



Alternative Energy Promotion Centre

National Rural and Renewable Energy Programme

Annual Progress Report

(16 July 2012 –15 July 2013)

(Approved by Programme Steering Committee on 05 September 2013)

September, 2013



List of Abbreviations and Acronyms

| | |
|--------|--|
| AEPC | Alternative Energy Promotion Centre |
| ADB | Asian Development Bank |
| AWP | Annual Work Plan |
| BSP | Biogas Support Programme |
| CCS | Clean Cooking Solution |
| CCU | Climate and Carbon Unit |
| CEDB | Clean Energy Development Bank |
| CREF | Central Renewable Energy Fund |
| DAG | Disadvantaged Groups |
| DCEP | District Climate and Energy Plan |
| DDC | District Development Committee |
| DECS | District Energy and Climate Change Section |
| DEEU | District Energy and Environment Unit |
| DFID | UK Department for International Development |
| DoED | Department of Electricity Development |
| EnDev | Energising Development |
| ESMF | Environment and Social Management Plan |
| EOI | Expression of Interest |
| ESAP | Energy Sector Assistance Programme |
| FNCCI | Federation of Nepal Chamber and Commerce Industry |
| FY | Fiscal Year |
| GIS | Geographical Information System |
| GIZ | German International Cooperation |
| GoN | Government of Nepal |
| GESI | Gender Equality and Social Inclusion |
| GWH | Giga Watt hour |
| HH | Household |
| ICS | Improved Cooking Stove |
| IGA | Income Generating Activities |
| IICS | Institutional Improved Cooking Stove |
| IoE/TU | Institute of Engineering, Tribhuvan University |
| ICE | Information, Communication Education |
| IAP | Indoor Air Pollution |
| ISPS | Institutional Solar PV System |
| IWM | Improved Water Mill |
| IWMCF | Improved Water Mill Credit Fund |
| KfW | German Development Bank |
| kW | Kilo Watt |
| KWh | Kilo Watt hour |
| LAPA | Local Adaptation Plan of Action |
| LDO | Local Development Officer |
| LFA | Logical Framework Approach |
| LGCDP | Local Governance and Community Development Programme |
| LPO | Local Partner Organisation |

| | |
|--------|--|
| M & E | Monitoring and Evaluation |
| MEDEP | Micro Enterprises Development Programme |
| MHDF | Micro Hydro Debt Fund |
| MHP | Micro Hydropower Plant |
| MICS | Metallic Improve Cooking Stove |
| MIS | Management Information System |
| MIRMS | Management Information Reporting and Monitoring System |
| MoSTE | Ministry of Science, Technology and Environment |
| MoE | Ministry of Energy |
| MoFALD | Ministry of Federal Affairs and Local Development |
| MoU | Memorandum of Understanding |
| MQA | Monitoring and Quality Assurance |
| MSME | Medium, Small and Micro Enterprise |
| MW | Mega Watt |
| NAST | Nepal Academy of Science and Technology |
| NEA | Nepal Electricity Authority |
| NEEP | Nepal Energy Efficiency Programme |
| NEFEJ | Nepal Forum for Environmental Journalist |
| NGO | Non Governmental Organisation |
| NPR | Nepalese Rupee |
| NRREP | National Rural and Renewable Energy Programme |
| NMHDA | Nepal Micro Hydro Development Association |
| O&M | Operations and Maintenance |
| PEU | Productive Energy Use |
| PPP | Public Private Partnership |
| PQ | Pre Qualified |
| PR | Public Relation |
| PREIP | Plant Rehabilitation and Efficiency Improvement Project |
| PV | Photo Voltaic PVPS Photo Voltaic Pumping System |
| PSC | Programme Steering Committee |
| RE | Renewable Energy |
| REF | Rural Energy Fund |
| RERL | Renewable Energy for Rural Livelihoods |
| RET | Renewable Energy Technology |
| RETS | Renewable Energy Test Station |
| RSC | Regional Service Centre |
| RRESC | Regional Renewable Energy Service Center |
| SAF | Subsidy Application Form |
| SEMAN | Solar Electric Manufacturer's Association Nepal |
| SESC | Solar Energy Subcomponent |
| SGBP | Saheri Gharelu Biogas Plants |
| SHS | Solar Home System |
| SNV | Netherlands Development Organization |
| SOD | Strategic and Organizational Development |
| SREP | Scaling UP Renewable Energy Programme |
| SSHS | Small Solar Home System |

| | |
|--------|--|
| TA | Technical Assistance |
| ToR | Terms of References |
| TRC | Technical Review Committee |
| UK | United Kingdom |
| ULAB | Used Lead-Acid Battery |
| UNCDF | United Nations Capital Development Fund |
| UNFCCC | United Nations Framework Convention for Climate Change |
| UNDP | United Nations Development Programme |
| USD | United States Dollars |
| VDC | Village Development Committee |
| WECAN | Water and Energy Consultat's Association of Nepal |
| WWF | World Wildlife Fund |
| YTD | Year to Date |

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1 Executive Summary

Government of Nepal established the Alternative Energy Promotion Centre (AEPC) in 1996 with the objective of developing and promoting renewable energy technologies in Nepal. In due course of time, it has positioned itself as an established national focal agency for the Rural and Renewable Energy sector development in Nepal. As the results of past learning of different programmes and projects, the GoN and development partners jointly agreed to support for the implementation of the National Rural and Renewable Energy Programme (NRREP) which follows single programme modality, started from 16 July 2012 and will end on 15 July 2017 with 184 Million USD estimated budget. The NRREP has completed one year of implementation yielding significant programme results despite various transitional complexities, and other sector challenges. Some of the highlights of the achievements during the FY 2012/13 (NFY 2069/70) are mentioned as below.

- The NRREP fully aligned towards single programme modality in the leadership of AEPC as envisioned by the programme document. It is also firmly aligned to the existing and evolving GoN framework and structure.
- The NRREP was successful to recruiting qualified professionals at diversified technical sectors.
- The ESAP's concluding activities (from July to December 2012) were additionally supported by the AEPC by utilizing existing workforce of NRREP.
- This year remained successful from demonstrating visibility of AEPC through different media that fostered promoting various RETs in Nepal.
- The CREF has been conceptualized as a Financial Intermediation Mechanism towards reliable and easy financing to RETs promotional efforts.
- GoN approved the new Subsidy Policy for Renewable Energy, Subsidy Delivery Mechanism, and various technical Guidelines.
- The new Regional Service Centers and National Technical Service Provider were selected through the competitive basis for the implementation of the programme at the local level.
- The capacities of the AEPC staff have been further enhanced through the support to various national and international trainings, seminar, conferences and exposures.
- The international exposures visit in renewable energy policy and technologies was organized to most of the members of the NRREP programme steering committee members.

Apart from these broad achievements, the NRREP was successful to gaining significant results from its implementation at all levels, particularly in terms of preparing the framework for further accelerated implementation. Some of them are:

- The GESI mainstreaming plan developed,
- NRREP' planning, monitoring and reporting system aligned towards Result Based Management System,
- Attained firm integration of Climate and Carbon into the programme service delivery with identification CDM projects for contribution to revenue generation,
- Smart organizational set up etc.

- Essential operational guidelines developed for all the technical components.

For details please refer the report and particularly Annex 1 below.

From technology promotional perspectives, significant progress has been made particularly in the areas of used lead-acid battery (ULAB) regulation under the solar subcomponent. Declaration of Indoor Air Pollution free country by 2017 is another important initiative in the the biomass energy sector. Similarly, significant progresses have been made in biogas plant installataion and urban biogas promotional initiatives through collaborative efforts.

From annual targets prespective, NRREP has attained encouraging progresstowards meeting the annual targetsin totality even though the implementation is less than one year. Some of these are:

- During the reporting period altogether 20,108 rural households have been electrified through the generation of 2,187.6kW of electricity from the micro hydro projects out of 3,000 kW target. However, the majority of the funds for the subsidy of micro hydro projects was already committed by ESAP II.
- Installed number of improved water mills is 1,256 out of target of 1,000 numbers.
- Installed number of solar PV home system is 91,879 out of 80,000 systems and installed number of small solar PV home system is 7,445 out of 10,000 systems. Out of total Solar Home Systems (SHS) ownership, 51% systems are owned by male and 49% systems owned by female. Similarly, in Small Solar Home Systems (SSHS), 63% is owned by male and 37% by female.
- Installed number of Institutional solar PV systems is 41 out of 40 systems and installed number of solar drinking water pumping systems is 25 out of 50 systems.
- Installed number of mud improved cook stoves is 128,345 out of 100,000 and installed metallic improved cook stoves is 3,806 out of 7,000 target. Out of total of 3,806 MICS installed, 1,770 (47%) are owned by female and 2,036 (53%) are owned by male.
- Installed number of domestic biogas is 4,984, out of 19,000 plants. Out of 4,984 domestic biogas plants supported in the reporting year, 58% are owned by male and remaining 42% are owned by female.
- Out of total 65 MSMEs established, 88% are owned by male and 12% owned by female. Further, 55% belongs to Indigioneous people, 3% belong to Dalits and rest to other caste.
- A total of 26 microhydro projects received credit through different banks amounting 64.7 million rupees (through MHDF/GiZ- 38.3 million and outside MHDF- 26.4 million ruppies).
- Similarly, 1050 biogas plants were supported through credit financing amounting NRs 26.25 million rupees as loan with support from KfW.

A total expenditure of ESAP II during 16 July 2012 to 15 July 2013 is NRs. 1,196,503,142. In the reporting period, total NRREP expenses is NRs. 672,594,455 only till 15 July 2013 as against the allocated budget of Rs. 2,332,275,000. The budget utilization rate remained **29 %** against the committed annual budget allocation. If we add the expenses NRs.1,196,503,142 from ESAP II, then total expenditure will be Rs. **1,869,097,597** (80%). On the other hand, the NRREP achieved 81% progress in the subsidy delivery against the annual targetof NRs 1,793,140,000. The

progress of 79% in subsidy is against the targeted budget for subsidy only, which includes the disbursement of NRs. 991 million as subsidy from remaining ESAP II fund. The total committed annual budget by GoN and development partners was NRs **2,356,299,000** in this fiscal year, and a total of NRs. 2,250,253,886 (96%) was released as mentioned in table 4.

There were some deviations encountered on AWP plan- 2012/13. Some of the planned activities could not be completed within the fiscal year. The particular underlying reasons were delay in staff recruitment, delay in approval of AWP, delay in selection of the new Regional Service Centers, approval of subsidy policy and subsidy delivery mechanism. Please refer to section 9 for detail reasons for deviation and adjustment plan.

Some operational challenges are emerging in the due course of programme implementation. Those areas can be summarised as:

- Reaching to the poor;
- Establishing an integrated M&E system with GESI information
- Working with wide range of partners, stakeholders and local government;
- Minigrid connection related concerns
- Low Carbon price in international market.
- Linking the renewable energy with the productive energy uses.

Despite various delays in completing initial startup activities like recruitment process and preparation of essential guidelines in the first year, NRREP has now gained the momentum towards the delivery side of the programme. Based on the current scenario, it is very likely that the slow progress trends of the reporting year will be compensated in the current fiscal year. AEPC/NRREP wants to reassure to its stakeholders that we will remain intact with the set plan and principles and accelerate the implementation process with improved effectiveness and diligence. The NRREP will however go into the possible solutions to overcome emerging challenges and problems in due course of time. The Inception Review report has recommended various improvement areas that will be taken as a reference point to move forward. The AEPC/NRREP has already started implementing some of those recommendations. We expect comprehensive review of the program by the AEPC board, coordination committee and Steering committee to recommend additional measures/suggestions to further improve the program effectiveness and speedy delivery of services.

2 NRREPI Introduction

2.1 Overview of NRREP

| | |
|-----------------|-----------------|
| Start date | 16 July 2012 |
| Completion date | 15 July 2017 |
| Budget | USD 184 Million |

2.1.1 Key Targets

| | |
|---|------------|
| • Mini and Micro Hydro power | 25,000kW |
| • Households benefiting from the community electrifications | 150,000 |
| • Improved Water mill technology | 4,000 |
| • Solar PV Home Systems | 600,000 |
| • Improved Cooking Stoves | 475,000 |
| • Household Biogas systems | 130,000 |
| • New MSMEs establishment | 1,300 |
| • Employment increased by MSMEs | 19,000 |
| • Existing MSMEs upgraded | 2,800 |
| • Income Generating Activities | 15,300 HHs |

2.1.2 Programme Components/Subcomponent/Units

1. Central Renewable Energy Fund Component
2. Technical Support Component
 - 2.1 Biogas subcomponent
 - 2.2 Solid Biomass Energy subcomponent
 - 2.3 Climate Change and Carbon Unit
 - 2.4 Solar Energy subcomponent
 - 2.5 Community Electrification subcomponent
 - 2.6 Institutional Support subcomponent
 - 2.7 Monitoring and Quality Assurance Unit
- 3 Business Development for Renewable Energy and Productive Energy Use component

2.1.3 Development Partners

Denmark, Norway, DFID/UK, Germany, SNV, UNDP/UNCDF, ADB, the World Bank

2.1.4 Other Features

- NRREP follows the single program modality. It will not be considered as consolidate and expedite on previous projects/programs. It however takes-up the best practices of the past renewable and rural energy programme/projects. Its support package consists of financial

resources, technical assistance, capacity building, coordination and collaboration for harmonization and synergy.

- The NRREP is firmly aligned to the existing and evolving GoN framework and structure. The programme follows the GoN subsidy policy and subsidy delivery mechanisms. The M&E systems are aligned towards the GoN monitoring requirements.
- The NRREP adopts a strong focus on poverty reduction and expedite GESI through mainstreaming process into the programme by enhancing capacity building to increase access and claim making capacity.
- The NRREP envisions positive effects on environment and climate change and changes the life of rural women and men in Nepal with due focus to increase and maximize carbon market revenue.
- Democratization and good governance are addressed in different ways into the programme. It works in coordination/collaboration with DDC/DECSs/RSCs, local organizations and private companies following the principles of PPP.
- It emphasizes decentralized energy systems, integrated programmes, environmental sustainability, partnership & coordination, research and technology transfer.
- The overall management of NRREP is carried out by the Programme Steering Committee chaired by Secretary, Ministry of Science, Technology and Environment. With AEPC being the executing agency, the NRREP Programme Director is the Executive Director of AEPC.
- Each component/sub-component is managed by a team led by a Programme Manager and the team is supported by National Advisor, and other programme staff.

3 Progress on NRREP Key Targets

3.1 Physical Progress and Targets

Table 1- Physical achievements against targets

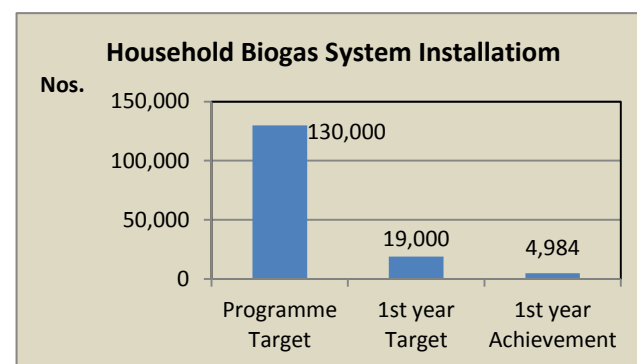
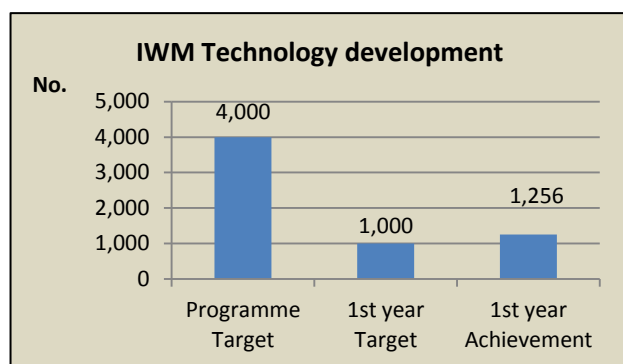
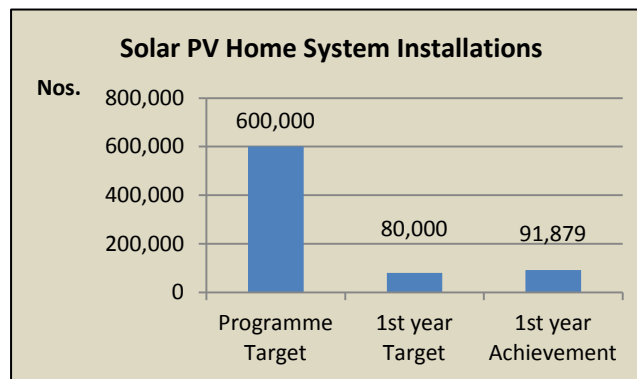
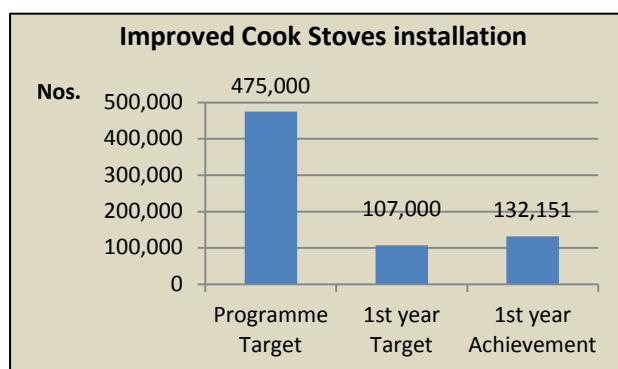
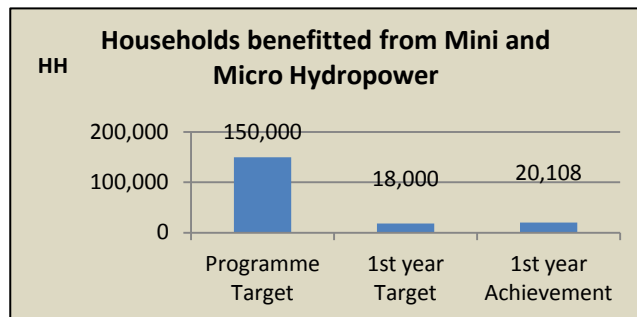
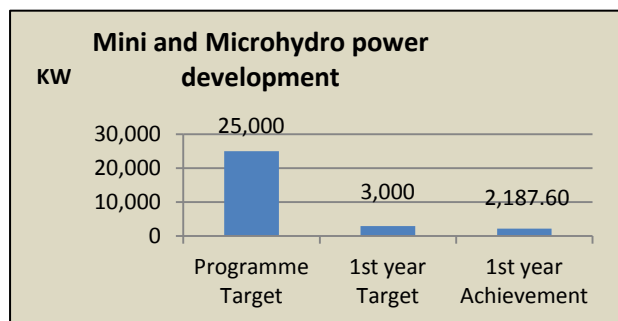
| SN | Activities | Unit | Annual Target | Achievement as of 15 July 2013 | |
|----|---|------|---------------|--------------------------------|-----|
| | | | | Physical | % |
| 1. | Mini/Micro Hydro Power* | kW | 3,000 | 2,187.6 | 73 |
| | | HHs | 18,000 | 20,108 | 112 |
| 2. | Improved Water Mill | No. | 1,000 | 1,256 | 126 |
| 3. | Solar PV Home Systems | No. | 80,000 | 91,879 | 115 |
| 4. | Small Solar PV Home Systems | No. | 10,000 | 7,445 | 74 |
| 5. | Institutional Solar PV Systems | No. | 40 | 41 | 103 |
| 6. | Drinking Water Pumping Systems | No. | 50 | 25 | 50 |
| 7. | Improved Cooking Stoves (ICS): Mud ICS** Metallic ICS | No | 100,000 | 128,345 | 128 |
| | | No. | 7,000 | 3,806 | 54 |

| SN | Activities | Unit | Annual Target | Achievement as of 15 July 2013 | |
|----|-------------------------|------|---------------|--------------------------------|----|
| 8. | Domestic Biogas Plants# | No. | 19,000 | 4,984 | 26 |
| 9. | Productive End-uses | No. | 50 MHPs | 32 | 64 |

The total installed biogas plants was 22,112, but subsidy disbursed was only to 4,984 plants.

* Out of these 2072.7 kW and 20,108 HHs have 100% of the subsidy covered by ESAP II

**There is no direct subsidy for Mud ICS. Out of total installed Mud ICS, 357 are other types.



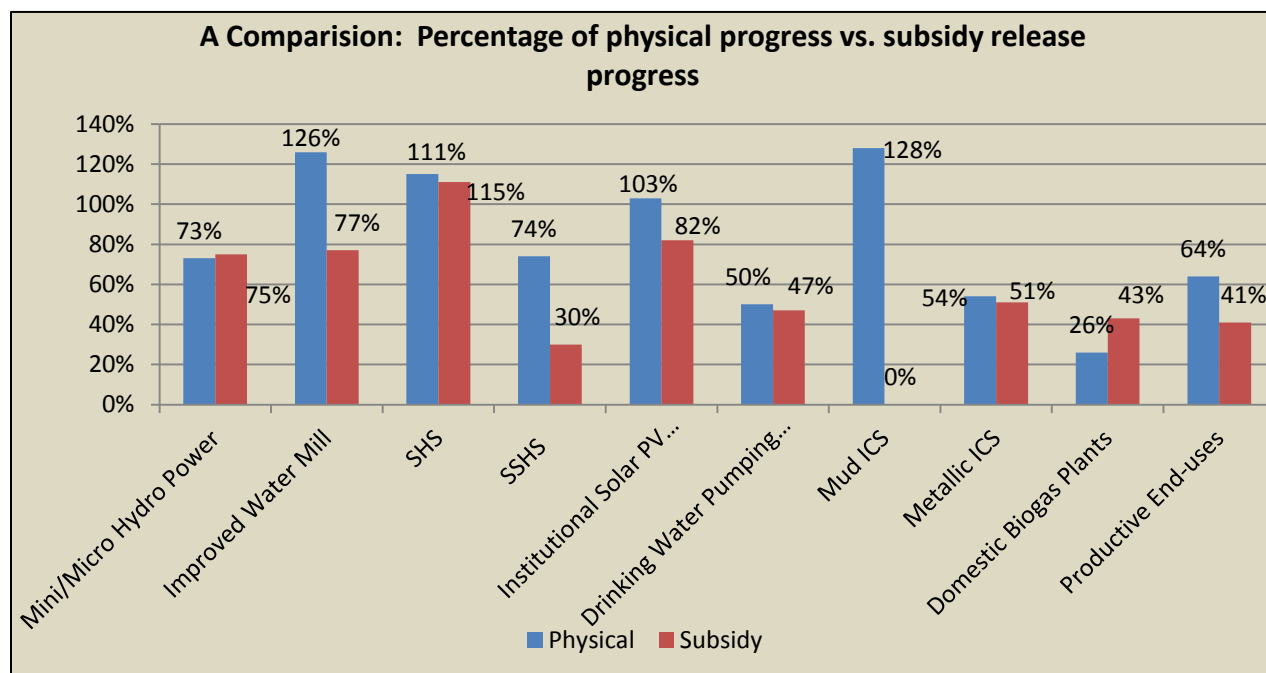
Note: Please refer to **section 9.1** for reason for deviations and target adjustment plan.

3.2 Progress against Subsidy Plan

Table 2- Progress on subsidy plan(Amount in ‘000 NPR)

| SN | Key Activities | Annual Budget | Achievement | |
|-----|----------------------------------|------------------|-------------------|------------|
| | | | Disbursed Amount* | Percentage |
| 1. | Mini/MicroHydro Power | 600,000 | 452,320 | 75% |
| 2. | Improved Water Mill | 28,000 | 16,974 | 77% |
| 3. | Solar PV Home Systems | 640,000 | 708,798 | 111% |
| 4. | Small Solar PV Home Systems | 40,000 | 14,890 | 30% |
| 5. | Institutional Solar PV Systems | 40,000 | 32,865 | 82% |
| 6. | Drinking Water Pumping | 60,000 | 28,093 | 47% |
| 7. | Metallic Improved Cooking Stoves | 28,000 | 14,314 | 51% |
| 8. | Domestic Biogas Plants | 342,000 | 136,269 | 43% |
| 9. | Productive End-uses | 12,500 | 6,155 | 41% |
| 10. | Risk Capital Grant to FIss | 2640 | 0 | 0% |
| | Total | 1,793,140 | 1,410,680 | 79% |

*Total disbursement includes NRs. 991 million from remaining ESAP II fund.



Reasons for significant deviation between physical progress and the progress on subsidy released are as follows:

- In case of IWM, the subsidy estimate was done based on the subsidy rate of long-shaft technology but majority of IWM schemes were demanded for short-shaft technology. Consequently, there was more physical progress compared to subsidy release.
- In case of SSHS, NRREP estimated NRs. 4,000 per system (10Wp) as subsidy in the annual plan as per the new standard. But, NRREP provided NRs 2,000 per system following previous standard (5Wp) in majority.
- In case of ISPS, NRREP estimated NRs. 1,000,000 per system as subsidy in the annual plan. But actual subsidy provided was less than the estimated amount in order to meet the lower demand from the corresponding institutions.

3.3 Progress against Budget Plan

Table 3- Progress on budget plan (Amount in '000 NPR)

| Particular/Component/Unit | 5-years plan* | Annual | | | |
|--|-------------------|------------------|-------------------|---------------------|----------------|
| | | Budget ** | Expenses | Budget Balance | Fund Util. (%) |
| Central Renewable Energy fund Component | 9,923,394 | 1,884,120 | 431,306.04 | 1,452,813.96 | 23 |
| Technical Support Component | 3,518,374 | 309,230 | 164,183.98 | 145,046.02 | 53 |
| Business Dev. for RE and Productive Energy use | 737,016 | 29,998 | 9,813.52 | 20,184.48 | 33 |
| NRREP Management | 447,474 | 108,927 | 67,290.91 | 41,636.09 | 62 |
| Studies, Audit, Review | 298,316 | 0 | 0 | 0 | 0 |
| Grand Total | 14,924,574 | 2,332,275 | 672,594.45 | 1,659,680.55 | 29 |

Notes:

* Since 5-years plan is forecasted in USD. It is converted into NRs applying 1 USD =Rs 87.74 as of 18 Jul 2012 -Nepal Rastra bank

**Annual budget is computed as per the budget allocations in the detailed work plan.

The expenditure from NRREP is low as compared to budget allocation, but all staff was involved for uncompleted activities of ESAP II from 16th July 2012 to 15th July 2013. If all these contribution is taken into account the expenditure will be 80%.

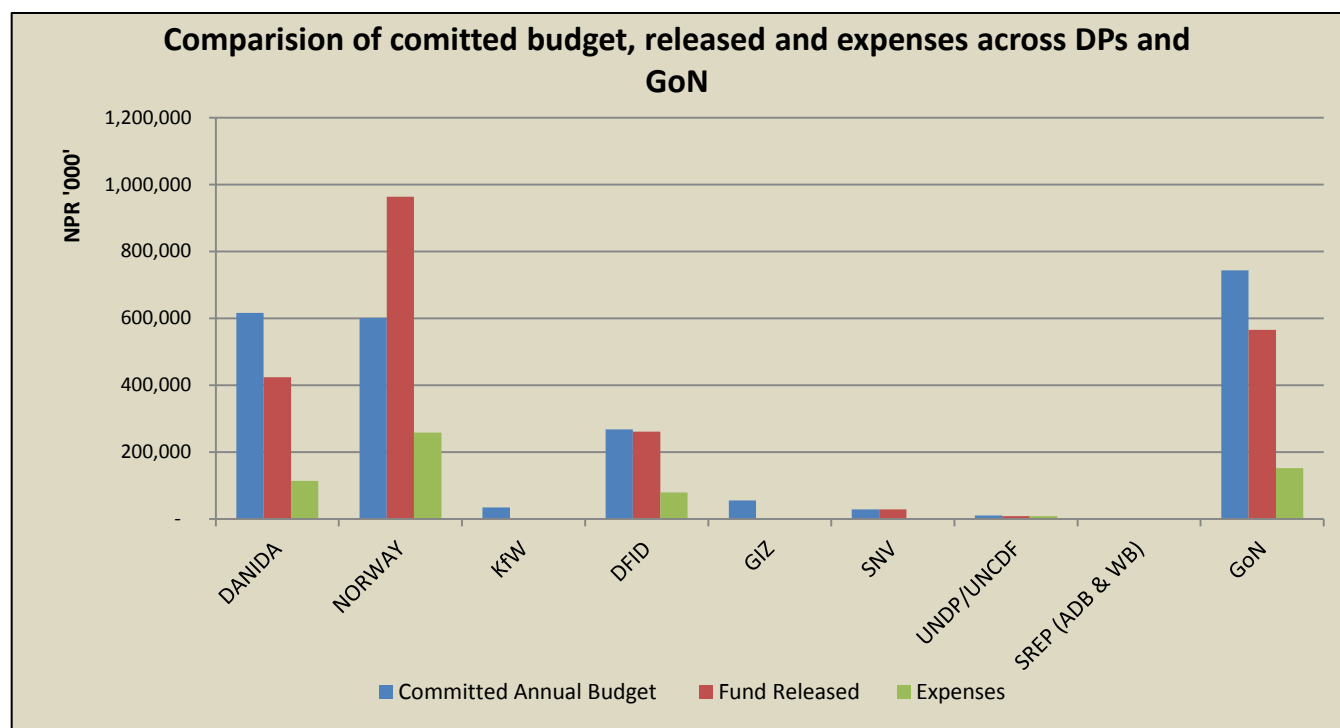
3.4 Progress against cost sharing plan

Table 4- Progress on cost sharing plan

(Amount in '000 NPR)

| Development Partners | Committed Annual Budget | Fund Released | Expenses | Remark |
|----------------------|-------------------------|---------------------|---|------------------|
| DANIDA | 616,061 | 423,643.76 | 113,517.82 | |
| NORWAY | 601,040 | 963,833.44 | 258,264.81 | |
| KfW | 34,000 | 0.00 | - | |
| DFID | 268,000 | 261,263.12 | 79,374.05 | |
| GIZ* | 55,000 | 0.00 | - | |
| SNV | 28,023.78 | 28,023.78 | - | Realesed to AEPC |
| UNDP/UNCDF | 10,230 | 8,356.42 | 8,356.42 | Exp. by UNDCF |
| SREP (ADB & WB) | 0 | 0.00 | - | |
| SubTotal | 1,612,355 | 1,687,120.52 | 459,513.10 | |
| Percentage | 100% | 106% of committed | 27% of release | |
| GoN | 743,944 | 565,133.37 | 151,430.79 | |
| Percentage | 100% | 76% of committed | 27% of release | |
| Total | 2,356,299 | 2,250,253.89 | 672,594.45 | |
| Percentage | 100% | 96 % | 29% of committed 30% of fund release | |

* The expenditure for Micro hydro Debt Fund is not calucuated as it is revolving in REF.



3.5 ESAP Financial status of the year

The table shows that the actual expenditure of ESAP-II during 16 July 2012 – 15 July 2013.

Table 5- ESAP financial progress

| Programme/Component | Plan Amount ('000 NPR) | Expenditure Amount ('000 NPR) |
|---|------------------------|-------------------------------|
| Institutional Development including Management Cost | 91,327 | 91,327 |
| Subsidy Disbursement- REF | 991,031 | 991,031 |
| Technical Support - Rural Energy Fund | 6,140 | 6,140 |
| Biomass Energy | 56,215 | 56,215 |
| Solar Energy | 17,024 | 17,024 |
| Micro- hydro | 34,766 | 34,766 |
| Total | 1,196,503 | 1,196,503 |

Note: Total expense is equal to total budgeted amount of the period. The expenditure of subsidy was only from 16th July 2012 to 15 July 2013.

3.6 Progress on Credit Financing:

Micro Hydro:

Micro Hydro Debt Fund is an earmarked fund, especially for MHPs which are unable to arrive at a financial closure. Clean Energy Development Bank and Himalayan Bank are the partners. The status of lending is as follows.

Table 6 Progress on Credit financing-Micro Hydro

| S.N | Bank | No. of projects | Loan amount (NPR Million) | Capacity KW |
|-----|----------------------|-----------------|---------------------------|-------------|
| | Under MHDF: | | | |
| 1 | HBL | 8 | 17.15 | 256 |
| 2 | CEDB | 11 | 20.98 | 449 |
| | Sub total | 19 | 38.13 | 705 |
| | Outside MHDF: | | | |
| 1 | Nabil Bank | 2 | 4.7 | |
| 2 | KIST Bank | 3 | 6.2 | |
| 3 | Kumari Bank | 1 | 8 | |
| 4. | HBL | 1 | 7.5 | |
| | Sub Total | 7 | 26.4 | |

Biogas:

Table 7 Progress on Credit financing-Biogas

| Fiscal Year | Disbused Loan | Outstanding loan | No. Loans | Installed No. of plants- planned | Installed no of plants-Actual |
|--|----------------------|-------------------------|------------------|---|--------------------------------------|
| Total Cumulative (Fy 2058/2059 to 2069/70) | 351,521,808 | 45, 973,014 | 472 | 17,482 | 26,016 |
| 2069/2070 only | 26,245,200 | 47,234,075 | 53 | 1050 | 1050 |

Solar:

For SHS, the Credit Financing SHS phased out with the phasing out of ESAP.

4 Major procedural activities accomplished

Central Renewable Energy Fund

- CREF has been conceptualized as a Financial Intermediation Mechanism where two sets of banks will be carrying out the responsibilities of delivering subsidy and credit.
- The CREF concept document prepared and forwarded to MoF for approval

Gender Equality and Social Inclusion

- Prepared GESI mainstreaming plan
- Conducted GESI GAP analysis
- Prepared social mobilization guideline.
- Coordinated with LGCDP for mainstreaming RET for GESI in local development programme.

Monitoring and Quality Assurance

- Developed NRREP result framework, approved and implemented
- Conducted NRREP baseline survey.

Climate and Carbon

- Carbon Revenue Utilization Guidelines Drafted:
- Carried out an assessment of District Climate and Energy Plans to support the necessary revision of DCEP Guideline.

Solar

- Prepared the Technical Standard of solar systems
- Conducted level I, level II and solar thermal technician trainings.
- Started Fraud- Proof SAF registration and monitoring systems.
- Call application for Prequalification.

Biogas

- Prepared the Third Party Monitoring Guideline

- Selected the third party monitors
- Installer companies have been selected and trained under the SGBP Promotion.
- Conducted policy gap analysis on conduction of waste to energy projects along with a validation workshop
- Organized Waste to Energy Bazaar where top 3 ideas were awarded.
- Drafted ESMF Guideline.
- Organized a validation workshop of all the stakeholders of the biogas to finalise the feasibility study guidelines and feasibility study guidelines.
- 16 consulting companies to conduct feasibility studies and 33 companies to construct large biogas plants have been qualified

Community Electrification

- Prepared procurement Guidelines for Procurement of Micro Hydropower equipment
- Prepared reference Micro Hydropower Standard
- Prepared guideline for Detailed Feasibility Study of MHP
- Initiated pre-Qualification processes of companies for survey & design and supply, installation and after sales service of Micro Hydropower Project is on going
- Prepared Roster of Consulting firms/Individuals for Outsourcing Management Services
- Initiated a study to develop guideline for the Cooperative Model for Mini/Micro Hydro Projects.
- Initiated prequalification of LPOs and Kit Manufacturers of IWM Technology.
- Prepared guidelines for IWM Electrification and IWM Implementation
- Prepared IWM kit Manufacturing Process Manual

Biomass Energy

- Declaration of Indoor Air Pollution free country by 2017
- Organized implementation Plan Formulation Workshop, Workshop on Stove Testing Benchmark, Performance and Safety Standards, an interaction on Subsidy Policy of Biomass Energy Technologies and Successful establishment of National ICS Forum and organization of first 'Experience Sharing Workshop' among stakeholders involved in the ICS sector. Successful organization of an international workshop 'Clean Cookstoves Marketplace 201' and Launching of National Alliance for Cleancookstoves (NACC)
- Organized 34 events of Orientations and Demonstrations of MICS in strategic locations of different districts.
- Completed 2nd round random Sample Monitoring and verification of MICS and ICS
- Conducted Stakeholder's pre-meeting on "Clean Cooking Solutions for All by 2017"
- Developed various ToRs related to Third party monitoring, gasifier study, enterprise development, market for briquettes and Biomass gasification ICE materials and called for proposals
- Organized 14 Regional Level Workshop for analysis for barriers to scaled-up implementation of ICS organized.
- Established Biomass Stove Testing Laboratory at RETS
- Completed Re-verification of second round random sample monitoring completed

- Video documentary of MICS produced through Media Majheri Pvt. Limited and delivered 200 copies of DVDs to various partners
- Supported to DDCs for announcement of ‘IAP Free Dolakha by 2016’ and ‘IAP Free Rautahat by 2017’
- Design, Development and Publication of Brochure/ Booklet on Biomass Densification (2012/13).

Productive Energy Use

- Drafted MSME Implementation Strategy and working guideline
- Identified of few existing MSMEs with a potential for upgrading as well as identification of potential entrepreneurs interested to set up new enterprises
- Conducted field visit to 6 districts
- Conducted study “Carryout Assessment and Establishment of database of existing enterprises established from the revolving fund through End Uses Subsidy for MHPs”
- Conducted “Piloting New and Innovative Idea/Technology for creating new MSMEs for Productive Use of Renewable Energy at Renewable Energy Catchment”
- Developed draft Study Report for “Exploring New and Innovative Ideas/ Technologies for creating MSMEs for Productive Use of Renewable Energy and Updating End Use Catalogue”
- Ongoing study on 1) “Assessment of Business Opportunities in Areas Electrified by RETs and Feasibility study of Energy Intervention in Lokta Handmade Paper Product”
2) “Exploring Local and District Level Organizations/Firms Providing BDS required for MSMEs” .

5 Achievements on NRREP immediate objectives

5.1 Immediate objective-1

To institute the CREF as the core financial institution responsible for the effective delivery of subsidies and credit support to the renewable energy sector.

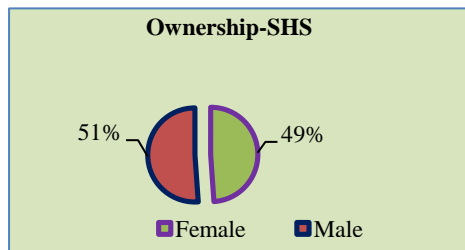
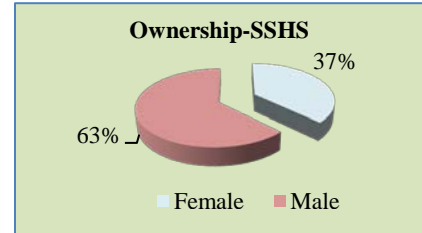
Some achievement has been made on this part of the immediate objective of the NRREP. The CREF has been proposed as a Financial Intermediation Mechanism towards instituting as core financial institution. The mechanism is conceptualized, and the process for its establishment developed. The CREF document is forwarded to the Ministry of Finance for approval. Since CREF is yet to be established, the activities in order to achieve the objective have been continued under REF.

5.2 Immediate objective-2

To accelerate renewable energy service delivery with better quality, comprising various technologies, to remote rural households, enterprises and communities, to benefit men and women from all social groups, leading to more equitable economic growth.

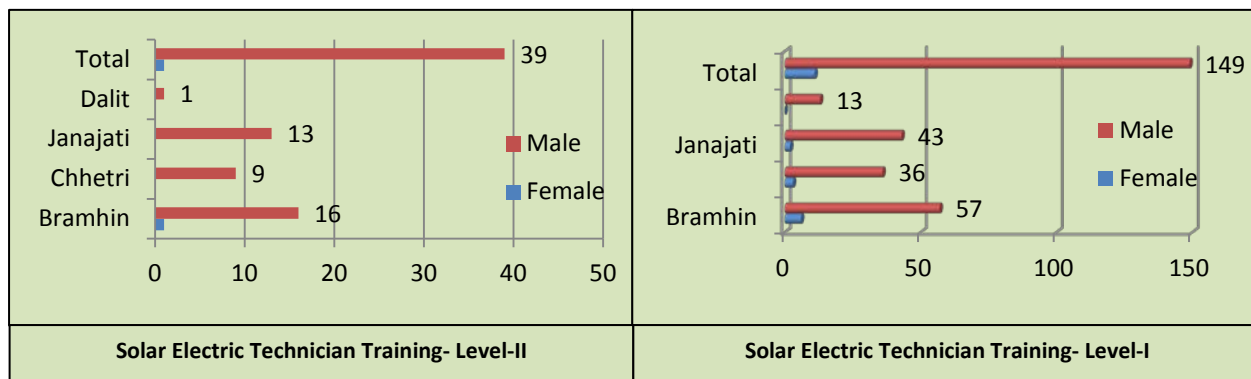
Solar Energy: In the solar sector significant progress have been achieved particularly in the areas of ULAB regulation, service delivery, online monitoring protocol, technical standards development, field monitoring, PQ of suppliers and capacity building of technicians.

The quality of program beneficiaries under solar component is is very much encouraging. As per the reported data, out of 91,879 Solar Home Systems (SHS) ownership, 51% systems are owned by male and 49% systems owned by female. Similarly, in Small Solar Home Systems (SSHS), out of 7,445 systems, 63% is owned by male and 37% by female. Please note that the LFA of Program document targeted to achieve at least 30% and 50% beneficiaries from disadvanmtaged group and female respectively.

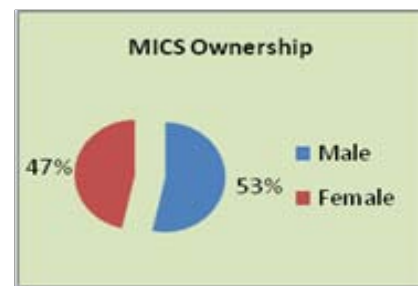


Solar Electric technician level-1 training was provided to 160 people in which 11(7%) trained people were female and 149 (93%) male. Out of total, 9% were Dalit, 28% Janajati, 39% Bramhan and 24% Chhetri. In level- 2 training, a total of 40 people were trained, of which female participation was only 1 (3%) and rest 39 people male. Out of total of level -2 taining participants, 42% were Bramhin, 22% Chhhetri, 33% Janajati and 3% dalit. Considering the

relatively poor result on the quality of beneficiary, the NRREP is committed to improve particulatly the social inclusion aspects of the program in future including more GESI integrated data collection.



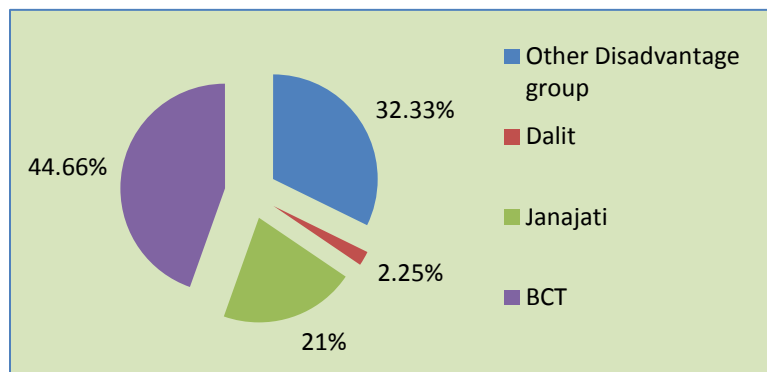
Solid Biomass Energy: In biomass energy sector, significant progress has been made in installation of improved cooking stoves throughout the country. Out of total of 3,806 MICS installed, 1,770 (47%) are owned by female and 2,036 (53%) are owned by male. Please note that the LFA of program document targeted to achieve 75% female ownership in the metallic ICS. Declaration of IAP free country by 2017 is the significant milestone achieved in the history of the country.



Significant progress have been made in the areas of organizing national and international events, ICS development and dissemination, monitoring, technical training & workshops, prequalification of firms and supporting to IAP campaign in many districts. Also, there is significant progress towards gasifier promotion in the country.

Biogas: The NRREP successfully integrated the activities running under Biogas Support Program (1992-2012) in NRREP. Significant progresses have been made in biogas plant installataion and urban biogas promotion. The third party monitoring guidelines, pre-qualifications of consulting firms and installer companies for large biogas companies, preparation of feasibility guidelines and detailed feasibility guidelines are some of the procedural achievements of the year. At the

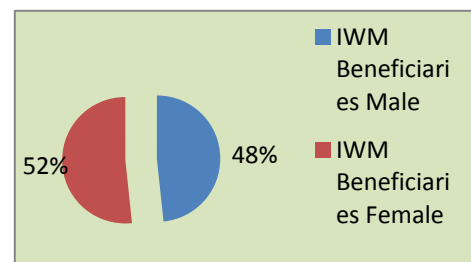
same time, the stakeholders' workshop for policy environment for waste to energy and opening of new avenues for biogas technology are the major achievements. Introduction of Saheri Gharelu Biogas (SGBP), Waste to Energy Bazaar to harness the new and innovative ideas in



large and waste to energy, initiation of Plant Rehabilitation and Efficiency Increment Project (PREIP), etc. are other major initiatives taken during the period. MoU and collaborations with KfW, World Bank for SREP, WWF, ADB, Renewable World, and HECAF etc. is additional milestones toward development of the biogas.

Out of 4,984 domestic biogas plants supported in the reporting year, 58% are owned by male and remaining 42% are owned by female. From ethnicity point of view, 0.3% is owned by single woman HH, 32% by disadvantage group, 2.25% by Dalit, 21% by Janajati and 44.66% by Bramhan-chhetri-Thakuri. Please note that the LFA of program document targeted to achieve 30% HH to be disadvantaged people.

Community Electrification: During the reporting period altogether 20,108 rural households have been electrified, 2,187.60 kW electricity generated from 102 numbers of Micro/Pico Hydropower Projects, which is a major success of the period, on the basis of installation. Average plant size of installed MHPs is found to be 26 kW that can be considered as significant progress. Regarding acheivement in ongoing projects, the MHPs with total capacity of 3,370 kW (109 projects) have been conditionally approved with estimation of benefits of 34,975 newly households and 2,871 kW (84 projects) have given final approval. It is



expected that around 27,488 rural households will be connected to electricity after completion of these MHPs. Similarly 1,256 Improved Water Mill have been installed from which 48,873 households have been benefited.

A total of 96,593 people (20,108HH) were benefited from the micro hydro in the reporting year out of which 52% are female. Similarly, A total of 310,100 population benefited (63,545 HHs) through IWM. Data shows that 52% of total beneficiary population in micro hydro is female. The NRREP commits for more GESI disintegrated data in future reporting. Please note that the LFA of program document targeted to achieve 50% women and 30% DAG during the program period.

Institutional Support: Significant achievements have been made in institutional development. Essential NRREP operational guidelines, subsidy policy and delivery mechanisms have been developed and implemented. Capacity building to NRREP related staff and HR management are other key achievements under the institutional support. The institutional capacity of AEPC/NRREP has further increased through the completion of the RSCs selection process which is one of big milestone of the year. An orientation to to all DECS engineers andLDOs on NRREP in the reporting year ghas also been conducted. The international exposure visit on renewable energy policy and technologies was orgnaised to the most of the members of the Programme Steering Committee in Germany from 13-20 July 2013. The AEPC Startegic and Orgniastional Development Plan was revised and still in eth process of finalization.

Climate Change and Carbon:RE technologies are developed so as to contribute to climate change adaptation and as carbon projects which ultimately contributes to the sustainable development and generate revenue from carbon market.

Monitoring and Quality Assurance: NRREP aligned toward Result based management culture at all levels; that helped improve the program effectiveness particularly in planning, monitoring and reporting areas.

Gender Equality and Social Inclusion: The NRREP aligned towards GESI responsive program through the development of basic GESI procedural apparatus such as mainstreaming plan, toolbox gap identification, inclusion of Renewable Energy Agenda in VDC and DDC planning process and MOFALD Environment Friendly Local Government concept,social mobilization guideline, capacity development, and coordination/network and lobby/advocacy activities.

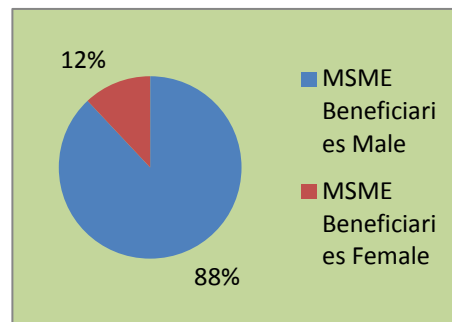
5.3 Immediate objective-3

To contribute to an increase in income generation potential for micro, small and medium sized enterprises (MSME) in rural areas, particularly for men and women belonging to socially and economically disadvantaged groups.

NRREP has appraised and forwarded business cum feasibility plan proposals for 65 MSMEs for the fundining through REF. Out of total MSMEs, 88% are owned by male and 12% owned by female. Out of the total MSME, 55% belongs to indigioneous people, 3% belong to Dalits and rest to upper caste from ethnicity prespective. According to LFA of program document, the program target is 25 % of new MSMEs to be owned and run by women and DAG. Besides, the

component worked on capacity development activities, database development, relevant studies to explore new innovations, identification of new MSME for upgradation, coordination with other relevant agencies etc were carried out in the reporting year.

As this is the first year of implementation of PEU activities and PEU being a relatively new component, the focus was on completing ground works for launching PEU activities in field from second year onwards. It is not clear whether there are 2800 existing MSMEs in AEPC supported micro hydro catchment area. Responsibility for IGA has been transferred from Institutional Development Sub-Component to PEU Component as the IGA activities fit seamlessly with PEU objectives. The Programme Document limits the scope of IGA to CE catchment areas for reaching out to marginalized groups in all parts of the country.



6 Communications, Documentation and Outreach

6.1 AEPC/NRREPC Communication

Since Alternative Energy Promotion centre is a semi autonomous governmental body, it follows the government communication strategy. AEPC/NRREP is disseminating various RET information to the public using different means such as website, Radio jingles, TV commercials, posters, hoarding boards, leaflets etc. The AEPC/NRREP also uses to participate in different festivals, Expos etc to reach out to the general public. Following is the list of Major National Events organized in the reporting year.

- Renewable Energy Week 2013
- Waste to Energy Bazaar 2013
- Clean Cooking Market Place 2013
- Formation of Nepal Alliance for Clean Cook stove
- Celebration of 500,000 plus ICS dissemination

6.2 Major documentation and publication

Table 8. List of publications

| Name of published Documents | Type | Availability |
|--|------------------------|----------------------|
| Leaflets, brochures of different components/sub-components | Print | Available on demand |
| E-newsletters | Electronic | Available in website |
| TV commercial and Radio jingle on GESI Promotion | Audio and Audio Visual | Available on demand |
| Documentary of Sahari gharelu Biogas plant | Audio Visual | Available on demand |
| Documentary on Institutional and Community biogas plant | Audio Visual | Available on demand |

6.3 Major Achievements towards Increasing Outreach

RSCs and National Technical Service Providers: Completed selection process of 11 Regional Service Centers including the National Technical Service Providers. The Framework Agreement has been signed to almost all RSCs.

DDC: Towards increasing the outreach, the AEPC/NRREP organized a NRREP orientation to all DECS engineers and LDOs. An operational guideline for DECS has been drafted. The NRREP ensured inclusion of Renewable Energy Agenda in VDC and DDC planning process resource book and relevant template produced by MoFALD. Further NRREP ensured inclusion of Renewable Energy Agenda and indicators in Environment Friendly Local Government concept developed by MOFALD as well. A stake-holders workshop with LDOs on internalization of DECS was also organized.

Other: In the light of the inception review, AEPC/NRREP realized the need to increase focus on outreach and local governance. As agreed in second programme steering committee meeting, a separate unit has been established with dedicated Programme Manager, Advisor and other staff. PR and Communication is imbedded in outreach management unit to ensure focus of PR Communication activities towards outreach.

7 Organization and Human resource development

7.1 Policies/Strategies/Guidelines

NRREP recognizes that the ability to fulfill its AEPC/NRRP objective and strategic plan relies on fostering an environment which develops the organizational efficiency and the highest quality standards in obtaining its targets and objectives. In this contexts, following policies/strategies and guidelines have been prepared or in the stage of preparation.

List of guidelines prepared, approved and under implementation:

- I. NRREP Administration and Financial Guideline
- II. Operational Guidelines for Regional Service Centers
- III. Operational Guidelines for District Energy and Environment Units

List of guidelines prepared:

- I. Strategic Operational Development (SoD) Plan of AEPC
- II. Guideline for DECS as a part of NRREP Guideline

7.2 Organizational Structure

There is a common understanding that the organizational structure of AEPC needs revision. The instrument for revising the structure is SOD, which is informed by systematic functional analysis. AEPC/NRREP has completed quick functional analysis using in-house expertise; however revision of SOD is still work-in-progress. However, in light of the need to deliver

programme objectives, a transitional AEPC programme structure has been implemented by AEPC. Major change in this structure is the formation of separate sub-component dedicated to improve our outreach (as advised by inception review).

This transitional structure will be implemented till such time that the approved SOD effectively replaces AEPC structure based on functional analysis.

7.3 Major Capacity Building Initiatives

The NRREP carried out various capacities building training to its staff, partners and stakeholders during the reporting period. The main objective of the training is to bring effectiveness and efficiency in the program implementation. Thesetraining were conducted in various places as convenient. The following table gives a glimpse of major training carried out during the reporting year. More than 1,130 people were benefited through different 25 plus training program last year.

Table 9 List of Trainings

| Name of Training | Organizer (Component) | Duration (days) | Target Group | *People trained (No.) |
|--|--|------------------------|---|------------------------------|
| Result based management | MQA | 2 | AEPC/NRREP staff | 30 |
| Quality Assurance | MQA | 2 | AEPC/NRREP staff | 15 |
| Capacity building on preparing GESI action plan | GESI unit and NORAD/ENERGIA | 2 | AEPC/NRREP staff | 30 |
| Solar technician Level I Training | AEPC/NRREP and conducted by SEMAN | 8 | SHS installing technicians | 160 |
| Solar technician Level II Training | AEPC/NRREP and conducted by SEMAN | 8 | SHS installing technicians | 40 |
| Solar Thermal Engineering Training | AEPC/NRREP and conducted by CES (IoE) | 3 | Engineers working solar thermal field | 28 |
| Micro Hydro Operators' Training | CE in collaboration with NMHDA, Astha and D.L. Energy | 22 | Operators of Micro Hydro Projects | 97 |
| Micro Hydro Project Management Training | CE in collaboration with UCS and SETAM | 7 | Managers of Micro Hydro Projects | 50 |
| Pico Hydro Operation and Management Training | CE in collaboration with D.L.Energy and HPR | 8 | Operators of Pico hydro projects | 46 |
| Training on Installation of Micro Hydro Projects | CE in collaboration with Aaran Engg., Techno Village and Epsom | 14 | Engineers of RSCs and Installer of PQ companies | 41 |

| Name of Training | Organizer (Component) | Duration (days) | Target Group | *People trained (No.) |
|---|--------------------------------|------------------------|---|------------------------------|
| Training on Survey and Design of Micro Hydro Projects | CE in collaboration with WECAN | 8 | Engineers of RSCs and PQ companies | 60 |
| Mini/Micro Hydro Power Survey and Design Training | CE | 8 | CE team | 15 |
| Training on MHP Design Aid | CE | 2 | CE team | 12 |
| E-bidding Training | CE | 2 | CE, RSCs, and Installer companies | 80 |
| Mason Training | BSC and NBPA | 7 | Biogas Construction Companies | 106 |
| Supervisor Training | BSC and NBPA | 6 | Biogas Construction Companies | 53 |
| Installers on SGBP | BSC | 1 | Installer | 38 |
| Awareness Training on SGBP | BSC | 1 | Owners of Installer Firms | 10 |
| Validation Workshop on Policy Gap of WtE | BSC | 1 | Stakeholders | 40 |
| Training on Biogas Design | BSC | 3 | Staff of BSC and national service providers | 22 |
| Training to Biomass new and efficient models | BMSC | 4 | RRESCs Engineers | 20 |
| Biomass Densification training | BMSC | 4 | Biomass Energy Engineer's, District Coordinators and Entrepreneur | 22 |
| Training on Biomass Densification with focus on Terai Regions". | BMSC | 4 | RRESCs Engineers | 21 |
| Business Promotion Training | BMSC | 3 | MICS Companies | 31 |
| Enterprise development training | PEU | 6 | Entrepreneurs | 76 |
| Total | | 130 | | 1113 |

*Unverified numbers

8 Compliance Status

As envisioned in the programme document Compliance Unit has been working out to bring to light of the information and evidence if NRREP is running under approved and agreed norms, rules, regulations, procedures and laws. It has been working for the quality assurance of NRREP Financial Management, Planning, Adopted Processes, Implementation and Control Systems.

Implementation of NRREP activities with zero tolerance level of corruption; maintenance and improvement of efficiency and effectiveness of systems and feedback and follow-up for the corrective measures are focus of Compliance Audit. Compliance Unit is regular source of information for NRREP Management, Development Partners and Steering Committee for:

- establishing, maintaining and promoting efficiency and effectiveness in NRREP activities/systems;
- Adding value for money and good governance through corrective measures, improved operations, systematic approach, risk management and controlled processes and systems in NRREP.
- continued follow up for corrective measures till final solutions in NRREP systems/processes;
- communication to the concerned parties of NRREP for the corrections of deficiencies in systems/processes/implementation;
- capacity building of the parties / agents / staff involved in NRREP activities

And in the above context, Compliance Unit carried out the following important tasks during this physical year after its full functional status from May 2013.

1. Initiated participatory planning process
2. Conducted meeting with Installers/Suppliers and service providers to give the message of the requirement of compliance of NRREP.
3. Performed the important tasks of CREF Working Group for the establishment of CREF
4. Provided advisory services to NRREP Management, Stakeholders and Service Providers on varieties of issues – for maintaining the compliance in NRREP activities.
5. Contributed for the establishment of efficient, effective and full functional Financial System in NRREP
6. Contributed for the preparation of NRREP Guidelines
7. Worked for the concretizing and elaboration of Compliance Unit manual
8. Reviewed various documents for reference

9 Review of AWP deviations & adjustment plan, risks and challenges

9.1 Major deviation from AWP- 2012/13 and adjustment plan

The NRREP has achieved more than 100% progress against the targets on IWM, Solar PV home system, Institutional Solar PV System and Mud ICS. However, there is shortfall of progress in few physical targets as follows-

- 73% progress against the target of 3,000 kW Mini/Micro hydro power
- 84% % progress against the target of 24,000 HHs of Mini/Micro hydro power beneficiary
- 74% progress against the target of 10,000 Small solar PV home systems
- 54% progress against the target of 7,000 metallic ICS.
- 26% progress against the target of 19,000 domestic biogas.

There are few reasons behind these shortcomings in the physical progress such as-

- Transition Phase (ESAP to NRREP): Delay recruitment of staffs in NRREP
- Contract extension of RSCs and selection of new RSCs: Delay contract extension of RSCs and irregular contract extension (like 3 months, 1 month, 15 days)
- Delay in approval of RE Subsidy Policy and RE Subsidy Delivery Mechanism
- The funds for the additional support for MHP from government budget were not available for some projects which were approved with additional support.
- MHP Projects commissioned in NRREP (329 kW) were already included in ESAP reporting.
- In the first year we did not have standardized designs for biogas plants bigger than 8 m³, nor did we have any pre-qualified companies capable of constructing such plants.

The same reasons were responsible for low financial delivery of the program. The NRREP has following target adjustment plan across the remaining period of the program.

Table 10 Targets adjustment plan

| Technology /Activity | Unit | 5 year target | Year 1 Actual | Year 2 Plan | Year 3 Plan | Year 4 Plan | Year 5 Plan |
|---|------|---------------|---------------|-------------|-------------|-------------|-------------|
| Mini/Micro Hydro Power | kW | 25,000 | 2,187.6 | 4,500 | 5,500 | 6,000 | 6,900 |
| Improved Water Mill | Nos. | 4,000 | 1,256 | 750 | 750 | 750 | 750 |
| Solar PV Home Systems and Small Solar PV Home Systems | Nos. | 600,000 | 99,324 | 125,000 | 125,000 | 125,000 | 125,000 |
| Institutional Solar PV Systems and drinking water pumping systems | Nos. | 1,500 | 66 | 325 | 325 | 385 | 400 |
| Solar Dryer and cooker | Nos | 7500 | - | 500 | 1,500 | 2,000 | 3,500 |
| Mud ICS | Nos. | 475,000 | 128,345 | 100,000 | 75,000 | 75,000 | 61,655 |
| Metallic ICS | Nos. | | 3,806 | 5,000 | 7,000 | 9,000 | 10,194 |
| Domestic Biogas Plants | Nos. | 130,000 | 4,984 | 26,000 | 35,016 | 32,000 | 32,000 |
| Institutional/community Biogas Plants | Nos. | 1,000 | 0 | 200 | 250 | 300 | 250 |
| Productive energy use (New and upgraded MSMEs) | Nos | 4,100 | 65 | 300 | 1,200 | 1,800 | 700 |
| IGA | HH | 15,300 | 0 | 1,000 | 6,000 | 6,000 | 2,300 |

Note:

- Target under Year-2 are as per the approved AWP.
- Targets under Year-3, Year- 4 and Year-5 are provisional.

Other Deviations at activity level:

Following are some deviations at the activity level which will be adjusted in consecutive annual plans.

CREF: CREF’s establishment was delayed due to approval of the CREF Financial Management Mechanism 2070 BS, CREF Operational Manual, establishment of the CREF Investment Committee. The REF is continued with the delivery of subsidy and facilitation of credit.

Biogas: The budget for the sub-component was revised

Solar Energy: There was no subsidy fund for solar thermal systems. Additional funding as managed from DFID. Targets were overshooted.

Community Electrification: Annual target revised from 4,000 kW to 3,000 kW

Biomass Energy: Due to transition phase, activities that need to be conducted through RSCs were negatively affected due to 3-month, 2-month & 1-month contracting (for the period Jan-July 2013) and delay in payment. The activities in Dhanusha, Mahottari, Bara and Parsa for the period Apr-Jul 2013 were hampered due to problem with RSCs looking after those districts. Similarly, the progress at center was delayed due to delay in finalizing NRREP guideline.

Monitoring and QA: The NRREP MIS could not be completed as per plan due to delay in approval process. This activity is shifted to FY 2013/14.

Climate and Carbon: Reduction in budget was the major deviation. Revision of AWP was made as per reduced ceiling. Some activities were adjusted to other sub-components/units to be within budget ceiling

Gender and Social Inclusion: Development of GESI mainstreaming toolbox could not be completed within the fiscal year. Pre-test, sharing, finalization workshop and finalization of the report shifted to FY 2013/14.

Productive Energy Use: Reduction of budget. Activities like Business Promotion Units establishment in RSC, Capacity building of BPU staff could not be carried out. Further, out of targeted business plans in 50 MHP catchment area only 33 MHP catchment areas (65 enterprises) were covered. Though demands for new enterprises were received by RRESCs, PEU could not forward the document to REF for subsidy as the new delivery mechanism is completely different from the old one.

9.2 Main implementation related problems experienced in FY 2012/13

Following table gives highlight on the major operational problems faced during the year and the way outs followed by the NRREP.

| Operational Challenges faced | Solution made |
|--|--|
| 1. Delay in staff recruitment (both internal and external, program officer on Jan and Advisor as full staff from April) process resulted | <ul style="list-style-type: none"> • The main tasks were divided among the existing staff within NRREP • Consultants were hired to complete necessary activities • Mobilized National Service Providers |

| Operational Challenges faced | Solution made |
|--|--|
| slow progress in NRREP implementation | |
| 2. Delay in preparation and approval of annual Work Plan caused setback in the progress | <ul style="list-style-type: none"> • More focus was laid in procedural and preparatory activities which do not need budgets. • Alternatively extra hour works were provisioned |
| 3. Delay in the approval of Administrative & Financial, and TA Pool Guideline of the Programme caused confusion in many operational processes. | <ul style="list-style-type: none"> • Delayed in approval of ToR was somehow managed by the management. • One to one talk and meetings in groups organized • Permanent solutions for such cases were suggested |
| 4. Amount of unspent budget is relatively high and lacking on target meeting | <ul style="list-style-type: none"> • The delivery side of the program was focused in later months of the year. • In case of biogas, which is a season based construction; it almost covered the expenditure of budget at later stage. |
| 5. Remaining works of the ESAP overlapped with NRREP | <ul style="list-style-type: none"> • In case of solar, subsidy committed for SHS continued to disburse. • In case of Micro Hydro, remaining subsidy installments of micro hydro projects initiated by ESAP continued until the projects are handed over. Committed funds for micro hydro projects set aside and transferred to CREF account for future disbursement. |
| 6. Delay in approval of new subsidy policy caused confusion among stakeholders for sometimes that affected in achieving targets. | <ul style="list-style-type: none"> • The subsidy policy was in place and implemented • Regular meetings with concern people were organized and communication level raised |
| 7. Limited understanding and less acceptance of GESI issues/inputs from professionals | <ul style="list-style-type: none"> • Regular meeting, coordination and supports from GESI unit in the activities of each component gradually improved the understanding and acceptance among the professionals |
| 8. New Technology related issues delayed the process especially in large and waste to energy | <ul style="list-style-type: none"> • Engagement of relevant private consultants, common discussion forum, etc. were organized • Video and teleconferences were organized to remove confusions and got new oversights |

9.3 Emerging operational challenges

Following table gives highlight on the major operational challenges perceived at the beginning of AWP 2013/14 implementation.

| Emerging Operational Challenges | Possible Solutions |
|--|--|
| 1. Challenge in reaching RE to poor, women and socially excluded groups as subsidy is not enough and the technology is expensive | <ul style="list-style-type: none"> • Launching pilot project for poor, women and socially excluded groups in coordination with stakeholders and right holders organizations. • Target the subsidy to |

| Emerging Operational Challenges | Possible Solutions |
|---|---|
| 2. Disaggregated database management | <ul style="list-style-type: none"> Provide proper orientation on database system for RSC, DECS and centre level staff for data management |
| 3. Integrated monitoring system | <ul style="list-style-type: none"> Develop and implement NRREP's integrated M&E system with high priority. |
| 4. Maintaining a common understanding among different stakeholders regarding NRREP | <ul style="list-style-type: none"> Organize regular stakeholders meetings, Increase communication level and formation of task force according to the issues raised. |
| 5. Implementation of Mini/Micro Hydropower Projects with faster rate to meet target | <ul style="list-style-type: none"> Speed up all pipeline projects (and initiate / explore the possibilities of mini hydro projects Identify the current status of the micro hydro “ sick” projects and find the right solution for the completion |
| 6. Minigrad connection | <ul style="list-style-type: none"> Conduct study of the potential sites of the mini grid connection Coordination between AEPC and NEA through Ministry of Science, Technology and Environment and Ministry of Energy for connecting the local grid to national grid |
| 7. Implementation and ownership of the activities at local level. | <ul style="list-style-type: none"> Align the implementation plan of AEPC/NRREP with local level planning process (DDC planning, VDC planning) through |
| 8. Risk of low carbon price in international market | <ul style="list-style-type: none"> Adopt other instruments/approach (Gold standard, Voluntary carbon markets etc) |
| 9. Proper functionality of RSCs to support CE, PEU and other activities | <ul style="list-style-type: none"> Finalize the contracts with RSC; hire and train the staff as soon as possible |

9.4 Status of NRREP risks perceived in Program Document

Following matrix is a comparison of risks perceived in the program document and the situation of risk after one year. Major risks are still pertinent.

| Risks areas perceived in PD | Mitigating measures | Current status |
|---|--|---|
| 1. Slow implementation of reforms to make AEPC autonomous | <ul style="list-style-type: none"> Expedite the process as soon as the functioning of new parliament Only start capacity building of AEPC when autonomous status is achieved | <ul style="list-style-type: none"> Still a risk. The autonomous status of AEPC depends on the passing of the “Bill for establishment and operation of renewable energy board” by the cabinet. As there is no functioning parliament, and the permanent government is still to be formed, further delays in these reforms are to be expected. |
| 2. Mandate to cover small hydropower | <ul style="list-style-type: none"> AEPC Board to revise the SOD and | <ul style="list-style-type: none"> Conducted the study on the current status of the small hydro power projects up to 10 |

| Risks areas perceived in PD | Mitigating measures | Current status |
|--|--|--|
| up to 10 MW will direct attention away from community electrification. | incorporate this aspect to in the organizational model <ul style="list-style-type: none"> Stringently follow-up on the NRREP targets for community electrification | MW to explore the possible interventions of AEPC <ul style="list-style-type: none"> Conducted the national level workshop on mini hydro development challenges and prospectus Drafted mini hydro white paper There is a firm understanding of focusing on projects below 1 MW for the time being, and the CE Sub-component is very cautious on trying to reach the NRREP target in this area. SOD is being updated |
| 3. Overlapping programs/projects in renewable energy sector | <ul style="list-style-type: none"> AEPC will timely raise the issue and settle as appropriate Signing Code of Conduct between GoN, JFA partners and non-JFA partners | <ul style="list-style-type: none"> Still a risk. Even though the concept of NRREP as a single programme modality is being recognized, there is still the risk that development partners and GoN can be tempted to design and implement RE programmes to carter their own objectives irrespective of NRREP |
| 4. The GoN commitments to revise the subsidy system and to provide a larger portion of the subsidies for RETs | <ul style="list-style-type: none"> AEPC will remind GoN to fulfill the commitments on time. Contionued negotioations on the matter between GoN and DP's | <ul style="list-style-type: none"> GON revised subsidy policy and AEPC revised subsidy delivery mechanism GoN's disbursement to subsidy in first project year has been lower that projected in Programme Document Review of the subsidy system is planned for next f/y. |
| 5. Slow establishment of CREF | <ul style="list-style-type: none"> AEPC will continuously follow-up to expedite the process Establishment of alternative preliminary subsidy delivery mechanism or continue the operation of REF | <ul style="list-style-type: none"> CREF Financial Intermediation Mechanism forwarded to the GoN for approval. The document is expected to be approved by MoF by the end of September 2013. The operations of REF has been extended temporarily until CREF is operational |
| 6. Subsidy to RETs potentially distorting the market and encouraging market inefficiencies, including increasing | <ul style="list-style-type: none"> Implementation of more competition among suppliers Revised subsidy delivery mechanism to | <ul style="list-style-type: none"> Still a risk. With the current blanket approach in the subsidy, eg in solar home systems, indications of market inefficiencies like price increase has been observed. |

| Risks areas perceived in PD | Mitigating measures | Current status |
|--|---|--|
| RET prices and provide less incentive for suppliers. | change incentives | <ul style="list-style-type: none"> • In Community Electrification SC the compulsory information sharing with supplier's association has been removed to avoid cartelling and increase competition • Review of the subsidy mechanism to address market inefficiencies and make it more targeted is planned for next FY. |
| 7. Fiduciary risks for Public Financial Management in MoEnv, MoFALD and AEPC, and risk of corruption. | <ul style="list-style-type: none"> • Ring-fencing • Financial and procurement oversight • Value for money audits | <ul style="list-style-type: none"> • Still a risk • With the establishment of a Compliance Unit in NRREP, the awareness on these issues is higher both within AEPC and with its partners and stakeholders • Increased numbers and targeted audits being implemented by compliance unit • Procurement training for NRREP professionals planned in August 2013 |
| 8. While Nepal will be a federal state the implications for the institutional set-up within the country will remain unclear for some time. | Adjust NRREP to a changed national institutional set-up | <ul style="list-style-type: none"> • Still a risk as the future state structure is still not clear. • No measures being implemented |

10 Annexes

10.1 Performance against outputs

| NRREP Outputs | | Achievements- 2012/13 |
|---------------|--|--|
| Output 1.1 | The CREF established and operational as the core financial institution for the effective delivery of subsidies and credit support to the renewable sector | <ul style="list-style-type: none"> No specific achievement. CREF has been proposed as a Financial Intermediation Mechanism. |
| Output 1.2 | Efficient and effective delivery of credit to RET sector through Banks and MFIs | <ul style="list-style-type: none"> 26 MHP have received loan and more 10 projects are awaiting disbursal. |
| Output 1.3: | Efficient and effective delivery of subsidies to RET sector in close consultation with AEPC | <ul style="list-style-type: none"> Total achievement in subsidy disbursement compared to annual target is 81% in total. However, the progress in small solar home systems, metallic improved cooking stoves and productive end-users are significantly less. |
| Output 2.1 | Scaled up implementation network is in place for biogas – Sector commercialization and GESI and Regional concerns | <ul style="list-style-type: none"> Out of targeted 19,000 plants, 22,112 (116%) plants are installed. A total of 4,984 domestic biogas owners have received the subsidy from REF. 23 Sahari Gharelu Biogas Plants have been installed in Kathmandu Valley under AEPC introduced urban biogas subsidy scheme. Initiated the implementation of the Plant Rehabilitation and Efficiency Improvement Project (PREIP) for plant rehabilitation and repair for 41,000 older plants. |
| Output 2.2 | Domestic, community and institutional (large) biogas plants are deployed/established and new biogas (waste digestion, motive power, electricity production) technology is ready for piloting | <ul style="list-style-type: none"> Completed the pre qualification of the consultants to carry out the feasibility studies of large biogas plants (upto 50 Cu m). The guidelines for the feasibility studies have been finalized. Completed the design for the large biogas plants (upto 50 Cu m). Pre qualification of the private construction companies and training to be completed. Completed the Study and Validation of the Policy gap Analysis Study to promote Waste to Energy (W2E) projects in Nepal. Organized the Waste to Energy Bazaar to harness innovative ideas to implement the projects. Out of the 128 project applicants, 30 identified projects were selected for presentation in the W2E Bazaar; and three best projects were selected for implementation. Orientation on W2E conducted in 7 municipalities |

| NRREP Outputs | | Achievements- 2012/13 |
|---------------|--|--|
| | | <p>and data collection on waste resources from over 20 municipalities; based on which preliminary selection of municipalities for W2E projects completed. Biratnagar, Tanahun and Pokhara municipalities have shown written interest to carry out the projects.</p> <ul style="list-style-type: none"> • Selection criteria for projects and the guideline for the proposal call finalized for the SREP. |
| Output 2.3 | Scaled-up implementation of ICS | <ul style="list-style-type: none"> • 128,345 household ICS, 357 IICS and 3,806 MICS were installed by the end of June 15 July 2013. • 30,000 Users' Manual and 2,000 MICS leaflet were printed. |
| Output 2.4 | New & improved biomass energy technologies such as enterprise scale stoves, gasifiers and bio-briquetting are ready & field tested | <ul style="list-style-type: none"> • Discussion with WINROCK international for joint technical and financial support in piloting one gasifier plant for community electrification and one gasifier plant for captive electricity generation. • Selected consultanting firm for 'Feasibility study and potential site identification for piloting biomass gasifier technology for electricity generation in rural community of Mid and Far Western Terai Regions' |
| Output 2.5 | 2.5.1 Update knowledge of evolving rules and regulation in different carbon markets | <ul style="list-style-type: none"> • Strengthened institutional networking in national and international level through participation in Climate Change Conferences, LED Asia Partnership and other national level programs • Mobilization of additional financial resources for Low Carbon Economic Development Strategy formulation. • Increased opportunity for additional financial resources through successful issuance of around 0.19 Million CERs. • Support to draft course structure for MSc in Climate Change and Development to IoE/TU • Drafted Carbon Revenue Utilization Guidelines and support GoN to formulate Low Carbon Economic Development Strategy and in implementing Local Adaptation Plan of Actions. |
| | 2.5.2 Develop a well diversified portfolio of projects using different instruments | <ul style="list-style-type: none"> • Drafted and submitted to DNA for approval the Project Idea Notes (PIN) for Solar Home Systems, Urban Biogas and Waste to Energy Programme. • Initiated the process of DoE hiring for inclusion of 3 CPAs of Biogas PoA • Completed assessment of Pilot DCEP and reviewed DCEP Guideline to further revision • Initiated the studies on identification of |

| NRREP Outputs | | Achievements- 2012/13 |
|---------------|---|--|
| | | Potential/feasible carbon projects in RE sector and role of RE in CC Mitigation and Adaptation |
| | 2.5.3 Put in place quality and performance assurance system and monitor continuously | <ul style="list-style-type: none"> Completed Emission Reduction Users' Survey for 4 Biogas CDM projects; prepared and submitted the monitoring reports for the same to DoE for verification Completed Emission Reduction Users' Survey for ICS and IWM CDM PoAs Prepared and submitted the annual progress report of MHP CDM Project to World Bank. Procured and started the installation of Energy Meters and accessories in MHP CDM Projects; supported CE components for installation of Real Time Monitoring Systems in MHPs. Printed and distributed MHP Logbook for MHPs |
| | 2.5.4 Support external monitoring and verification in effective manner | <ul style="list-style-type: none"> Completed field verification by DoE for 4 Biogas CDM Projects, Validation field visit for IWM CDM PoA Request for Registration submitted to UNFCCC by DoE for Biogas PoA Request for Post Registration Change for MHP CDM and Biogas CDM Project Activities 3 and 4 submitted to DoE. Crediting period for Biogas CDM project Activities 1 and 2 renewed till 2018. |
| Output 2.6 | A highly developed fraud-proof registration, eligibility-checking and verification system for solar energy systems (SHS, SSHS, ISPS and PVPS) | <ul style="list-style-type: none"> Developed online monitoring system protocol and concept note for this activity was collected from 6 different organizations working in this field. Recommended Subsidy Application Form (SAF) of 91, 126 SHS and 7,818 SSHS |
| Output 2.7 | Used Battery management introduced and functional, and in compliance with international standard | Approved Used Lead Acid Battery (ULAB) regulation, prepared concept note for establishing collection center for ULAB |
| Output 2.8 | Some Viable "large Community PV Systems' are operational | <ul style="list-style-type: none"> 40 kWp solar power system to be installed in AEPC building to replace the existing diesel generator. Supported to 41 institutional solar power systems for schools in rural areas out of target 40. Supported to 25 rural solar drinking water projects achieving 50% targets Initiated designing of solar mini grid to be piloted in two places of Nepal. |
| Output 2.9 | Solar thermal domestic devices (dryers, others) are ready for the market | <ul style="list-style-type: none"> Developed technical standards and testing protocol for solar thermal system Piloted world largest solar dryer for drying lapsi |

| NRREP Outputs | | Achievements- 2012/13 |
|----------------------|--|--|
| | | <p>candy</p> <ul style="list-style-type: none"> • Trained 28 engineers to design solar thermal systems • Developed training handbook for solar thermal systems • Developed subsidy application forms , monitoring and quality assurance guidelines |
| Output 2.10 | Project management capacity is in place and performing, and number of completed projects increases at a faster rate. | <ul style="list-style-type: none"> • Supported to install altogether 146 (2072.7 kW) of Micro/Pico Hydropower Projects. Served 20,108 HHs out of target 18,000 HHs • Conducted one year guarantee check. • Prepared roaster of effective and efficient service providers • Reviewed of CE Project Approval Process to reduce project cycle. |
| Output 2.11 | Community electrification projects better designed with regard to available potential, and operate at a higher load | <ul style="list-style-type: none"> • Updated technical standard/guidelines of M/MHP • Prepared MH procurement guidelines and standard • Provided orientation and training to survey/design consultants and installers. • Supported to capacity building of communities (MHP/PHP operators, managers training). |
| Output 2.12 | Community electrification technology is scaled-up and is of a higher standard | <ul style="list-style-type: none"> • Conducted study to assess the status of identified projects up to 10 MW • Conducted techno socio economic study of Baglung mini grid. • Prepared DPR for interconnection of MHP • Supported for installation of real time technology. • Supported for researchers/student in research/dissertation thesis. |
| Output 2.13 | Improved Water Mills promotion is scaled-up and the technology is of a higher standard | <ul style="list-style-type: none"> • Installed 1,256 Improved water mills out of target 1,000. • Updated Technical standard/guidelines. • Conducted one year guarantee check. |
| Output 2.14.1-2.14.3 | AEPC is recognized as an effective, efficient institution for the promotion and development of the RE sector | <ul style="list-style-type: none"> • Developed the subsidy policy and delivery mechanism for renewable energy and obtained approval. • Completed filling up of entire NRREP positions including advisors, officers and assistant officers. • Developed NRREP admin and finance guideline got approval and implemented. • Organised individual capacity building activities. • Organised RE international exposure visit to Germany for high level government officials from MOEST, NPC, OPMCM, MOF, MOFALD. |

| NRREP Outputs | | Achievements- 2012/13 |
|---------------|---|--|
| | | <ul style="list-style-type: none"> Completed functional analysis of AEPC's SOD for improvements. Designed and implemented AEPC programme structure. |
| Output 2.14.4 | Develop and Implement AEPC Monitoring and Quality Assurance systems for effective result -based management | <ul style="list-style-type: none"> Developed and aligned NRREP planning, monitoring and reporting mechanism towards result based management. Major products are NRREP result framework, draft M&E framework and reporting framework. Carried out NRREP baseline study Initiated random monitoring of RETs at the field mobilizing DECS. Capacitated NRREP staff on RBM and quality assurance systems |
| Output 2.14.5 | AEPC is recognized as GESI responsive institution in promotion of RETs to create employment and generate income through MSME approach to improve living standard of rural women and men | <ul style="list-style-type: none"> Developed social mobilization guideline and GESI mainstreaming toolbox Identified GESI gap at policy and institutional level Capacitated AEPC/NRREP staff on GESI through conduction of planning cum capacity development workshop, GESI sensitization training, DEEU orientation etc. Supported to prepare jingle and on aired in mass media; radio and FM and prepared TVC to deliver GESI responsive message on RE targeting poor and socially excluded groups Provided inputs to NRREP documents to make it GESI responsive and extended coordination and networking with right based organizations. |
| Output 2.15 | DEEU/Ss become an integral part of DDCs and work to establish linkages between the AEPC and the needs of the rural population whilst promoting the interests of women and marginalized groups | <ul style="list-style-type: none"> Provided NRREP orientation to the DECS of all districts. Provided NRREP orientation to Senior Official of DDCs. Supported to DEEU in carrying out RETS promotion activities. Prepared a document highlighting of roles and responsibilities of DEEU and RSCs in relation to carrying out NRREP related activities |
| Output 2.16 | RSCs are contracted and their capacity enhanced to facilitate the delivery of RE services and promote linkages at a local level as a resource of the AEPC | <ul style="list-style-type: none"> Completed the process relating to selection and establishment of Regional Service Centers (RSCs). 9 RSCs and 2 National Technical Service Providers are finalized. |
| Output 3.1 | Capacities of existing MSMEs are enhanced | <ul style="list-style-type: none"> Completed compilation of data/information on existing and potential end-uses/enterprises of selected MHPs of 21 districts |

| NRREP Outputs | | Achievements- 2012/13 |
|---------------|--|---|
| | | <ul style="list-style-type: none"> Appraised and forwarded business cum feasibility plan proposals for 65 MSMEs to REF |
| Output 3.2 | New and innovative MSMEs are created and operationalised, with a specific emphasis on integrating women and marginalized section of the population | <ul style="list-style-type: none"> Business cum Feasibility plans of 32 MHPs was forwarded to REF with 65 proposed end-uses. Preratory works initiated towards MSMEs creation such as- identification of potential entrepreneurs,piloting of innovative MSMEs, study to explore new ideas to promote MSMEs. |
| Output 3.3 | Appropriate business development services are available to MSMEs in RE catchments | <ul style="list-style-type: none"> Preparatory works initiated towards the business development such as meetings with various stakeholders and technology providers. Study on “Exploring Local and District Level Organizations/Firms Providing BDS required for MSMEs” |
| Output 2.17 | Income generating activities (IGA) for households using RE are developed and implemented in catchments areas | <ul style="list-style-type: none"> - Only preliminary activities were initiated |

10.2 Districtwise Installed Improved Cook Stoves (Mud Type)

| SN | District | No. ICS | SN | District | No. ICS |
|--------------|----------------------------|---------|----|--------------|----------------|
| 1 | Taplejung | 2,150 | 33 | Lamjung | 1,352 |
| 2 | Panchthar | 1,784 | 34 | Tanahu | 1,238 |
| 3 | Ilam | 2,628 | 35 | Kaski | 1,433 |
| 4 | Jhapa | 4,281 | 36 | Syangja | 1,058 |
| 5 | Sankhuwasabha | 1,675 | 37 | Nawalparasi | 1,490 |
| 6 | Terhathum | 2,388 | 38 | Palpa | 1,190 |
| 7 | Bhojpur | 2,069 | 39 | Rupandehi | 4,068 |
| 8 | Dhankuta | 2,533 | 40 | Gulmi | 1,838 |
| 9 | Sunsari | 3,034 | 41 | Kapilbastu | 4,408 |
| 10 | Solukhumbu | 1,423 | 42 | Arghakhanchi | 1,840 |
| 11 | Khotang | 2,449 | 43 | Myagdi | 1,191 |
| 12 | Okhaldhunga | 1,992 | 44 | Parbat | 1,258 |
| 13 | Udayapur | 2,307 | 45 | Baglung | 1,820 |
| 14 | Siraha | 4,327 | 46 | Pyuthan | 1,794 |
| 15 | Dolakha | 3,192 | 47 | Rukum | 894 |
| 16 | Ramechhap | 2,335 | 48 | Rolpa | 1,606 |
| 17 | Sindhuli | 1,958 | 49 | Dang | 1,749 |
| 18 | Dhanusa | 2,280 | 50 | Salyan | 2,056 |
| 19 | Mahottari | 1,934 | 51 | Jajarkot | 1,268 |
| 20 | Bara | 1,655 | 52 | Surkhet | 1,820 |
| 21 | Sindhupalchowk | 1,949 | 53 | Dailekh | 2,551 |
| 22 | Kavre | 2,138 | 54 | Kalikot | 1,849 |
| 23 | Bhaktapur | 106 | 55 | Bajura | 1,044 |
| 24 | Lalitpur | 492 | 56 | Achham | 1,840 |
| 25 | Kathmandu | 75 | 57 | Kailali | 7,529 |
| 26 | Rasuwa | 370 | 58 | Doti | 1,910 |
| 27 | Nuwakot | 2,524 | 59 | Bajhang | 945 |
| 28 | Dhading | 2,274 | 60 | Darchula | 431 |
| 29 | Rautahat | 5,498 | 61 | Baitadi | 2,035 |
| 30 | Makawanpur | 1,370 | 62 | Dadeldhura | 1,571 |
| 31 | Parsa | 2,538 | 63 | Kanchanpur | 1,282 |
| 32 | Gorkha | 1,901 | 64 | Bardiya | 1 |
| | Other Community based ICSs | | | | 357 |
| Total | | | | | 127,988 |

10.3 Districtwise Installed Metallic Improved Cook Stoves

| SN | District | No. of MICS | SN | District | No. of MICS |
|--------------|-----------------|-------------|-----|------------|--------------|
| 1. | Taplejung | 19 | 16. | Makawanpur | 35 |
| 2. | Panchthar | 279 | 17. | Gorkha | 270 |
| 3. | Ilam | 141 | 18. | Lamjung | 304 |
| 4. | Sankhuwasabha | 8 | 19. | Tanahu | 49 |
| 5. | Terhathum | 12 | 20. | Manang | 46 |
| 6. | Dhankuta | 35 | 21. | Kaski | 160 |
| 7. | Solukhumbu | 48 | 22. | Mustang | 42 |
| 8. | Okhaldhunga | 32 | 23. | Myagdi | 67 |
| 9. | Dolakha | 210 | 24. | Baglung | 309 |
| 10. | Ramechhap | 85 | 25. | Rukum | 75 |
| 11. | Sindhupalchowk | 505 | 26. | Jajarkot | 166 |
| 12. | Kavrepalanchowk | 35 | 27. | Dailekh | 4 |
| 13. | Kathmandu | 70 | 28. | Jumla | 219 |
| 14. | Rasuwa | 145 | 29. | Kalikot | 1 |
| 15. | Nuwakot | 188 | 30. | Mugu | 123 |
| | | | 31. | Humla | 124 |
| Total | | | | | 3,806 |

10.4 Districtwise Installation of Households Biogas Plants

| S.N | DISTRICTS | No of Plants |
|-----|--------------|--------------|
| 1. | ARGHAKHANCHI | 15 |
| 2. | BAGLUNG | 59 |
| 3. | BAJHANG | 95 |
| 4. | BANKE | 562 |
| 5. | BARA | 436 |
| 6. | BARDIYA | 1,300 |
| 7. | BHAKTAPUR | 6 |
| 8. | BHOJPUR | 16 |
| 9. | CHITWAN | 1,309 |
| 10. | DADHELDHURA | 2 |
| 11. | DANG | 1,223 |
| 12. | DARCHULA | 13 |
| 13. | DHADING | 946 |
| 14. | DHANKUTA | 6 |
| 15. | DHANUSHA | 55 |
| 16. | DOLAKHA | 122 |
| 17. | DOTI | 20 |
| 18. | GORKHA | 508 |

| S.N | DISTRICTS | No of Plants |
|------------|------------------|---------------------|
| 19. | GULMI | 31 |
| 20. | ILAM | 289 |
| 21. | JAJARKOT | 1 |
| 22. | JHAPA | 970 |
| 23. | KAILALI | 2,156 |
| 24. | KALIKOT | 17 |
| 25. | KANCHANPUR | 1,094 |
| 26. | KAPILBASTU | 355 |
| 27. | KASKI | 589 |
| 28. | KATHMANDU | 14 |
| 29. | KAVRE | 655 |
| 30. | KHOTANG | 11 |
| 31. | LALITPUR | 104 |
| 32. | LAMJUNG | 717 |
| 33. | MAHOTTARI | 205 |
| 34. | MAKWANPUR | 1,945 |
| 35. | MORANG | 500 |
| 36. | MYAGDI | 46 |
| 37. | NAWALPARASI | 507 |
| 38. | NUWAKOT | 463 |
| 39. | OKHALDHUNGA | 43 |
| 40. | PALPA | 378 |
| 41. | PANCHTHAR | 40 |
| 42. | PARBAT | 7 |
| 43. | PARSA | 99 |
| 44. | PYUTHAN | 146 |
| 45. | RAMECHHAP | 185 |
| 46. | RASUWA | 105 |
| 47. | RAUTAHAT | 179 |
| 48. | RUPANDEHI | 303 |
| 49. | SANKHUWASABHA | 11 |
| 50. | SAPTARI | 19 |
| 51. | SARLAHI | 493 |
| 52. | SINDHULI | 708 |
| 53. | SINDHUPALCHOK | 137 |
| 54. | SIRAHA | 61 |
| 55. | SOLUKHAMBU | 5 |
| 56. | SUNSARI | 124 |
| 57. | SURKHET | 211 |
| 58. | SYANGJA | 433 |
| 59. | TANAHU | 716 |

| S.N | DISTRICTS | No of Plants |
|--------------|-----------|---------------|
| 60. | TAPLEJUNG | 19 |
| 61. | TEHRATHUM | 33 |
| 62. | UDAYAPUR | 295 |
| Total | | 22,112 |

Note: A total of 4,984 domestic biogas owners have received the subsidy from REF.

10.5 Districtwise Installed Micro Hydro Projects

| SN | Owner/Project Name | Districts | VDC Name | Capacity in kW |
|----|--|-----------|-------------|----------------|
| 1 | Kasagad Micro Hydro Project | Achham | Rishidaha | 92 |
| 2 | Jigadi Khola Micro Hydro Project | Achham | Devisthan | 9 |
| 3 | Toli Ghatte K Micro Hydro User's committee | Achham | Toli | 29 |
| 4 | Nani khola Micro Hydro User's Committee | Achham | Sutar | 32 |
| 5 | Dhortatan Garpa K MH User's Committee | Baglung | Bobang | 40 |
| 6 | Bhuji K V Micro Hydro User's Committee | Baglung | Bobang | 84 |
| 7 | Barahghos Khola Micro Hydro User's committee | Baglung | Khungakhani | 11 |
| 8 | Barahathan Khola MH User's Committee | Baglung | Khungakhani | 8 |
| 9 | Lebang K Micro Hydro User's Committee | Baglung | Devisthan | 29 |
| 10 | Baya Khola Micro Hydro Project | Baglung | Devisthan | 50 |
| 11 | Ghatte Khola IWM Electrification Project | Baitadi | Kataujpani | 2 |
| 12 | Gannigad Khola Micro Hydro Project | Baitadi | Kotpetara | 30 |
| 13 | Bajarigad Pico Hydro Project | Bajhang | Deulikot | 3 |
| 14 | Dantola Micro Hydro Project | Bajhang | Datol | 60 |
| 15 | Talkoti Gad MHP User's Committee | Bajhang | Melbisauni | 62 |
| 16 | Jeude Gad MHP | Bajhang | Surama | 25 |
| 17 | Telparigad Micro Hydro Project | Bajhang | Kailash | 9 |
| 18 | Gadaunigad Khar Khola Micro Hydro Project | Bajhang | Kalukheti | 20 |
| 19 | Sunakhani Khola Micro Hydro Project | Bajhang | Patdewal | 17 |
| 20 | Chhadevel Khola Micro Hydro Project | Bajhang | Pauwagadi | 9 |
| 21 | Dhami Gad Khola Micro Hydro Project | Bajhang | Deulekh | 19 |
| 22 | Kachaligadh Pico Hydro Project | Bajura | Kanda | 5 |
| 23 | Simdhara Micro Hydro Project | Bajura | Jugada | 40 |
| 24 | Sim khola Pico Hydro Project | Bhojpur | Chaukidanda | 2 |
| 25 | Kakuwa Khola Pico Hydro Project | Bhojpur | Kulung | 5 |
| 26 | Chandeshwari(Khunge Khola) Micro Hydro Project | Bhojpur | Khawa | 16 |
| 27 | Buwa Khola I Micro Hydro Project | Bhojpur | Balankha | 11 |

| SN | Owner/Project Name | Districts | VDC Name | Capacity in kW |
|----|--|-----------------|--------------|----------------|
| 28 | Kalagad Khola Micro Hydro Project | Darchula | Brahmadev | 43 |
| 29 | Daringal Khola Micro Hydro Project | Dhading | Pida | 10 |
| 30 | Hagarti Khola MHP | Dhading | Tasarpu | 16 |
| 31 | Laxmi khola Micro Hydro Cooperative Ltd. | Dhankuta | Marekatahare | 40 |
| 32 | Jaushwara Khola Pico hydro Project | Dolakha | Orang | 5 |
| 33 | Ghatte Khola MH Users Committee | Dolpa | Majhphal | 30 |
| 34 | Community Base Kapre Khola Micro Hydro Project | Gorkha | Hansapur | 11 |
| 35 | Tamsyo Khola Micro Hydro Project | Gorkha | Ghyachok | 12 |
| 36 | Chhahare Khola Micro Hydro Project | Gorkha | Saurapani | 22 |
| 37 | Nangkohong Khola MHP | Gorkha | Lapark | 26 |
| 38 | Paneri Khola Micro Hydro Project | Humla | Rodikot | 14 |
| 39 | Bada Khola Micro Hydro Project | Jajarkot | Khagenakot | 7 |
| 40 | Fadka Khola Micro Hydro Project | Jajarkot | Ramidanda | 16 |
| 41 | Rugagadh Pico Hydro Project | Jumla | Sanigaun | 3 |
| 42 | Dochalgad MHP | Jumla | Gajyangkot | 85 |
| 43 | Naumule Micro Hydro Project | Jumla | Depalgaun | 77 |
| 44 | Ujyalo Samaj Sangta Khola MHP | Jumla | Dhap | 25 |
| 45 | Aula Khola Micro Hydro Project | Kalikot | Khin | 70 |
| 46 | Dhand Khola Micro Hydro Project | Kalikot | Chhapre | 18 |
| 47 | Bhurgyu Khola micro Hydro User's committee | Kaski | Ghandruk | 50 |
| 48 | Sana IWM Electrification Project | Kavrepalanchowk | Saladhara | 4 |
| 49 | Sikti Khola Mahabharat Pico Hydro Project | Kavrepalanchowk | Bhimkhori | 5 |
| 50 | Khani K Micro Hydro User's Committee | Kavrepalanchowk | Budakhani | 20 |
| 51 | Tawa Khola Micro Hydro Project | Khotang | Khidima | 17 |
| 52 | Nawa Liding K MH User's Committee | Khotang | Rakhawangdel | 70 |
| 53 | Sindure Dhunga Liding K MHP | Khotang | Bakachol | 70 |
| 54 | Swanra Tap Khola Micro Hydro Project | Khotang | Phedi | 30 |
| 55 | Panchami Chhamawa Khola Micro Hydro Project | Khotang | Phedi | 39 |
| 56 | SandhKhola Micro Hydro User's Committee | Lamjung | Bajhokhet | 20 |
| 57 | Lower Kri Khola Micro Hydro Project | Lamjung | Kolki | 6 |
| 58 | Shree Chilli Khola II Micro Hydro Project | Lamjung | Kolki | 10 |
| 59 | Sarangi Khola MH Project | Lamjung | Gauda | 4 |
| 60 | Paise Khola II MHP | Lamjung | Ilampokhari | 12 |
| 61 | Mahavir Khola Micro Hydro Project | Lamjung | Bichaur | 18 |
| 62 | Ingle Khola Micro Hydro User's Committee | Myagdi | Guraja | 30 |
| 63 | Saghuri Khola Pico Hydro Project | Nawalparasi | Mainaghat | 3 |
| 64 | Nirandi Khola I Micro Hydro Project | Nawalparasi | Jaubari | 11 |
| 65 | Khahare K Micro Hydro Project | Nawalparasi | Kotethar | 7 |
| 66 | Aderi Khola Jarap Pico Hydro Project | Okhaldhunga | Jyamire | 5 |

| SN | Owner/Project Name | Districts | VDC Name | Capacity in kW |
|-----|--|----------------|--------------------|----------------|
| 67 | Chisapani Pico Hydro Project | Okhaldhunga | Bhadaure | 4 |
| 68 | Sisne Khola Pico Hydro Project | Okhaldhunga | Thulachhap | 3 |
| 69 | Yolung Khola MH Project | Okhaldhunga | Srichaur | 10 |
| 70 | Thotne Khola Micro Hydro Project | Okhaldhunga | Mamkha | 23 |
| 71 | Khisri Khola Micro Hydro Project | Okhaldhunga | Khichandeshwori | 19 |
| 72 | Thulo Khola Micro Hydro Project | Okhaldhunga | Phulbari | 50 |
| 73 | Baseni Khola Pico Hydro Project "B" U.Committee | Palpa | Rahabas | 1 |
| 74 | Arun Khola Micro Hydro Project | Palpa | Rahabas | 43 |
| 75 | Mabewa Khola Pico Hydro Project | Panchthar | Sidin | 5 |
| 76 | Sano Khola Pico Hydro Project | Panchthar | Ranitar | 5 |
| 77 | Niwa Khola Gramin Vidhyut Sahakari Santha L. | Panchthar | Ektin | 21 |
| 78 | Naya Khola Micro Hydro Project | Panchthar | Aarubote | 8 |
| 79 | Giluwa K Pico Hydro Project | Ramechhap | Priti | 5 |
| 80 | Baaz Khola Micro Hydro Project | Ramechhap | Kubukasthali | 13 |
| 81 | Thulo Khola Pico Hydro Porject | Rolpa | Pachwang | 5 |
| 82 | Sunchhahari Community Pico Hydro Project | Rolpa | Siuri | 5 |
| 83 | Chunmang Khola Micro Hydro Project | Rolpa | Rangkot | 27 |
| 84 | Dumai Khola Micro Hydro Project | Rolpa | Uwa | 27 |
| 85 | Chapka Duikholi Dovan Micro Hydro Project | Rolpa | Eriwang | 32 |
| 86 | Deuta Khola Pico Hydro Project | Rukum | Garayala | 5 |
| 87 | Muree Khola Pico Hydro Project | Rukum | Garayala | 5 |
| 88 | Kokhe Khola B Pico Hydro Project (Peltric) | Sindhuli | Bhadrakali | 2 |
| 89 | Garke K Pico Hydro Project | Sindhuli | Santeshwori Rampur | 2 |
| 90 | Khani Khola Chokhopani Pico Hydro Project | Sindhuli | Santeshwori Rampur | 5 |
| 91 | Saraswati Khola Pico Hydro Project | Sindhuli | Bhadrakali | 5 |
| 92 | Marin Khola Micro Hydro Project | Sindhuli | Bastipur | 8 |
| 93 | Damar Thado Khola Micro Hydro Project | Sindhuli | Bastipur | 8 |
| 94 | Marin Haitar Khola Micro Hydro Project | Sindhuli | Bastipur | 12 |
| 95 | Ghatte Khola Micro Hydro Project | Sindhuli | Amel | 6 |
| 96 | Bagang Trasi Ghyanchho Ghyang Pico Hydro Project | Sindhupalchowk | Baruwa | 2 |
| 97 | Ghatte Khola MH Project | Solukhumbu | Kanku | 10 |
| 98 | Jwalamai Loding K Micro Hydro User's Committee | Solukhumbu | Loding Tamakhani | 20 |
| 99 | Bhuwa Khola Micro Hydro Project | Solukhumbu | Bung | 88 |
| 100 | Sobuwa Khola-5 Gairee Puchhar MHP | Taplejung | Change | 22 |
| 101 | Mulpani Pico Hydro Project | Terhathum | Samdu | 1 |
| 102 | Rasuwa Khola Pico Hydro Project | Udayapur | Rauta | 5 |
| | Total | | | 2,187.60 |

10.6 Districtwise Construction of Micro Hydro (Final Approval)

| SN | Project Name | District | VDC | kW | HHs |
|----|---------------------------------|-----------|----------------|------|------|
| 1 | Machhaine Khola MHP | Humla | Shreenagar | 30 | 274 |
| 2 | Baghamare Khola MHP | Jajarkot | Laha | 45 | 473 |
| 3 | Thawa Khola Raikar MHP | Iiam | Fuyatappa | 20 | 190 |
| 4 | Lum Khola Ghatte Khola MHP | Humla | Kharpunath-8 | 20 | 180 |
| 5 | Piplyadi Khola MHP | Humla | Dadaphaya-9 | 20 | 170 |
| 6 | Ghatte Gad Okhar Gad Khola MHP | Kalikot | Ranchuli | 18.5 | 166 |
| 7 | Ranchuli MHP | Kalikot | Ranchuli | 16 | 211 |
| 8 | Maluwa Phokta Khola MHP | Jumla | Mahabaipathar | 31 | 420 |
| 9 | Bhum Khola MHP | Achham | Kalekada | 34 | 284 |
| 10 | Juwa Nadi MHP | Jumla | Patmara | 14 | 118 |
| 11 | Chuile Khola MHP | Kaski | Ghandruk | 47 | 300 |
| 12 | Sahupata Khola | Bajhang | Ritthapata | 9 | 108 |
| 13 | Shree Chhahare Khola I MHP | Lamjung | Ilampokhri -6 | 9 | 81 |
| 14 | Tamghas Khola MHP | Rolpa | Mirul | 7 | 70 |
| 15 | Jiwai Khola MHP | Rolpa | Mirul | 15.1 | 253 |
| 16 | Baudi Khola MHP | Palpa | Bakamalang | 11 | 157 |
| 17 | Lalbang Sipcha Khola MHP | Rukum | Sakh | 9 | 114 |
| 18 | Jharbang Chancheri MHP | Rukum | Khara | 20 | 207 |
| 19 | Khara Pipalbot MHP | Rukum | Khara | 17 | 170 |
| 21 | Chanchalghat MHP | Baglung | Ranasingkiteni | 100 | 918 |
| 22 | Cheura Gad Khola MHP | Rolpa | Wot | 22 | 343 |
| 23 | Thawa Khola MHP | Ilam | Phuyatappa | 18 | 164 |
| 24 | Chhipra Khola MHP | Rukum | Pipal | 19 | 178 |
| 25 | Sakh Khola MHS | Rukum | Sakh | 39 | 322 |
| 26 | Sakh Khola II MHS | Rukum | Sakh | 28 | 264 |
| 27 | Naudhari Khola MHS | Rukum | Syalapakha | 16 | 205 |
| 28 | Lower Chiuri Khola MHS | Rukum | Pokhara | 14 | 165 |
| 29 | Ghetma Khola MHS | Rukum | Ghetma | 28 | 308 |
| 30 | Chun Khola I MHP | Rukum | Chaukhabang | 23.5 | 196 |
| 31 | Ghari Khola MHS | Rukum | Magam | 14 | 151 |
| 32 | Patal Khola MHS | Rukum | Sakh | 18 | 158 |
| 33 | Chun Khola II MHP | Rukum | Chaukhabang | 27 | 256 |
| 34 | Jhumsa Khola III MHP | Palpa | Gothadi | 68 | 603 |
| 35 | Nyaju Khola MHP | Taplejung | Papung | 15 | 149 |
| 36 | Shree Sapsu Nibu Khola MHP | Patchthar | Imbung | 43 | 360 |
| 37 | Tamajor Khola MHP | Sindhuli | Tamajor | 15 | 180 |
| 38 | Shiwa Khola MHP | Taplejung | Khebang-1 | 70 | 580 |
| 39 | Muwa Khola MHP | Panchthar | Prangbung-5 | 100 | 840 |
| 40 | Tammawa Khola MHP | Taplejung | Tapethok-7 | 65 | 546 |
| 41 | Tap Khola II Mini Hydro Project | Khotang | Sapteshwore | 303 | 2442 |

| SN | Project Name | District | VDC | kW | HHs |
|----|--------------------------------------|-------------|---------------|------|------|
| 42 | Karamkot Khola MHP | Nawalparasi | Jaubari -7,8 | 14 | 150 |
| 43 | Pelpque Khola MHP | Gorkha | Saurpani-8 | 7 | 176 |
| 44 | Kamko Tha Khola MHP | Manang | Nar-7 | 40 | 84 |
| 45 | Baudi Khola I MHP | Nawalparasi | Ruchang-6 | 11 | 169 |
| 46 | Budum Khola MHP | Solukhumbu | Gudel | 100 | 862 |
| 47 | Ghate Khola MHP | Solukhumbu | Juving- | 11 | 102 |
| 48 | Paati Khola MHP | Ramechhap | Gupteshwor | 17.5 | 217 |
| 49 | Kunikhop Khola MHP | Solukhumbu | Salleri-6 | 12.5 | 105 |
| 50 | Khari Khola III MHP | Solukhumbu | Juving- | 70 | 567 |
| 51 | Manlakhark Sisne Phedi MHP | Okhaldhunga | Khijipalate | 26.5 | 248 |
| 52 | Thotne Khola Chaman MHP | Okhaldhunga | Mamkha | 14 | 179 |
| 53 | Juddi Khola MHP | Bajura | Gortee | 100 | 1114 |
| 54 | Mala Gad MHP | Bajura | Kailasmandu | 100 | 1163 |
| 55 | Dupka Bagar MHP | Achham | Ghughurkot | 35 | 320 |
| 56 | Barju Gad MHP | Bajura | Gudukhati- | 40 | 502 |
| 57 | Dahachal MHP | Bajura | Bandhu- | 15 | 214 |
| 58 | Sela Gad MHP | Bajhang | Surma-2 | 28 | 270 |
| 59 | Jeude Gad No 2 MHP | Bajhang | Daulichaur | 27 | 292 |
| 60 | Jalakanya Kamee Khola MHP | Solukhumbu | Kerung | 15 | 185 |
| 61 | Murlung Khola MHP | Kaski | Ghandruk-8 | 25 | |
| 62 | Rudra Tal MHP | Baglung | Bobang-9 | 10 | 94 |
| 63 | Ling Khola MHP | Gorkha | Aruarbang-6 | 8 | 136 |
| 64 | Kubinde Pachase Khola MHP | Dhading | Katunje-4 | 18 | 186 |
| 65 | Muru Khola II MHP | Rukum | Muru-5 | 8 | 130 |
| 66 | Lisne Khola MHP | Dhading | Jharlang-1 | 72 | 565 |
| 67 | Dhunduri Khola MHP Upabhaokta Samiti | Dhading | Jharlang-7 | 66 | 561 |
| 68 | Solu Khola Gangku MHP | Solukhumbu | Panchan | 100 | 1126 |
| 69 | Bheri Khola MHP | Rukum | Chaukhabang-9 | 23 | 450 |
| 70 | Khali Khola MHP | Bajura | Wai | 52 | 430 |
| 71 | Garma Gad MHP | Baitadi | Amachora | 20 | 200 |
| 72 | Sangta Khola Dapkana MHP | Jumla | Dhapa | 11 | 115 |
| 73 | Arung Khola MHP | Nawalparasi | Rakachuli | 32 | 400 |
| 74 | Khar Khola MHP | Humla | Darma | 70 | 550 |
| 75 | Saighunga MHP | Bajhang | Kotdewai | 45 | 466 |
| 76 | Veng Khola MHP | Rolpa | Ghartigaun | 20 | 190 |
| 77 | Juni Tongcha MHP | Humla | Hepka-7 | 20 | 225 |
| 78 | Dobiya Khola MHP | Jajarkot | Ragda-7 | 18 | 235 |
| 79 | Bheri Khola MHP | Jajarkot | Bhagawati | 15 | 240 |
| 80 | Mawa Khola II MHP | Ilam | Banjho-3 | 11 | 95 |
| 81 | Ankhe Khola MHP | Dolpa | Raha | 51 | 327 |
| 82 | Nang Khola MHP | Rolpa | Korchabang | 38 | 323 |

| SN | Project Name | District | VDC | kW | HHs |
|--------------|--------------------|-------------|-----------------|--------------|---------------|
| 83 | Phulmadi Khola MHP | Nawalparasi | Bharatipur-1 | 6.5 | 128 |
| 84 | Ladi Khola MHP | Nawalparasi | Dandajheri -2,3 | 10 | 123 |
| Total | | | | 2,871 | 27,488 |

10.7 Districtwise Installed Improved Water Mills

| SN | District | No. of Systems |
|--------------|-----------------|----------------|
| 1 | Okhaldhunga | 98 |
| 2 | Udayapur | 7 |
| 3 | Dolakha | 27 |
| 4 | Ramechhap | 11 |
| 5 | Sindhuli | 45 |
| 6 | Sindhupalchowk | 34 |
| 7 | Kavrepalanchowk | 29 |
| 8 | Rasuwa | 66 |
| 9 | Nuwakot | 62 |
| 10 | Dhading | 19 |
| 11 | Makawanpur | 10 |
| 12 | Chitwan | 18 |
| 13 | Gorkha | 16 |
| 14 | Rukum | 34 |
| 15 | Rolpa | 40 |
| 16 | Salyan | 38 |
| 17 | Jajarkot | 56 |
| 18 | Surkhet | 34 |
| 19 | Dailekh | 126 |
| 20 | Dolpa | 19 |
| 21 | Jumla | 51 |
| 22 | Kalikot | 51 |
| 23 | Bajura | 16 |
| 24 | Achham | 34 |
| 25 | Kailali | 7 |
| 26 | Doti | 85 |
| 27 | Bajhang | 86 |
| 28 | Darchula | 47 |
| 29 | Baitadi | 66 |
| 30 | Dadeldhura | 24 |
| Total | | 1,256 |

10.8 Districtwise established Enterprises through end-use subsidy for MHPs

| SN | Name of MHPs | District | VDC | kW | No. of Enterprises |
|----|----------------------|----------|-------------|-----|--------------------|
| 1 | Upper Rilugad MHP | Bajhang | Rilu | 30 | 2 |
| 2 | Sibi Khola MHP | Palpa | Gandakot | 6.5 | 1 |
| 3 | Doling Khola MHP | Dolakha | Chankhu | 37 | 3 |
| 4 | Putpute Khola II MHP | Syangja | Chisapani-9 | 98 | 2 |

| SN | Name of MHPs | District | VDC | kW | No. of Enterprises |
|----|-----------------------|-----------|--------------------|------|--------------------|
| 5 | Siwa Khola MHP | Panchthar | Tharpu | 18 | 2 |
| 6 | Pipe Khola MHP | Jajarkot | Khalanga-8 | 14 | 1 |
| 7 | Machherna Khola MHP | Jajarkot | Ramidanda-6 | 11 | 1 |
| 8 | Kut Khola II MHP | Baglung | Rajkut-1 | 8 | 2 |
| 9 | Daram Khola II MHP | Baglung | Kandebash-9 | 27 | 2 |
| 10 | Ritha Khola MHP | Baglung | Burtibang-7 | 74 | 4 |
| 11 | Pangraghari Khola MHP | Baglung | Adhikarichaur-4 | 12.5 | 1 |
| 12 | Jhiwa Khola MHP | Baglung | Boharagaun-7 | 23 | 2 |
| 13 | Khaire Khola MHP | Lalitpur | Gimdi | 11 | 1 |
| 14 | Chyane Gumu Khola MHP | Dolakha | Lailang | 76 | 2 |
| 15 | Firpaiche Khola MHP | Lamjung | Dudhpokhari | 50 | 5 |
| 16 | Thade Khola MHP | Palpa | Rahabas-5 | 8 | 1 |
| 17 | Liti Khola MHP | Dhading | Tasarpu | 15 | 2 |
| 18 | Tawa Khola II MHP | Khotang | Mattim | 19 | 3 |
| 19 | Kisedi Khola MHP | Lamjung | Pachowk - 7 | 21 | 3 |
| 20 | Togo Khola MHP | Lamjung | Pasagaun | 35 | 3 |
| 21 | Ghatte Khola MHP | Lamjung | Taghring - 1 | 25 | 2 |
| 22 | Simdi Gad MHP | Bajhang | Patadewal | 35 | 2 |
| 23 | Thingthewa Khola MHP | Taplejung | Lingtep | 23 | 2 |
| 24 | Rigai Khola MHP | Rolpa | Mirul | 5.5 | 1 |
| 25 | Yemphewa Khola MHP | Taplejung | Sanghu-9 | 36 | 2 |
| 26 | Thade Khola MHP | Taplejung | Dhungesaghu-9 | 10 | 1 |
| 27 | Toli Ghutte Khola MHP | Achham | Toli | 29 | 1 |
| 28 | Jadari Gad MHP | Bajhang | Pauwagudi | 21 | 1 |
| 29 | Bhuji Khola IV MHP | Baglung | Bobang | 26 | 2 |
| 30 | Gadi Khola MHP | Baglung | Adhikarichaur | 22 | 3 |
| 31 | Golang Khola MHP | Rolpa | Ghartigaun and Wot | 17 | 2 |
| 32 | Laxmi Khola MHP | Dhankuta | Marek Katahare-4 | 40 | 3 |

10.9 Districtwise Installation of Solar Home Systems

| SN | District | No. of Systems | Capacity in KWp |
|----|---------------|----------------|-----------------|
| 1 | Taplejung | 721 | 22.74 |
| 2 | Panchthar | 1,323 | 56.36 |
| 3 | Ilam | 190 | 6.67 |
| 4 | Jhapa | 2 | 0.08 |
| 5 | Sankhuwasabha | 832 | 18.58 |
| 6 | Terhathum | 59 | 2.05 |
| 7 | Bhojpur | 1,299 | 34.68 |
| 8 | Dhankuta | 18 | 0.44 |
| 9 | Morang | 147 | 4.70 |
| 10 | Sunsari | 34 | 0.71 |
| 11 | Solukhumbu | 255 | 5.42 |
| 12 | Khotang | 765 | 17.79 |

| SN | District | No. of Systems | Capacity in KWp |
|-----------|-----------------|-----------------------|------------------------|
| 13 | Okhaldhunga | 1,077 | 25.86 |
| 14 | Udayapur | 2,566 | 60.94 |
| 15 | Saptari | 136 | 3.14 |
| 16 | Siraha | 139 | 3.05 |
| 17 | Dolakha | 134 | 2.68 |
| 18 | Ramechhap | 1,285 | 29.80 |
| 19 | Sindhuli | 3,320 | 83.78 |
| 20 | Dhanusa | 9 | 0.28 |
| 21 | Mahottari | 31 | 0.97 |
| 22 | Sarlahi | 828 | 21.49 |
| 23 | Sindhupalchowk | 165 | 3.66 |
| 24 | Kavrepalanchowk | 261 | 6.46 |
| 25 | Lalitpur | 18 | 0.38 |
| 26 | Rasuwa | 69 | 1.38 |
| 27 | Nuwakot | 87 | 1.88 |
| 28 | Dhading | 1,239 | 30.23 |
| 29 | Rautahat | 800 | 19.05 |
| 30 | Makawanpur | 1,439 | 29.93 |
| 31 | Bara | 446 | 12.94 |
| 32 | Parsa | 82 | 2.54 |
| 33 | Chitwan | 1,147 | 34.79 |
| 34 | Gorkha | 325 | 7.08 |
| 35 | Lamjung | 196 | 4.08 |
| 36 | Tanahu | 466 | 11.67 |
| 37 | Kaski | 32 | 0.90 |
| 38 | Syangja | 123 | 2.86 |
| 39 | Nawalparasi | 1,123 | 29.27 |
| 40 | Palpa | 1,117 | 25.03 |
| 41 | Gulmi | 912 | 20.59 |
| 42 | Kapilbastu | 11 | 0.22 |
| 43 | Arghakhanchi | 830 | 18.57 |
| 44 | Mustang | 16 | 0.42 |
| 45 | Myagdi | 479 | 11.78 |
| 46 | Parbat | 30 | 0.66 |
| 47 | Baglung | 70 | 1.78 |
| 48 | Pyuthan | 1,242 | 25.22 |
| 49 | Rukum | 5,901 | 119.78 |
| 50 | Rolpa | 6,138 | 125.57 |
| 51 | Dang | 2,005 | 42.77 |
| 52 | Salyan | 5,892 | 119.54 |
| 53 | Jajarkot | 4,450 | 89.33 |
| 54 | Banke | 2,244 | 53.57 |
| 55 | Bardiya | 113 | 2.38 |
| 56 | Surkhet | 5,365 | 117.27 |
| 57 | Dailekh | 7,899 | 159.33 |
| 58 | Dolpa | 384 | 8.26 |
| 59 | Jumla | 1,412 | 31.28 |

| SN | District | No. of Systems | Capacity in KWp |
|----|--------------|----------------|-----------------|
| 60 | Kalikot | 2,813 | 56.42 |
| 61 | Mugu | 640 | 12.84 |
| 62 | Humla | 237 | 5.64 |
| 63 | Bajura | 790 | 15.76 |
| 64 | Achham | 3,617 | 72.76 |
| 65 | Kailali | 4,115 | 84.06 |
| 66 | Doti | 2,055 | 42.54 |
| 67 | Bajhang | 2,665 | 53.97 |
| 68 | Darchula | 1,592 | 32.39 |
| 69 | Baitadi | 2,875 | 58.43 |
| 70 | Dadeldhura | 621 | 12.90 |
| 71 | Kanchanpur | 161 | 3.48 |
| | Total | 91,879 | 2,026 |

10.10 Districtwise Installation of Small Solar Home Systems

| SN | District | No. of Systems | Capacity in Watt Peak |
|----|-----------------|----------------|-----------------------|
| 1 | Taplejung | 59 | 295 |
| 2 | Panchthar | 11 | 55 |
| 3 | Ilam | 66 | 330 |
| 4 | Jhapa | 49 | 245 |
| 5 | Bhojpur | 23 | 115 |
| 6 | Dhankuta | 11 | 55 |
| 7 | Morang | 221 | 1,105 |
| 8 | Khotang | 70 | 350 |
| 9 | Okhaldhunga | 1 | 5 |
| 10 | Udayapur | 64 | 320 |
| 11 | Dolakha | 408 | 2,040 |
| 12 | Ramechhap | 3 | 15 |
| 13 | Sindhuli | 41 | 205 |
| 14 | Mahottari | 272 | 1,360 |
| 15 | Sarlahi | 94 | 470 |
| 16 | Kavrepalanchowk | 31 | 155 |
| 17 | Nuwakot | 50 | 250 |
| 18 | Dhading | 144 | 720 |
| 19 | Rautahat | 325 | 1,625 |
| 20 | Makawanpur | 17 | 85 |
| 21 | Bara | 7 | 35 |
| 22 | Chitwan | 77 | 385 |
| 23 | Gorkha | 82 | 410 |
| 24 | Syangja | 1 | 5 |
| 25 | Nawalparasi | 19 | 95 |

| SN | District | No. of Systems | Capacity in Watt Peak |
|----|--------------|----------------|-----------------------|
| 26 | Palpa | 197 | 985 |
| 27 | Rupandehi | 5 | 25 |
| 28 | Gulmi | 45 | 225 |
| 29 | Kapilbastu | 59 | 295 |
| 30 | Arghakhanchi | 2 | 10 |
| 31 | Baglung | 53 | 265 |
| 32 | Pyuthan | 63 | 315 |
| 33 | Rukum | 294 | 1,470 |
| 34 | Rolpa | 69 | 345 |
| 35 | Dang | 7 | 35 |
| 36 | Salyan | 55 | 275 |
| 37 | Jajarkot | 119 | 595 |
| 38 | Bardiya | 46 | 230 |
| 39 | Surkhet | 1,836 | 9,180 |
| 40 | Dailekh | 150 | 750 |
| 41 | Jumla | 24 | 120 |
| 42 | Kalikot | 212 | 1,060 |
| 43 | Mugu | 15 | 75 |
| 44 | Humla | 10 | 50 |
| 45 | Bajura | 351 | 1,755 |
| 46 | Achham | 173 | 865 |
| 47 | Kailali | 281 | 1,405 |
| 48 | Doti | 219 | 1,095 |
| 49 | Bajhang | 309 | 1,545 |
| 50 | Darchula | 376 | 1,880 |
| 51 | Baitadi | 275 | 1,375 |
| 52 | Dadeldhura | 54 | 270 |
| | Total | 7,445 | 37,225 |

10.11 Districtwise Installation of Institutional Solar PV

| S.N | Name of Institutions | District | System Capacity (Wp) |
|-----|--|------------|----------------------|
| 1 | Shree Shiva Vocational Secondary School, Jajarkot | Jajarkot | 3420 |
| 2 | Shree Chandradaya HSS, Bajhang | Bajhang | 3420 |
| 3 | Trimohan Higher Secondary School, Terathum | Terhathum | 3420 |
| 4 | Kalika Devi Higher Secondary, Solukhumbu | Solukhumbu | 3000 |
| 5 | Shree Dadhuwa Durcha Sec, School, Lamjung | Lamjung | 2400 |
| 6 | Laxmi Ma. Vi., Morang | Morang | 2100 |
| 7 | Shree Buddhibikash Sec School, Rolpa | Rolpa | 2660 |
| 8 | Shree Prabhat Ma. Vi. Dopai, Rukum | Rukum | 2880 |
| 9 | Shree Suryodaya Higher Sec School, Dhakadam Salyan | Salyan | 3420 |
| 10 | Shree Jivanjyoti U. Ma Vi. Gutu-4, Surkhet | Surkhet | 2860 |

| S.N | Name of Institutions | District | System Capacity (Wp) |
|-----|--|-------------|----------------------|
| 11 | Shree Vijayashwari Higher Sec. School, Hariharpur-7, Surkhet | Surkhet | 2880 |
| 12 | Shree Buddheswori Sec School, Olaney-7, Panchthar | Panchthar | 2340 |
| 13 | Shree Bhagawati Ma. Vi. Dailekh | Dailekh | 3600 |
| 14 | Shree Rainadevi Secondary School | Dailekh | 3600 |
| 15 | Shree Krishna Uchha Ma. Vi. Dailekh | Dailekh | 3840 |
| 16 | Shree Jivanjyoti Ma. Vi., Rolpa | Rolpa | 3300 |
| 17 | Nepal Rastriya Ma. Vi., Rolpa | Rolpa | 3040 |
| 18 | Gnesh Ma. Vi. Kavre | Kavre | 3420 |
| 19 | Shikshyakendra Amar HSS, Baitadi | Baitadi | 3420 |
| 20 | Shree Uchha Ma Vi, Rautahat | Rautahat | 3800 |
| 21 | Adarsha Higher Secondary School, Rukum | Rukum | 2220 |
| 22 | Siddhartha Janata Higher Se. School. Rukum | Rukum | 2220 |
| 23 | Nepal Rastriya Ma. Vi., Jajarkot | Jajarkot | 2220 |
| 24 | Madi Mltiple Campus, Chitwan | Chitwan | 2880 |
| 25 | Shree Uchha Ma Vi, Sindhuli | Sindhuli | 2960 |
| 26 | Shree Dol Bhanjyang HSS, Dadhing | Dhading | 2960 |
| 27 | Baijanath HSS, Achham | Achham | 2960 |
| 28 | Arjun HSS, Baitadi | Baitadi | 2960 |
| 29 | Shree Chakreswory Sec. School | Achham | 2960 |
| 30 | Punyamata HSS, Okhaldhunga | Okhaldhunga | 2220 |
| 31 | Sahabir Lower Secondary School, Tanahun | Tanahun | 1520 |
| 32 | Shree Arun Ma Vi, Tanahun | Tanahun | 1440 |
| 33 | Shree Someshwor HSS, Chitwan | Chitwan | 1140 |
| 34 | Apinath Ma. Vi. Darchula | Darchula | 2850 |
| 35 | Gumdi Health Post, Dhading | Dhading | 1900 |
| 36 | Shanti Higher Sec. School, Dailekh | Dailekh | 2280 |
| 37 | Shree Tamang Kharka Higher Sec. School, Dadhing | Dhading | 2080 |
| 38 | Lomanthan Community Library and Information Center Mustang | Mustang | 2080 |
| 39 | Barchhain Higher Sec. Doti | Doti | 2080 |
| 40 | Shree Hwangdi Mehale Sec. School, Gulmi | Gulmi | 2080 |
| 41 | Radio Ramaroshan, Achham | Accham | 3080 |

10.12 Districtwise Installation of Community Solar Drinking Water Projects

| SN | District | No. of Systems | Capacity in Watt Peak |
|----|-----------|----------------|-----------------------|
| 1 | Panchthar | 1 | 1,400 |
| 2 | Ilam | 2 | 2,420 |
| 3 | Udayapur | 1 | 1,470 |
| 4 | Ramechhap | 1 | 1,800 |
| 5 | Sindhuli | 2 | 4,560 |
| 6 | Tanahu | 4 | 6,430 |
| 7 | Syangja | 2 | 2,560 |
| 8 | Palpa | 1 | 2,850 |

| SN | District | No. of Systems | Capacity in Watt Peak |
|----|--------------|----------------|-----------------------|
| 9 | Myagdi | 1 | 5,275 |
| 10 | Baglung | 2 | 3,770 |
| 11 | Rukum | 1 | 3,040 |
| 12 | Rolpa | 2 | 2,770 |
| 13 | Salyan | 1 | 2,080 |
| 14 | Surkhet | 1 | 1,400 |
| 15 | Baitadi | 2 | 2,280 |
| 16 | Dadeldhura | 1 | 1,300 |
| | Total | 25 | 45,405 |

10.13 Lending of ENDEV/Hydropower debt Fund

Projects Supported by Himalayan Bank Limited under MHDF

| S.N | Micro Hydro | Location | Loan Amount (NPR Million) | Installed Capacity KW |
|-----|-----------------|-------------------------|---------------------------|-----------------------|
| 1 | Khani Khola | Kavrepalanchowk | 1.8 | 20 |
| 2 | Pacific Power | Ramechhap | 2.5 | 80 |
| 3 | Thulo Khola | Okhaldhunga | 3.5 | 50 |
| 4 | Tap Khola/Lumju | Khotang | 1.95 | 19 |
| 5 | Swaratap Khola | Khotang | 3 | 30 |
| 6 | Marinhutar | Sindhuli | 0.8 | 12 |
| 7 | Banakhu | Kavre | 2.2 | 25 |
| 8 | Durlung | Milche, Kavrepalanchowk | 1.4 | 20 |
| | | Total | 17.15 | 256 |

Projects Supported by Clean Energy Development Bank under MHDF

| S.N | Micro Hydro | Location | Loan Amount (NPR Million) | Installed Capacity KW |
|-----|------------------------------|-------------|---------------------------|-----------------------|
| 1 | Arkhet Khola MHP | Gorkha | 1.5 | 30 |
| 2 | Shiba Khola MHP II | Panchthar | 3 | 53 |
| 3 | Rakula Khola MHP | Udaypur | 1 | 25 |
| 4 | Sindurehunga Lidingkhola MHP | Khotang | 1.5 | 70 |
| 5 | Khorlabesi Lunget Khola MHP | Khotang | 1.18 | 26 |
| 6 | Juke Dovan Likhu Khola MHP | Okhaldhunga | 4 | 88 |
| 7 | Poku Dovan Khola MHP | Ramechhap | 3 | 45 |
| 8 | Ghatte Khola MHP | Solukhumbu | 1 | 10 |
| 9 | Nakham Khola MHP | Khotang | 2.1 | 60 |
| 10 | Jwalamai Loding Khola MHP | Solukhumbu | 1.2 | 20 |
| 11 | Teshro Hundi Khola MHP | Gorkha | 1.5 | 22 |
| | Total | | 20.98 | 449 |

Projects supported by other banks outside the MHDF

| SN | Bank | Project | Loan (NPR Million) |
|----|--------------|-------------------|--------------------|
| 1 | Nabil Bank | Syaure Bhumi MHP | 3.5 |
| 2 | Nabil Bank | Charibang MHP | 1.2 |
| 3 | KIST Bank | Naubise Khola MHP | 1.5 |
| 4 | KIST Bank | Milti Khola MHP | 1.5 |
| 5 | KIST Bank | Arun Khola MHP | 3.2 |
| 6 | Kumari Bank | Surnayagad MHP | 8 |
| 7 | HBL | Midim Khola MHP | 7.5 |
| | Total | | 26.4 |

10.14. Cumulative progress of Biogas Credit till NFY- 069/070

| SN | Fiscal Year | Disbursed Loan | Outstanding Loan | No. of Loans | Installed No. of Plants - Planned | Installed No. of Plants - Actual |
|----|--------------|--------------------|-------------------|--------------|-----------------------------------|----------------------------------|
| 1 | 2058/2059 | 3,037,500 | 3,037,500 | 20 | 243 | 838 |
| 2 | 2059/2060 | 8,669,250 | 9,949,514 | 39 | 686 | 575 |
| 3 | 2060/2061 | 5,538,500 | 9,772,109 | 20 | 444 | 431 |
| 4 | 2061/2062 | 16,210,000 | 18,670,974 | 56 | 1099 | 1152 |
| 5 | 2062/2063 | 28,473,202 | 36,404,883 | 36 | 1886 | 1091 |
| 6 | 2063/2064 | 27,979,260 | 52,304,581 | 33 | 1735 | 1367 |
| 7 | 2064/2065 | 52,546,171 | 67,610,719 | 58 | 2643 | 3881 |
| 8 | 2065/2066 | 90,058,096 | 122,485,018 | 68 | 3943 | 6154 |
| 9 | 2066/2067 | 59,866,493 | 130,688,114 | 50 | 2428 | 7799 |
| 10 | 2067/2068 | 27,617,950 | 111,139,576 | 34 | 1106 | 1286 |
| 11 | 2068/2069 | 5,280,186 | 50,843,859 | 5 | 219 | 392 |
| 12 | 2069/2070 | 26,245,200 | 47,234,075 | 53 | 1050 | 1050 |
| 13 | 2070/2071 | 0 | 45,973,014 | 0 | 0 | 0 |
| | Total | 351,521,808 | 45,973,014 | 472 | 17482 | 26016 |