Outcome 1:

MoU between AEPC & SCECO: The 603kW Salleri Chialsa Mini Hydropower Project has been in operation since 1989. It is one of the best managed systems in the country. AEPC is replicate the successful governance and management system in mini hydropower projects it is supporting. A MoU was signed by AEPC and Salleri Chialsa Electricity Company (SCECO), owner of Salleri Chialsa Mini Hydropower Project on 30 September, 2018 According to the MoU, AEPC will procure SCECO services for smooth operation and management of mini hydropower projects.

Guidelines for Utility-Scale Solar PV Projects: In 2017, RERL/AEPC initiated development of "Guidelines for Utility Scale Solar PV Project" on the request of Department of Electricity Development (DoED). The guidelines were finalized by a task force with representation from RERL/AEPC, DoED, Ministry of Energy, Water Resources and Irrigation (MoEWRI) and Nepal Electricity Authority (NEA). It is envisaged that the guideline would be the national guideline for all stakeholders working in utility scale solar PV projects. The guidelines cover aspects from project conception, survey, design, financing and applicable rules and regulations.

In order to get feedback from different stakeholders particularly the private sector, a one-day workshop was organized on 3 August 2018. The workshop provided important insights on different aspects on development of utility scale solar PV projects. The document will be forwarded to MoEWRI for endorsement and implementation.

Climate Lunchpad 2018: Climate Lunchpad, the world's leading green business ideas competition, was hosted for the first time in Nepal from 17 to 24 August 2018. The event was organized by Emerging Technologies Pvt. Ltd. in collaboration with the Government of Nepal, United Nations Development Programme, Global Environment Facility, German Development Cooperation, Wind Power Nepal, Sagarmatha Cement, Nepal Insurance Company, Thames International College, and SUN Urja Nepal. The competition aims to provide a platform for helping aspiring entrepreneurs grow their green ideas into global businesses to address Climate Change.

Out of 58 applications 12 teams took part in the competition. The top 3 teams from Nepal will represent the country at the Global Grand Finale in the UK in November 2018.

Additional TRAC Fund: In order to promote Solar Mini Grid and Institutional Solar PV Systems particularly in marginalized communities, UNDP has provided additional fund for QTR IV, 2018. Considering the demand from different communities, RERL has initiated feasibility studies for Solar Mini Grid and Institutional Solar PV Systems.

Outcome 2:

Vendor Financing: AEPC/RERL and UNCDF are jointly promoting solar PV pumping systems in Terai districts under the Vendor Challenge Fund. Under this activity Ghampower Consulting Company has installed 7 PVPS for fish farming in Bardiya, Kailali, Dang and Sarlahi districts. The RERL is also providing technical assistance for progress monitoring and supervision of the projects. The progress made so far is satisfactory.

Energy Assessment: RERL supported AEPC to assess electricity consumption/requirements for designing solar PV back-up systems for Ministry of Physical Infrastructure Development in Provinces 1, 2 and 7. The assessment includes collection of information on electricity consumption, operation hours of diesel generator, appliances in use as well as condition of electric wiring, transformer, switches etc.

Technical Assistance to AEPC/SASEC: RERL is providing technical assistance to AEPC/SASEC for development of mini hydropower projects with the total design capacity of 5,379kW and Solar Mini Grids of 157kWp in different parts of Nepal. RERL is supporting for survey, design, procurement, construction supervision, institution establishment and strengthening, financial closure, business opportunity assessment and business plan preparation. The projects are at different stages of development as given in the table below.

A. Mini Hydro

Table 1: Under Construction Projects

Projects	kW	HHs	District
Simrutu Khola	200	1,386	Rukum
Giri Khola	200	1,840	Jumla
Phawa Khola	500	2,093	Taplejung
Tara Khola	394	2,200	Baglung
Upper Junbeshi	250	615	Solukhumbu
Total	**1,544**	**8,134**	

Table 2: Pipeline Projects

Projects	kW	HHs	District
Lower Bom Khola	282	620	Solukhumbu
Khtayad Khola	500	3,200	Mugu
Patrasi Khola	500	2,500	Jumla
Tap Khola-II	303	2,671	Khotang
Theso Khola	250	NA	Solukhumbu
Lung Khola	500	NA	Pyuthan
Chuwa Khola	1,000	NA	Humla
Ghami Khola	500	1,000	Mustang
Total	**3,835**	**9,371**	

B. Solar Mini Grid

S.N.	Projects	District	Capacity kWp
1.	Dubung Solar Mini Grid	Tanahun	18
2.	Harkapur Solar Mini Grid	Okhaldhung	31
3.	Kaduwa Solar Mini-grid	Khotang	21
4.	Chyasmitar Solar Mini-grid	Khotang	17
5.	Dhading Solar Mini Grid	Dhading	10
6.	Ramite Khola Solar Mini Grid	Morang	35
7.	Olane Solar Mini Grid	Panchthar	25
Total			**157**

Export/Import of Surplus Electricity Generated by Mini Hydropower Projects: AEPC/SASEC/RERL team visited Jumla to organized a discussion between Patarasi and Giri Khola Mini Hydro developers and Jumla municipality on export/import of electricity from these projects to Jumla bazar. AEPC/SASEC/RERL on behalf of the communities presented technical and financial aspects of export/import. It was agreed that the municipality would discuss the idea with all concerned stakeholders including users' committee operating NEA plant, district chambers of commerce and industry and potential large electricity users. Several discussions are needed before the idea is accepted by all stakeholders and implemented.

Grid Connection of MHP: With financial assistance of AEPC and RERL's technical support 23kW Syaurebhumi MHP, Nuwakot, 40 kW Leguwa Khola MHP, Dhankuta and 90 kW Chimal MHP, Tapjejung have been interconnected with the grid. Interconnection of micro hydro with the grid helps generate additional revenue for the MHP and avoid transmission losses of NEA. Furthermore, having generation systems at the end of the line helps improve voltage quality and system reliability. Based on the experience, NEA and AEPC will gradually grid connect other MHPs as the grid encroaches MHP service areas.

KFW PVPS: RERL has been supporting AEPC to collet demands, Environment and Social Safeguard screening, feasibility study, design and install KfW funded solar pumping systems (PVPS). So far, 41 PVPS have been installed in Baglung, Kaski, Tanahun, Pancthar, Rukum, Salyan, Acchaam, Dadeldhura, Ramechaap, Chitwan, Tanahun, Dailekh, Rukum, Palpa and Gulmi and 23 PVPS are under construction.

Electric Cooking: RERL carried out performance test of several locally available electric stoves (induction and infrared) and a low wattage heat storage type stove developed by Kunmin University, Kunmin, China in collaboration with Kathmandu Alternative Power and Energy Group (KAPEG). Performance test included standard tests included Water Boiling Test (WBT) and general testing for meal preparation (including rice, roti, lentil, beans and spinach) using energy data loggers in each appliance.

RERL is also collaborating with Global Alliance for Clean Cooking (GACC) to promote electric cooking in mini/micro hydro catchments areas. In this regards, RERL is working with PEEDA, Coventry University and Bristol University of UK in Rukum district to test electric stoves and understand users' acceptability.

After laboratory testing, induction stoves were given to 10 households in Simle Micro Hydro catchment area in Rukum district. A two-week long baseline survey was carried out to find out the cooking habits, types and quantities of fuel used, etc. in 10 households before connecting the electric stoves. A separate three phase data logger and sensors were used to measure data in the power house to determine effects of induction cooker on the generator. The field test was conducted for 2 weeks and a follow up consumer satisfaction survey was also carried out. IT was found that the micro hydro plant operated without any problems during the test. On the consumer side, it was found that they were satisfied with the performance of induction heaters/cookers as it not only saved time and fuel cost but also time for cleaning cooking utensil. RERL will field test Infra-Red and Low Wattage Heat Storage Stoves soon.

Outcome 3:

Commercial Operation of Rol Khola MHP: One way of overcoming the collective action problems faced by the communities managing MHPs is to lease out the management of the plant including daily operation, minor repair and maintenance, tariff collection, etc. to a private party, entrepreneur or company for an agreed monthly/annual amount. RERL has initiated for the community to lease out operation and management of Rol Khola MHP in Rukum.

Outcome 4:

Account Management and Computer Billing System Training: In order to enhance knowledge and skill on computerized accounting system and management, RERL provided training to MHP managers. The training focused on accounting keeping through computer software.

It is expected that, this training will help improve financial management of MHP including accounting and book keeping. Training was also provided on demand collection and subsidy processing for Productive Energy Uses (PEU) promotion. The training was conducted from 2 to 7

September, 2018. Altogether 20 participants including 2 women from Rukum, Rolpa, Achham, Bajura and Jumla took part in the training.

Micro Hydro Operator Refresher Training: A 15 days long training on the "Mini/Micro Hydro Operation" was held at Surkhet from September 25 to 9 October 2018. The objective of the training was to BUDILD UP the capacity of operators for trouble shooting and smooth operation and minor repair works. Altogether 24 operators received both practical and theoretical knowledge and skills on various aspects of micro hydro operation, management, electricity distribution and regular maintenance.

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