



# ARTI's Experience of Promoting Household Cooking Energy Solutions

Priyadarshini Karve  
Project Co-ordinator, ARTI

[pkarve@arti-india.org](mailto:pkarve@arti-india.org)

# ARTI's involvement with Rural Cooking Energy Technologies



1996-2002	Technical Back up Support Unit for National Programme on Improved Cookstoves, in Maharashtra and Goa
2003-2005	Commercialisation of Improved Biomass Fuels and Cooking Devices in India : Pilot Project
2006-2008	Commercialisation of Improved Biomass Fuels and Cooking Devices in India : Scale Up Project
2008 onwards	Commercialisation of Improved Biomass Fuels and Cooking Devices through Samuchit Enviro Tech Pvt Ltd

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...

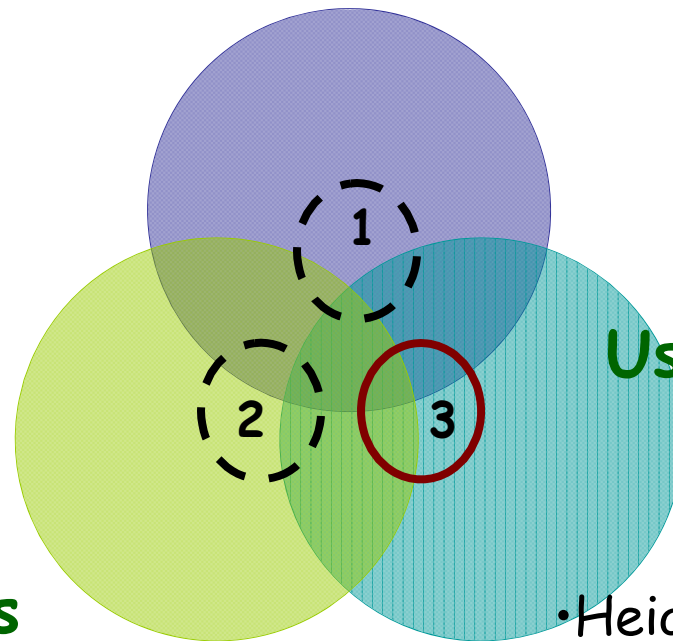


- Ashden Awards - 2002 and 2006
- World Technology Award 2005 in Environment Category
- Several Other Prestigious Awards - in India & Internationally

# Designing Solutions: Three Pronged Approach



High Efficiency



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



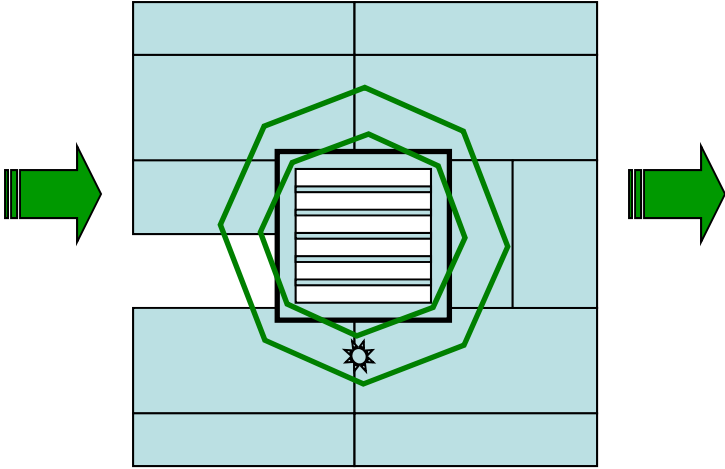
**ASHDEN AWARD FOR RENEWABLE ENERGY, 2002**

# 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 by 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)



Sarai Cooking System

Improved Laxmi Stove Bharatlaxmi Stove

- 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)

**Ashden Award  
2006**

**Ashden Award  
2002**



Biogas from Organic Waste

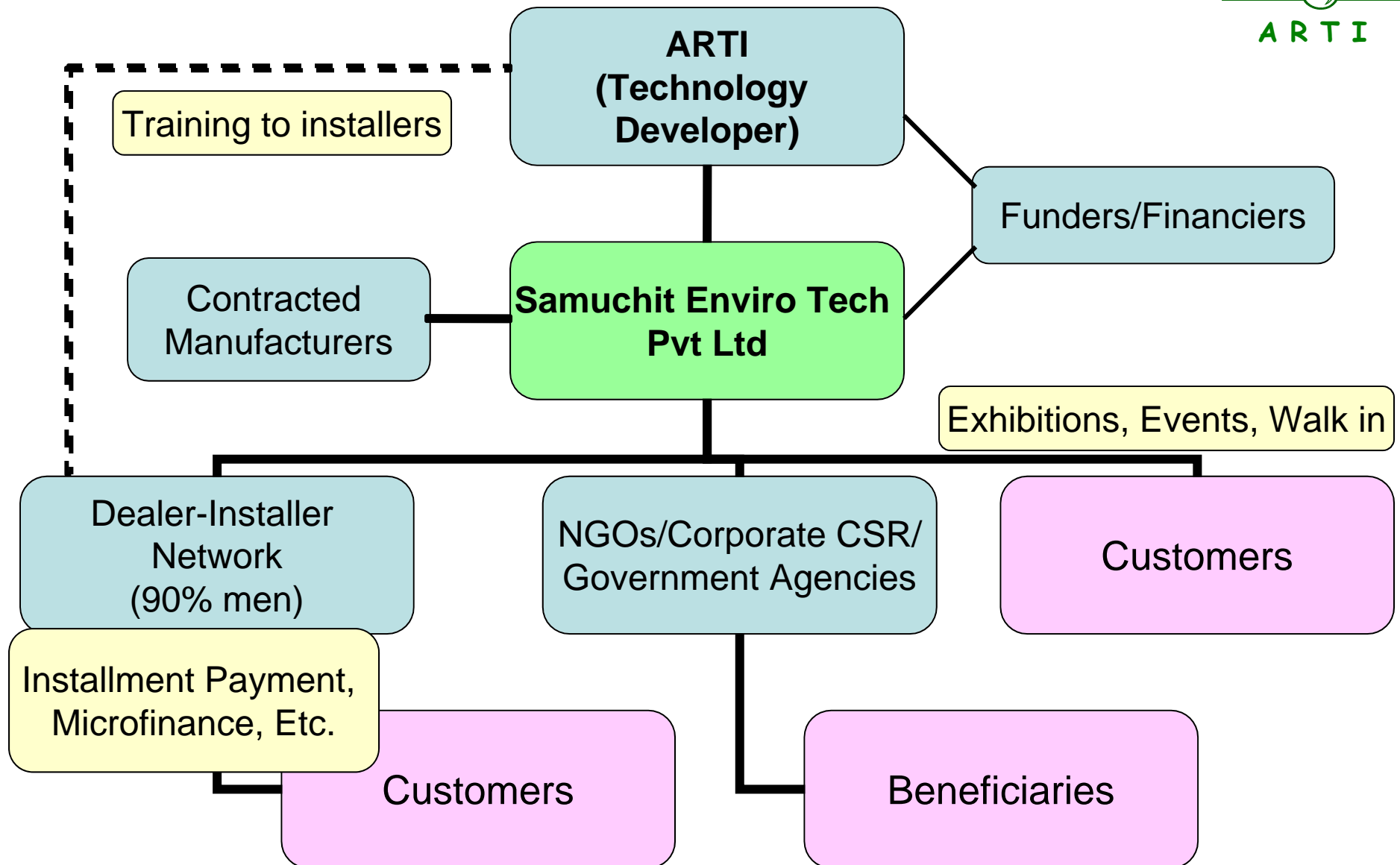


Vivek Sawdust Stove



Char Briquettes from Agrowaste

# Commercialisation Strategy



# 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**

2<sup>nd</sup> 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](mailto:samuchit.envirotech@gmail.com)

Website: [www.samuchit.com](http://www.samuchit.com)

Follow on Twitter: [bioenergy\\_flame](https://twitter.com/bioenergy_flame)



**Contact ARTI at:**

2<sup>nd</sup> Floor, Maninee Apts,  
S.No.13, Dhayarigaon,  
Pune 411 041, India

Telefax: 91 20 24390348

Email: [contact@arti-india.org](mailto:contact@arti-india.org)

Website: [www.arti-india.org](http://www.arti-india.org)

**Contact: Dr. Priyadarshini Karve**  
[pkarve@arti-india.org](mailto:pkarve@arti-india.org)/  
[priyadarshini.karve@gmail.com](mailto:priyadarshini.karve@gmail.com)