

Policy brief

Pradhan Mantri Ujjwala Yojana: A demand-side diagnostic study of LPG refills

Anurodh Giri, Arshi Aadil

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MicroSave

Market-led solutions for financial services

About *MicroSave*

MicroSave is a leading international consulting firm that offers practical, market-led solutions in the areas of Digital Financial Services, Inclusive Finance and Banking, Micro, Small and Medium Enterprises, and Private Sector Development. We focus on enhancing access to financial services to the low- and middle-income segments.

Our vision is to live in a world where everyone has access to high-quality, affordable, market-led financial services and support. For 20 years, we have worked with our clients as a locally based, international consulting firm. We have guided policy and facilitated partnerships to develop enabling ecosystems.

We welcome your feedback on this policy brief. Please write to us with your comments or questions to

Anurodh Giri: anurodh@microsave.net

Arshi Aadil: arshi@microsave.net



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Executive Summary

Pradhan Mantri Ujjwala Yojana (PMUY), which launched in May, 2016, is laudable for its unique approach, design, and implementation. The scheme eliminates the most significant impediment to using liquefied petroleum gas (LPG) for poor households in India – the high cost of entry. PMUY provides financial support in terms of 50% of the total cost, or INR 1,600 (USD 25), to poor households to help them purchase an LPG stove. These poor households could not have afforded the high initial cost of purchasing an LPG connection and would have been otherwise dependent on hazardous biomass fuels for cooking.



48.6 million beneficiaries since inception



16% increase in LPG penetration



Target revised from 50 million to 80 million new beneficiaries in the fiscal year 2018–19

Since its inception, the PMUY scheme has already provided low-cost LPG connections to more than [48.6 million](#) beneficiaries. This has increased LPG penetration in the country by 16%. The PMUY scheme received its seed funding based on savings from the [digitisation of the LPG subsidy](#) and “Give it Up” campaign. The redistribution of the fuel subsidy has generated significant political dividend for the Government of India. This rich dividend has motivated the government to revise the PMUY target from 50 million to [80 million](#) new LPG PMUY beneficiaries in the fiscal year 2018–19.

In January, 2018, *MicroSave* conducted an independent assessment of PMUY in three Indian states – Chhattisgarh, Madhya Pradesh (M.P.), and Uttar Pradesh (U.P.). The assessment aimed to understand the demand-side behavioural triggers or barriers to the use and subsequent refill of LPG cylinders. Our study found that providing an LPG connection, which is the first step of the process, has been fairly successful. Yet there are several impediments to significant adoption in rural areas. These include the high price of refills, cultural or behavioural beliefs, and issues with access, which translates to the long distances of beneficiary households from the LPG dealer.



Key findings

1

The study finds that targeting of beneficiaries under PMUY is “precise”, as per our key findings, and has made LPG accessible to the deserving segment. Among the beneficiaries who were interviewed, almost 90% live in *kutcha*¹ houses and were dependent on ‘unclean’ cooking fuel options, such as firewood and cow dung cakes. The profile of PMUY customers is strikingly different from an average, non-PMUY customer in terms of fuel needs, fuel usage pattern, family size, safety standards, and most importantly, income levels.

2

Rural households have a pattern of cooking that is different from that of a typical urban LPG user and require more fuel to suit their cooking needs. They usually have a large family and require large cooking pots and pans that do not fit on a conventional cooking stove easily. They cook large quantities of fodder for cattle, heat water during the winters, and eat grains that must be cooked slowly. These activities consume massive amounts of energy, which makes LPG a prohibitively expensive option. Hence, many beneficiaries in villages feel that biomass fuels are irreplaceable.

3

LPG is the fuel of choice for this segment, yet most people cannot afford to use it regularly. They consider it a “luxury item” and use LPG only during emergencies, such as hosting guests, or during the rainy season when fuelwood or cow dung cakes are unavailable. Of the PMUY beneficiaries interviewed, 81% use fuelwood or cow dung cakes at least once a day for cooking.

4

The study highlights that 23% of beneficiaries who had received LPG connections before 1st September, 2017, never refilled their cylinders. Such instances of ‘no refills’ were the highest in Chhattisgarh with 40% of beneficiaries never refilling, followed by 17% in M.P. and 4% in U.P.

5

Three barriers drive most of the low uptake of PMUY refills:

1. Affordability – due to the high effective cost of the refill, which is INR 150–250 (USD 2.3–3.8). This cost is higher than the actual refill price once lost wages and transportation costs are factored in;
2. The inconvenience of carrying heavy LPG cylinders from distant warehouses due to limited doorstep delivery (specifically in M.P.);
3. Behavioural biases, which affects households who do not consider smoke to be a major issue.

6

Most PMUY households are first-time LPG stove users² and are unaware of safety practices when using an LPG stove. Their houses are unventilated, are made of wood and straw, and have a low roof ceiling, thus making it unsafe to use LPG stoves.

1. Kutcha houses are built of wood, mud, straw, and dry leaves.

2. Some PMUY households who had migrated to or from Indian metropolitan cities have previous experience in using an LPG stove.



Key recommendations



Affordability

- Since the affordability of LPG refills is one of the major barriers to uptake, we recommend that the government should design credit and deposit-linked financial solutions for PMUY beneficiaries in association with MFIs, self-help groups (SHGs), and small finance banks. This would help fund the cost of LPG cylinder refills.
- The Government of India (GOI) should consider increasing the amount of LPG subsidy for PMUY beneficiaries to reduce the cost burden of LPG refills. This would bring about significant behavioural change and help people adopt clean cooking fuel. It would cost an additional burden to the exchequer to provide a subsidy to PMUY beneficiaries. This additional burden to subsidise 50% to 75%³ of the present cost of LPG cylinders would be in the range of INR 29 to 78 billion (USD 433 to 1,148 million) respectively each year.



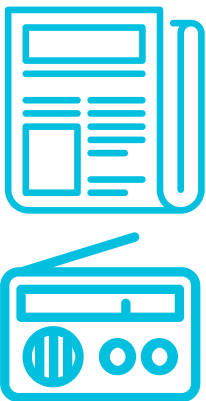
Accessibility

- To achieve PMUY targets, LPG dealers have stretched far beyond their catchment areas and enrolled beneficiaries living far away from their warehouses. These beneficiaries have to travel long distances to reach their LPG dealers to buy refills. The government

3. This cost has been calculated assuming annual rate of 6.4 refills, which is current trend in rural India. We have also assumed that 20% of the 50 million PMUY beneficiaries will choose not to refill their LPG cylinder even once. The cost of each unit of LPG cylinder is the average cost of LPG cylinders in Delhi, Kolkata, Mumbai, and Chennai as published on website of the leading oil marketing company Indane.

should shift the LPG connections of PMUY beneficiaries to their nearest LPG dealer warehouses to avoid challenges related to transportation and accessibility. Ideally, warehouses should be located within five kilometres from homes of beneficiaries.⁴

- The government should incentivise LPG dealers to deliver the LPG cylinders to the home location of PMUY beneficiaries. We estimate the annual cost of incentivising dealers to provide home delivery to PMUY beneficiaries would be in the range of INR 4.6 to 5.7 billion (USD 68 to 85 million)⁵. The dealers should also be allowed to manage an additional LPG warehouse near the location of their PMUY beneficiaries.



Others

- Beneficiaries noted that they are unable to gauge when their LPG cylinder is close to being empty. As a result, they are not able to make financial plans for their next purchase. One option might be that the government provides a double bottled connection⁶ to those PMUY beneficiaries who can afford it, which would help them better manage their energy requirements. With an additional LPG cylinder available for cooking, the beneficiaries can comfortably make financial arrangements to purchase their next refill. Additionally, based on the LPG usage history of beneficiaries, a personalised “call to action” text message could be sent in advance to the registered mobile numbers of PMUY beneficiaries. These messages would remind them to make financial arrangements for possible LPG refills over the subsequent 10-15 days.
- The government should make efforts to increase awareness of the benefits and safety features of the PMUY scheme to mitigate any misconceptions. A combination of mass media, such as TV, radio, and newspapers and targeted promotional activities, such as video on wheels, road shows, and street plays could be used to reach PMUY segments.

4. The government has already been increasing the number of LPG distributors in India aggressively. The plan is to add 10,000 additional distributors and 5,200 dealers have already been selected.

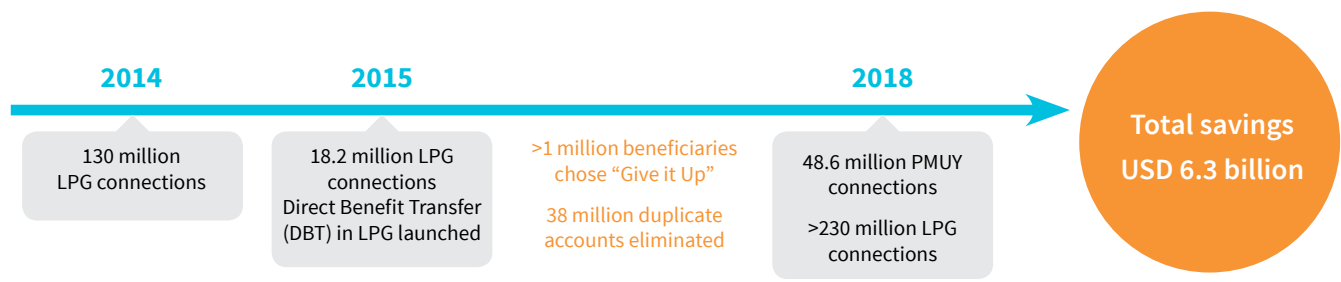
5. We have assumed the cost of home delivery of LPG cylinder to be INR 18 (USD 0.26) and have calculated the total cost after assuming an annual rate of 6.4 refills, which is current trend in rural India. Please refer to an MoPNG circular for the delivery charges.

6. A double-bottled connection is an LPG connection where the beneficiary gets an additional LPG cylinder as opposed to a normal connection where the beneficiary gets only one LPG cylinder.



Introduction

Each year in India, excessive indoor air pollution claims over 120,000 lives⁷. The Indian government launched the [Pradhan Mantri Ujjwala Yojana](#) (PMUY or Ujjwala scheme) in May, 2016. This initiative aims to provide clean cooking fuel to households that have traditionally relied on either firewood, coal, or dung cakes or a combination of the three as a primary source of cooking.



Source: Official website of the [DBT Mission](#)

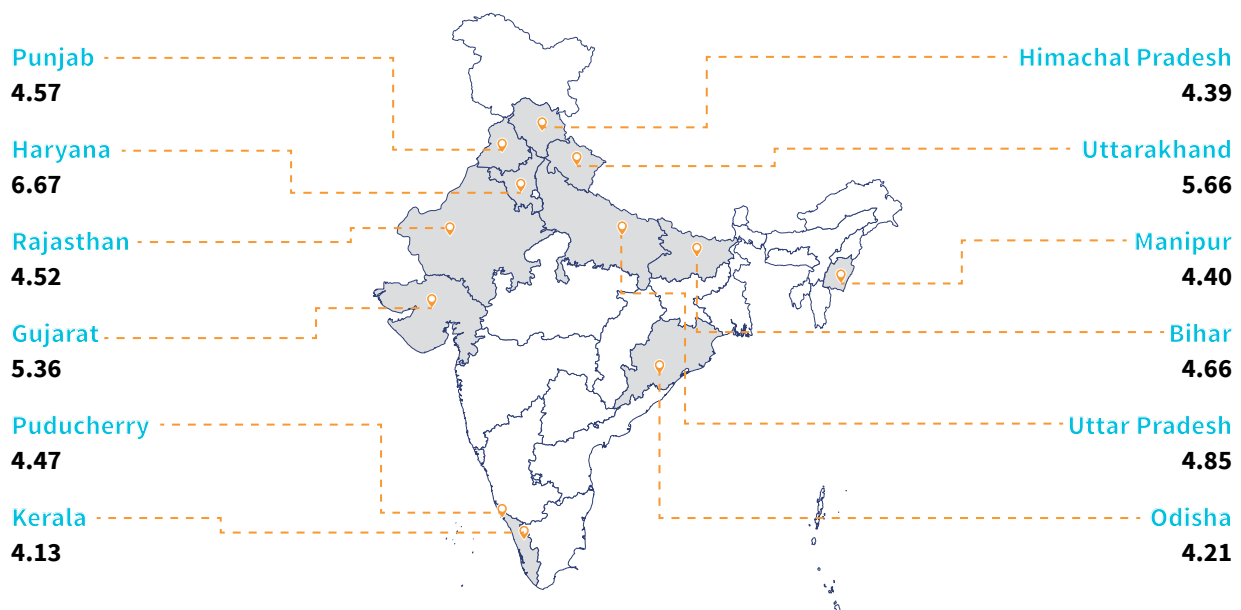
PMUY is a remarkable example of redistribution of fuel subsidy savings that have been realised through policy reforms. Over the past four years (2014–18) the Government of India (GOI) launched the direct benefit transfer in LPG subsidy (DBTL), followed by the “[Give-it-up](#)” campaign, during which time the government nudged wealthy customers to surrender their LPG subsidy. These initiatives resulted in the removal of approximately 38 million “ghost” or “fake” beneficiaries from the system and the voluntary surrender of fuel subsidies by more than 10 million affluent beneficiaries respectively. By launching PMUY, the GOI redistributed the savings of USD 6.3 billion (though this amount is [often disputed in the public domain](#)) to poor people who live in rural areas without clean cooking gas.

7. Indoor air pollution caused [1,24,000 premature deaths](#) in India, as per a 2015 study by Lancet.

The Ujjwala scheme has reduced the high upfront cost of purchasing an LPG connection significantly through a mix of subsidy⁸ and a loan facility.⁹ The Ministry of Petroleum and Natural Gas (MoPNG), which has been responsible for implementing PMUY, used the Socio-Economic Caste Census (SECC) –2011¹⁰ to identify its target segment. The MoPNG simplified the enrolment processes by introducing simple documentation requirements and a quick application process through the use of outreach camps. This encouraged droves of aspiring beneficiaries to flock to dealer locations and camps. As a result, the scheme achieved an exemplary enrolment of 38.5 million beneficiaries within 20 months, taking the overall LPG penetration in the country [from 56% \(household-wide\) in 2014 to 80%](#).

A little over a year after the scheme's launch, media reports¹¹ highlighted the challenge of low refill rates by PMUY beneficiaries. Data from the government's [Petroleum Planning and Analysis Cell \(PPAC\)](#), an arm of MoPNG, shows that the number of LPG connections across India has increased by 16.26% since the launch of PMUY. Yet LPG usage has increased by only 9.83%¹². The government submitted to the parliament that the average annual per capita consumption of PMUY consumers who have remained connected for at least a year from the date of their initial connection is around 4.32 cylinders. The net amount of LPG in each cylinder weighs 14.2 kg. In contrast, the national domestic consumption of LPG in rural India is 6.4 cylinders¹³.

The following figure compares the **average LPG consumption of PMUY beneficiaries**¹⁴ (14.2 kg LPG per cylinder) across Indian states.



MicroSave conducted an independent assessment of PMUY beneficiaries in M.P., Chhattisgarh, and U.P. from November, 2017 to January, 2018, to understand the reasons behind the low uptake of PMUY refills. The objective of the study was to examine the efficiency, efficacy, and operational aspects of the scheme and understand the triggers and barriers that drive the behaviour around usage and refills of LPG by PMUY beneficiaries.

8. A PMUY connection costs INR 3,200 (USD 50). The government bears 50% of the total cost, this is, INR 1,600 (USD 25). This includes a security deposit for the cylinder and pressure regulator, the cost of a 'Suraksha' hose pipe, and charges for documentation, installation, and administrative fees. A PMUY beneficiary has to pay INR 1,600 (USD 25) for the stove and the first refill.

9. A PMUY beneficiary can use a loan facility to fund the purchase of the first refill or the LPG stove. The cost of the LPG stove or refill or both will be recovered on equated monthly installment (EMI) basis from the subsidy amount payable to the consumer on purchase of each refill.

10. [Socio Economic Caste Census – 2011](#)

11. The Wire: [The Poor Got LPG Cylinders Under Modi's Scheme But They Can't Afford Gas Refills](#); Livemint: [India's poor are not using LPG cylinders they got under Ujjwala scheme](#)

12. Scroll.in: [PMS plan for free gas connections is failing its objective as government had been warned it would](#)

13. Lok Sabha: Unstarred Question No. 2673 Answered on 12th March, 2018: LPG Coverage in Rural Areas

14. [Reply submitted by MoPNG in the Lok Sabha on 12.03.2018](#)

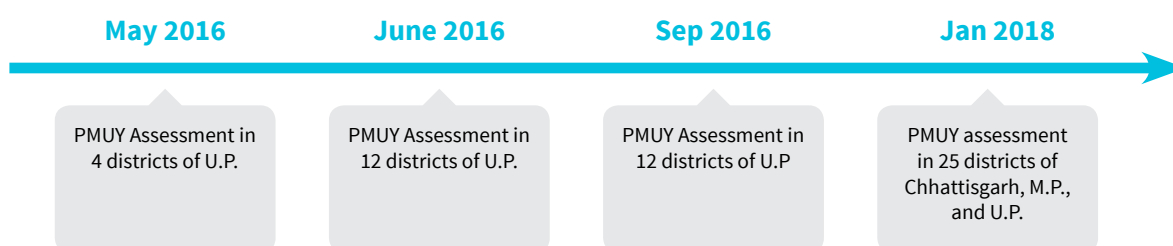
Study objectives

The study answered the following key research questions:

<p>1</p> <p>How effective has the PMUY scheme been in reaching the intended target segment?</p>	<p>2</p> <p>How different is the profile (demographic or usage) of PMUY beneficiaries from “typical” LPG users?</p>	<p>3</p> <p>Have PMUY beneficiaries who use LPG stoves stopped using traditional fuels such as firewood or biomass completely?</p>	<p>4</p> <p>What are the triggers and barriers that impede the high uptake of PMUY refills? Are there any cultural biases, myths, or perceptions that obstruct the use of LPG by PMUY beneficiaries?</p>	<p>5</p> <p>What are the ways to improve the uptake of PMUY refills?</p>
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Methodology

Since the PMUY scheme launched in May, 2016, *MicroSave* has continued to assess its performance. Between May, 2016 and January, 2018, we conducted a total of four rounds of assessments. The findings in this document are primarily from the fourth round of PMUY assessments that we conducted in January, 2018. We conducted this round in U.P., M.P., and Chhattisgarh. The document also includes key qualitative observations from the earlier three rounds of assessments (May to September, 2016).



The study followed a mixed-methods research methodology, led by qualitative enquiry and supported by quantitative surveys. The research team covered districts that are geographically spread out to gather deeper insights. They followed a snowballing method of sampling to select beneficiaries. The survey covered 514 PMUY¹⁵ households spread over 105 villages in 25 districts across Chhattisgarh, M.P., and U.P. The study does not offer a nationally representative picture and only provides insights on the uptake of the PMUY scheme in M.P., Chhattisgarh, and U.P.

The following sections present the findings in this policy brief:

- A. Comments on PMUY implementation
- B. Comments on PMUY refill uptake
- C. Comments on barriers of PMUY uptake
- D. Comments on safety issues
- E. Policy recommendations
- F. Operational recommendations

15. We surveyed a total of 205 PMUY beneficiaries in Chhattisgarh, 199 in M.P., and 110 in U.P.



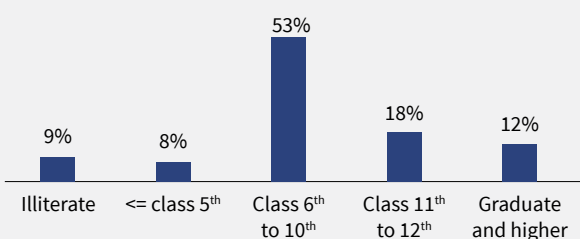
Key findings

A. Comments on PMUY implementation

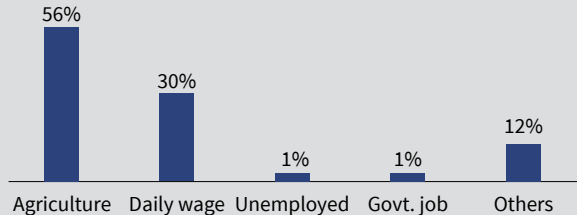


PMUY scheme targeting is “laser-precise” and has made LPG stoves accessible to low-income populations. The set of socioeconomic profiles and consumption needs of the target segment is completely different from “typical” LPG users.

Highest education in the family



Occupation of households



The PMUY scheme is designed appropriately to reach the most deserving beneficiaries through accurate targeting using the SECC¹⁶ database. The study finds that PMUY connections have indeed reached the needy segment where almost 90% of the beneficiaries live in kutchha houses. In almost 70% of the surveyed households, family members reached a highest education level of up to 10th standard or less. Around 86% of the surveyed households either depend on agriculture and seasonal income or belong to the daily wage-

16. <http://secc.gov.in/>

earning category and survive on small daily incomes earned through private and government work. These characteristics set the PMUY segment apart from a “typical” LPG user from the pre-PMUY period in terms of income level, geographical setting, family structure, culture, and fuel consumption behaviour.

The following table highlights the key differences between a PMUY beneficiary and a “typical” LPG user.

Parameter	PMUY (rural areas)	Non PMUY (urban areas)
Occupation	Mostly daily wage earners or farmers	Mostly salaried or involved in business
Family size	Medium to large (2–15 family members)	Small to medium (2–6)
House style	Mostly <i>kutchra</i> ¹⁷ houses (added benefits of cooking with fuelwood during winters)	<i>Pucca</i> ¹⁸ houses
Doorstep delivery of LPG	No	Yes
Diet quantity or appetite	High, due to intensive physical labour	Less, due to city lifestyle and work (desk-based and involves less physical labour)
Eating outside home	Nil	Weekly to monthly outings
Consumption of packaged or ready-to-eat food	Nil	Too many options – home-delivery or mobile food counters
Perceptions, practices and beliefs	<ol style="list-style-type: none"> 1. High usage of fuel to prepare feed for cattle; 2. The habit of eating grains such as pearl millet (bajra), which take a lot of time and, hence, energy to cook; 3. A need to heat water throughout the day during winter; 4. The use of large cooking pots and pans that cannot be used on an LPG cooking stove 	Nil

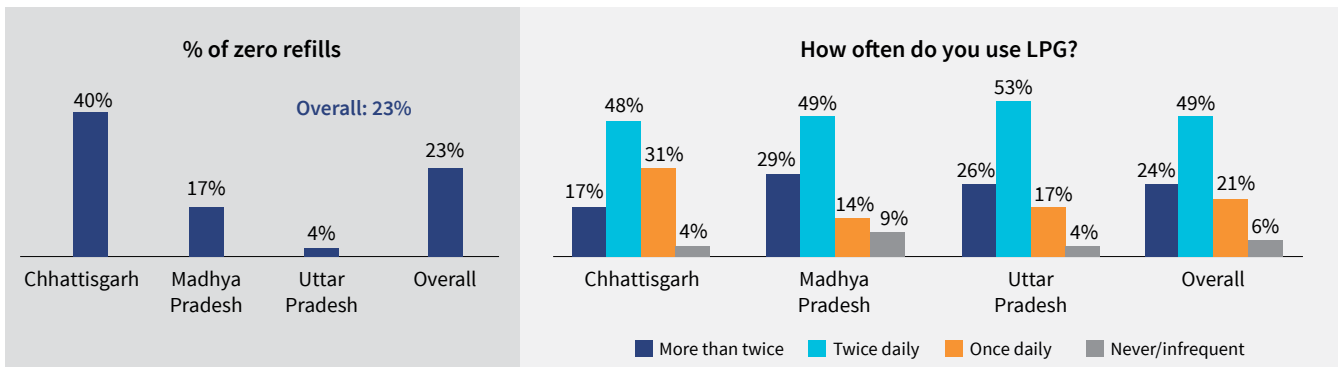
17. The houses are built of wood, mud, straw, and dry leaves

18. The houses are stable and robust and are built of cement and brick

B. Comments on the uptake of PMUY refills



The PMUY segment exhibits a low rate of refilling LPG. Of the surveyed beneficiaries in M.P., U.P., and Chhattisgarh, 23% did not refill even once. These beneficiaries had already received their cylinder before 1st September, 2017. LPG usage is considered a “luxury” in villages, with 81% of the beneficiaries surveyed continuing to use both LPG and firewood or dung-cakes for cooking.



The research highlights that Chhattisgarh has the highest percentage of PMUY beneficiaries (40%) who have not purchased a single refill since they finished using their first cylinder¹⁹. M.P. and U.P. seem to be performing comparatively well, with 83% of users in M.P. and 96% of users in U.P. opting to refill after their first cylinder was exhausted. The study highlights that the average number of LPG cylinders consumed in a year by a PMUY beneficiary is at 2.7 in Chhattisgarh, 3.8 in M.P., and 3.2 in U.P. versus a [national average of 4.32 refills a year for rural areas](#). The poor performance of LPG refill in Chhattisgarh is specifically due to the abundance of free firewood. In Chhattisgarh, [41% of the land comprises forested area](#), compared to 25% in M.P. and 6% in U.P.

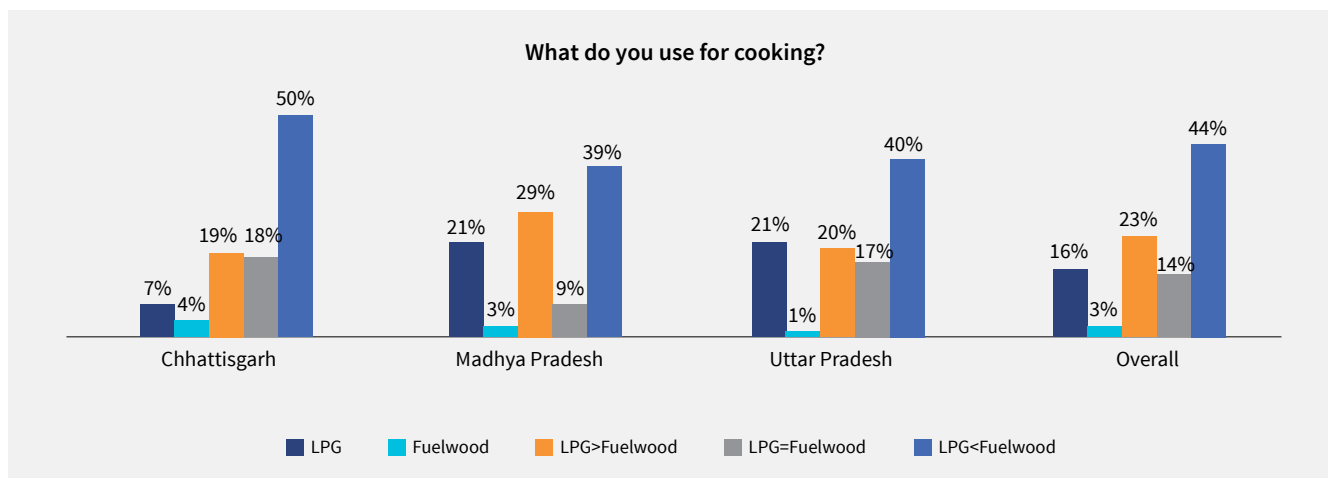
On an average, beneficiaries have to wait for between 19–22 days to order a refill from the LPG dealer after their previous cylinder is empty. This is because of the time needed to arrange the lump sum finance required to purchase a PMUY refill. Beneficiaries who have taken a loan for their PMUY connection also noted that they do not receive any information on the outstanding loan instalments and loan amount. Some beneficiaries were not even aware of the fact that they had actually been given a loan to purchase the stove and first LPG refill.

Finally, the inability of female beneficiaries to travel to the dealer location with heavy LPG cylinders also adds to the average delay in the purchase of refills. During the course of our research, it was evident that both male and female members of a PMUY household realise the importance of purchasing an LPG refill and doing so as soon as possible. However, female beneficiaries often have to depend on male members of the household to arrange money for the refill and to transport the refilled cylinders from the LPG dealer location to their home.

According to the study data, only 16% of beneficiaries have shifted to LPG exclusively, while 81% use fuelwood or dung-cakes at least once a day to cook food. Almost all beneficiaries use LPG mainly to prepare tea. Their use of LPG to prepare food depends upon time and convenience. Most beneficiaries do not use LPG during the winter months as the use of fuelwood has an extra benefit of keeping the house warm through the day. PMUY


19. Beneficiaries who have received the LPG connection on or before 1st September, 2017

beneficiaries also exhibited a tendency to reserve the LPG for use during the rainy season when firewood or dung-cakes are difficult to collect. The beneficiaries interviewed were also not aware of the ‘double bottle cylinder’ facility where they could avail two cylinders per connection.



According to PMUY beneficiaries, biomass fuel such as firewood or dung-cakes is irreplaceable in villages. This is because the fuel is a cheaper alternative for intensive cooking needs, such as preparing fodder for cattle, boiling large quantities of water, and using large pots and pans that are not energy efficient.

C. Comments on barriers to PMUY uptake



The high “effective price” of refill, the absence of doorstep delivery, and cultural issues are the main reasons for the low uptake of PMUY refills.

Most beneficiaries admitted that LPG is their first choice for cooking fuel because it reduces drudgery and improves the cleanliness of homes, pots and pans, clothes, and hands. Beneficiaries also realise that LPG is a highly efficient method of cooking and saves both time and energy. An increasing scarcity of firewood in villages, coupled with risks and threats associated with firewood collection motivate beneficiaries to continue using LPG.

Despite there being consensus around the time saved when using LPG, annual refills are low. Beneficiaries seem to resist making the shift exclusively to LPG, which stems from a number of challenges, as outlined below.

1. Affordability

The cost of the LPG refill is one of the biggest challenges for PMUY beneficiaries. PMUY beneficiaries have to incur a partial or a full day’s loss of wages of INR 100–150 (USD 1.5–2.3) to refill cylinders, as most LPG retailers in rural areas do not provide doorstep delivery. Additionally, beneficiaries have to bear transportation costs (they borrow a bike or a car and pay INR 50–100 (USD 0.77–1.5) for petrol or diesel) to commute to the dealer point. Thus, the effective cost of an LPG cylinder refill for a PMUY beneficiary ranges from INR 900–1,000 (USD 13–15), which is INR 150–250 (USD 2.3–3.8) higher than the actual refill price.

The PMUY segment finds it challenging to meet the effective cost of LPG refills on a regular basis because of their seasonal agricultural incomes and marginal daily wage earnings. Households that are involved in

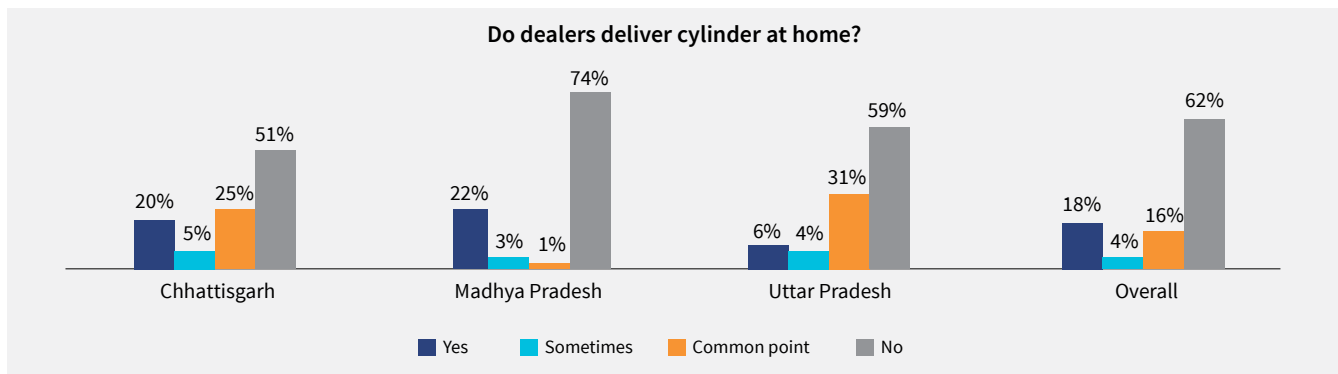
daily wage activities earn INR 150 to 200 (USD 2.3–3) daily, which amounts to INR 5,000 to 6,000 (USD 77–92) monthly. Assuming that the PMUY household shifts to cooking on LPG completely, and the cylinder lasts for a month, the daily LPG usage costs is approximately INR 30–33 (USD 0.5). A household that depends on daily wage income, therefore, must spend around 20% of their daily earnings on an LPG refill. This makes the high cost of an LPG refill untenable for low-income households.

Similarly, households that depend on a seasonal lump sum income from harvests find it difficult to expend every other month on LPG refills. Arranging INR 900–1,000 (USD 13–15) each month is a challenge as they do not have a consistent income and do not save. LPG refills are not a priority expense for these households. Readily available and free firewood and cow dung cakes (especially in forest belts across M.P. and Chhattisgarh) push PMUY beneficiaries to avoid LPG use.

2. Limited doorstep delivery

Ninety-six percent of PMUY beneficiaries interviewed highlighted the fact that the availability or supply of cylinder at the LPG dealer location is “not at all a concern”. Most beneficiaries take cylinders on the same day that they book the request for it. However, a limited scope for home delivery requires the PMUY beneficiaries to travel more than five kilometres, and in some cases, even more than 10 kilometres to pick-up the LPG cylinder from the dealer location.

Limited home delivery is specifically severe in M.P., where 74% of the interviewed beneficiaries said that cylinders are not delivered to their homes. Some dealers in M.P. and U.P. do deliver LPG cylinders to a common point in beneficiaries’ villages, thus reducing the need to travel. In M.P., however, beneficiaries did not have this option. Of the beneficiaries in M.P., 73% have to travel more than five kilometres, and often 10 kilometres, to pick up their cylinders.



3. Behavioural and awareness issues

It was surprising to observe that health is not a major concern for most PMUY beneficiaries, especially in Chhattisgarh. Beneficiaries said that they have become used to smoke and do not see adverse health effects. We also observed that that female beneficiaries have become complacent cooking on traditional *chulhas*²⁰ and accepted it as a part of their lives. These beneficiaries feel that cooking on firewood stove is justified as it saves the family some money.

The research also highlights that beneficiaries have a distinct set of beliefs and practices that limit their use of

20. *Chulha* is an Indian term for stove used for cooking food.

LPG. For example, some feel that food cooked on a traditional stove stays warm when it is kept over the stove, which allows them to serve warm food for a longer period of time. Other PMUY beneficiaries felt that the taste of food cooked on a firewood stove is much better when compared to food cooked on an LPG stove.

No issues with smoke

Indumati, in Durg, Chhattisgarh has no issues with smoke. She has been cooking on a wood-fired *chulha* for the past 35 years. She has become so used to it that she does not complain of a cough, smoke, or eye irritation anymore. She says, *“I am used to it since childhood and we do not sit in front of traditional stove the entire time. We do not have any work so it is better to save money by fetching fuel wood than spending on gas.”*

D. Comments on safety issues



As most PMUY beneficiaries are first-time LPG users, they lack safety awareness related to the use of LPG stoves.

Since most PMUY households have no prior exposure to cooking on LPG stoves, the research team observed gaps in safety awareness that should be addressed. Following are some of the risk factors that we observed during field visits. These require mitigation through safety guidelines and related communication programmes:



Risk Factor #1

PMUY families live in kutcha houses with thatched roofs that leak. During the rainy season, it is quite common for rainwater to drip from the leaking roof.

Possible impact: Water dripping from the roof may seep into the stove and burners and cause corrosion or other damage.

Mitigation: Install LPG connection in the area of the house that is away from leaks.



Risk Factor #2

PMUY families store dry firewood sticks, cow dung, and kerosene in a makeshift cooking area adjacent to mud stove or LPG stove.

Possible impact: Dried firewood sticks and cow dung have a high chance of catching fire during cooking which could potentially cause severe damage to the entire house.

Mitigation: Place LPG stove away from firewood, cow dung, or kerosene.



Risk Factor #3

PMUY households have kutcha houses made of straw and mud. They place the LPG connection in a small unventilated room dangerously close to the straw.

Possible impact: Straw is highly combustible.

Mitigation: LPG stoves must be kept at a safe distance from the straw.



Risk Factor #4

PMUY families in the three states surveyed do not have a separate kitchen area. They mostly use a mud stove in an open area called the aangan (courtyard). They install LPG connections either in the same living room or in the open aangan.

Possible impact: Installing an LPG connection in an open area may pose risk in storms. Also, children, cattle such as goats or cows, or rodents that have easy access to the same open area may damage the LPG stove.

Mitigation: Safeguard LPG stove from goats, cows, cattle, or children and block entry of strong breezes.



Risk Factor #5

Most PMUY families do not have cement slab to place LPG stove. In most cases, they place the LPG stove on the earth below the cylinder. To comply with safety regulations (that is, place the stove above the cylinder) they use a wooden frame to elevate it above the stove.

Possible impact: Wooden frames have a high chance of catching fire due to the excessive heat generated during cooking.

Mitigation: PMUY families should be advised to build a low-cost mud platform on which they can place their LPG stove.

E. Policy-level opportunities to harness the benefits of the PMUY scheme

1. Financial support to PMUY beneficiaries

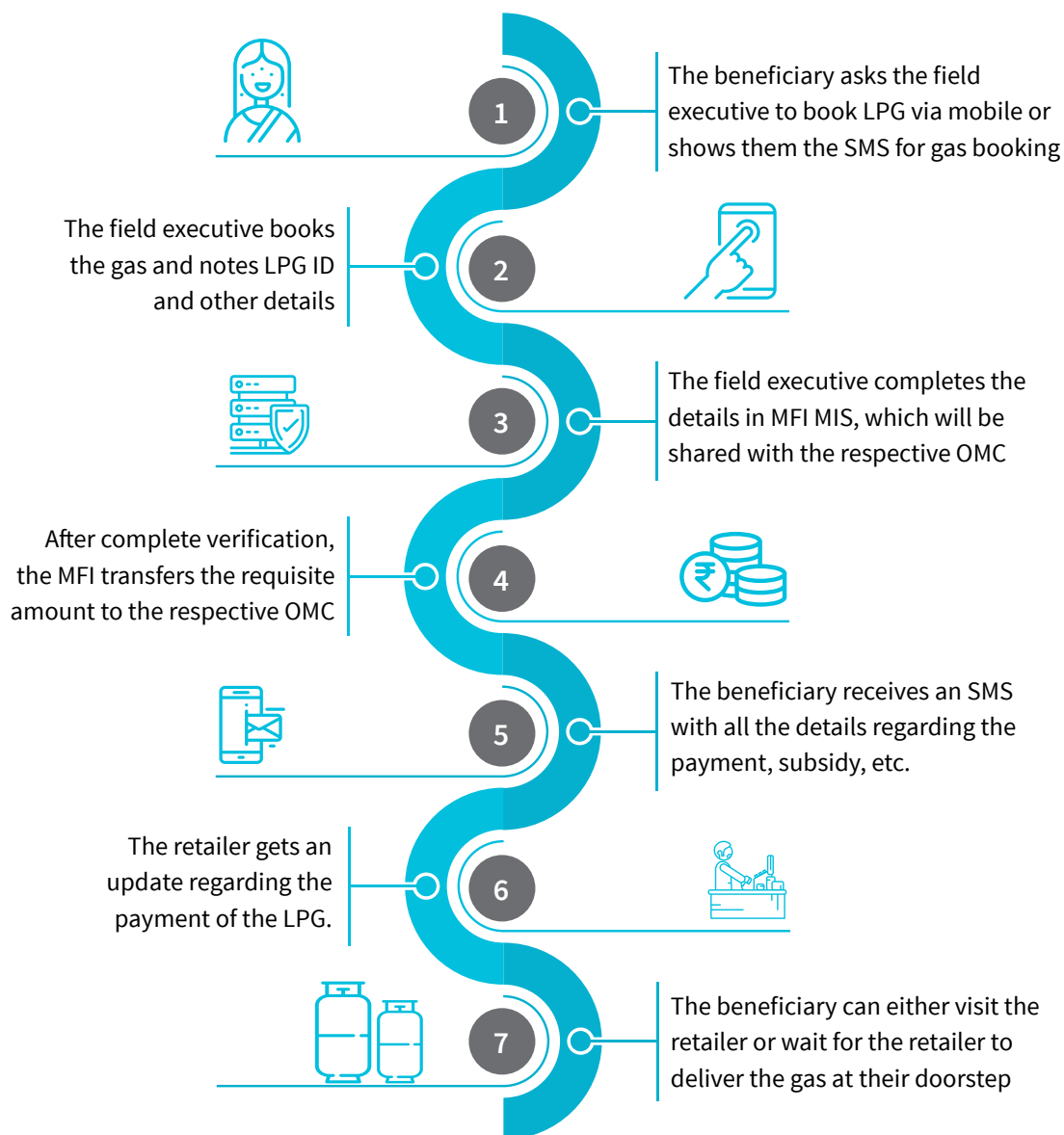
The government should increase the amount of subsidy provided to PMUY beneficiaries to make the refills affordable. The additional cost of providing LPG subsidy to the PMUY beneficiaries at 50% to 75% of the [present cost](#) of an LPG cylinder would be INR 29 to 78 billion (USD 433 to 1,148 million) respectively²¹. The government has recently [shelved its plan to phase out LPG subsidy](#) owing to fluctuating crude oil prices. However, in future, if the government decides to reinstate the decision, the savings from phasing out LPG subsidy could be redirected to the PMUY beneficiaries without any additional burden to the exchequer.

The government should also advise oil marketing companies (OMCs) to recover the loan component from the initial gas stove purchase over a longer period of time – that is, slower amortisation of the loan. One way to do this is by deducting only a part of the outstanding loan amount from the total subsidy amount credited to the beneficiary's bank account. This is in contrast to the current system, where beneficiaries do not receive any subsidy after the refill purchase.

21. This cost has been calculated assuming annual rate of 6.4 refills, which is current trend in rural India. It has also been assumed that 20% of the 50 million PMUY beneficiaries will choose not to refill their LPG cylinder even once. The cost of each unit of LPG cylinder is the average cost of LPG cylinders in Delhi, Kolkata, Mumbai and Chennai as published on website of leading oil marketing company Indane

2. Credit and deposit-linked financial schemes to fund LPG refills

PMUY customers find LPG to be more expensive than fuelwood and cow dung. It is difficult for them to manage the upfront cost of an LPG refill. As lack of affordability is a significant barrier, *MicroSave* suggests tie-ups with MFIs, SHGs, and small finance banks to design financial solutions for PMUY beneficiaries.



Why MFIs?

- No upfront payment for INR 800 to buy a LPG.
- A person to assist the beneficiary for booking (field executive).
- No burden of visiting bank for withdrawing subsidy.
- Savings of time and cost, as beneficiary will not have to visit the agency for booking.

The MFI channel can be used to extend credit to PMUY beneficiaries who already are MFI customers. Similarly, SHG members who hold a PMUY connection should be encouraged to save every day or every week for LPG refills. A pilot of this model should be implemented to assess its viability.

3. Rationalisation of dealer load

We observed during the research that to achieve PMUY targets, LPG dealers have stretched far beyond their catchment areas to enrol beneficiaries far away from their locations. Moreover, beneficiaries are not aware of the dealer portability feature, which allows them to choose the dealer located closest to their residence. The government should conduct a one-time “top-down” analysis to map and move beneficiaries to their closest LPG dealer location. The government could also provide double bottled cylinders to PMUY beneficiaries to assist them to plan their energy requirements better.

4. Communication on health awareness targeted at behavioural change

Communication is the most important aspect of any programme and must be strong at all stages. *MicroSave's* field experience has revealed that health is not a major concern for most beneficiaries mainly because they do not see the tangible effects that the smoke from the *chulha* has on their health. The latest National Family Health Survey says [indoor pollution leads to tuberculosis](#) and the use of cooking gas may shrink the incidence of TB in the country. It is time to launch a dedicated health campaign around the negative effects of burning fuelwood and the associated health costs.

F. Operational Recommendations

1

Introduce a call to action at the moment of decision: Beneficiaries highlighted the fact that it is difficult to assess exactly when their current LPG cylinder will run out. They complain that LPG cylinders become empty without warning. This is, in part, why they are unable to plan their next purchase. Even those who have shifted to LPG rely on biomass or fuelwood as a back-up when the LPG refills run out. Unlike urban consumers, buying an LPG refill represents a high cost for rural consumers. As a result, they need to arrange for sufficient cash on the day of refill. Therefore, a personalised message could be sent to the PMUY beneficiaries based on past LPG usage history to remind them that it is time to make financial arrangements for a possible LPG refill in next 10–15 days. Design changes to the cylinder could also be considered to indicate the amount of LPG remaining.

2

Providing home delivery options: We observed that more than half of the PMUY beneficiaries in all three surveyed states do not receive home delivery of LPG cylinders. The situation is worse in M.P., where 73% of the beneficiaries need to travel more than 5–10 KM (some travel as far as 20–25 km) to obtain an LPG refill. The number of dealers should be increased in M.P. to fill up “white spaces”. Additionally, the dealers should be incentivised to deliver LPG cylinders to the home locations of PMUY beneficiaries. We estimate that this would increase the cost to the government by INR 4.6 to 5.7 billion (USD 68 to 85 million).

3

Setting up an additional warehouse: The government should advise LPG dealers to establish additional warehouses near the location of PMUY beneficiaries. This will reduce the distance the beneficiaries have to travel to purchase their LPG refill currently.

4

Improving awareness: The government should make an effort to increase awareness of the benefits and safety features of the PMUY scheme to mitigate beneficiary misconceptions. Most retailers fail to inform beneficiaries that the PMUY connection can also be availed on credit. Also, beneficiaries do not receive information about subsidy deductions if they take a loan for their PMUY connection. The beneficiaries are not informed about the frequency and number of subsidy credits or deductions. A combination of mass media (TV, radio, newspapers, etc.) and targeted promotional activities (video on wheels, road shows, street play during mela or haat, etc.) should be leveraged to reach the PMUY population. The toll-free number to which consumers can dial in to understand various aspects of the programme or usage should be printed or pasted on the cylinders.

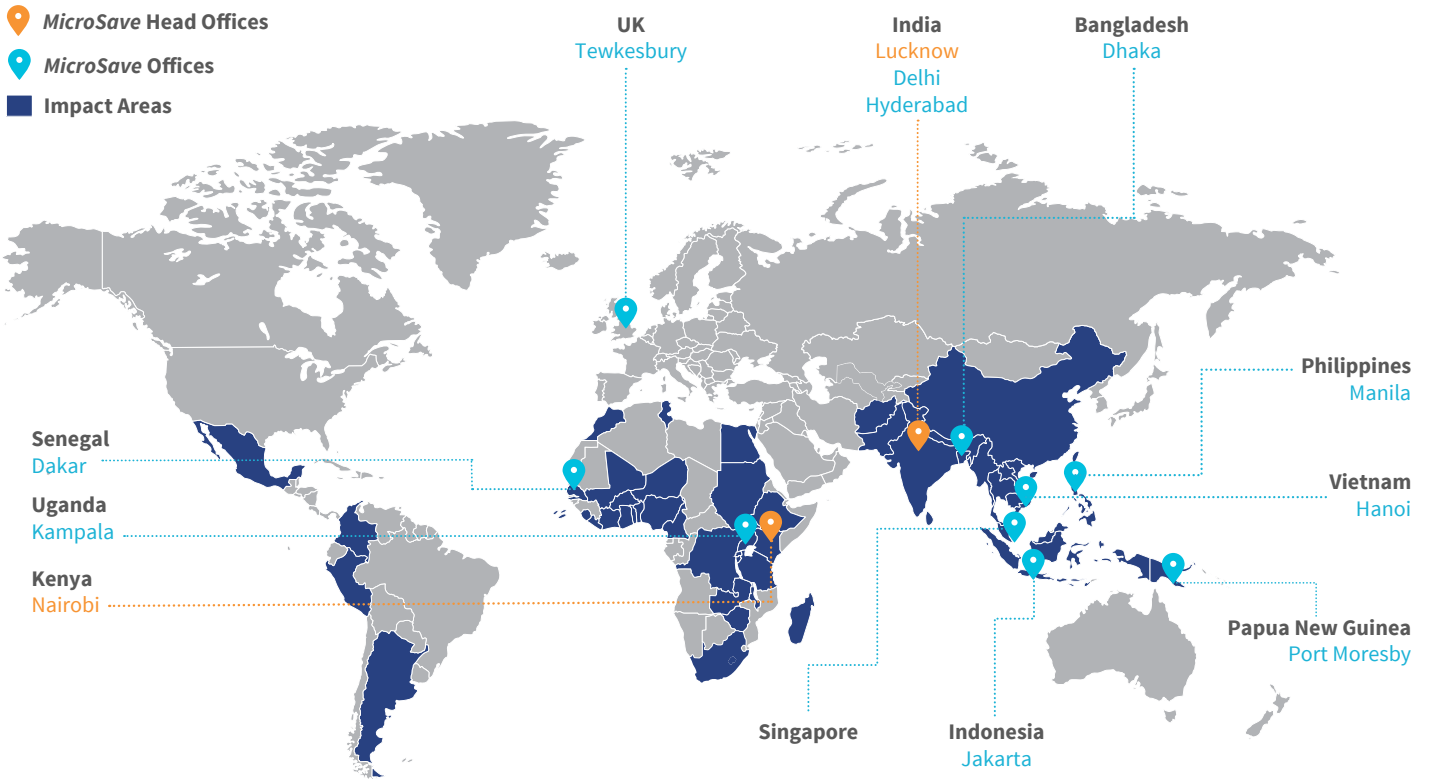
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Alternate LPG booking method: During the research, we observed that the PMUY beneficiaries are not comfortable using interactive voice response (IVRS) to make advance bookings for cylinders. Instead, beneficiaries prefer to bring their empty cylinder to the dealer location and check on the availability of a replacement. We suggest that the government designs a suitable booking method that involves the government administration in the local villages such as the post office or panchayat officials. The PMUY segment is well-acquainted with post offices and Panchayat officials and thus would be much more comfortable to access them to reserve their cylinder.

22. We have assumed the cost of home delivery of LPG cylinder to be INR 18 (USD 0.26) and the total cost has been calculated assuming annual rate of 6.4 refills, which is the current trend in rural India. Please refer MoPNG circular for the delivery charges.

MicroSave

Market-led solutions for financial services



Asia Head Office

28/35, Ground Floor, Princeton Business Park, 16 Ashok Marg,
Lucknow, Uttar Pradesh, India 226001
Tel : +91-522-228-8783 | Fax : +91-522-406-3773
Email: Manoj@MicroSave.net

Africa Head Office

Shelter Afrique House, Mamlaka Road,
P.O. Box 76436, Yaya 00508, Nairobi, Kenya
Tel : +25-420-272-4801 | Fax : +25-420-272-0133

www.MicroSave.net