

## A clean cooking strategy: driving towards sustainability

Energy use, a key indicator of living standards across the world, is also instrumental in raising it. The choice of cooking fuel in households (especially rural) has a huge impact on living conditions especially for women and children. On an average in India, household spending on cooking fuel accounts for around 5-6% of its total expenditure. Factors such as socio-economic (availability and easy access, also determined by household income and price of fuel, education and awareness), culture or lifestyle, and, to a large extent, government policies also influence cooking fuel choice.

Affordable, reliable and clean energy for cooking is essential not only for reducing health and environmental impacts but also helping women to do more productive work and developing the rural economy.

### Comparing the options

Among the various fuel options available (firewood, pellet, biogas, kerosene, liquefied petroleum gas or LPG, piped natural gas or PNG) biogas accounts for the lowest effective greenhouse gas emission; PNG and then LPG are next. An assessment of annual life cycle emissions of various fuels per household per annum is based on the estimation of life cycle emissions, feedstock processing, fuel processing, distribution and cook-stove use. Further, a comparison of the levelised cost of various fuels (non-taxed and not subsidised), annual life cycle emission per household (kg/CO<sub>2</sub> equivalent) and extent of in-house air pollution for various cooking fuels suggests that biogas and PNG are the best cooking energy options. Cooking fuels emit substantial amounts of toxic pollutants (respirable particles, carbon monoxide, oxides of nitrogen and sulphur, benzene, formaldehyde and polyaromatic compounds) which contribute to indoor air pollution. In households with limited ventilation — common in rural household and semi-urban areas — these pollutants could lead to severe health problems. Among the various options available for cooking fuel, firewood and pellet are the most polluting, LPG and kerosene are moderately cleaner, and biogas and natural gas are cleaner fuels for combustion.

### The push

National level programmes to ensure that most switch to clean cooking fuels have been initiated since the 1980s, the National Project on Biogas Development (NPBD) being an example. But the programme has been hampered by mala fide practices, poor construction material, a lack of maintenance, misrepresentation of achievements and a lack of accountability and follow-up services. Once again, in order to ensure access to clean energy — a key focus area for poverty alleviation — the government launched a flagship programme, Pradhan Mantri Ujjwala Yojana in May 2016. with a cumulative target of providing LPG connections to more than eight crore families. Further, the Petroleum and Natural Gas Regulatory Board (PNGRB) has been holding auctions across cities for distribution of gas for cooking through PNG.

However, since conventionally, governments have been subsidising LPG and as such a consumption-based subsidy is not available for biogas and PNG, it has led to a preference for LPG over other cleaner, safer, more cost effective and locally available options (biogas in rural areas). Further, LPG import along with large subsidies are a drain on government resources which hamper the focus on other social development programmes.

### What can work

To promote biogas in rural and semi-urban areas, adopting the service-based enterprise model with suitable resource availability offers a sustainable approach. It will also help self-drive the programme. The model is being successfully implemented in Hoshiarpur, Punjab using a 100 cubic meter biogas plant. The plant supplies clean and piped cooking biogas to 44 households and a school every day.

Such models can also generate employment significantly at the grass-root level an important additional benefit of running a biogas programme. However, there is a need to provide financial support and facilitate capacity building in order to promote enterprise-based models for community-level plants.

The cost-competitiveness of natural gas (including imported re-gasified LNG) calls for scaling its penetration in urban and semi-urban/rural areas. PNG needs to be promoted in urban areas beginning with the densely populated Tier-I and Tier-II/III cities, making LPG just one of the options to choose from rather than it having an edge over others. For this, the cost of LPG must be set as the upper-cost ceiling and the PNGRB could focus only on the setting up of safety regulations, with distribution rights being given to distributors.

To further enable a consumer to freely make cooking fuel choices, consumption-based subsidies need to be replaced with a functional subsidy that is provided on the basis of household income levels and local variables. Possibility of leakages must also be eliminated by ensuring that subsidies of any kind are provided only through direct benefit transfer. Such an approach will provide a neutral thrust and promotion to different types of cooking fuels on the basis of their original virtues.

As India takes a long-term view on sustainability and energy security, it is important to create an environment where its citizens are aware of the options and make their energy choices based on the nature of the fuel and not because of socio-economic constraints.

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