



NEPAL RENEWABLE ENERGY PROGRAMME



Renewable Energy Budget of Local Governments : Lumbini Province

February 2021

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Acronyms

AEPC	Alternative Energy Promotion Centre
CA	Constitution Assembly
FEG	Fiscal Equalization Grant
FG	Federal Government
FY	Fiscal Year
GoN	Government of Nepal
HDI	Human Development Index
HPI	Human Pocerity Index
IS	Internal Source
LG	Local Government
MoEWRI	Ministry of Energy, Water Resources and Irrigation
MoPID	Ministry of Physical Infrastructure Development
M	Million
MW	Mega Watt
NEA	Nepal Electricity Authority
NNRFC	National Natural Resources and Fiscal Commission
NPC	National Planning Commission
NPR	Nepalese Rupees
NREP	Nepal Renewable Energy Programme
PG	Provincial Government
OD	Organisational Development
O & M	Organisational and Management
PECC	Provincial Energy Co-ordination Committee
PG	Provincial Government
RE	Renewable Energy
RM	Rural Municipalities
UM	Urban Municipalities
WRED	Water Resource and Energy Development

EXECUTIVE SUMMARY

The local government renewable energy (RE) budget analysis of Lumbini Province for FY 2077/78 intends to enable the local government (LG), Alternative Energy Promotion Centre (AEPC), and provincial government (PG) to understand the priority of Local Governments renewable energy choices and the trend of RE budget for three successive years. The LGs allocate budgets on RE from the fiscal equalisation grant received from the federal government and provincial government as well as from their internal source. Data is derived from the Red books of local governments uploaded in their respective websites for fiscal year 2077/78.

Out of the total 109 LGs, only 23 local governments (9 UM and 14 RM) in FY 2077/78 had information on energy related budget in Redbook. The budget details are available in their annual development plan which were endorsed from municipal/rural municipal assembly.

Key findings:

- a) In FY 2077/78, LGs have allocated budget in renewable energy activities ranging in between NPR 0.2 million to 16 million. The cumulative renewable energy budget of sampled LGs comes out to be NPR 104.708 million.
- b) Out of sampled local governments the renewable energy budget was highest in FY 2075/76; had major fall in FY 2076/77 by 60%. The renewable energy budget was slightly increased by 4% in FY 2077/78 despite the lockdown and priority shift into health sector for sub-national governments.
- c) In all three successive years the share of rural municipalities in total renewable energy budget is higher (i.e. above 50 %) in comparison to share of urban municipalities (i.e. below 50 %). However, the share of urban municipalities in total renewable energy budget is progressively increasing in recent years.
- d) Electricity line extension for household electrification is the most popular as 60 percent of the sampled LGs have allocated budget in this category, followed by solar street light (43%), national grid powered drinking water (39%) and irrigation (21%) projects. Altogether 17% of sampled LGs have allocated budget for mini/micro hydro projects. The solar powered drinking water or irrigation projects have been paid least priority by local governments. The possible reason for choosing national grid rather than solar power for drinking water or irrigation purpose might be that significant improvement in electrification status of LG and discounted tariff rate offered by NEA for irrigation or drinking water purpose, ease of installation and less initial investment if powered by national grid or most of the LGs might be unaware of application of solar technologies in drinking water or irrigation purpose.
- e) In terms of budget allocation it was found that 38% of total RE budget of sampled LGs has been allocated for national grid powered drinking water projects followed by installation of solar street light (24%), household electrification through national grid extension (14%) and national grid powered irrigation projects (10%). However, it was found that just 4% total RE budget of sampled LGs has been allocated for solar powered irrigation projects whereas just 2 % of total budget has been allocated for solar powered drinking water. Nominal budget of below 1% of total budget has been allocated for home solar system, biogas and biomass.
- f) National grid powered **drinking water projects** are chosen by most of the rural municipalities (8 out of 9 LGs for this choice) and have allocated more budgets (NPR

37.290 million out of NPR 40.140 million for this choice) than urban municipalities. However, national grid powered **irrigation projects** are popular choice among urban municipalities (3 out of 5 LGs for this choice) and they have share of 75 % in budget allocation for this choice.

- g) Solar street light is chosen by most of the urban municipalities (7 out of 10 for this choice) and have allocated more budgets (NPR 23.129 million out of NPR 24.869 million for this choice) than rural municipalities.
- h) Mini/micro-hydro projects are popular among rural municipalities while home solar systems are popular among urban municipalities in terms of budget allocation for RE activities choices.

1. BACKGROUND

1.1 INTRODUCTION

The Constitution of Nepal was formally promulgated, and it declared the country as a Federal Democratic Republic on September 20, 2015 with fiscal powers to be shared amongst the federal government (FG), the province governments (PG) and the local governments (LG). Under the federal context, responsibilities of LGs have increased as defined in Schedule 8 of the Constitution of Nepal. The Local Government Operation Act, 2074 that came into effect since 15 October 2017 has paved a strong legal foundation towards institutionalizing legislative, executive and quasi-judiciary practice of the local government. The Act has stipulated several arrangements related to authorities, duties and responsibilities of local government, assembly meeting and working system, assembly management procedures, plan formulation and implementation, judicial works, financial jurisdictions, administrative structure, and district assembly, among others. Without adversely affecting the universality of Schedule-8 of the Constitution, it clarifies the function, duties, and rights of municipalities/rural municipalities. The act clearly states that the local government can formulate, implement, monitor, evaluate and regulate local level policies, laws, standards, and plans related to hydro power projects up to one megawatt. Further, the municipality can manage, operate, and regulate local electricity distribution system and services. The roles were further made more specific and elaborated by the National Planning Commission Guideline, 2076, stating the LGs can implement and manage renewable energy (RE) projects up to 3 MW including RE in irrigation, drinking water, institutions and productive end uses.

The Constitution further defined the framework of fiscal federalism within the pattern of income and resource distribution; intergovernmental transfer modality being included in the Constitution. The National Natural Resources and Fiscal Commission (NNRFC) has been constituted at the federal level to make national level development plans and to recommend additional grants and loans for the sub national governments. Thus, the GoN on the recommendation of the NNRFC distributes fiscal equalisation grants (FEG) to the sub national governments based on their need for expenditures and revenue capacity. The province can also distribute FEGs to the local level falling under its domain from the grants obtained from the GoN and from its resources in accordance with the provincial law based on their need for expenditures and revenue capacity. The FEG is also allocated for programmes and projects related to infrastructure development that contribute to the balanced development of the relevant province.

Table 1: Lumbini Province – Key Statistics

Key indicators	Lumbini Province
Area	17,810 km ²
Population	<ul style="list-style-type: none"> ▪ 4,458,259 ▪ UM:2,321,272 & RM:2,136,987
Households	<ul style="list-style-type: none"> ▪ 861,726 ▪ UM: 472,137 & RM: 389,589
Electrification Status	91.00 %
Human Development Index (HDI)	0.468

Human Poverty Index (HPI)	31.6
No. of LGs	109
No. of urban municipalities (UM)	36 (including 4 Sub-metropolitan city)
No. of rural municipalities (RM)	73
No. of wards	983 (UM Wards: 456 & RM Wards: 527)

1.2 OBJECTIVE

To exercise the mandates provided under schedule 8 of the Constitution of Nepal and further clarified by Local Government Operation Act, 2074 and elaborated by National Planning Commission Guideline, 2076; the LGs allocate budget on RE considering its geographical area, HDI, HPI and electrification status. The policies and plans prepared based on comprehensive analysis of past trends and volume of budget can play significant role in the LG's sustainable development of RE. Thus, this analysis is made with a few objectives as below:

- To Identify the RE priorities of LGs in terms of their budget allocation from FEGs and/or internal source (IS) budget.
- To find the trend of RE budget allocation by LGs in last three consecutive fiscal years.
- Compare RE priority activities and budgets between urban and rural municipalities.
- To infer areas of improvement while allocating RE budget at LG level.

1.3 METHODS INCLUDING KEY TERMINOLOGIES

This analysis report was prepared using the local government's Red Book published under website of concerned LGs for the fiscal year of 2077/78. Available data were summed up, averaged, brought into percentage and ratio, listed up, and other statistical method applied for analysis. Data is presented with the help of suitable graphs and charts.

- 1 **Agri-electrification:** Priority of LG which includes works such as purchase of transformer, electric pole, conductor for line electricity extension up to farm lands solely for irrigation purpose such as lift irrigation.
- 2 **Electricity line extension:** Priority of LG which includes works such as purchase of transformer, electric pole, conductor for line extension solely for residential purpose such as household electrification.
- 3 **Human Development Index (HDI):** The HDI is a geometric mean of normalised indices for three dimensions of human development - Health is measured by life expectancy at birth; education is measured by mean of years of schooling for adult aged 25 years and more and expected years of schooling for children of school entering age; and standard

of living is measured by gross national income per capita. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI¹.

- 4 **Human Poverty Index (HPI):** The HPI introduced in 1997 is a composite index assessing three elements of deprivation -longevity, knowledge and decent standard of living. The HPI-1 measures poverty in developing countries whereby longevity is the probability of not surviving to 40 years of age, knowledge is adult literacy rate, and the third is the population percentage not utilising improved water source and percentage of children under-weight for their age.
- 5 **Internal source of revenue:** The revenue collected by LG themselves including local taxes, service charges, fees, rental income from buildings and facilities, interest income on municipal investment, and income from sale of municipal assets.
- 6 **Renewable Energy budget:** This document defines renewable energy budget are the specific budget allocated by the local governments for promotion, development and expansion of renewable energy as guided by the roles and responsibilities defined by the Constitution of Nepal 2015 and Local Government Operation Act 2017. Hence, this definition incorporates hydro up to 1 MW, distribution line up to 11 kV and other institutional and household renewable energy technologies and applications.
- 7 **Revenue distribution** is the method of distribution of budget that governments earn from Value Added Tax (VAT) and other taxes calculating the capacity of provincial and local governments contributing to the revenue.
- 8 **Matching fund:** Recipient government should finance specified (by law) percentage of expenditure share from their own sources within two types of norms - open ended (providing the matching fund without the limit) and close ended (matching the fund only up to a pre-specified limit).

¹ Taken from UNDP website, <http://hdr.undp.org/en/content/human-development-index-hdi>

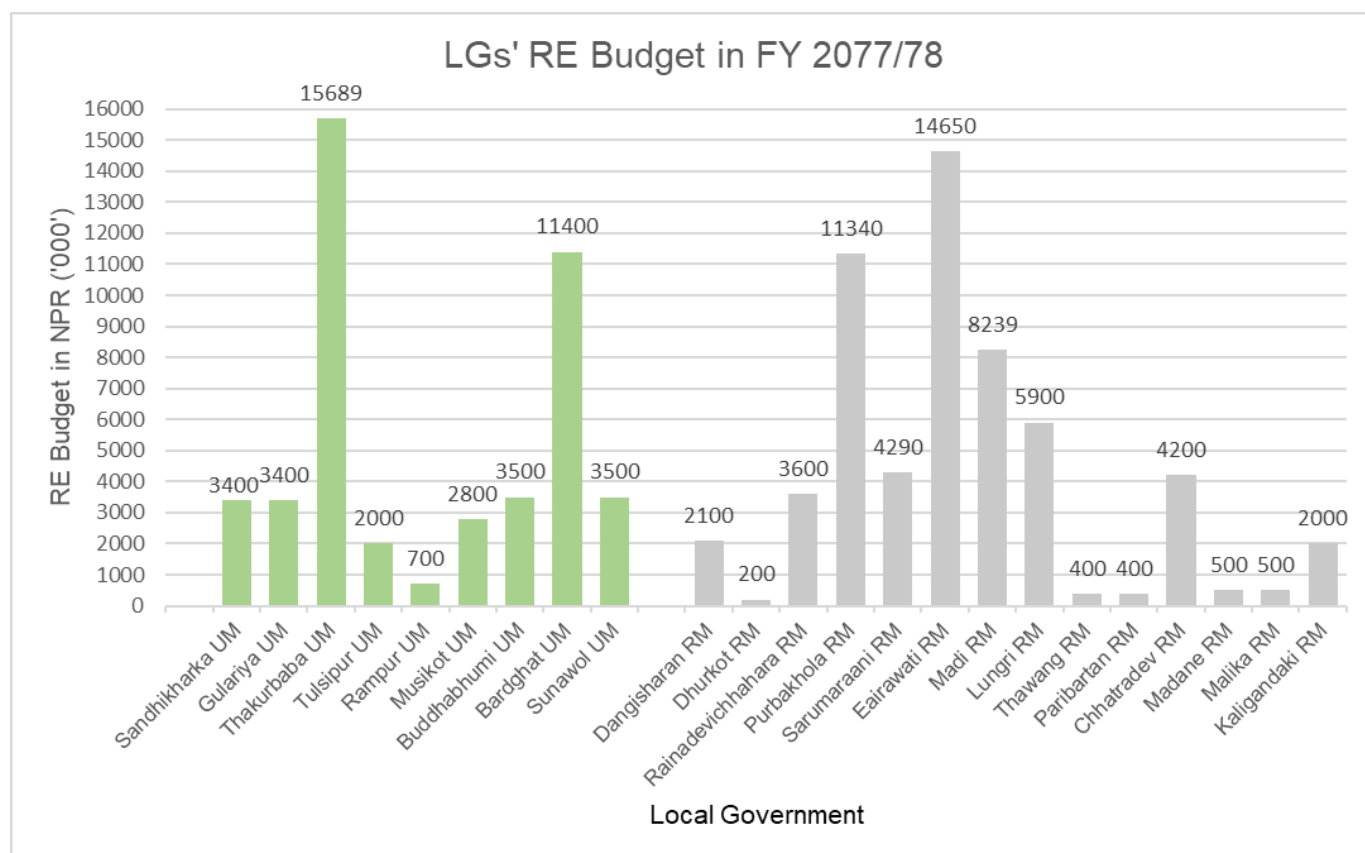
2. FINDINGS

This chapter contains details of RE budget allocated by LGs i.e. FEG and/or IS budget. Data collected refers to the budget allocated on energy related programs, infrastructure, RE and their productive uses. The data from FY 2077/78 were used to analyze renewable energy budget in current fiscal year while data from FY 2075/76 and FY 2076/77 were used for comparative analysis. Figures and charts are numbered for easy reference.

2.1 LOCAL GOVERNMENT'S RENEWABLE ENERGY BUDGET

Out of the total 109 LGs, only 23 local governments (9 UM and 14 RM) in FY 2077/78 had information on energy related budget in Redbook. The budget details are available in their annual development plan which were endorsed from municipal/rural municipal assembly. Among 23 such LGs which have information on RE budget; Chatradev rural municipality of Arghakhanchi district has found to have allocated matching fund of NPR 4 million in renewable energy sector. It was also found that 12 LGs have just published the policy and programs and one LG has uploaded budget speech only on their website for current fiscal year. However, it was found that 73 LGs did not have yet published their annual development programs and plan (Red book) on their website. Some LGs were found to have allocated RE/energy budget in bulk and thus they do not have disaggregated RE budget. Based on this information, the figure 1 below shows the budget of these sub-national government in RE/energy related activities.

Figure 1: Local Governments' Renewable Energy Budget in FY 2077/78



Some key notes of above:

- a) In FY 2077/78, LGs have allocated budget in renewable energy activities ranging in between NPR 0.2 million to 16 million.
- b) Amongst 23 sampled LGs; 9 urban municipalities have allocated renewable energy budget of NPR 46.389 million whereas 14 rural municipalities have allocated renewable energy budget of NPR 58.318 million. The cumulative renewable energy budget comes out to be NPR 104.708 million.
- c) Urban municipalities have average RE budget of NPR 5.154 million whereas rural municipalities have allocated RE budget of NPR 4.165 in an average.

2.2 LOCAL GOVERNMENTS PRIORITIES IN RENEWABLE ENERGY

Local governments in Lumbini province have allocated budget for 12 different types of renewable energy activities. They have chosen to allocate budget on RE activities such as mini/micro-hydro, solar street light, water lifting for irrigation or drinking purpose, household electrification, waste management, biogas and biomass. Based on this information, the figure 2 below shows the priority of these sub-national government in RE/energy related activities in terms of budget in decreasing order from left to right:

Figure 2 : Local governments budget in RE Activities

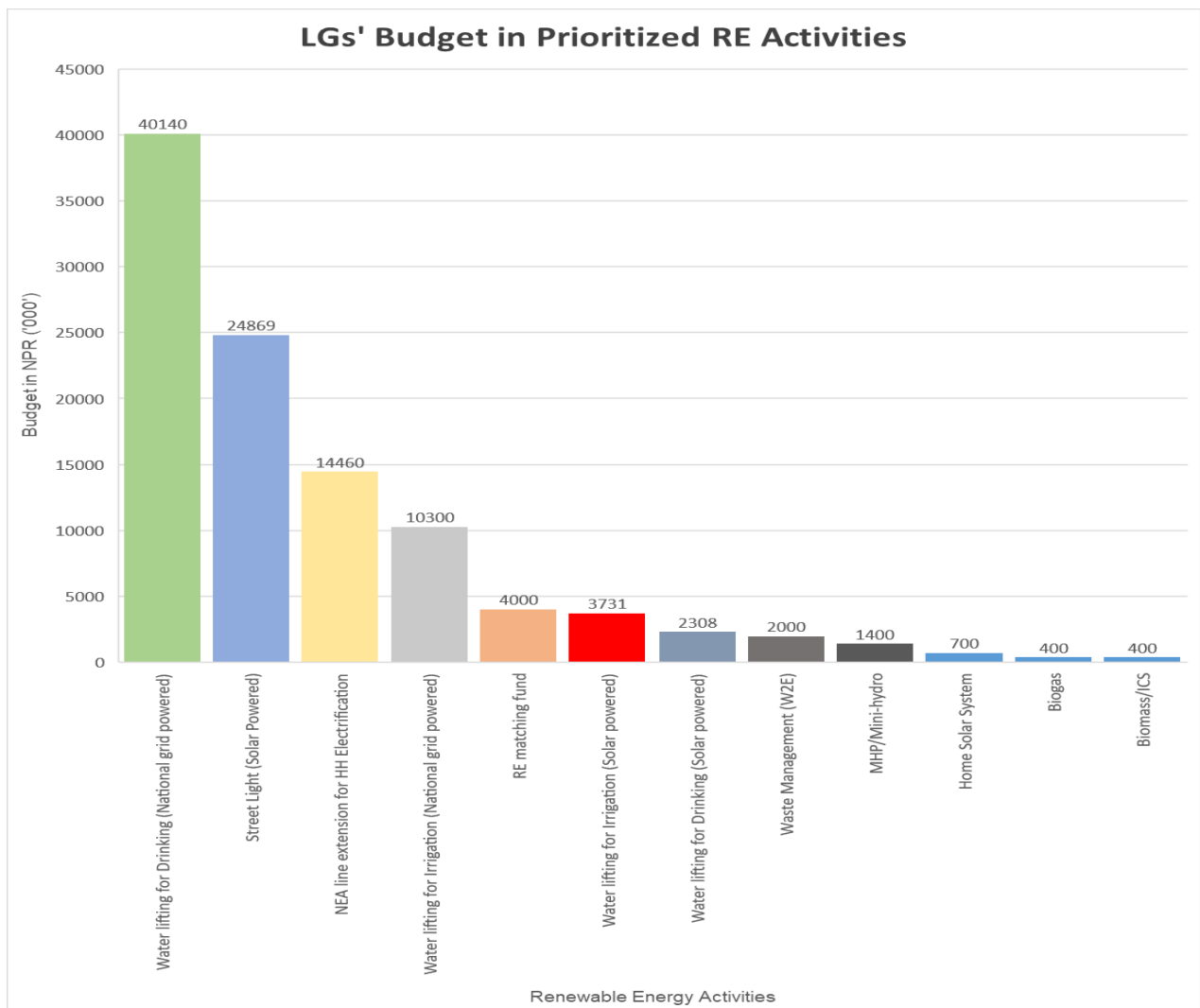


Table 2: Choice of LGs on Renewable energy activities

RE Activities	Number of LGs
NEA line extension for HH Electrification	14
Street Light (Solar Powered)	10
Water lifting for Drinking (National grid powered)	9
Water lifting for Irrigation (National grid powered)	5
Micro/Mini-Hydro	4
Home Solar System	2
Water lifting for drinking (Solar powered)	1
Water lifting for Irrigation (Solar powered)	1
Waste Management (W2E)	1
Biogas	1
Biomass/ICS	1
RE Matching Fund	1

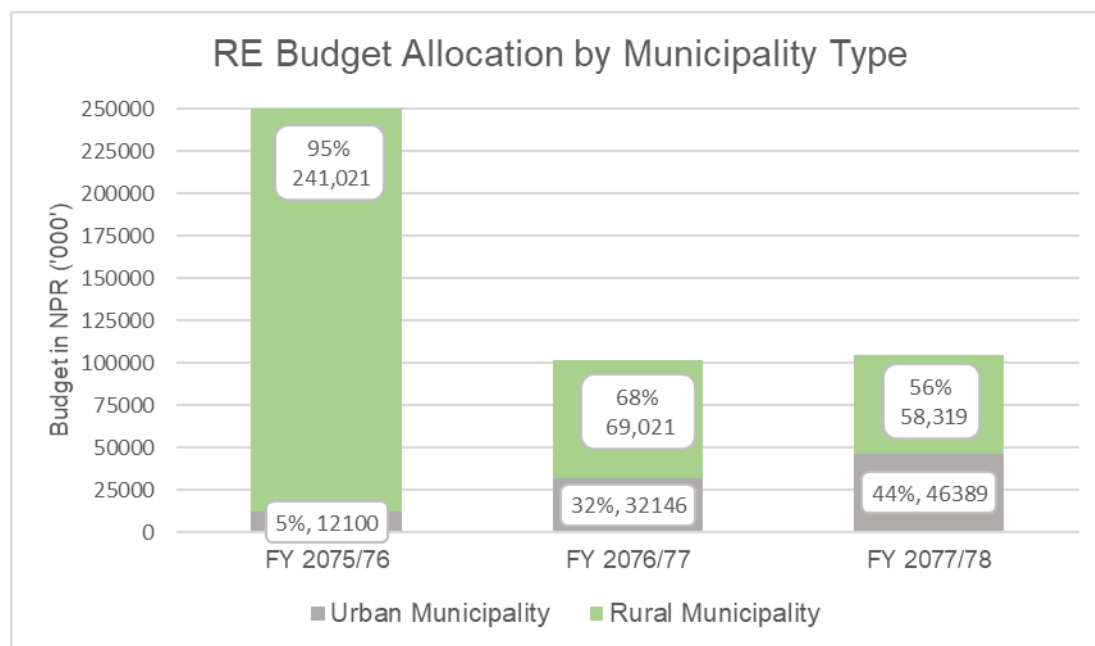
Some key notes of above :

- a) In FY 2077/78, electricity line extension for household electrification is the most popular as 60 percent of the sampled LGs have allocated budget in this category, followed by solar street light (43%), national grid powered drinking water (39%) and irrigation (21%) projects. Altogether 17% of sampled LGs have allocated budget for mini/micro hydro projects. The solar powered drinking water or irrigation projects have been paid least priority by local governments. The possible reason for choosing national grid rather than solar power for drinking water or irrigation purpose might be that significant improvement in electrification status of LG and discounted tariff rate offered by NEA for irrigation or drinking water purpose, ease of installation and less intital investment if powered by national grid or most of the LGs might be unaware of application of solar technologies in drinking water or irrigation purpose.
- b) In terms of budget allocation it was found that 38% of total RE budget of sampled LGs has been allocated for national grid powered drinking water projects followed by installation of solar street light (24%), household electrification through national grid extension (14%) and national grid powered irrigation projects (10%). However, it was found that just 4% total RE budget of sampled LGs has been allocated for solar powered irrigation projects whereas just 2 % of total budget has been allocated for solar powered drinking water. Nominal budget of below 1% of total budget has been allocated for home solar system, biogas and biomass.

2.3 TREND OF LOCAL GOVERNMENT'S RENEWABLE ENERGY BUDGET

This section provides a brief overview on share of urban and rural municipalities in total renewable energy budget and change in volume of renewable energy allocated by local governments in successive fiscal years based on renewable energy budget of sampled LGs available for different fiscal years. The information on renewable energy budget is available for 35 LGs in FY 2075/76 and 2076/77 while it is available for 23 LGs in FY 2077/78. Since the renewable energy budget of particular LGs might not be available for all three years, the disaggregated comparison of renewable energy budget might not be possible at this stage.

Figure 3 : RE budget allocation by municipality type in consecutive fiscal years



It can be seen that :

- Out of sampled local governments the renewable energy budget was highest in FY 2075/76; had major fall in FY 2076/77 by 60%. The renewable energy budget was slightly increased by 4% in FY 2077/78 despite the lockdown and priority shift into health sector for sub-national governments.
- In all three consecutive years the share of rural municipalities in total renewable energy budget is higher (i.e. above 50 %) in comparison to share of urban municipalities (i.e. below 50 %). However, the share of urban municipalities in total renewable energy budget is significantly increasing in recent years.

2.4 URBAN VS RURAL : RE CHOICE AND BUDGET SHARE IN PRIORITIZED RE ACTIVITIES

This section briefly describes the choices of urban municipalities compared to choices of rural municipalities amongst most popular six RE activities out of 12 RE activities explained above in section 2.2. It also explains the share of urban and rural municipalities in budget of most popular six RE activities (i.e. NEA line extension for HH electrification, Solar street light,

National grid powered drinking water and irrigation projects, Home solar system and Micro/mini-hydro projects.

Figure 4 : UM Vs RM ; Choice of RE Activities

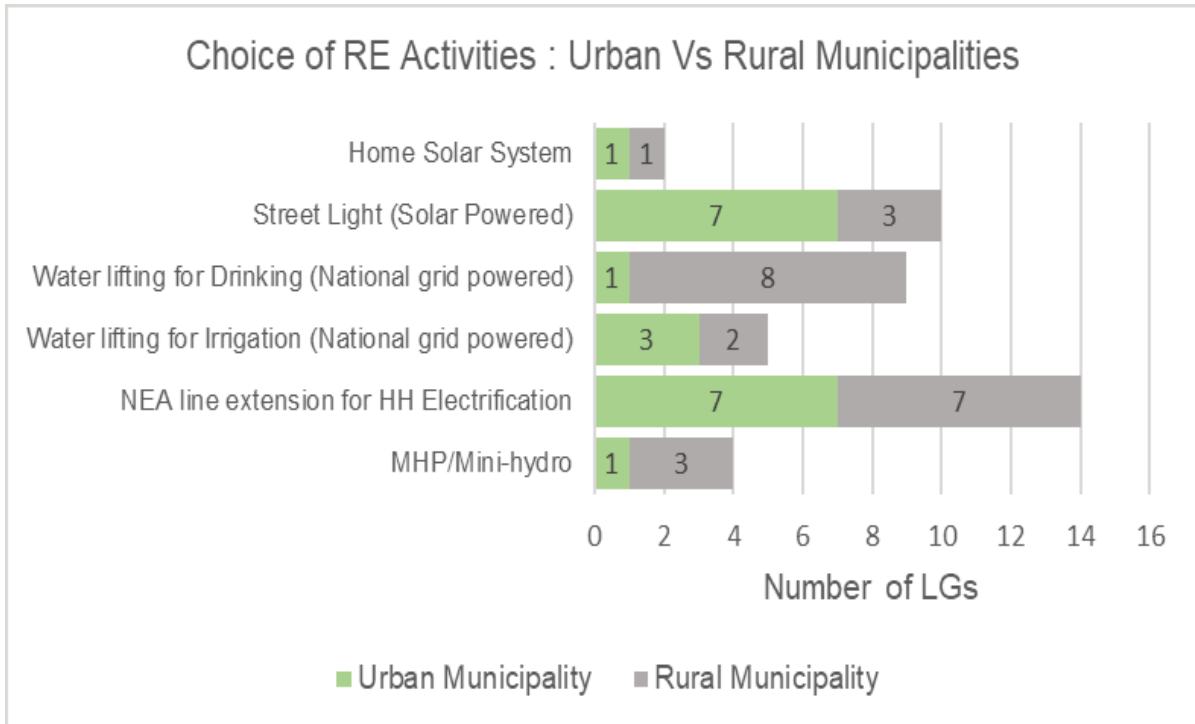
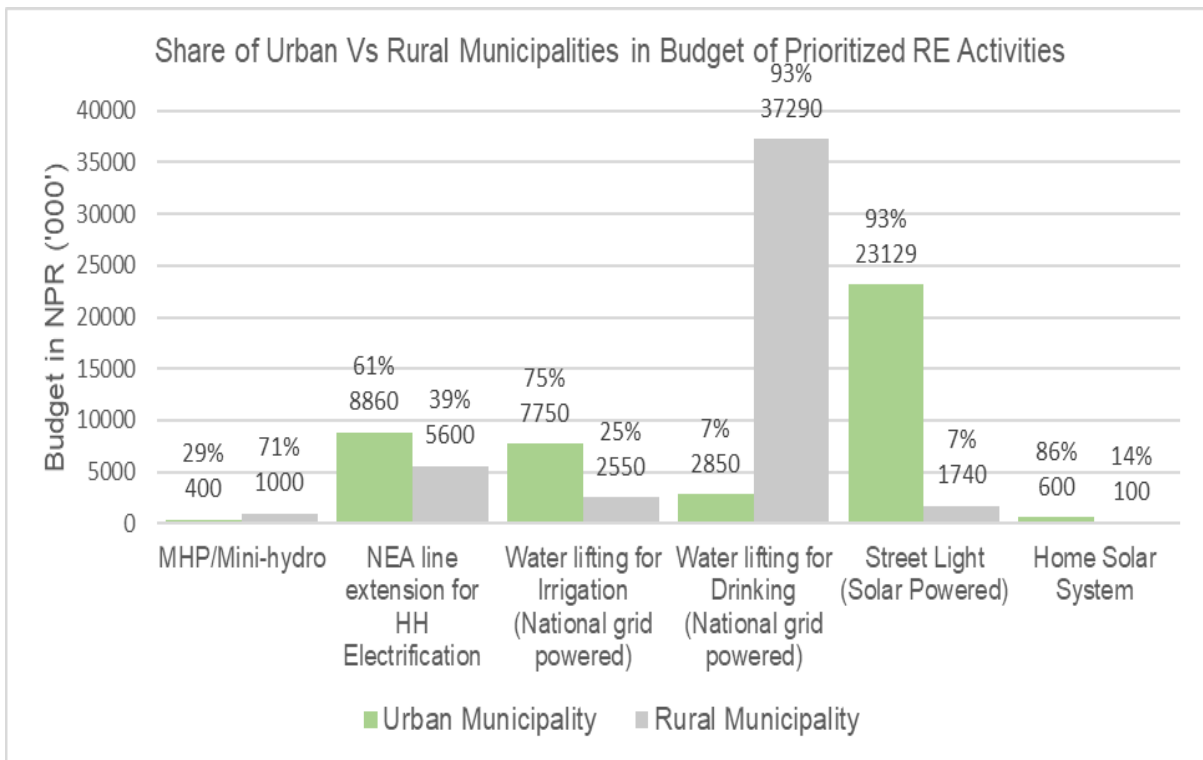


Figure 5 : UM Vs RM ; Share of Budget in Prioritized RE Activities



Some key notes of above :

- a) NEA line extension for household electrification is most popular RE choices among LGs and is chosen by equal number of urban and rural municipalities. However, in budget allocation for this activity, urban municipalities have allocated more budget than rural municipalities.
- b) National grid powered drinking water projects are chosen by most of the rural municipalities (8 out of 9 LGs for this choice) and have allocated more budgets (NPR 37.290 million out of NPR 40.140 million for this choice) than urban municipalities. However, it is interesting to note that national grid powered irrigation projects are popular choice among urban municipalities (3 out of 5 LGs for this choice) and they have share of 75 % in budget allocation for this choice.
- c) Solar street light is chosen by most of the urban municipalities (7 out of 10 for this choice) and have allocated more budgets (NPR 23.129 million out of NPR 24.869 million for this choice) than rural municipalities.
- d) Mini/micro-hydro projects are popular among rural municipalities while home solar systems are popular among urban municipalities in terms of budget allocation for RE activities choices.

3. RECCOMENDATION

- 1) The study so far has found that less than 25 percent of LGs have published their Red-Book on their website in current fiscal year. Thus, all LGs are recommended to publish their annual program and budget right after completion of seven steps planning process and endorsement of Red-Book from their municipal/rural assembly by the mid of July each year.
- 2) The LGs are mostly found to be focussing on small scale RE activities as per the budget. As they have mandate of planning, implementing and managing RE projects up to 1 MW, it is clear that this would not be an easy step to take but UMs in particular can be provided more support so that they can invest or finance larger RE projects up to 1 MW such as waste to energy, solar projects (land mounted or roof-top) and mini-hydro projects etc. This may in turn boost income for the LGs. For this, the budgets need to be significantly increased particularly from FEG or IS.
- 3) Opportunities for knowledge sharing, innovation and learning by inter LGs can also help to improve for development of RE and allocating the budget from FEG or IS.
- 4) Empowering Local government policy is essential to stimulate uptake of renewable energy technologies in rural areas, both on the supply and demand sides.
- 5) While materializing the renewable energy projects, it is recommended for local governments to focus on sustainable operation of RE projects rather than just quantifying RE projects each year.

Annexes

ANNEX 1: RENEWABLE ENERGY BUDGET OF LOCAL GOVERNMENTS IN FY 2077/78

S.No	Name of Palika	Type of Palika	District	MHP/Mini-hydro	NEA line extension for HH	Water lifting for Irrigation (National)	Water lifting for Irrigation (Solar)	Water lifting for Drinking (National grid)	Water lifting for Drinking (Solar)	Street Light (Solar)	Home Solar System	Biogas	Waste Management (W2E)	Biomass /ICS	RE matching fund	Total
1	Sandhikharka	UM	Arghakhanchi		450			2850		100						3400
2	Gulariya	UM	Bardiya		1300					2100						3400
3	Thakurbaba	UM	Bardiya		2160	5000				8529						15689
4	Dangisharan	RM	Dang			1400				700						2100
5	Tulsipur	UM	Dang		1050	750				200						2000
6	Dhurkot	RM	Gulmi		200											200
7	Rampur	UM	Plapa							700						700
8	Rainadevichahara	RM	Plapa		1000			2600								3600
9	Purbakhola	RM	Plapa		2500			8140		600	100					11340
10	Sarumaraani	RM	Pyuthan		1000			2850		440						4290
11	Eairawati	RM	Pyuthan			1150		13500								14650
12	Madi	RM	Rolpa				3731	2200	2308							8239
13	Lungri	RM	Rolpa		400			5500								5900
14	Thawang	RM	Rolpa	100	300											400
15	Paribartan	RM	Rolpa	400												400
16	Chhatradev	RM	Arghakhanchi		200										4000	4200
17	Madane	RM	Gulmi					500								500
18	Malika	RM	Gulmi	500												500
19	Musikot	UM	Gulmi	400	1000						600	400		400		2800
20	Kaligandaki	RM	Gulmi					2000								2000
21	Buddhabhumi	UM	Kapilbastu							1500			2000			3500
22	Bardghat	UM	Nawalparasi west		1400					10000						11400
23	Sunawol	UM	Nawalparasi west		1500	2000										3500
			Total	1400	14460	10300	3731	40140	2308	24869	700	400	2000	400	4000	104708