



Understanding the Diffusion of eCooking Solutions for Micro Enterprises in Rural Nepal (One-Year Follow-Up)

IMPRINT

This follow-up study was part of the interventions implemented within the WISIONS Innovation Lab Nepal. The overarching goal of the Innovation Lab Nepal is to strengthen the livelihoods of mountain communities of Nepal by applying sustainability solutions in the fields of energy access and landscape management in an integrative way. The WISIONS Innovation Lab is implemented in Nepal by a consortium of local organizations led by Winrock International Nepal and which comprises the collaboration with People, Energy & Environment Development Association (PEEDA) and RECOFTC Nepal.



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LIST OF ABBREVIATIONS

E-cooking	Electric Cooking
LPG	Liquefied Petroleum Gas
MHP	Micro hydro power
NDC	Nationally Determined Contribution
NPR	Nepalese Rupee
PEEDA	People, Energy and Environment Development Association

1. BACKGROUND

Nepal remains heavily dependent on traditional and imported fuels for cooking. According to the 2021 National Population and Housing Census, 51 % of Nepali households cook with firewood and 44.3 % with liquefied petroleum gas (LPG), while only 0.5 % use electricity as their primary cooking fuel¹. Because LPG is entirely imported, this dependence exposes households and the national economy to volatile international prices and periodic supply disruptions, while continued reliance on firewood contributes to indoor air pollution and pressure on forest resources. At the same time, Nepal's rapidly expanding hydropower generation has created growing surplus capacity, particularly during off-peak hours, that domestic electricity use could help absorb. Recognizing this opportunity, the Government of Nepal has set a target, through its updated Nationally Determined Contribution (NDC) under the Paris Agreement, to expand the use of electric cookstoves to 2.1 million households and an additional 15,000 institutions and firms² by 2035². Against this backdrop, PEEDA supported enterprise-level adoption of eCooking in Baglung district through the WISIONS Innovation Lab, with the aim to broaden the understanding of eCooking in the enterprises.

Under the WISIONS Innovation Lab (Phase III) Project, the People, Energy and Environment Development Association (PEEDA) supported 20 micro-enterprises in Baglung District with the introduction of electric cooking (eCooking) technologies. This support was provided through a subsidized incentive model, whereby beneficiaries received up to 70 percent of the appliance cost, or NPR 7,000 (whichever was lower), as a subsidy. The model was designed to ease the financial burden on users while ensuring that beneficiaries made a meaningful contribution to the investment. In addition to the appliance subsidies, electrical wiring upgrades were carried out where necessary to guarantee safety and adequate load capacity. All support activities, including wiring enhancements, were completed by June 2025. As a direct result from the implementation phase, a report was published back in 2025 which includes detailed explanations of the practical intervention and first results³.

2. AIM OF THE FOLLOW-UP STUDY

Following the implementation phase, the project team initiated a follow-up study one year later to evaluate the adoption and utilization of eCooking technologies among supported enterprises. The study aimed to document the changes brought about by the intervention, identify challenges faced by users and capture lessons learned. Its specific objectives are:

- To assess the effectiveness of subsidized eCooking appliances in supported micro-enterprises, including usage patterns, benefits, and operational challenges.

1 Government of Nepal, Central Bureau of Statistics, National Population and Housing Census 2021, National Report (2023). <https://censusnepal.cbs.gov.np/results>

2 Government of Nepal, Third Nationally Determined Contribution (NDC 3.0), submitted to the UNFCCC, May 2025. https://unfccc.int/sites/default/files/resource/5_RTL_Nepal.pdf

3 Understanding the Diffusion of E-cooking Solutions for Micro Enterprises in Rural Nepal (2025). https://www.wisions.net/wp-content/uploads/2025/11/WISIONS-Reports_IL-Nepal_E-Cooking.pdf

- To determine if peer learning, demonstration, and spillover effects have emerged from the project intervention.
- To identify conditions and enabling factors required to promote and scale eCooking for enterprises.

The findings are intended to inform strategies for strengthening and scaling enterprise-level eCooking solutions in Nepal.

3. APPROACH OF THE FOLLOW UP STUDY

The follow up study combined a series of methodological tools to collect data and/or promote reflection and dialogue among key stakeholders.

3.1 SURVEY OF PARTICIPANT ENTREPRENEURS

The survey targeted 20 entrepreneurs that had adopted the devices during the project with the aim of assessing both the condition of the devices and the experiences of the eCooking users. Of these, 19 entrepreneurs were contacted by telephone. In addition, the team conducted in-person visits with 14 of these entrepreneurs. These field visits provided richer qualitative insights into how eCooking practices have been integrated.

3.2 SURVEY OF NON-PARTICIPANT ENTREPRENEURS

This survey focused on entrepreneurs who had engaged in the initial phase of the project but ultimately chose not to invest and participate in the eCooking intervention, as well as other local entrepreneurs who were newly identified during the study. The identification of these non-participant entrepreneurs was carried out through two approaches:

- By asking current adopters to indicate peers who had expressed interest in their eCooking solutions.
- By directly approaching enterprises located in the project site.

In total, six surveys with entrepreneurs who are not using eCooking were conducted in person. The primary objective of this survey was to assess whether peer learning and spillover effects had emerged because of adopters' usage experiences, and to understand the extent to which these dynamics influenced broader entrepreneurial interest in eCooking technologies.

3.3 INTERVIEWS WITH KEY STAKEHOLDERS

The project team conducted key informant interviews with a range of local stakeholders to gain insights into the relevance and feasibility of expanding demand for eCooking solutions in the region. The interviews included representatives of Badigad Rural Municipality, principals of Khara Secondary School and Prava Secondary School, representatives from three micro-hydropower plants (Giringdi Khola MHP, Nishi Khola II MHP and Nishi Khola III MHP), as well as owners and

managers of large retail shops engaged in the sale of eCooking technologies.

The purpose of these consultations was to capture the perspectives of institutional actors, energy providers, and market intermediaries on the adoption of eCooking. Their views provided valuable context on the opportunities, challenges and the potential pathways for scaling eCooking solutions within the region.

3.4 MULTI-STAKEHOLDER WORKSHOP

A multi-stakeholder workshop was convened on May 4, 2026, at Hotel Durbar, Burtibang. The main purpose of the workshop was to enable exchange and get some more insights from the discussions on eCooking adoption. The participants included eCooking adopters, potential users, representatives from local government, micro-hydropower plants, government schools, local media and retail shop owners. Building on the insights gathered through surveys and interviews, the program facilitated dialogue between key local stakeholders – both those previously interviewed and those recommended by participants, alongside advanced and potential users.

The workshop started with practical cooking demonstrations where four advanced adopters showcased the preparation of different dishes using the supported eCooking technologies. The demonstration menu included roasted and gravy style meat dishes, chowmein and momo. While the cooking was underway, other participants observed the process and engaged in discussions with the cooks regarding the benefits of eCooking, challenges encountered till date, changes in electricity bills and cooking responsibility, and other relevant aspects of usage. In addition, participants were given the opportunity to gain hands-on-experience with the appliances, thereby enhancing their practical understanding of the technology and its application in everyday cooking. The whole group was then invited to taste samples of each dish and provide feedback on the quality of the food prepared.



Figure 1: Participants of the Multi-Stakeholder Workshop (PEEDA, 2026)

Following the peer-to-peer cooking demonstrations, participants were divided into four groups. Within these groups, participants engaged in structured discussions to foster a shared understanding of main barriers to adoption of eCooking technologies, options for addressing those barriers, and specific actions that could be undertaken in the short and medium term. The group work provided a platform for participants to share diverse perspectives, exchange practical experiences, and collectively explore strategies for overcoming barriers. The process also encouraged collaborative problem solving and highlighted locally relevant pathways for expanding the use of eCooking technologies in the region. At the end, each group presented its results to the large group.

3.5 DATA TRIANGULATION

To ensure the robustness and credibility of the findings, the project employed a triangulation approach that integrated multiple sources of data from both demand and supply side. On the demand side, telephone surveys were conducted with adopters of eCooking technologies, complemented by in-person visits to selected enterprises and school principals to gather deeper qualitative insights. Additionally, in-person surveys were carried out with potential users to capture perspectives from non-adopters. On the supply side, key informant interviews were held with representatives of the local government, micro-hydropower plants, retail shop owners, and repair technicians to understand institutional, technical and market dynamics.

The evidence from these surveys and interviews was further validated through the multi-stakeholder workshop. This workshop facilitated dialogue, peer-to-peer demonstrations, and group discussions, thereby enabling the cross-verification of survey data, stakeholder opinions and experiential insights. Collectively this triangulated methodology strengthened the reliability of the study outcomes and provided a comprehensive understanding of the opportunities, challenges and pathways for scaling eCooking adoption in the region.

4. FINDINGS

4.1 SUSTAINED USE AND CHANGES IN COOKING PRACTICES

One year after installation, induction stoves remain in daily use across all supported enterprises. Table 1 shows adoption trends of cooking fuel and cooking practices across the baseline, endline and follow-up phases. During installation, fuel analysis data already showed that induction stoves were quickly adopted, with most micro-enterprises using them for 60-90% of cooking tasks. Boiling dishes such as rice, tea and vegetables were the most common, while LPG was used for frying and high heat dishes like chowmein. The endline survey, which was conducted shortly after installation, confirmed this pattern. The follow up survey, conducted almost a year after installation, revealed that induction stoves have become a sustained part of daily cooking, particularly for boiling water, eggs and noodles and preparing tea. Results show that some enterprises have purchased a momo steamer and added this to their electric cooking tasks.

Micro-enterprises reported LPG cylinders now last longer in comparison before induction stove adoption, pointing to a deeper fuel-cost saving than was visible at the time of the endline. However, fuel stacking persisted, especially LPG being used for large groups of customers and for dishes requiring continuous high heat such as while frying chowmein. The demand for larger commercial induction stoves has grown, as many micro-enterprise owners find the 1900 W induction stoves insufficient during peak business operations. Cooking large portions quickly to serve customers during rush hours remains to work better with LPG or firewood stoves.

Table 1: Adoption trends and LPG savings across phases

	Baseline (before eCooking)	Endline Survey (few weeks after installation)	Follow Up Survey (~1 year after installation)
Induction Use	0% (only LPG and firewood)	60-90% of cooking tasks	100% respondents use induction daily
Primary induction cooking tasks	-	Boiling (water, noodles, eggs), Tea, Potatoes	Boiling (water, noodles, eggs), Tea, Potatoes
LPG use ("Fuel Stacking")	LPG for frying and chowmein	LPG for frying and large groups	LPG used for large groups and certain dishes like chowmein
LPG cylinder duration	~20 days	Not separately tracked	2-3 months
Monthly LPG cost savings	No savings, full LPG spend	NPR 81 - 2,000	NPR 400 - 3,150

4.2 PERCEIVED IMPACTS AND CHALLENGES

During project implementation, LPG cost savings of NPR 81-2000 per month were measured by eCooking adopters while after a year, the same adopters reported monthly savings of NPR 400-3150 as specified in Table 1. Beyond cost, users have confirmed practical benefits that they already reported on a few weeks after installation. These include cleaner kitchens, reduced smoke, convenience, and efficiency of eCooking.

Despite these positive impacts, the main enterprise-level challenge reported directly by current adopters is the limited capacity of the supported induction stoves during peak business hours, as already noted in Section 4.1: cooking large portions quickly to serve customers during rush hours still works better with LPG or firewood. Although none of the adopters experienced an induction stove breakdown during the past year, the entrepreneurs did raise concerns about the availability of repair services if a stove would break in the future. Broader barriers to scaling eCooking adoption across the region more generally, including appliance and cookware availability, warranty support, affordability of larger units, and electricity reliability, were raised extensively during the multi-stakeholder workshop and are presented together with the proposed solutions in Section 4.4.



Figure 2: An entrepreneur preparing chowmein noodles in her restaurant's kitchen (PEEDA, 2026)

Figure 3: A kitchen combining LPG and induction stoves, illustrating the fuel-stacking pattern (PEEDA, 2026)

4.3 SPILLOVER EFFECTS AND LOCAL INTEREST IN ECOOKING

The project generated notable spillover effects, contributing to increased awareness and growing interest in eCooking technologies among non-users and wider community stakeholders. Telephone and in-person surveys with adopters revealed that their experiences were frequently shared with peers during the past year. This has prompted curiosity and consideration of eCooking solutions among entrepreneurs who had not initially invested. Potential users expressed interest after observing demonstrations and hearing about the economic, health and environmental benefits reported by adopters. Surveys showed improved perceptions and growing interest in future adoption if financial assistance, training and reliable electricity were provided.

On the supply side, key informant interviews with local government representatives, micro-hydropower representatives, retail shop owners, and repair technicians highlighted the recognition of the potential for eCooking to utilize surplus electricity, reduce dependency on imported fuels and create new business opportunities. Local government representatives emphasized subsidies and targeted technology support with grid infrastructure upgradation, seeing eCooking as a way to reduce household fuel costs and improve environmental and health conditions. Microhydropower representatives highlighted eCooking helps to utilize surplus electricity, especially during off-peak hours, making grids more sustainable. Their priority is load management and revenue generation from grid interconnection, which eCooking can support. Retail shop owners see eCooking as a business opportunity but focused on the need for better supply chains, warranties and training to build consumer confidence. Repair personnel pointed out the shortage of skilled service providers and the need for training programs. Their interest mainly lies in employment creation and technical capacity enhancement, as demand for repair and maintenance services could generate additional livelihoods.

The multi-stakeholder workshop clearly demonstrated that diverse groups of people are eager to learn about and exchange ideas on eCooking. This was reflected by the number of participants, the lively and engaged discussions during cooking demonstrations and the active engagement of participants throughout the thematic sessions. Peer-to-peer cooking demonstrations not only showcased the practicality of induction stoves but also allowed participants to directly experience the taste and quality of food prepared with them. The thematic group discussions further enriched the dialogue, enabling participants to explore challenges and co-develop solutions. This interactive format fostered enthusiasm, strengthened collective ownership and highlighted the growing local interest in scaling eCooking adoption.



Figure 4: Roasted chicken and momos being prepared during the peer-to-peer cooking demonstration (Schneider, 2026)

4.4 REMAINING BARRIERS AND SOLUTIONS FOR UPSCALING

During the multi-stakeholder workshop and enterprise surveys several barriers to wider eCooking adoption were raised, complementing the enterprise-level challenges noted in Section 4.2. Limited local availability of suitable stove models, compatible cookware, and spare parts, combined with inadequate warranty support, was frequently cited as a constraint on existing users upgrading their equipment and on new entrepreneurs considering eCooking. Affordability remains a significant concern, as upgrading to larger commercial units requires a level of investment that many micro-enterprises cannot cover without external support. Non-adopters also cited this barrier as a reason for not purchasing eCooking appliances. Electricity reliability was also identified as a limiting factor, with frequent power cuts and voltage fluctuations forcing enterprises to rely on LPG or firewood for large customer groups during outages. This highlights that reliability is not just about supply hours, but also the quality of electricity. Finally, the cultural preference for food prepared using traditional firewood continues to compound these barriers by adding a taste-based dimension to the resistance that technology demonstrations alone have not yet managed to overcome.

In response, a range of solutions were proposed by adopters, non-users, and other members of the local community during the multi-stakeholder workshop. Awareness and education campaigns were considered essential, with suggestions to run community-based programmes, hold demonstrations in schools, and organise promotional activities to build confidence and reduce misconceptions. The importance of strengthening market and service ecosystems was also emphasised, including ensuring the availability of appliances and spare parts, offering warranties, and training local young people in repair and maintenance. This would create employment opportunities while ensuring consumers can access services quickly.

The shift towards eCooking appliances is supported by local microhydro plant operators, which are supplemented by connections to the national grid to ensure a reliable power supply. However, limitations in microhydro capacity require the expansion of household grid connections. The local government is working on technical upgrades to increase household access to the national grid, a request that has also been raised directly by communities. Combining grid reliability improvements with financial support for commercial-size electric stoves could therefore potentially enable micro-enterprises to adopt eCooking appliances on a larger scale. Improving the electricity supply alone will not resolve peak-hour capacity constraints, and increasing appliance capacity alone will not help if the underlying power supply remains unreliable. For micro-enterprises to confidently scale their use of eCooking, these two solutions must advance together.

5. CONCLUSION AND RECOMMENDATIONS

The eCooking intervention has laid a strong foundation to contribute in the scaling up of eCooking solutions for micro-enterprises in Nepal. The follow-up assessment of businesses supported by eCooking technologies in the Baglung district shows that eCooking has become an integral part of these enterprises' daily cooking practices. The adoption of eCooking has gradually reduced dependence on LPG and firewood and generated economic savings. Peer-to-peer learning, cooking demonstrations and multi-stakeholder engagement initiated through this study have further increased awareness and interest, creating a spillover effect that extends beyond the project's direct beneficiaries and generating further demand.

At the same time, challenges in the eCooking sector persist. Wider adoption continues to be constrained by technical barriers, such as unreliable electricity supply and limited appliance capacity. Cultural preferences, limited awareness, and high upfront costs remain barriers, particularly but not only for non-adopters. Addressing these issues will require coordinated action in the areas of infrastructure strengthening, incentive design, raising awareness, and developing local repair services.

Overall, the insights from this follow-up study compared to the survey right after implementation show a clear progression from cautious trial piloting to broader acceptance, with quantifiable economic gains and stronger recognition of health, environmental and social benefits. The change signifies that while the initial implementation confirmed feasibility of eCooking adoption in the region, the follow up after a year demonstrated both measurable savings and the emergence

of resolving existing barriers requiring targeted stakeholder interventions.

Recommendations for the Way Forward

Building on the recommendations set out in the 2025 report, insights from the follow-up study point to the following actions for increasing the adoption of eCooking in rural Nepal:

- **Cookware and Appliance Design.** The 2025 report recommended identifying, testing and promoting cookware suited to high-demand commercial dishes. This follow-up sharpens that recommendation into specific product gaps. Larger woks, curved-base induction cooktops and larger-capacity momo steamers are needed for high-volume, bulk-cooking micro-enterprises.
- **Addressing Cultural and Taste Based Resistance** through designing targeted demonstrations for dishes with strong traditional fuel taste preference. This follow-up shows that generic technology demonstrations alone do not resolve taste-based objections. Dedicated taste-comparison sessions for dishes with a strong traditional-fuel taste preference could add value in reducing resistance from local households and micro-enterprises rooted in established habits.
- **Prioritizing infrastructure investment** in areas with frequent MHP morning shutdowns. This follow-up refines the technical recommendations of the 2025 report with a specific operational trigger. During the times of MHP morning shutdowns to cool down generators, micro-enterprises revert back to LPG for bulk morning cooking. As a result, a power cut contingency plan for micro-enterprises during these power outages need to be developed, endorsed by the local government and executed by relevant power supply organizations.
- **Explore microloans or vendor-partnership financing.** This follow-up confirms the need to explore sustainable financing mechanisms, such as microloans, vendor partnerships or collaboration with micro-finance institutions, as an alternative to continued reliance on subsidies. Such financing would reduce the upfront cost burden of both eCooking appliances and compatible cookware, supporting adoption at a wider scale.
- **Establish a rapid repair response system.** A local network of technicians with the skills for providing induction stove repairs and troubleshooting is required as a more concrete mechanism for post-sales services.

By leveraging surplus electricity from grid-connected microhydro plants, engaging local government and the private sector, and fostering community ownership, the region has strong potential to accelerate eCooking adoption and transition towards more sustainable cooking practices.

