Opportunities in Micro Financing Renewable Energy Services in Nepal

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Abstract
Nepal is heading towards a crisis through its unsustainable energy use pattern. There is an overwhelming dependence on traditional fuels—fuel wood, agricultural residue and animal dung (accounting for 88% of primary energy use) and fossil fuels (accounting for 11.5% of primary energy use). This gives rise to adverse impacts regarding energy security, environment and human health. Therefore, there is an urgent need to substitute these energy sources with renewable clean energy sources. Fortunately, Nepal has a huge potentiality for promoting renewable energy technologies (RETs).

Access to adequate, affordable, reliable, safe and environmentally benign energy is crucial to achieving the Millennium Development Goals and for improving the lives of poor people across the world. Realizing the fact the Government of Nepal has given priority to promoting RETs and also provides subsidies. However rural poor are deprived of the benefits of the technologies and the government subsidy because they lack the ability to pay the upfront cost required to purchase such technologies.

Micro-finance Institutions (MFIs) can provide credit to rural poor for acquiring RETs. Proven technology, a strong quality control mechanism and favorable economics of the various RETs makes providing loans for them viable, reliable and bankable loan products for MFIs. A recent market estimate shows that there is an annual financing need of over 1 billion Nepalese rupees for small scale RETs, which can be an immediate market for MFIs in Nepal. As commercial/development banks are also looking for new investment opportunities, these financial institutions can also partner with MFIs to fulfill this demand.

Experiences in Nepal and outside show that interventions are necessary at both the demand and supply sides to promote micro financing of RETs. Demand side interventions include increasing awareness on technology and financing options, promotion of productive uses of energy for increasing income of the rural poor. Supply side interventions include capacity building of MFIs, wholesale financiers and energy companies; facilitating flow of funds from wholesalers to the MFIs; building working relationships among energy companies and MFIs; lobbying for favorable policy environment.

Key Words
Renewable energy technologies, Investment opportunities, Micro finance institutions, Commercial and Development Banks
1. Background

Access to adequate, affordable, reliable, safe and environmentally friendly energy is crucial to achieving the Millennium Development Goals (MDGs) and for improving the lives of poor people across the world. However, two billion people globally cannot afford clean, safe cooking fuels and depend on traditional biomass sources – having negative impact to their health and the environment. Whilst micro finance services targeting the poor have been successfully promoted in many developing countries, such services for promoting clean energy technologies has not been widely tried out.

Energy services are essential for socio economic development. Renewable energy (RE) has significant potential to mitigate global climate change, address regional and local environmental concerns, reduce poverty, and increase energy security. The challenge is to provide appropriate policy framework and financial tools to enable RE to achieve optimum market potential from being a marginal source energy supply into the mainstream1.

Renewable energy technologies (RETs) are best suited to supply the energy need of highly scattered remote rural households. Despite the huge potential of promoting renewable energy in Nepal, it is heading towards a crisis through its unsustainable energy use pattern. There is an overwhelming dependence on traditional fuels-fuel wood, agricultural residue and animal dung (accounting for 88% of primary energy use) and fossil fuels (accounting for 11.5% of primary energy use). This gives rise to adverse impacts regarding energy security, environment and human health. Therefore, there is an urgent need to substitute these energy sources with renewable clean energy sources.

Acknowledging the potential benefits of RETs, the Government of Nepal (GoN) subsidizes RET for rural households and communities in order to ensure wider and more equitable dissemination. However, the majority of rural poor remain unable to take advantage of government subsidies for RETs because they do not have ready cash on hand to purchase the system. This situation will become more acute in future since GoN plans to gradually phase out the subsidy scheme in RETs.

2. RETs and Financing Needs of the Consumer

As we look at the current RET installations, the majority of them are in more "affluent" and accessible rural areas. However to reach the RETs’s primary target of reaching the poorest of the poor in rural Nepal, innovative approaches are essential. The cost of RET system escalates due to increased transportation costs to remote, scattered villages. Such subsistence-based rural communities lack disposable income to pay the upfront cost of installation. Furthermore, with ever-decreasing government subsidy, there is immense demand for affordable means of credit from communities with limited purchasing power.

Vital to this issue is the unfortunate reality that the period of maximum RET subsidy went unnoticed by poor households as they were unaware about the technology, and were unable to bear the risk of investing additional money for RET systems. Now, as the rural households have become more aware of the RETs, the cost of the systems are steadily going up; yet, just as the poor have accumulated enough confidence to purchase the technology, government has planed to reduce subsidy on RETs over time. The role of affordable credit, therefore, has become vital in making RETs accessible to poor households. RET potential in rural areas, strategic location of micro finance institutions (MFIs) and the energy needs of the rural poor serve as drivers to promote micro

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financing of RETs in rural Nepal. Hence adequate motivation of MFIs is expected to result in large-scale financing of RETs through MFIs.

The definition of micro-finance covers all mechanisms to provide financial services to the poor. This includes micro savings, micro loans, micro insurance and money transfer. The loans can be for immediately productive activities, the case for most micro-finance loans, or for quality of life improvements. Renewable energy technologies, such as biogas and solar home systems, can provide substantial improvements in the life of rural households.

It is widely acknowledged that micro finance can play an important role in enhancing the economic opportunities available to the poor. Most micro loans are provided for immediately productive activities which help farmers to increase their income. This is important to improve the financial status of poor people. RETs, on the other hand, improve the well-being of rural households by providing them modern forms of household energy, which in turn provide multiple benefits with respect to health, education etc. Poor households that can not pay the upfront cost of systems need credit so they can pay for systems over a longer period. MFIs can provide loans for systems cost-effectively in rural communities. For large numbers of poor people to receive access to modern energy services for cooking, lighting and television, MFIs must be convinced that the available technologies are appropriate for poor rural users. They must also be convinced that their clients can pay for systems either from increased income as a result of installation of systems or from other sources.

3. Financing Opportunities in RET Markets

With the aim of encouraging MFIs to view RETs as attractive loan products, studies have been carried out by Winrock International, Alternative Energy Promotion Centre (AEPC), Biogas Support Program (BSP) and Centre for Rural Technology/Nepal (CRT/N) to provide both technical and financial information about RETs. These studies have indicated a huge market potential in RET micro financing.

The following table presents the investment potential in various RET sectors.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Potential Installed</th>
<th>Annual Target</th>
<th>Total investment/year (NRS ,000)</th>
<th>Subsidy/year (NRS ,000)</th>
<th>Potential for loan/year (NRS ,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biogas</td>
<td>1.9 million 184,000</td>
<td>22,000</td>
<td>550,000</td>
<td>176,000</td>
<td>374,000</td>
</tr>
<tr>
<td>SHS</td>
<td>2.4 million 95,000</td>
<td>20,000</td>
<td>500,000</td>
<td>200,000</td>
<td>300,000</td>
</tr>
<tr>
<td>Solar Tuki</td>
<td>2.4 million 60,000</td>
<td>25,000</td>
<td>112,500</td>
<td>31,250</td>
<td>81,250</td>
</tr>
<tr>
<td>IWM</td>
<td>25,000</td>
<td>1255</td>
<td>37,650</td>
<td>15,060</td>
<td>22,590</td>
</tr>
<tr>
<td>Micro Hydro</td>
<td>10 MW 3,250KW</td>
<td></td>
<td>650,000</td>
<td>276,250</td>
<td>373,750</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>1,850,150</td>
<td>698,560</td>
<td>1,151,590</td>
</tr>
</tbody>
</table>

MFIs are strategically located in rural areas and have proved their easy access to rural population through their simple policy and procedures. Moreover, these institutions are mostly focused on financing income-generating activities. The studies have established RETs as a viable area of
investment for MFIs, and suggests that increased MFI financing is justified because of the following reasons:

3.1 RETs are creditworthy

- **Huge market potential:** The majority of Nepal’s population lives in rural areas, and energy is viewed as a means of fulfilling social and economical objective of the rural population. In this context, the promotion of appropriate energy is essential to meet the basic needs of the communities for cooking, lighting etc. Energy is also essential to meet the social objective of alleviating human drudgery, and required to sustain and support economic activities. In Nepal, RETs are the best means of supplying reliable, quality and cost efficient power to consumers in scattered remote rural households. In addition, the government, donors, INGOs and NGOs are presently all promoting RETs. With the right design, and products and services focusing on rural areas, RETs promise to be a very lucrative new market for MFIs.

- **Robust and Well proven technologies in Nepal:** RETs, especially hydropower, biogas, solar thermal and solar PV, are tested and trusted technologies in Nepal. Around 10MW of power is being produced through pico and micro hydro power systems. More than 100,000 households have been electrified with solar PV systems. More than 184,000 biogas plants have already been installed in more than 66 districts. RETs have gained immense popularity, with the demand increasing day by day. RETs have been established as a robust and dependable technology. Trained technicians, operational support and advice and spare parts are easily available. The technologies are particularly suitable for the rural community as they utilize the natural resources, and the systems cost is directly proportional to the energy required.

- **Relatively simple to operate:** With the exception of hydropower, RETs do not have significant maintenance requirements. Manufacturers provide basic training to consumers to enable them to undertake routine repair and maintenance themselves.

- **Guarantee mechanism:** Most RETs manufacturers and suppliers provide guarantees for their systems. In the case of solar PV, suppliers provide a 2 year guarantee from the date of installation for the complete module. Similarly, biogas suppliers provide a 3 year guarantee for construction.

- **Multiple uses of the technologies:** RETs have many end uses such as for cooking and lighting, and to power telecommunications equipments, entertainment (radio and television), household electrification, health clinics, water pumping, milling and grinding and many other productive uses.

- **Environment friendly:** RETs are environment friendly technologies, and have various environmental benefits that depend upon the technology itself.

3.2 Portfolio diversification

MFIs should offer new services to cater to the changing needs and demands of members to ensure growth and sustainability. The introduction of RET loan products provides MFIs an opportunity to integrate credit with other services for the socio-economic benefit of members and the society. Portfolio diversification also means risk diversification. The lending is distributed in small amounts among numerous micro entrepreneurs. In most countries, the main characteristics of microfinance institutions are their excellent repayment rate and thus their high solvability.
3.3 RETs can provide significant benefit to borrowers

Many MFIs are guided by social objectives that encourage them to work for socio-economic welfare of their members. One way to meet the social objectives is by financing RETs in order to increase the access of the rural population to clean energy technologies. RETs have various direct and indirect benefits.

| Mobilizing Micro Finance to Improve Access to Renewable Energy Technologies for Poor Households |

Winrock works to promote clean energy services to poor households through access to micro finance and supports additional livelihood enhancement by promoting small and medium enterprises using clean energy. Winrock has been working with rural poor households, the government, micro finance institutions, energy companies, other financial institutions to develop market mechanism to benefits all of these stakeholders. Winrock’s microfinance support program in Nepal includes capacity building and building linkages between Microfinance Institutions (MFIs), energy companies, the Alternative Energy Promotion Centre and commercial banks. Winrock also managed to influence government policy to include energy sector as a priority investment sector for microfinance.

Winrock’s Microfinance Capacity Building Program, funded by the USAID, has built capacity of 400 MFIs to support for clean energy promotion to poor households from 2003 and 2006. Winrock has developed several guidebooks and manuals, and published newsletters catering to MFIs and potential biogas adopters. This Program catalyzed 150 MFIs to provide loans exceeding one million US Dollars to 5000 poor households to construct biogas plants. An additional 700,000 US$ was also mobilized from these households’ contributions and government subsidy for these biogas plants. A sample study of 100 of these biogas adopters in 2006 has shown that there has been an average increase of 8837 rupees per household per year from the sale of biogas slurry and the sale of increased vegetable production through the use of slurry. Winrock supported WWF Nepal to link microfinance and energy technology promotion based on the lessons from this Program.

Winrock also promoted micro-finance to help poor households connect to electricity supply and to develop small and medium enterprises through another USAID funded project entitled “Conflict Mitigation through Community Based Rural Electrification”, from November 2005 to November 2006. Winrock worked with two Rural Electrification Community Organizations (RECOs) to build their capacity to also operate as a microfinance institution. They provided micro credit to 155 poor households connect to the national electricity grid and 189 households to establish small and medium enterprises and run income generating activities. These two RECOs provided the credit of total worth of $40,000. Winrock's enterprise development capacity building works with rural households to support them to analysis the total value chain from input suppliers to the end users.

Winrock supported the establishment of the Clean Energy Development Bank and its capacity building in Nepal through an USAID supported project entitled “Technical Advisory Services to the Clean Energy Development Bank. Winrock has helped the development of the Bank’s policy and procedures to work with rural micro finance institutions and other financial intermediaries to provide micro finance access for acquiring clean energy systems and for using energy for income generating activities.
4. Financing models

Various countries have practiced different models of financing RETs based on the local conditions. The following are some models which are relevant in our country.

Micro-financing

The poor households in rural areas are heavily dependent on either traditional sources of energy, or on expensive and increasingly scarce fossil fuels. The majority of these communities lack the upfront capital to afford modern energy technologies. This does not only apply to decentralized renewable systems, but also the cost of connection to the grid line. Micro financing for RETs will therefore enable the poor access to such beneficial energy technologies.

As stated in the case above, MFIs in Nepal indicate a gradual progress in this direction. More than 150 MFIs have been financing biogas and other renewals. Nirdhan Utthan Bank, Purbanchal Grameen Bikash Bank, Sahara Savings and Credit Cooperative, Karnali Savings and Credit Cooperative are good examples of MFIs involved in RET financing. Examples in the region include Sarvodaya Economic Enterprise Development Services (SEEDS) in Sri Lanka. SEEDS has pioneered a successful example of micro financing of solar home systems. In coordination with private solar companies, SEEDS has already financed over 70,000 solar home systems.

Franchising

MFIs in remote areas are strategically located close to the RET customer. However these institutions may not have adequate funds for financing such systems, and may also be viewed as not credit worthy by commercial banks. The franchising model can work effectively in such cases.

The MFI provides loan origination and administration services on behalf of the bank, and functions within a clearly defined guideline framework. It leverages its proximity to the client base and utilizes relevant methodologies and local staff. In this structure, the MFI facilitates the loan process by selecting clients and monitoring loans; the loan is carried on the bank’s books alone. Incorporation of the entity is uncomplicated since it functions as a service provider as opposed to a financial intermediary. Fees paid for the services rendered are linked to disbursements and recoveries.

ICICI bank in India has successfully practiced this model in generic micro finance schemes. With proper orientation to both commercial banks and MFIs, this can be replicated in financing RETs.

Revolving funds

The “revolving fund” is a fund established to finance a cycle of operations through amounts received by the fund. The funds are designed in such a way that the interest income covers the management cost. Members of the group select the management committee for its efficient and effective management. A number of members obtain loans and pay back as per the rules and procedures established. The next set of members obtain loans as the former group pays it back, and it goes on revolving thus among the members. Such funds are generally used for financing income generating activities. With proper orientation and training, funds can also be used for financing modern energy services.

Revolving funds have been established to finance the purchase of small photovoltaic systems in developing countries. WWF Nepal has established a revolving loan fund for financing biogas plants in its program area. WWF is working through cooperatives and community forest users
groups. In several parts of the country, many community forest users have established revolving funds for financing renewable energy systems mostly biogas plants. Solar Electric Light Fund (SELF) has shown these funds can be very successful given a small amount of start-up funding for purchasing PV home lighting systems.2

Vendor financing

In this model, energy service providers sell the system in credit and collect regular installments from users. Such models are appropriate in areas where the presence of financial institutions is negligible, or where the service provider coverage area is very high. This model has been used for financing solar home systems in many parts of the region.

Grameen Shakti in Bangladesh is an energy company that sells its products and services on credit, and collects regular installments. It has successfully installed over 100,000 solar home systems in rural Bangladesh. Few solar companies like Rural and Alternative Energy Pvt. Ltd, Tahanu Nepal has also started this model in a small scale. This company and some other solar companies are now planning to expand it in various parts of the country.

Leasing

This model of financing energy services allows consumers to pay monthly fee for the energy services rather than buying the system. The system service provider provides guaranteed maintenance and reliable energy services.

Grameen Shakti in Bangladesh has a leasing model called micro utility. It is targeted at communities unable to purchase the system at a single go. GS provides the system without upfront costs, on condition that users share the power with other neighbors within the technical limit of the SHS. The owner of the system pays a monthly installment to GS, and collects a load charge from the other users according to the load capacity used. 50% of installment generally comes from this power selling mechanism.

5. Conclusions

Nepal has a huge potential for promoting RETs as cost effective means to provide energy services to the poor in the remote villages. Once MFIs are convinced about the credit worthiness of RETs, they can provide affordable credit to rural clients to access these highly beneficial technologies. Commercial banks and other development banks can also take advantage of this enormous potential market by means of MFIs as their intermediaries.

6. Recommendations

The following recommendations can be drawn to accelerate RET micro financing in Nepal.

- RETs are bankable loan products for MFIs and there is huge market for financing RETs which not only improve the quality of life of the rural poor but also be a means for income generation through their productive uses.

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• Capacity building is essential to attract MFIs into this sector. Capacity building efforts need to be done for MFIs as well as energy service providers so that they can complement each other to increase both their businesses.

• Related government agencies and program for RET promotion should give special attention towards increasing access of poor households in the RETs through facilitating microfinance access.

• Provision of guarantee fund and similar mechanism would be useful to build the confidence of commercial/development banks to provide wholesale loans to MFIs.

References


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