

# LPG: The Dream Energy for Nepalese Women

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## Introduction

One of the fundamental factors in the functioning of any civilized society is energy. It is needed to improve life style and socio-economic development of individuals and the country. Nearly 75 percent of Nepal's population live in rural areas. The rural population consumes nearly 80 percent of the total residential energy who consume 73 percent of firewood. Self-collected fire wood is more common in rural Nepal and biomass is widely used regardless of economic status of the households. Only 27 percent of the rural population have access to electricity (CBS 2014<sup>1</sup>). Hence rural households are the foremost end user of biomass<sup>2</sup> and commercial energy<sup>3</sup>, which varies between rural and urban populations, between low and high-income groups within the country. From the study areas in rural Kavre, Dhading, Kailali and Rupandehi, households consumed almost all type of fuels using various types of cooking stoves. Electricity was mainly used for lighting, communication and entertainment.

Energy is a basic good. Over the years, household energy consumption analysis followed the theories of the energy ladder including types of technology, its efficiency and investment. However, this study indicates that culture, individual preferences, availability, efficiency, price and cost effectiveness are some factors that play vital role in determining energy and fuel choice. It explicitly shows that instead of relying excessively on the energy ladder model for sustainability, energy projects /programs must also include household economics framework along with opportunity cost and cultural and individual preferences. This article is based on Focus Group Discussions (FGD) and Key Informant Interviews (KII) in the study areas listed above. This article looks into the increasing importance of LPG and whether it supports or impedes empowerment of rural women in Nepal.

Petroleum products are not produced in Nepal but over the years it is highly depended on it. Import is the only method to meet the demand for petroleum products. The demand and supply are both increasing day by day. It was first introduced in the country in the early 70s and since 1975 the supply has increased by almost 70 folds. LPG was introduced as an alternate of kerosene, electricity and biomass in urban and semi urban area. The period between 1987 and 1997 is regarded as the time when the demand for LPG was highest.

In recent times the use of Liquefied Petroleum Gas, LPG, has increased both in the urban as well as rural areas of Nepal. Of the total 1,140,662 LPG users, only 10 percent are in the rural areas<sup>4</sup>. According to CBS 2016, Firewood is used by 76.5% rural and 37.9% urban households. Use of LPG gas is the second most used cooking source in Nepal, urban 53.3% and rural 8.7% are using LPG gas. It is also found in 2015/16 that 7.5% use cow dung, 1.8% leaves, 2.7% biogas, and 0.3% other source for cooking.

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<sup>1</sup>Population Monograph 2014, CBS, GoN

<sup>2</sup> Biomass resources includes wood, bamboo, twigs, wood shavings, sawdust, bark, roots, agricultural residues such as paddy husk, straw, jute stick, and cow dung.

<sup>3</sup>Commercial energy resources in Nepal, candle, petroleum products, coal, and hydroelectricity. Petroleum products include diesel, kerosene, furnace oil, motor spirit, and others. Nepal also has few indigenous renewable energy sources, while all fossil fuel is imported.

<sup>4</sup>Population Monograph 2014, CBS, GoN

In the urban areas, as well most of the remittance-earning families in rural areas switched to LPG in recent years. The switch is also seen in the households that earlier on used kerosene for cooking. According to Annual Household Survey 2012/13, in the last 12 years the number of LPG users jumped by 13 percentage points to 22.4 percent. However, there has been very little change in the number of people using firewood, cow dung and bio-gas as main cooking fuel over this same period. The use of LPG is also common in hotels, restaurants and roadside eateries. The roadside eateries are often operated by women.

LPG is totally imported from India and distributed by The Nepal Oil Corporation through its network across the country. Besides, NOC, there are private gas industries, Nepal has 53 brands of gas cylinders. However, customers cannot exchange their brand of gas cylinders with any other brand which creates great difficulty for the consumers especially during supply adversities. This becomes even more difficult for those that have only one cylinder. Currently, Nepal Oil Corporation (NOC) provides subsidy on LPG through a cross-subsidy mechanism. The subsidy allocated is Rs 38 subsidy on a LPG cylinder as cross-subsidy measures. The Ministry of Finance has said the government is preparing to introduce a direct subsidy regime on liquefied petroleum gas (LPG) in a bid to make the fuel affordable to households, this still at the discussions stage. The cylinders are purchased at the dealers who do not necessarily deliver at the doorstep. The gross weight of a full 14.2kg cylinder is approximately 29.5kg so an added challenges lies in having to transport it from the dealers to the house.

## Women's Perspective of LPG

According to Integrated Energy Solutions (IES, 2007), cooking with LPG has a number of benefits for households. These are:

- Gas is an acclaimed and preferred cooking fuel internationally.
- Gas is clean, controllable, fast and efficient.
- The hob heating settings on gas appliances are more precise compared to low-standard electrical hobs.
- With gas, one pays for what one uses. There is no loss of heat unlike with other fuels.
- Gas is safe and has an international safety record unlike electricity and other commercial energy sources.
- It is portable and can be stored safely.
- Gas appliances generally last longer if used correctly (IES, 2007).

The study's main objective was to deliver on the following results:

- An understanding of readiness for fuel switching to LPG in rural areas.
- An analysis of the impact of work load as a factor for transiting to LPG.
- An analysis of the impacts of LPG intervention with regard to perceptions, behaviour change and finances on low-income households and particularly women
- Recommendations emanating from the study results regarding the measures needed to support consistent energy supply in low income areas.

## Method

The field study was conducted in 4 rural areas of Kailali, Dhading, Kavre and Rupandehi districts of Nepal.

Though both qualitative and quantitative data were collected from these areas. The assessment is based only on the qualitative information collected through Focus Group Discussions (FGD) and Key Informant Information (KII). The FGD participants were mainly women's groups engaged in vegetable farming,

livestock rearing, savings and credit groups as well as mothers' groups. The key informants comprised of women representatives within the village committees, health posts, and village/ward leaders. In total 8 focus groups and 10 KII form the basis of this study. The response relied on the respondents' memory in recalling their energy use activities of a previous years. The second section of the questions explored people's LPG use by households. The third section then looked at women's perspectives of LPG energy.

Previous studies in household energy use showed that people perceived LPG to be a dangerous fuel (Mehlwana and Qase, 1998<sup>5</sup>), saying that it posed a greater danger to the households as there are chances of it 'exploding', (Cowan and Mohlakoana, 2004<sup>6</sup>). Nonetheless, people even low-income communities have readily accepted LPG stoves though not as a primary source of cooking energy albeit only for specific meals and occasions. As households adopt LPG it has become the best fuel option for cooking.

## Findings

Here it is to be understood that the participants were poor. As per the categorization<sup>7</sup> practiced by government, these belonged to "medium poor" and "poor" groups. Of the different social support provided by the government; 5 percent received old age allowance, all households were entitled to primary and secondary school education. Despite their apparent poverty, all households were connected to grid electricity but did not own any electric appliances except for a radio and very few owned a television set. Hence electricity was used only for lighting. A few of the households, around 30 percent, had LPG stove; 40 percent had an improved cookstove, 5 percent had a biogas systems whereas all continued to have traditional firewood stoves.

To date there have been no specific programs to promote the use of LPG, this fuel is a market based product with minimal subsidy from the government. It is unlike the renewable energy technologies such as improved cookstoves (ICS) or biogas systems. The clay body ICS stopped being subsidised only in recent years, while the metallic body ICS as well as imported ICS still enjoy subsidies. The biogas is one technology that is subsidised based on capacity of the system, geographical location and distance of the household from the road head. Thus affordability is the main criteria for households opting for LPG.

One of the main findings is that fuel wood is never replaced entirely, even in households that have been using LPG for many years. Fuel wood is still considered essential for preparing animal feed, traditional food, brewing alcohol and boiling water as well as space heating and for both cultural and technical reasons, and for traditional parties. Therefore, fuel wood is also seen as a fuel with advantages that go beyond price and include cultural considerations.

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<sup>5</sup>Mehlwana, M. and Qase, N., 1998. The contours of domesticity, energy consumption and poverty: The social determinants of energy use in low-income urban households in Cape Town's townships (1995- 1997). Energy & Development Research Centre, University of Cape Town. March 1998.

<sup>6</sup>Cowan, B., and Mohlakoana, N., 2004. Barriers to modern energy services in low-income urban communities: Khayelitsha energy survey. Energy Research Centre, University of Cape Town. September 2004.

<sup>7</sup>Poverty Alleviation Fund, established in 2003 to reduce incidence of poverty in the country, defines poverty based on level of food sufficiency. Those with food sufficiency of less than three months are categorised as 'hardcore poor'. Those with food sufficiency of more than three months but less than six months are classified as 'medium poor', while those with food sufficiency of over six months but less than a year are categorised as 'poor'. This categorization is prevalent in Nepal.

## Reasons for Using LPG

People's perception of LPG prices in 2017<sup>8</sup> when they were using the fuel for cooking highlighted a common factor, the fuel was too expensive. This comparison is based on the use of fuel wood and this is a freely available commodity collected from the nearby forest or farmland. Of the responses, 70 percent had not even thought of purchasing a LPG set. Even the ones that had LPG set refrained from using it as a primary cooking energy, they used it very cautiously.



LPG was primarily used as substitute for firewood especially to cook tea, make a quick snacks coffee and other instant food like cooking noodles, frying beaten rice etc. when guest come. One respondent from Balthali, stated 'I have bought a new cylinder of LP gas over a year ago that is not finished yet. I use it only occasionally for making tea or coffee for guests so that I'll get the time to talk with them'.

<sup>8</sup>Cost of one cylinder was NRs 1375.

The LPG use has a status quo linked to it. Luxmi Chaudhari of Sukhad, Kailali said that ‘...though there are a number of village people are poor, at the same time they prefer sophisticated life style and use LPG. Whenever they have money in their hand, they buy luxurious things and drink alcohol and invest money in unproductive things. There are a few that prefer to spend money on their children’s schooling. Of course there are a few that are conscious about saving the money for their future.’

These statements imply that LPG is more a luxury item for the rural population.

### Factors promoting the use of LPG

According to the participants, though LPG is used occasionally, the use of LPG there had a list of factors that makes LPG their first priority given the choice. LPG they say cooks faster compared to kerosene and fuel wood emits less smoke. It reduced women’s work and saved time and increased the comfort of working in the kitchen. Above all LPG reduces exposure to smoke and the burden of collecting fuel wood and its preparation.

Additionally upon the use of time saved, women are also able to contribute to improve their own and their families’ lives, whether through income generation, education or leisure.

### Factors inhibiting the use of LPG

Despite the benefits the number of rural households’ uptake of LPG and its influence as primary source of cooking energy is even lower. The use of LPG is limited to times of emergency. It last more than 3 months to one year in comparison to average of 6 weeks if used regularly as a main cooking fuel. One could argue that access and availability as well as income play a greater role than culture. The discussions demonstrated that income and fuel cost constrain the choice of fuel and associated devices that are certainly a crucial factor for energy use adoption.

During the focus groups discussions, the participants complained that it was very expensive to cook with LPG. The price of initial investment for the stove and cylinder is around NRs 7500, the cost also varies with the brand of the stove. Refilling a LPG cylinder 15 kg is NRs 1375 with extra cost for transportation, around NRs 100.

The difficulties in availability of LPG is another impeding factor in the adoption of LPG. In all four project areas, LPG was not easily available. The nearest market was 5 to 10 km away from the settlement. For refill all households depended on the nearest marketplace. In case of Rupandehi and Kailali the cylinders were transported by bus, cycle or three-wheelers depending on the accessibility. In Dhading and Kavre the empty cylinders were deposited and the refilled ones were collected from a specified shop identified by the retailer from the main market. As the households here are not accessible by road the cylinders were carried manually just as they would carry the fuel wood collected from the forests.

Perceptions of the dangers of LPG is another factor that inhibits the use of LPG. The possibilities of explosion is a fear amongst potential users. Even the offer of a free brand new stove and all attachments by Mercy Corps in Balthali after the earthquake did not prove irresistible. Instead they opted for ICS. None of the respondents received instructions with their new gas stoves and were not been informed about the safety features – the auto-start and cylinder that can be turned off completely.

## Other Observations

Multiple fuel use and transition trends are observed even in the rural areas. However, there is a hesitance to adopt LPG as the primary cooking fuel.

Another factor influencing the sustainability of LPG use are a lack of maintenance and repair facilities within the community or even the village.

## Necessary Actions for Promoting LPG

For promoting the use of clean cooking fuels such as LPG, it is pertinent to take up the following actions: Develop necessary infrastructure for supply and storage of LPG nearer to the users and establish repair and maintenance units/cadres of LPG accessories.

Conduct campaigns on safe use of LPG

Organise awareness raising and education drive on energy sources, people are open to change and can embrace fuels that are cleaner.

At the same time, there is a need for change in policy making and implementation with appropriate pricing measures of LPG. If it was subsidized in the same way as biogas, willingness to use it as an everyday fuel would be much higher as its stigma of being dangerous would be removed.