ARTI’s Experience of Promoting Household Cooking Energy Solutions

Priyadarshini Karve
Project Co-ordinator, ARTI

pkarve@arti-india.org
### ARTI's involvement with Rural Cooking Energy Technologies

<table>
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<th>Period</th>
<th>Description</th>
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<td>1996-2002</td>
<td>Technical Back up Support Unit for National Programme on Improved Cookstoves, in Maharashtra and Goa</td>
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<tr>
<td>2003-2005</td>
<td>Commercialisation of Improved Biomass Fuels and Cooking Devices in India: Pilot Project</td>
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<td>2006-2008</td>
<td>Commercialisation of Improved Biomass Fuels and Cooking Devices in India: Scale Up Project</td>
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<td>2008 onwards</td>
<td>Commercialisation of Improved Biomass Fuels and Cooking Devices through Samuchit Enviro Tech Pvt Ltd</td>
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1996 to date — Various R&D and Field Testing Projects on a variety of biomass fueled cooking devices for rural households and commercial establishments
ARTI is Proud of...

- Ashden Awards – 2002 and 2006
- World Technology Award 2005 in Environment Category
- Several Other Prestigious Awards - in India & Internationally
Designing Solutions: Three Pronged Approach

- **High Efficiency**
  - Fast lighting
  - Flame control
  - Fast cooking
  - Height suited to squatting
  - Flexibility in fuels
  - Low smoke and soot
  - Fuel saving
  - Low price

- **Low Emissions**

- **User friendliness:**
  - Fast lighting
  - Flame control
  - Fast cooking
  - Height suited to squatting
  - Flexibility in fuels
  - Low smoke and soot
  - Fuel saving
  - Low price
Improved Laxmi Stove

- Fixed Cement stove for wood or woody biomass fuel
- Two pot stove with chimney
- Manufactured by local rural artisans using molds
- Low emissions in the house confirmed through measurements
Vivek Sawdust Stove

- Portable metallic stove
- Fuel - sawdust, or any powdery biomass
- Smokeless Clean flame
- Operates continuously for 2-3 hours
Sarai Cooking System

Medium size model of Sarai Cooking System

ASHDEN AWARD FOR RENEWABLE ENERGY, 2002
Sampada Stove

- ARTI’s Gasifier stove
- Developed in 2006
- Stainless steel outer body
- Fuel: Wood chips, pellets, biomass briquettes, small twigs, wood chunks, etc.
- Charcoal produced as a bye product
Bharatlaxmi Stove
Bharatlaxmi Stove

- Single pot stove without chimney
- Basic inset produced from eight insulating cement bricks
- 50% fuel saving, 50% smoke reduction
- Can take up any fuel that is burnt in traditional stove

Cummins Diesel India Foundation is sponsoring Bharatlaxmi Stoves for 1000 houses in Nandal and Surawadi Villages in Phaltan Block, Dist Satara, Maharashtra State, creating smoke free homes
Char Briquettes from waste biomass

- Single barrel kiln suitable for charring leaf litter, garden waste, or agricultural waste
- Diesel/electric engine operated briquetting machine - suitable capacity
- A pair of kilns and a small briquetting machine cost INR 15,000 (~ USD 300) and can produce 70 kg of charcoal daily.
- About INR 10,00,000 (~ USD 2000) investment for Multiple kilns and higher capacity briquetting machine for a larger operation.
ARTI Compact Biogas Plants

ASHDEN AWARD FOR RENEWABLE ENERGY, 2006
Our Solutions (Products)

- Improved Laxmi Stove
- Bharatlaxmi Stove
- Sarai Cooking System
- Ashden Award 2006
- Ashden Award 2002
- Biogas from Organic Waste
- Vivek Sawdust Stove
- Char Briquettes from Agrowaste

- Products not fuel specific (e.g., specifically sized pellets).
- Other source of energy not required (e.g., electricity).
- Cost range: INR 500 – 20,000 (USD 10 – 400)
Commercialisation Strategy

- ARTI (Technology Developer)
  - Training to installers
  - Contracted Manufacturers

- Samuchit Enviro Tech Pvt Ltd
  - Exhibitions, Events, Walk in

- Customers
  - NGO's/Corporate CSR/Government Agencies

- Beneficiaries
  - Customers
  - Funders/Financiers

- Installment Payment, Microfinance, Etc.
Pilot → Scale Up Issues

- ARTI-Samuchit showed that biomass based cooking energy solutions can be sold in open market in India → Several companies (including multinationals) are selling products in India.

- Samuchit Enviro Tech is capable of sending goods in quantities of few hundred units to any location in the world → Not sufficient sales as yet to achieve financial stability.

- Biomass fueled cooking energy solutions being a rural specific intervention leads to a big psychological barrier → Necessary to project these solutions as a means of shifting away from non-renewable to renewable for any section of society.

- ARTI’s R&D efforts are ongoing and sustained through research grant funding → New products always in pipeline.

- None of the companies in this sector are financially self sustaining as on today.
Important Lessons learned

• Local production led to quality issues, and service and maintenance lacunae, due to high drop out rate among local producers.

• High drop out rate because localised production and sale of improved stoves alone is not a profitable business.

• Centralised production and branding solves quality and maintenance issues, but leads to price escalation.

• Affordability of a product is a matter of perception/priority.

• Conventional retailers are not suited to sell innovative products.

• Great potential for women’s groups, rural co-operatives as dealers/installers, but not many are keen on taking up a totally novel business activity.

• The most effective marketing mechanism is demonstration to the potential users.
Specific Actions Required

- There are no universally applicable/acceptable standards for improved cookstoves → WISER can focus on developing standards for Improved Cookstoves.

- Lot of confusion about ‘approved’ biogas plant designs eligible for subsidy/other incentives → Awareness raising among policy makers.

- WISER can facilitate in ‘product/technology exchange’ across the region → Users get more choices in cooking energy solutions without all organisations/suppliers trying to reinvent the wheel!

- Policy advocacy needed across the region to reduce taxation on these products/technologies.
For ARTI’s energy devices, Contact:

Samuchit Enviro Tech Pvt Ltd

2nd Floor, Ekta Park Co-op Hsg Soc,
Behind Nirmitee Showroom, Law College Road, Pune 411 004, India.

Telefax: 91 20 25460138,
Email: samuchit.envirotech@gmail.com

Website: www.samuchit.com

Follow on Twitter: bioenergy_flame

Contact ARTI at:

2nd Floor, Maninee Apts,
S.No.13, Dhayarigaon,
Pune 411 041, India

Telefax: 91 20 24390348
Email: contact@arti-india.org
Website: www.arti-india.org

Contact: Dr. Priyadarshini Karve
pkarve@arti-india.org/
priyadarshini.karve@gmail.com