Beyond Biomass: Communicating the LPG Case...

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“Energy is the golden thread that connects economic growth, social equity, and environmental sustainability. With access to energy, people can study, go to university, get a job, start a business – and reach their full potential.”

-Ban Ki-moon, 8th Secretary-General of the United Nations
Related SDGs

5. Gender Equality
3. Good Health and Well-being
7. Affordable and Clean Energy
10. Reduced Inequalities
13. Climate Action
• Around 71% of the population on unclean cooking fuels like Fire-wood (49%), followed by Crop Residue (9%), Cow Dung Cake (8%), Kerosene (2.9%) and Coal (2.4%)

• Use of LPG/PNG accounted for around 28.5%

_Census 2011_

• Household Air Pollution (HAP) related to cooking caused 1.3 million premature deaths in India (WHO, 2018)

• Associated health conditions: _Ischemic Heart Disease, Lung Cancer, Chronic Obstructive Pulmonary Disease (COPD), Pneumonia & Stroke_
• Majority time spent on Cooking/Cleaning/collecting fuel.
• This causes time poverty leading to lost economic/academic opportunities
• Only 65.4% of the females are literate as compared to 82.1% of males
• 75.5% of women are not enrolled in higher education

• 12% of Rural Households with LPG in contrast to 66% of Urban Households

• In India the contribution of HAP to ambient air pollution is estimated to be almost 30%
• Nearly 275 million Rural people depend upon forests for their daily chores: cooking fuel, livelihood and subsistence

_Census 2011_
Women cooking food in their hearths by literally burning their own bones along with the biomass to feed their loved ones!!
Why LPG?

Threats - Bio Mass Fuel
- Health Hazards
- Time Poverty
- Lost Economic/Aca. Opportunity
- Drudgery
- Environment Depletion

Opportunities - LPG
- Better Health
- Economic Independence
- Freedom from Drudgery
- Mental relaxation
- Environment Friendly
- Overall Reduced Inequalities
LPG Scenario - Census 2011

India

- LPG/ PNG: 29%
- Fire-wood: 50%
- Kerosene: 3%
- Coal, Lignite, Charcoal: 1%
- Cow dung cake: 8%
- Crop residue: 9%

URBAN

- LPG/ PNG: 66%
- Fire-wood: 20%
- Crop residue: 1%
- Cow dung cake: 2%
- Coal, Lignite, Charcoal: 3%
- Kerosene: 8%

RURAL

- Fire-wood: 63%
- LPG/ PNG: 12%
- Kerosene: 1%
- Coal, Lignite, Charcoal: 1%
- Cow dung cake: 11%
- Crop residue: 12%
Landscape of LPG: 2014-Now

- SC/ST in PMUY: 2.84 Cr (47.4%)
- As on March 2017: 23.46 Cr. LPG Connections
- As on January 2019: 25.23 Cr. LPG Connections with 90% coverage
- Till April 2014: 13 Cr. LPG Connections with 55% LPG Coverage

Figures in Cr.

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<th>Figures in Cr.</th>
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<tr>
<td>Pre-PMUY Customers</td>
<td>13</td>
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<tr>
<td>PMUY customers</td>
<td>6.26</td>
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<tr>
<td>Non-PMUY new Customers</td>
<td>5.97</td>
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<tr>
<td>Total LPG Customers</td>
<td>25.23</td>
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Adopting LPG: Barriers vs. Enablers

- Agrarian Social Structure
- Forest Dependent Community (FDC)
- Irregular Financial Sufficiency
- Lack of Assessment – Opportunity Cost
- Limited exposure to Media, Information, Education & Communication
- Apprehension related to usage: Safety & Usage Techniques
- Cultural mindsets/cooking habits
- Backward in terms of Access to Modern Technology and Dependence on Biomass

- Innovative Reforms with strong political will
- Targeted Programs - Attitude & Behavioral Change
- Inter Sectorial Linkages
- IEC programs focused on health hazards
- Regulation of Fraud, Cylinder Theft, Misuse and Under-filling
- Harnessing Entrepreneurial Strengths of local Traders
PMUY: Innovative Approach

Ujjwala Suraksha Mitra

Safety for Consumers

LPG Emergency Helpline Number 1906
PMUY: Innovative Approach

LPG Bottling Plant
As on December 2018:
191 OMC Bottling Plants

LPG Distributor
As on December 2018:
21566 LPG Distributors

As on March, 2018:
• 23.3 Cr LPG customers have joined PAHAL
• Rs 1,00,149 Cr subsidy transferred
• Rs 42,000 Cr saved in LPG subsidy

More than 1 crore LPG consumers have given up their cooking gas subsidies in the 1st year
## PMUY Refill Pattern for 1st Year

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<th>Parameters</th>
<th>Count</th>
<th>%</th>
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<td>Consumers who came back for a refill in 1st year of PMUY</td>
<td>172,94,457</td>
<td>80.2%</td>
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<tr>
<td>Consumers who took 3 or more refills in 1st year of PMUY</td>
<td>106,90,325</td>
<td>61.8%</td>
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<td>Consumers who took 4 or more refills in 1st year of PMUY</td>
<td>81,37,190</td>
<td>47.1%</td>
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<td>Average number of refills consumption in 1st year of PMUY</td>
<td>Nearly 4</td>
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The Critical “A”s

- ADOPTION
- AFFORDABILITY
- ACCESSIBILITY
- AWARENESS
Awareness

“Degree of Knowledge & Perception about LPG Adoption & Usage”

Behavioral changing programs & components focusing on:

• Fuel Switch: LPG – Better health, Convenience Factor & Safe Fuel

• Cooking- No longer “only women’s problem”

• Use of Social Network Analysis to determine the level of Knowledge and Awareness and subsequently barriers in adoption of LPG

• Involvement of Local Change Agents for Community Mobilization

• Awareness Camps to tackle low information and scattered rumors on LPG safety issues

• Sectorial Linkages
  ❖ Health programs- Ayushman Bharat
Accessibility

“Factors impacting a household’s ability to procure LPG cylinders”

- Identification of Areas of low coverage/ un-served areas
- GIS mapping of Current Distributors; mapping the ratio of distributor vs. targeted HHs
- Making Health Sub-Centers a point of supply/storage of small capacity cylinders
- Formation of Local Women Entrepreneurs in supply chain- From Women Development to Women Led Development
- Strengthening Production-Distribution Chain
- Deep Stick Solution in specific Geographical Area
Affordability

- Economics of health benefits
- Partnership - Self Help Groups & Micro Finance Institutions
- Aspirational Asset – “Hum LPG Wale Hain”
- Low Capacity Cylinder
- Innovative Pricing Techniques:
  - Targeted/Telescopric Pricing
- Sectorial Linkages
  - Rural Employment Scheme
Innovation in LPG: Technology

Department of Industrial and Systems Engineering of IIT Kharagpur have devised:

- A 'Decision Support System' (DSS) focusing on the Ujjwala Yojana. The system will help to maximize (optimize) the number of LPG connections.
- The DSS devised at the IIT uses mixed integer linear programming to mathematically formulate the policy using input parameters, decision variables and their relationships.

IIT Bhubaneswar’s Prajjawala have developed

- An Internet of Things (IoT)-based solution to measure, track, transmit, store and analyse consumers’ LPG consumption.
- This IoT-based solution won the first edition of ‘The Grand India IoT Innovation Challenge’ by digital infrastructure provider Tata Communications.
Innovation in LPG: Supply Chain

“Mobile retail dealers in Bangladesh”

A project to distribute LPG in households and small businesses with a door to door delivery strategy.

- The project introduced Mobile Retail Dealers (MRD) to visit customers area door to door and offer them 12kg LPG cylinders

- The dealers use bicycles or rickshaws for their deliveries

- Currently there is a network of some 150 LPG distributors and 1,930 registered MRDs.

“LPG: Sub-dealer Strategy in Turkey”

- Engagement of Sub-dealers who are usually small scale highly locally-orientated retailers such as general stores and grocery outlets

- In this model, dealers share the profit margin with sub-dealers

- Sub-dealers are effective in reaching small villages
Innovation in LPG: Initiative

“Plantation Project”—Transforming lives through Co-operative Societies

• Recognized as a model Community Based Organization to improve the socio economic conditions of the Estate workers
• “Clean Cooking – Healthy Living”-- Strategic partnership with leading LPG suppliers to help the workers give-up Biomass fuel and use LPG through the formation of co-operative societies
• New product innovation - 5Kg Cylinder delivered at a strategic place in a specific time slot
  • Ideal size for Estate Home with limited space
  • Easy to carry for woman in Hilly Terrain

“Enhancing women’s engagement on the clean cooking sector as female energy entrepreneurs; building gender sensitivity & innovative leadership – case study: Ghana”

• In Ghana efforts have been made to ensure women are involved in the whole clean cooking value chain.
• Women have been economically empowered through their engagement in the clean cooking sector
• Women’s networks have provided access to consumers in hard to-reach markets
• Women distributors also have better understanding towards the needs of women and approaches their clients easily
Innovation in LPG: Micro-Finance

“Bottled Gas For Better Life”

• loans of about US $80-90 to make the switch from solid cooking fuels to LPG. It is addressing consumer demand for LPG through microfinance

• Loans are provided to households for their purchase of LPG start-up kits (double-burner ignition stove, a 12.5kg filled gas bottle, a rubber hose and a regulator)

• As of November 2018, 684 Cameroonian households (more than 3000 people) and 63 Kenyan households (around 300 people) have switched to clean cooking with LPG through the program
“Beyond Biomass...is a Journey.....
A Journey of Teary, Tired Eyes to Twinkling Dream Fetching Empowered Eyes”

Thank You