

From connections to use: Realizing the objective of smokeless kitchens for all

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The recently announced Pradhan Mantri Ujjwala Yojana to provide concessional LPG connections is a step in the right direction but much more needs to be done by 2019 and beyond to ensure homes in India cook using modern fuels. This article explores the issues in providing connections, subsidy provision and ensuring sustained use of LPG and other modern fuels to displace solid fuels from Indian kitchens. It also highlights the need for planning for increased demand and addressing institutional gaps to ensure the benefits of modern fuel adoption, especially health benefits are realised.

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1. Introduction

As part of the budget speech, the Finance Minister announced that he was setting aside Rs. 2000 crores to subsidise the cost of acquiring LPG connections for 1.5 crore BPL households. This was followed by the announcement of a more ambitious Rs. 8000 crore scheme called the Pradhan Mantri Ujjwala Yojana (PMUY), which aims to provide subsidised connections to 5 crore BPL households by 2019 (PIB 2016). PMUY is part of a larger program of adding 10 crore new LPG connections by 2019 to achieve nearly universal connection coverage in Indian households (PTI 2016).

According to Census 2011, solid fuels such as firewood, crop residue, coal and dung-cakes are used by about 17 crore Indian households as their primary fuel for cooking, with 88% of rural households reliant on such fuels. Burning such fuels results in severe household air pollution which is identified as the second leading contributor to India's disease burden (Ministry of Health and Family Welfare 2015). In comparison, poor sanitation, that has received much needed attention lately, ranks 15th. According to Global Burden of Disease data published by WHO, solid fuel use is responsible for about 13% of all mortality and morbidity in India (measured as Disability Adjusted Life Years), and causes about 40% of all pulmonary disorders, nearly 30% of cataract incidences, and over 20% of each of ischemic heart disease, lung cancer and lower respiratory infection (IHME 2015). This deprivation is gendered to a large extent as women and children are the most exposed to harmful effects of smoke from burning these fuels. Studies estimate that 88% of rural women in the working age are engaged in the drudgery of fuel-wood collection and spend an average of four hours every week on it, depriving them of the opportunity to use this time more fruitfully in leisure or productive activities (Desai 2011). In the past, governments have attempted exploring alternatives such as promoting improved biomass cook-stoves which have largely been unsuccessful (Kishore and Ramana 2002). Moreover, recent research shows that even so-called 'clean stoves' can have significant health

impacts (Smith and Sagar 2014). Therefore, this ambitious program announcement by the government is timely and significant.

2. PMUY scheme

PMUY proposes to provide Rs. 1600 per household to cover the security deposit for a 14.2 kg cylinder as well as the regulator. This builds upon the 'Give It Up' and 'Give Back' campaigns that respectively urge the well-off to give up their LPG subsidies and provide one subsidised LPG connection to a BPL household in turn (Jindal 2016). State government grants and CSR funds of the oil marketing companies – under the Rajiv Gandhi Grameen LPG Vitaran Yojana (RGGLVY) – have been used earlier to subsidise the initial cost of acquiring LPG connections for BPL households. However, PMUY is much larger in its scale of ambition. In comparison with claims of about 75 lakh BPL households being given subsidised LPG connections until September 2012 (PIB 2012) and 55 lakh being covered under the Give Back program, PMUY targets 5 crore connections over three years.

If the problems arising out of usage of solid fuels for cooking need to be truly resolved, then all households should not only obtain a connection but also use a clean fuel such as LPG on a sustained basis. Therefore concerted long term efforts are needed to ensure that households want to use sufficient quantity of LPG or other modern fuels, there is reliable supply of the fuels and there are institutions and processes to help achieve these goals. Unless the issues described in subsequent sections are addressed, PMUY runs the risk of failure similar to Rajiv Gandhi Grameen Vidyutikaran Yojana. This program was expected to deliver universal electricity access but due to design, planning and implementation weaknesses it could, at best, be said to have delivered physical infrastructure to most of the country but not universal access or affordable and reliable electricity supply (Sreekumar and Dixit 2011, Josey and Sreekumar 2015).

3. Ensuring sustained use of modern fuels

Affordability

An important driver in the decision to switch from solid fuels to modern fuels is affordability and merely subsidised connections provided under PMUY will not be adequate for this. Households will have to bear other upfront costs to get a connection over and above the Rs. 1600 subsidy. These costs could range between Rs. 1800 and Rs. 2500 for administration, inspection and demonstration charges, and a stove and tube, and could be up to 50% of a typical poor rural household's monthly expenditure¹. One way to address this could be for state governments to pitch in with additional support, as they have done in the past (PIB 2012).

Past experience shows that providing subsidised connections alone does not translate to regular LPG use, particularly if solid fuels are available 'free of cost' (Jain, Agarwal and Ganesan 2014). The Deepam scheme of the Andhra Pradesh Government provided about 17 lakh subsidised connections in 2 years, but most beneficiaries continued to use biomass as the primary cooking fuel for affordability reasons (Rajakutty and Kojima 2002). The 2012 'Kerosene free Delhi' scheme was

¹ Estimated from average household size and average monthly per-capita expenditure of a poor rural person as per the expert group chaired by Dr.C. Rangarajan (Planning Commission 2014)

similar, with about half the beneficiaries continuing to use firewood, kerosene or illegally procured LPG though the scheme resulted in 3.5 lakh new connections in 2 years (IRADE 2014).

It is estimated that an average household would need about 13 cylinders of 14.2 kg each per year to meet all its cooking needs². At today's subsidised LPG prices, a typical family would spend about Rs. 5500 per year for the 13 cylinders it would use. This would be a significant 10% of a BPL family's average annual expenditure. Therefore, additional LPG subsidy to BPL households beyond the current subsidy is required to ensure sustained use of LPG. Currently, LPG subsidies are around Rs. 95 per cylinder. If this has to be increased to, say, Rs. 350 per cylinder for the first seven cylinders in a year, the additional annual subsidy for the 5 crore BPL consumers would be a maximum of about Rs. 9000 crores. The decision to stop subsidies for all those reporting incomes over Rs. 10 lakhs per annum can help in reducing this subsidy burden. It can be further reduced through other subsidy exclusion means based on factors such as asset ownership³ and providing graded subsidies to consumers in the intermediate income bracket (say, incomes between Rs. 6 and 10 lakhs per annum).

Cash flow is also an issue which affects affordability, given the lumpy nature of payments for 14.2 kg cylinders, unlike for biomass or kerosene (Nayak, Werthmann and Aggarwal 2015). In this regard, proposals to use smaller (5 kg) cylinders and accepting payments for connections in instalments are welcome measures.

Effective subsidy transfer

With PAHAL, LPG fuel subsidies are being directly transferred to the bank accounts of beneficiaries to reduce leakages and inefficiencies. For this to extend to rural (BPL) households, much deeper financial inclusion and effective provision of banking services is critical, to enable smooth transfer of subsidies to beneficiaries in rural areas. Beneficiaries should be able to access the subsidy easily once a bank account is opened. Though the penetration of financial services has been improving of late, reports have shown that awareness of financial services and use of bank accounts especially in rural areas is dismal (Yadav 2015). The acute gender disparity with respect to access and use of financial services as shown by the Committee on Financial inclusion chaired by Deepak Mohanty can be detrimental to the scheme as the LPG connection and subsidy provision would be in the woman's name (RBI 2015). These problems need to be addressed to ensure that the uptake of LPG is sustained.

Going beyond BPL

There are known problems of exclusion in identifying BPL households. There is a suggestion that PMUY will use the socio-economic caste census data of 2011 to identify beneficiaries (PIB 2016). However, this data is not publicly available and controversial, and hence may not be appropriate for use in this program (Economic and Political Weekly 2015). Moreover, the data will also be out-dated for use by 2019. Affordability of LPG is relevant even for non-BPL households, as unsubsidised

² This is estimated based on an assumption that useful cooking energy required is about 1046 MJ per capita per year (Sanga and Jannuzzi 2005) and stove efficiency is 60%. Typically, households – particularly poorer households – do not use LPG for all their cooking needs and hence use fewer cylinders.

³ Declaration of assets owned by consumers and periodic inspection of the premises by distributors or community representatives are possibilities. Factors for exclusion can include 4 wheeler ownership, ownership of air-conditioners, type of house etc.

connection costs can be more than 50% of an average rural household's monthly expenditure. LPG costs at current prices can be a non-trivial 6% of average annual expenditure⁴. Therefore, to meet the goal of making LPG access near-universal, PMUY should broaden the set of target households, perhaps through measures such as inclusion based on assessment of household assets and characteristics, and recommendation by community representatives. These additional households should also qualify for some added subsidy on the LPG cylinders to ensure continued usage of LPG.

Going beyond LPG

While PMUY focuses on LPG, it need not be the only option to ensure smokeless kitchens in India. In a country as diverse as India, other options such as biogas, electricity and even piped natural gas (PNG) will probably be more suitable in some areas. Family and community size biogas plants may be an environmentally sounder option if they are well integrated with the sanitation programs, particularly in areas with high livestock densities, though technological and business-model challenges would have to be addressed. Electric induction based cooking is highly energy efficient though current inefficiencies in the electricity supply chain and resultant high cost of supply may render it viable only in limited areas. Currently, the cost of PNG supply is 5-7% cheaper than subsidised LPG in some cities, though initial connection costs are higher⁵. PNG could also be an attractive option in cities as PNG networks spread, and uptake of unsubsidised PNG in cities can free up resources to encourage the use of LPG in rural areas. So, there is a need to move away from a one-size-fits-all approach to a more integrated approach with greater flexibility at the state and district levels in promoting locally suitable options.

4. Ensuring reliable supply

Moving away from solid fuels will be a gradual process with multiple fuels being used in the transition period. Affordability is the first step towards the transition and it may be easier in regions where the NSSO survey indicates that firewood is being purchased (NSSO 2012)⁶. However, parameters such as convenience and reliability of supply are also important for complete transition. Ensuring continuous supply of LPG (or other modern fuels) is hence important to ensure that the advantages of obtaining a connection are achieved.

Viable distribution networks

Last mile supply poses a challenge in rural areas as distribution costs are typically higher and consumption is likely to be lower. There were only 1340 rural connections released per RGGLVY distributor on average in 2012, whereas at least 1800 connections with regular demand are required to make them financially viable (PIB 2012). Rural households currently consume less than 2 cylinders of LPG per annum as against an assumption of 4 cylinders made in RGGLVY (MoPNG 2009, NSSO 2012). Therefore, there is a need to develop models that promote viable rural distributorships through exploring ideas such as smaller cylinders (to ease cash flow) and co-locating distributorships with other businesses such as retail or PDS stores. Community groups, such as self-help groups, can

⁴ Estimated based on average household size and average monthly rural per-capita expenditure as reported by (NSSO 2012).

⁵ Based on PNG prices published by service providers in 10 cities.

⁶ In fact, LPG will currently prove to be a cheaper source of energy in areas and in seasons where households are forced to pay more than Rs.3 per kg for biomass.

also take on the role of distribution and/or act as peer-pressure groups to ensure timely payments of instalments.

Imports

There may be a concern about increased imports with improved uptake of LPG. However, this need not be so. Even if all the 5 crore BPL households shifted completely to LPG and all the incremental LPG demand were met by imports, in 2019, it would only amount to an additional import of 10 million tons of petroleum which would be just 5% of the total petroleum imports. In comparison, 69 million tons of diesels, 18 million tons of petrol and 7 million tons of kerosene were consumed in 2014. Suitable policies to rapidly enhance electricity access and quality of supply will result in near elimination of kerosene use and reduction of diesel use for generators. Effective policies to promote public transport, improve efficiency of railways and improve efficiency of vehicles can further greatly reduce diesel and petrol consumption. These reductions can more than offset any extra imports of LPG.

Infrastructure

Infrastructure such as transport and logistics, refineries, import terminals and bottling plants may need to be strengthened as LPG demand picks up. Regular monitoring of the scheme's progress can help in appropriate planning of such infrastructure.

5. Institutional aspects

Effective design and implementation of programs requires institutions and processes that work cohesively to achieve the program goals.

Inducing and sustaining fuel switching

In order to encourage families to switch to modern fuels, there is a need for a concerted communication and awareness campaign similar to those for the Swachh Bharat Mission or the Stop Tuberculosis Campaign. This campaign should not only explain the program and the means to obtain clean cooking fuels, but should also build awareness regarding the health hazards of solid fuel use and the importance of freeing women from the drudgery of fuel collection and dangers of exposure to smoke. This is particularly important given that the decision to switch may be driven not only by economic but also social and cultural norms which under-value the effort and health of women and reduce her bargaining power in the household (Kishore and Spears 2014).

In order to ensure sustained use of modern fuels like LPG, there is also a need for a robust system of monitoring the distribution service to ensure fair service to all households. Such a monitoring system could perhaps be best driven by local community groups, which should have adequate representation of women, minority and backward castes and classes. This should be augmented by a well-functioning grievance redressal mechanism to address problems of service quality to consumers, which could arise due to the challenges of rural distribution networks. Publicly available information about progress of the scheme including data about connections, dealerships, consumption, complaints and their redressal can be further measures to promote good quality of service for consumers.

Integrated approach

Given the diversity of India in terms of cooking traditions, infrastructure and affordability, and the multi-dimensional nature of the cooking problem, it is unlikely that a one-size-fits-all solution would work. Therefore, an integrated approach involving multiple stakeholders would be appropriate rather than its being spearheaded by one ministry. This would ensure that all relevant stakeholders become partners and work towards achieving a common objective.

Given regional differences, states should play a greater role in the program to customise it, identify beneficiaries, choose delivery channels and decide the appropriate fuel mix to promote in different regions of the state. The ministries of Health and Family Welfare and Women and Child Development should be partners in the program given the strong linkages to health and gender aspects. The Ministry of New and Renewable Energy can bring in its biogas expertise to the program, and the Ministry of Power could play a role in ensuring that electricity access is sufficiently reliable and affordable for households to consider electric induction based cooking where appropriate. In other words, a well thought out multi-stakeholder, integrated program on the lines of 'Swachh Bharat' and 'Make In India' is required to address the cooking problem effectively⁷.

6. Conclusions

To paraphrase the well-known Chinese proverb, a journey of a thousand miles begins with the first step. PMUY definitely marks a good first step, but it should be remembered that there are many more steps to be taken before the destination is reached. This requires concerted follow-up, a comprehensive and integrated strategy, and careful planning and implementation. We hope the government walks the remaining distance to achieve the objective of smokeless kitchens in India.

7. References

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⁷ On a lighter note, such a program could be christened Smokeless Kitchens Yojana or SKY, given the fondness of the current regime for acronyms.

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