

Scaling Up Demand for LPG in Guatemala: Motivators, Barriers and Opportunities – Extended Summary

Study goal and objectives

In Guatemala, about 70% of urban households use Liquefied Petroleum Gas (LPG) for cooking. Over half of these users continue to cook with firewood. Households will only enjoy the health benefits of LPG when it is the primary fuel for cooking.

The goal of the study is to facilitate LPG scale-up among Guatemalan households with easy access to LPG. To reach this goal, the study pursues two objectives:

1. Identify key motivators for LPG use among urban and peri-urban households already using LPG.
2. Explore ways corporate and institutional programs can facilitate LPG adoption and scale-up among employees.

The work was based on primary and secondary research: national statistics, individual meetings with national stakeholders and focus groups.

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Main Findings

The key barriers to a complete transition to LPG for urban and peri-urban households are concerns about safety and the poor quality of LPG cylinders; the reputation of LPG suppliers and distributors; lack of knowledge of how to cook with LPG or how to use a pressure cooker; and lack of easy cost comparisons between LPG and firewood.

LPG is used in households with a wide range of incomes. Taste of food cooked with LPG, technical access to LPG refills and the initial cost of LPG cylinders and stoves are not barriers to increased LPG use.

Four interventions are proposed, some of which are relevant for corporate and institutional programs: consumer information and marketing; facilitation of stove and cylinder purchase; regulation and review of LPG cylinders; and industry and government engagement.

Main focus group findings

Understanding LPG users' preferences and experiences of cooking with LPG is critical for broadening LPG use among urban and peri-urban households. Ten focus groups with 5 to 7 people were held in 5 locations where LPG is used by a relatively large proportion of households: Villa Nueva (Guatemala), Sanarate (El Progreso), Escuintla (Escuintla), Santa Apolonia (Chimaltenango) and Ciudad Vieja (Sacatepéquez). Most of the participating households use LPG as their primary or secondary cooking fuel.

Key barriers to transition to LPG for urban and peri-urban households are: **Safety concerns and poor quality LPG cylinders.** Participants reported feeling unsafe using the LPG cylinder and stove, especially the oven. Participants received no information or instructions on safe installation or use. All participants agreed that cylinders were usually old and damaged. Several retailers believed that up to half of all cylinders in circulation may leak.

Reputation of LPG retailers and suppliers. Poor cylinder quality, partially-filled cylinders, leakage and LPG price volatility all contributed to consumer distrust of *expendios* (retailers) and LPG suppliers. In general,

consumers were not willing to pay more for better service or cylinders. They believed that the current price should already include good service and quality cylinders. Several possible reasons for partially-filled cylinders were provided: incomplete supplier refills (especially when LPG price is low), use by the retailer before delivery, and leakage. It was not possible to verify any of these possible causes.

Consumer said:

"If I buy the cylinder in the store, they sell me a new one, which I lose as soon as the cylinder is empty, since they will replace it with an old one".

"The duration [of the cylinder] depends on the retailer, since the retailers use some gas, we can see that the seal has been tampered with".

Lack of knowledge on how to cook with LPG. During the discussions, some participants realized that they were cooking on a high flame for too long and therefore wasting LPG. In an attempt to conserve LPG, one woman asked all members of her household to eat at the same time so she wouldn't have to reheat the food.

Lack of skill in using a pressure cooker, which is essential for cooking foods like beans that take a long time. A large majority of LPG users cooked rice and pasta, *atole* (drinks), coffee, soups and meat exclusively with LPG. About half the participants cooked beans with LPG. A large proportion bought tortillas rather than cook them.

Lack of easy cost comparisons between cooking with LPG and firewood. Few households had compared the cost of cooking with LPG to cooking with firewood. Those who had concluded that cooking with LPG is cheaper cook exclusively or almost exclusively with LPG. Most participants considered cooking with LPG to be expensive because they perceived the single, large upfront cost of the LPG start-up package to be greater than several smaller expenses, such as the cost of purchasing firewood. These multiple smaller costs were viewed as more manageable and as having less impact on the household budget than one large expense.

In terms of motivators, women attributed numerous and powerful **benefits** to LPG: easy, practical, cleaner and faster than firewood. Other benefits included ease of tending and adjusting the

flame, the absence of smoke and its odor, and the ease of lighting the stove compared with firewood.

Higher income, education and paid work contribute to LPG adoption but are not a pre-condition for it nor for exclusive LPG use. Women without outside employment also valued the benefits of LPG (fast and practical).

Health and environmental benefits are acknowledged by women but are not key to LPG preference.

Consumers said:

"Cooking without LPG would kill me".

"I use LPG because there is no better option for cooking".

"We know how much time is needed to cook with LPG. When cooking with firewood, we must regularly check and taste the food".

"If I have to choose between going to my doctor and buying gas, I choose gas"!

Up-front cost of the LPG stove and cylinder, access to LPG refills and taste are not barriers to LPG use. Stoves and cylinders were either received as a

wedding gift or purchased. Half the participants paid in cash, and the other half paid with credit offered by sellers. It may be argued that households that can afford the cost of LPG refills are capable of paying the start-up costs with some financial assistance or a payment plan, if needed. Participants acknowledged that food cooked on LPG may taste slightly different than food cooked on a fire, but all agreed that ease, speed and convenience of LPG are much more important considerations overall. Several participants also reported that the cooking vessel (e.g., clay cooker) has more impact on taste and texture than the energy source does. Finally participants said they know how to use spices to make the food tastier, if needed.

Taste may persist as a barrier to LPG adoption based on non-users' belief that food cooked with LPG will taste different. In that sense, personal experience cooking with LPG is important to modify preconceived notions.

Consumers said:

"My family cannot tell if I cook beans in a clay pot or if I cook them with gas, they do not distinguish it, therefore, we are the ones that choose".

"The flavor you get when cooking with firewood does not matter, we give the seasoning to the food".

A smaller cylinder would be considered relevant only as an "emergency reserve" by LPG users.

Characteristics of LPG users participating in the focus groups are as follows:

LPG is used in households with a wide range of incomes, including those below the poverty line. Two-thirds of participating households lived below the poverty line. Household incomes represented in the focus groups range from less than GTQ 2,000 to 8,000 (US\$260 to \$1,060) per month. In lower income households, income instability combined with volatile LPG prices posed a more significant barrier than low income.

A large majority of households used **the 25 lb. cylinder**. Half reported that the cylinder lasts between 22 and 30 days and half reported 30+ days, depending on household size and cooking habits. It may be useful to include this question in the ENCOVI Survey to get more precise information on LPG consumption. Most women reported that they replace the cylinder as soon as

it is empty rather than cooking with firewood until the end of the month.

Households that regularly consumed more than one 25 lb. cylinder per month may not consider using a 35 lb. one because: 1) the higher cost of a bigger cylinder (LPG is not less expensive when purchased in larger quantities); 2) fluctuating costs and unstable LPG prices; and 3) difficulty finding a 35 lb. cylinder.

The ***desire for the cylinder to last as long as possible*** contributes to continued reliance on firewood, especially when a large quantity of food must be cooked. In such cases, participants were not comparing the actual cost of firewood with gas and most assumed that LPG cost more than firewood. Moreover, firewood continued to play a key role as an emergency source of energy when LPG was unavailable for technical or economic reasons. In other words, firewood contributes to a sense of energy security of the household.

None of the participants used an improved biomass cookstove. Three quarters of the participants were unaware that improved biomass cookstoves exist.

Households are quite ***resilient to price volatility*** in both directions (increase/decrease).

Participants considered a fair price for 25 lb. cylinder to be GTQ 100 - 120 (US\$ 13 - 16). Nevertheless, households are slow to increase use of LPG when prices fell. They would replace firewood with LPG or use less firewood if they knew the price would stabilize in the “fair range” in the long term.

Corporate Social Responsibility: Opportunities for employers

Two key factors drive the idea of involving employers and institutions in the promotion of clean fuels and technologies, specifically LPG: 1) Employers have the potential to reach a large number of families through their employees; and 2) Employers may be able to facilitate employee purchase of LPG stoves and cylinders, thus removing a financial barrier for LPG adoption.

Three complementary types of activities could be envisioned for employers:

Research and analysis: assessment of employees’ situations, monitoring impacts of clean cooking on employee households (e.g., air quality, costs, benefits for the employers).

Raising awareness and building capacity of employees on clean cookstoves and fuels, safe LPG use, efficient cooking practices, cost assessment.

Facilitating stove and cylinder purchases using salary deductions or through saving accounts in employee-run cooperatives.

Clean cookstoves activities could be integrated into the JUNTOS Program, a part of CentraRSE activities since 2014. CentraRSE is the Guatemala Center for Corporate Social Responsibility. The program is focused on improving the quality of life of employees. Employers in the food industry sector may be interested since cooking is part of their professional activities. The LPG sector is also of interest since these employers provide LPG cylinders to their employees but do not know if employees continue to cook with multiple fuels.

LPG consumption and organization of the sector in Guatemala

In 2011, LPG was used, alone or with other energy sources, in 1.4 million households, representing 70% of urban households and 19% of rural households. National LPG

consumption increases by 3 to 4% per year, but firewood consumption increases faster. Roughly half a million urban households do not use LPG. Availability is not a barrier to consumption in urban and peri-urban areas. However, household use of multiple fuels (fuel stacking) is prevalent even in urban areas.

Income does not strongly affect the amount of LPG consumed by households. Gas consumption is not closely correlated to price. Seasonal weather has a stronger impact on consumption than LPG price, rain making cooking with wood difficult.

The LPG industry is dominated by two large companies: ZETA and TOMZA Gas. The most common cylinder size is 25 lb. Cylinder distribution is based on a centralized filling system, with consumers trading empty cylinders for full ones through neighborhood retailers. Around 3 million cylinders are in the market. The number of cylinders inspected annually represents a marginal part of total cylinders in the market. Consumers routinely complain about low-quality, damaged and leaky cylinders. Most stakeholders acknowledge the need for a cylinder inventory and removal of poor quality cylinders from circulation.

Cooking experiment

An experiment was conducted under *real cooking conditions* to compare the cost and time of cooking all meals with LPG exclusively versus cooking all meals with firewood exclusively for the same number of days.

In one household of 3 adults and 1 child, a 25 lb LPG cylinder used exclusively lasted 17 days, or 90 hours of cooking time. The LPG cylinder, expected to weight 25 lbs, weighed only 20 lbs. Cooking for 17 days with firewood exclusively required 35 more hours of cooking time than with LPG (40% more), and cost GTQ 38 more (US\$5), 32% more than with LPG. Of course, all parameters of such as analysis depend entirely on each household.

Conclusion: Intervention avenues

A four-pillar strategy is proposed to accelerate the transition to exclusive LPG use in households cooking with multiple fuels, including LPG and to promote adoption of LPG by households with stable incomes and cooking with purchased firewood.

Consumer information and marketing on 1) the benefits of clean cookstoves and fuels, 2) cooking practices with LPG, 3) cooking cost analysis, 4) safe handling of LPG by consumers and retailers. These actions may be implemented through employers.

Facilitate stove and cylinder purchase in order to give non-users the opportunity to experience the benefits of LPG: to develop consumer finance options through employers, to promote a smaller cylinder, and to offer a free-trial period.

Regulation and review of LPG cylinders to guarantee cylinder quality.

Engage industry and government to recognize and act on their mutual interest in growing the market for clean stoves.

Changing deeply ingrained habits and long-held beliefs will take time and require a longer-term process with repeated messages focused on specific consumer groups.



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