Dissemination Approach of Improved Biomass Stoves in Indian Himalayan Region

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The need

- **World:** Around 2.6 billion people
- **India:** 772 million people (66% of the total population)
  - 750 million people subjected to the adverse impacts on health from household air pollution (HAP)
- **Rural India:** 144 million households (86% households)
Clean cooking options

Cleaner option

Clean option

Clean option
Improved biomass stove – The shifts

Concentrated efforts began in 1980s with National Programme on Improved Cookstoves (NPIC) – Subsidy based model

Market driven solutions

Natural draft

Forced draft

Tier 1,2

Tier 3, 4
Clean cooking programme

Supported by DfID
Implemented by TERI
18 states in India covered

Emphasized on creating market based solutions for forced draft Improved Biomass Cookstoves (IBC)

- 75 Energy Enterprises were created
- More than 55,000 IBCs were disseminated
- Village level retailers/ SHGs were linked
- Manufacturing units established
- Eight different IBC models developed considering affordability aspects
The basic model

Technology innovation and customization

Technology Developer

Production, quality control

Manufacturer

State level player - Product and spare stock management

Distributor-C & F Agent

Retail sales and service point

Retailer-Energy Entrepreneur

End User

End User Finance

Awareness generation, training, monitoring & documentation

NGO

NGO compensation

The Energy and Resources Institute (TERI)
The case of Indian Himalayan Region

- Indian Himalayan Region: 54 lakhs households (63% households)
- Rural Indian Himalayan Region: 50 lakhs (78% households)
The case of Himachal Pradesh

- 90% of the total population resides in rural area
- 65% depend on traditional burning of biomass
- 33% depend on LPG
- Number of IBCs disseminated – about 3000
The technology

- SPTL 0610
- Forced draft
- Thermal efficiency - 37% (against the average 17% approximate)
- Carbon Monoxide (CO) level - 2.25 g/MJ\textsubscript{d} (gram/Mega joule \textsubscript{delivered})
- Total Particulate Matter of 147.40 mg/MJ\textsubscript{d} (milligram/Mega joule \textsubscript{delivered})
- Approved by the Ministry of New and Renewable Energy.
- High combustion efficiency thereby reducing particulate matter emission (per unit of energy delivered) and carbon monoxide by 72% and 80% respectively in comparison to a traditional mud stove
The study

- First 100 buyers
- Next 1000 buyers
- Study State / other IHR states
## Results

<table>
<thead>
<tr>
<th>Factors (% of households)</th>
<th>First 100 buyer’s households</th>
<th>Next 1000 buyer’s households</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPL category</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Usage of LPG during pre–purchase scenario</td>
<td>98%</td>
<td>77%</td>
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<tr>
<td>Usage of traditional mud stove during pre–purchase scenario</td>
<td>100%</td>
<td>91%</td>
</tr>
<tr>
<td>Female headed households</td>
<td>25%</td>
<td>25%</td>
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<tr>
<td>Male members responsible for collection of firewood</td>
<td>60%</td>
<td>12%</td>
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</tbody>
</table>
Initially what to look at to promote IBCs through market mode

- Proportion of population belonging to higher three MPCE classes
  - (USD 24.78->41.03)
- Proportion of households using LPG as primary cooking fuel
- Proportion of female headed households
3 A’s in promoting IBCs

• Awareness
• Affordability
• Acceptance
The indices for the identified indicators

<table>
<thead>
<tr>
<th>State</th>
<th>% of population in higher three MPCE classes (USD 24.78- &gt;41.03)</th>
<th>% of hhs using LPG as primary cooking fuel</th>
<th>% of female headed hhs</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>JK</td>
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<td>0.33</td>
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<tr>
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<td>0.00</td>
<td>0.09</td>
<td>0.36</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Conclusion

- A grant based approach proposed initially for the areas with
  - low household income
  - lower spread of LPG
  - lower number of female headed households
Thank you
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