keeping system and computerized billing system in micro hydropower projects. The training was conducted in 17-19 March 2017.

**Orientation to SASEC Staff:** To enhance the capacity of SASEC Staff on productive energy uses and commercial operation of the renewable energy systems, a one-day orientation was organized in Kathmandu. RERL staff provided the training for 22 SASEC Social Mobilizers and District Energy Officers.

**Dissemination of Electric Lokta Boiler Machine:** The Community Forest Users Groups of Kharbang, Dagatun VDC, Baglung installed 3 electric Lokta Boilers to boil lokta bark used for handmade paper. With electric boiler the communities can save firewood and labor and help reduce CO2 emission.

