Baseline for Rural Renewable Energy Related National Development Indicators and Other Indicators Related to NRREP Outputs

Final Report

Submitted To
Alternative Energy Promotion Center (AEPC)
National Rural and Renewable Energy Programme (NRREP)

Submitted By
Rural Infrastructure and Management Consultant (RIMC) Pvt. Ltd
Lokanthali - 16, Bhaktapur

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Abbreviations and Acronyms

AEPC	Alternative Energy Promotion Centre
BESC	Biomass Energy Sub Component
BSP/N	Biogas Sector Partnership, Nepal
CBS	Central Bureau of Statistics
CDM	Clean Development Mechanism
CREF	Central Renewable Energy Fund
DAG	Disadvantaged Group
DDC	District Development Committee
DEES	District Energy and Environment Section
DEEU	District Energy and Environment Unit
ESAP	Energy Sector Assistance Program
FGD	Focus Group Discussions
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
FNCSI	Federation of Nepalese Cottage and Small Industries
GESI	Gender Equality and Social Inclusion
GoN	Government of Nepal
GOs	Governmental Organisations
ICS	Improved Cooking Stove
IWM	Improved Water Mill
ISPS	Institutional Solar Photovoltaic System
KiND	Khimti Neighborhood Development Project
kW	Kilo-Watt
MHP	Micro Hydro Power
M&ERF	Monitoring and Evaluation Result Framework
MQUA	Monitoring and Quality Assurance
MSME	Micro Small and Medium Sized Enterprises
PEU	Productive Energy Use
PDD	Project Design Document
PPP	Public Private Partnership
PVPS	Photovoltaic Pumping System
SSP	Solar Energy Support Program
SHS	Solar Home System
SSHS	Small Solar Home
NDIs	National Development Indicators
NGOs	Non-Governmental Organisation
NPC	National Planning Commission
NRREP	National Rural and Renewable Energy Programme
NSLS	National Standard Living Survey
R&D	Research and Development
RE	Renewable Energy
RET	Renewable Energy Technology
RIMC	Rural Infrastructure and Management Consultant
RSCs	Regional Service Centers
TU	Tribhuvan University
VDC	Village Development Committee
WECS	Water and Energy Commission Secretariat

Executive Summary

Background

Under the aegis of Alternative Energy Promotion Centre (AEPC), the National Rural and Renewable Energy Programme (NRREP) is a five year long programme with broader aim of reducing dependency on the traditional energy sources and improving the living standards of by increasing productivity and employment.

The NRREP is aligned to the existing and evolving Government policy framework. As such, the Monitoring and Evaluation (M&E) systems are also oriented towards the GoN monitoring requirements (i.e. National Development Indicators) apart from the routine programme M&E.

In this context, this baseline document is prepared with specific focus on data requirement to measure NRREP contribution to national development indicators prepared by National Planning Commission and the data requirement to the indicators related to NRREP result framework. The result framework prepared by AEPC/NRREP clarifies the logic of the program and specificity of the indicators for M&E.

Methodology

The methodology of preparing this baseline primarily consisted of collection, collation of and discussion on data from secondary sources and from NRREP components/sub components. A short field visit was made to the selected districts to validate and clarify some of the data from secondary sources. Likewise, series of consultations were held with AEPC/NRREP officials in order to ensure the data collected from different secondary sources are relevant to the programme as well as identify areas for additional data requirements (i.e. gender, girls trafficking, HIV).

The absence of adequate data to reconstruct baseline for NRREP is a problem largely due to the fact that the study is primarily relying on the secondary data. As the secondary data has its own purpose and specificity, there are some inherent limitations in the study particularly in adequacy of data and right data that serves the purpose and reflects the need of AEPC/NRREP indicators. isolated Therefore, in consultation with NRREP team, it was agreed to present nearest possible general data if the energy related socio economic data are not available; give data available from studies if nationally representative data are not available (i.e. data representing Nepal's urban pollution is not available therefore data from Kathmandu valley is presented)

Major findings and discussions

Baseline related to National Development Indicators

NPC has developed result based monitoring and evaluation framework with indicators for 17 sectors (i.e. line ministries). There are 35 NDIs that are linked to NRREP output one way or other.

Some of the salient features of NDI related base line information are; lower per capita energy consumption (381 Kg of oil equivalent or 16 Giga joules) but encouraging progress towards the access to on-grid/off-grid electricity (70%) Despite this, only 12% of populations are benefitted

from alternative energy technology and 86.5% energy use is still from traditional sources like fire wood and agricultural residues.

Over the period energy related MSMEs appeared increasing (1,345 total energy related MSME registered), but still it is less than 1% of total registered enterprises under Department of cottage and small industries. 300,000 employments in this sector are reported but disaggregation by caste and sex are not available, but among the wage earners in non-agriculture sector disparity in employment between male and female exists (76% of male and 45% of female). The size of population below poverty line is recorded at 25.16% with 27.3% rural and 15.46% urban residents.

While the good governance has been the guiding principle of the government programme for some time; accurate, adequate and authentic data is not yet established. Ministry of Federal Affairs and Local Development has initiated a nationwide performance measurement for all VDCs, Municipalities and DDCs. VDCs and DDC have better performance record compared to municipalities with 79%, 85% and 46% respectively, meeting the standard of minimum conditions and performance in 2012/13. In a more specific and energy related fraud cases, about 163 numbers of deviated cases (from the monitored 10%sample) in solar energy sector are monitored by AEPC / ESAP till the end of 2010.

Programme specific base line

NRREP has three main programme components (CREF, Technical support and PEU) that synergistically plan to achieve the overall programme objective of improving the living standard of Nepalese people through expanding the opportunities in renewable energy sector.

Despite only 12% benefiting from alternative energy services, the employment in this sector is apparently increasing (19, 814 employed as of 2012). However, disaggregation of data by GESI and Woman is not available.

Easy access to working capital (credit) and technical support has been a common problem in promoting energy related enterprises particularly for the poor and disadvantaged groups including women.

Technical support and credit should move in tandem to produce better result in promoting renewable energy particularly in rural areas. Keeping this in view, NRREP technical components are comprehensively designed with five major areas of intervention.

a **Use of solid biomass** as a source of alternative energy is well established in Nepal with 746,223 ICS and 277,526 biogas plant (including 226 Institutional and 74 Community plants), (of which 23% are reported as woman and 16.72% DAG owned) installed. 84 qualified private biogas companies and 32 metallic ICS private companies were mobilized by 2012. Apart from other benefits (environment, time saving, fuel wood saving), this has directly contributed in reduction of respiratory disease and 75% of biogas users have reported lower incidence of other disease as well.

b **Solar energy** is very popular and solar home system has been widely installed with 352,454 units (including 329,849 SHS and 22,605 SSHS) installed in different parts of the country benefiting over 1.6 million people. Further, 2155 ISPS and 111 PVPS systems were installed. Likewise, by 2012 over 4000 technicians of different categories (technicians, engineers, others) were trained to provide technical assistance. Besides,

over 2,062 solar dryer and solar cookers were also promoted in different parts of the country. Solar Mini-grid projects are not yet implemented in Nepal but the feasibility studies are accomplished by AEPC in the 3 locations.

c **Community electrification** is also gaining momentum with one local mini grid established by linking six micro-hydro plants. Achievements are also reported in improving the capacity, standards and efficiency of various renewable technologies. So far, the total installed Mini Micro-Hydro Power Generation in Nepal is reached to 44,645 KW (including Micro Hydro- 24,604 KW, Mini- Hydro- 16,338 kW, Pico- 3,703 kW) at an average rate of 1500 kW production annually. The role of IWM, toward the community electrification, is also appreciable for the many settlements in the remote areas. So far 9,015 numbers of IWMs are installed and providing energy services to 468,780 households benefiting 2,343,900 numbers of people. However, segregation by caste and sex are not available.

d **Productive energy use**, in its real sense, is the end result of renewal energy related interventions – without the productive use of technology there is no meaning of it. Towards this, NRREP aims to increase income and employment potential for MSMEs with range of supportive activities. In this context, the guidelines for income generation and grant disbursement development, detail plan for capacity building (including training guidelines/manuals) of MSMEs and establishment of business promotion units within NRREP is underway.

e **Institutional support** is crucial in efficient delivery of the NRREP results. In this regards, NRREP aims to achieve at least 80% expenditure against its planned budget. Designing tools for GESI capacity building and formulating policy and instrument (i.e. subsidy policy, delivery mechanism) for GoN has begun.

Climate and carbon related programme is slowly gaining space in renewable energy sector. As such, district climate and energy plans were developed and piloted in three districts on Nepal. By 2012, five projects were registered under Clean Development Mechanism (CDM) which includes biogas and micro hydro projects. Meanwhile, a Baseline study has been carried out for the CDM project registration of the SHS (320,000 units), with its estimated annual emission reduction per CPA 31,037 tCO_2e.

Social issues are also identified and recognized as critical and overarching issue by NRREP document. Gender based violence and HIV are the two obvious social areas that NRREP aims to intervene to change the current status. A national study reported that 22% women of age 15-19 have experienced physical violence at least once since age 15, and 9% experienced physical violence within the 12 months prior to the survey. Likewise 12% of women of age 15-49 reported having experienced sexual violence at least once in their lifetime. Similarly, in another important issue of HIV and AIDS, only about one in four women (27 percent) and men (29 percent) know of ways to prevent mother-to-child transmission of HIV and one-quarter of female and one-third of male youths age 15-24 have comprehensive knowledge of AIDS.

Conclusions and recommendations

The base value presented here are of two broad categories. One that is related to national development indicators (developed by National Planning Commission) and another is NRREP programme/result specific. Some data are from nationally representative studies, whereas some are from specific study or programme data. Therefore some sensitivity is required while using and interpreting the data.

The construction of this baseline value is based on data from secondary sources; therefore there are some inherent limitations (adequacy, accuracy, specificity) of data hence its association with NRREP indicators. While the best and latest available secondary sources were used for baseline data, it is likely that more recent data will be forthcoming over the period. Therefore it is necessary to regularly update the base value for certain output indicators.

Although no specific recommendations on data and sources can be made due the nature of data and its ownership, the team would like to make some suggestion in its use for NRREP as follows;

a NDI related data is comprehensive and mostly is to measure impact/objective level indicators. Therefore these sets of data can be used for the midterm and or final evaluation.

b Programme specific data, depending on source and specificity, can be used either for evaluation and or for output monitoring purpose.

c Depending on the need of NRREP, both sets of data are ready to use for various purposes (result tracking, impact studies, process learning). Some of the data (Labour force survey report 2010 and Nepal living standard survey report, 2010/11) are reported from the year 2010/11. However, some latest data as of 2012 might be forthcoming, and it is useful to check if latest data is available in near future.

Important NRREP baseline information (As of 15 July 2012)

Energy Sector	▪ Energy consumption: 86.5% (traditional), 12.8% (commercial) and 0.7% (renewable). ▪ Per capita energy consumption: 381 Kg of Oil equivalent or 16 Gigajoule. ▪ Total Electric Power Installed Capacity: 718.62 Megawatt (MW) ▪ Households accessing electricity: 70% (both on-grid and off-grid power service). ▪ Population accessing hydro-electricity: 18,238,730 (3,647,746 HHs) ▪ Population benefited from the alternative energy technologies: 12%. ▪ Total Investment in RE Sector from 1996-2012: USD 253 Million ▪ Total Government Contribution in RE Sector from 1996-2012: USD 36.59 Million (14.5%)
Biomass Energy	▪ Traditional energy consumption: firewood 89.36%, agriculture residue 4.05%, livestock residues 6.59%. ▪ Numbers of ICS user: 746,223 (50% woman beneficiary). ▪ Indoor Air Pollution free VDCs: 84 ▪ Number of large scale Institutional Improved Cook Stoves (IICS): 1518 ▪ No. of qualified MICS manufacturers and installer companies: 32 ▪ Stove master trainer/promoter trained: 11,510 (50% woman).
Biogas Energy	▪ Number of biogas plants: 277,526 biogas plant (including 226 Institutional and 74 Community plants), (23% women owned, 16.72% DAG owned). ▪ Number of qualified private biogas companies: 84 (20% in remote districts) ▪ Use of slurry: 74 to 89% (after composting 63%). ▪ 75% of biogas users have reported lower incidence respiratory problem. ▪ Biogas sector credit disbursed: 46.42 million ▪ Number of MFIs in credit delivery: 136 ▪ Biogas sector subsidy disbursed: NRs. 2,363 million (BSP, Nepal, 2013)
Solar Energy	▪ Number of installed household solar system: 352,454 units (including 329,849 SHS and 22,605 SSHS) ▪ Number of Solar Energy technicians CTEVT certified: (LEVEL-I, 3,908, LEVEL-II, 164) ▪ Numbers of installed ISPS- 2155 and PVPS -111 systems ▪ Total installed photovoltaic capacity: 11.614 MWp ▪ AEPC supported installed photovoltaic capacity: 8.863 MWp (including SHS,SSHS,ISPS and PVPS) ▪ Number of installed solar dryers and cookers: 2,062 ▪ Number of Qualified Private Companies: For SHS/SSHS -37 , For ISPS-12, For PVPS-8, For Solar Dryers/Cookers- 6
Community Electrification	▪ Installed capacity of Mini-Hydro Power: 16,338 kW (16.34 MW). ▪ Number of Installed Mini-Hydro Projects- 42 ▪ Installed capacity of the Micro-Hydro Power: 24,605 kW (24.6 MW). ▪ Number of Installed Micro-Hydro Projects- 1287 ▪ Installed capacity of Pico-Hydro Power: 3702.6 kW (3.7 MW). ▪ Number of Installed Pico-Hydro Projects- 1634 ▪ Number of Installed IWM Projects- 9015 ▪ Population benefited from IWMs: 2,343,900 (468,780 HHs) ▪ The fabrication/assembly capacity of local manufacturer: Up to 100 kW. ▪ Number of Qualified Private Companies: Installer Companies- 58, Survey and Design Companies-52
Climate and Carbon	▪ 13th Plan 2013 anticipates alternative energy planning incorporating climate change in all districts. ▪ AEPC registered CDM projects: 5 (four biogas projects consisting of 60 thousands biogas plants, and one Micro hydro Project with 450 micro- hydro units).

	▪ Emission Reduction Monitoring Report to DOE: two biogas projects (2012) ▪ Conducted baseline study for SHS PoA.
Institutional support	▪ Policies and Guidelines in Place: o Alternative Energy Development Formation Order 1996 o Rural Energy Policy 2006 o Rural (Renewable) Energy Subsidy Policy 2009 o Rural (Renewable)Energy Subsidy Delivery Mechanism 2010 ▪ Major Programs and Projects in RE Sector o REDP/RERL o ESAP I and ESAP II o REP o BSP o KiND o IWMP o Special Government Programs (Rukum Ujjyalo, Jaibik Indhan, Wind)

RETs installation Data (Cumulative up to mid July 2012):

SN	RE Technologies	Installed under AEPC support		Installed out of AEPC support		Total	
		Nos.	Capacity	Nos.	Capacity	Nos.	Capacity
1	Mini-hydro power plants	1	0.4 MW	41	15.94 MW	42	16.34 MW
2	Micro-hydro power plants	815	17.786 MW	472	6.819 MW	1,287	24.605 MW
3	Pico hydro power plants	862	2.339 MW	772	1.364 MW	1,634	3.703 MW
4	Improved water mills	7,527	NA	1,488	NA	9,015	NA
5	Household biogas plants	2,68,398	NA	8828	NA	277,226	NA
6	Community and Institutional biogas plants	300	NA	NA	NA	300	NA
7	Improved cooking stoves	621,826*	NA	124,397	NA	746,223	NA
8	Solar home systems	299,709	7.48 MWp	30,140	0.955 MWp	329,849	8.435 MWp
9	Small solar home systems	22,605	113 kWp	NA	NA	22,605	113 kWp
10	Institutional solar PV systems	1202**	1217.19 kWp	953	1732.16 kWp	2155	2949.35 kWp
11	Solar PV water pumping systems	45***	53.025 kWp	66	NA	111	NA
12	Solar dryers and cookers	2,024	NA	NA	NA	2,024	NA
13	Wind energy	13	23.2 kW	11	3.5 kW	24	26.7 kW

* *The figure includes 6,940 metallic ICS.*

** *The figure includes 903 ISPS (including 107 PV mills) installed under EU-supported REP.*

*** *The figure includes 30 PV water pumping systems installed under EU-supported REP.*

1. Introduction

1.1 Background and Context

National Rural and Renewable Energy Programme (NRREP) is a five year national programme of Alternative Energy Promotion Centre (AEPC), Ministry of Science, Technology and Environment to be implemented with financial and technical assistance from various donors.

NRREP is an enhanced programme that not only builds on the best-practices and lessons of the past renewable and rural energy programmes/projects, but it also departs from the past renewable resources programmes by undertaking new approaches for future. The new approach is to pull all different elements in a single envelop as a consolidated programme for synergy and better impact. Besides, the NRREP also provides an institutional building support to the AEPC and its decentralised structures along with support to income generating and livelihood activities in the programme catchment areas of the community electrification schemes.

The NRREP aims to improve the living standards and increase employment of rural women and men; reduce dependency on the traditional energy and attain sustainable development by integrating the alternative energy with the socioeconomic activities in the rural communities. NRREP is linked with three MDGs i.e. Goal 1 (alleviant of poverty and hunger), Goal 3 (gender equity and social inclusion) and Goal 7 (environmental sustainability).The NRREP has three main components **Central Renewable Energy Fund** (CREF), **Business Development for Renewable Energy and Productive Energy Use (PEU)** and **Technical Support** component (TSC). The **Technical Support Component** has five subcomponents: Institutional Support, Solar Energy, Community Electrification, Biogas, and Solid Biomass. Under the TSC, the Climate and Carbon, Gender & Social Inclusion, and Monitoring and Quality Assurances are also major programmes.

Context

In view of NRREP components and functions and its relation with the MDG targets and other policies, the present baseline study of the AEPC/NRREP is conducted to prepare the baseline status of M&E Result Framework of AEPC/NRREP and the National Development Indicators (NDIs) related to renewable energy. NDIs are defined by the National Planning Commission (NPC) and those that are related to NRREP outputs as of 15-July, 2012 are used as base value.

The NRREP baseline study is being conducted after developing a result chain and monitoring plan by the AEPC/NRREP. Those result chain framework prepared by AEPC has clarified the logic of the program and specified the key indicators for evaluation. This baseline study attempts to give the present situation at the beginning of the NRREP; which in turn can be compared to the situation after the end of the program intervention, to establish the changes that have occurred.

Further, the baseline study also made efforts to identify the additional baseline information which was though not defined in the M&E Result Framework, but was emphasized in the NRREP Programme document e.g. GESI, awareness on HIV and AIDS, gender based violence, and girls trafficking.

1.2 Objectives

Objective

The NRREP programme document has envisaged regular assessments of progress towards reaching the development impact and outcomes as designed. The AEPC/NRREP assigned Rural Infrastructure and Management Consultant (RIMC) Pvt. Ltd. to undertake the assessment

entitled “Baseline for Rural Renewable Energy Related National Development Indicators and Other Indicators Related to NRREP Output”.

The main objective of the assignment is:

To contribute to the establishment of baseline of all the rural renewable energy services in Nepal, against which the impact of NRREP interventions would be assessed using the M&E techniques.

The specific objectives are:

- To obtain/establish baseline for the NPC-defined NDIs related to socio-economic impact of rural renewable energy services including employment, rural livelihoods, income gender equality and social inclusion (GESI), and environment.

- To establish/obtain baseline for other indicators related to outputs as mentioned in the NRREP Programme document/ Result Framework.

2. Methodology

The methodology for this study primarily consisted of collection, collation and analysis of data from secondary sources. A field visit was made to selected districts (Ilam, Kavre, Tanahun, Baglung, and Doti), to validate and clarify some of the data from secondary sources.

In consultation with AEPC/NRREP officials, an inventory of possible secondary data sources was identified. The team collected hard copies of information by visiting the respective organisations. Soft copies were also obtained primarily through internet search and some from respective offices.

Series of consultation were held with AEPC/NRREP officials in order to ensure the data collected from different secondary sources are relevant to the programme. Some important data already available in AEPC/NRREP programme units were also provided to study team to include in the study report as appropriate.

National Planning Commission (NPC), Central Bureau of Statistics (CBS), Council for Technical Education and Vocational Training (CTEVT) and some NGOs/research organisations were visited/contacted to obtain data and relevant documents. Apart from reviewing documents for extracting relevant data for base line, additional documents were reviewed to obtain the background information as well as to expand the understanding and interpretation of secondary data in the context of AEPC/NRREP programme.

Details and process followed are as follows;

I. Prepare inventory of baseline

Further to the inception meeting, specific checklist and information collection formats were developed to collect data from secondary sources. A series of meetings were conducted with AEPC/NRREP officials (components, subcomponents and units) and Renewable Energy Service Centre (RESC), District Energy and Environment Section/Unit (DEES/U) to finalise the inventory of the baseline.

The baseline inventory was prepared based on NPC's NDIs, Result Framework of NRREP, and other base line information as envisioned in the Program document. In this regard, the study explored the NDIs related to NRREP output/outcomes that are relevant to each other. The finding of the baseline inventory is presented in Annex 1: NRREP related National Development Indicators and Annex 2: Baseline value for output indicators.

The time frame of the study was from 17 May to 30 August 2013.

Schedule: Implementation schedule of the baseline study activities were as follows:

SN	Activities	Schedule
1.	Inception phase	17 – 31 May 2013
2.	Preparation of plan	01 – 07 Jun 2013
3.	Conduct desktop study/literature review	08 – 30 Jun 2013
4.	AEPC/NRREP components visit and information collection	15 Jun - 10 Jul 2013
5.	Field visit/ data collection	11 – 25 Jul 2013
6.	Preparation of draft report and submission (preliminary draft)	26 Jul – 06Aug 2013
7.	Revision of draft report and comments/feedback	07 – 15 Aug 2013
8.	Comment/feedback incorporation	16 –25 Aug 2013
9.	Final draft report submission	26 Aug 2013

SN	Activities	Schedule
10.	Revision of final draft report and comments/feedback	01 Sept 2013
11.	Comment/feedback incorporation	02 Sept 2013
12.	Report presentation workshop	11 Sept 2013
13.	Completion and distribution of the final report	15Sept 2013

II. Desk review

A comprehensive desk review was conducted to identify and extract relevant data for base line and to acquire socio-economic information on renewable energy sector. The team reviewed relevant documents that included but not limited to the following:

- NRREP Result Framework (2012 – 2017), 2013
- 13th Plan/ Approach Paper, NPC, 2013
- ESAP Programme Completion Report, April 2013
- NRREP Nepal Programme Document , 2012
- Economic Survey, Nepal, 2012
- Nepal Status Paper on UN Conference on Sustainable Development (Rio+20), 2012
- Nepal Electricity Authority, Annual Report, 2011/12
- Nepal Demographic and Health Survey, 2011
- National Living Standard Survey, 2010/11
- Renewable Energy Data Book, 2011
- WECS Energy Sector Synopsis Report, 2010
- Three Year Plan (2010-13), NPC, 2010
- 20 Years Hydro Power Development plan 2009/10

III. Carry out additional baseline assessments

The study team consulted with the concerned component, sub-components and units of AEPC/NRREP for clarity of programme indicators and nature and depth of data requirements. As such it was agreed to collect additional data on PEU, GESI and CC units particularly the socio economic data.

Programme progress reports, relevant study reports and data as well as some other publications (i.e. micro-hydro guideline as reference) were made available by the respective units.

Where data was inadequate, the team explored alternate sources of information and verifications. Unclear and ambiguous data were confirmed and verified through Key Informants Interviews, Focus Group Discussions and in consultation with AEPC/NRREP team where appropriate.

Additional socio-economic data were collected from RESCs, and DEES/Us that are under the District Development Committee (DDC).

IV. Analysis and discussion on baseline data

The baseline data is clustered by AEPC/NRREP programme components and analysed to the extent possible and as allowed by the secondary sources. Analysis and discussions is made only to those data that has direct contribution to the outcome indicators. Data that has indirect contribution to the outcome indicators are presented in baseline data tables only.

V. Sharing the key findings with AEPC and other stakeholders

Before finalization of the report, a workshop is organized at AEPC to share the findings and get comments and feedbacks on the key findings and recommendations. The final report has been submitted after incorporation of comments and feedback.

2.1 Scope of the work

- Obtaining baseline database on relevant NDIs related to rural renewable energy including its socio-economic impact.
- Obtaining other baseline of other indicators related to outputs mentioned in the NRREP programme document.
- Collection of climate change related baseline data and carrying out the required analysis in consultation with Climate and Carbon unit of NRREP.
- Collection of GESI related and employment related baseline data from the latest Labor Force Survey in consultation with GESI Unit of NRREP.
- Establishing institutional baseline data forms as an integral part of the Baseline.

2.2 Limitation of study

This report does not intend nor has the mandate to check the validity of the primary sources of data that has been received. Secondly, since the study is primarily relying on the secondary data, there are some inherent limitations particularly in adequacy of data and right data that serves the purpose and reflects the need of AEPC/NRREP indicators.

- The scope of assignment does not cover the data related to types, number and sizes of Renewable Energy Technologies (RETs).
- If the nationally representative data are not available, data available from isolated studies are presented. For example, recent national data representing Nepal's urban pollution is not available therefore data of the Kathmandu valley and major cities is presented.
- If the energy related socio economic data are not available, nearest possible general data are presented.

15 July 2012 was considered as the base year for using information available in AEPC/NRREP programme documents. Therefore, for the information available in NRREP documents and information supplied by the respective components (particularly the technical information) were used as a base value as of this base period.

2.3 Organization of the Report

The report contains five chapters: the first introductory chapter presents the background, context and objective. The second chapter 'methodology' provides the scope of the work, limitation of the study and organisation of the report. The third chapter contains the study's baseline indicators related to NDIs of NRREP outputs/Result Framework. The fourth chapter explains the baseline data of the NRREP objective and NRREP components. The last chapter covers the study recommendations based on the findings.

3. Baseline for NDIs Related Indicators

Core Baseline:

- 718.62 Megawatt (MW) of electricity is produced in Nepal.
- Per capita energy consumption of Nepalese citizen is 381 Kg of Oil equivalent or 16 Gigajoule.
- Nepal Living Standard Survey shows that the 70% of households in Nepal have access to electricity through both on-grid and off-grid power service.
- 12% of populations are benefited from the alternative energy technologies in Nepal.
- 76% of male wage earners are in non-agriculture and 45% of female wage earners are in this sector.

Nepal is a country endowed with high potential for renewable energy resources like hydro, solar, wind, biomass etc. The country has abundant hydroelectric potential. The theoretical hydroelectric potential has been estimated to be as high as 83,000 MW of which 42,000 MW are considered to be technically and economically feasible. The Table 1highlights the estimated potential and their basis of renewable energy resources in Nepal.

Table 1: Potential of Renewable Energy Resources in Nepal

S.N.	Technologies	Estimated Potential	Basis
1	Mini/micro Hydro	>100 MW	Possible in 55 districts of Nepal
2	Domestic Biogas	1.1 million plants	At existing livestock population
3	Solar Energy	2,100 MW	4.5 kWh/m^2/day radiation if 2% area is taken as suitable
4	Improved Cooking Stove	>2.5 Million	Considering 75% eligible households as of total household of 2001 census
6	Wind	3,000 MW	Considering 10% of area with more than 300 W/m^2
7	Bio-fuel	11,00,000 tons	

Source: AEPC, 2010

However, the potential is not fully harnessed and capitalized into useful energy. Presently, about 12 % of population is accessing alternative energy sources like micro hydro plant and solar home system. Approximately 900 thousand households are using clean energy solutions like improved cook stoves and biogas. Although, the share of alternative energy sources is still small, it has increased by more than 50% since 2005.

The NRREP clearly anticipates using monitoring data from the National Planning Commission's National Development Indicators (NDIs) for measuring its results particularly the outcomes and the outputs. NPC has developed result based monitoring and evaluation framework and detail indicators for 17 sectors. In those sectoral indicators, there are many indicators that are directly linked to energy and environment sectors, and there are some indicators though are not directly related to energy and environment but has strong relevance to NRREP components.

The base value is presented for both directly related indicators and for those that have strong relevance but not directly related. NRREP has 22 outputs and 35 outcome/interim indictors that are linked and related to National Development Indicators. Some of the important output/outcome and its baseline data are discussed here for clarity of data and its relevance for

monitoring core programme results and evaluations (midterm, final evaluation). Please refer to Annex: 1 for the detail NDI related baseline data for NRREP outputs.

Some of the important baseline data are explained in this section.

3.1 Base Value of Energy Resource and Consumption:

Nepal's energy resources are presently classified into three categories, namely, the traditional, commercial and alternative energy. Traditional energy resources include fuel wood, agricultural residues and animal dung. Among the total energy use of Nepal the fuel wood or firewood consumption is 77.3% (Economic survey, 2011/12), which is primarily used for the cooking and heating purpose in the rural households.

The commercial sources of energy are electricity, coal and petroleum products. As per the NEA Annual report 2011/12, only 718.62 Megawatt (MW) of electricity has been tapped in Nepal despite tremendous hydro potential and other renewable energy potential.

Coal has been basically used in the Nepalese industrial sector as a major source of fuel. Share of coal consumption in the total energy used in the Nepalese industry is 58% (EEC/FNCCI Nepal, 2012).The petroleum products are used in the transport sectors, industries, agriculture sector and also for the generator backup power supply.

The per capita energy consumption of Nepalese citizen is 381 Kg of Oil equivalent or 16 Gigajoule, which is five times less than the world average per capita energy consumption at present (The World bank database, 2011).

3.2 Base Value of Energy Access Profile:

The Nepal Living Standard Survey (2011/12) shows that the 70% of households have access to electricity through both on-grid and off-grid power services. In totality, population having access to electricity is dominating in urban areas with share of 96% (of urban population), while the corresponding figure for rural households are 63%. Although the government activities for promotion of alternative energy technologies started late, less than two decades ago, there are already 12% of population benefitting from the alternative energy technologies in Nepal.

3.3 Base Value of Energy Sector Enterprise and Employment:

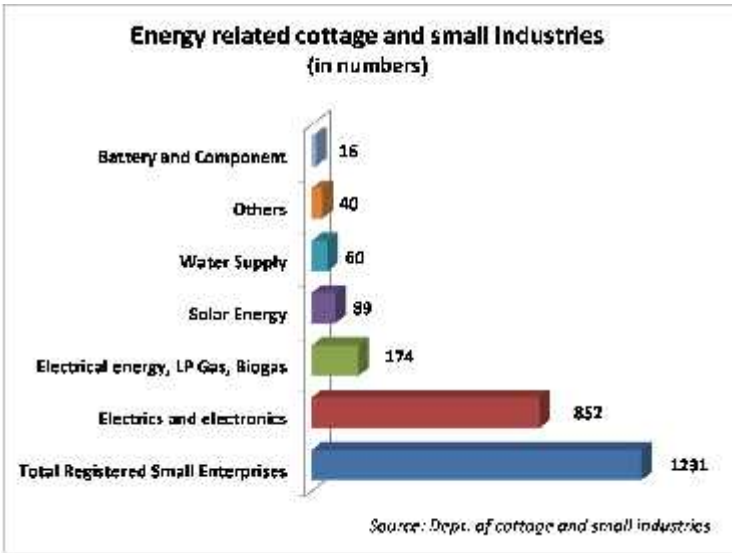
In recognition to the fact that only 12% population are currently benefitted from alternative energy, the Thirteen Plan (Approach paper 2013) anticipates that by the end of the plan, an additional 22 MW alternative energy will be produced (Micro-hydro 15 MW, Solar 6 MW and Windmill 1 MW) in the country. As a result 11,000 additional employment opportunities will be created in small and cottage industries related to energy sector. Furthermore, the approach paper also anticipates alternative energy planning in all districts and expected to begin benefit from carbon trade.

Out of 78% employment rate in Nepal[1], NLSS (2011) was able to capture employment data in gas, electricity and water sector (2.0% for male and 1.2% for female).

[1]A person is defined as "currently employed" if he or she is either employed for at least one hour during the previous seven days, or has a job attachment if temporarily absent from work, or is available to work if work could be found. On the other hand, a person is "currently unemployed" if he or she did not work during the last seven

As of 2012, there were a total of 148,258 registered small and cottage industries and out of which 1,345 (0.90%) are energy related small and cottage enterprises (see Figure 1) whereas the total numbers of registered large enterprises are 503 and that of medium enterprises are 1,155.

Figure 1: Energy related cottage and small industries



Detail information about such registered industries is not available, but it is clear that electric and electronic related small and cottage industries occupies large share of MSMEs. Similarly, electrical energy, LPG, and biogas stands in the second position followed by solar energy related industries.

This pattern of energy related MSMEs is clearly encouraging despite overall small share of energy related industries (0.83%) of all MSMEs registered under Department of cottage and small industries.

The statistical report by Central Bureau of Statistic (CBS) indicates that the portion of currently employed population has increased from 67% in 1995/96 to 78% by the year 2010/11. During the same period, the share of unemployed population has decreased slightly from some 3% down to 2%.

The agriculture sector constitutes 35% of the wage employment and the remaining is accounted by non-agricultural sector. The new and innovative Micro Small and Medium Enterprises (MSMEs) are also in development stage that is expected to cover both woman and marginalized population in the state. However, there is a wide gender gap in the employment by the main sectors for example: 76% of male wage earners are in non-agricultural while only 45% of female wage earners are in the same sector (NLSS, 2010/11).

3.4 Base Value of Urban Environmental Pollution

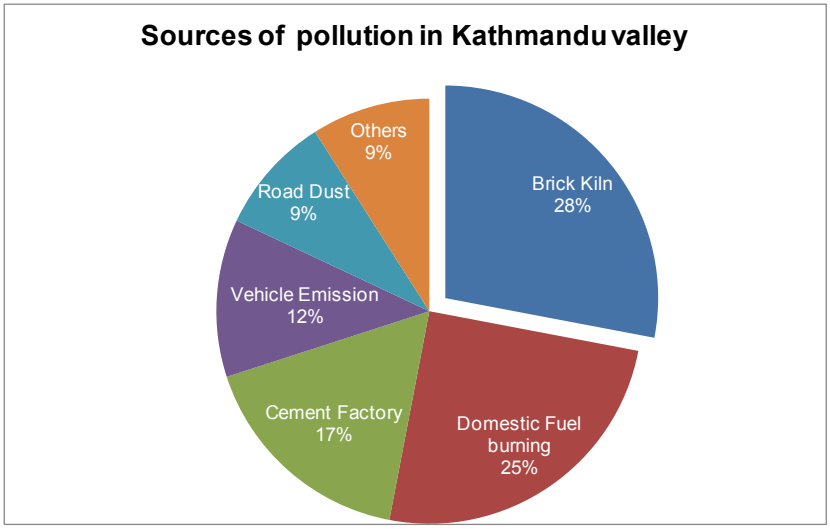
Environment is one such a domain without its proper functioning, overall health of the people and the development of the country is hampered including the conservation of environmental resources. The key environmental problem underlying in Nepalese urban sector are; air pollution, water pollution and solid waste pollutions.

As for the air pollution, the Particular Matter of Diameter 10 microns or less (PM10) and PM2.5 are of major concern of particulate pollutants in terms of their impact on human health. Situation Analysis of Environmental Health in Nepal 2009 by World Health Organization (WHO) and Nepal Health Research Council has indicated that, the concentration of PM10 is very high compared to national standard in most of the urban areas of Nepal.

days but was looking for work, or was waiting to hear from a perspective employer or to start a new job or could not find work or did not know how to look for work. Others who did not work in the past seven days or did not look for work for reasons other than listed above are classified as “currently inactive” (NLSS 2011)

The measured levels of lead in PM10 were below the National Ambient Air Quality Standard (NAAQS) for lead (0.5µg/m³). The Polyaromatic Hydrocarbons concentration in Kathmandu valley found three times higher than European Union recommended level (1 µg/m³). The availability of carbon monoxide (CO), nitrogen oxide (NOx), sulphur dioxide and substantial amount of lead (Pb) in the atmosphere are the main causes of health hazard due to air pollution. A study finding by the World Bank that contributes the air pollution of Kathmandu valley is presented in Figure 2.

Figure 2: Source of pollution in Kathmandu



(Source: Dr. Pushpa R Sharma, Environmental Issues & Child Health in Nepal, 2009)

Likewise, the average per capita solid waste generation of 5 big cities of Nepal (Kathmandu Metropolitan City, Lalitpur, Biratnagar, Pokhara & Birjung) is 0.50kg/cap/d and that of other municipalities of Nepal is 0.32kg/cap/day.

3.5 Base Value of National Poverty Level

Various studies at the national and international level show that the renewable or alternative energy activities generate more job opportunities and income generation activities at various levels. In Nepal, it is also experienced that the renewable energy services such as micro-hydro, biogas, solar energy has supported in income generation activities in the rural communities. The economic survey of Ministry of Finance (MoF) shows that about 25.16% of the total Nepalese populations are under poverty line, out of this 27.43% are rural and 15.46% are urban population.

The project document has strong emphasis on benefits to the people particularly the rural poor, women and disadvantaged group, therefore data and information related to people benefitting from project intervention is very crucial. The challenge however is to identify plausible and nationally representative employment related data that is related to energy sector.

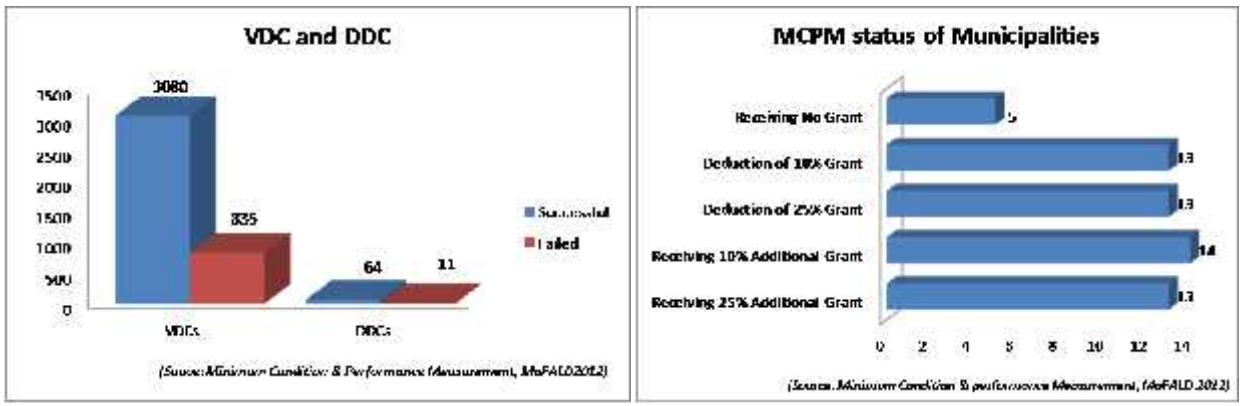
3.6 Good Governance

The government has developed an action plan on Good Governance and Economic Development and Prosperity in 2068to have an effective implementation of the Act 'Good Governance (Management and Operation) 2008.

The Ministry of local Development has developed Public Expenditure & Financial Accountability and Fiduciary Risk Reduction Action Plan in 2012 and Minimum Condition and Performance Measurement (MCPM)[2] 2012/13. The main objective of this action plan and MCPM is to strengthen public financial management, reduce fiduciary risks and to improve the transparency and accountability of public expenditures.

The Ministry of local Development has reported that out of total 3,915 Village Development Committees (VDCs) 3,080 (78.67%) VDCs have met the Indicators for Minimum Conditions[3] and only 64 (85.33%) DDC fulfill the MCPM (Figure 3). Likewise, the numbers of Municipality receiving 25% and 10% additional grants are 13 and 14 respectively. But only five Municipalities did not receive any kind of grants. On the other hand, 26 Municipalities' grant was taken off from the available grant facilities.

Figure 3: Rating scenario of VDC, DDC and Municipalities



AEPC is a national level apex body that implements programme and carry out quality checking and monitoring of the alternative energy programs/projects in Nepal. In this regard, AEPC also aims to improve a fraud-proof registration of enterprises, eligibility checking process and project verification of the activities. According to the solar energy sub-component, AEPC has monitored and recorded 163 numbers of deviated (fraud/cheating) cases till 2010 in the solar energy sectors.

2MPCM for DDC and Municipality: (i) Planning and Budget Management, (ii) Resource Mobilization and Financial Management, (iii) Budget Release, Expenses and Programme Execution, (iv) Monitoring, Evaluation , Communication and Transparency, and (v) Organization Management and Functional Responsibilities

3Minimum Conditions for VDC: (1) Annual Budget and Programme Execution (2) Annual Programme Evaluation (3) Annual and Trimester Progress Report (4) Internal Audit and Final Audit of VDC (5) Account Operating of DDF (6) Documentation of Information and Management (7) Final Audit and Documentation of Audit Irregularities (8) Inventory Management and (9) Management of Staffs

4. Baseline Information of Programme Objectives

Core Baseline:
- Total share of fire wood consumption in the traditional energy sources is 77.3%.
- Number of employment generated by RET services is 19,814.
- Annual Household income is NRs 202,374.

The NRREP has strong poverty reduction focus in its programme design. It has a clear emphasis on effectively reaching out to the more remote and poorest part of the country with demand led approaches actively involving beneficiaries in decision making. It supports use of energy for productive purposes leading to increase in income and employment in rural areas. It promotes mainstreaming GESI into the programme at all levels. This will be in line with the GoN commitment to mainstream GESI and empowerment of women in the 3 year plan (2010-2013).

The baseline information is presented by objectives and by components for easy reference.

Programme Objective: Improve living standard through Renewable Energy

The programme objective of the NRREP is to improve the living standard and increase employment of women and men as well as productivity, reduce dependency on traditional energy and attain sustainable development through integrating the alternative energy with the socioeconomic activities of women and men in rural communities.

The baseline for NRREP by its objectives is prepared on the basis of result framework indicators, which is presented in Table 2.

Table 2: Programme objective, indicators and base value

Programme objective:	Indicators	Base value (15 July 2012)	Source
To improve the living standard of rural women and men, increase employment of women and men as well as productivity, reduce dependency on traditional energy and attain sustainable development through integrating the alternative energy with the socioeconomic activities of women and men in rural communities.	Benefited additional 12% rural people from Renewable energy of them 50% are women and 30% DAG.	- Total of 12% population benefited from RE - Segregated data are not available for women and DAG	Thirteen plan approach paper, NPC 2013
	Reduced dependency on traditional energy sources by 85% from 87.1 % (baseline).	Share of traditional energy sources 86.5%	Economic Survey 2011-12, Ministry of Finance,
	HH income increased by 20% (increased revenues and /or decreased expenses) in the intervention areas from baseline.	Annual HH income NRs 202,374	NLSS 2010/11, Vol. 2 (p 43)
	Increased employment by 30,400* through RET services from estimated 19,814** baseline.	Employment generated by RET services 19,814	AEPC programme document
	Increased employment by 19,000 through MSMEs of which 50% are women and 30% DAG.	Total employment 300,000 in MSMEs. Women and DAG segregated data are not maintained.	PEU Component description (p 2)

**Total sum of Biogas-11,000, Solar- 8, 000, CE- 10,000, and Biomass-1,400*
** Total sum of *Solar- 5,814, Biogas-9,000 & CE- 5,000*

5. Baseline Information of Components

This section gives baseline data according to Monitoring and Evaluation Result Framework (M&ERF) as of 15 July 2012. The AEPC/NRREP Programme document anticipates that the NRREP's monitoring and reporting system ought to be aligned with the guidelines of National Planning Commission and Ministry of Finance. One of the key mandates of the NRREP Programme documents include generating baseline of the programme on the basis of indicators developed in the M&ERF on energy related climate change impact, as well as socio-economic impact including GESI.

The AEPC, NRREP, Monitoring and Quality Analysis (MQA) Unit has developed the Results Based Monitoring and Evaluation (RBME) Guidelines, which are now in implementation stage. The programme focuses on the RBME of energy related climate change impact and socio-economic impact. As such, NRREP strives to link and achieve NDIs related to renewable energy.

The baseline information are developed for all the 28 outputs of NRREP (including their sub-outputs) and most of the sources of these base values are from the respective components/sub-components of NRREP and latest published report from government and non-government organizations. The detail baseline value and source of data/information against the programme output and indicators is illustrated in Annex 2.

5.1 Central Renewable Energy Fund (CREF)

Core Baseline:

- Total subsidy amount NRs 1,191,250,000 available (2010) and, disbursed NRs 606,202,749 (51%).
- The available subsidy amount to micro-hydro project - NRs 328 million (2010/11).
- 136 MFIs involved in credit delivery & NRs. 46.42 million credit amount disbursed in Biogas sector.
- Total subsidy NRs. 2,363 million disbursed in bio-gas sector (BSP, Nepal, 2013)
- Six partner banks involved in credit delivery for RET.
- Three Insurance companies for capacity building for financial sector.
- More than 6,000 SHS financed through Microfinance up to 2012.
- Loan provisioned for 11 Micro-hydro projects (ESAP 2011).

The immediate objective of the CREF Component is to institute the CREF as the core financial institution responsible for the effective delivery of subsidies and credit support to the renewable energy sector. The interim plan (2007/10) and Three year Plan (2010/13) has also envisaged women and the unemployed youth to use credit facilities.

It also aims to establish the CREF as an independently resourced and managed organisation with the capacity to effectively deliver subsidies and credit to help implement RET at household and community levels.

The programme outputs of CREF are distinctly identified with set of indicators. There are three outputs and 10 indicators. The baselines are developed in each indictor to assess its outcome and impacts in future. The detail indicators and baseline are depicted in Annex2.

CREF is already established in AEPC. The CREF will ensure its legal basis to be clarified that the activities to be covered by CREF are determined.

The CREF Component's immediate objective, indicators and baseline for RBME are given in Table 3.

Table 3: Baseline of Immediate Objective – 1 (CREF)

Immediate Objective - 1	Indicators	Base value	Source
To institute the CREF as the core financial institution responsible for the effective delivery of subsidies and credit support to the renewable energy sector.	Established CREF institution set-up	- CREF Established - CREF operational manual is under preparation. - Six commercial banks (financial intermediaries) identified - Financial intermediaries are in process of Implementation.	CREF Component
	Approved operational manual on CREF	Approval in process	CREF Component
	Signed agreement with the at least 6 commercial banks	Agreement in process	CREF Component
	Increased availability of financial resource by 75% for the development of renewable energy sector compared to base year.	NRs 99,965 million allocated for rural credit of which 50% for subsidy	CREF Component
	Disbursed 75% of approved annual funds for credit.	NRs 606,202,749 (51%) disbursed in 2009 - 2011	ESAP-II Project completion report 2013

The CREF component has been established, and is preparing credit fund operational manual. It is also in the process of implementation of financial intermediaries with commercial banks.

Keeping in view the above situation of formal credit supply, the NRREP/CREF is aiming to increase the institutional financial intermediaries for the effective delivery of subsidies and credit support to the renewable energy sector.

5.2 Technical Support Component

Though the rural sector occupies a significant position in Nepal's economic development, the outcomes of development plans of last five decades regarding the rural development is less than expected. Shortage in the mains power supply, among others, can be considered as one of the major determinants of slow growth. As of now, only 12 percent of the total people living in the rural areas are currently using alternative energy services (Approach Paper, NPC 2013).

The Immediate Objective of the Technical Support Component is, *"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."*

The **Technical Support (TS) Component** has five subcomponents: Institutional Support, Solar Energy, Community Electrification, Biogas and Solid Biomass. Likewise the Climate and

Carbon, Gender & Social Inclusion, are also major programmes. The TS Component's immediate objective, indicators and baseline are given in the respective sub-component and the program output level baselines of TSC are tabulated in the Annex2.

In this section, the baselines related to the immediate objective of the Technical component are elaborated for each sub-component. Meanwhile, the baselines of the component/sub-component at program output level are also highlighted in this section.

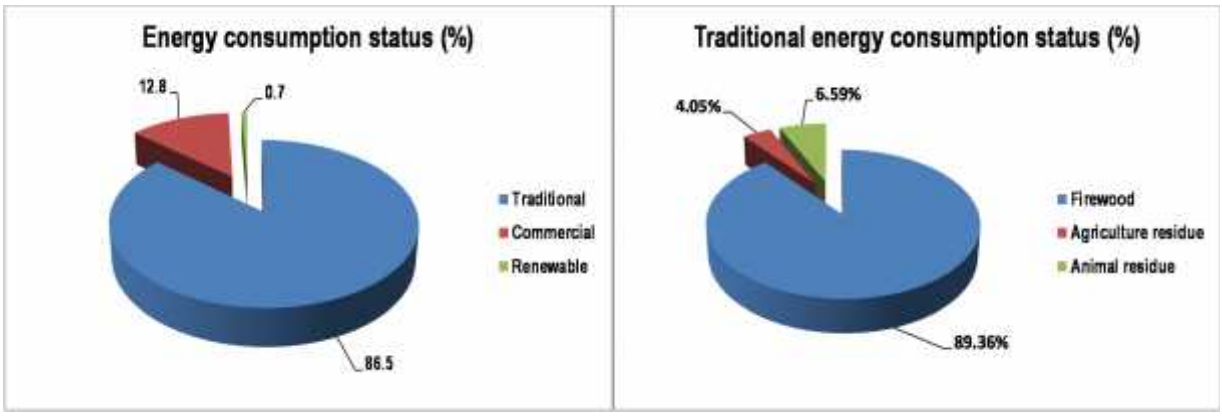
4.2.1 Biomass Sub-component:

Core Baseline:

- The ratio of traditional, commercial, and renewable energy consumptions in Nepal is 86.5%, 12.8% and 0.7% respectively.
- Out of the total traditional energy consumption, the share of firewood is 89.36%, agriculture residue 4.05% and livestock residues 6.59%.
- The cumulative numbers of total ICS user households are 746,223 out of which more than 50% belongs to woman beneficiary.
- 84 numbers of VDCs are declared as Indoor Air Pollution free VDCs.
- Total of 1,518 units of large scale Institutional Improved Cook Stoves (IICS) have been implemented.

The traditional energy sources still dominate energy demand and its consumption in Nepal. Though Nepal has huge water resource with high energy potentials, energy crisis in Nepal is ever increasing due to its failure in attaining notable success in hydro-electricity generation. Figure has shown the sources of energy and their consumption status in year 2011/12. The ratios of traditional, commercial, and renewable energy consumptions that stood at 86.5 percent, 12.8 percent and 0.7 percent respectively in fiscal year 2011/12.

Figure 4: Sources of energy and their consumption status



Immediate Objective:

The Base Value of immediate objectives of the solid biomass sub-component is given in Table 4.

Table 4: Base value of the solid biomass

Biomass Indicators	Base value	Source
Increased 8.8 % of ICS users from baseline year of which 50% belonging to DAG and women.	The cumulative numbers of total ICS user are 623,361 out of which above 50% belongs to woman beneficiary. Nevertheless, GESI disaggregated data are not available.	Biomass Subcomponent, AEPC
Declared 500 IAP free VDCs by 2017.	There are 84 numbers of VDCs that are declared as IAP free VDCs.	Biomass Subcomponent, AEPC
Sustained cleaner cooking technologies by the 90 % of ICS users.	All the ICS disseminated through AEPC programme are cleaner cooking technologies.	
Reduced respiratory diseases in the intervention areas.	The data of reduced respiratory disease due to use of ICS is not available.	

The Key Baseline of Output Indicators for Biomass subcomponent:

The Bio-mass subcomponent basically aims to deliver the better quality (and large numbers of) improved cooking stoves to the poor community in the remote households and expand ICS promotion into the institutional market as well. This will reflect a positive outcome in the efficient use of bio-mass fuel and reduce the environmental pollution level either indoor or outer atmosphere. There are already 84 VDCs that are declared as IAP free VDCs, based on the evaluation from local government body such as VDCs, DDCs in collaboration with AEPC.

During the ESAP Phase-I and II, total of 24 regional renewable energy service centers were providing services to biomass energy sector. And the program implementation network was also established with various district based organizations, national NGOs, national universities, UN world food programme and DDC/DEES etc. The biomass energy component of previous program has promoted household and institutional ICS, bio-briquette and gasifiers. Household level gasifier and institutional gasifiers were disseminated as pilot basis only. The progress of two different types of ICS technologies installed at the household level is presented in the **Error! Reference source not found.**. Most of the ICS disseminated are of mud type (737,748) and these are promoted in the mid hill and Terai region of Nepal. Above 90% of installed ICS are reported in operation.

Apart from the household level ICS, there are 5 different models of Institutional Improved Cook Stoves (IICS) introduced by AEPC. The total of 1,518 units of large scale Institutional Improved Cook Stoves (IICS) have been implemented till 15-July-2012. The beneficiary group of the IICS are school hostel, Army Camp, District Police Office, Hotels, Religious Centers, Restaurants, Highway hotels etc.

As for the capacity development in the solid biomass energy sector, there is already encouraging progress in strengthening the local capacity to sustain the program. During the program intervention 11,510 Promoters and clean cook stove master trainers trained, out of which 50% were women (Source: ESAP program achievement report, 2012 and Biomass Subcomponent, AEPC). Meanwhile, 115 persons also received training on the bio-briquette technologies.

4.2.2 Bio-gas Sub-component:

Core Baseline:

- Total installed biogas plants are 277,526 (including 226 institutional and 74 community plants), out of which 23% are woman and 16.72% are DAG owned.
- There are 84 qualified private biogas companies who are eligible to work with AEPC biogas programs out of which 20% are working in low biogas constructed and remote districts.

AEPC's Biogas programme and Biogas Support Program (BSP) began in 1992 and has done tremendous progress in disseminating the technologies to the end users along with the capacity development of the service providers and the local technicians. The biogas programme is the first project in the Nepal to operate under Clean Development Mechanism (CDM) principles. The Bio-gas projects are benefiting to end users and changing their lives in many ways such as access to clean cooking fuel and lighting service, improving sanitation and health, giving people time to pursue other activities, and improving crop yields. In macro-level, it is reducing pressure on forestry resources of Nepal.

The NRREP will continue to the support the biogas technology services with the objective of extending the technologies to additional 95,000 populations and also to reducing respiratory diseases in the intervention areas. The technology is expected for various types of end use application through domestic, community and institutional (large) biogas plants. Moreover, the new biogas technologies are also in progress for the urban sectors, such as waste digestion, motive power, electricity production etc.

Immediate Objective:

The Base Value of immediate objectives of the bio-gas sub-component is presented in Table 5.

Table 5: Base value of bio-gas sub component

Bio-gas Indicators	Base value	Source
Benefited 95,000 (19,000 plant) including 50% women and 30% DAG of additional rural population from biogas per year.	**Total installed Biogas** =277,226 **Women owned biogas plants:** 23% **DAG** (HH Plants: War Victim=54, Poor HH=5,375, *Dalit*=4,904, *Janajati*= 34,482. **In total**=44,815 **Community Plants:** 50 m^3 plant for 12 *dalit* HH, 35 m^3 plant for 7 *dalit* HH, 35 m^3 plant for 12 *Janajati* HH.)	BSP-N Database 2012 and others
Supported 95% of biogas in use after one year of installation.	95% plants that have crossed guarantee period (3 years) are operational.	BSP Year Book, 2011/12.
Used slurry by 70% of biogas owners for agricultural purposes.	74 to 89% biogas users use slurry in one or another form and 63% after composting.	BSP Year Book, 2011/12.
Reduced respiratory diseases in the intervention areas.	The data of reduced respiratory disease due to use of biogas is not available. However, 75% of biogas users have reported lower incidence of diseases[4].	The Implementation Completion and Results Report (TF-58031), World Bank, October 25, 2012.

4Positive perception is reported on curbing indoor air pollution via use of biogas.

The Key Baseline of Output Indicators for Biogas subcomponent:

The biogas technologies has played positive role in saving firewood, saving imported expensive kerosene fuel and also the large amount of greenhouse gases that might escape into the atmosphere. In total, there are already 277,226 number of biogas plants that are installed in the rural households. In addition, 226 Institutional biogas plants are installed. Similarly, 74 units of community biogas plants are also promoted. Out of the installed biogas plants in the country, about 95% plants that have crossed guarantee period and they are still in operational. The various types of promoted biogas technologies in household, institutional and community biogas plants promoting by AEPC are GGC, Modified GGC, TED, SGBP and NIBP model.

The previous programme of biogas energy has also enhanced local capacities. There are already 84 qualified private biogas companies in place who are eligible to work with AEPC biogas programs under subsidy policy. Out of these companies, about 20% are working in low biogas constructed and remote districts.

The waste to energy policy has not been included in the current Renewable Energy Policy. Therefore, the waste to energy projects are not yet established in the state but will be promoted in the new program by AEPC.

4.2.3 Solar Energy Sub-component:

Core Baseline:

- The number of installed household level SHS and SSHS are 329,849 and 22,605 respectively.
- Total of 3,908 number of Solar Energy LEVEL-I technicians and about 164 Solar Energy LEVEL-II technicians trained and certified under the CTEVT skill development program of Government of Nepal
- The total numbers of installed ISPS and PVPS are 2,155 and 111 respectively.
- Total Photovoltaic capacity installed by SHS, ISPS and PVPS through the AEPC program is 8.75 MWp.
- Study on Management of Used Lead Acid Batteries (ULAB) has been carried out and establishment of ULAB recycling plant is under process.
- Total of 37 solar PV companies are prequalified for SHS and 38 companies for SSHS dissemination under AEPC program

Solar Energy is one of the targeted sectors of the alternative energy technology promotion through AEPC, not only in the rural community but also in the urban and semi-urban areas. In the previous program under ESAP, the Solar Energy Support Program (SSP) was one of the components that supported dissemination of solar photovoltaic systems for rural household services as Solar Home System (SHS) and Small Solar Home System (SSHS). In the past, AEPC has also promoted the Institutional Solar Photovoltaic System (ISPS) and the Photovoltaic Water Pumping System (PVPS) in the off-grid rural areas. Similarly, Renewable Energy Project (REP) funded by European Union and Government of Nepal was another intervention that has supported institutional level (larger) size solar electrical systems for the rural community buildings and the community drinking water supply systems in the off-grid location of the rural communities.

The Solar Energy Sub-component of NRREP/AEPC is implementing solar photovoltaic and solar thermal energy projects promotion in line with the program objective and outcomes.

Immediate Objective:

The Base Value of immediate objectives of the Solar Energy sub-component is tabulated as follow.

Table 6: Base value of the solar energy

Solar Energy Indicators	Base value	Source
Benefited 30 Lakhs (600,000 system) of additional population including 50% women and 30% DAG from solar energy by 2017.	352,454 numbers in total (329,849 SHS and 22,605 SSHS) Woman and DAG segregated data are not established.	Solar Energy Support Program (SSP) MIS database, AEPC 2012
Promoted 95% of the solar systems (by numbers) are in use and functional after 1 year.	The exact data of solar system functioning after one year is not available.	

The Key Baseline of Output Indicators for Solar Energy Subcomponent:

As per the AEPC database, the total number of solar home system (SHS) and small solar home system (SSHS) installed in the country are 329,849 and 22,605 respectively. The total number of both types of solar systems 329,849 has directly benefited to the rural population of above 1.6 Million. The report also states that the total of 100,100 female users is benefited through the SHS program that covers 31% of the total SHS beneficiaries. As far as the development of community scale solar mini-grid project is concern, there are 3 potential sites identified in the district i.e. Surkhet, Morang and Sindhupalchowk.

The total progress of ISPS and PVPS system implementation till the 15-July-1012 are 2,155 numbers of ISPS and 111 numbers of PVPS.

There is big environmental concern of the solar home system used batteries recycling and disposal. In this regard, a regulation to manage the used lead acid batteries was drafted and is in the final stage of the approval. Likewise, cash incentive voucher scheme was also designed and implemented to collect Used Lead Acid Battery (ULAB) from the field. As per the ESAP program achievement report, it is found that the study has been conducted on Management of Used Lead Acid Batteries and proposal was also called from private sector for establishing ULAB recycling plant. However, till the July 2012, the used battery collection provision is not started and battery recycling facility is not in place

The quality control and monitoring mechanism QAM2009 does exist for the Subsidy Delivery Mechanism and has been in practice by AEPC in the previous programme. But there were no fraud-proof registration system in place till 15-July-2012; nevertheless, there has been penalization provision to the fraud/cheating cases of solar energy projects. Total 163 no of deviated cases from previous monitoring by ESAP/AEPC was observed and it is under record of the AEPC's solar energy section.

As far as the baseline of the capacity development in solar energy sector is concern, a significant progress has been made through the previous solar energy program under AEPC as well as the other government institutions. Total of 3,908 Solar LEVEL-1 technicians and about 164 Solar of LEVEL-II technicians are trained and certified from CTEVT.

- Likewise, total of 116 Trainers and 28 Solar Design Engineers training was accomplished.
- A total of 37 solar companies are prequalified for SHS (38 for SSHS) implementation

In the solar thermal technology part, 2,024 numbers of solar dryer and solar cookers are disseminated through AEPC due to which 16,000 people are benefited from the same.

4.2.4 Community Electrification Sub-component:

Core Baseline:

- Access of hydro-electric energy to 18,238,730 populations (3,647,746 HHs) of Nepal.
- Total of 2,343,900 (468,780 HHs) population are benefited from 9,015 number of IWMs.
- The total installed capacity of the Mini-Hydro Power Generation in Nepal is reached up to 16.34 MW
- The total installed capacity of the Micro-Hydro Power Generation in Nepal is reached up to 24.604 MW
- The total installed capacity of the Pico-Hydro Power Generation in Nepal is reached up to 3.703 MW
- The fabrication/assembly capacity of local manufacturer and engineering professionals are only up to 100 kW size.

The community electrification subcomponent basically deals with the Micro-hydro, Mini-hydro and the Improved Water Mill (IWM) technologies for the rural community based electrification projects. There has been significant progress in the promotion and implementation of the micro-hydro projects and improved water mills in Nepal but mini-hydro projects are under development. The NRREP aims to scale up the Micro-hydro/Mini-hydro/IWM technologies and its numbers by enhancing project management capacity and better design of the project.

Immediate Objective:

The Base Value of immediate objectives of the Community Electrification sub-component is given in Table 6.

Table 7: Base value of the community electrification

Community Electrification Indicators	Base value	Source
Increased access of hydro electric energy to 750,000 (150,000 HHs) additional rural population including 50% women and 30% DAG by 2017.	Access of hydro-electric energy to 18,238,730 populations (3,647,746 HHs). Segregated database of access to woman and DAG is not established	CBS: National Report, 2012
Promoted and functional 95 % of mini/micro hydro systems.	Exact information of functional mini/micro hydro systems is not found.	
1,040,000 (208,000 HHs) population is benefited from 4000 IWM	2,343,900 (468,780 HHs) population are benefited from 9,015 IWM.	Community Electrification Sub-component

The Key Baseline of Output Indicators for Community Electrification Subcomponent:

The total installed capacity of the Mini, Micro and Pico-Hydro Power Generation in Nepal is reached up to 16,338 kW, 24,604 kW and 3,702.6 kW respectively.

Meanwhile, one local mini grid is also established in Baglung district, by bundling 6 number of the Micro-hydro power plants in the region. The efficiency of the Micro-hydro power plant has been seen as 55% and the average promoted size of the Micro-hydro size is 24.3 kW (based on the 431 numbers of MHP implemented by ESAP and REDP/RERL).

As far as the capacity development part, the Fabrication/assembly capacity of local manufacturer is only up to 100 kW and is required to enhance. Similarly, existing guideline and standard of engineering professional skill is up to the 100 kW micro-hydro power size.

IWM is another appropriate clean energy technology for the Nepalese rural community where the adequate environmental resources are also available. The IWM has been outreached up to 33 districts of the state. This technology has provided support service to 7,527 numbers of IWMs projects benefiting 391,404 numbers of Households and 1,957,020 numbers of people in the rural areas of Nepal. The efficiency of the existing IWM systems are in the line of 33% and with the innovation in the technology the efficiency could be enhanced further.

4.2.5 Climate and Carbon Sub-component:

Core Baseline:

- The NPC Thirteen Plan 2013 anticipates alternative energy planning in all districts and expected to begin benefit from carbon trade.
- AEPC has successes in registering five CDM Projects; four biogas CDM projects consisting about 60 thousands biogas plants, and one Micro hydro CDM project with total 448 mini/micro hydro units.
- Until 2012 there are two biogas projects of which Emission Reduction Monitoring Report to DOE is submitted.
- A Baseline study has been carried out for the CDM project registration of the SHS (320,000 units), with its estimated annual emission reduction per CPA 31,037 tCO2e.

The Climate and Carbon Unit (CCU) was established at AEPC in July 2010 with the financial support from UK Department for International Development (DFID) and the technical assistance of SNV Nepal. Since its establishment, the unit has been catalyzing the renewable energy programmes in order to better address climate change issues. The CCU supports government to formulate climate change sensitive RE policy and plan, support Government of Nepal to develop a Guideline for Local Level Climate Change Initiatives and support DDC to prepare climate and gender sensitive energy plans and to implement it.

The Key Baseline of Output Indicators for Climate and Carbon Subcomponent:

Climate and Carbon Unit of AEPC is working on Development and management of RETs carbon projects feasible in the country. The CCU has developed District Climate and Energy Plans preparation Guidelines and developed District Climate and Energy Plans (DCEPs) for three pilot districts namely; Ilam, Makawanpur and Mustang. CCU/AEPC has succeed in registering five Clean Development Mechanism (CDM) Projects; four biogas CDM projects consisting about 60 thousands biogas plants, and one Micro hydro CDM project with total 448 mini/micro hydro units (Source: AEPC Website). Meanwhile, a baseline study is conducted for a CDM project of Solar Home Systems (320,000 units), with its estimated annual emission reduction per CPA 31,037 tCO2e. Until the 2012 there are only 2 biogas project of which Emission Reduction Monitoring Report to DOE submitted.

The baseline information of the CDM project progress for the carbon credit is summarized in the following table.

Technology	No of CDM Projects	Total No of RET Systems
Biogas	4	60,000
Micro-hydro	1	448
SHS	1 (baseline study only)	320,000
ICS PoA	1	
Biogas PoA	1	
IWM PoA	1	

As far as the capacity development in this sector, Climate and Carbon Unit is acting as technical arm of Ministry of Environment, Science and Technology, for the Climate Change related issue and there have been capacity building activities conducted in relation to CC negotiation, ERPA negotiation, CC adaptation orientation and CDM project implementation orientation etc. Meanwhile, capacity strengthening of academic institutions, government institutions and private sector addressing climate change issues are also expected for future program.

4.2.6 Institutional Support Sub-component

Core Baseline:
- NRREP aims to achieve at least 80% expenditure against its planned budget.
- RE policy developed in 2006 is not GESI responsive. New GESI responsive RE policy is not in place.
- SOD was developed during REDP and ESAP intervention but not approved at that time.

Institutional development Sub-component is responsible to design and implement appropriate tools for capacity assessment and development including GESI. The institutional development Sub-component supports and carries out capacity building and advocacy for formulation and implementation of RE related policies. There are three indicators under immediate objective-2 that are directly related to Institutional development. The Sub-component supports AEPC for effective implementation of RE projects/programme.

Immediate Objective:

The Base Value of immediate objectives of the Institutional Support sub-component is tabulated in Table 7.

Table 8: Base value of the institutional support sub-component

Institutional Support Indicators	Base value	Source
Achieved more than 80% of financial expenditure against the planned budget. (AEPC's institutional capacity analysed)	NRREP just started with its stated mandate, AWP prepared.	AEPC/NRREP, Institutional Support
Designed and implemented appropriate tools for capacity assessment and development including GESI.	Scattered and/ or disaggregated approach to address the issues of capacity building and GESI concerns.	AEPC/NRREP, Institutional Support
Assisted GoN on RE related policy formulation and instruments including subsidy policy and delivery mechanism.	Rural Energy Policy 2006 Rural Energy Subsidy Policy 2009 Rural Energy Subsidy Delivery Mechanism 2009.	AEPC/NRREP, Institutional Support

Monitoring and Quality Assurance Unit

The NRREP M&E system is aligned with the GoN (National Planning Commission and Ministry of Finance) monitoring requirements. Monitoring is viewed in NRREP as a management tool that enables result-based management. Managing for results include planning for results, implementation, performance review and evaluation assessments to track long-term impact.

Monitoring and Quality Assurance (MQA) unit is responsible for overall monitoring of NRREP. The NRREP uses monitoring data from the endeavours of the National Planning Commission and supplement these M&E data with additional and specific impact and outcome assessments. The result based monitoring of activities of NRREP provides relevant monitoring on energy related climate change impacts as well as socio-economic impacts including GESI.

Managing for results include planning, implementation, performance review and evaluation assessments to track long-term impact. The results from the monitoring feed back into implementation, based on management corrective action. Details of indicator and base value are given in Annex 2.

GESI Unit

GESI is one of the most crucial components that cut across all the sectors and interventions. NRREP has fully recognised the urgency of addressing GESI issue in all its activities. The AEPC is recognised as an effective, efficient and GESI proactive institution for the promotion and development of the RE sector. As such, preparation of GESI mainstreaming plan is under way which serves the key guiding document for NRREP programmes. More elaborated and additional indicators with baseline/status is presented in Table 9.

Table 9: Additional indicators and baseline/status of GESI related programme

NREEP Output	Indicators	Baseline/Status
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 (will be considered as separate output#19).	GESI concerns included in RE policy, separate RE in periodic plan, RE sectoral plan, RE subsidy policy and subsidy guidelines.	GESI issues are not addressed in RE policy, program and plan. ESAP - II tried to incorporate gender but not completed.
	GESI tool box	GESI tool box has not been prepared. During the ESAP - II, a gender strategy was developed focusing women participation only.
	Social mobilization guideline	The REDP and ESAP – developed guidelines for community mobilization.
	GESI audit guideline.	The GESI audit guideline has not been developed.
	GESI responsive plan and budget	No orientation on GESI responsive plan and budget.
	GESI capacity development plan.	Capacity development and gender mainstreaming plan yet to be prepared. NRREP has planned to identify GESI gap at policy and institutional level.
	GESI responsive RET promotional information aired in FM, Radio and TV, etc.	The dissemination is yet to be started.
	5-10 right-holder institutions working for women and DAG involved in RET services.	The concept of outreach exists.
	Established GESI knowledge management system.	Knowledge management system yet to be established.

Source: AEPC/NRREP, GESI Unit

NRREP also aims to have balanced team of staff with gender and inclusion issue fully incorporated. The current distribution of staff composition shows that Brahmin/Chhetri occupies 61% of positions, followed by Ethnic group (37%) and Dalit (1%). Likewise male occupies 73% of total position in the NRREP office. Additional information is also discussed in gender based violence; HIV and AIDS as well as in staffing structures of NRREP sections below. Details of indicators and base value are given in Annex 2.

5.3 Business Development for RE and Productive Energy Use (PEU)

Despite the increasing trend of MSMEs, the overall performance in terms of generating employment, reducing the dependency on traditional energy sources, and contributing to overall national poverty indicator is still not encouraging. There are number of challenges and issues facing this sector which clearly demands additional support. Some of the critical areas that require supports are technical assistance and availability of working fund (i.e. credit). Keeping this in view, NRREP has set a clear objectives and interventions to boost this sector.

Immediate Objective

The immediate objective of the component is to contribute to an increase in income generation and employment potential for micro, small and medium enterprises (MSMEs) in rural areas.

The MSMEs are classified by the latest revised act 2007 (Entrepreneurship Development for Competitive Small and Medium Enterprises) and the current Industrial Enterprises Act of 1992, amended in 1997, has classified industrial enterprises into cottage, medium, small, and large scale. Please also refer to section 3.3above.

Renewable energy (RE) schemes must strive towards financial sustainability to ensure their long term impact. In addition to generating adequate revenues for operation and maintenance of the schemes, NRREP aims to improve the living standards of women and men in rural areas. These objectives imply that renewable rural electrification should translate into equitable local economic development in rural and remote areas.

Productive energy use (PEU) promotion seeks to enable the translation of rural electrification into positive economic outcomes for MSMEs resulting in income generation growth and contributing to poverty reduction in rural areas of Nepal.

Increased income generation and MSMEs can be enhanced through several outcomes such as: Increased productivity, higher quality product, reduced workload and freeing time for new entrepreneurial activities, diversification of economic activities, development of value-added activities involving enhanced skills, increase in output capacities and decrease of production costs. Those

Definition of enterprises

Cottage industries (CIs): specified traditional industries utilizing specific skills or local raw materials and resources, using less than 5 KW of electric power with fixed assets (excluding land and building) up to NPR200, 000.

Small industries (SIs): investment of up to NPR30 million in fixed assets.

Medium industries (MIs): industries with fixed assets between NPR30 million andNR100 million.

Large industries (LIs): investment of more than NPR100 million in fixed assets.

Energy-based: Industries generating energy from water resources, wind, solar, coal, natural oil, gas, biogas, or any other sources.

(Source: Ministry of Industry)

outcomes will be enabled by a wide range of support measures for MSMEs. The PEU Component's immediate objective; indicators and baseline for RBME are given in Table 10.

Table 10: Baseline of Immediate Objective -3 (PEU)

Immediate Objective - 3	Indicators	Base value	Source
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.	Registered 1,300 new MSMEs formally.	Not yet registered[5]	NRREP Programme document
	Upgraded 2,800 existing MSMEs with increased profit of 12%.	Not yet registered	NRREP Programme document
	Received grant by 15,300 HHs for IG/PEU activities of which 50% is DAG HH.	Not yet started	NRREP Programme document
	Created and operational 70 % of MSMEs after a year of creation.	Not yet started	NRREP Programme document
	Increased 19,000 employment including 50% women and 30% DAG owned MSMEs.	Not yet started	NRREP Programme document

The PEU component has six programme outputs and nine indicators for monitoring the regular programme and activities. To measure its outputs a baseline is required against each output's indicators and baseline are developed on the basis of currently available data/information from published and unpublished reports. Details are in Annex 2.

5.4 Baseline about HIV/AIDS, Gender based Violence, GESI

The NRREP programme document also focuses social outcome and impact by renewable energy based activities the programme areas. Though not specified in result framework, issues like HIV/AIDS, girls trafficking, gender based violence and information technology are addressed across the NRREP in a number of ways including through capacity development activities among communities exposed to high risks of HIV/AIDS. Activities are included awareness rising on issues of HIV/AIDS, information provision, measures of prevention, and prevention of gender based violence and trafficking.

HIV/AIDS Gender based Violence and Girls Trafficking:

Core Baseline:

- 86 percent of women and 97 percent of men age 15-49 have heard of AIDS.
- Comprehensive knowledge of AIDS is not widespread among either women (21 percent) or men (30 percent).
- Only about one in four women (27 percent) and men (29 percent) know of ways to prevent mother-to-child transmission of HIV.
- One-quarter of female and one-third of male youths age 15-24 have comprehensive knowledge of AIDS.

Nepal Demographic and Health Survey (NDHS) 2011 indicated that 86 percent of women and 97 percent men age 15-49 have heard of AIDS. Knowledge of AIDS declines with age, being higher among women younger than age 40 than among women age 40-49. The NDHS also shows that knowledge of AIDS among women is higher in the hill zone than in the Terai and mountain zone. Similarly, awareness is lowest among women living in the poorest households

5Even though the baseline numbers for upgrading existing MSMEs and establishing new MSMEs for PEUis "0", several hundreds of MSMEs have already been established under various MHPs (RERL and ESAP) before 15th July 2012. The exact number of existing MSMEs is yet to be available.

and highest among women living in the wealthiest households.

The NRREP programme document anticipates that the electricity from renewable energy provides an opportunity for promotion of Information Technology and mass communication, which leads to new possibilities for spread of information on HIV/AIDS. The NDHS report shows that media exposure in Nepal is higher among men than women. Seven percent of women and 20 percent of men are exposed to all three media (radio, television and newspaper) at least once a week. 44 percent of women and 59 percent of men listen to the radio at least once a week, and 47 percent of women and 55 percent of men watch television at least once a week. The proportion of newspaper readers is significantly higher among urban women (35 percent) and men (60 percent) than among their rural counterparts (9 percent and 29 percent, respectively).

National Census, CBS, 2011 indicates that 7.28 percent of total households have access to computer. This proportion is significantly higher among urban households (23.66%) than the rural (3.37%). Only 3.33 percent of households of Nepal have internet facility. Access to internet facility among rural population is very low (1.24%) compare to the urban dwellers (12.11%).

Gander based Violence and Girls Trafficking:

Core Baseline:

- 22% women of age 15-19 have experienced physical violence at least once since age 15, and 9 % experienced physical violence within the 12 months prior to the survey.
- 12 % of women of age 15-49 report having experienced sexual violence at least one in their lifetime.
- Among ever-married women who had experienced spousal violence (physical or sexual), more than two in five reported experiencing physical injuries.
- Nearly two in three women have never told anyone about the violence they have experienced.
- Approximately 12,000/yr. Nepalese children are trafficked to Indian brothels and the Gulf countries.

The NRREP programme document focuses on the contribution to the prevention of gender based violence and trafficking through awareness raising and capacity building programme among the communities in its intervention areas.

Gender-based violence is a term used to describe any harmful act that is perpetrated against a person's will, and that is based on socially ascribed differences between males and females. It is a violation of human rights and a form of discrimination. It is defined as violence that is directed against a person on the basis of gender. Gender-based violence reflects and reinforces inequalities between men and women. Various population-based in Nepal have indicated domestic violence as a reason for poor health, insecurity, and inadequate social mobilization among women (NDHS 2011)

The NDHS, 2011 reports that more than one in five (22 percent) women age 15-49 have experienced physical violence since age 15 and that 9 percent experienced physical violence in the 12 months prior to the survey. The survey further highlights that the percentage of women who have experienced physical violence since age 15 increases with age from 10 percent among women age 15-19 to 30 percent among women age 40-49. The finding of the survey shows that nearly two in three women have never told anyone about the violence they have experienced. The base value for those areas is suggested in Figure .

Table 11: Additional baseline focused on Programme document (GESI, HIV)

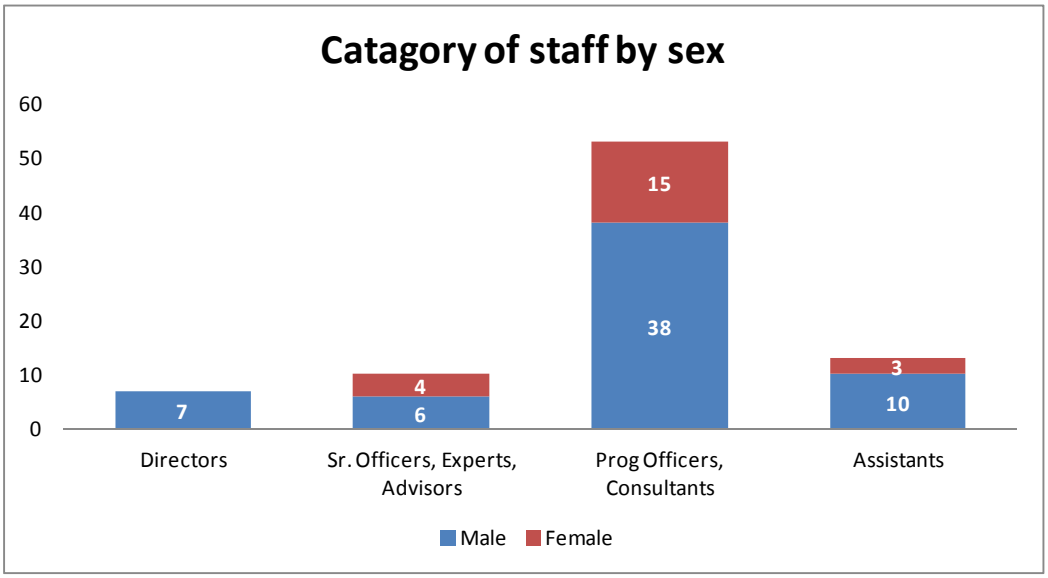
Programme document focused Areas	Baseline	Source
Awareness rising on issues of HIV/AIDS	86 % of women and 97 % of men age 15-49 have heard of AIDS.	Nepal Demographic and Health Survey, Ministry of Health and Population, 2011 (P 189),
	Comprehensive knowledge of AIDS is not widespread among either women (21 %) or men (30 %).	
	Only about one in four women (27%) and men (29%) know of ways to prevent mother- to-child transmission of HIV.	
	One- quarter of female and one-third of male youths age 15-24 have comprehensive knowledge of AIDS.	
Gender Based violence related areas	22% women of age 15-19 have experienced physical violence at least once since age 15, and 9 % experienced physical violence within the 12 months prior to the survey.	Nepal Demographic and Health Survey, Ministry of Health and Population, 2011 (P 233),
	12 % of women of age 15-49 report having experienced sexual violence at least one in their lifetime.	
	One-third (32%) of ever-married women age 15-49 repot ever having experienced emotional, physical, or sexual violence from their spouse, and 17 report having experienced one or more of these forms of violence in the past 12 months.	
	Among ever-married women who had experienced spousal violence (physical or sexual) in the past 12 months, more than two in five reported experiencing physical injuries.	
	Nearly two in three women have never told anyone about the violence they have experienced.	
Girls Trafficking:		
Trafficking is viewed as forced prostitution and coerced labour driven by the unviable economy (defined by the UN General Assembly in 1994)	Approximately 12,000/yr. Nepalese children are trafficked to Indian brothels and the Gulf countries	Reintegration of the Nepalese Girls Trafficking Returnees into Society- *An Empirical Study of Reconstruction of the Self Identity: "A Matter of Pride or Shame or Both?"* Shovita Adhikari The Degree of Master in Comparative Social Work, Faculty of Social Sciences, University of Nordland, Norway May 2011
Information Technology:		
The percentage of households having computer and internet facility	**Computer:** Nepal: 7.28% (Urban: 23.66%; Rural: 3.37%) **Internet:** Total: 3.33% (Urban: 12.11%; Rural: 1.24%)	(National Population and Housing Census, CBS, 2011
Carbon and Climate	Common principles, tools and practices shall be in place to increase carbon revenue by the Carbon Finance in compliance to CDM and voluntary market.	NRREP Népal Program Document, Page 12
	The RETs in use do all contribute to climate change mitigation by substituting fossil fuels with electricity from renewable sources, and by reducing the use of firewood and in part oil-based fuels for cooking and other thermal	NRREP Népal Program Document, Page 6

Programme document focused Areas	Baseline	Source
	applications.	

Additionally, the NRREP Programme document anticipates an agreed gender balance within the group of contracted programme staff. As such there can be less or more national advisers, but the ones for GESI and Monitoring are mandatory.

NRREP also aims to have balanced team of staff with gender and inclusion issue fully incorporated. The current distribution of staff composition shows that Brahmin/Chhetri occupies 61% of positions, followed by Ethnic group (37%) and Dalit (1%). Likewise male occupies 73% of total position in the NRREP office. It is also noted that there is thin presence of women at senior level and none at director level, whereas among programme officer level number of women employee is high (see figure 9). Detail current of staffing number and category is given in Annex 3.

Figure 5: Category of staff by sex



6. Summary and recommendation

The base value presented here are of two broad categories.

a. Base value for NDI related indicators
b. Programme/result frame work specific base value

These two sets of data are interlinked and at times same data can be used for both categories. Some data are from nationally representative studies, whereas some are from specific study or programme data

NDI related base value

NPC has developed result based monitoring and evaluation framework with indicators for 17 sectors (i.e. line ministries). There are 35 NDIs that are linked to NRREP output and many are directly linked to energy and environment sectors, and some are not directly related to energy and environment but has strong relevance to NRREP thematic areas.

Some of the core NDI related base line information are;

- 718.62 Megawatt (MW) of electricity has been produced in Nepal.
- Per capita energy consumption of Nepalese citizen is 381 Kg of Oil equivalent or 16 Gigajoule.
- Nepal Living Standard Survey shows that the 70% of households in Nepal have access to electricity through both on-grid and off-grid power service.
- 12% of populations are benefited from the alternative energy technologies in Nepal.
- 76% of male wage earners are in non-agriculture and 45% of female wage earners are in this sector.

Lower per capita energy consumption but impressive access to on-grid/off-grid to electricity (70%) is notable. Despite this, only 12% population have benefitted from alternative energy technology and 86.5% energy use is still from traditional sources like fire wood and agricultural residues. Specific and gender disaggregated data for employment generated in renewal energy sector is yet to come, but figure from non-agriculture employment as a proxy can be indicative of current situation. As 76% of male and 45% of female wage earners are in non-agriculture sector indicate not only the disparity between male and female in waged employment, but also an indicator of existence of barriers for women in accessing waged employment. Despite only 12% benefiting from renewable energy, the employment in this sector is apparently increasing (19, 814 employed as of 2012, AEPC). The size of population below poverty line is recorded at 25.16% with 27.3% rural and 15.46% urban residents.

Programme/result frame work specific base value

Energy sector enterprise and employment

Over the period energy related MSMEs appeared increasing, but still it is less than 1% (1,231 energy related industries) of total registered enterprises under Department of cottage and small industries (1, 48,258 registered). Nonetheless, it is clear that electric and electronic related small and cottage industries occupies large share of MSMEs. Some 300,000 employment in this sector is reported but disaggregation by sex and caste are not available, but among the wage earners in non-agriculture sector disparity between

male and female exists (76% of male and 45% of female). Out of 78% employment rate in Nepal, NLSS (2011) was able to record employment data in gas, electricity and water sector (2.0% for male and 1.2% for female).

Good governance

While the good governance has been the guiding principle of the government programme for some time; accurate, adequate and authentic data is yet to available. The Ministry of local Development has developed Public Expenditure & Financial Accountability and Fiduciary Risk Reduction Action Plan in 2012 and Minimum Condition and Performance Measurement (MCPM) 2012/13. The main objective of this action plan and MCPM is to strengthen public financial management, reduce fiduciary risks and to improve the transparency and accountability of public expenditures. The Ministry has initiated a nationwide performance measurement for all VDCs, Municipalities and DDCs. VDCs and DDC have better performance record compared to municipalities with 79%, 85% and 46% respectively meeting the standard of minimum conditions and performance in 2012/2013. Based on these findings, Ministry makes corrective action (increase grant to local bodies, reduce grant, or totally stop central grant unless improvement are seen). In a more specific and energy related fraud cases, about 163 numbers of deviated cases in solar home system were reported by ESAP/AEPC by 2012.

Urban environmental pollution

Urban pollution is a growing concern of all and it is even more important due to high urbanisation rate in Nepal. The key environmental problem underlying in Nepalese urban sector are; air pollution, water pollution and solid waste pollutions.Situation Analysis of Environmental Health in Nepal (WHO and NHRC 2009) has indicated that the concentration of PM10 is very high compared to national standard in most of the urban areas of Nepal. Among the sources of urban pollution, brick kiln, domestic fuel burning and cement factory are the top three pollutants. Vehicle emission and rod dust are also important contributors.

Programme specific base line

NRREP has three main programme components (CREF, Technical support, PEU) that synergistically plan to achieve the overall programme objective of improving the living standard Nepalese people through expanding the opportunities in renewable energy sector.

Central Renewable Energy Fund (CREF)

Easy access to working capital (credit) and technical support has been a common problem in promoting energy related enterprises particularly for the poor and disadvantaged groups including women. The programme outputs of CREF are distinctly identified with set of indicators. There are three outputs and 10 indicators. The baselines are developed in each indictor to assess its outcome and impacts in future. The detail indicators and baseline are depicted in Annex 2. Government has made number provisions for credit and subsidies for such initiatives. As such as of 2012, NRs 1,191 million subsidy was available during the year 2009-2011. Likewise, some NRs 606 million credit was disbursed in the same period which was only 51% of total credit available for renewable energy.

Technical support component

Technical support and credit should move hand in hand to produce better result in promoting renewable energy particularly in rural areas. Keeping this in view, NRREP technical

components are comprehensively designed with five major areas of intervention with sub-components. It aims to accelerate better quality renewable energy service delivery to remote rural households, enterprises and communities.

Bio mass sub-component:

The Nepalese society at large is still heavily relying on traditional source for energy requirements (firewood is 89.36%, agriculture residue 4.05% and livestock residues 6.59%).Use of biomass as a source of alternative energy is well established in Nepal with 746,223 ICS installed with the help of 80 plus qualified private companies by 2012 with cleaner cooking technology set up in almost all installations. Though a small number, it is encouraging to note that 84 VDCs are declared as indoor pollution free (IAP) VDC. Apart from other benefits (environment, time saving, fuel wood saving), this has directly contributed in reduction of respiratory disease by 2.4% and 75% of biogas users have reported lower incidence of other disease as well.

Solar energy component:

Solar energy is very popular and solar home system is rapidly expanding with 329,849 units installed in different parts of the country benefiting over 16 million people of which 33.4% are women. However, for solar thermal system installation is not very encouraging with a fluctuating trend over last four year. Likewise by 2012 over 1000 technicians of different categories (technicians, engineers, others) were trained to provide technical assistance. Besides, 2,062 solar dryer and solar cookers were also promoted in different parts of the country.

Community electrification:

This area is also gaining momentum with one local mini grid established by linking six micro-hydro plants and one mini-hydro plant. There has been significant progress in the promotion and implementation of the micro-hydro projects and improved water mills in Nepal but mini-hydro projects are under development. The NRREP aims to scale up the Micro-hydro/Mini-hydro/IWM technologies and its numbers by enhancing project management capacity and better design of the project. Achievements are also reported in improving the capacity, standards and efficiency of various renewable technologies.

Productive energy use:

Productive energy use, in its real sense, is the end result of renewal energy related interventions – without the productive use of technology there is no meaning of it. Productive energy use (PEU) promotion seeks to enable the translation of rural electrification into positive economic outcomes for MSMEs resulting in income generation growth and contributing to poverty reduction in rural areas of Nepal. Towards this, NRREP aims to increase income and employment potential for MSMEs with range of supportive activities. In this context, the guidelines development for income generation and grant disbursement, detail planning for capacity building (including training guidelines/manuals) of MSMEs and establishment of business promotion units within NRREP are underway.

Institutional development sub component:

Institutional support is crucial in efficient delivery of the NRREP results. In this regards, NRREP aims to achieve at least 80% expenditure against its planned budget. Institutional development Sub-component is responsible to design and implement appropriate tools for capacity assessment and development including GESI. The institutional development Sub-component supports and carries out capacity building and advocacy for formulation and implementation of RE related policies. Designing tools for GESI capacity building and formulating policy and instrument (i.e. subsidy policy, delivery mechanism) for GoN has begun.

Climate and Carbon sub component:

Climate and carbon related programme is slowly gaining space in renewable energy sector. As such, district climate and energy plans were developed and piloted in three districts. By 2012, five projects were registered under Clean Development Mechanism which includes biogas and micro hydro projects.

Monitoring and quality assurance unit:

Monitoring and Quality Assurance (MQA) unit is responsible for overall monitoring of NRREP. The NRREP uses monitoring data from the endeavours of the National Planning Commission and supplement these M&E data with additional and specific impact and outcome assessments. The result based monitoring of activities of NRREP provides relevant monitoring on energy related climate change impacts as well as socio-economic impacts including GESI.

GESI unit:

Keeping in view of importance and urgency of GESI related issues, which cut across all the sectors and interventions, NRREP has plan in addressing GESI issue through its activities. As such, preparation of GESI mainstreaming plan is under way which serves the key guiding document for NRREP programmes. NRREP also aims to have balanced team of staff with gender and inclusion issue fully incorporated. The current distribution of staff composition shows that Brahmin/Chhetri occupies 61% of positions, followed by Ethnic group (37%) and Dalit (1%). Likewise male occupies 73% of total position in the NRREP office.

Gender based violence, HIV and AIDS and related issues:

Social issues are also identified and recognized as critical and overarching issue by NRREP document. Gender based violence and HIV are the two obvious social areas that NRREP aims to intervene to change the current status. One national study reported that 22% women of age 15-19 have experienced physical violence at least once since age 15, and 9 % experienced physical violence within the 12 months prior to the survey. Likewise 12 % of women of age 15-49 report having experienced sexual violence at least once in their lifetime. Similarly, in another important issue of HIV and AIDS, only about one in four women (27 percent) and men (29 percent) know of ways to prevent mother-to-child transmission of HIV and one-quarter of female and one-third of male youths age 15-24 have comprehensive knowledge of AIDS.

Recommendations

Although no specific recommendations on data and sources can be made due the nature of data and its ownership, the team would like to make some suggestion in its use for NRREP as follows;

a. NDI related data is comprehensive and mostly is to measure impact/objective level indicators. Therefore these sets of data can be used for the midterm and or final evaluation.

b. Programme specific data, depending on source and specificity, can be used either for evaluation and or for output monitoring purpose.

c. Depending on the need of NRREP, both sets of data are ready to use for various purposes (result tracking, impact studies, process learning). Some of the data (Labour force survey report 2010 and Nepal living standard survey report, 2010/11) are reported from the year 2010/11. However, some latest data as of 2012 might be forthcoming, and it is useful to check if latest data is available in near future. These baseline data has direct relevance to AEPC/NRREP objectives; therefore it is recommended that;

   - During course of project implementation and routine programme monitoring, disaggregation of energy related MSMEs is prepared to identify size, nature and operation so that project inputs can be better targeted to benefit rural poor particularly the disadvantaged groups.

   - Secondly, the current data is inadequate to identify the number of people benefitting (or end users) from such enterprises. Therefore to make the baseline stronger and capture dimensions of poverty as well as contribution of energy sector to poverty reduction, employment and energy consumption data needs to collected and correlated.

2. Annexes

Annex 1: NRREP related National Development Indicators

NRREP Outputs	Outcome/Interim Indicators	Baseline	Source and explanations
Output 3.1.*Capacities of existing MSMEs are enhanced*	Employment targeted trained human resources	Total No.:**230,969** Female: 31,647 Male: 199,322	Industrial Profile, 2012; Department of cottage and small industries Capacity of enterprises is often measured by the number to trained (i.e. capable) personnel and production capacity. Since the production data is not available, this data from Industrial profile is considered to be most relevant for this indicator.
Output 3.2 *New and innovative MSMEs are created and operationalised, with a specific emphasis on integrating women and marginalized section of the population.*	Number of registered (cottage, small, medium and large) industries	Cottage: 11,407 Small: 132,020 **Energy related**: **1,231**	Statistics of Industrial Promotion (Nepali) 2069 (p15);Department of Cottage and Small Industries[6]
		Large: 503 Medium: 1,155 Small: 3,173 **Energy related**: 114	Industrial Statistics 2011/12, (p 16&17) Department of Industry
	Energy Related registered enterprises (No):		Statistics of Industrial Promotion (Nepali) 2069; cottage and small industries (P 15)
	Electricity, Energy, LP Gas, Biogas	174	
	Water Supply	60	
	Solar Plant (Solar companies)	89	
	Electricals and electronics	852	
	Battery and components	16	
	Others	40	
	Total (No)	1231	
	Number of additional employment*(Refer to foot note below for definition)*[7] *Employment in gas, electricity and water*	78% Female 1.2%; Male 2.0% (of the 78%)	NLS survey 2011, (p 2, Vol. 2)
	Amount of loan given to *Dalit*s & their numbers	Segregated loan given data to Dalit are not found	
	Amount of loan given to *Janajati*s & their number	Segregated loan given data to *Janajatis* are not found	
	Proportion of women in income generating employment in non-agriculture sector	76 percent of male wage earners are in non-agriculture while only 45 percent of female wage earners are in this sector	Nepal living standards survey 2011 (P 60),

[6]Data disaggregated by sex is not available

[7]A person is defined as "currently employed" if he or she is either employed for at least one hour during the previous seven days, or has a job attachment if temporarily absent from work, or is available to work if work could be found. On the other hand, a person is "currently unemployed" if he or she did not work during the last seven days but was looking for work, or was waiting to hear from a perspective employer or to start a new job or could not find work or did not know how to look for work. Others who did not work in the past seven days or did not look for work for reasons other than listed above are classified as "currently inactive" (NLSS 2011)

NRREP Outputs	Outcome/Interim Indicators	Baseline	Source and explanations
Output 3.3 *Appropriate business development services are available to MSMEs in RE catchments*	Number of registered (cottage, small, medium and large) industries	Cottage: 11,407 Small: 132,020 **Energy related**: **1,231**	Statistics of Industrial Promotion (Nepali) 2069 (p15);Department of Cottage and Small Industries
		Large: 503 Medium: 1,155 Small: 3,173 **Energy related**: 114	Industrial Statistics 2011/12, (p 16&17) Department of Industry
Output 2.1 *Scaled up implementation network is in place for biogas - Sector Commercialization and GESI and Regional concerns*	Population benefited from alternative energy (percentage)	12%	13th plan (approach paper, NPC), 2070 (P 72)
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*	Per capita energy consume (GJ or Kg Oil Equivalent)	16 gigajoule (or 381 kg of oil equivalent)	20 years hydropower plan 2012, Ministry of Energy.
	Population benefited from alternative energy (percentage)	12%	13th plan (approach paper, NPC), 2070 (P 72)
Output 2.3 *Scaled-up implementation of ICS*	Per capita energy consume (metric ton) (GJ or Kg Oil Equivalent)	16 gigajoule (or 381 kg of oil equivalent)	20 years hydropower plan 2012, Ministry of Energy.
	Ratio of traditional fuel (firewood) among the total energy use	Out of the total traditional energy consumption, the share of firewood is 89.36%.	Economic Survey 2011-12, Ministry of Finance
Output 2.4 *New & improved biomass energy technologies enterprise scale stoves, gasifiers and bio-briquetting are ready & field tested*	Population benefited from alternative energy (percentage)	12%	13th plan (approach paper, NPC), 2070 (P 72)
Output 2.5 *Update knowledge of evolving rules and regulation in different carbon markets*	Revenue /GDP ratio (percentage)	14.91%	Strategic plan 2012/13 – 2016/17, Inland Revenue Department, 2012
Output 2.6 *A highly developed fraud-proof registration, eligibility-checking and verification system for solar energy systems (SHS, SSHS*	Number of corruption related cases: Registered/filed, adjudicated, convicted (fully/partially)	163 no of deviated cases of solar energy from the previous monitoring by AEPC/ESAP.	Solar Energy Sub-component
Output 2.7 *Used Battery management introduced and functional, and in compliance with international standards*	Urban pollution level	The concentration of PM10 is very high compared to national standard in most of the urban areas of Nepal. The measured levels of lead in PM10 were below the NAAQS for lead (0.5 µg/m³). The Polyaromatic Hydrocarbons concentration in Kathmandu valley found THREE times higher than European Union recommended level (1µg/m³).	Environmental Health in Nepal 2009 (by World Health Organization & Nepal Health Research Council).
Output 2.8 *Some Viable "large Community PV*	Capacity of total connected electricity (megawatt)	718.62 MW	NEA Annual Report, 2011/012

NRREP Outputs	Outcome/Interim Indicators	Baseline	Source and explanations
Systems' are operational			
Output 2.9 *Solar thermal domestic devices (dryers, others) are ready for the market*	Population benefited from alternative energy (percentage)	12%	13th plan (approach paper, NPC), 2070 (P 72)
Output 2.10 *Project management capacity is in place and performing, and number of completed projects increases at a faster rate*	Capacity of total connected electricity (megawatt)	718.62 MW	NEA Annual Report, 2011/012
Output 2.11 *Community electrification projects better designed with regard to available potential, and operate at a higher load factor*	Household having electricity connected already (percentage)	70% of households have access to electricity. Out of this, 96% of urban areas have access to electricity while the corresponding figure for rural households is 63%.	- Nepal living standard survey 2010/11, Vol. 1(P 34)
Output 2.12 *Community electrification technology is scaled-up and is of a higher standard*	Per capita utility of rural electricity	The national average per capital utility electricity consumption is 130 kWh but no segregated data for the urban and rural are found.	Nepal Energy Efficiency Program Website (http://wecs-neep.gov.np/article-energy_situation_nepal)
Output 2.13 *Improved Water Mills promotion is scaled-up and the technology is of a higher standard*	Number of registered (cottage, small, medium and large) industries	Cottage: 11,407 Small: 132,020 **Energy related**: **1,231**	Statistics of Industrial Promotion (Nepali) 2069 (p15);Department of Cottage and Small Industries
		Large: 503 Medium: 1,155 Small: 3,173 **Energy related**: 114	Industrial Statistics 2011/12, (p 16&17) Department of Industry
Output 2.14*.1* ***to 2.14.3 – Output*** *AEPC is recognized as an effective, efficient institution for the promotion and development of the RE sector*	Effectiveness of implementation of good governance act and rule	**MCPM Ratings** **Total VDCs: 3,915** Successful VDCs: 3,080 Failed VDCs: 835 **Total DDC: 75** Successful DDCs: 64 Failed DDCs: 11 **Total Municipality**: **58** Receives 25% additional grant: 13 Receives 10% additional grant: 14 Deduction of 10% grant: 13 Deduction of 25% grant: 13: No grant: 5	Minimum Condition & Performance Measurement (MCPM) results. Ministry of Local Development and Federal affairs 2070. MCPM is measured against 9 conditions for all VDCs, Municipalities, and DDCs. Minimum Conditions for VDC: (1) Annual Budget and Programme Execution (2) Annual Programme Evaluation (3) Annual and Trimester Progress Report (4) Internal Audit and Final Audit of VDC (5) Account Operating of DDF (6) Documentation of Information and Management (7) Final Audit and Documentation of Audit Irregularities (8) Inventory Management and (9) Management of Staffs

NRREP Outputs	Outcome/Interim Indicators	Baseline	Source and explanations
***Output 2.14.4**. Develop and Implement AEPC Monitoring system for result -based management*	Effectiveness of implementation of good governance act and rule	Action plan on Good Governance and Economic Development and Prosperity 2068 is developed.	Ministry of Local Development
		Public Expenditure & Financial Accountability and Fiduciary Risk Reduction Action Plan are developed.	
	Number of local bodies conducting one hundred percentage of public audit of the projects operated by them	**MCPM Ratings** **Total VDCs: 3,915** Successful VDCs: 3,080 Failed VDCs: 835	Minimum Condition & Performance Measurement (MCPM) results. Ministry of Local Development and Federal affairs 2070
		Total DDC: 75 Successful DDCs: 64 Failed DDCs: 11	
		Total Municipality: **58** Receives 25% additional grant: 13 Receives 10% additional grant: 14 Deduction of 10% grant: 13 Deduction of 25% grant: 13: No grant: 5	
***Output 2.14.5**. AEPC is recognized as an effective, efficient and GESI proactive institution.*	Proportion of women in income generating employment in non-agriculture sector	76 percent of male wage earners are in non-agriculture while only 45 percent of female wage earners are in this sector	Nepal living standard survey 2010/11 (P60)
	Amount of loan given to women and their numbers	Segregated loan given data to women are not available	
	Amount of loan given to Dalits and their numbers	Segregated loan given data to Dalit are not available	
	Amount of loan given to Janajatis and their numbers	Segregated loan given data to Janajatis are not available	
***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*	Number of local bodies conducting one hundred percentage of public audit of the projects operated by them	According to the information received from field survey no any local bodies has conducted one hundred percent public audit of the projects operated by them.	Focus Group Discussion with RSCs (field)
		As per the provision of Public Audit Guideline 2067 (MoLD), it is mandatory for local bodies to conduct public audit of the project implemented by them. Public audit is one of the indicators for Minimum Condition & Performance Measurement (MCPM) results for local bodies.	Public Audit guideline, 2067, Ministry of Local Development, GoN
	Number of local bodies to inform local people through the media (radio, newspapers, interaction) and percentage of the population to receive information about the projects operated by local bodies	It is practiced for disseminating the information through local FM Radio and Local News Paper. The percentage of data dissemination is not available.	Focus Group Discussion with RESCs (field)

NRREP Outputs	Outcome/Interim Indicators	Baseline	Source and explanations
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*	Number of the trained staff in the local bodies	The recorded data are not available.	RESCs.
	Number of local bodies conducting public hearing (VDC/municipality/DDC)	As per the provision of Public hearing Guideline 2067 (MoLD), it is mandatory for local bodies to conduct public hearing of the project implemented by them. Public hearing is one of the indicators for Minimum Condition & Performance Measurement (MCPM) results for local bodies.	Public Audit guideline, 2067, Ministry of Local Development, GoN.
		According to the information received from field survey no any local bodies has conducted one hundred percent public hearing of the projects operated by them.	Focus Group Discussion with RSCs (field)
Output 2.17*. Income generating activities (IGA) for households using RE are developed and implemented in catchments areas*	Proportion of population below poverty line	Total = **25.16 %** Rural = 27.43% Urban = 15.46%	Economic survey 2011/12, Ministry of finance, (P 92)

Annex 2: Baseline value for output indicator

PROGRAMME OUTPUT LEVEL			
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.**		
Output 1.1:	**Indicators of Performance**	**Base Value (15 July 2012)**	**Source**
Output 1.1: The CREF has been endowed with the capacity and powers to successfully carry out its operational mandate in cooperation with other sector organizations and the AEPC in particular. **Revised:** The CREF established and operational as the core financial institution for the effective delivery of subsidies and credit support to the renewable sector	Drafted CREF Financial Intermediation Mechanism.	Concept of Financial Intermediation Mechanism reflected in the Annual plan.	AEPC/NRREP, CREF Component
	Drafted CREF operational guidelines.	- CREF operational guidelines have not been drafted. - The subsidy delivery mechanism, 2066 (2010) had provision to establish CREF. - Before 15 July 2012, there was REF. - The continuation of REF was under discussion for the bridging period before the NRREP. - There is a clause in the Joint Financial Agreement (Para 38?) for continuation of REF until the establishment of CREF.	AEPC/NRREP, CREF Component
	Identified at least 6 financial intermediates.	10 financial institutions are identified. Among them, six were selected through competition process and remaining four institutions were identified through negotiation.	AEPC/NRREP, CREF Component
Output 1.2: The existing subsidy system modified to improve its effectiveness and to enhance its focus on women and marginalized groups. **Revised:** Efficient and effective delivery of credit to RET sector through Banks and MFIs	Number of projects recommended for credit facilities	During the ESAP (Before 15 July 2012), 9,000 SHS (through Bank's fund) and 16 Micro-Hydro projects (9 projects through micro-hydro debt fund and 7 projects through Bank's fund) were provided credit.	AEPC/NRREP, CREF Component
	75% increase in availability of financial resources for the development of renewable energy sector compared to base year.	- Total subsidy amount NRs. 1,191,250,000Was available (2010). - The disbursed amount was NRs. 606,202,749 (51%)	AEPC/NRREP, CREF Component
	75% of approved annual funds for credit disbursed	- Total credit amount NRs 325.28 million in Bio-gas sector. - 136 MFIs involved in credit delivery and NRs. 46.42 million credit amount disbursed in Biogas sector.	- AEPC/Biogas Loan sector
		- The committed subsidy to micro-hydro project is estimated NRs. 328 million in 2010/11. - Total subsidy NRs. 2,363 million disbursed in bio-gas sector	- AEPC/NRREP, CREF Component - BSP, Nepal (2013)

Output 1.3: Efficient and effective delivery of subsidies to RET sector in close consultation with AEPC Revised:	Number of project recommended for subsidy	- Total of 33,217 SHS in 71 districts installed and provided subsidy of NRs 241.3 million. Similarly, 5,856 number of rural households have been electrified with SSHSs in 23 districts with disbursement of NRs. 11.7 million as subsidy. - Similarly, 1,844 rural households have installed improved metallic cooking stoves in 12 districts with disbursement of NPR 7.4 million as subsidy. - As of mini grid, the MHPs with total capacity of 2,857 kW had been conditional approval with estimation of benefits of 24,698 households of 30 districts. - Total of 60,501 rural households in rural districts received subsidy for SHSs. - 6,020 rural households received subsidy for SSHSs of 47 districts. - About 3,000 rural households installed Metallic cooking ICS of 30 districts. - Similarly, the MHPs with total capacity of 2,231 kW of 33 districts had given final approval.	AEPC/NRREP, CREF Component
	Ratio of loan to subsidy gradually increased in consecutive years.	The ratio of loan to subsidy has not much increased till 15-July-2012. For example, in 2012, the bio-gas equipment price increased, then loan amount increased and subsidy amount was also increased by the Government. From 2006 to 2011 there was no change in the ratio because a single subsidy policy was in place.	AEPC/NRREP, CREF Component
	Subsidies are provided following national subsidy policy and delivery mechanism.	Subsidy Policy and delivery mechanism is followed while providing subsidies.	AEPC/NRREP, CREF Component
	Subsidy received by poor and marginalized people of remote areas.	- There is no segregated data mentioned about the subsidy disbursed to the poor and marginalized people. - The previous year data on this indicator has not maintained.	AEPC/NRREP, CREF Component
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.***		
Output 2.1: Scaled up implementation network is in place for biogas – Sector commercialization and GESI and Regional concerns	Established functional network with at least 10 national organizations (e.g. health, education, tourism, security sector institutions) for wider dissemination targeting to reach DAG HHs.	9 functional networks: (i) BSP-N (ii) NBPA (iii) HECAF (iv) FECOFUN (v) MFIs (vi) Local NGOs (vii) DEEUS (viii) Private Sectors (ix) Municipalities	AEPC/NRREP, Memorandum of Understandings, 2012
	Data base installed to support quality	BSP-N Database is managed in Oracle software and the	AEPC/NRREP, Agreement, 2012

	assurance and control.	database of NBPA is managed in SQL-Azure.	
	Installed additional 95,000 domestic biogas plants of which 30% are targeted to DAG HHs, including 90,000 for remote areas	Total of 277,526 biogas plants are installed. The DAG HHs related segregated data are not established.	BSP-N Database 2012
	Ensure 20% of biogas companies working in low biogas constructed and remote districts	Out of total 84 qualified private biogas companies, about 20% are working in low biogas constructed and remote districts.	AEPC Website
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.	Integrated Waste to Energy policy issues in the national Renewable Energy Policy	Waste to Energy Policy has not been included in the current Renewable Energy Policy.	Renewable Energy Policy, 2006
	Installed 1,000 institutional biogas plants.	226 Institutional biogas plants are installed.	Govinda P Devkota, 2009, Development of modality for promotion of institutional or community biogas plants in Nepal.
	Installed 200 community biogas plants of which 30% are DAG owned.	74 community biogas plants are installed[8]. But the segregated database of DAG owned are not established.	Govinda P Devkota, 2009, Development of modality for promotion of institutional or community biogas plants in Nepal.
	Piloted 10 new biogas technologies in different geographical regions.	The biogas technologies and models presently available are: 1. Gobar Gas Company (GGC) 2047 2. Modified GGC which are promoted only from 2011 3. TED model 4. Sahari Gharelu Biogas Plant (SGBP), which are started from 2012. 5. Nepal Interim Biogas Plant (NIBP) technology, which is in trial phase.	AEPC/NRREP, Bio-gas Subcomponent.
	Installed biogas plants are functional by 95%.	Around 95% plants that have crossed guarantee period are operational.	BSP Year Book 2011/12
	Installed 8,500 commercial biogas plants.	14 number of commercial biogas plants are implemented	Biogas Sub-component
	Installed 20 Waste to Energy projects in Municipal Scale at 20 locations.	Waste to Energy Projects are not yet established	Biogas Sub-component
Output 2.3: Scaled-up implementation of ICS	Integrated IAP Free /clean cooking solution issues in revised renewable energy policy-2013.	IAP free provision was not stated in the existing RE policy.	

[8]A final report on "development of modality for promotion of institutional or community biogas plants in Nepal", report submitted by Govinda P Devkota in 2009.

	Promoted additional 475,000 improved cooking stoves (metallic-35,000, mud-440,000) of which 30% are DAG in all 75 districts through NRREP supports.	Promoted total ICS are 746,223. Out of which Mud-type ICS are 737,748 units and Metallic ICS are 8,475 units. The DAG segregated data are not available.	AEPC MIS Database 2012 and ESAP Program achievement Report, 2012
	At least 90% installed ICS are in operational state and certified as IAP Free.	Total of 84 VDCs are declared as IAP free VDCs, which is adjudged by collaboration of VDCs/DDCs and AEPC. In this regard, percentage of operating ICS is difficult to say but most of the installed ICS (above 90%) are in operation.	Biomass Subcomponent, AEPC
	Established network at national level to support IAP Free campaign, resource mobilization and extensive coverage.	In ESAP Phase-I, 9 regional renewable energy service centers were providing services. Similarly, in ESAP phase-II, 15 regional renewable energy service centers were providing services to biomass energy sector. Program implementation network established with district based organizations, national NGOs, national universities, UN world food programme and DDC/DEES.	ESAP program achievement report, 2012
	Trained 6,000 stove masters of which 50% are women and 30% are DAG.	During the program intervention 11,510 Promoters/Stove master were trained. About 50% of woman are trained out of the above figure, but GESI segregated data are not maintained	AEPC MIS database, 2012
Output 2.4: New & improved biomass energy technologies such as enterprise scale stoves, gasifiers and bio-briquetting are ready & field tested	Piloted at least 3 new ICS models in different geographic locations.	16 different models (Including Mud and Metallic type ICS)	List of model disseminated by AEPC, Year 2012
	Piloted enterprise scale stoves at different large scale institutions.	5 different models of Institutional Improved Cook Stoves (IICS). The total of 1,518 units of large scale Institutional Improved Cook Stoves (IICS) have been implemented till 15-July-2012. The beneficiary group are school hostel, Army Camp, District Police Office, Hotels, Religious Centers, Restaurants, Highway hotels etc.	ESAP program achievement report, 2012 and Biomass Subcomponent, AEPC
	Trained 100 bio-briquette entrepreneurs in improved technologies including 50% women and DAG At least 10 number of gassifier plants piloted.	115 persons received training on the bio-briquette technologies. DAG segregated data are not maintained.	Trainings completion report on Bio-briquette Technologies Year 2012
Output 2.5: **2.5.1:** Update knowledge of evolving rules and regulation in different carbon markets.	Strengthened institutional networking of AEPC on climate change at national and international level.	Established Climate and Carbon unit in AEPC which also does institutional linkage of Climate Change activities of AEPC with Climate Change Management Division of the	

		Ministry of Environment Science and Technology (MoEST). Likewise, establishing network with the DDC through DEEUs/DEESs and capacity building of DDC-DEEU/S to coordinate climate change activities at local level	
	Mobilized additional resources for strengthening AEPC's carbon market initiatives.	Climate Change Program (Financial support by DFID, Technical Support by SNV from June 2010-June 2012). The financial resource of Euro 304,148 and about USD 2.1 million received from biogas CDM.	Carbon and Climate Unit
	Supported GoN/MoSTE to formulate climate change related policy, strategy, program formulation/implementation.	Support to DNA/MoSTE in CDM project assessment. Support to District Climate Change and Energy Planning (DCEP) guidelines preparation.	AEPC?NRREP Carbon and Climate Unit
		Formulated and Published the Climate Change Policy 2011.	MoSTE Website: http://moste.gov.np/Sections/Climate_Change
	Supported to increase capacity of academic institutions, GoN and private sector towards addressing climate change issues	No capacity building activities are accomplished.	
Output 2.5: **2.5.2:** Develop a well-diversified portfolio of projects using different instruments.	Developed two additional carbon projects in the areas of Solar and larger biogas	A baseline has been carried out for registration of a CDM project of Solar Home System (320,000 units), with its estimated annual emission reduction per CPA 31,037 tCO2e is developed.	AEPC Website, Carbon and Climate Unit
	Included CPAs in Biogas, ICS & IWM PoA CDM from 2013	Not yet included	Carbon and Climate Unit
	Supported to prepare GESI responsive Climate and Energy Plans in 72 districts and provided technical support to implement it	DCEPs developed for the 3 districts, Makawanpur, Ilam and Mustang.	AEPC, Carbon and Climate Unit
	Prepared and submitted Emission Reduction monitoring report to DOE annually	Prepared and submitted Emission Reduction Monitoring Report to DOE for 2 biogas projects upto 2012.	AEPC, Carbon and Climate Unit
	Prepared and submitted CBP monitoring report to buyer annually	Not yet prepared	Carbon and Climate Unit
Output 2.5: **2.5.4:**Support external monitoring and verification in effective manner	Verified and registered 5 CDM projects (4 biogas & 1 micro-hydro) annually	Verified 2 biogas CDM projects up to 2009. Other 4 Biogas projects and 1 Micro-Hydro project are in pipeline.	Carbon and Climate Unit
	Registered and verified 3 PoA CDM (Biogas, ICS & IWM) 2014 onwards annually	1 Biogas-PoA, 1 ICS PoA and 1 IWM PoA are in pipeline.	Carbon and Climate Unit
	Registered and verified 2 new carbon projects/programs 2016 onwards	The new carbon projects are not registered and verified.	Carbon and Climate Unit

Output 2.6: A highly developed fraud-proof registration, eligibility-checking and verification system for solar energy systems (SHS, SSHS, ISPS and PVPS).	Developed and piloted Electronic system for fraud-proof registration in two remote districts by Dec. 2013.	No fraud-proof registration system in place till 15-July-2012. But there has been penalization provision to the fraud/cheating cases of solar energy projects.	Solar Energy Sub-component, 2012.
	Mainstreamed Outcomes of the piloted electronic fraud-proof registration system by the end of 2014.	Not yet started	Solar Energy Sub-component, 2012.
	Decreased deviated cases by 50 % by the programme period.	163 no of deviated cases from previous monitoring by ESAP/AEPC[9].	Solar Energy Sub-component, 2012.
	Revised and implemented Quality Control and Monitoring Mechanism, practices and improved.	Quality control and Monitoring mechanism QAM2009 existed for the Subsidy Delivery Mechanism 2010 and has been in practice.	Solar Energy Sub-component, 2012.
	Installed 1,550 (Institutional-1,200 and Drinking water pumping systems-350) benefited to 31,000 HH including 30% DAG and women headed HH.	Total number of installed ISPS and PVPS are 2,155 and 111 respectively. The DAG and women headed HH segregated data are not maintained.	AEPC and others
	Promoted 600,000 SHS and SSHS benefited to 30, 00,000 population including 50% women and DAG.	Solar Home systems (SHS)- 329,849 and Small Solar Home Systems (SSHS) - 22,605. Total benefited population are around 1.6 Million.	AEPC and others
	Produced 14 MWp additional power by Solar systems (SHS – 10 MWp, SSHS- 2MWp, ISPS-1.5 MWp, PVPS – 0.5 MWp).	Total of 8.863 MWp from AEPC programs. (ISPS+PVPS=1.270 MWp SHS= 7.48 MWp and SSHS= 0.113 MWp)	AEPC
	Out of installed Solar Systems, at least 30 % belong to socially disadvantage people.	Total number of women benefited through SHS and SSH are 322,322. There is no database available for the women and DAG owned SH/SHH.	Solar Energy Sub-component, 2012.
Output 2.7: Used Battery management introduced and functional, and in compliance with international standard.	Prepared and approved Battery Management Regulation and is in effect by the end of 2013.	A regulation to manage used lead acid battery was drafted and is in the final stage of the approval.	ESAP program achievement report
	Developed Mechanism for collection of used lead battery and at least five battery collection centres are established in five different locations by the month of July 2014.	Cash incentive voucher scheme was designed and implemented to collect Used Lead Acid Battery (ULAB).	ESAP program achievement report
	Established a battery management recycling plant in feasible location and operated by the end of 2015.	Studies conducted on Management of Used Lead Acid Batteries. And proposal was called from private sector for establishing ULAB recycling plant.	ESAP program achievement report

[9]The deviations are found in the 10% sample monitored. The monitoring and verification of system installed after 2010 is being conducted at the time of this baseline study so couldn't be included here.

	Collected and recycled at least 200,000 numbers of used batteries by 2017.	Battery Collection not started and recycling facility is not in place.	
Output 2.8: Some Viable "large Community PV Systems' are operational	Extended support to 500 number of solar energy based PEUs generating 8,000 employments and 2.5 MWp additional powers (produced by large community PV systems including ISPS/PVPS) and piloted.	Solar energy based PEU of both ISPS and PVPS installed are 2,266 totaling the no of systems of total installed capacity of 3.05 MWp.	AEPC and others
		Following capacity building and door opened for employment. - Above 3,908 Solar LEVEL-I technicians (6.85% female) and about 164 Solar LEVEL-II technicians (7.3% female) trained and certified by GoN/ CTEVT.	CTEVT, Sanothimi, Bhaktapur
		- Total of 116 Trainers and 28 Solar Design Engineers training was accomplished. - A total of 37 solar companies are prequalified for SHS (38 for SSHS) implementation	AEPC/Solar Energy Sub-component
	Served to X HHs through 10 mini-grids including1, 600 number of large community PV system (ISPS/PVS) of which 30% belonging to DAG.	Solar Mini-grid projects are not yet implemented in Nepal but the feasibility studies are accomplished by AEPC. However, the large size community PV systems are implemented in the rural communities through former ESAP and REP programme.	ESAP program achievement report
	Integrated RE Policy addressing solar mini grid issues and guidelines are developed addressing.	Solar mini-grid project guideline is not in place for the community based rural electrification: But the three potential sites are identified in Surkhet, Morang and Sindupalchowk Districts.	
Output 2.9: Solar thermal domestic devices (dryers, others) are ready for the market.	Developed modality for solar thermal and implemented.	AEPC provides subsidy to the family size solar dryers and commercial solar dryers. Likewise, AEPC promote and provide subsidy to the solar cookers. AEPC also does monitoring of the field installation and conduct surveys, studies etc.	AEPC Website
	Increased demands for Solar thermal by 20% compared to base year.	Demand of solar thermal in the last five years are: 242 (in 2008), 262 (in 2009), 250 (in 2010), 258 (in 2011) and 242 (July-2012)	AEPC/Solar Energy Sub-component, 2012.
	Established 7,500 numbers of solar drier/ cookers and benefited to 37,500 people including 50% women and 30% DAG.	Total number of Disseminated solar Dryers and Cookers are 2,024.Number of people benefited are 16,000. But the DAG segregated data are not maintained.	AEPC/Solar Energy Sub-component,
		One large scale solar dryer is being piloted for drying 250 Kg of LAPSI.	
	Supported, piloted and up scaled 5 large scale	Large scale sola cooker – 1	Sun Works Nepal, Balkhu

	thermal systems by the end 2015.	(with 4 reflector) Tunnel dryer – 40 Large scale solar water heater- 3 Solar space heating collector- 1 (having 100 collectors)	
Output 2.10: Project management capacity is in place and performing, and number of completed projects increases at a faster rate.	An installation of 4000-6000 kW of hydro power is in place constantly per annum.	An average installation of 2000 kW micro-hydro power per annum.	Community electrification Sub-component
	Completed 1,000 of additional community electrification projects at progressive rate (including Micro Hydro, Mini and Pico).	Total = 2,963 (42 mini-hydro, 1287 micro-hydro and 1,634 pico-hydro)	RE Data Book 2011 (p3) and others
	Enhanced Quality Control and Monitoring Mechanism in place practiced and reviewed.	Quality Control & Monitoring Mechanism of Micro-hydro project is maintained	
	Reduced average project cycle to 2.0 years.	Average project cycle 2.5 years.	Community electrification Sub-component
	Generated 25,000 kW of hydropower through mini and micro hydro projects benefitting directly150, 000 households including 50% women and 30% DAG.	Total Mini/Micro/Pico-Hydro Power Generation is 44,645 kW	AEPC and others
Output 2.11: Community electrification projects better designed with regard to available potential, and operate at a higher load.	Upgraded guideline/ standards and skills of engineering professionals up to 3 MW are developed.	Existing Guideline/standard of the engineering professionals skill is upto 100 kW	Community electrification Sub-component
	Supported PEU to increase plant factor of micro hydro to 40 % by the end programme period.	plant factor of existing micro-hydro is found to be 25%	- Community electrification Sub-component, 2012
	Reduced plant shutdown period by 15% in relation to equipment failure in a year compared to baseline year.	- 30 days (8.3%) for repair & maintenance - 55 days (15.1%)	- Community electrification Sub-component, 2012 - KIs, FGD Field survey
Output 2.12: Community electrification technology is scaled-up and is of a higher standard.	Installed/ piloted at least 5 Mini hydro and local grids/ regional grid/ grid connection, based on feasibility study, in potential micro hydro installed sites.	- Mini-hydro power plants are under construction and therefore no power capacity that is already installed. - One local mini grid is established by interconnecting 6 micro-hydro plants at Baglung.	Community electrification Sub-component
	Increased fabrication/ assembly capacity of local manufacturers up to 1 MW.	Fabrication/assembly capacity of local manufacturer is up to 100 kW.	Community electrification Sub-component
	Increased technical standards of transmission & distribution system of MHP to NEA standard.	AEPC has formulated standard	Community electrification Sub-component
	Promoted average size of projects of greater	Average promoted size of project is 24.3 kW	Based on 431 Nos. of electrified

	than 35 kW.		MHP by ESAP & REDP/RERL, 2012
	Increased designed overall efficiency of Micro / Mini Hydro by more than 70% and linked with energy use for productive economic activities.	Overall efficiency of Micro-hydro 55%	Community electrification Sub-component
Output 2.13: Improved Water Mills promotion is scaled-up and the technology is of a higher standard.	Increased capacity of IWM sector/ stakeholder by 50% from 33% in operation and management.	Existing operation and management capacity of IWM sector/stakeholder is 33%	Community electrification Sub-component
	Increased overall efficiency of IWM by 43% from 33%.	Existing efficiency of IWM is 33%	Community electrification Sub-component
	Supported service providers to develop 4000 numbers of IWMs benefiting to 80,000 HHs and 400,000 people including 50% women and 30% belonging to DAG.	Support service to 9,015 IWMs benefiting 468,780 Households and 2,343,900 populations. Segregated data of woman and DAG are not established.	Community electrification Sub-component and others
	Increased outreach to 53 districts.	Existing outreach up to 33 districts	Community electrification sub-component, and IWM baseline data
	Increased technical standards of IWM up to pico (5kW).	Up to now IWM standard only	Community electrification Sub-component
Output 2.14: **2.14.1 – 2.14.3:** AEPC is recognized as an effective, efficient institution for the promotion and development of the RE sector	Developed, submitted and approved GESI responsive RE policies, strategies, and plan prepared.	AEPC had developed RE policy in 2006,and which is not GESI responsive	AEPC/NRREP, GESI Unit
	Drafted and submitted AEPC Bill/ Act for approval.	AEPC Bill/Act has not been prepared yet. It has been functioning with bylaws.	AEPC/NRREP, GESI Unit
	Developed, approved implemented and refine GESI responsive SOD and NRREP guidelines.	- GESI responsive SOD and NRREP guidelines have not been developed yet. - SOD was developed during REDP and ESAP but not approved.	AEPC/NRREP, GESI Unit
	Completed of AEPC development interventions and projects timely.	Previous development interventions were completed timely	
	Implemented performance management and improvement mechanisms including individual capacity building/learning.	Performance management system not fully implemented. Individual capacity building not linked with performance management system.	AEPC/NRREP, Institutional support sub-component
	Established functional relationship with government, DPs and stakeholders.	Functional relationship existed but not systematically organized.	
	Ensured coordination and collaboration	Coordination and collaboration existed but not	

	(including orientation) with major stakeholders beyond RE sector (e.g. forest, agriculture, FNCCI, etc.).	systematically organized.	
	Produced quality engendered knowledge products and ensured appropriate knowledge dissemination to extend outreach.	No knowledge management guideline exists.	AEPC/NRREP, GESI Unit and Institutional support sub-component
	Established partnerships evidence of 10 functional public, private partnership (PPP) models in the RE sector.	All programme/project followed PPP model	AEPC/NRREP, Institutional support sub-component
	Promoted R&D on RE sector to design gender friendly technology.	Protocol development underway	AEPC/NRREP, GESI Unit
Output 2.14.4: Develop and Implement AEPC Monitoring system for result -based management Revised: Develop and Implement AEPC Monitoring and Quality Assurance systems for effective result -based management (Will be considered as separate output#18).	Developed and functional GESI responsive result-based M&E framework by 2013 Established and functional NRREP MIS with beneficiaries' categorization by Dec 2013	Not existence of M&E unit and GESI responsive result based M&E framework was also not in place.	AEPC/NRREP, GESI Unit
		Not yet practiced of result based management and not trained in the RBM.	
	Established and functional a Random Monitoring Mechanism by March 2013.	AEPC-ESAP practiced random monitoring of technologies at the field but not established in a systematic manner.	AEPC/NRREP, MQUA Unit
	Established baseline -2012 with sex and caste segregated data of each technology at all level by 2013.	RET database 2011 is in place, but without sex & caste segregated data.	AEPC/NRREP, MQUA Unit
		There is a good practice of establishing socioeconomic baseline of Micro hydro at project level but it is not in an integrated manner at the program level.	
	Developed and functional feedback and quality assurance system by 2015.	AEPC has mechanism for assurance of quality of technical components of RETs only; particularly solar PV home system. However, systematic feed backing mechanism is distinctly lacking.	AEPC/NRREP, MQUA Unit
	Produced at least 5 M&E reports/learning products	The AEPC has practice of publishing occasional program documents but lacking publication of specific M&E reports.	AEPC/NRREP, MQUA Unit
		The program documents includes: AEPC Annual Progress Report, Technical and socio-economic impact study reports of various RETs, Baseline study reports and training reports, Quarterly publication of e-newsletters, Program achievements reports etc.	AEPC Website (http://www.aepc.gov.np/index.php option=com_docman&Itemid=307) (http://www.aepc.gov.np/index.php option=com_docman&Itemid=120)
	Produced periodic progress reports (quarterly/annual).	There exists good practice of producing program's Annual and half yearly progress reports. Trimester progress	AEPC/NRREP, MQUA Unit

		reporting system is in place in GoN format. Further, there exists a practice of Telephonic reporting/ collection practice but it happens in ad-hoc basis	
	Assessed at least two impacts of the program interventions through studies and technical audits.	Following impact study were completed before: Impact and its contribution in achieving MDG-REDP Assessment, Impact of Mini Grid Electrification, Impact study of Karnali Ujyalo Programme, socio-economic impact study of SHS users, effectiveness or impact of ICS in reducing indoor air pollution,	AEPC Website: (http://www.aepc.gov.np/index.php?option=com_docman&Itemid=307&limitstart=20)
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 (will be considered as separate output#19).	Addendum GESI concerns in RE policy, program, periodic plan rules/ regulation and guidelines.	The concerns and issues of GESI were not addressed in RE policy, program and plan. ESAP II was designed with inadequate budget for addressing GESI issues. In late 2010 comprehensive attention of promoting GESI, first in MGREC in later. In two other technical components: biomass and solar energy was given due attention through Addendum I and II	AEPC/NRREP, GESI Unit
	Prepared and mainstreamed GESI tool box for AEPC/NRREP, DEES, private sector and RSCs by 2015.	GESI tool box has not been prepared. During the ESAP II, a gender strategy was developed in which no GESI concept was conceptualized. The concept of GESI was under discussion.	AEPC/NRREP, GESI Unit
	Developed and implemented social mobilization guideline by 2015.	The REDP and ESAP II, developed community mobilization guideline.	AEPC/NRREP, GESI Unit
	Developed and implemented GESI audit guideline and procedure by 2014.	The GESI audit guideline has not been developed. However, the need and importance is realized by the concerned unit. The practice of such audit has not been formalized and institutionalized in field level.	AEPC/NRREP, GESI Unit
	Ensured GESI responsive plan and budget in AEPC/ NRREP, regional service centres and DEEs.	No orientation on GESI responsive plan and budget.	AEPC/NRREP, GESI Unit
	Prepared and implemented 4 years capacity development and gender mainstreaming plan by 2014.	Capacity development and gender mainstreaming plan yet to be prepared. There is no provision of GESI competency while recruiting staff. However, the need of capacity building and gender mainstreaming plan has been realized. Therefore, NRREP has planned to identify GESI gap at policy and institutional level.	AEPC/NRREP, GESI Unit
	Disseminated GESI responsive RET promotional information through media, posters etc.	The dissemination is yet to be started. Before the NRREP, information was disseminated through media but less priority on GESI issues.	AEPC/NRREP, GESI Unit

	Increased outreach of RET services through collaborating with right-holder institutions of women and DAG associated networks.	The concept of outreach is exists. During the ESAP phase II, there was no practice on it.	AEPC/NRREP, GESI Unit
	Established knowledge management system for GESI mainstreaming.	Knowledge management system yet to be established. During ESAP, there was only practice of gender concept and there was no concept of GESI.	AEPC/NRREP, GESI Unit
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.	DDC owned DEES in all districts.	DEESs are not established in all districts,	
	Endorsed GESI responsive DCE Plan and budget in all DDC.	Three DDC council endorsed DECP (before 15 July 2012)	AEPC/NRREP
	Ensured effective implementation of DEES guidelines by DDCs.	Practiced in a few districts.	RESCs
	Trained DEES staff in line with identified gaps including GESI.	No training practice in line with identified gaps and GESI.	AEPC/NRREP/RESCs
	Established an effective functional linkage across AEPC, Private Sector, RSC and DDC.	Implementation modality is PPP model. Private sectors collect demand, manufacture, supply, install and provide ASS to the end users. AEPC does support in the RE awareness creating, promotional activities, networking, capacity strengthening, subsidy providing to the end user via private sector as well as monitoring. RSC provides services to the end users from the regional level in coordination with the AEPC, to fasten the RE project activities at local level.	
	Ensured DDCs RE activities to reflect NRREP annual plan and vice versa.	Not yet started	AEPC/NRREP/RESCs
	50 number of RE projects conducted public/ GESI audits in the leadership of DDCs.	As per the provision of Public Audit Guideline 2067 (MoLD), it is mandatory for local bodies to conduct public audit. The practice of public audit is more focused on financial part. The public audits are used to facilitate by RSCs with leadership of users' committee. There was lack of GESI issues and DDC leadership while conducting public audit of RE projects.	AEPC/NRREP/RESCs
	Created demand on RE technology among women, poor & DAG through awareness creation, social mobilisation and interaction.	AEPC has been creating demands on RE technology through social mobilization process since 1996. Creation of demand is the first step of project cycle of AEPC. The regional partner (RRESC) carries out various awareness activities through IEC materials and local media.	AEPC/NRREP
Output 2.16:RSCs are contracted and their capacity enhanced to facilitate the delivery of	Developed and implemented RSC Operational Guideline including GESI functions by 2013.	Not yet developed and implemented	AEPC/NRREP/RESCs

RE services and promote linkages at a local level as a resource of the AEPC	Ensured RSC coverage in all DDCs.	Before the NRREP, a total of 16 Regional Centres (RRESC) were operational in 52 Mid-hill districts, 4 high-hill and 12 Terai districts.	AEPC/NRREP
	Trained RSCs' staff in line with identified gaps to enhance RSC capacity.	Gap assessment has not been carried out. During ESAP II, 437 training sessions were conducted on various subjects. A total 4,459 ICS promoters were trained (50% female). Stove masters were trained from five Terai based Regional Centres (800 persons trained).	AEPC/NRREP/RESCs
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.***		
Output 3.1: Capacities of existing MSMEs are enhanced.	Developed GESI responsive PEU implementation guidelines by 2013.	Not yet developed (in process)	AEPC/NRREP/PEU Component
	Developed training manuals and end-use catalogue addressing GESI concerns/ issues.	Training manual and end use catalogue is developed but not GESI responsive.	Guideline for Promotion of Economic Activities, 2011; End Use Catalogue, 2005
	Received technical and/or financial supports by 2,800 existing MSMEs using RETs out of which 25% will be owned and run by women and DAG.	Not yet started	AEPC/NRREP/PEU Component
	Established Business Promotion Units in all RSCs.	Not yet established	NRREP Programme document
Output 3.2: New and innovative MSMEs are created and operationalised, with a specific emphasis on integrating women and marginalized section of the population.	Formally registered 1,300 units of new and innovative MSMEs of which 25 % are owned and run by women and DAG.	Not yet registered	NRREP Programme document
Output 3.3: Appropriate business development services are available to MSMEs in RE catchments.	Described BDS are appropriate by the 75 % of MSMEs in their area any time.	Not yet started	NRREP Programme document
Output 2.17: Income generating activities (IGA) for households using RE are developed and implemented in catchments areas.	Developed IGA guidelines by end of 2013.	IGA guideline has not been developed in NRREP. Before the NRREP, there was no IG activities directly support to household level.	AEPC/NRREP/PEUC Annual Work Plan
	Received grant by 15,300 HHs for IG/PEU activities of which 50% belonging to DAG and women.	Not yet started	NRREP Programme document
	Supported 1,000 indigenous and traditional skills based IG activities.	Not yet started	NRREP Programme document

Annex 3: Current status of NRREP staffing

Current status of NRREP staffing

Designation	No.	Brahmin (M)	Brahmin (F)	Chhetri (M)	Chhetri (F)	Ethnic (M)	Ethnic (F)	Dalit (M)	Dalit (F)
Executive Director	1	**1**							
Assistant Director	6	5				1			
Senior Program Officer	2					1	1		
Senior Environment Expert	1	1							
Senior Engineer	2	1				1			
Program Officer	30	12	2	3	0	10	3		
Advisors	5	2	1				2		
Asst. Program Officer	18	3	5	4	2	2	2		
Consultant	5	3	1			1			
Office Assistant	13	2	3			7		1	
Total	**83**	**30**	**12**	**7**	**2**	**23**	**8**	**1**	**0**

(Source: AEPC/NRREP, 2013)

Annex 4: Checklists for Interaction

In-house

General issues (for setting the context)
Socio-economic features
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Other general issues
Energy sources and technologies (general information and trend)
Sources of energy
Water: (grid, Peltric sets, micro, mini, hydro; improved water mills) - mainly for lighting
Biomass (Biogas; Improved cook stoves, firewood, animal droppings, agricultural residues, other forest products)- mainly for cooking and space heating
Solar PV for lighting and thermal for water heating/cooking/drying etc.
Other renewable (Wind)
Uses/technologies
Traditional (like water mills used by Ghatera, Chandera (woodcrafter))
Scale of use of ICS, biogas, heating technologies
Use in agriculture (production, processing)
Trend of technology uses

Annex 5: List of persons consulted

SN	Name	Position	Organization
1	Mr. Bharat Raj Poudel	Programme Manager	NRREP/MQAU
2	Mr. Barun Adhikari	National Advisor	NRREP/MQAU
3	Mr. Lok Raj Pathak	Programme Officer	NRREP/ MQAU
4	Mr. Gopal Joshi	Programme Officer	NRREP/ MQAU
5	Dr. Anup Pradhan	Component Manager	NRREP/PEU
6	Mr. Prakash Aryal	Energy Officer	NRREP/PEU
7	Mr. Bikash Upreti	Programme Officer	NRREP/PEU
8	Ms. Manjari Shrestha	Programme Officer	NRREP/PEU
9	Mr. Ananda Raj Maskey	Component Manager	NRREP/CREF
10	Mr. Manu Binod Aryal	Credit Officer	NRREP/CREF
11	Ms. Karuna Sharma	National Advisor	NRREP/Carbon & Climate
12	Mr. Prem Kumar Pokhrel	Programme Officer	NRREP/Carbon & Climate
13	Mr. Neelam Sharma Rijal	Programme Officer	NRREP/Carbon & Climate
14	Mr. Rudra Prasad Khanal	Programme Manager	NRREP/GESI
15	Ms. Nigma Tamrakar	National Advisor	NRREP/GESI
16	Ms. Tara Shrestha	Programme Officer	NRREP/GESI
17	Mr. Samir Thapa	Programme Manager	NRREP/Biogas
18	Mr. Uttam Prasad Jha	National Advisor	NRREP/Biogas
19	Mr. Nawa Raj Dhakal	Programme Manager	NRREP/Biomass
20	Mr. Jagdish Kumar Khoju	Programme Manager	NRREP/Community Electrification
21	Mr. Rana Bahadur Thapa	Programme Officer	NRREP/Community Electrification
22	Mr. Tilak Kandangwa	Programme Officer	NRREP/Community Electrification
23	Mr. Sanjaya Sharma	Programme Officer	NRREP/Community Electrification
24	Mr. Ram Prasad Dhital	Programme Manager	NRREP/Solar Energy
25	Mr. Mukesh Ghimire	Energy Officer	NRREP/Solar Energy
26	Mr. Avishek Malla	Programme Officer	NRREP/Solar Energy
27	Mr. Chaitanya Chaudhary	Proamme Officer	NRREP/Solar Energy
28	Mr. Santosh Rai	Quality Control Officer	NRREP/Solar Energy
29	Mr. Shalav Risal	National Advisor	Institutional Support Sub-Component
30	Mr. Bibek Raj Kandel	Programme officer	Institutional Support Sub-Component

Annex 6: List of respondents from the field

SN	Name	Organization
1	Nava Raj Dahal	DCRDC, Baglung
2	Ramesh Maharjan	DEEU, Baglung
3	Srijana Thapa Magar	DCRDC, Baglung
4	Ganga Prasad Acharya	DCRDC, Baglung
5	NetraLal Upadhyay	DCRDC, Baglung
6	Gyan Bahadur Thapa	DCRDC, Baglung
7	Niraj Khatiwada	DCRDC , Baglung
8	Ishwo rLal Rajbhandari	DCRDC, Baglung
9	Sewanta Kattel	DCRDC, Baglung
10	Hira Kaji Ghale	NCDC, Ilam
11	Yam Adhikari	NCDC, Ilam
12	Ghanendra Bhandari	NCDC, Ilam
13	Mahendra Bhattarai	DDC, Ilam
14	Pragya Dhakaal	NCDC, Ilam
15	Prakash Khatiwada	NCDC, Ilam
16	Subodh Niraula	NCDC, Ilam
17	Pramod Neupane	RIMC, Jhapa
18	Sudhir Jha	REMREC, Kavrepalanchowk
19	Rakesh Tuladhar	REMREC, Kavrepalanchowk
20	Ranju Khadka	REMREC, Kavrepalanchowk
21	Sunita Sharma	REMREC, Kavrepalanchowk
22	Mukti Nath Taujale	REMREC, Kavrepalanchowk
23	Jayram Karkee	REMREC, Kavrepalanchowk
24	Khem Raj Bhandari	RIMC, Jhapa
25	Prakash Bhandari	DEEU, Tanahu
26	Sarita Gurung	RESDTN, Tanahu
27	Sarala Shrestha	RESDTN, Tanahu
28	Shusila Kaini	RESDTN, Tanahu
29	Pawan Acharya	RESDTN, Tanahu
30	Santosh Ojha	RESDTN, Tanahu
31	Madhav Neupane	RESDTN, Tanahu
32	Langhi Gurung	RESDTN, Tanahu
33	Tej Prasad Sharma	RESDTN, Tanahu