



# CHARTING THE SUCCESS OF LPG DISTRIBUTION IN INDIA

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An Exceptional Energy Case Study

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## The World LPG Association

The World LPG Association (WLPGA) was established in 1987 and unites the broad interests of the worldwide LPG industry in one organisation. It holds Consultative Status with the ECOSOC. WLPGA exists to provide representation of LPG use through leadership of the industry worldwide.

## Acknowledgements

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# SCENE SETTING - WHY THIS STUDY



**When a country the sheer size of India launches a formidable clean energy campaign with staggeringly ambitious targets, the world takes note and watches.**

India is home to more than 240 million households out of which about 100 million households were deprived of LPG as cooking fuel and had to rely on traditional fuels such as firewood, coal, dung – cakes etc. as a primary source of cooking fuel. The smoke from burning such fuels causes dangerous levels of household air pollution that adversely affects the health of women and children causing several respiratory diseases and disorders. According to a report from the World Health Organization (WHO), smoke inhaled by women from unclean cooking fuel is equivalent to being in a room burning 400 cigarettes in an hour. In addition, women and children had to go through the drudgery of collecting firewood where they are at risk from a host of dangers.

**Liquefied petroleum gas (LPG) provides an instant solution to many of these issues and its many specific benefits make it the perfect solution to replace cooking with traditional fuels.**

With support from the very highest echelons of Indian government, Pradhan Mantri Ujjwala Yojana (PMUY), or more simply 'Ujjwala' was launched by Prime Minister of India Narendra Modi in 2016. Ujjwala aims to provide lifesaving LPG connections to families in India and reduce the threat of household air pollution.



The world looks to India to learn from these initiatives and this report looks at the various elements of this ambitious plan, charts the successes and lessons learned so that elements of these programmes can be replicated in other markets.

# INTRODUCTION



In 2012 the World Health Organization almost doubled their statistic of people dying prematurely from exposure to household air pollution to a staggering 4.3 million per year. This is more than double the number of people who die from HIV AIDS, tuberculosis and malaria combined. **Cooking with LPG, with its many clean burning benefits, provides an immediate solution to this pressing health issue.** This has been recognised worldwide and acted on with great success in India..

On 1<sup>st</sup> May 2016 Narendra Modi, Prime Minister of India, launched the Ujjwala scheme. The goal was to distribute 50 million LPG connections to women of below poverty line (BPL) families,. A budgetary allocation of ₹800 billion (US\$12 billion)

was made for the scheme. In the first year of its launch, some 20 million connections were made. As of 23 October 2017, 30 million connections were made, 44% of which were given to families belonging to scheduled castes and scheduled tribes. In 2018, the scope was widened to include a total of 80 million poor households. These were to be released by March 2020. By December 2018, 58 million were released. Finally, the target was achieved by September 2019, 7 months before deadline. 21,000 awareness camps were conducted by state-owned Indian LPG marketers. The scheme, somewhat naturally, led to an increase in LPG consumption by 40% in 2019 as compared to 2014. Today India is the second biggest domestic LPG market in the world after China.

# LPG IN INDIA



Marketing operations for LPG in India commenced in 1955 in Mumbai. Since its introduction, **the number of LPG connections grew gradually** over a period of almost six decades, **eventually reaching 145 million consumers across the country by April 2014**. This came at a time when total LPG penetration in India stood at a modest 56%. The availability of clean cooking fuels in India has been a major challenge for rural households for many years. Though modern fuels like kerosene and LPG are the major sources of cooking energy in urban India, a large portion of households still used biomass such as firewood, dung, crop residue, coal and charcoal.

The Government of India provides LPG to domestic households through the three state-owned Indian

LPG marketers: Indian Oil Corporation Limited (IOC), Hindustan Petroleum Corporation Limited (HPLC) and Bharat Petroleum Corporation Limited (BPCL). Supplies are made available to consumers through a wide distribution network of Indian LPG marketers. Before the current package of reforms were instituted, LPG cylinders for domestic use were sold at heavily subsidised rates in 14.2 Kg and 5kg cylinders. Eligible households had access to a certain number of subsidised cylinders per year. The total subsidy burden on the Indian State was \$460 billion USD for the period between April 2013 and March 2014. This massive public subsidy was a fiscal challenge for the state exchequer. In addition to the fiscal issues, the pricing of domestic subsidised LPG below market price, led to the diversion of subsidised LPG to non-domestic uses such as commercial and industrial applications





which created a black market. This, in turn, also added to the burden on the state. All these issues led the government to explore a number of alternative schemes to minimise seepage of subsidised LPG into other segments. This led to the launch of Direct Benefit Transfer of LPG Subsidy (DBTL) by the Ministry of Petroleum & Natural Gas, as one way to increase the integrity of the subsidy system.

**DIRECT BENEFIT TRANSFER OF LPG SUBSIDY (DBTL):**

The DBTL scheme was initially launched in selected parts of India in mid-2013 and was carried out in six phases. In the initial roll out of the scheme, the Aadhaar number (a 12-digit unique identity number based on biometric and demographic

data of Indian citizens) was used to access the LPG subsidy by consumers. **Under the scheme, consumers were to pay the market price for the domestic LPG and the subsidy amount was transferred directly to their bank accounts.** Learning from initial challenges, the Government comprehensively reviewed the scheme and after examining the difficulties faced by the consumers, re-launched a modified scheme in Nov 2014 and named it Pratyaksh Hanstantrit Labh or PAHAL as it is commonly known.

**THE MAIN OBJECTIVES OF PAHAL ARE:**

1. Ensure saving public money by eliminating subsidy diversion/seepage.
2. Protect entitlements and ensure the subsidies reach targeted domestic consumers.
3. Improve the availability/delivery of LPG cylinders to genuine LPG consumers.
4. Eliminate fake/duplicate LPG connections.

Currently, transfers are only made to verified bank accounts which are linked to the national LPG database. National subsidy rates are maintained in a centralised system where the quota of



subsidised cylinders is also managed for each customer. **Currently LPG customers receive subsidies on twelve cylinders per financial year.**

The PAHAL scheme has been recognised by the Guinness Book of World Records as the largest cash benefit programme in the history. As of July 2019, **248.6 million LPG customers (93.85%) out of 264.9 million active customers have joined this scheme.**

### SCHEME IMPLEMENTATION IMPACT ON THE LPG MARKET

Following the roll out of the PAHAL scheme, there was an increase in the sale of commercial cylinders, whereas sales of domestic cylinders have fallen significantly. This is an indication that domestic LPG is no longer being diverted into commercial and industrial uses. There has also been an increase in the growth rate of commercial LPG sales by 41.4%, as well as Autogas sales which have grown by 20.2%. In addition, the growth rate of the domestic LPG sales has decreased by 4.2% between 2014 and 2016. This is another indication that diversion of domestic LPG to other uses such as Autogas has reduced. Projected year on year savings between 2014 and 2018 is projected to be approximately \$7.89 billion USD.



### GIVEITUP

In early 2015, the Indian Government launched the “GiveltUp Campaign”, which was spearheaded by Prime Minister Modi. He made an appeal to wealthy Indians who could afford to pay the market price of LPG, to give up their LPG subsidy on domestic LPG. He also announced the decision of the Government to utilise the money saved by the GiveltUp Campaign to provide subsidised LPG to struggling sections of India that were still using conventional fuels for cooking. Since the launch of GiveltUp some 10.3 million LPG customers across the country have given up their LPG subsidy. It is estimated that a savings of approximately \$1.07 billion USD has been achieved following the launch of GiveltUp.

### SMOKELESS VILLAGES

In 2015, Indian Oil Corporation (IOC) began working on the Smokeless Village initiative. ‘Smokeless Village’ was conceptualised as a model to reach the remotest corners of India to achieve the objective of connecting each household in every village with LPG. This would aide in combatting the health hazards resulting from household air pollution caused by use of traditional fuels.

After one LPG connection was provided to each household in the village, it was officially declared as “Smokeless” by local authorities. Villages were adopted after data was collected regarding population, total number of households and number of households using LPG. After a village was identified, the village representatives were contacted by an officer of IOC to inform them of their selection and to walk them through the process. Other third parties such as relevant local NGOs and community organisations were also incorporated into the Smokeless Village project to help with its implementation and amplify its reach.

Workshops were conducted for villagers to create awareness about household air pollution and its health hazards, as well as the benefits of LPG usage over conventional fuels. **The villagers were also educated on the safe use of LPG with hands-on demonstrations and educational programmes.** LPG was then provided to all



The first Smokeless Village was declared on 28<sup>th</sup> November 2015. Since then IOC working with local authorities all over India has created over 3800 Smokeless Villages and 40 Smokeless Towns.

remaining households in the village followed by a certificate issued by the government indicating that 100% of the inhabited households had LPG connections. The village was then officially declared a "Smokeless Village".

The WLPGA created a video case study on the Smokeless Villages campaign, as part of the Cooking For Life campaign. The video, along with a wealth of supporting data, is available on the WLPGA website.



# LAUNCHING UJJWALA



Both the PAHAL and the GiveItUp programmes served as stepping stones towards the creation of the Pradhan Mantri Ujjwala Yojana (PMUY), commonly referred to as 'Ujjwala' which was launched in May 2016 by Prime Minister Modi and the Ministry of Petroleum and Natural Gas (MOPNG). The scheme aimed to provide clean cooking LPG to poor households that otherwise still used traditional cooking fuels such as firewood, coal, cow-dung cakes, etc. Switching to LPG would liberate them from the ill-effects of smoky kitchens and the drudgery of collecting firewood.

Ujjwala was formally launched by Prime Minister Modi in Balia, Uttar Pradesh with a target of providing free access to LPG to 50 million female members of BPL households by March 2019. This target was subsequently raised up to 80 million LPG connections aimed at providing universal access to all poor households in the country by March 2020. Only women from poor households who fall under the following defined social categories are eligible to get connections under the Ujjwala scheme:





- (1) Socio Economic Caste Census data 2011 (based on Government Census 2011)
- (2) Scheduled Caste/Scheduled Tribes households
- (3) Beneficiaries of Pradhan Mantri Awas Yojana (PMAY- Rural)
- (4) Antyodaya Anna Yojana (AAY)
- (5) Forest dwellers
- (6) Most Backward Classes (MBC)
- (7) Tea & Ex-Tea Garden Tribes
- (8) People residing on islands/river islands
- (9) Poor Households as per the 14 point exclusion criteria of SECC

Since the programme was launched, the Indian LPG marketers Indian Oil Corporation Limited (IOCL), Hindustan Petroleum Corporation Limited (HPCL), Bharat Petroleum Corporation Limited (BPCL) have been responsible for implementing the programme. **Over the following 39 months, access to LPG was increased across the length and breadth of the country helping poor women who had never had access to clean cooking fuel before.** Access was established

in the remotest corners of the country – from the Himalayas in the north to the backwaters in the south, from the hilly forested terrains of the north-east to the deserts in the west.

On 7 September 2019, Prime Minister Modi handed over the symbolic 80 millionth LPG connection. This achievement meant that LPG penetration in India had reached 96.5% of the country, up from 62% on 1 April 2016. Today, some 274 Million households, nearly the entire population of one of the most populous countries on earth, now have access to LPG.

The Ujjwala programme provides a cash subsidy of Rs. 1600 (approximately \$23 USD) by the Indian State, which can be used for the security deposit on an LPG cylinder, a regulator and a hose, a consumer booklet and installation and demonstration charges. Indian LPG marketers are also offering interest free loans for accessories such as hot plates as well as well. 78% of end users decided to take advantage of these types of loans. The loans are paid off by deducting the subsidy received for each refill until paid in full. Some State governments also provide funding assistance for the hot plates and the first cylinder refill.



The scheme largely caters to poorer segments of society across the country. It is significant to mention that around 85% of Ujjwala beneficiaries have sought cylinder refills and the average per capita consumption is around three refills per year. This should be seen as a positive change in the lives of these households which were long dependant on traditional cooking fuels and methods. As the adaptation to cooking on LPG by these first-time users is gradual and dependent on various factors - such as behavioural aspects and societal practices - a period of one year is considered to be a transition period for switching over completely to LPG.

**To create awareness of the benefits of LPG over traditional fuels, various initiatives were launched such as 'LPG Panchayats' as well as other awareness programmes.** LPG Panchayats are platforms for sharing of experiences and concerns by consumers. Between April 2018 and March 2019, the industry organized over 105,000 LPG Panchayats across the length and the breadth of the country.

To make LPG affordable to poor families, LPG marketers in India introduced LPG cylinders in a smaller and more affordable package - 5kg cylinders for Ujjwala beneficiaries wherein they could swap their 14.2 Kg cylinder for a 5 Kg refill. Under this programme they maintain the flexibility to switch back to 14.2 kg cylinders in the future. The prospective applicants were also

given the option to access the 5 kg Double Bottle Connection scheme. This programme provides two 5kg cylinders, thus minimising the danger of running out of LPG while cooking. Having two cylinders has been shown to vastly improve end-users' comfort with using LPG. For a Double Bottle Connection Rs.1600 (\$23 USD) per connection is paid for by the government with an additional Rs.350 (\$5 USD) paid for by the marketers.

To increase the number of refills taken by Ujjwala beneficiaries, the Indian LPG marketers also deferred the payback period of loans for a period of one year or until the customer takes six LPG refills.

Making LPG cylinders available to the consumers residing in the distant and far flung areas was crucial in realizing the noble aim of providing universal coverage of clean cooking fuel to poor households across the country. LPG marketers have laid down plans to improve access to LPG through continued investment in expanding the national distributor network. Between April 2018 and March 2019, the Industry created 3,626 new LPG distributors. As of 1 June 2019, there were 23,776 LPG distributors across India. Over and above the upcoming distributor network, the LPG marketers have taken assistance from Common Service Centres (CSC) scheme, a project under the Digital India program. CSCs are used to provide a large number of digital services in the rural areas. The key stakeholder of the scheme is the Village Level Entrepreneur (VLE). VLEs have set up small agencies which are providing new LPG connection enrolment, LPG refill booking and delivery services in exchange of a nominal fee. Thus VLEs will be able to bridge the gap between the distributor network and the requirement of the customer in far flung areas.

### **OTHER SOCIO-ECONOMIC BENEFITS OF THE SCHEME:**

- ▶ A large number of rural poor households using traditional cooking fuels such as firewood/agriculture waste/biomass/ kerosene are switching to clean cooking LPG. By making this switch, Household Air Pollution (HAP) in the kitchens is reduced significantly.

- ▶ There are substantial health benefits for women and their families as a result of reducing exposure to smoke emitting from burning solid fuels and kerosene.
- ▶ There is also a notable reduction in emissions of pollutants such as CO<sub>2</sub>, black carbon and organic carbon released by inefficient solid fuels, which contribute to climate change.
- ▶ There is less pressure on forests, where wood fuel - including charcoal - is harvested in a non-renewable fashion which contributes to deforestation.
- ▶ There is a reduction in women and child labour spent fuel collection and cooking, thereby creating opportunities for alternative engagement in education, other productive labour and social activities.



# INFRASTRUCTURE DEVELOPMENT



With the implementation of Ujjwala, the entire Indian supply chain of LPG had to be augmented to meet the increased demand across the country.

To cater to the increased number of LPG consumers in the country, the associated infrastructure to support the LPG ecosystem required expansion as well. Since, more than 50% of LPG is required to be imported, plans were drawn for constructing more import terminals and augment the existing ones. While new import terminals at Mundra (on the western coast) and Haldia (on the eastern coast) have been commissioned, few others are expected to come up on the east and west coast. This will enable the LPG industry to have flexibility in receiving LPG cargoes as the Import requirement reaches almost 14 MMTPA within next 2 -3 years.

In order to enable cross-country movement, more than 4000 km of product pipelines is being laid. The availability of this new infrastructure has enabled the Indian LPG marketers to meet the increased demand of LPG across the country after PMUY was implemented. This infrastructure will also be able to support the demand in the forthcoming years.

In addition to the bulk receipt and transportation, the bottling infrastructure also saw a lot of work towards brownfield and greenfield expansion. The industry put into place plans for more than 30 new bottling plants in addition to the augmentation of existing bottling plants so as to achieve higher bottling capacity closer to the demand centres. Most of these projects shall be completed with 2021-22. At present, the rated industry bottling capacity in the country is almost 19 MMTPA and the capacity utilisation of 120 to 140 % is achieved easily from the 195 bottling plants. In case of deficit or regional imbalance, Bottling assistance from private parties are being sought.

Additionally, as LPG cylinders are transported to LPG distributors by road, the transportation fleet to cater to the increased number of distributors and area of supply is also being expanded.





## PARALLEL WORK DONE ON EXPANSION OF DISTRIBUTION NETWORK IN RURAL AND REMOTE AREAS

Population distribution and concentration is closely linked to the geographical diversity of India. Until 2014 the majority of the LPG distribution network was accessible only in major cities, towns, and large villages with sizeable populations. Families living away from these distribution points often found it difficult to access LPG connections and refills. This gap in the distribution network was the major missing link in the LPG ecosystem.

To quickly increase LPG penetration across the country, new guidelines for selection of LPG distributorships were implemented by the Indian LPG marketers in June 2016. Under these revised norms, new distributors were invited to contact any of the Indian LPG marketers to set up new businesses with the goal of rapidly expanding distribution networks in rural and remote areas. Up to June 2019, around 3,800 new distributors had been commissioned thus increasing the reach of LPG throughout the country and creating new jobs in local communities.

Between 2014 and 2019, around 10,000 LPG distributors were added to the LPG distribution network and with this, the LPG requirements of the country, whether rural or remote, were efficiently catered for by the distribution network.



# COOKING FOR LIFE



Ujjwala forms part of the World LPG Association's Cooking For Life campaign. Cooking For Life is a campaign from the WLPGA which was launched in 2012 and aims to facilitate the transition of a billion people from cooking with traditional fuels, as well as other dirty and dangerous fuels, to cleaner burning LPG by 2030.

Cooking For Life convenes governments, public health officials, the energy industry, and global NGOs to expand access to LPG and bring this modern alternative to the people who need it most. Cooking For Life also works to increase public awareness about how traditional fuels negatively affect everyday life among the world's most vulnerable. Cooking For Life puts the necessary tools and resources for success in the hands of energy policy decision makers in developing countries. In addition to India, Brazil and Indonesia are shining examples of successful countrywide conversions to LPG, proving that large-scale adoption is possible. The campaign arms leaders and decision makers with best practices and lessons learned for implementing successful LPG conversion programmes.

Other benefits of the campaign will be preventing some 500,000 premature deaths per year, primarily women and children, from exposure

to household air pollution. It will also save some 2.65 million hectares of forest, or 51% of annual global net deforestation, with every 268 million households converted to LPG.

For more information visit [www.wlpga.org/initiatives/cooking-for-life/](http://www.wlpga.org/initiatives/cooking-for-life/)



# NEXT STEPS



Some follow up proposals include, but are not limited to:

- ▶ Ensure that everyone who has a connection uses LPG and that there is no fuel stacking.
- ▶ In terms of health measurement, are there statistics in place to demonstrate how health has improved since the scheme was launched?

- ▶ Consider the adoption of renewable propane.
- ▶ How can representatives from other countries work with the government of India to learn from the success and educate their own nations on how to transition to LPG?



# CONCLUSION



The Ujjwala scheme is a show-stopping example of a government responding to a national health crisis with a nationwide project, and demonstrates that this level of initiative is only possible with strong political will. PAHAL resulted in less divergence of subsidised product into commercial and industrial sectors and is an

excellent example of targeting subsidies to ensure they reach the people who need them.

The project can be used as an example for other countries who seek to improve the health and welfare of BPL families, particularly of women.



**READ MORE**



WLPGA has produced a wealth of reports and case studies on the benefits of switching to LPG and these are all freely available from the WLPGA website ([www.wlpga.org](http://www.wlpga.org)).



Further reading suggestions include:

- ▶ LPG's contribution to achieving the Sustainable Development Goals (SDGs)
- ▶ Cooking with Gas: Why women in the developing world want LPG and how they can get it
- ▶ How Children in the developing world benefit from switching to LPG
- ▶ Socioeconomic impact of switching to LPG for cooking
- ▶ Substituting LPG for Wood: Carbon and deforestation impacts
- ▶ Kerosene to LPG conversion programme in Indonesia
- ▶ Accelerating the LPG Transition: Global Lessons from Innovative Business and Distribution Models



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