

**Outcome 1:****Knowledge Sharing Event:**

Renewable Energy for Rural Livelihood (RERL) and Nepal Micro Hydro Development Association (NMHDA) jointly organized Knowledge Sharing Event on 13 April 2018. The event aimed to share breakthrough achievements of RERL/AEPC in grid interconnection of Micro



Hydro and Roles of Private Sector in promoting renewable energy in federal context. Speaking during the programme, Minister of Energy, Water Resources and Irrigation (MoEWRI) Mr. Barsha Man Pun welcomed the fact that a micro hydropower plant had been interconnected with the National Grid and promised to make necessary changes in the policy to encourage similar interconnections all over the country. Moreover, he emphasized that renewable energy should not be taken as an alternative to the grid but seen as a complete solution for rural households in off grid areas. The event included presentations of technical papers and panel discussions on grid interconnection of MHPs and private sectors role in federal context.

**Orientation to Provincial Governments and Municipalities:** RERL supported AEPC to organized orientation on RE development in the federal structure to representatives of Provincial Governments, Parliamentarians of Provinces 4,6 and 7. The orientation included presentations on renewable energy technologies, status of AEPC supported projects in the province, roles and responsibilities of provincial and local governments. Provincial governments expressed their views that renewable energy is important for providing clean energy access to rural people. AEPC is planning to organize similar orientations to Provinces 1,2,3 and 5 in coming fiscal year.

**Municipal Energy Plan:** RERL has drafted integrated Municipal Energy Plan of 2 Municipalities (i) Palungtar, Gorkha and (ii) Mahankal, Lalitpur with focus on domestic, including clean cooking, lighting and operating household appliances, community systems for street lighting, community centers, schools and health centers and productive uses. RERL presented MEP preparation methodology in the orientation to Municipalities of Province 2 and Jumla district organized by AEPC. After the orientation, the participants realized the importance of MEP and expressed their desire to prepare similar plans for their municipalities. As a result, the RERL has been receiving lots of demand from different provinces and municipalities.



**Chinese Ambassador's Visit:**

Her Excellency Ms. Yu Hong, the Chinese Ambassador to Nepal and Mr. Renaud Meyer, Country Director of UNDP Nepal visited Syaurebhum Micro Hydropower Plant at Nuwakot. The main objective of the visit was to observe performance of 23kW grid interconnected micro hydropower plant. The delegation accompanied by



ACD of UNDP Nepal also visited the premises of the District Coordination Committee (DCC) where UNDP had provided 3 prefabricated buildings for office use and solar PV system for lighting and operating equipment.

**Capacity Building of Government Engineers:** Solar Power Expert of RERL trained AEPC Engineers on design of "MW Scale Solar PV". A total of 20 participants received training covering 'need of grid connected solar PV in Nepal', selection of solar array, inverter, row spacing calculation, losses in PV system, etc. In addition, RERL expert also provided training on "grid interconnection of MHP" and shared lessons from pilot interconnection of Syaruebhum MHP.

RERL also provided training on "MW Scale Solar PV" to 14 engineers from Nepal Telecom, Nepal Electricity Authority, Water Energy and Commission Secretariat and Private Sector.

**Outcome 2:**

**Micro Hydro:** RERL provided technical assistance to AEPC to install 14 new Micro Hydropower Plants with total capacity of 558kW and benefiting 5,059 households. In addition, RERL is also supported AEPC to rehabilitated 9 MHP generating 259kW and benefiting 2,443 households



Penstock Pipe Damaged by EQ



After Rehabilitation



**Mini Hydro:** RERL is supporting AEPC/SASEC to develop mini hydropower projects in different parts of the country. RERL is providing technical assistance for survey, design, procurement, construction supervision, institution formation and strengthening, financial closure, business opportunity assessment and business plan preparation. The projects are at different stages of development given in the table below.

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
<b>Total</b>	<b>1,544</b>	<b>8,134</b>	

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
<b>Total</b>	<b>3,835</b>	<b>9,371</b>	



**Captive Generation Solar Plan:** RERL provided technical and financial support to Surya Power Company to connect its 1000kW captive solar PV system in Nawalparasi district to the national grid. This is the first grid interconnected captive solar plant in Nepal.

**Electric cooking:** RERL has successfully lab tested low wattage electric stove with storage facility in collaboration with Kathmandu Alternative Power and Energy Group. 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 low wattage electric stoves and understand users' acceptability.



**Photo Voltaic Pumping System:** RERL is providing technical assistance to AEPC to install PVPS funded by KfW. So far, 41 PVPS have been installed in different parts of the country. These projects are primarily for providing water supply for drinking and household uses.

**Energy for Health (E4H):** In close collaboration with SNV Nepal, RERL provided technical and financial assistance to install two 3kWp solar PV systems in health posts in Rukum and Salyan districts. The system has been providing uninterrupted power supply for lighting and operation of medical equipment.



**Institution Development:** RERL is supporting the users of the 100kW Gutu Solar Mini Grid, Surkhet, 25kW Olane Solar Mini Grid and 70kW of Saptame Solar Mini Grid, Panchthar districts to establish special purpose vehicle (SPV, cooperative/company) to manage their systems. AEPC/SASEC is promoting these projects with ADB funding and RERL has provided technical support for feasibility study, procurement and project implementation.

### Outcome 3:

**Commercial Operation:** To demonstrate financial viability of MHPs, RERL is supporting 25 MHPs in five districts for commercial operation wherein the micro hydro is seen not only as a social infrastructure but also a commercially feasible enterprise. RERL support includes community mobilization, institutional strengthening and productive end use promotion.

After RERL intervention, monthly revenue collection of the 83 kW Darna MHP, Achham increased from NPR. 36,000 to 80,000 on an average. With RERL support the MHP is practicing computerized accounting system which has drastically improved transparency and willingness among users to pay their bills on time.

To ensure that women directly take advantage of access to electricity, RERL facilitated to establish women's cooperative and engage monthly saving and credit activities. Further, RERL has carried out feasibility of lift irrigation systems to promote high value agriculture in Kailash Khola corridor.

### Outcome 4:

**Training on Computerized Accounting System:** To improve knowledge on account keeping of MHP managers, RERL has conducted training on "Cooperative Account Keeping" for 24 participants including 2 women from Baglung, Sindhuli, Morang, Solukhumbu, Mugu, Achham and Jumla districts. The training was conducted between 19 and 28 May 2018. The training focused on operation of accounting software.



**Training cum exposé visit:** AEPC/SASEC/RERL organized training cum exposé visit for Mini Hydro Developers and officials of Rural Municipalities. The participants visited Salleri Chialsa Mini Hydro Project, which is one of the best managed community owned project in Nepal, and learnt about efficient management including reliable and quality electricity supply, appropriate tariff setting, timely revenue collection, maintaining inventory, timely consumer services and regular maintenance of the plant, etc. The participants were also orientated on Mini Hydro Operation and Management Manual drafted by RERL. Altogether, 21 people including 1 woman from Rukum, Jumla, Baglung, Mugu, Solukhumbu and Taplejung participated in the programme.

**Orientation on Special Purpose Vehicle (SPV):** RERL organized an orientation on formation of SPV for development of the 422kW Shantipur Mini Hydro Project, Shantipur, Kailali. The orientation provided information on advantages and disadvantages of different institutional options such as cooperative and private company. A total of 35 Municipal officials and members of Users Committee including 2 women participated in the programme. on Cooperative & Company Acts.

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