



Beyond user committees – Towards cooperative business models for MHPs in rural Nepal

Powerhouse of the MHP Nisi Kohla II.
(Photo: Winrock, 2023)

Introduction

Over the past thirty years, numerous Micro Hydropower Plants (MHPs) served the electricity needs of remote mountain communities without access to the grid. As these technical systems were set up, local community-based organisations (CBO) emerged. These groups not only contributed labour and finances for infrastructure construction but also developed technical and managerial skills to operate their decentralised power systems.

Nowadays, communities still maintain and operate MHPs through user committees. When the MHPs were constructed, communities received active external support and capacity building. The required financial support was provided along with intensive support for the planning, construction, installation and commissioning of the systems.

However, aging equipment and frequent canal damage have led to reduced power generation by many systems. In addition to this, a lack of technical expertise and funds for maintenance have further complicated their ability to provide reliable service.

In order to ensure the sustainable, long-term operation of MHPs, the systems must be technically robust and well-managed. This factsheet proposes transforming MHP user committees into business-oriented models that support the sustainable, long-term operation of these systems as a potential solution.

Shifting from user committee models to cooperatives

Many MHP user committees in Nepal, organise the tariff collection and employ the staff to operate the plant. Experience from working closely with many user committees has shown that increasing the electricity consumption by promoting productive end uses is not a priority as long as the tariff collection is sufficient to cover the cost of operation. It is not uncommon for MHPs to only supply power during peak domestic load hours and shut down the systems during off-peak hours. One motivation on the part of operators and user committees is to protect the turbine and generation machinery against wear in order to prolong their lifespan. The lack of incentive to increase electricity consumption leads to underutilised MHPs. On average, only 20% of the electricity generation capacity of MHPs is utilised in Nepal, meaning that their revenue is insufficient to operate the plants sustainably¹.

In addition to this, many committees lack managerial skills and proper governance procedures. This has often led to opaque decisions and in some cases misuse of resources, which in turn reduces trust in and support for them within the communities, and hampers the financial and operational sustainability of the systems. Complaints are also common regarding the lack of proper inclusion of women in decision-making and operation. In general, these kinds of community-based models offer great opportunities to promote gender and social inclusion at the very local level. However, more efforts appear to be needed to establish appropriate procedures and develop skills to positively impact the inclusion dimension.

Transforming the operational model of MHPs from user committees to cooperatives provides clear incentives to increase the utilisation of electricity, professionalise their management, improve their governance structures and procedures, and generate profits to improve the livelihoods of the communities. Cooperatives, for example, can distribute dividends to their members, making it profitable to promote increased electricity usage. Members of cooperatives are more open to increasing salaries and benefits to operators and other staff members, thereby encouraging members to stay in their jobs when the cooperative is in profit. Moreover, cooperatives are required to implement and report on transparent consultation and decision-making procedures that involve all their members. The experience of Renewable Energy for Rural Livelihood (RERL) (a project of the Government of Nepal that looks to scale up the development of renewable energy projects in the country) has shown that the shift from a user committee model to a cooperative model can encourage members and staff to put greater effort into selling more electricity and generating more revenue. RERL's experience also indicates that, while the change in registration is important, projects also need their technical and managerial capacity to be strengthened significantly in order to be fully transformed into an effective MHP cooperative.

Management and operation

A cooperative provides a structured entity within the organisational framework where the communal dimension remains integral, thereby establishing close links to community-based organisations. However, cooperatives can also be for-profit organisations aimed at operating profitably whereby revenue surpluses are distributed as dividends among the members in proportion to their shareholding within the cooperative during the fiscal year (after interest on loans has been paid). Cooperatives provide services to their members (which can be individuals or corporations), in this case electricity. They are owned by the users of the service and can range from cooperatives for mini or micro-sized hydropower to large hydropower systems.

In detail, an MHP cooperative uses a threefold organisational structure. Its **members** are owners and users of the MHP, contributing to the initial investment cost through their capital share and finance operation through the set electricity tariffs. As the electoral body, the members elect a Board of Directors, usually consisting of 7-15 members. Appropriate representation of women and marginalised social/ethnic groups should be ensured within this body. The **Board of Directors** is responsible for general guidance and control of the cooperative's affairs. As such, it decides on the tariffs, the shareholder dividend, the acceptance of new members, and hires the MHP's management. The board is accountable to its members and reports on the status of the cooperative at regular intervals. **Management** is accountable to the board. They are in charge of the day-to-day operation of the technology, consisting of three areas: reading the users' meters, operating the MHP system itself, and handling financial and administrative responsibilities².

Socio-economic and sustainability impacts

Transforming MHPs into business-oriented organisations can have significant impacts on the socio-economic situation of their communities, in particular, when the financial model and improved technical reliability creates favourable conditions for productive uses of energy.

Many communities in rural Nepal face the challenge of outward migration, mostly to urban centres within Nepal, as well as to Malaysia, India and the Gulf Countries. Young men in particular from mainly agricultural areas seek higher wages elsewhere. The last available national census revealed that out of 55 hill and mountain districts, 36 showed a declining population rate³. This has profound impacts on the livelihoods of communities. On the one hand, remittances can improve the economic situation of communities in the short term.

Cooperative Business Models for MHPs

On the other hand, women often have to replace the lost labour on farms. This adds to existing gender inequalities because women are already responsible for most of the care work, therefore facing a double burden.

MHPs as cooperatives with improved, reliable service allow for productive uses of energy. Small and medium sized enterprises can benefit from stable and reliable electricity provision, lower prices and favourable tariffs during off-peak hours. This can foster new employment opportunities in rural areas, which in turn can reduce the need to migrate

Scaling-up potential

With the Nepalese government investing significantly in expanding the national grid to even the remotest parts of the country, MHPs that are not operating in an economically viable manner are under pressure to move from the user committee model to a commercial model in order to increase the systems' economic viability so as to ensure their long-term operation through grid interconnection.

Nevertheless, there are hurdles to overcome when it comes to expanding implementation of the solution. It requires robust managerial skills to ensure that the systems operate economically and effectively. Moreover, the MHPs management and operation team requires technical proficiency to deliver the quality of service required and sustain the cooperative's profitability. Making sure these conditions are met entails two things:

- a) initial investment in training and capacity building that improve the organisational structures and build the skills of cooperative members to take on the different roles needed (e.g., board, management, technical operation and maintenance) and
- b) a long or medium term scheme to support the local communities through the transition process which might include regular follow-ups and timely advice from various professionals as well as regular opportunities for peer-to-peer exchange among MHP cooperatives to accelerate the learning curve by sharing and comparing their own experiences.

The transformation from a user community to a business-oriented model requires the involvement and co-operation of all relevant stakeholders. Key local actors include the MHP management committee and officials, local government representatives, representatives of the wards, and user groups (such as community forest groups, women's groups and farmers' groups) The scaling-up of this solution also requires significant involvement of diverse actors at the national level.



Woodworking shop in the village of Nisi, in Baglung, Nepal, which is powered by the local MHP Nisi Khola II. (Photo: Winrock, 2023)

In the case of Nepal, a set of entities and programmes that can support this type of solution are currently in place, for instance: The Renewable Energy for Rural Livelihood (RERL) project which has been providing capacity building training to the MHPs it supports. Similarly, the Nepal Renewable Energy programme has established a Sustainable Energy Challenge Fund (SECF) under the Ministry of Energy, Water Resources and Irrigation (MoEWRI), implemented by the Alternative Energy Promotion Centre. The SECF supports commercially viable MHPs for grid interconnection and system improvement including required capacity building training by providing up to 50% of the capital costs. GIZ's Renewable Energy and Energy Efficiency Program (REEEP) has also joined the SECF and provides similar support to MHPs. Moreover, the private sector represented by the National Association of Micro Hydropower Developers (NAMHD) also has a natural interest in supporting this kind of solution, which strengthens the country's whole micro hydropower sector.



Tarakhola MHP (Photo: Winrock, 2023)

Case study

Tara Khola Mini Hydropower Plant, Baglung Capacity: 380 kW

The 380 kW Tara Khola Mini Hydro Project I showcases the tangible benefits of business-oriented MHP models for the local community post-grid connection. Initially, the system was promoted by a user group with nine executive members. However, despite the efforts of the executive members, the user group was not able to collect the amount needed for the system to be financially viable. The beneficiaries of the system then took the decision to develop it through a company with all 1,700 beneficiaries as shareholders. This way, they were able to collect enough equity to co-fund the project. In 2021, the plant provided regular electricity to 1700 households, 45 slate industries, four carpentry businesses and twelve sawmills. These productive uses have generated employment opportunities for over 300 men and women, fostering local prosperity. In addition to this, the project's integration into the national grid through a Net Metering Agreement with Nepal Electricity Authority (NEA) has not only ensured a reliable electricity supply but also enabled the company to generate income through electricity sales, further contributing to its sustainability and the economic well-being of the community⁴.

Lessons learned from IL Nepal

Favourable organisational models for MHPs in Nepal

The cooperative model is most favourable for MHPs in Nepal, promoting community involvement and financial stability. However, the success of any model, whether a cooperative or a user committee, heavily depends on the management committee's capacity. Well-managed user committee models can also perform effectively, indicating that robust management practices are crucial regardless of the organisational structure.

Importance of gender-responsive design

Incorporating gender-responsive design into MHP management is essential. The Cooperative Act 2074 recommends that at least 33% of the Board of Directors should be women, which is often not the case in user committee models. Examples such as Girikhola MHP, where a woman serves as Deputy Chairperson, and Nisikhola III, where a woman works as an operator, demonstrate the positive impact of women's involvement. Ensuring gender representation can enhance the effectiveness and inclusivity of MHP operations.

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This factsheet is part of the series “Sustainability Solutions for Mountain People and Landscapes,” developed within the WISIONS Innovation Lab Nepal. The aim is to promote an integrated approach to strengthening the livelihoods of people living in mountain communities. Each factsheet provides information on specific sustainability solutions in the fields of energy and landscape management that have shown promising potential for improving the livelihoods of mountain people but have a low level of adoption in Nepal and other mountain regions. The information is tailored to the specific context of Nepal’s mountain landscapes and offers practical insights and guidance for scaling up the application of these solutions. Additionally, it presents an integrated approach that begins with an understanding of the opportunities and challenges faced by mountain communities, enabling the systematic deployment of synergies between solutions from the energy and landscape sectors.

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