PACE

Public Private Partnerships for Access to Community Electricity

Case Study: Small Hydropower Scheme, Tehrathum, Nepal

Background

Tehrathum is a small district stretching 697km^2 in Eastern Nepal, with a population of 114,000, and a relatively high literacy rate of 61 per cent. The district's main food crops include rice, maize, millet and wheat, while cash crops include oilseeds, potatoes, tobacco and cardamom, which only recently became a favorite among the farmers. The local communities also keep livestock including cattle, buffalo, sheep and goats.

Table 1: Details of Tehrathum District

Number of households	20,000
Electrified Households	807
Population	114,000
Number of males	55,970
Number of females	58, 453
Electricity tariff	Rs. 6.80 a unit

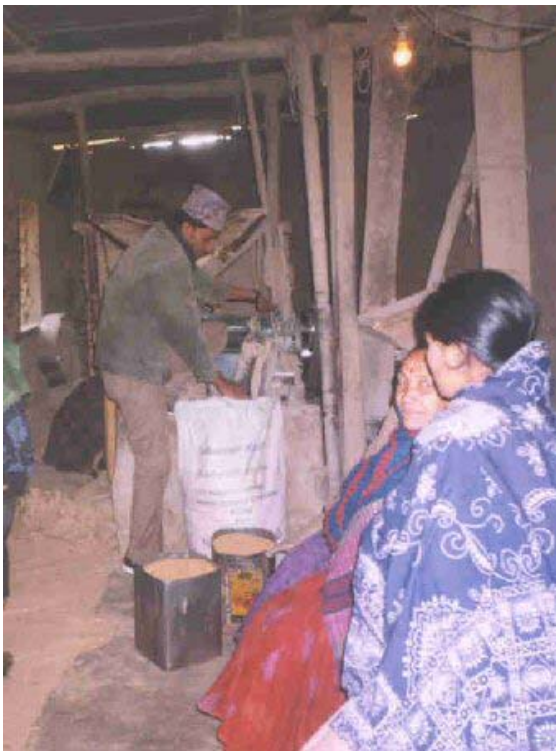
Though small in size, Tehrathum ranks among the ten most developed districts in Nepal, and boasts a per capita food surplus of 99 days. Firewood is the main energy source although the district also uses hydropower and biogas, both of which are being promoted and strongly supported by the UNDP's Renewable Energy Development Program (REDP).

Tehrathum's electricity supplies are generated by an off-grid small hydropower plant built in 1989 with a capacity of 100KW and also from the central grid. The plant provides power to the district's administrative centre and to six surrounding villages. The hydropower plant was built by the Government of Nepal as part of its policy to extend electricity to all the district administrative centers. With a total of 800 customers, the electricity supply is often disconnected in the evenings to avoid plant overload. Apart from the hospital, the army and the police quarters, customers experience load shedding every other day.

Although the national electricity grid has finally reached the district, this has not yet been synchronised with the hydropower plant. Power is supplied either from the grid or from the small hydro depending on the load. This has reduced load shedding to three days a week as grid electricity substitutes the locally generated electricity during peak hours.

Financing

Construction of the hydropower plant in Tehrathum was jointly funded by the Governments of Nepal and Japan, with technical assistance and construction equipment coming from Japan.



A mill uses electricity for operation and lighting

Public-Private Partnerships

Although the electrification of Tehrathum was initially a government-run venture, the government decided to lease it to the private sector since it was losing money on running the plant and as a step towards private sector involvement in the power sector.

In 1999, the management of the hydropower plant, including distribution activities and revenue collection, was contracted to a private sector company – Singha Bahini Bidyut (SBB). SBB leases the system from the national electricity utility, Nepal Electricity Authority (NEA), and is also responsible for the repair costs. Although relations between the SBB and NEA have been difficult at times, the benefits of co-operation remain quite evident:

- NEA is now receiving an income instead of making a loss.
- More local people are employed in running the system than under NEA management.

- The performance of the system and, therefore, the quality of service to customers, has improved.

Access to Electricity

Livelihood benefits – *Direct Consumers*

Electricity breathed a new lease of life in Tehrathum district, with most households expressing satisfaction with the reliability of the service. However, with continued load shedding (for two and a half hours each time), complaints are not surprising. The majority of consumers in all income groups considered the price of electricity to be reasonable, and some were willing to pay more for an improved service.

All the customers surveyed (100%) said they mostly use the electricity for lighting and security, while 84 per cent said they also use it for radio and television. Another 48 per cent said they use it for cooking, while some 30 per cent said they use it for refrigeration. At least 12 per cent of the consumers use electricity for telecommunication purposes. Interestingly, none of the customers use electricity for direct income generation, and the consumption pattern shows that most customers are mostly interested in improving the quality of their lives.

Table 2: Use of electricity by households

	% of sample
Cooking	48
Refrigeration/Freezing	30
Lighting	100
TV and/or Radio	84
Telecommunications/IT	12
Security	100
Productive Uses	0
Other	25

Commercial and institutional users

Like households, institutions and commercial establishments mostly use electricity for lighting and security. However, access to electricity has improved institutional efficiency following the acquisition of photocopying machines, fax machines and computers. Most institutions and commercial users (88%) think the price of electricity is reasonable, and all of them said they would be willing to pay a higher price for better services. Institutions include schools (235), colleges (2), hospitals and government offices.

Computer teaching schools are also cropping up, and IT service companies are increasingly extending services to Tehrathum. Industries have also increased from six, four years ago, to ten today. Commercial users are the backbone of the district, and include mills, hotels and restaurants, among others. The service area has seven mills which provide various services such as grinding grain, hulling rice and expelling oil from oil seeds.

Benefit:

Milling is labour intensive and a very onerous task that would have to be done by women if there was no electricity to run the mills.

Livelihood benefits – *Indirect Consumers*

Households without electricity agreed that they are still able to enjoy the benefits of electrification, and are optimistic that they too will soon get connected. Although employment opportunities have not improved after electrification of the district, the community believe that they have benefited through better services, access to telecommunications, and lower prices for goods and services.

Both men and women mentioned health and education as the areas in which they have mainly benefited. Interesting to note is that a significantly higher proportion of women than men attributed the improvements in their livelihoods to electricity. This is probably because electricity has made it easier to carry out tasks such as rice hulling which they would otherwise have done manually. The introduction of office electronic equipment namely photocopiers, fax machines and computers has also widened the scope of opportunities for business as communication with the outside becomes easier.

Conclusions

Tehrathum district provides an example of how private sector management by the public sector can increase the performance and quality of service. Other key lessons and conclusions from this case are as follows:

- As electricity becomes available and is used for more and more purposes, this can lead to the establishment of new services that depend upon a reliable and quality service.

- For community electrification schemes to be sustainable, it is likely that investment will be required to improve and develop systems to ensure that the needs of all users can be met.

- Income generation for poverty reduction can be a slow process. For electrification to be effective in creating employment opportunities, attention needs to be paid to other aspects of the local economy such as skills, raw materials and markets.

DFID

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