BUSINESS MODELS FOR IMPROVING ENERGY ACCESS
Case Studies on Biomass and Biogas

Namiz Musafer
Director
Sri Lanka Energy Managers Association
Integrated Development Association (IDEA – Kandy)

SAARC Workshop
Participation of Private Sector in Overcoming Energy Poverty in SAARC Member States
Dambulla, Sri Lanka, 29 – 30 August 2019
PESTEL ANALYSIS

Business Models of Improved Energy Access
Product Life Cycle

Business Models of Improved Energy Access
SUSTAINABILITY & GREEN LANDSCAPE

- Green Financing
- Eco Products
- Sustainable - Green Procurement
- Green Jobs
- Eco Labels
- Responsible Consumption and Production

Business Models of Improved Energy Access
# Key Elements of a Business Model

<table>
<thead>
<tr>
<th>Components</th>
<th>Key Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value proposition</td>
<td>Why should the customer buy from you?</td>
</tr>
<tr>
<td>Revenue model</td>
<td>How will you earn money?</td>
</tr>
<tr>
<td>Market opportunity</td>
<td>What marketspace do you intend to serve, and what is its size?</td>
</tr>
<tr>
<td>Competitive environment</td>
<td>Who else occupies your intended marketspace?</td>
</tr>
<tr>
<td>Competitive advantage</td>
<td>What special advantages does your firm bring to the marketspace?</td>
</tr>
<tr>
<td>Market strategy</td>
<td>How do you plan to promote your products or services to attract your target audience?</td>
</tr>
<tr>
<td>Organizational development</td>
<td>What types of organizational structures within the firm are necessary to carry out the business plan?</td>
</tr>
<tr>
<td>Management team</td>
<td>What kinds of experiences and background are important for the company’s leaders to have?</td>
</tr>
</tbody>
</table>
CASE I - ENVIROFIT

• CCS - Colarado, USA: Operations South America, Africa, Asia
• Technologies for people living in extreme energy poverty
• Energy products for people living in remote parts of world
• Innovative - aesthetic, hi performance, meet customer needs
• Years of consumer research & product development
• Serve over 5 million people

Source: envirotif.org
L1: ADAPT, INNOVATE & RESPOND TO CONSUMER PREFERENCES

- Using market-based approach - shift users from beneficiaries to customers
- Building a market require research and pilot stoves the consumers willing to buy
- Quality, Durability, and Performance of stove important
- Models to adapt & evolve to meet needs of different cultures & cooking traditions
- Segment the market by price, fuel, and product features
- Models with accessories and multi-use features
L2: CENTRALIZED MANUFACTURING

• To scale a product for consistent & reliable quality, centrally manufacture with stringent quality-control

• Localize supply-chain in phases - Grow with demand reduce cost

• Manufacturing decisions made based on Market Demand

• Centralized manufacturing in regional hubs to overcome bottlenecks

• Centralized manufacturing - more permanent jobs, develop transferable skills, pay higher wages, more consistent hours
L3: SCALE AT RIGHT PACE TO MAXIMIZE IMPACT

• Building a market requires balance of growing production, distribution, and marketing synchronously

• Supply chain needs to be developed before sales can initiate, though requires investment

• Grant funding needed to support Technology Innovation, Development, Distribution & Marketing Development?

• Initial growth stage, mixed funding required; each business component require grants before investment case made?
L4: TO REACH LAST MILE, BEHAVIOR CHANGE NEEDED FM DESIGN 2 DELIVERY

- Female entrepreneurs can increase sales & adoption in rural communities – so train & engage them
- Market-based approach ideal for scaling profitability, yet grants needed to technology development & pilot distribution approaches
- Convincing users to change cooking practices is a multi-step process. It require investment at all stages of program
L5: CLEAN & EFFICIENT STOVES - A TOOL TO REACH IMPACTS

• CCS have direct impact on consumers, improving household wellbeing
• CCS have indirect impact on the environment and economy
• A market-based approach provide win-win solutions for social, public, and private institutions
• Programs need to shift priorities from supplying stoves as an end goal to viewing stoves as to make impacts
  - on improved health, ecosystem regeneration, gender inclusion, livelihoods & reduced CC

Business Models of Improved Energy Access
ENVIROFIT MODEL

The ENVIROFIT SMAAART™ 360 Model

- Adoption
- Affordability
- Access

WORLD CLASS R&D
IMPACT MONITORING
DESIGN FOR ADOPTION
CUSTOMER CARE
PRODUCTION FOR SCALE
EXTENSIVE DISTRIBUTION
ENVIRONMENTAL FUTURE MODEL

- R & D - Cutting Edge innovations for customers’ cooking needs
- Rigorous consumer testing, fix problems b4 reaching customers
- Production for Scale, Material & Products inspection for quality
- Extensive Distribution - Partner with last mile entrepreneurs, local businesses, international distributors for market access
- Customer Care – Training & support on awareness & adoption by Customer Care Centre
- Impact reporting - Customers monitor & evaluate products, collect info on cooking habits; feedback to product innovation

Business Models of Improved Energy Access
ENVIROFIT - FEATURES

• Durability – Made of not scrap metals, but with heat-resistant materials with a 12 month warranty
• Speed - cook 50% & 20% faster than traditional and other ICSs
• Efficiency - 3x more efficient, fuel consumption reduction up to 60%
• Emissions - Maximize airflow, reduce smoke & toxic emissions up to 80%

Source: envirotfit.org
CASE STUDY - SELCO

• Succeeded in creating a market for solar home lighting systems
• Decided to adapt same model for ICS
• External grant funding for 3 years sought
• Soon realised that ICS market was very different from solar home lighting market
SELCO FOUND THAT

• Improved cook stoves provide many benefits
• Yet, they have uniquely challenging characteristics to sell
  • Inappropriate design to meet end user needs
  • Too expensive for the poor to buy on cash
  • Price too small to attract regular consumer financing
  • Lack of end user value for the given advantages (underserved poor to spend their scarce money)
FAILED ASSUMPTIONS

• Existed stove technology & design capacity could be easily adapted

• Technologists understood product well - technically & commercially

• Along with Solar Systems, can implement and reduce overheads using
  • Existing network could be leveraged to deliver
  • Existing financial links (MFIs in particular)

• Financial innovation is achievable especially in MFI sector
  • Needs of consumer and entrepreneur financing would match with existing portfolios
  • High appreciation of social and economic benefits of ICSs
LESSONS

• SELCO’s existing business model ideally suited for solar home lighting systems
• It is not suited for smaller products like cook stoves
• ICS require a new, innovative business model for effective long term distribution and use in a specific area
• Distinct disconnect between Developers & Actual Implementers
• Many technology developers are also implementers – but expertise for effectively deliver are different
ANAGI - TWIN CLAY COOK STOVE

• Energy Crisis
• Power of Ministry of Power
• Multi Purpose Development
• Initial Parties
• IDeA 1989
• Design, dissemination, commercialisation, diversification
• Autonomous Business Model
• Further development / improvement

Business Models of Improved Energy Access
KEY PROCESS STEPS

• Different research groups
• Technology Transfer
• R & D & Continuous Improvement
• Different Clay, Processes, Moulds
• Single, Dual pot,
• Tile Industry, Rural potters
• 6 month Guarantee
• Quality, Brand ‘Anagi’, logo, Pricing
FACTORS CONTRIBUTED FOR SUCCESS

• Catalyst role, deep involvement
  • Training & Capacity
  • Awareness & Promotion
  • Learning and sharing
  • Integrating with existing
  • One among many products
  • Initial Investments
  • Time, commitment & perseverance
OUTCOMES

• 350,000 stoves / yr, penetration levels
• 339 trained, 5 clusters
• Less than $3, good mark-ups
• Nationwide distribution, availability
• Look alike sub standard products
• National Standards
• National Indoor Air Quality Guidelines
• Retain sustainable energy status
BIOSGAS LANKA

- Energy Crisis
- Early Attempts & Failures
- Resource Data
- Technical Service Providers
- Separate Masons and Developers’ Roles
- National Standards (SLS 1292)
- Quality Assurance and Check Lists
- Training and Capacity Building
- Mainstreamed Extension Services
- Energy to Waste Management
Biogas Lanka

- Household to Institutions
- Labour intensive to Mechanization
- Sweat Equity to Turnkey
- Integrated Organic Farming and Livelihoods
- Main and Affiliated Courses
- Subsidies to Debt and Self Financing, Market Driven
- Issues with R&D, Innovations and Appliances
BIOMASS - FUELWOOD SUPPLY - LANKA

- Concentrate on fuelwood for energy poverty
- Disregard biomass for industrial thermal and power generation
- Rubber and Cinnamon
- Gliricidia and Home Grown
- Subsistence or Out grower System
- End of harvest & uprooting
- Commercial Suppliers
- Transit and Exchange Points

Business Models of Improved Energy Access

Photos - Nilantha Kumara
Biomass Fuelwood Supply - Lanka

• Fuelwood Depots and Processing Centres
• Home Delivery or Stacked in Groceries
• Hand Carts, Bullock Carts, Hand Tractors and Mini Lorries
• Rice Husk and Saw Dust – Alternative Demands
• National Standards (SLS 1475)
THANKS
REFERENCES

Envirofit (2017), Cooking in one million kitchen: Lessons learned in scaling a social enterprise