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CATALYZING CLEAN ENERGY IN BANGLADESH (CCEB) PROGRAM TASK 5: MARKET ANALYSIS AND DEVELOPMENT FOR IMPROVED COOKSTOVES

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CATALYZING CLEAN ENERGY IN BANGLADESH (CCEB) PROGRAM

TASK 5: MARKET ANALYSIS AND DEVELOPMENT FOR IMPROVED COOKSTOVES

USAID CATALYZING CLEAN ENERGY IN BANGLADESH (CCEB)

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ABSTRACT

The Catalyzing Clean Energy in Bangladesh (CCEB) effort is USAID's clean energy flagship program designed to support and enhance energy security, economic growth and climate change mitigation in Bangladesh. One of the key components of this program is the "Market Analysis and Development for Improved Cookstoves" which focuses on promoting new technology throughout Bangladesh for the next four years. This component has five key areas to ensure scalability of the ICS value chain:

1) Market Development
2) Enterprise Development and Access to Financing
3) Capacity Building for Financial Institutions
4) Standards and Protocols
5) Coordination

The ICS sector in Bangladesh is still very new and is nascent in terms of development, marketing or understanding the value of ICS products throughout the country. The analysis performed by the USAID CCEB team shows that the Bangladesh market has tremendous opportunity for growth and has the potential to succeed the 350,000 ICS households that USAID CCEB has committed to realize via entrepreneurship development, demand driven and supply chain activities via introduction of new technology to local ICS entrepreneurs.

The assessment reports outlined in this document captures the current state analysis and recommendations derived from best practices that have been incorporated worldwide, endorsements gathered from prominent local private sector partners, as well as input gathered from both international ICS subject matter experts, ICS donors such as World Bank representatives, United Nations Foundation Global Alliance for Clean Cookstove representatives , Shell Foundation representatives, information derived from the WASHPlus study, representatives of the Bangladesh Government, ICS focused NGOs and international and national manufacturers of ICS products. As the first year team lead was not included in the second year work planning effort, the recommendations provided are not based on what will actually occur for year two but rather endorsements based on the work accomplished in the first year in the hope that the effort will continue to be carried out by the relevant parties.

Figure 1: USAID Mission Director, Richard Greene, U.S. Ambassador, Dan Mozena, Bangladesh Govt. Addl. Secretary, Taposh Roy, USAID CCEB Sr. Program Advisor, Sabrina Amjad at the ICS Market Facilitation Platform Launch

A comprehensive market development study was undertaken by the USAID WASHPlus team based on consumer needs and preferences, willingness to pay and define the barriers to purchase and outline the correct use and modifications required of the improved cookstoves. This information as outlined in Appendix 5 was used by the USAID CCEB effort to define the market development effort via focus groups in Dhaka, Sylhet and Rajshahi to understand the range of stove models and/or price points/marketing strategies that are likely to reach scale in Bangladesh. CCEB held workshops, seminars and conducted field site visits to provide mentoring to enterprises for improved capacity to: develop business plans; employ targeted and effective marketing strategies; help entrepreneurs understand internal quality control measures and recognize how they may comply with carbon finance requirements in the future. The USAID CCEB ICS team conducted an initial assessment of the current state of enterprise development, access to financing and current quality standards that ICS enterprises adhere to support entrepreneurs to access financing for expansion of their

Figure 2: Poster launched at ICS Market Facilitation Platform, initially created for SMC Dissemination to

production and distribution practices To foster coordination between key stakeholders, the ICS CCEB team worked with GACC to set up a collaboration platform with the Ministry of Power, Energy and Mineral Resources, to share the findings with other local ICS stakeholders through the Country Action Plan launch discussion.

CCEB also performed a current state analysis to identify specific commercial banks/MFIs interested in providing financing for ICS to interested entrepreneurs. CCEB explored options to partner with IDCOL to institute a cookstoves support program at a national scale similar to IDCOL's Solar Home System initiative. USAID CCEB ICS team spent a majority of the first year building an understanding with different promoters of ICS products in the international arena in the promotion of the new technology to help build an effective value chain for ICS products.

Figure 3: Current Users of New ICS Technology

ACRONYMS

The following table provides a list and description of acronyms used in this report.

Table 1: List of Acronyms and Definitions

ALRI	Acute Lower Respiratory Infection
BCSIR	Bangladesh Council of Scientific and Industrial Research (BCSIR)
BDT	Bangladeshi Taka
CCEB	Catalyzing Clean Energy in Bangladesh
CCT	Controlled Cooking Test
CCTF	Climate Change Trust Fund
CDM	Clean Development Mechanism
CF	Carbon Finance
COPD	Chronic Obstructive Pulmonary Diseases
CPA	CDM Program Activity
EPA	United States Environmental Protection Agency
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation)
GOB	Government of Bangladesh
GS	Grameen Shakti
GACC	Global Alliance for Clean Cookstoves
GVEP	Global Village Energy Partnership
HH	Household(s)
IAP	Indoor Air Pollution
ICS	Improved Cook Stoves
IDCOL	Infrastructure Development Company Limited
IFC	International Finance Corporation
INGO	International Non-Government Organization
JPMVEC	J.P. Morgan Venture Energy Corporation
KFW	Kreditanstalt für Wiederaufbau
KPT	Kitchen Performance Test
LGED	Local Government Engineering Department

LPG	Liquid Petroleum Gas
MFI	Microfinance Institute
NGO	Non-Governmental Organization
ODA	Official Development Assistance
PCIA	Partnership for Clean Indoor Air
PO	Partner Organization
POA	Program of Activities
SEDA	Sustainable Energy Development Authority
SHS	Solar Home System
SME	Small and Medium Enterprise
USAID	United States Agency for International Development
UPPR	Urban Partnership for Poverty Reduction
VER	Verified Emission Reductions
VERC	Village Education Resource Center
WB	World Bank
WBT	Water Boiling Test
WHO	World Health Organization

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FIGURE

1 EXECUTIVE SUMMARY

ADVENT OF IMPROVED COOKSTOVES IN BANGLADESH

Bangladesh air pollution is a major environmental health problem that increases the global burden of diseases like respiratory infections, heart disease, lung cancer and birth defects. Indoor air pollution is estimated to cause approximately 2 million premature deaths mostly in developing countries like Bangladesh. (Salahuddin et al, 2013) Dhaka, the capital of Bangladesh is one of the cities where level of air pollution is alarming and is six times higher than the recommended level of World Health Organization (WHO). (Salahuddin et al, 2013) According to a World Bank report, air pollution kills 15,000 Bangladeshis each year. Nearly 50 percent of pneumonia deaths among children under five are due to particulate matter inhaled from indoor air pollution. (Salahuddin et al, 2013) In developing countries like Bangladesh, exposure to pollutants from indoor combustion of solid fuels on open fires or traditional stoves increases the risk of acute lower respiratory infections and associated mortality among young children. (Salahuddin et al, 2013).

Figure 4: Current Users of Traditional Cookstove

Under the Market Analysis and Development for Improved Cookstoves component, a set of activities is envisaged to build a sustainable, improved cookstove market in Bangladesh in order to reduce energy consumption and greenhouse pollutants. CCEB has a focus to establish a framework to deliver **350,000+ stoves by 2017** through an extensive entrepreneurship base, with particular focus on building women as future leaders of the ICS sector.

Figure 5: Traditional 2 Pot Version Stove

This aforementioned goal is set to be achieved by the USAID CCEB ICS team through the following tenets:

- **Market Development:** CCEB will assess current market and support market development interventions for improved cookstoves
- **Enterprise Development and Access to Financing:** CCEB will provide training and mentoring to enterprises for improved capacity. CCEB will also provide support to enterprises to access financing for expansion of their production and distribution capacities and for on-lending to consumers, as needed.
- **Capacity Building for Financial Institutions:** CCEB will build capacity of financial institutions for lending to improved cookstove enterprises.
- **Standards and Protocol:** CCEB will identify suitable institutions to establish standards and protocols for cookstove design, installation, testing and performance monitoring

Figure 6: Current Users of New ICS Technology

- **Coordination:** CCEB will ensure close cooperation across the sector with all relevant parties and programs supporting the Global Alliance for Clean Cookstoves.

In developing countries, indoor air pollution is caused by burning biomass fuels in inefficient mud and wood stoves in poorly ventilated areas. In Bangladesh, the exposure to women and small children is significantly higher due to a women's customary role in cooking activities. The following analysis focuses on driving change at the grass root level with various elements in regards to promoting demand, building a sustainable supply of new ICS technology in Bangladesh and providing entrepreneurship growth for the ICS sector. Initially introduced by the Bangladesh Council of Scientific and Industrial Research (BCSIR), to date there has been only one form of stove existent in the rural marketplace. The aim of the USAID CCEB ICS team was to bring in new international manufacturers to promote new ICS technology while driving demand for ICS products throughout the country.

The primary research method conducted was through various focus group sessions with entrepreneurs and cookstove users and in-depth site visits. Interviews were conducted mainly with women who had used the new ICS technology who could share personal experiences to drive demand as well as provide feedback to the relevant international manufacturer. This information was conveyed by the USAID CCEB ICS team to the respective international parties. The conversations focused on building rapport with local organizations that had partaken in the in-depth study carried out by the USAID WASHPlus program. WASHPlus operates using the USAID Framework for Impact, which looks to see improved practices, in this case improved cooking practices in Bangladesh, a program (whether pilot or at-scale) must ensure that effective and appealing products and services are available and accessible to consumers; that institutions and policies support the related products or behaviors; and that these products are promoted in a way that reaches consumers through convincing appeals and multiple credible channels. (Rosenbaum et. al) This means that a marketing plan for ICS in Bangladesh must take into account stove design, payment options, and fuel availability; assess if government policies inhibit import, distribution, or sales; and highlight ways for public and private sector institutions to build needed capacities and work in coordination. (Rosenbaum et. al)

The USAID CCEB ICS team built relationships with international manufacturers that had initially been introduced into the country by the WASHPlus program:

- **Envirofit Z3000 (single pot, built-in-place, rocket design),**

- **EcoZoom Dura (single pot, portable, rocket design),**
- **Prakti LeoChimney (2-pot portable metal chimney stove),**
- **Eco-Chula (single-pot portable fan gasifier stove),**
- **Grameen Greenway (single-pot portable natural draft gasifier stove)**

Based on the relationships formed by the USAID CCEB ICS leadership team with the above parties, almost all of the aforementioned stove manufacturers were able to attend the ICS Market Facilitation Platform. To showcase the current state of the country, the USAID CCEB team used the WASHPlus study to distribute the findings to all the international manufacturers, donor organizations and local private sector organizations. A substantial part of the Year 1 CCEB effort was spent in collaboration with the various international actors and explaining the benefits and modifications required on the part of stove manufacturers to bring a feasible product to the Bangladesh market.

A message content analysis was also conducted by the USAID CCEB ICS program to assess what types of health messages women have been exposed in relation to the ICS sector. The material included on-site surveys and interviews with various end users and both national and international stakeholders, who are considered to be the main users and promoters of new ICS technology. In addition to observations, relevant administrators, health care providers, research development specialists and workers were also interviewed. The fieldwork specified below was conducted during April 2013- September 2013.

Figure 7: ICS Market Facilitation Platform

Various focus groups, work-shops and an ICS Market Facilitation Platform was conducted to promote partnerships between key players both in the national and the international sphere to help drive the focus towards new technology. The drive towards new technology need to be established through extensive entrepreneurship development, creating demand through the Social Marketing Company (SMC) which the ICS CCEB team has been coordinating with in regards to promoting ICS products at the grass root level, working with the

corporate social responsibility division of Chevron to implement ICS products in rural parts of Sylhet, working with Shell Foundation to develop a sustainable structure via which Envirofit can enter the ICS market space, and working with the Global Alliance for Clean Cookstoves to build a knowledge sharing platform through the advent of the Country Action Plan, which is due to be launched this coming October 2013. The CCEB ICS team has also made great headway in familiarizing the aspect of new technology to the masses through the launch of the ICS Market Facilitation Platform. This event attended by both international and national parties, was helpful because it helped drive the aspect of coordination between various parties and showcase new ICS technology. As the first event of its kind, the CCEB ICS team showcased both local and homegrown ICS products and it's advent in the fuel sector.

2 INTRODUCTION

More than half of the world's population—three billion people—cook their food indoors using open fires or rudimentary stoves. Indoor burning of solid fuels releases toxic pollutants including particulate matter and carbon monoxide. These harmful cooking practices cause an estimated 1.9 million premature deaths annually (Global Alliance for Clean Cookstoves, 2010). As the household members most likely to cook family meals, women and children are most affected. The reliance on biomass fuels in developing nations has put considerable pressure not just on the safety of families, but on the environment as well, increasing both deforestation and greenhouse gas emissions. (Berkley Air, 2013)

Although the Government of Bangladesh initiated an Improved Cook Stoves Program, the main reason behind it was conservation of biomass. Benefits of reduced emissions were very briefly mentioned in the program's mid-term evaluation report. (Tabassum, Indoor Air) However, no correlation was made between the high rates of acute respiratory infections and the smoke from stoves and further studies were not initiated to investigate the issue.(Tabassum, Indoor Air) However, the stove acceptance rate was as low as 2%. (ICDDRB, 2002) There were various reasons behind this low figure including negligible user participation during stove design and implementation, altered cooking and fuel management method, high maintenance etc. The program however ended in December of 2001 and there are no plans to revive it. (ICDDRB, 2002)

USAID CCEB's aim was to focus on learning and understanding the dynamics behind the social marketing and social science to explore consumer perceptions of five of the most promising ICS products, used in the WASHPlus study, available for distribution in Bangladesh. The study complements other efforts by a range of stakeholders to strengthen market-based approaches and consumer choice for improving household air quality and reducing the environmental impacts associated with dependence on biomass fuels. The assessments conducted below focuses on providing a current state analysis of the five tenets the ICS program.

Each of these tenets has corresponding assessments, work products and field reports listed as follows:

i. Market Development
    a. Four Workshops conducted with feedback from attendees
ii. Enterprise Development and Access to Financing
    a. Business Model Workshop Report documenting business model for ICS entrepreneurs
    b. Access to Finance Report with list of financial institutions
iii. Capacity Building for Financial Institutions
    a. Collaboration report with IDCOL
iv. Standards and Protocols
    a. Recommendation for Cookstove Testing Centre/Centre of Excellence in Bangladesh with focus on current local cookstove standards
v. Coordination
    a. Workshop Report on "Linking ICS Manufacturers and ICS Distributors"
    b. ICS MFP Conference Overview

It should be noted here that according to the first year work plan the initiation of the Maturity Model for the ICS sector was supposed to have taken place. The Deloitte Cypress Maturity Model has been designed to showcase to ICS stakeholders a current assessment of the ICS sector and what the future action items would be for this sector to attain maturity in the development, marketing and supply of ICS products. The Maturity Model is closely tied to the completion of the Bangladesh Government and GACC led Country Action Plan (CAP) for Improved Cookstoves, which has yet to be completed. This CAP will define asto what kind of activities that current donors and other pertinent bodies have undertaken throughout the country to improve the growth of the sector. This then can be tied into the scoring for both the current and desired state of the Maturity Model. Again, as the first year task lead was not been initiated into the work planning process for next year, it is strongly recommended to CCEB leadership that once the CAP is finalized that the Maturity Model be built into the second year work plan to help evaluate the current and future status of the ICS sector.

Other than the above assessments, there have been a few key achievements that have been realized by the USAID CCEB ICS program in the past few months:

1) Leverage $5000 from the Global Alliance for Clean Cookstoves to host the launch of the ICS Market Facilitation Platform

2) Initiated and facilitated the development of a Memorandum of Understanding signed between S&S Enterprise, a local Bangladeshi ICS sector led enterprise and Grameen Greenway Infra, an international manufacturer of Improved Cookstoves. The MOU is to help facilitate the setting up of a plant which will help promote the advent of new technology within Bangladesh. It is recommended that USAID CCEB help foster this relationship in the coming years ahead. The plant, once established, should be able to manufacture 5000 stoves per month in the first year of production, 8000 stoves per month in the second year of production and 12,000 stoves per month in the third year of production.

Figure 9: Brochure launched at ICS Market Facilitation Platform, initially created for SMC Dissemination to ICS end-users

3) Facilitated the initial discussion to initialize an MOU between Envirofit, an international manufacturer and a premier local manufacturer of energy products Rahima Afrooz. It is recommended that the USAID CCEB program look to maintain and carry these relationships forward to provide a sustainable value chain for ICS products

Figure 8: Prototype Leaflet Created for SMC Dissemination to ICS end-users

throughout the country.

4) Worked with the Bangladesh based marketing leader Social Marketing Company, a premier industry leader in the area of behavior change, to design marketing tools such as posters, leaflets, key messages via brochures to be distributed to the masses to increase the demand of Improved Cookstoves throughout Bangladesh. It has been agreed that if CCEB can in fact create and provide 5000 posters for dissemination purposes, SMC will take the initiative to distribute these items through their grass root network comprising of 5000+ mobilization agents throughout the country.

Figure 10: Prototype Poster Created for SMC Dissemination to ICS end-users

The posters have been created and approved by CCEB leadership and was initially launched at the ICS Market Facilitation Platform. It has been agreed that in order to augment this exercise of increasing demand at the grass root level, that SMC will develop a 1-2 minute video clip that can be run through local cable channels at the grass root level. Again, it is strongly recommended that these conversations continue to take place between CCEB and SMC and the WashPlus team to implement an effective marketing strategy.

It is also recommended that the relevant advice and tools posed by SMC is taken into account when drawing out the 2nd year work plan. A flip chart and other tools that have been advised to be created by SMC are also strongly recommended to be undertaken by USAID CCEB ICS team in its second year. This will help initiate story telling exercises by SMC mobilization agents to ICS product end users.

5) Initiated discussions with the Dhaka Chamber of Commerce to initiate 2000 ICS entrepreneurs within the ICS sector and formulate a bill to present to the National Board of Revenue to minimize the cost of import tax levied on international ICS products. It is recommended that these discussions continue and be formulated into action steps for the 2nd Year.

6) Discussions are underway with the Corporate Social Responsibility division within Chevron to initialize the start of a revolving fund and start demand creation activities in specific regions of Bangladesh to promote the access of ICS products. An outline of the discussion and the implementation of what the Global Development Alliance (GDA) may look like between USAID and Chevron CSR unit is outlined in Appendix 6. It is strongly recommended that these discussion and activities continue in the following years ahead to facilitate the initialization of a GDA to finalize Chevron's participation in the USAID CCEB project.

7) Attended the international ICS seminar in Phnom Penh, Cambodia for the Global Alliance for Clean Cookstoves to understand worldwide best practices currently underway and showcase CCEB's role in the ICS sector through an international poster session.

Figure 11: GACC Conference in Cambodia

8) Initiated the Market Facilitation Platform for Improved Cookstoves to help link international and national manufacturers through a common platform.

9) Collaboration discussion underway with the Global Alliance for Cleancookstoves to initiate a testing center and center of excellence within the country that will help foster knowledge sharing and provide a standards and testing institution within the country. It is recommended that these collaborative discussion sessions become part of the 2nd year work planning process.

10) Collaborative discussion underway with the Shell Foundation and Envirofit to set up a sustainable structure to help ICS manufacturers avail finances within the country to help set up ICS institutions and drive demand of ICS products. Again, it is recommended that these conversations continue into next year.

11) Discussions are underway with the Bangladesh Women's Chamber of Commerce to set up a revolving fund to help enable women entrepreneurs join the ICS sector. Highly recommend discussions continue well into the 2nd year.

Figure 12: Focus Group Session in Srimangal promoting new ICS technology

3 - MARKET DEVELOPMENT (TASK 5.1)

3.1 ICS SITE VISIT WORKSHOP - RAJSHAHI

EXECUTIVE SUMMARY

A four member team, including three representatives from CCEB and one representative from USAID visited Rajshahi from 21-23 June, 2013 for the following purpose:

- Conduct two workshops with a)users of ICS products and b)NGOs and private entrepreneurs of ICS products to understand the current business model
- Introduce new ICS technologies to potential and existing ICS entrepreneurs
- Develop business plan for ICS entrepreneurs to upscale their business
- Identify MFIs in the area

Figure 13: ICS Task Lead promoting new ICS technology in Rajshahi to users of ICS products

Figure 14: Workshop promoting new ICS technology in Rajshahi to new users

The two day trip included two workshops. The initial one was conducted with users of ICS and traditional stoves while the other workshop was conducted with NGOs and private entrepreneurs of ICS, and meeting with three microfinance institutions. The CCEB ICS team visited Rajshahi and Chapainawabganz, two of the 64 districts in Bangladesh. The initial study of these two areas, showed that the potential demand of ICS technologies is enormous. After the visit, CCEB assessed that there was substantial demand in the marketplace for new ICS technology in middle to high income families.

The identified target market and demographic zones included middle to high income areas that included villages and semi-urban areas near-about the Rajshahi and Chapainawabganz districts. The CCEB ICS team interviewed local women who confirmed that international stoves will need to be customized according to local needs. CCEB's initial assessment also suggested that for an entrepreneur to build a sustainable business, it is important to provide credit sales (micro loans), since the products are slightly more expensive than bondhu chullas.

Figure 15: USAID CCEB ICS team with users of new ICS technology and USAID CCEB Sr. Energy Advisor, Sher Khan

Most of the users, entrepreneurs, NGOs, MFIs and government officials were unaware of the new technologies proposed by CCEB. As such, there is a need for increased amount of marketing and awareness campaigns. CCEB also identified a number of potential partners, entrepreneurs and MFIs that will support both consumers and entrepreneurs in the distribution and development of ICS products over the next five years as detailed in the Access to Finance report.

METHODOLOGY AND FINDINGS

WORKSHOP 1: UNDERSTANDING AND GROWING THE DEMAND FOR ICS PRODUCTS

Objective: Introduce new ICS technologies and discuss user preferences and motivation to purchase ICS stoves

Location: Moharajpur, Chapainawabganj

Attendees: Traditional and Improved Cookstove Users

Figure 16: USAID CCEB Sr. Energy Advisor, Sher Khan talking about the benefits with the users

Description: More than 30 participants, including ICS users and traditional stove users participated in the event. USAID Representative, Mr. Sher Khan, and USAID Senior

Program Advisor, Sabrina Amjad addressed the participants highlighting that indoor air pollution is one of the major health hazards for women and children and what the new technology would bring to the masses. The Chairman of Moharajpur union mentioned that it is a great opportunity for participants to learn about new ICS technologies. During the meeting, users of traditional cookstoves and ICS products shared their experiences and knowledge with the CCEB ICS team members.

CCEB team and S.S Enterprise shared different models of ICS technology with the participants and highlighted both advantages and disadvantages of the Grameen Greenway Stoves. Advantages include the stove's portability, less emission of smoke and less time needed for cooking. The feedback received from current users of the stoves includes small size of the stove, the current high price of the stove and unavailability of the required fuel (briquettes). The CCEB team questioned the audience in great detail to better understand their lifestyle as well as benefits and challenges faced by users of traditional cookstoves and current use of ICS products.

Outcome: New ICS technologies were introduced while new demand creation activities were defined using information gathered from the ICS users.

WORKSHOP 2: UNDERSTANDING AND GROWING THE CURRENT BUSINESS MODEL

Objective: Introduce new ICS technologies and develop business models for ICS entrepreneurs

Location: Chapainawabganj

Attendees: NGOs and Private Entrepreneurs of Improved Cookstoves

Figure 17: Unique ICS Code for M&E Purposes

Description: The workshop started off with a brief introduction of each of the 37 participants, including their name, organization and the number of years they have been working with the promotion of ICS products. USAID Sr. Energy Advisor Sher Khan and CCEB Sr. Program Advisor, Sabrina Amjad led the discussion with the audience. The participants were then divided into three working groups to work on the following topics:

- **Overview of Current Business Model:** Most entrepreneurs have an average of 5-10 workers for their businesses. For improved cookstoves, the entrepreneurs are currently targeting lower and middle income families. They sell *Bondhu Chullas* for approximately 1200 BDT, which is usually either paid in cash and/or credit collected in 5-6 separate installments. Almost all entrepreneurs are providing after sales service, which includes five years' service warranty. The users are provided with a unique ID number and a contact number of the service provider, which can be used to access any support needed for maintaining the ICS product. Current marketing of ICS products take place mostly through word of mouth, leaflets and demonstrations.

- **Future Targeted Business Model Growth:** The entrepreneurs at this session were primarily engaged in selling *Bondhu Chula*. CCEB team and S & S Enterprise demonstrated a sample of the Grameen Greenway Smart Stove, a new ICS technology in Bangladesh. This seemed to spark entrepreneurs' interest in the new technology, but they stressed that these stoves were too expensive for rural households. However, the entrepreneurs identified that these will work well in semi-urban areas, where LP gas is currently not available. This will enable ICS retailers to expand their current market and also their product range. In order to market the product, entrepreneurs suggested yard seminars, video shows, cable line ads, door to door marketing, etc.

Figure 18: Entrepreneurs inspecting new ICS technology

Due to the high price of the product, entrepreneurs would like to keep a provision for the payment of the new technology in six-month installments. However, the distributors were not willing to buy a large number of stoves with cash payment from the manufacturers. They would like to see the feasibility of the product and their impact on the current market, as well as the type of fuel and the warranty on the actual product. It was suggested that setting up a number of small distributors would be a feasible way to market the product versus a single point of sale center. The USAID CCEB team has defined future growth for businesses as defined in the Business Model in Chapter 7.

Outcome: New ICS new technologies introduced and existing business models were evaluated. A future business model for ICS entrepreneurs has been outlined below in Chapter 7.

WORKSHOP 3: UNDERSTANDING LOCAL BUSINESS MODELS CURRENTLY UNDERWAY WITH GIZ AND GRAMEEN SHAKTI ENTREPRENEURS

Objective: Open discussion with stove distributors and local manufacturers about new technologies; idea generation for both supply side and demand campaign.

Location: Rajshahi

Attendees: GIZ, Grameen Shakti and private entrepreneurs of Improved Cookstoves

Figure 19: GIZ and Grameen Shakti Entrepreneurs with USAID CCEB ICS team

Description: CCEB team visited the GIZ and Grameen Shakti Offices in Rajshahi. USAID Sr. Energy Advisor Sher Khan and CCEB Sr. Program Advisor, Sabrina Amjad led the discussion with the audience. GIZ also invited a group of partner entrepreneurs to this meeting. Both GIZ and Grameen Shakti explained their current operations on ICS, including target population, training plans, marketing strategies, monitoring and evaluation strategies and current challenges faced by entrepreneurs as well as organizations.

Outcome: New ICS technologies were introduced to participants and existing business models and programs were evaluated.

3.2 ICS SITE VISIT WORKSHOP REPORT – SYLHET

EXECUTIVE SUMMARY

A four member team visited Srimangal from 5-6 June, 2013 for the following purpose:

- To understand the existing perception of cooking practices
- Conduct two separate workshops with two specific ICS end users within the Sylhet region to understand their preference and choice regarding stoves
- Introduce new ICS technologies to potential and existing ICS entrepreneurs

The one day trip included two separate workshops with users of ICS and traditional stoves users both in Srimangal and Bibiyana gas fields operated by Chevron Bangladesh. The initial study of these two areas showed that the potential demand of ICS technologies is enormous. After the visit, CCEB assessed that there was substantial demand in the marketplace for new ICS technology in these communities. However, since they received a large number of free goods from Chevron supported NGOs, hence there was substantial hesitation on purchasing an ICS product for 1700 BDT. CCEB's initial assessment suggests that it is important to keep a provision for micro loans since the products are slightly more expensive than *bondhu chula.*

Figure 20: Demand driven workshop – Convincing Srimangal Users of ICS New Technology Benefits

Most of the users, entrepreneurs, NGOs, MFIs and government officials were unaware of the new technologies proposed by CCEB. As such, there is a need for increased amount of marketing and awareness campaigns in these areas. The Sr. Program Advisor Sabrina Amjad led discussions and surveyed the general feedback from the core focus groups to further learn asto what parts of the stoves will need to be customized according to the local needs. CCEB also identified a couple of potential partner entrepreneurs and NGOs that will support both consumers and other entrepreneurs in the distribution and development of ICS products over the next five years as identified in the Business Model outlined in Chapter 7.

METHODOLOGY AND FINDINGS

WORKSHOP 4: UNDERSTANDING AND GROWING THE DEMAND FOR ICS PRODUCTS

Objective: To understand the existing perception of cooking practices and introduce new ICS technologies.

Location: Srimangal

Attendees: Traditional and Improved Cookstove Users

Figure 21: Demand driven workshop – Sr. Specialist Anowar Mollah showcasing the new ICS tech. stove

Description: More than 20 participants, including ICS users and potential users participated in the event. USAID Representative, Mr. Sher Khan, addressed the participants at the beginning of the event and highlighted that Indoor Air Pollution (IAP) as one of the major health hazards for women and children. USAID CCEB Sr. Program Advisor, Sabrina Amjad led the discussion addressing the benefits of the stove. Most of the participants received the bondhu chula for free from CNRS. During the meeting, users of traditional cookstoves and ICS products shared their experiences and knowledge with the CCEB ICS team members. CCEB team shared the different models of ICS technology with the participants and highlighted both advantages and disadvantages of the Grameen Greenway Stoves. Advantages include the stove's portability, less emission of smoke and less time needed for cooking.

Almost 50% of the users present were willing to buy the new ICS technology (Grameen Greenway) demonstrated to them. However, they were not sure how to pay for it. Creating a system of paying in installments is critical. The CCEB ICS team was also able to identify two female entrepreneurs who are currently performing small maintenance services for the users for a minimum contribution. CCEB team questioned the audience in great detail to better understand their lifestyle as well as benefits and challenges faced by users of traditional cookstoves and current use of ICS products.

Outcome: New technologies introduced while new demand creation activities were defined using information gathered from the ICS users.

WORKSHOP 5: UNDERSTANDING AND GROWING THE DEMAND FOR ICS PRODUCTS

Objective: To understand the existing perception of cooking practices and introduce new ICS technologies.

Location: Bibiyana

Attendees: Traditional and Improved Cookstove Users

Description: The discussion led by USAID Sr. Energy Advisor, Sabrina Amjad started off with a brief discussion on the benefits achieved by users of ICS in the area. Some of these included no dirt on the pots, no smoke, less time needed for cooking; two items can be cooked at the same time, etc. The community did not seem to have any knowledge on how or where to purchase the "bondhu chula" from. The participants seemed relatively well-off and had received free stoves from Chevron. As such it was harder to convince them to purchase new products. Most families use their existing "bondhu chula" inside their kitchen and has an additional alternative mud stove that they have built outside for winter use.

Figure 22: Demand driven workshop – Introducing new ICS technology in Bibiyana

The users in Bibiyana were also willing to shift to the new ICS technology demonstrated by the USAID CCEB team because it looked good, emitted less smoke and consumed less firewood. Very few users are able to pay 1700BDT in a single installment and as such they prefer a system of being provided micro loans to buy the new ICS technology.

Outcome: New technologies were introduced while new demand creation activities were defined using information gathered from ICS end users.

4 ENTERPRISE DEVELOPMENT AND ACCESS TO FINANCING (TASK 5.2)

4.1 LINKING ICS MANUFACTURERS TO DISTRIBUTORS

EXECUTIVE SUMMARY

A business development workshop was organized on July 09, 2013, with 17 participants, including NGO representatives, international manufacturer Prakti and local entrepreneurs.

Figure 24: Prakti Stoves- Introduced to ICS CCEB Focus Group

The workshop started with a brief introduction of each participant, followed by a presentation on CCEB activities on the ground and a second presentation on new ICS technology – PRAKTI. Mr. Mouhsine Serrar, CEO and Founder of PRAKTI, talked about their activities in different countries around the world and their stove models.

He also presented a live model of the stove to the participants and explained that the stoves will have to be customized according to local needs. The presentations were followed by a lively Q&A session, which also brought forward a number of suggestions, including the importance of access to finance for both users and entrepreneurs. It was stressed that pilot projects need to be carried out around the country, to better understand the needs and preference of the community people. Representative from Dhaka Chamber of Commerce and Industry (DCCI) mentioned the involvement of CCEB and ICS products in an upcoming expo, which is part of their target to grow 2000 entrepreneurs. SMC is interested to disseminate new ICS technologies across the whole country.

Figure 23: Prakti Stove introduced in Bangladesh

METHODOLOGY AND FINDINGS

WORKSHOP 6: LINKING INTERNATIONAL MANUFACTURERS TO LOCAL DISTRIBUTORS WITHIN BANGLADESH

Objective:

- To discuss goals and strategies used by the USAID CCEB program
- To create a platform linking international manufacturers and local entrepreneurs
- To create an opportunity to bring new ICS technologies to Bangladesh

Location: CCEB Office, Dhaka

Attendees: NGO representatives, international manufacturer and local entrepreneurs (i.e. distributors of ICS products)

Description: On July 08, CCEB hosted a business development workshop, bringing together NGO representatives, international manufacturers and local entrepreneurs from different districts of Bangladesh. The workshop was divided into two sessions:

- CCEB findings in the field
- International ICS technology and its potential in Bangladesh

Sr. Specialist, Anowar Mollah provided a brief presentation on goals and objectives of the CCEB project, followed by the recent activities and findings derived from the field. The ICS team shared the findings of one entrepreneur who is currently distributing and selling Greenway stoves, which is one of the five ICS technologies which will be promoted through the USAID CCEB program.

The presentation outlined how CCEB is supporting the entrepreneur and also talking to Greenway Infra directly to encourage them to set up a manufacturing plant in Bangladesh. In the following discussion from the private sector parties attending the meeting, it was seen that there was a high demand for new technologies in both rural and semi-urban areas.

Figure 25: Meeting with International Manufacturer Prakti and local business leaders interested in developing the ICS market

The ICS CCEB team also pointed out that CCEB has partnered with Social Marketing Company (SMC) in creating demand for ICS products in 19 upazillas where SMC is currently working. Representatives from SMC discussed asto how this will be accomplished through their mobilization agents present in the field. The presentation also highlighted CCEB's efforts in talking to MFIs and enlisting the help of financial institutions such as IDLC and

IDCOL to create an access to finance for both entrepreneurs and users. The WASHPlus project was discussed in detail and the study findings portrayed to the entire group. The second half of the workshop consisted of a presentation by Mr. Mouhsine Serrar, Founder and CEO of PRAKTI stoves. He mentioned that PRAKTI stoves are unique because they allow for continuous rapid prototyping and "mass customization". He shared the different stove models designed for different countries, including Nepal, India, Haiti and South Sudan.

In collaboration with NGOs, government agencies, and local companies, PRAKTI has distributed 8,000 household stoves and 880 institutional stoves. They are constantly consulting with stakeholders worldwide. Mr. Mouhsine, in response to a question from a local ICS potential distributor, PRAKTI's CEO mentioned that the product can be easily customized according to the country's local needs. However, it is very important to set up a financial product alongside, since access to finance is a key factor for users. A number of key steps for manufacturers and MFIs were discussed and agreed upon by participants. These include selecting and finalizing a design for a stove and simultaneously selecting a financial product for three tiers of users (high, medium and low range). It can then be tested through small pilot projects in different regions of Bangladesh.

Figure 26: International Manufacturer Prakti and local distributors and manufacturers

Representatives from the Dhaka Chamber of Commerce and Industry (DCCI) mentioned that they are looking to grow 2000 entrepreneurs by the end of the year. They have a plan to create a platform for these entrepreneurs through an expo in November, and are very interested in promoting ICS as a business area. Dr. Zahid, Head of Behavioral Change and Communication at the Social Marketing Company (SMC) also addressed that indoor air pollution is one of the biggest health hazards for both the mother and child. To address these issues, SMC will work with CCEB in the long run to introduce new ICS technologies to overcome household energy problems. Mr. Ruhul Quddus, Executive Director from the Rural Service Foundation a sister concern of Rahim Afrooz was committed in promoting new technologies along with their solar products.

Outcome:

- All participants understood the goals and objectives of the CCEB program

- Understand and links have been created between international manufacturer (PRAKTI) and local entrepreneurs
- Local participants were interested in bringing new ICS technologies for both manufacturing and assembly purposes into the country

4.2 BUSINESS MODEL WORKSHOP FOR ICS ENTREPRENEURS IN BANGLADESH

EXECUTIVE SUMMARY

A consultation workshop was organized on April 16, 2013, with NGO representatives and donor organizations. USAID CCEB Sr. Program Advisor, Sabrina Amjad led the focus group discussions between the key parties. Participants were divided into three groups for group work, which included brainstorming session and presentations, following by question and answer sessions. The workshop identified best practices for effective outreach campaigns, challenges faced by existing projects, and existing as well as potential distribution channels. The USAID representative and Sr. Energy Advisor, Sher Khan was also present and shared his views of USAID's goals and mission for the ICS sector.

Figure 27: ICS Entrepreneur sharing his current business model

Figure 28: ICS Entrepreneur researching barriers to ICS industry success

NGOs were highly encouraged due to involvement of SMC in the ICS component of CCEB. Participants predicted that more than 500,000 households can be reached if all the strategies are used. Affordability of poor rural households should be considered at the innovation stage. It was also suggested that the fuel type should also be considered as a parallel value chain. The accessibility of improved cook stoves needs to be as user-friendly and environmentally friendly as possible. It was suggested that R&D scientists should be invited to future workshops that focuses on promoting new ICS technology held by CCEB. Participants were very interested in learning how CCEB would

work with select partner NGOs and how the manufacturing and distributorships would work throughout the country.

METHODOLOGY AND FINDINGS

WORKSHOP 7: CONSULTATION WORKSHOP WITH CCEB STAKEHOLDERS

Objective:

- Discuss best practices for an effective outreach campaign to promote demand of ICS products
- Engage and understand the distribution methods currently employed by the ICS organization to sell the relevant products
- Discuss the prevalence of new technology and how to effectively introduce ICS products through the many distribution channels that are currently in existence

Location: CCEB Office, Dhaka

Attendees: NGO representatives, donor representatives, and private sector representatives

Description: On April 16, CCEB hosted a consultation workshop with its stakeholders from different sectors, including NGOs, donors and private sector. The workshop was divided into three sessions:

Figure 29: Local GS entrepreneur discussing current Grameen Shakti business model

i. Best Practices for an Effective Outreach Campaign
ii. Existing Distribution Methods
iii. Promoting New Technologies through Distribution Channels/ Trade Facilitation Platform

Participants were divided into three groups to carry out brainstorming sessions and presentation on the above topics.

Best Practices for an Effective Outreach Campaign: The participants came up with unique ideas from their own work experience. Some of these are listed below:

- Community Based Organization (CBO) formation: These can include teachers, social/political leaders, and elites (i.e. community people are more widely accepted in comparison to representatives from NGOs). However, since it may difficult to sustain a CBO on a single issue (i.e. ICS products), it was suggested the use of existing CBOs.
- Cultural events such as folk songs, theme natoks, melas, etc.
- School sessions and courtyard meetings
- Demonstration points: to be maintained by CBOs
- Colorful wall paintings
- Training manual for users, including low literacy level manuals
- Communication materials such as billboards, posters and leaflets

NGOs were highly encouraged due to involvement of reaching the grass root sector through SMC participation in the ICS component of CCEB. The participants also pointed out that demand creation is related to the end-user's ability to purchase stoves. Here, MFIs and other financial institutions could help move forward to help the consumers purchase the necessary product with micro loans. They suggested the creation of a technical committee/national testing and standards center to help evaluate each ICS technology before it enters the market space.

Challenges in Dissemination of ICS technologies: During the second session, participants discussed constraints in the dissemination of ICS technologies in the country: Some of these included:

- Lack of continuity of funds: As a result, the projects are not sustainable
- Subsidies in the market
- No funds available for staff development: difficult to attract skilled staff
- Problem with the mindset of rural communities
- Advocacy needed at the policy level (health concern & deforestation)
- Duplication of projects, resulting in relocation of staff
- Business models need to be created for the private sector
- Lack of after-sales service/maintenance: This is true for users as well as manufacturers
- Inadequate research and development initiatives (such as no advancement in Science Laboratory)

VERC and Grameen Shakti were known to be providing training to their end users. VERC, as a rule of thumb, follows up with the user after one week of installation: user manuals were also provided when a 'bondhu chullah' was built on premises. A second follow-up visit is carried out after 10 -15 days to gather information on benefits and problems that the user may be experiencing from the stove. Monitoring usually takes place every 3 months, following the second follow-up session. Helpline numbers are provided if the users require any support while carrying out their daily chores.

Another local-level NGO shared their business model of having trained the end users of ICS products on how to install and maintain the product thereby helping the end recipient with the complete installation. NGO staff members oversaw the process to see that their installations were in fact accurate. The individual used for M&E purpose was also involved in after-sales service who received 5-10 taka extra from each household for providing the service. However, this process was only feasible for households located within the same area.

Some participants also pointed out that it is important for ICS parts to be available at the doorstep or a nearby vicinity of the end-user. Having to come to the city for parts, such as to purchase a chimney or other part of the current ICS model existent within Bangladesh, can be a hindrance. They suggested that working with women leaders to promote the advocacy of stoves should be encouraged. An example provided here was that of Unilever women workers selling other products which can also be adopted by CCEB in the promotion of the products.

Figure 30: Local VERC entrepreneur discussing current VERC business model

Affordability of poor rural households should be considered in the initial stages before a manufacturing plant is situated in a particular area. The fuel type should also be considered since the aim is to make the stove as user-friendly and environment-friendly as possible.

Distribution Channels: Towards the beginning of the session, a few participants pointed out that the market itself creates distribution channels: if effective demand (purchasing

power, acceptance of product, willingness to pay) is present, channels will by default be created to meet the need of the users. Other points mentioned include the following:

- We can find entrepreneurs who can make profit by selling ICS products. However, ICS should be an added product to their existing business line
- Local agents should be developed: Approx.: pay 50tk for new stove delivery and 300tk for selling and installation
- Production centers: both outsourcing and self
- MFIs and local financial institutions
- Local NGOs (either NGO staff or local community people)

Participants agreed that the projects need help in identifying the market where the demand can be created. They also said that intensive training is required for manufacturers and distributors if new technologies are brought into the country. It was suggested that manufacturing plants should be based outside Dhaka, as transportation costs are much lower in the rural sectors versus urban areas. The other factor to consider would be to maintain space for production and storage of ICS products when distributors were identified in certain areas..

Outcomes:

1) All participants understood the goals and objectives of the CCEB ICS program
2) Identification of potential distributors, retailers and manufactures through the identified organizations
3) Identification of demand creation activities that CCEB can engage for promotion of ICS products
4) Identification of possible constraints for next steps forward to help devise necessary mitigation strategies for both supply and demand of ICS products
5) Identification of potential teaming partners who will campaign at the grass root level

Feedback from participants:

1. Workshop facilitation was easy to understand and provided an excellent overview of the program and outlined next steps
2. The presence of USAID Representative (Sher Khan) was inspiring and encouraging to the attendees
3. The objectives of CCEB (Task-5) are clear
4. Lively presentation and everybody had the opportunity to express their views; especially liked the team building activities
5. Useful findings from group work ; important for developing appropriate implementation strategies
6. Good gathering and information sharing
7. Excellent team work
8. Meeting venue was good

Figure 32: VERC personnel discussing current and future

Figure 31: IDCOL, BASA, Grameen Shakti discussing current and future business model

Figure 33: Business Model for Women Entrepreneurs

4.3 BUSINESS MODEL FOR ICS ENTREPRENEURS

EXECUTIVE SUMMARY

Burning of biomass for cooking is associated with health problems and climate change impacts. Many previous efforts to disseminate improved stoves – primarily by the Bangladesh Government and NGOs and CSR related efforts from organizations such as Chevron Bangladesh – have not been successful in creating a sustainable ICS sector. Through the many workshop sessions, the USAID CCEB ICS team received continuous feedback from local entrepreneurs on the various business models that can be leveraged through the ICS sector currently prevalent in the market space as well as focus on the promotion of new technology that USAID CCEB is trying to introduce into Bangladesh.

WHY AN ICS PRODUCT COULD BE A VIABLE MAINSTREAM ITEM FOR BANGLADESH ENTREPRENEURS

- Popular product with growing market in the rural sectors
- Low capital requirement to get started to promote the current ICS product prevalent in the market
- Training relatively easy to become an assembler/distributor/retailer of new technology
- Make use of local raw materials
- Involves simple practical skills, requiring only a few days/weeks practical training

Figure 34: IDCOL launch of ICS with USAID Sr. Energy Advisor, Sher Khan and USAID Sr. Program Advisor Sabrina Amjad

Each business model would require differing levels of investment. The actual investment will vary on a case-by-case basis. Specifically, the USAID CCEB team considered how the ability of current stove businesses in the market place will help to achieve scale and become self-sustaining. From the understanding derived from different ICS entrepreneurs, the USAID ICE team understands that distributors, manufacturers and retailers will be influenced by six elements of their respective business models: design, customers targeted, financing, marketing, channel strategy, and organizational characteristics. Successful ICS entrepreneurships in

the field would need to share common generous enterprise financing, a sophisticated approach to developing a sales channel, and many person-years of management experience in marketing and operations of the current product.

CURRENT ICS SECTOR IN BANGLADESH

Since 1988, various versions of the Improved Cook Stove (ICS) program have long been promoted in Bangladesh, but efforts to create a sustainable market, have so far been scarce, reaching a mere 1.7 % market share. Nevertheless, Grameen Shakti, has been able to demonstrate an exponential growth in 2010 and 2011 thereby making it possible for other organizations and enterprises to achieve similar results. (EEREP, 2012) This is very notable in previous successes with other renewable energy (RE) technologies, notably solar PV. (EEREP, 2012)

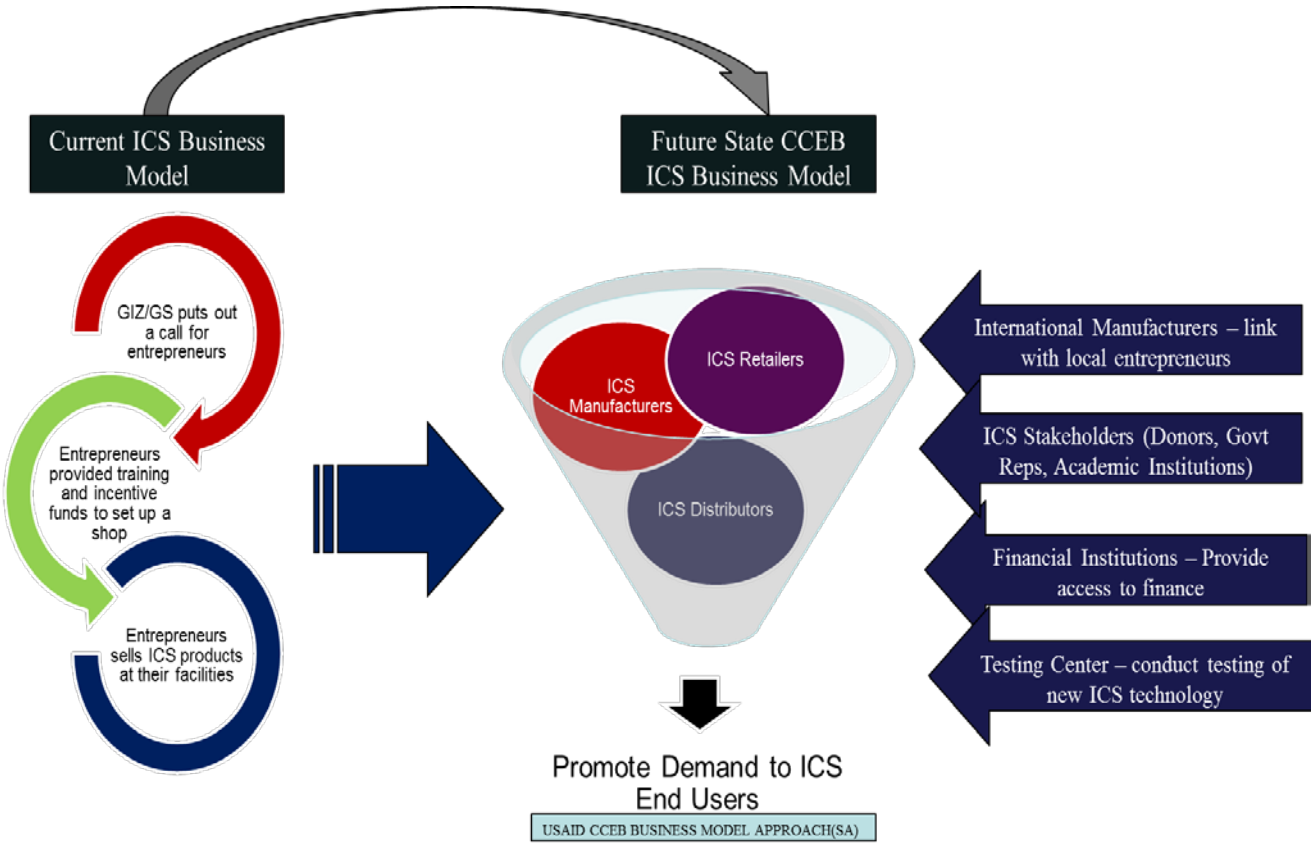

Figure 35: Current Business Model and Future Business Model for ICS Products

The Bangladesh Council of Scientific and Industrial Research (BCSIR) built the initial rudimentary design leading to low take rates by heavily subsidizing stoves, thereby undermining the pre-existing local markets for stoves. Despite more than 30 years of effort, NGO efforts remain small-scale. Numerous problems, including fragmentation of effort and insufficient attention to scalability and sustainability, have prevented such operations from expanding to serve a larger customer base. (EEREP, 2012)

Bangladesh, a market of more than 29 million households has potential in building a sustainable ICS sector through innovative business models (1) due to its remarkable success in commercializing solar home systems, due in part to the role played by IDCOL, a GOB non-banking financial institution, in end user refinancing, (2) because the grounds for innovative market-based interventions have been set up by its decade long efforts to develop the ICS sector, and (3) Bangladesh's remarkable success in driving social change through public awareness and social marketing campaigns for deeply set traditional behaviors (e.g., sanitation, oral rehydration, and family planning). (EEREP, 2012)

METHODOLOGY AND RECOMMENDATIONS

PROVIDING A HOME GROWN SOLUTION THAT WORKS

Recently, organizations aiming to sell cookstoves commercially have emerged around the world, with operations in Latin America, Africa, South Asia, and the Asia Pacific region. (Energy Policy 2011) However, there are few demonstrations of self-sustaining commercial distribution of improved stoves and there is a need to assess what would make commercial cookstove programs successful in Bangladesh, lack of capital, low awareness and affordability among the target population, high tariffs, limited distribution networks and absence of end user finance are some of the key barriers to success for the ICS sector to grow throughout the country. (Toyola Energy 2013)

Figure 36: Improved Cookstove Market Facilitation Platform promoting new technology

During the ICS Market Facilitation Platform held by the USAID CCEB program in September 2013, Anuradha Bhavnani of Shell Foundation explained that her organization had a six-step plan to market ICS in the country. Firstly, they plan to analyze markets and catalyze 'disruptive' solutions. They will then identify partners and pilot new business models, following which they will create 'pioneers' and provide early stage support. The organizers will support partners to scale up operations and tackle emerging market barriers, thus ensuring market building to enable replication. Shell Foundation, thereby, undertakes a holistic approach to ensure sustainable distribution of ICS products. Bhavnani also suggested micro-finance as an option for financing buyers.

During the same event, Harish Anchan of Envirofit said that his organization offers a line of customizable products. Citing poor quality materials, lack of quality control standards, poor durability, lack of standardized testing and lack of proven measured reductions in emissions are some of the reasons that he quoted as being barriers to effective marketing of ICS products. Anchan offered solutions to address some of the problems. He suggested including warranty on the stoves, collaborating to ensure habit change in users and offer training to end-users. Regarding the marketing of ICS in Bangladesh, Anchan stated that Envirofit could offer its Research and Development experience, share their working methodologies in Indian Market and across the globe, offer multiple products for Bangladesh market, including stoves for the domestic and institutional markets, design carbon partnerships approaches and share the evaluation and reporting mechanisms.

The USAID CCEB ICS team has identified the following ways which also may help with an increase in the demand of ICS products hence leading to sustainable business solutions throughout the country. (Toyola Energy 2013)

- Mobile sales by vehicles, boats, etc.
- Financing ICS End User residing in rural sectors of Bangladesh-- Give the customer a stove and a "ICS Fuel Saving Box"
- Customers put the money saved from using less fuel in the "ICS Fuel Saving Box" to pay for the stove over a period of time

The approach employed above was used by Toyola Energy in Ghana, which has helped sell over 300,000 stoves since 2007 delivering positive health, environmental, financial and social benefits in West Africa. (Toyola Energy 2013).

At the ICS Market Facilitation Platform Mr. Tapos Kumar Roy, Additional Secretary, Ministry of Power, Energy and Mineral resources, stated that the use of solid fuel is inefficient, as it results in air pollution, loss of time and health problems. As studies show that most people still prefer traditional stoves over ICS, hence a market supply chain needs to be established. With the view of scaled up wide scale adaptation of clean cooking in Bangladesh, the government of Bangladesh is in the process of setting up a Household Energy Platform, where problems and solutions in implementing ICS will be discussed. The government of Bangladesh is developing a national action plan, according to which seven million Improved Cook Stoves will be distributed around the country over the course of five years. USAID CCEB ICS lead has been in close conversation with the Bangladesh Government to link potential ICS entrepreneurs to the platform and provide the entrepreneurs the opportunity to sell these products directly to the end user.

The local entities that have been selected by USAID CCEB in the first year that will support approximately 500+ individual entrepreneurs in the form of manufacturers, assemblers, distributors and retailers are as follows:

1. SS Enterprise-Bangladesh
2. Siddque Sanitation
3. Faruk Unnata Chula
4. AID Bangladesh
5. Rahima Afrooz

The USAID CCEB ICS team after having conducted in-depth research and feedback from various recipients, who are currently manufacturing and promoting ICS products in the market place, outlines the following business model process steps which would help a local ICS entrepreneur enter the current market space.

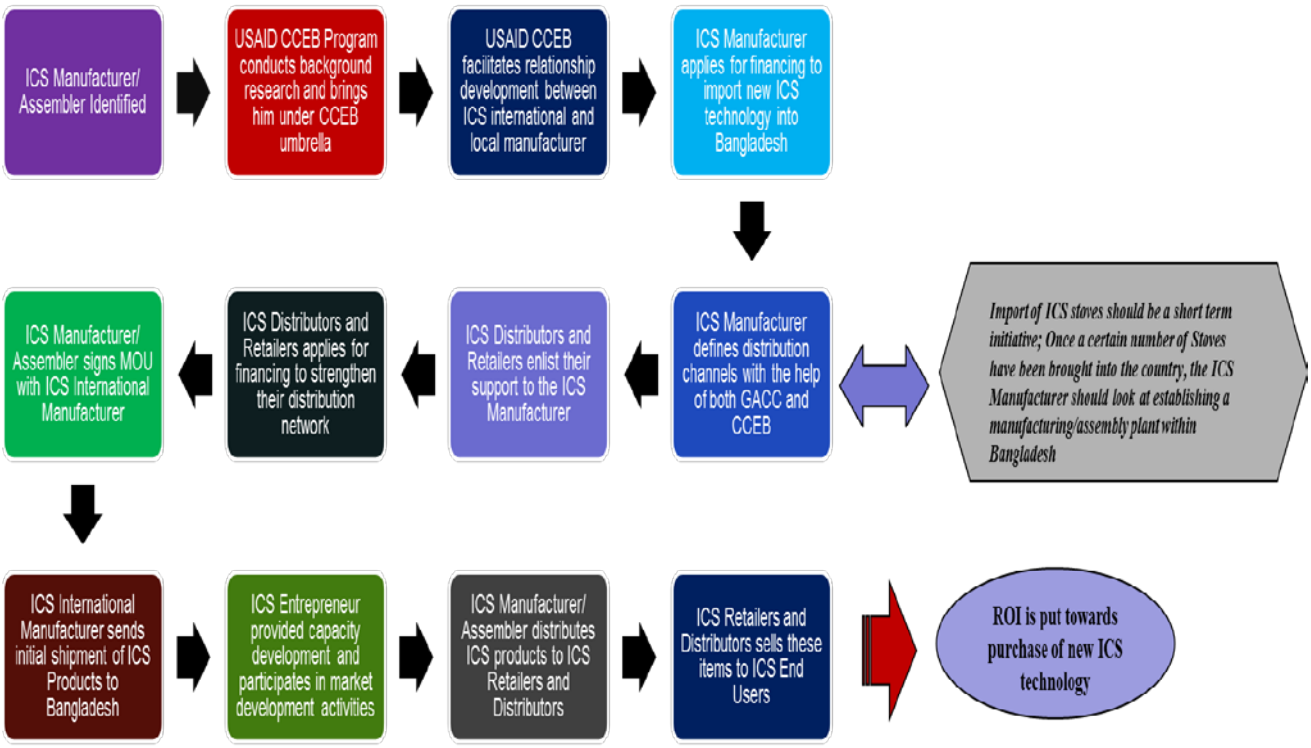

Figure 37: USAID CCEB Proposed Future Business Model for ICS Entrepreneurs

A portion of the above processes have been successfully applied in the case of the local entrepreneur S&S Enterprise which is committed to bringing in a few thousand stoves into the Bangladesh market over the next five months. Mr. Shawkat Ali, the Chairman of S& S enterprise has been working very closely with the international manufacturer of Improved Cookstoves, Greenway Grameen Infra, which USAID CCEB has been helping coordinate to build a successful relationship between the key parties. The USAID CCEB ICS leadership team has been facilitating discussions between the key parties which led to the signing of an MOU to set up a manufacturing plant in Bangladesh. This is in fact is a big step for Bangladesh as this ICS manufacturing plant will be the first of its kind in Bangladesh. The estimated number of ICS products that will initially be produced will start at 5000-8000 stoves/month in the first two years to expand to

Figure 38: Figure 38: MoU signing between S&S Enterprise and Grameen Greenway Infra

10,000 stoves per month in the third and fourth years. S&S Enterprise had previously brought in 500 stoves into the country and in 2013, with the help of USAID CCEB has been successful in bringing in approxiamtely 1000 stoves into the country with an order of 5000 stoves with Greenway Grameen Infra that are being customized for the Bangladesh market. An overview of the MoU is outlined in Appendix 1.

The number of women entrepreneurs currently employed by S&S Enterprise is approximately 10 women who help market the individual stoves throughout the Rajshahi region. As S&S enterprise looks to establish a manufacturing plant in the country of the new ICS technology, the organization in looking to target 40% women entrepreneurs who will become their last mile retailer/distributor of the ICS products.

As outlined in Appendix 5, the study undertaken by the USAID WASHPlus effort afforded findings which were shared by the USAID CCEB team with the following manufacturers:

- **Envirofit**
- **EcoZoom**
- **Prakti**
- **Eco-Chula**
- **Grameen Greenway**

With the advent of the collaboration agreement between S&S Enterprise and Grameen Greenway, these modifications suggested by the customers, were taken into account and provided to S&S enterprise for them to enhance in their next batch of ICS products that they bring into the country. Concurrent to this activity, demand driven activities needs to be undertaken to make sure that end users have access and are aware of the new type of ICS technology that is currently entering the Bangladesh market.

To help drive demand and as part of WASHPlus's Phase 2 activity, the WASHPlus team will undertake the building of a marketing campaign that the USAID CCEB effort can initiate and implement in the upcoming years. At the time of the writing of this report, an initial shipment of a thousand stoves has already entered into Bangladesh under the umbrella of S&S enterprise with an order of 5000 under the process of being shipped at a later time with the necessary customer modifications made by Grameen Greenway. It should however be noted here that a key barrier other than access to finance opportunities for burgeoning entrepreneurs is the high cost of the tax levied for importing an ICS product into the country. In order to mitigate this issue, the USAID CCCEB ICS team lead has struck an understanding with the Dhaka Chamber of Commerce as well as the Ministry of Power, Energy and Mineral Resources and National Board of Revenue representative to create a

bill to help minimize the current tax rate of 65% for all ICS products that may be entering the Bangladesh market space. It is highly recommended that this conversation between the relevant parties continue to be facilitated and the bill be moved into action in the 2nd year work plan.

Business Model - ICS Manufacturer/Assembler

ICS entrepreneurs are already making complete stoves supported through Grameen Shakti, GIZ and other institutions but they may not be able to reach the full potential market in rural or semi-urban areas. In order to facilitate that process, an ICS entrepreneur with excellent marketing skills working on the last mile philosophy, may be able to stock products and sell them at a margin to customers (for instance, by offering credit to customers who can pay back with the fuel-savings they make via the 'ICS Fuel Saving Box'). *(Deep EA)* Using their home base as a platform, these marketers, can market these stoves directly from their homes to relevant end users in the surrounding villages.

Business Model - ICS Assembler

Another opportunity for a local Bangladeshi entrepreneur is to buy new technology parts or the current ICS stove model parts in bulk and assemble the stoves to sell them to customers throughout the country. Again, good marketing skills will be essential to market these products effectively throughout Bangladesh. They may want to use existing distribution channels and/or locate new entry points within the ICS sector as denoted by Grameen Shakti, BRAC or any of the other leading health, sanitation, energy and/or household retailers throughout the country.

Business Model – ICS Installer

In some areas, people may want to have fixed stove installations inside their home as is prevalent through the incorporation of bondhu chullas. There have been opportunities for current local ICS product repair men and women to cater to the community since they are familiar with the current ICS technology. These installers could also perform monitoring and evaluation exercises for stove manufacturers and donor organizations to be able to provide realistic feedback on the use of the stoves and specific design modifications required for ease of use.

An important criterion for the stove designers is whether they are targeting rural or urban buyers. In rural areas, biomass use is higher, incomes are lower, and biomass is likely to be collected rather than purchased (Barnes et al., 2005). Cookstove companies targeting more affluent and educated populations may need to compete with LPG-fueled alternatives but

may also find their customers willing and able to pay for the attributes of an improved stove. Conversely, it may be difficult to profitably serve the neediest populations with purely commercial business models. (Bailis et al., 2009)

For ongoing support, the most important advice to the Bangladesh Government is to eliminate or mitigate market distortions resulting from financial supports for improved biomass stoves. As derived from local entrepreneurs they would benefit from more favorable tax treatment like excise tax exemptions on imports of stoves and stove components from abroad. (Energy Policy, 2011)

5 CAPACITY BUILDING FOR FINANCIAL INSTITUTIONS (TASK 5.3)

5.1 ACCESS TO FINANCE REPORT

EXECUTIVE SUMMARY

With a target of cookstove dissemination to over 30 million households in Bangladesh by 2030, the current market penetration represents a mere 2% of the target potential, indicating the scale of the challenge and the critical need for a more coordinated, innovative and integrated approach. (Bangladesh CAP, 2013) The ICS sector has a huge potential to grow within the next decade or so. The ICS Market Facilitation Platform held by the USAID CCEB program provides ultimate opportunities for ICS sector entrepreneurs to avail and succeed in this sector. During the various conversations held at the site visits with various MFIs and discussions with prominent financial partners in this space, access to finance was a major barrier for a lot of burgeoning entrepreneurs in wanting to gain access and establish their distribution network within this sector.

In light of the above, the Power Division has taken the lead to develop a CAP through involvement and input from wider stakeholders of the sector with technical and financial support from the Global Alliance for Clean Cookstoves (GACC), GIZ Bangladesh, USAID CCEB, World Bank and SNV Netherlands Development Organization. The CAP presents a comprehensive summary of priority intervention options necessary to affect change, and focuses on providing interested parties (existing and potential donors, entrepreneurs, NGOs and policymakers) with a menu of intervention options to undertake in order to scale up the widespread adoption of clean cooking solutions in Bangladesh. Out of the 32 interventions outlined within the CAP, which is primarily designed to cover the period between 2013-2017, one of the key task areas that the Bangladesh Country Action Plan is looking at is the initiative to increase access to finance to cookstove and fuel entrepreneurs. (Bangladesh CAP, 2013).

In keeping with USAID CCEB's vision to bring access to finance opportunities to growing number of ICS entrepreneurs in this sector, the USAID CCEB ICS leadership team has met with various MFIs as well as the SME Foundation, private banks, and other financial institutions both inside and outside of the Dhaka region. This was to help understand how current small and medium based enterprises can gain access to finance within the ICS

sector to build a sustainable value chain within the country. The MFI site-visits conducted both in Sylhet and Rajshahi provided an overview of the access to finance opportunities available to both end users and to both manufactures and distributors of ICS products. This assessment outlines the findings and recommendations by USAID on how to best move forward with ICS entrepreneurship opportunities.

METHODOLOGY AND RECOMMENDATIONS

USAID CCEB was able to perform in-depth research and bring onboard a host of different MFIs and carbon buyers who are willing to work with entrepreneurs identified through the ICS program. Due to Deloitte's inability to sign MOUs between the USAID CCEB program and the actual partner organization, a lot was based on developing an understanding, that the selected MFI would be open to linking their availability of funds to actual entrepreneurs and signing an MoU between the identified entrepreneur and the financial institution.
The following organizations as well as carbon buyers were able to provide an in-depth overview of the current access to finance opportunities present within Bangladesh and have committed to becoming partners to the USAID CCEB effort.

- IDLC
- MIDAS
- IDCOL/World Bank
- Grameen Shakti
- IFIC
- Prime Bank
- PKSF
- Bangladesh Women's Chamber of Commerce
- SME Foundation

Carbon Buyers:

- Nexus- Carbon for Development
- Future Carbon

UNDERSTANDING ACCESS TO FINANCE OPPORTUNITIES CURRENTLY IN EXISTENCE

There are a number of barriers towards access to finance opportunities in Bangladesh. These are economic, social, institutional and regulatory. Conventionally, commercial banks are the dominant providers of financial services. Then one finds the licensed non-bank financial institutions, micro finance institutions, NGOs, co-operative societies regulated by the central bank or the government. In addition, though not licensed, money lenders also play a very important role towards informal financial services in rural areas. (Financial Express, 2013)

Most enterprises in the country seek informal funding or are forced to self-fund their activities, which impedes their growth and subsequently slows down their development to a certain extent. However, businesses that can actually access formal funding do it in less favorable conditions depending largely on enterprise scale. Unfortunately, there is a high level of risk associated with SMEs that impedes the access of competitive funding. (Meagher, 1998). Reliance on the financial institutions to get access to fund is not all that popular, as the financial intuitions put SMEs in tight credit constraints due to stringent collateral requirements. (Meagher, 1998).

As the capital market is not well developed and coordinated in Bangladesh, the entrepreneurs do not feel confident to raise the necessary funds through shares and bonds or through venture capital. In order to access these markets, businesses are required to show favorable liquidity conditions, profitability, and risks that offer both trust and security to investors. In Bangladesh, SMEs in most cases are unable to meet all the requirements. Therefore, in most cases they have been relying on their personal savings, loans from relatives, friends, moneylenders, retained earnings, profit from other business ventures or funds generated through personal income to initiate ICS businesses. All in all, for SMEs, neither unsecured commercial credit nor debentures equity capital in the form of publicly traded shares and private placements, nor NGO micro credit is a viable option. (Haque et al, 2003).

The availability of financial services is a constraint, due to physical access, affordability or eligibility. In Bangladesh, over 50 commercial banks that have about 8,000 branches operate in urban and rural areas. (Financial Express, 2013).Over 1,000 microfinance institutions and NGOs and over 500 co-operative societies also operate in accepting savings and providing loan services mostly in rural areas. (Financial Express, 2013). Due to introduction of mobile financial services and installation of ATMs, the financial services have expanded further into

the country. Along with the growth of the economy and economic activities, the expectation of the people for financial services has also grown. In spite of all these initiatives, access to financial services is still considered to be low in Bangladesh.

To facilitate the process of bringing new MFIs into the mix as willing participants who would be interested in supporting future entrepreneurs of the ICS sector, the USAID CCEB ICS team conducted various site visits to remote parts of Bangladesh to understand the barriers to access finance by small and medium enterprises.

The understanding derived from this and other visits with potential ICS entrepreneurs showed that small and medium business enterprises face a lot of barriers from formal financial institutions and limited personal income. Banks ask for excessively high collateral for loan and undervalue the price of the security. The revolving fund at the Bangladesh Central bank is under-utilized due to low performance. This is driven by the lack of knowledge, lack of interest and absence of efficient officials at the branch level of many banks and financial institutions to promote these types of funds to the right entrepreneur.

Figure 39: USAID CCEB ICS meeting with Grameen Shakti Entrepreneurs and Access to Finance specialists

MFI Site Visits Conducted in Rajshahi

Objective: Define and understand access to finance models supporting household energy

Location: Chapainawabganj, Rajshahi

Attendees: MFI representatives

Description: CCEB team visited three microfinance institutions in the area. Each institution provided a brief overview on their current portfolio of projects and operation structure. The CCEB ICS team was able to strike initial agreements with all three parties who would be interested in adding ICS to their product list and subsequently drafting a MoU between them and an USAID CCEB identified ICS entrepreneur.

Outcome: Understanding developed with MFI to help support the promotion of the ICS structure and economies of scale

Discussions Underway in Dhaka

Objective: Define and understand access to finance models supporting household energy

Location: Dhaka

Financial Institutions: IDLC, Dhaka Chamber of Commerce, Bangladesh Women's Chamber of Commerce, IFIC Bank, SME Foundation, IDCOL, Corporate Social Responsibility arm of Chevron, Rahima Afrooz, Shell Foundation (International)

Description: The CCEB ICS team lead visited both the Dhaka Chambers of Commerce and Women's Chamber of Commerce and various financial institutions throughout the country. Each institution provided a brief overview on their current portfolio of projects and operation structure. CCEB was able to strike initial agreements with the aforementioned institutions who would be interested in adding ICS to their product list, helping finance ICS entrepreneurs and subsequently drafting a MoU between the entrepreneur and the financial institution.

Outcome: Understanding developed with both local and international organizations to help support the promotion of the ICS structure, thereby increasing the economies of scale. Please refer to Figure 38 on Page 48 which showcases how a common entrepreneur can gain access to finance to avail an ICS opportunity

DEFINING FUTURE ACCESS TO FINANCE OPPORTUNITIES

According to a survey conducted by Bangladesh Small & Cottage Industries Corporation (BSCIC), it was found that there were total 197 types of small industries with 38,294 industrial units in the country. (Ministry of Finance, 2003) Based on 2002-03 data, the sectorial contributions to GDP in Bangladesh were 11.20% for large and medium industries, 4.71% for small industries, the total being 15.91%, as against 18.23% for Agriculture and forestry and 67.05% for others (Ministry of Finance, 2003). The contribution of the entire manufacturing industry to GDP is still very low, particularly for small industries of the country and so it clearly shows that there is room for growth in the SME sector, especially for small manufacturing industries. (Haque et al, 2003). This information is pertinent to realize that the future ICS sector with the promotion of new technology will be built on the basis of new ICS manufacturers entering the ICS industry. The common barrier to a successful launch of an enterprise is the access to finance for most small and medium sized enterprises.

In order to minimize this barrier, USAID CCEB ICS team would need to provide advocacy programs for financial institutions to undertake training programs which would change the organization's perception towards the ICS sector. As depicted below, both time and commitment would both play a crucial role in helping the ICS financial institutions understand the value and growth associated with the ICS sector.

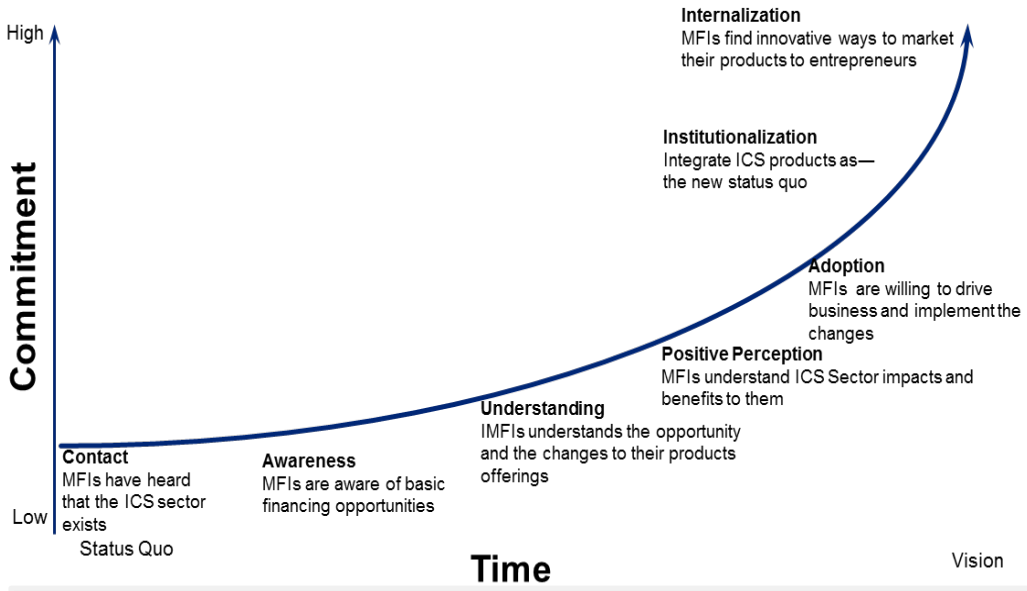

Figure 40: Commitment building exercise for access to finance selected organizations

USAID CCEB's aim is to be able to bring potential MFIs under the CCEB umbrella whose capacity can be built in the following ways. The MFIs that have been selected to be part of

the ICS value development process should be provided in-depth coaching and mentoring which then will enable them to embrace the ICS sector and understand that this will be an expansion of their current scope of services. The expansion would relate to access to finance opportunities linked both to attracting ICS entrepreneurs who would be interested in setting up an ICS manufacturing plant as well as promoting the new technology by providing loans to the end users who otherwise would not be able to purchase the ICS product.

The USAID CCEB ICS program lead is working with the Shell Foundation, the Dhaka Chamber of Commerce and the Bangladesh Women's Chamber of Commerce on trying to locate funding to establish a revolving fund within the country for the ICS sector. This will help entrepreneurs avail finances for small to medium sized enterprises to grow. The approach would entail focusing on setting up a revolving fund with the assistance of a private sector organization. The funds should be set within a commercial financial entity such as IDLC, IFIC, Prime Bank or any other commercial organization. The aforementioned organizations have had in-depth discussions with the USAID CCEB ICS lead, whereby once the funds have been located, the financial institutions are prepared to manage the fund with a low percentage rate as a charge for their services. The SME Foundation could in turn act as the regulatory body to help monitor these finances for the promotion of ICS products. USAID CCEB can then coach the financial institution to grow their capacity by providing them with mentorship opportunities by linking them with other established MFI sector leaders.

The list of financial institutions that the USAID CCEB program has identified will need to understand and adopt new guidelines to attract ICS entrepreneurs. In order to bring change within a specific organization, readiness assessments should be designed to gather data that both informs the ICS entrepreneurs on the availability of the products as well as helps the financial organization understand risk mitigation strategies associated with the change of the financial institution expanding their current skill set.

ICS Fund Adoption Theories:	Risk Mitigation Strategies:
✓ Address MFI ICS related entrepreneurs, communications, and development needs ✓ Identifies the degree to which the change initiative is understood by both the leadership and stakeholders ✓ Identify how ready the MFIs are for the new ways of doing their work with ICS products ✓ Focus effort on where it is needed most for facilitating change within the MFI organization to introduce new services ✓ Help make the ICS service line implementation successful by attracting SMEs	✓ Identify a clear process for assessing ICS sector related services ✓ Identify the right messaging, methods, and frequency of communications for potential ICS entrepreneurs ✓ Gauge the evolving capacity to change ✓ Use results to drive messaging and determine communication methods and frequency to formulate payback schemes ✓ Identify which entrepreneurs would be most likely to use the ICS allocated funds and which specific groups may resist the most

Figure 41: ICS Fund Adoption Theories vs. Risk Mitigation Strategies

To grow the capacity of financial institutions, the USAID CCEB team will need to provide a specific set of activities that will help grow the institution's awareness and commitment to the ICS sector. As detailed below, once a financial institution has been identified as potential member who could house a potential revolving fund and/or provide funding at a low percentage rate to ICS entrepreneurs, the following set of activities need to occur to grow the institution's capability.

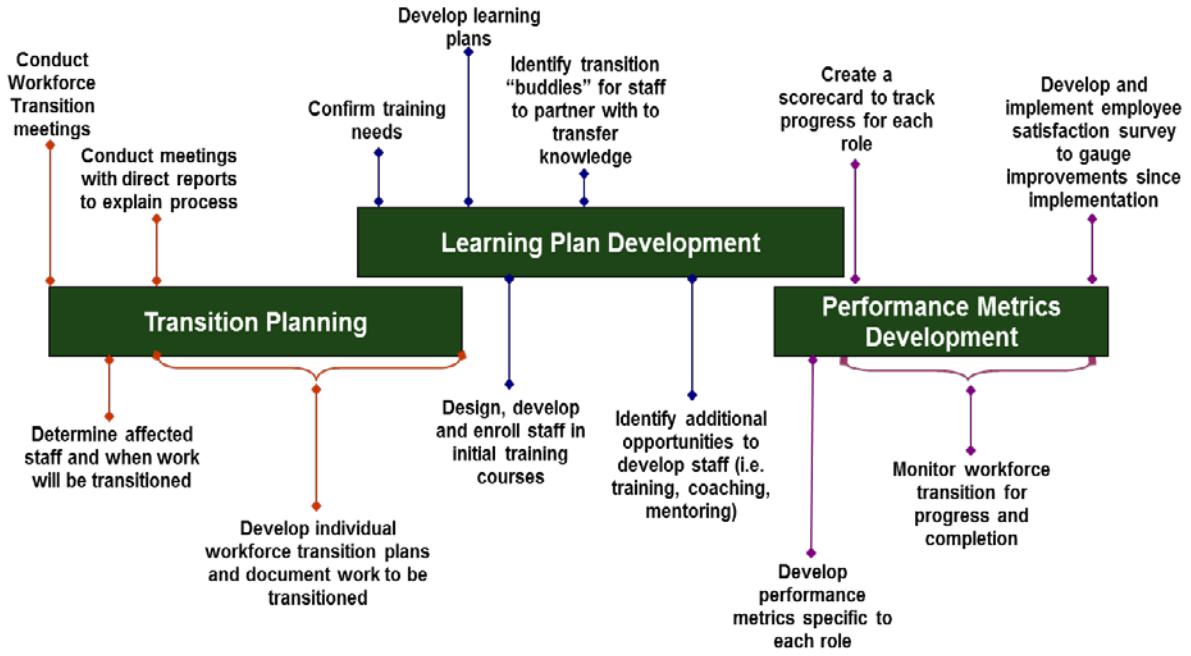

Figure 42: Capacity Development Road Map for Financial Institutions

LIST OF FINANCIAL INSTITUTIONS

Organization	Description	Contacts
KFW	Renewable Energy Refinancing Fund	Md. Tazmilur Rahman Programme Manager, Energy KFW House10/C, Road 90, Gulshan 2, Dhaka 1212 Tel : 9886416, 882271 kfq.dhaka@kfw.de
World Bank	Various rural, renewable, and clean-energy initiatives	Zubair K M Sadeque Sr. Energy Finance Specialist South Asia Sustainable Development, World Bank Office Dhaka, Agargaon, Sher-e-Bangla Nagar, Dhaka 1207, Bangladesh 815 9001-28, Ext. 4119; 0171 407 8688 zsadeque@worldbank.org
International Finance Corporation (IFC)	Various rural, renewable, and clean-energy initiatives	Afifa Raihana PhD Specialist, Sustainable Energy Finance Advisory Services in South Asia MENA United House 10 Gulshan Avenue Dhaka1212 Bangladesh Tel: +8802-883-3752 - 66 Fax: +8802-883-3495, 989-4744 Cell: +88-01711-541-800 E-mail: ARaihana@ifc.org Web:
Infrastructure Development Company Limited (IDCOL)	Solar home systems	Mahmood Malik CEO/ED Infrastructure Development Company Limited (IDCOL) UTC Building, 16th Floor,8 Panthapath, Kawran Bazar.Tel: 9102171-8 mmalik@idcol.org
Bangladesh Bank	PV systems, Renewable Energy Refinancing Fund, etc.	A. H. M. Kai-Khasru Executive Director Bangladesh Bank Head Office, Motijheel C/A Dhaka-1000, Bangladesh

		Ph-88-02-9530218, 9530010-75/3524
IDLC	Renewable Energy financing Fund (Green fund)	Mesbah Uddin Ahmed Head of Structured Finance and Head of Dhaka Region IDLC Finance Limited Boy's Galleria (1st Floor), 57 Gulshan Avenue, Gulshan-1, Dhaka-1212 Tell: 8834990 Mobile: 01838444428 mahmed@idlc.com
PALL KARMA-SAHAYAK FOUNDATION (PKSF) -PKSF	Renewable Energy Refinancing Fund	Fazle Rabbi Sadeque Ahmed Climate Change Specialist Plot:E-4/B, Agargaon Administrative Area, Sher-e-Bangla, Dhaka-1207, Bangladesh Pho-0088-02-9126240-3, 9140056-9 Cell-01552-310099 frsa1962@yahoo.co.uk
MIDAS	Renewable Energy Refinancing Fund	Dr. A. S M. Mashi-ur-Rahman Managing Director MIDAS MIDAS Center, Plot-5, Road-16 (old-27), Dhanmondi, Dhaka-1209 Tel: 9117154 Mobile: 01711-842976 mashiur@midas-bd.com.bd

5.2 COLLOBORATION REPORT WITH IDCOL

The USAID CCEB ICS team underwent extensive communication both in Washington DC and Bangladesh with World Bank officials and local IDCOL officials to reach an understanding on how to best promote international ICS technology into Bangladesh. IDCOL is still in the process of evaluating CCEB's role into their respective effort, since they are formalizing their internal structure on how to best move forward. IDCOL has formulated a preliminary testing group and is also in the process of selecting partner organizations who can help reach their goal of helping sell 1 million ICS units throughout the country over the next five years. Per USAID CCEB's conversation with IDCOL, it was discussed that the USAID CCEB may be able to come onboard as a technical partner who could help bring international manufacturers into the country and help link them to IDCOL's local partner organizations. This would achieve two things- 1) Meet IDCOL's goal of promoting new ICS technology in Bangladesh 2) Provide IDCOL's local partner organizations (PO) with different products to meet consumer demand.

The following scope outlines asto what has been discussed. It is recommended that these conversations continue well into the next year in order to formalize asto what may actually occur once the partner organizations have been formalized within IDCOL.

SCOPE OF WORK FOR CATALYZING CLEAN ENERGY IN BANGLADESH-CCEB:

- CCEB will undertake comprehensive market development effort in IDCOL PO areas. This will be based on consumer needs and preferences, willingness to pay, and barriers to purchase and promote correct use of improved cookstoves. The market development effort, supported by SMC, will inform consumer education and market development approaches, including TV or radio advertisements, community outreach events, etc.
- CCEB will introduce new technologies and create a link between local IDCOL funded entrepreneurs and international manufacturers, so that the stoves can be manufactured locally and sold at a lower cost for community households in SMC designated areas.
- The USAID CCEB team will also help identify unique distribution channels that IDCOL's POs can plug into and bring international and local experts together to fortify and introduce economies of scale

- CCEB will provide training and mentoring to IDCOL funded enterprises for improved capacity to: develop business plans; employ targeted and effective marketing strategies; conduct internal quality control; and comply with carbon finance requirements
- CCEB will work with World Bank/IDCOL and GACC to help facilitate a testing center/Center of Excellence for improved cookstoves in the country; CCEB will provide capacity development and technical assistance as needed, within the objectives set forth by the CCEB project.

SCOPE OF WORK FOR INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED-IDCOL:

- IDCOL will assist CCEB in identifying appropriate location for demand campaign in IDCOL PO designated areas.
- IDCOL will assist CCEB in finalizing the technologies for dissemination across the country.
- IDCOL will assist in leveraging funds for its demand campaign in project area; This can include funds for campaign materials such as flyers, leaflets, brochures, movie, melas, etc.
- IDCOL will assist in leveraging funds by introducing CCEB to IDCOL partner organizations that have received IDCOL funding and are willing to use those funds to promote new ICS technology.
- IDCOL will assist CCEB organize courtyard meetings and school sessions on benefits of ICS through IDCOL POs
- IDCOL will assist CCEB in organizing melas and/or gambiras on identified IDCOL PO areas
- IDCOL will assist CCEB in identifying possible entrepreneurs or Partner Organization (PO), including manufacturers, distributors and retailers
- IDCOL will assist CCEB in training entrepreneurs/Partner Organization
- IDCOL will assist CCEB in identifying a feasible institution for housing a lab and testing center within the country – This process is currently underway since IDCOL recently completed an analysis of assessing feasible testing and standards institutions within the country; USAID CCEB and GACC has been working very closely to understand the result to move forward with next steps
- IDCOL will assist CCEB in identifying potential MFIs to lobby and provide advocacy for accessing the finance needs for ICS entrepreneurs

It is suggested that for Year 2, these conversations continue to take place both in Dhaka as well as in DC to understand what the various donors are planning to achieve within the ICS sector.

6 STANDARDS AND PROTOCOLS (TASK 5.4)

6.1 TESTING AND STANDARDS FOR ICS IN BANGLADESH

EXECUTIVE SUMMARY

Over 2.7 billion people, or one-third of the world's population, rely on burning biomass such as wood fuels, charcoal and dung in traditional stoves for their daily cooking needs. This traditional cooking method is inefficient and is a source of concern for air pollution, meaning they not only contribute to climate change and environmental degradation, but to poor health and poverty, particularly among women and children. According to the World Health Organization, the indoor smoke from household biomass use ranks in the top 10 risk factors for the global burden of disease. (Improved Ghanaian Cookstove Project, 2012) It's linked to childhood pneumonia, chronic obstructive pulmonary disease and lung cancer among other diseases. (Improved Ghanaian Cookstove Project, 2012)

Cookstove technologies vary in their performance between different manufacturers, hence performance and quality can change over time. Independent testing and standards are critical for users to make informed choices; for manufacturers to affirm their product quality and drive innovation; for investors, donors, and policymakers to have a credible basis for comparing stove performance and quality; and for all stakeholders to have a common terminology for communicating, understanding, and improving stove performance and adoption. (Cleancookstoves, 2012)

WHY IS ICS TESTING REQUIRED IN BANGLADESH

- Grass root design options of the prevalent bondhu chullah are myriad, and good stoves solve severe problems related to IAP
- New technology and design are being added and are being brought into Bangladesh from surrounding regions
- Reduce indoor air pollution (IAP); clear the air in kitchens that are hazy with the smoke of open fires
- Decrease emissions of black carbon in the atmosphere
- Build trust within end users through rigorous performance standards that marketers would need to adhere to for all ICS products manufactured within Bangladesh

Biomass combustion with traditional cookstoves is an important contributor to climate change as well. Other than carbon dioxide, the leading contributor to rising global temperatures is black carbon ('soot'), accounting for 18% of the increase (with CO accounting for 40%). (Levine and Beltramo 2009) In Asia and Africa, traditional household cookstoves that burn solid biomass fuels produce the majority of black carbon; household energy use in Africa alone will produce 6.7 billion tons of carbon by 2050 (Levine and Beltramo 2009). Climate change activities targeting black carbon emissions can have a much more rapid impact that those focusing on CO. CO remains in the atmosphere for years, while black carbon lingers for only a few weeks. (Tahmid Arif et al, 2011) Due to incomplete combustion of biomass fuels in traditional cookstoves, appreciable quantities of irritants, toxins and carcinogens are released into the kitchen environment and these pose a major threat to the respiratory system of the users (Sarkar et al. 2006).

Improved stove reduces smoke emission and health hazards especially to the cook. In the case of chimney stove, fuel gases are also taken out of the kitchen so that the kitchen becomes cleaner for the cook. Other benefits of improved stove include reduced cooking time, less smoke, less blackening of the utensils, saving fuel, portability for portable stoves especially during rainy season, etc. (Tahmid Arif et al, 2011)

In keeping with the above findings, the USAID CCEB program recognizes that there is strong need for a testing and standards center within the country for improved cookstoves. As of August 2013, an in-depth analysis was conducted by the World Bank for where to house and how to best situate a testing center within Bangladesh. In order to refrain from duplicating the same effort with USAID CCEB funds, the assessment below looks at evaluating current institutions that could potentially house a center of excellence that will work closely with the testing and standards institution within the country.

The Center of Excellence (COE) will act as an incubation center that will work towards providing resources and knowledge management opportunities as well as linking potential manufacturers to distributors of ICS products. This COE could further facilitate discussions between financial entities and ICS entrepreneurs.

CURRENT PRACTICE FOR ICS TESTING

Improved cooking stove projects in the developing world have the potential to reduce deforestation, improve health, and slow climate change. To meet these requirements, stoves

must be carefully designed through thorough testing and verification of performance. The systematic investigation of the heat transfer and combustion efficiency of stove design in the laboratory sheds light on what technologies work best and helps to ensure that stoves being disseminated are truly a significant improvement over traditional cooking methods.(MacCarty 2010)

Improved cookstoves testing is currently not prevalent in the marketplace in Bangladesh. The demand required to drive new technologies into the marketplace has not been adopted. In Bangladesh, household decisions to adopt – or reject – new technologies are based on a complex set of factors, including cultural and financial. (ICS Final Report, 2010) Investing in cookstoves is often not viewed as a high priority. Household energy issues are significantly impacted by gender roles: women generally use stoves, while men often control family finances and make household decisions. There is a need to better understand, and respond to these issues. There is also a significant lack of awareness concerning indoor air pollution in Bangladesh, despite many years of study on the issue.

Stove performance uses lab-based water boiling tests (WBTs), which yield a number of performance indicators including time to boil water, specific fuel consumption, and energy efficiency when the stove is operated at both high and low power output. (Rob Bailis et al, 2007)They can also be conducted via field-based kitchen performance tests (KPTs), which yield daily per capita fuel consumption in real cooking conditions. In addition, organizations can utilize a controlled cooking test, which combines elements of lab- and field-based tests. (Rob Bailis et al, 2007)

At the testing and standards workshop held by the USAID CCEB program in September, it was brought forward by the NGO participants that even though there are no set organizations that carry out testing and standards of ICS products in Bangladesh, tests such as WBT, CCT and KPT are conducted on a project-need basis by different organizations (Winrock,

Figure 43: Testing and Standards Focus Group

VERC, etc.). Such tests are being conducted based on the availability of project funding and willingness of entrepreneurs. The results from KPTs versus WBTs results tend to be much less ambiguous. Correlations between the outcomes in lab-based tests and field-based tests should be explored in order to understand the relationships between the two assessment methods. (Rob Bailis et al, 2007)

However, emission testing of ICS products has never been performed in Bangladesh due to unavailability of equipment. In fact, none of the workshop participants had conducted cyclical testing for improved cooking stoves even if the beneficiaries were facing myriad of problems while cooking with ICS products installed by the NGOs in attendance. The participants looked at the testing portion of ICS as part of after sales service, which they voiced, that they were not able to provide to ICS beneficiaries. Hence, the dialogue that was necessary for product development to occur between end users and manufacturers of ICS products did not transpire which led to limitations in the design development of ICS products within the current marketplace.

A hurdle within Bangladesh is that currently organizations do not have specific feedback mechanisms in place for monitoring and product evaluation purposes. An impromptu monitoring and evaluation mechanism has been established by ICS retailers in the field which provides ad-hoc services to the beneficiaries. Once an ICS product has been established, the ICS retailer leaves a phone number behind for the ICS consumer to reach back for routine level maintenance which is answered by ICS technicians and field workers for basic repair services for a fee. These technicians and field workers act as monitoring and evaluation specialists as necessary to drive information back to the ICS manufacturer.

Figure 44: Testing and Standards Focus Group with CCEB

FUTURE STATE RECOMMENDATIONS

Currently there are no methods that exist to assist in the development process of providing a high quality stove to an end user. It would be recommended that a technical group be formed to certify that a stove being promoted in the marketplace actually meets certain standards in terms of efficiency, pollution, durability, and safety. This should be done in a way that does not stifle creativity, but ensures that the public receives an acceptable product. The benefits of creating an ICS

Center of Excellence have been outlined in Appendix 4 to showcase the payback to the ICS value chain development. Once certified, the stove could qualify for government assistance through loans, marketing, and dissemination, or even some form of subsidy. There also needs to be more of a focus on understanding and addressing the significant barriers to adoption that exist within the homes of the poor. (ICS Final Report, 2010)

During the USAID CCEB ICS testing focus group session, there was common consensus between key ICS NGO focused organizations that a national level testing institute was required within the country.The national level testing center could in fact be incorporated in Dhaka while other division and district level testing centers would be incorporated in different regions of Bangladesh. It was also recommended that field level mobile testing units offer improved cookstove services on a regular basis to end users. The testing center's focus will be to support all entrepreneurs in their quest for product modifications and upgrades as suggested by ICS consumers. In-depth research was performed by the CCEB ICS team which included conversations with Bangladesh Council of Scientific and Industrial Research (BCSIR) personnel, Bangladesh University of Engineering and Technology (BUET) professors, International Centre for Diarrheal Disease Research- Bangladesh *(*ICDDR-B) researchers and personnel from the Village Education and Resource Center (VERC). The results derived from the analysis was that BUET, with the development of a new lab in regards to Solar Home System implementations throughout the country may be a suitable establishment that is able to further its capability to endorse all future product testing of improved cookstoves.

The ultimate goal for the USAID CCEB program is to have a variety of improved stoves for sale in retail markets all over Bangladesh. One role for the government to play in supporting this sphere is in the testing and certification of stoves. A technical group needs to be given the responsibility for testing stoves both at the national level, as well as at a regional level with a mobile laboratory existent in the field, which would play a part in the development of effective, usable technologies. This national testing center can be housed in an academic institution such as BUET or other semi government institution, where it would have oversight to provide certification for any new specific stove technology that is being brought into the country. This lab could also focus on providing testing for emissions for all ICS products.

It is further recommended that technical groups or organizations be established as private initiatives at the Regional, District and Divisional levels to cater to the local manufacturers

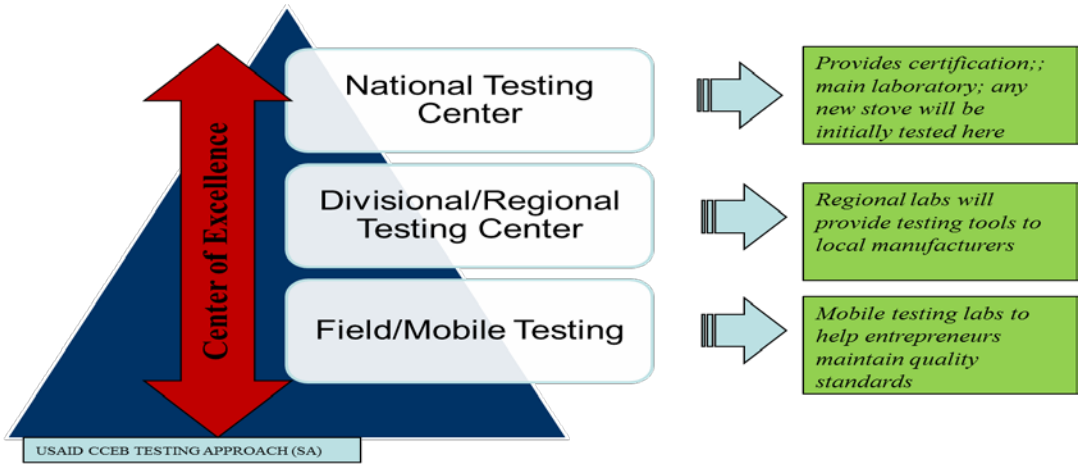

Figure 45: Center of Excellence and Testing Center Adoption in Bangladesh

while coordinating and collaborating with government entities such as the Ministry of Power and Mineral Resources, Ministry of Health & Environment, Ministry of Women and Children's Affairs and other relevant divisions.

It is recommended that the management of the organization should have both government and private professionals present within the team. To administer a stove program at a government level, an institution with a commercial approach and good field-level experience in quality-assured technology promotion and dissemination may be well suited.

It is further recommended that the regional and divisional level testing facilities be established in cooperation with national level organizations so that the grass-root level entrepreneurs can receive the services they frequently need. The field level research and monitoring would be accomplished by the field level testing labs that can check in with various entrepreneurs to gauge the quality and standard of the stove.

A probable selection of entities that could in fact become testing centers at the divisional level could in fact be housed within NGOs or private sector businesses that have past experience in implementing ICS activities. The aforementioned institutions have the potential to establish and run these types of testing centers, since they have had past knowledge in how to conduct the CCT, KPT and WBT tests. They also have the network to disseminate the knowledge to the masses and are seen as true implementers of ICS products in the field.

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Once an organization is identified, a certain number of trainers can also be selected from NGOs or private sector entities, to be provided training from a central organization so that they can work in the regional and other centers. The benefits are associated with promotion of brand, acceptability of products, employment creation, market promotion as well as building awareness among consumers.

While talking to the participants it was also found out that at the initial stage of introducing the methodology of testing within the country, local and national level entrepreneurs may not be willing to provide the fee required for the cost of testing to get a product certified. In these circumstances, initial investments may be driven through incentive funds from both public and private sector institutions. The investments or subsidies could be donor funded or become a government initiative to drive behavior change at the grass root level.

While planning for modification of the current ICS design and the incorporation of a testing center both at the national and divisional levels should also address issues related to the promotion of ICS products such as fuel innovation, local and cultural context, geological distinction, seasonal variation, traditional cooking practices and fuel diversity throughout the country. The testing center should not only drive towards the different types of improved cookstoves that have entered the marketplace but should also address the different types of fuel that are accessible in the local market through ICS entrepreneurs. It is strongly believed that demand for ICS products will in fact drive entrepreneurs to seek testing services for certification of ICS products. The demand of ICS producers is closely tied to behavior change which USAID CCEB looks to implement in different forms at local, regional and at the national level.

ICS CENTRE OF EXCELLENCE – BRINGING ICS INNOVATION TO BANGLADESH:

Considering the future implications of ICS in Bangladesh, it is strongly recommended that a Center of Excellence be established for knowledge sharing purposes, research and development as well as providing training to end users. A Center of Excellence can in fact provide an enabling environment for innovation, teaching and learning as well as practical research on the application of Improved Cookstoves. The Centre can work with other testing facilities situated throughout Bangladesh and can be housed within an academic institution but can be modeled to run along private sector lines with strong emphasis on social development. The Center can offer specialized training courses to key government decision-makers and important social groups such as ICS manufacturers, distributors and retailers as

well as other relevant stakeholders. The Center's outreach efforts would be intended to stimulate interest as well as demystify the ICS sector with special stakeholder groups including students in educational institutions throughout Bangladesh as well as important groups such as ICS entrepreneurs and end users residing in rural Bangladesh.

The Centre can offer vocational skill development initiatives which can be geared towards improving productivity and profits towards overall competitiveness of ICS products. The major areas of focus could include business modeling of small scale businesses to reach economies of scale, providing access to financing opportunities for interested ICS entrepreneurs as well as providing testing and standards education to ICS stakeholders. There could be specially targeted training for field based marketers as well as monitoring and evaluation specialist and change agents such as influential political figures within specific communities. The focus could range from leadership training to minimizing barriers to conduct true marketing of ICS products with an emphasis to developing practical hands-on skills. Special vendor partnerships with NGOs and private sector entities could underpin offerings in those areas whereas popular demand courses can be offered in multi-media in remote villages throughout Bangladesh.

In addition to core capacity-building programmers, the Center may also decide to offer consulting services designed to assist individuals, institutions and businesses to keep pace with the rapid developments in Improved Cookstoves and corresponding fuel supply. The international and national level expertise would be deployed for conducting the aforementioned tasks. The organization also can provide updated information on ICS, regular monitoring and feedback to the entrepreneurs in order to establish a sustainable ICS market in Bangladesh.

At the time of the writing of this report, the USAID CCEB ICS team lead has been in conversation with the Global Alliance for Clean Cookstoves and World Bank representatives who is looking to establish a testing center within the country. The CCEB ICS leadership team has discussed in setting up a Center of Excellence with the Bangladesh Agriculture University, Khulna University as well as Mymensingh University. It is recommended that for the 2nd year work plan, the USAID CCEB team continue to facilitate this process by discussing with the relevant entities in establishing the aforementioned entity within Bangladesh.

7 COORDINATION (TASK 5.5)

7.1 LAUNCH OF ICS MARKET FACILITATION PLATFORM SEMINAR REPORT

KEY ICS TOPICS

MAJOR ISSUES STRESSED

1) Protracted grassroots campaign: awareness is one of the major issues as the awareness campaign needs to be planned out carefully. Some poor/ultra poor do not prioritize health; financing is a major issue, so unless that is dealt with awareness will not work. Monitor feedback regularly from buyers and shape the awareness campaign similarly

2) Effective collaboration with between govt. private organizations and international organizations so as not to replicate activities. However, specialization will only work if there's smooth coordination amongst all parties. Should be a structured coordination

Figure 46: Bangladesh ICS International Manufacture Launch at ICS Market Facilitation

3) Distribution is also another aspect that's very important. ICS have been available in Bangladesh for the past 5 years but has not been distributed effectively. Distribution should be accomplished through the establishment of an effective market approach to create demand within the ICS sector, which in turn should be able to drive the supply. Developing a sustainable market supply chain as opposed to subsidized supply channels.

4) Need standard monitoring mechanism which GoB will ensure through the development of standard and testing protocol

5) Another aspect is that the design of an ICS shouldn't be a one size fits all approach. These must be designed for Bangladesh's more common biomass. The design must be improved every year and hence, the cost should also be minimized through R&D.

6) Financing: Entrepreneur or consumer – two types of finance; Consumers can be financed through Microcredit and grants. Carbon financing is an option from which grants could be provided. It may be difficult for small local manufacturers to come up with the investment required and sustain as the product is a slow-moving product. In that case the manufacturers will also need lending, SME financing is an option.

Figure 47: Registration at ICS MFP

7) People are reluctant to buy these stoves since traditional stoves are nearly free and don't require technical support.

8) Capacity building also very important for local manufacturers as they are not trained at all for manufacturing ICS.

9) All grassroots levels, ensure all ICS stakeholders national and international NGOS are involved in improving cook stoves

10) No standards and tests to understand ICS

11) Prospective consumers skeptical because of failure of earlier projects

12) National test labs should be developed and certification of ICS to establish quality. Only certified models can be funded for the dissemination of ICS.

Figure 48: Eco-Chullah at ICS MFP

13) Exemption of tax from the import of manufactured ICS.

14) Risk Husk Briquettes – a value added project

15) ICS can be used in many ways: food processing industries, agro processing industries, soap making, textile

16) Users who belonged to small families of up to three to four members liked the stove models

17) Government's Household energy platform will discuss and share problems and issues; this action plan is in process for government approval.

ICS MFP SEMINAR: LAUNCH OF MARKET FACILITATION PLATFORM FOR IMPROVED COOK STOVES (ICS)

Dignitaries and stakeholders attended the launch of the 'Market Facilitation Platform for Improved Cook Stoves (ICS), organized by USAID in association with Catalyzing Clean Energy in Bangladesh (CCEB) and Global Alliance for Clean Cook stoves (GACC) on September 7, 2013.

In her welcome address, Sabrina Amjad, the Senior Program Advisor of USAID-CCEB , said that around 25 million household use traditional cook stoves in Bangladesh that result in exposure to health problems due to the smoke emitted by these cook stoves. She expressed hope that through protracted grassroots campaign, new ICS technology could be made available to 350,000 households all over the country over the next four years. Citing her first-hand experience in the field, she explained how rural families were benefitting from ICS, as these cook stoves cut working time, mitigated overall health costs, and improved savings.

Figure 49: Attendees at ICS MFP

Around 49,000 household deaths occur in Bangladesh due to traditional cook stoves related accidents, Paul Stevens, GACC Representative from the Netherlands, further added that women and children are the two most negatively affected by such accidents. Apart from the human cost, the environment cost is equally worrying, as the pressure on natural resources is intensified. He stressed on the need for effective structured collaboration between government, private local organizations and international organizations along so as to avoid replication of activities. Stevens added that a specialized and effective action plan would ensure sustainability in intervention, and to establish an effective market for ICS.

Chief Guest of the event, Tapos Kumar Roy, Additional Secretary, Ministry of Power, Energy and Mineral resources, stated that the use of solid fuel is inefficient, as it results in air pollution, loss of time and health problems. As studies show that most people still prefer traditional stoves over ICS, a market supply chain needs to be established. The government of Bangladesh is developing a national action plan, according to which seven million

Improved Cook Stoves will be distributed around the country over the course of five years. With the view of scaled up wide scale adaptation of clean cooking in Bangladesh, the government will set up a Household Energy Platform, where problems and solutions in implementing ICS will be discussed, Roy said. The action plan is in process for government approval and will hopefully be finalized soon,
he added.

Figure 50: Attendees at ICS MFP launch of ICS new technology

Terming the smoke emitted from traditional cook stoves as a "killer," US Ambassador to Bangladesh, Dan Mozena stated that indoor air pollution is the fourth largest global cause of death, claiming a life in every eight seconds. Only 3 percent of the population uses Improved Cook Stoves in Bangladesh. ICS could be life changers and life savers as they would help prevent respiratory diseases, and there would be less need for firewood consumption by Improved Cook Stoves when compared to traditional cook stoves. He further said that clean, fuel efficient cook stoves can contribute effectively in protecting the people and environment of Bangladesh. Installing ICS at homes across the nation will be a great challenge, he said. This Market Facilitation Platform for Improved Cook stoves (ICS) must be a driving force for sharing ideas, insights, networking and making connection to figure out how best to take ICS to the greatest number of people in the country, he added.

The final speaker of the opening session of the event, Richard Greene, Mission Director of USAID, stated that the installation of ICS all over the country could spell the next big success story for Bangladesh, as these stoves promote full security, while establishing immense health and environment benefits for the people using them.

GOVERNMENT OF BANGLADESH ACTION PLAN FOR ICS AND ICS LOCAL MANUFACTURING – SUPPLY AND DEMAND

The opening plenary was followed by separate focused sessions over the day. A session on the action plan of the government of Bangladesh for ICS and ICS Local Manufacturing: Supply and Demand, moderated by Rajeev Muntakamani, included speakers from the government, BRAC, GIZ (German Society for International Cooperation) and Grameen Shakti.

Representative from the government, Iqbal Mahmud, stressed on the need for standard monitoring mechanism and development of standard and testing protocol of Improved

Cooking Stoves. He stated that the government policies are already in place in this regard, with seminars being held to share the vision of implementing ICS all over the country and to share ideas on short and medium term activities. An action plan has also been chalked out, Mahmud added. Adding on to the Additional Secretary Tapos Kumar Roy's talks of organizing a Household Energy Platform to share ideas on implementation and improvement of ICS technology, Mahmud stated that the platform will be well-structured, functioning on broader understanding and interest from the stakeholders.

Figure 51: Attendees at Prakti Presentation at ICS MFP

The Additional Secretary of the Ministry of Power, Energy and Mineral Resources will chair the platform while prospective members could be from the Infrastructure Development Company Limited (IDCOL), along with members of the private sector, the civil sector and the academia. Regular meetings will be held under this platform, and the platform will be involved in monitoring sector performance, advocacy and mobilizing resources, Mahmud added.

The aim is to replace all traditional cooking stoves by 2021, even though the timeline mentioned in the action plan is 2025, he said. In his presentation, Mahmud stated that Phase 1 of the implementation phase will be from 2014-2015, the second phase will be from 2016-2017, and the third phase will be in 2018. He hoped that the day's trade event would pave way for new, efficient, affordable ICS technology, include diversified products, add value chain to supply side, facilitate local entrepreneurship development and develop market support.

Figure 52: Attendees at Local Supply of ICS Products at ICS MFP

When asked by a member of the audience on the government's plans to standardize ICS, Mahmud answered that the standardization of Improved Cook Stoves under the Bangladesh Standards and Testing Institute (BSTI) has been elaborately mentioned in the action plan. The action plan also mentions the need to set up another laboratory to enhance the standard of ICS, he added. The International Workshop Agreement on Improved Cook Stoves is being reviewed

by the ISO, and a meeting will be held during November on the standard and testing of ICS. Another meeting will be held at the end of September to discuss internal quality control and capacity development of local manufacturers.

Figure 53: New ICS Technology introduced

M. F. Shadekul Islam Talukder of BRAC said that a survey conducted by BRAC found that about 99% of the households in rural areas used traditional stoves; less than 1% of the rural households used any form of ICS. According to BRAC's findings, some of the issues raised regarding the unwillingness to use Improved Cook Stoves are that these stoves require more time to cook; the immobility of fixed ICS was also cited as a problem, along with a lack of fuel options. In his presentation, Talukder also pointed out those users who did not pay proper attention to the maintenance of ICS. They also spoke of the unavailability of raw materials required to operate improved, clean cooking stoves, he added. He further stressed that social culture prevented a lot of them from using ICS, as cooking on traditional stoves has become an old practice for these households.

Figure 54: Roundtable Discussion Moderators at ICS MFP

Talukder recommended that Improved Cooking Stoves should have provision from the most common types of biomass fuels that will be available locally. He also said that ICS should be able to accommodate pots of different sizes and shapes. He further stated that awareness raising materials should be easily understandable, further adding that local ICS users could be included in awareness raising programs. He called for effective monitoring and follow-up of ICS use by households and suggested that programs be designed whereby rural women could have an equal voice as users, technicians and entrepreneurs.

ROUNDTABLE DISCUSSION ON ICS MARKET BARRIERS

The roundtable discussion, moderated by Bangladesh Govt. Representative Siddique Zobair and USAID CCEB Sr. Program Advisor, Sabrina Amjad, looked at the barriers that are currently preventing Improved Cooking Stoves from being included in Bangladeshi markets.

Stakeholders stressed on the need to monitor quality rather than concentrate on the quantity of ICS disseminated around the country. They spoke about the need to establish a strong, sustainable business model and the necessity to include variety to allow people to choose from different models of Improved Cooking Stoves.

Long with cost effective pricing, participants at the roundtable spoke of introducing a mechanism through which maintenance of the Improved Cooking Stoves could be easily available in the localities it targets. They also spoke about poor after sales services of ICS, as parts of such cooking stoves are not easily available in local markets. Speakers also stressed the need of benchmarking in terms of energy efficiency.

They also spoke about the need for the stoves to be made in a way that it is both commercially viable and self-sustaining. User training could be an important aspect to achieve that goal, participants added. Speakers also stressed that there should be more awareness about how Improved Cooking Stoves contribute to financial and health benefits. Acceptance of the ICS is a barrier, and so steps should be taken to ascertain the features that the target customers would like to add to the stoves or the changes they would like to see being made in these Improved Cooking Stoves.

Apart from targeting rural household, consumers from urban areas could also be targeted, as the market is diverse and there are people who would like to spend more money to enjoy a comfortable cooking experience, speakers added. If a wider range of the market is target then the “bottom of the pyramid” will also be covered, they added.

Figure 55: ICS enterprises being discussed at Roundtable Discussion

Speakers also emphasized on the need for modifying ICS to suit the cooking culture of Bangladesh. Educating customers regarding these steps could also help in changing behavior to accept ICS as part of their cooking culture, they added. House to house demonstrations could be included as part of this education process. Once users understand that these stoves have holistic benefits, customers will be more willing to accept them and change their habits accordingly. Continuous monitoring should be done to ensure that users don’t shift back to the traditional cooking stove.

Even though many women understood the advantages of Improved Cooking Stoves, men seemed less willing to adapt to the stoves, speakers said. As men generally have control

over the purchasing power in rural households, sales pitch should be directed towards them as well, to make them understand about the benefits of ICS.

Participants also called for financial support through CSR projects and asked for a change in import policy, whereby custom taxes on ICS would be reduced. DCCI could be the most effective pressure group to bring down taxes, speakers added. Furthermore, speakers stressed that as these products are very cheap, rural users should be encouraged to buy them instead of donating or loaning ICS to them. They also stressed on the need for subsidization and grants to manufacture these cooking stoves locally.
All participants at this discussion stated that the government, private and public organizations, donor agencies, local and international organizations need to work together in collaboration to roll out a sustainable plan in ensuring proper marketing of Improved Cooking Stoves.

NEW ICS TECHNOLOGY – INTERNATIONAL MANUFACTURERS

Speakers from international organizations marketing ICS products in Bangladesh spoke in this session moderated by the CCEB USAID Sr. Program Advisor, Sabrina Amjad.

Moushine Serrar of PRAKTI stated that their stoves are built according to consumer needs. Poor people need value and performance along with affordable pricing, he said. Thus, it is important to integrate design, engineering, manufacturing and marketing to ensure the best product. He also stressed on the need to better the design every six months. Marketing and awareness is futile without the stoves being “top-notch”, Serrar said, adding that it was important to concentrate on the stoves more than everything else. He also stated that marketing of ICS in Bangladesh must be driven by enterprises rather than government driven as that would be the only way to effectively market any consumer product.

Figure 56: Moushine Serrar from PRAKTI at ICS MFP

Apart from affordable single burners, PRAKTI also offers double burners that are slightly more expensive. He added that PRAKTI stoves are made to suit the culture and availability of resources of each country. Citing the example of a Nepalese user, Serrar stated she seemed more confident after using the Improved Cooking Stove as she no longer smelled of smoke and could get a job as a day worker. Currently, PRAKTI stoves are marketed in Haiti

and India but Serrar hopes Bangladesh would be the third country where their stoves are available.

Jay Jagdish of Alpha Eco Chula claimed that their Improved Cooking Stoves effectively reduced air pollution by 90%. Describing the benefits of the Alpha Eco Chula, Jagdish added that the stove converts biomass into biogas.

Figure 57: Jay Jagdish introducing the Eco-Chullah

Any biomass including cow dung, coconut flakes, dry leaves or straw can be converted into biogas to be used by the stove. Four different kinds of stoves have been designed to suit the convenience of users. The stoves have power packs which store around four hours of energy to cook food, explained Jagdish. Jagdish further added that the Alpha Eco Chula does not need installation, is consumer friendly, reduces one third of wood usage. Agricultural waste can also be used as biogas and solar panels can be used as a source of energy.

Anuradha Bhavnani of Shell Foundation explained that her organization had a six-step plan to market ICS in the country. Firstly, they plan to analyze markets and catalyze 'disruptive' solutions. They will then identify partners and pilot new business models, following which they will create 'pioneers' and provide early stage support. The organizers will support partners to scale up operations and tackle emerging market barriers, thus ensuring market building to enable replication. Shell Foundation will undertake a holistic approach to ensure distribution, she said. Bhavnani also suggested micro-finance as an option for financing buyers

Sacchit Naik of Greenway Alpha stated that their stoves have been tested and evaluated in laboratory as well as third party field trials and are BIS-compliant, and approved by the Indian government. Greenway Alpha stoves ensure optimal burning while maintaining the local need for front-loading, said Naik. Effective and efficient sustainable distribution of ICS is important, said Naik, adding that the product design must capture users' needs and aspirations.

Harish Anchan of Envirofit said that his organization offers a line of customizable products. Citing poor quality materials, lack of quality control standards, poor durability, lack of standardized testing and lack of proven measured reductions in emissions as reasons as barriers to effective marketing of ICS, Anchan offered solutions to address some of the problems. He suggested including warranty on the stoves, collaborating to ensure habit change in users and offer training to end-users. Regarding the marketing of ICS in Bangladesh, Anchan stated that Envirofit could offer its Research and Development experience, share their working methodologies in Indian Market and across the globe, offer multiple products for Bangladesh market, including stoves for the domestic and institutional markets, design carbon partnerships approaches and share the evaluation and reporting mechanisms.

Figure 58: Harish Anchan introducing the Envirofit stove

ACCESS TO FINANCE FOR ICS

This session moderated by GACC and SNV representative, Anam Al Mudabbir included discussants speaking of ways through which finance can be accessed for proper marketing of ICS. Wahidur Rahman of the Infrastructure Development Company Limited (IDCOL) said that as a government owned financial institution; IDCOL could support the marketing of ICS by offering grants, as it has plans to install 1 million Improved Cooking Stoves in rural households by 2017 with an aim to reduce indoor air pollution.

Figure 59: Raden Siddiqui of Future Carbon on Access to Finance

Raden Siddiqui of Future Carbon (UK) stated in his presentation that uncertainties about project development costs and lack of information about development costs can act as a deterrent to potential project developers and investors. He further spoke about high transaction and opportunity costs that are often associated with ICS projects working with multiple participants. He also pointed out that funding models used may not always promote equitable distribution of benefits and ensure payments reach the grassroots level, which is essential to ensure participants are empowered and incentivized to participate in the long term.

In his presentation, Siddiqui suggested developing a targeted 'community carbon fund' to stimulate new projects and project expansion, tools and methodologies. He also stressed on the need for providing more information on typical start-up costs and cost breakdowns to increase information available for potential investors. He also suggested working with existing groups and community structures, such as ICS makers and suppliers, could increase prospects for access to finance. He further called for capturing the diversity of funding sources available, including development funding. When asked how his suggestions are effective to leverage access to finance, Siddiqui stated that as carbon projects are very risky and very project centric, they will need to look into the country, and come up with a market analysis to offer a definitive answer.

Figure 60: Anuradha Bhavani from Shell Foundation

Fazle Rabbi Sadeque Ahmed of the Community Climate Change Project (CCCP) of the Palli Karma-Sahayak Foundation (PKSF) listed GIZ, Grameen Shakti, BRAC, IDCOL, Green Climate Fund and some other organizations as potential sources of funding. In his presentation, he stated that potential entrepreneurs of ICS could explore a number of multilateral, bilateral and international sources of funding for reducing GHG emission. He further stressed on the need for technical support at all stages of ICS such as at installation and repair and maintenance. He called for the development of different types of model for different types of fuel, particularly agricultural residue and leaves. He also said that the barrier of technology transfer for ICS should be removed and the cost ICS should be considered so that cost does not become the major barrier to popularizing ICS amongst prospective users.

FUEL SUPPLY INNOVATION

Dr Mohammad Abduor Rouf of BCSIR said that apart from firewood, rice husks, straws, briquettes could be used in ICS, thus ensuring low smoke emissions from the stoves. In many rural houses cow dung is more used as a fuel than wood and it can be used as a source of fuel in ICS as well, to reduce smoke emission. He further added that users are skeptical of ICS because of failure of ICS projects earlier. Mominur Rahman of BUET said that rice husk briquettes could be an

Figure 61: Hasan Rashid Khan, inventor of the Bondhu Chullah in Bangladesh

ideal fuel alternative to firewood, as can power around 175-183 Kwh/ton and revenues earned from such briquettes could go up to Tk 2200 to Tk 3000. These briquettes have three times the density of wood and are 27% more efficient in burning than wood.

Dr Hasan Rashid Khan suggested the use of low density crop residue such as straw and rice husks in the stoves. He added that these fuels are easier to store in stoves, are convenient and have better burning characteristics.

ICS DEMAND CREATION IN BANGLADESH

In his presentation titled "Cardiopulmonary Mortality and Indoor Air Pollution: Role for Improved Cook Stoves", Dr Dewan S Alam of ICDDRB, stated that solid-fuel use is associated with increased risk of cardio-respiratory mortality in Bangladesh and there is a non-significant increased risk of cardiovascular mortality using traditional cook stoves. He further added that the use of biomass fuel with Improved Cook Stoves has the potential of reducing indoor air pollution. However, constraints related to availability of appropriate fuel, acceptability, affordability and adaptations require support from ICS manufactures, he concluded.

Figure 62: Closing Plenary of the ICS MFP with USAID, GACC and Bangladesh Govt. representatives

Dr Karabi Dutta of USAID/WashPlus Bangladesh stated that WashPlus conducted consumer preference trials of Improved Cooking Stoves of five brands, namely, EcoZoom Dura, Envirofit Z3000, Prakti LeoChimney, Greenway Smart Stove and Alpha Renewable Energy Eco Chula, in eight villages of two divisions of the country. The trials showed that none of the 5 stoves, as currently produced, meet all, or even most, consumer needs. Even though households recognized the benefits of the ICS, not one of them would completely replace traditional stoves, she added. In her presentation, Dr Dutta stated that depending on the family size, the stove users found it very difficult to cook large quantities of rice in these stove models; in all stove models it took longer to cook large quantities of food in large vessels, which they also found to be "tippy" on the smaller portable stoves. Consumers most appreciated the Prakti and Eco-Chula stoves, with the preference for each stove varying by district. Users who belonged to small families of up to three to four members liked the stove models, she added. She stressed on the need for stove design improved for Bangladeshi market and further consumer preference testing.

Farooq Shams, Strategic Director of Bitopi and Behavior Change Expert, showcased the fact that behavior change may not occur without the right incentive for the end buyer. In his creative demonstration, he drove home the fact that all messages may not be driven across to the end user. Behavior change maybe stimulated through creative thinking that may be negative in connotation but would drive the message of the Improved Cookstove home if provided in the correct setting.

Figure 63: Farooq Shams, Behavior Change Expert at ICS MFP

Dr Anwarul Mamun of SMC said that SMC has completed a workshop for the development of communication messages for ICS with participation from all relevant stakeholders. They have also tried to change consumer behavior by Community Mobilization through partners and SMC's own programs – Mobile Film Program and Floating IEC program. SMC has also tried to create awareness about ICS through mass media communications, by spreading awareness through TV, radio and newspapers, said Mamun.

Feedback from participants:

1. The opening session was excellent especially the speech by the Chief Guest (HE Ambassador: Dan Mozena) was inspiring and encouraging
2. The contents of the workshop were constructive and informative
3. New marketers have been oriented with new ICS technologies, hence an initial market has been created
4. The initial connection/bridge between international manufacturers and local entrepreneurs / investors was being facilitated
5. The MFP has created a window of opportunity to enter new ICS technologies into the Improved Cookstove market in Bangladesh
6. It was good to see governmental officials show their interest towards new ICS technologies
7. Good gathering and information sharing with all relevant stakeholders such as academic, international manufacturers, local entrepreneurs, private sector, NGOs, Donors, investor, Government.
8. Venue, food, team work were fantastic.

8 APPENDICES

APPENDIX 1. MEMORANDUM OF UNDERSTANDING BETWEEN S&S ENTERPRISE AND GREENWAY GRAMEEN INFRA

S&S Enterprise's focus is to introduce environmentally sustainable products through carbon dioxide reduction & carbon trade planting. As a result of this, 300,000 Neem trees were planted in Chapainawabganj with an initial investment of Taka 1,500,000. These Neem trees were cultivated for their flowers, seeds, leaves & fruits which carries various medicinal values leading to health benefits for the end user and financial incentives for the investor.

Shortly after this initiative, in 2012, S&S Enterprise-BD, begun importing 500 high tech smoke controlled Improve Cooking Stoves from Green Way Grameen Infra Private Ltd, Mumbai, India. S&S Enterprise-BD intends to install 100,000 ICS products and create a fuel manufacturing plant focusing on biomass briquettes over the next two years.

Under the USAID CCEB umbrella, S&S enterprise has outlined their goal to deliver 10,000 stoves/month. As outlined below, S&S Enterprise has signed a MoU with Grameen Greenway Infra to set up the first ever ICS manufacturing plant involving new ICS technology in Bangladesh.

MEETING OVERVIEW OF MOU SIGNING

Minutes of meeting between Mr. Shawkat Ali, Mr. Hasan – S S Enterprise- Bangladesh
Sacchit, Ankit, Neha – Greenway Grameen Infra, India

27 and 28 August 2013 at Mumbai

- Both parties agree to promote Greenway brand biomass cookstoves in Bangladesh by establishing sustainable distribution channels and local manufacturing
- Both parties will work together towards submitting a manufacturing plan to the Board of Investment in Bangladesh and other agencies. This plan would be executed through a Joint Stock Company (Joint Venture) incorporated in Bangladesh.
- Greenway is expected to contribute technology and cover technical manpower costs for the establishment of the manufacturing facility while S S Enterprise-BD is expected to contribute towards financing the project and local management. Tentative holding structure would be 25% for Greenway and 75% for S S Enterprise-BD
- Both parties will work towards establishing a market case for the product and test distribution through initial imports from India to Bangladesh. Best efforts would be made to ensure that exports are cost effective and allow for market testing at customer-friendly pricing.

MEMORANDUM OF UNDERSTANDING BETWEEN S&S ENTERPRISE AND GREENWAY GRAMEEN INFRA

MEMORANDUM OF UNDERSTANDING
Between S S Enterprise – BD and Greenway Grameen Infra Pvt Ltd

This Memorandum of Understanding (MoU) sets forth the understandings of the Parties with respect to ongoing collaboration and future joint business relationship planned by the parties to manufacture, distribute and market clean biomass cookstoves under the 'Greenway' brand in Bangladesh. Both parties have been working together based on the provisions of another MoU signed July 21, 2012. The current MoU builds upon the previous version by expanding the scope of collaboration and responsibilities. The following is an outline of a tentative future agreement/contract between the two parties.

1. Both parties agree to promote Greenway brand biomass cookstoves in Bangladesh by establishing sustainable distribution channels and local manufacturing.

2. Both parties will work together towards submitting a manufacturing plan to the Board of Investment in Bangladesh and other agencies. This plan would be executed through a Joint Stock Company (Joint Venture) incorporated in Bangladesh.

3. Greenway is expected to contribute technology and cover technical manpower costs till the establishment of the manufacturing facility while S S Enterprise-BD is expected to contribute towards financing the project and local management. Tentative holding structure would be 25% for Greenway and 75% for S S Enterprise-BD.

4. Both parties will work towards establishing a market case for the product and test distribution through initial imports from India to Bangladesh. Best efforts would be made to ensure that exports are cost effective and allow for market testing at customer-friendly pricing. It is expected that 8,000 units would be imported and consumed to set up this distribution further succeeded by local manufacturing.

5. Both parties will work towards securing soft financing in the form of grants, soft loans etc. for the enterprise (both manufacturing and distribution).

6. Rights of ownership of any Intellectual Property and Trade Secrets generated by the enterprise shall be owned by the enterprise. Ownership of technology licensed or shared or Intellectual Property shared by either of the Parties to the joint enterprise shall be retained by the respective Party.

SIGNATURE - MEMORANDUM OF UNDERSTANDING BETWEEN S&S ENTERPRISE AND GREENWAY GRAMEEN INFRA

7. Both parties will work towards drafting and executing a formal agreement/contract as per the intentions and provisions of this MoU.

8. Both Parties shall consult and take due consent of the other Party before adding new partners to the intended enterprise.

Agreed:

Mr. MD. Shawkat Ali

S S Enterprise, BD
29/08/2013
Proprietor

Mr. Ankit Mathur

For GREENWAY GRAMEEN INFRA PVT. LTD.
29/08/2013
Authorised Signatory

Figure 64: MoU Signing Ceremony Shawkat Ali (S&S Chair) and Neha Juneja (Grameen Greenway)

Figure 65: Ankit Mathur (CEO Greenway) and Shawkat Ali (S&S Enterprise)

NDA 1 - MEMORANDUM OF UNDERSTANDING BETWEEN S&S ENTERPRISE AND GREENWAY GRAMEEN INFRA

NON-DISCLOSURE AGREEMENT

PARTIES OBLIGATED BY AGREEMENT
By signing this Agreement, the parties intend that they, their officers, directors, and employees, shall be bound by this Agreement.

PARTIES SIGNING AGREEMENT
Greenway Grameen Infra Private Limited, a Corporation of the State of Maharashtra, India located at 301, Chawla Complex, Sector 15, Commercial Business District (CBD) Belapur, Navi Mumbai 400614 (hereinafter "Greenway").

And

S S Enterprise-BD of the Country of Bangladesh, located at City Heart Suit- 5/1A (4th Floor) 67, Naya Paltan Dhaka-1000 (hereinafter "S S Enterprise-BD").

Either or both may also be hereinafter referred to, individually as the "Party," and collectively as the "Parties."

PURPOSE OF AGREEMENT

This agreement sets forth the procedures, commitments and disclosures required to set up a clean biomass cook stoves enterprise in Bangladesh under the 'Greenway' brand.

IDENTIFICATION OF INFORMATION

Information regarded as proprietary by either party will be so indicated in writing, and/or by the placement of a "PROPRIETARY" notice on the face of any documents regarded as such.

NOW THEREFORE, the Parties hereby mutually agree as follows:

ARTICLE 1. PROPRIETARY INFORMATION RIGHTS AND OBLIGATIONS

(a) Information that is to be accepted in a confidential relationship and treated as Proprietary Information, shall be disclosed in a tangible form, and shall be conspicuously marked as being "Confidential," "Proprietary," or by any other appropriate legend clearly indicating the proprietary nature of the information.

(b) Proprietary Information, if first disclosed in a non-written or other non-tangible form, shall be identified by the disclosing party at the time of disclosure as being disclosed in confidence, shall be reduced to tangible form and marked in accordance with Article 1(a), and such tangible form shall be delivered to the Party identified above within twenty (20) working days after the date of first disclosure. During the above stated 20-day period, such Proprietary Information shall be protected in accordance with the terms of this Agreement.

(c) Proprietary Information that is disclosed pursuant to this Agreement shall not be used other than for the purposes submitted, or disclosed to any third party, unless authorized in writing by the disclosing Party.

(d) Upon receiving Proprietary Information from the disclosing Party, recipient shall use at least the same degree of care that it uses in protecting its own information of like kind, but not less than reasonable care to safeguard such Proprietary Information from an unauthorized use or

NDA 2- MEMORANDUM OF UNDERSTANDING BETWEEN S&S ENTERPRISE AND GREENWAY GRAMEEN INFRA

disclosure. Recipient agrees that each employee having access to Proprietary Information of the other Party to this Agreement, shall be in a "need-to-know" basis and shall be informed of the existence of this Agreement.

(e) If the Receiving Party makes any copies, extracts, summaries, or digests of the Proprietary Information (including computer entries), the Receiving Party shall ensure that appropriate legends are affixed thereto.

The individuals identified below are designated as the primary point of contact for receiving notices under this Agreement and for receiving Proprietary Information exchanged between the Parties pursuant to this Agreement.

FOR: Greenway	FOR: S S Enterprise-BD
Attn.: Ankit Mathur Phone: +91-22-41239169 Fax : +91-22-41235846 E-Mail: ankit@grameeninfra.com	Attn.: MD.Shawkat Ali Phone: 0088-01715218589 Fax : E-Mail:ssebdali@gmail.com

Either Party may change their designated point of contact upon written notice to the other Party.

ARTICLE 2. AGREEMENT AND CONFIDENTIALITY TERMS

This Agreement shall terminate after the period of time specified below, from the date of last execution of this Agreement by the Parties, except that either Party, upon thirty (30) days written notice to the other Party, may terminate this Agreement. All obligations to maintain confidentiality shall survive termination under this Article 2.

The Term of this Agreement shall be three (3) years from the effective date hereof, as determined by the last date of execution.

The Period of Confidentiality shall be three (3) years from the time the disclosing Party first discloses the Proprietary Information to the receiving party.

ARTICLE 3. PROTECTION LIMITATIONS

It is acknowledged by the Parties, that when any portion of such Proprietary Information falls within any of the following provisions, such portion of such Proprietary Information is released from the protection provided under this Agreement from the date such provision becomes effective:

(a) Information which is or becomes part of the public domain without breach of this Agreement;

(b) Information which is subsequently received from a third party who did not obtain, or disclose such information in violation of any rights of the Disclosing Party;

(c) Information which is already known to a Party, which is substantiated by reasonable evidence;

(d) Information which is publicly disclosed with the prior written approval of the Party that owns, or controls the information; or

(e) Information which was independently developed by an employee of the receiving Party, who did not have access to the disclosed information, and independent development, is substantiated by reasonable evidence.

NDA 3 - MEMORANDUM OF UNDERSTANDING BETWEEN S&S ENTERPRISE AND GREENWAY GRAMEEN INFRA

ARTICLE 4. JUDICIAL ORDER

Notwithstanding the foregoing, nothing in this Agreement shall restrict the right of either Party to this Agreement, from disclosing such Proprietary Information pursuant to a judicial order issued by a court of competent jurisdiction, or other valid and binding court ordered discovery, but only to the extent so ordered; provided, however, that the Party so ordered shall notify the other Party to this Agreement, in writing, of such pending action to compel disclosure or such order in sufficient time to permit adequate time for response by the affected Party. The receiving Party shall provide all reasonable assistance, at the disclosing Party's expense and direction, in opposing such disclosure order.

ARTICLE 5. TERMINATION PROVISIONS

All such Proprietary Information and copies, extracts, summaries, or digests (including computer retained format) thereof shall remain the property of the disclosing Party. All such Proprietary Information shall be returned to the disclosing Party upon the first of the following events shall occur:

(a) After the termination of this Agreement under Article 2; and/or within 30 days after a request for return of the information.

(b) At the request of a Party upon completion of the purpose(s) for which it was submitted;

(c) Upon the determination by a Party that received the information that it no longer desires to possess such Proprietary Information; or

(d) Upon breach of any of the obligations of this Agreement, wherein such Proprietary Information, and all copies thereof, shall be returned to the Party that owns or controls the Information within thirty (30) days of written demand by such Party.

ARTICLE 6. GENERAL PROVISIONS

(a) No license, right, title, or interest in, or to any patent, trademark, mask work, copyright, service mark, or any other intellectual property rights, is granted or implied by disclosure of, or access to such Proprietary Information disclosed hereunder. Each Party warrants that it has the lawful, unqualified right to transfer, use, or otherwise disclose the information transmitted hereunder. No other warranties, express, or implied at law, or in equity, are intended or deemed to arise by virtue of entering into this Agreement or performing hereunder.

(b) In the event of breach of the terms of this Agreement, the failure of a Party to enforce any right under this Agreement, shall not be deemed a waiver of any right hereunder. The invalidity in whole, or in part, of any condition of this Agreement shall not affect the validity of any other condition hereof.

(c) At all times, both Parties shall remain independent contractors, with each responsible for its own employees and representatives. This Agreement is not intended to be, nor shall it be construed as, a joint venture, partnership or other formal business organization, and neither party shall have the right or obligation to share any of the profits, or bear any losses, risks or liabilities of the other Party by virtue of this Agreement. Neither Party is authorized to act for, or on behalf, of the other Party, nor to bind or, otherwise commit the other Party to any contract, or other matter.

(d) This Agreement is deemed to be made under, and shall be construed in accordance with the laws of India & Bangladesh, exclusive of the conflict of laws provisions thereof.

(e) This Agreement supersedes all previous understandings between the Parties with respect to the subject matter of this Agreement.

NDA 4 - MEMORANDUM OF UNDERSTANDING BETWEEN S&S ENTERPRISE AND GREENWAY GRAMEEN INFRA

(f) No amendment or modification of this Agreement shall be valid, or binding on the Parties, unless made in writing and signed on behalf of the Parties, their respective duly authorized officers, or representatives.

(g) This Agreement may be executed in counterparts and transmitted by facsimile, each of which when so executed and transmitted shall be deemed to be an original, and all such counterparts shall together constitute one and the same instrument

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized representatives, as of the date listed below:

By: MD Shawkat Ali
MD/CEO

(Title) S S Enterprise - BD
Proprietor 29/08/2013

(Signature) (Date)

By: Ankit Mathur
Co-Founder & CTO

For GREENWAY GRAMEEN INFRA PVT. LTD.
(Title)
29/08/2013
Authorised Signatory

(Signature) (Date)

APPENDIX 2. PARTICIPANT LIST FOR RAJSHAHI SITE VISIT

PARTICIPANT ATTENDANCE TRACKER

Event Name:	Meeting with Grameen Shakti: Understanding Local ICS Programs Underway
Event Location/Dates:	Rajshahi
Event Facilitator:	Sabrina Amjad
Event Facilitator Signature:	Sabrina Amjad

Training Date	Participant Name	Participant job title/org (occupation)
23/05/2013	Md. Arafath Mostafa	Grameen Shakti, Divisional Manager
23/05/2013	Abdur Razzak Mia	Grameen Shakti, Natore Division
23/05/2013	Md. Abul Kashem	Grameen Shakti, Chapainababgang (R.M)
23/05/2013	Md. Golam Rabbani	Grameen Shakti, Rajshahi Branch (Bm)
23/05/2013	Mst. Nahida Sultana	Rajshahi G.T.C, Incharge
23/05/2013	Mst. Luthfa Sharmin	Rajshahi G.T.C
23/05/2013	Md. Anwar Hoshain	Godagari Branch

PARTICIPANT ATTENDANCE TRACKER

Event Name:	Meeting with GIZ: Understanding Local ICS Programs Underway
Event Location/Dates:	Rajshahi
Event Facilitator:	Sabrina Amjad
Event Facilitator Signature:	Sabrina Amjad

Training Date	Participant Name	Phone Number	Participant job title/org (occupation)
20/05/2013	Md. Hafijur Rahman	01716-902482	Hafij Enterprise
20/05/2013	Md. Nayen Uddin	01724-982954	Nadi Sanitary
20/05/2013	Md. Bela Mia		Bari Gor Nirman
20/05/2013	Md. Rayhan Ali	01838-660721	Shathi Sanitary
20/05/2013	Md. Rabiul Islam	01831-1369900	Rayhan Sanitary
20/05/2013	Md. A. Mannan	01738-306065	Ma-Moni Store
20/05/2013	Md. Mostak Ahmed	01750-497564	Rownok Sanitary
20/05/2013	Md. Shamimul Basir	01823-263792	Arkid Ring
20/05/2013	Md. Al Amin	01833-104163	District Manager, GIZ
20/05/2013	Md. Ohiduzzaman	01847-003667	Asst. District Manager, GIZ
20/05/2013	Krishna Kumar Shingha	01833-104112	Divisional Manager, GIZ

PARTICIPANT ATTENDANCE TRACKER

Event Name:	Understanding and Growing Supply Chain Creation Activities
Event Location/Dates:	Moharajpur, Chapainawabganj
Event Facilitator:	Sabrina Amjad
Event Facilitator Signature:	Sabrina Amjad

Training Date	Participant Name	Participant job title/org (occupation)	Participant signature
22/05/2013	Towhida Khatun	Executive Director, Seba Foundation	
22/05/2013	Md. Sohidul Islam	P.O. Chatona Manobik Un. S	
22/05/2013	Md. Nasim Ahmed	Assistant, Chatona Manobik Un. S	
22/05/2013	Md. Sujan Ali	Co-ordinator, GBUS	
22/05/2013	Md. Aminul Islam	LGED, Chapai Nababgonj Shodor	
22/05/2013	Md. Abul Kalam	LGED, Chapai Nababgonj Shodor	
22/05/2013	Md. Abdul Matin	Mohananda Somaj Kollan Shongstha	
22/05/2013	Md. Altafur Rahman	Sub Asst. Agri Culture officer	
22/05/2013	Md. Sohel Rana	Monanda Somaj kollan Sangha	
22/05/2013	Mark Pankaj Sarkar	Program Officer,CCDB, Chapai	
22/05/2013	Mss Serina Kathan	Zilla Mohila Bishoyok Adhidoptor,Tred Porsikok	
22/05/2013	Mss Najnin Naher	Zilla Mohila Bishoyok Adhidoptor	
22/05/2013	Md. Mahmudur Rahman	Seba Foundation, Kathal Bagicha	
22/05/2013	Md. Iftag Khan Alam	Maharajpur Village Development	
22/05/2013	Md. Hafijur Rahman	Grameen Prodip, ED	
22/05/2013	Md. Lutfor Rahman	Grameen Prodip, Manager	

22/05/2013	Md. Mostafizur Rahman	Grameen Prodip, Manager- GIL	
22/05/2013	Md. Abul Kashem	Grameen Shakti, Chapainababganj	
22/05/2013	Ms Saiful Islam	UDPS	
22/05/2013	Md. Akidul Alam	UDPS	
22/05/2013	Md. Naser Uddin	Proyas Manobik Unnayon Society	
22/05/2013	Md. Rabiul Awal	GBUS	
22/05/2013	Nur Akter Jahan	RSDE	
22/05/2013	Md. Rejaul Karim	EEDS	
22/05/2013	Md. Mojammel Haque	EEDS	
22/05/2013	Md. Monzurul Khan	EDRSDF Chapainababganj	
22/05/2013	Md. Sadruzzaman	SS Enterprise	
22/05/2013	Md. Tofazzal Haque	RSDF-Pc	
22/05/2013	Md. Shawkat Ali	SS Enterprise	
22/05/2013	Md. Mukhlesur Rahman	SZE	
22/05/2013	Md. Mosharrof Hossain	PSW	
22/05/2013	Md. Obaidur Rahman	Social service Officer	
22/05/2013	Md. Sajedur Rahman	Chaiman, RSDF	
22/05/2013	Md. Masud Rana	Ashroy	
22/05/2013	S.M. Aminuzzaman	AEO, DAE	
22/05/2013	Saidur Rahman	Asroy	
22/05/2013	Md. Azad Rahman	SZ/GIZ	

Overall Comments Received: Workshop Evaluation Form

Date: 22/05/2013

Title and Location of Training: Understanding and Growing Supply Chain Creation Activities

Workshop Presenter: Sabrina Amjad

Please indicate your impressions of the items listed below.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The workshop met my expectations.	❍	●	❍	❍	❍
2. I will be able to apply the knowledge learned.	●	❍	❍	❍	❍
3. The objectives for each topic were identified and followed.	●	❍	❍	❍	❍
4. The content was organized and easy to follow.	●	❍	❍	❍	❍
5. The materials distributed were pertinent and useful.	❍	●	❍	❍	❍
6. The presenter was knowledgeable.	●	❍	❍	❍	❍
7. The quality of instruction was good.	●	❍	❍	❍	❍
8. The presenter met the training objectives.	●	❍	❍	❍	❍
9. Class participation and interaction were encouraged.	●	❍	❍	❍	❍
10. Adequate time was provided for questions and discussion.	❍	●	❍	❍	❍

11. How do you rate the work shop overall?

Excellent	Good	Average	Poor	Very poor
❍	●	❍	❍	❍

10. What did you like most about the training?

11. What aspects of the training could be improved?

APPENDIX 3. PARTICIPANT LIST FOR BUSINESS MODEL WORKSHOP

PARTICIPANT ATTENDANCE TRACKER

Event Name:	BUSINESS MODEL WORKSHOP
Event Location/Dates:	Dhaka, USAID CCEB Office
Event Facilitator:	Sabrina Amjad
Event Facilitator Signature:	Sabrina Amjad

Name	Designation	Organization	E-mail
Sher Khan	COR, CCEB	USAID	sherkhan@usaid.gov
Sabrina Amjad	Country PM/ICS Lead	USAID CCEB	Samjad@deloitte.com
Anowar Mollah	Senior ICS Specialist	USAID CCEB	amollah@cleanenergy-bd.org
Raisa Chowdhury	Communications & Training Manager	USAID CCEB	rchowdhury@cleanenergy-bd.org
Farhana Ahmed	Admin Assistant	USAID CCEB	fzaman@cleanenergy-bd.org
Nepal Roy		BRAC	nepal.cd@brac.net
Farid Ahmed	Chief Executive	Women Development Program(WDP)	farid-wdp@gmail.com
LailaIshrat Jahan Ruen	Capacity Building and Documentation Officer	Village Education Resource Center(VERC)	laila@verc.org ruen81@yahoo.com
Nur Mohammad Sarker	Assistant Engineer	Grameen Shakti	eng_shoriful@company.com
Md. Shahidul Islam	Senior Coordinator	Bangladesh Association for Social Advancement(BASA)	shahid_gd@yahoo.com
SayedAhamed	Executive Director	AID Bangladesh	sayedaidbd@yahoo.com
Mohammad Wahidur Rahman	Assistant Director (Director)	IDCOL(Infrastructure Development Company Ltd)	wahid@idcol.org
Dr. A Z M Zahidur Rahman	Head Behaviour Change Communication	SMC(Social Marketing Company)	zahid@smc-bd.org
Dr M Shahidul Islam	Former Director General	BARI (Bangladesh Agriculture Res. Instt.)	dmsislam@agni.com dmsislam@gmail.com dmsislam1946@yahoo.com
A.K.M Shirajul	Executive Director	Bangladesh	akmshirajulislam@gmail.com

Islam		Association for Social Advancement(BASA)	islambasa@gmail.com
Md. Mokhlesur Rahman (Sumon)	Project Co-ordinator	Center for Natural Resource Studies	sumon.agri@gmail.com sumon@cnrs.org.bd
Md. AhsanUllah Bhuiyan	Assistant General Manager	Grameen Shakti	ahasan8@yahoo.com g_shakti@grameen.net
Md. Shah Alam	AGM	Bangladesh Association for Social Advancement(BASA)	shahalam3011@gmail.com
Ms. Nazma Akter	Executive Director/Secretary	EshoJatiGorhi(EJAG)	ashojatigorhi@yahoo.com

APPENDIX 4. BENEFITS OF SETTING UP A CENTER OF EXCELLENCE FOR THE ICS SECTOR IN BANGLADESH

A diversified Center of Excellence for Improved Cookstoves in Bangladesh will provide a variety of benefits that can be gained from centralizing a set of essential functions to support the creation of the value chain for the ICS sector. Some of the benefits include:

- Respond to the dynamic trade environment existent for ICS products within the country
- Bring all ICS stakeholders expertise together at the national level
- Deliver greater consistency and harmonization across key stakeholder groups
- Align ICS manufacturing processes with modern business practices
- Enhance industry-based knowledge for ICS products
- Implement manage-by-account practices for ICS entrepreneurs
- Better reuse of capabilities across programs
- Increased speed of delivery of ICS product distribution
- Cost reduction or elimination through shared infrastructure and tools
- Cost savings through shared skill sets and elimination of redundant or inefficient process or approach

Key Areas asto how a Center of Excellence can be helpful (Hunt, 2009):

Shared Learning – first and foremost a proper COE will prevent, or minimize the reinvention of the wheel for most business units with a base from which to start their understanding of a process or technique. These formalized and uniform roles and process enable shared learning (Hunt, 2009):

- Aggregation and evangelizing of best practices
- Training and certifications of ICS products
- Skill assessments & team building

Measurements & Metrics — COEs should be able to demonstrate they are delivering the valued results that justified their creation through the use of output metrics (Hunt, 2009).

- Uniform Metrics
- Uniform tools and collection methods
- Aggregation and evangelization of the results

Support — For ICS manufacturers, retailers and distributors, COE's should offer support and mentoring to the business lines. The level of support will vary based on ability and resources and organization(Hunt, 2009).

- Sourcing and procurement of shares tools and resources
- Share subject matter experts within the ICS sector
- Develop process and opportunity for scale in the service offering
- Where possible, financial and resource support

Governance – Leading standards and practices adopted by ICS stakeholders (Hunt, 2009)

- Creation and arbitration of common standards, policies and methodologies
- Enforcement of a consistent architecture and uniform approach across the organization
- A common method and set of techniques for managing information for ICS products
- Developing and enabling well defined Roles and Responsibilities within an ICS entity

APPENDIX 5.CONSUMER PREFERENCES GAUGED BY WASHPLUS STUDY

The USAID WASHPlus study used the following stoves to gauge reaction among the masses.

- Envirofit Z3000 (single pot, built-in-place, rocket design),
- EcoZoom Dura (single pot, portable, rocket design),
- Prakti LeoChimney (2-pot portable metal chimney stove),
- Eco-Chula (single-pot portable fan gasifier stove),
- Grameen Greenway (single-pot portable natural draft gasifier stove)

To assess consumer preferences, researchers of the WASHPlus study applied an innovative methodology called Trials of Improved Practices, or TIPs. The WASHPlus application of the TIPs method uses "elicitation questions," which are semi-structured questions that have been developed and validated to systematically identify barriers and motivators to change, including which factors are most influential in spurring the performance or nonperformance of a behavior.(Rosenbaum et al)

ICS fuel efficiency was measured using a three-day kitchen performance test (KPT), widely acknowledged as the best currently available method for accurately estimating daily household fuel consumption. (Rosenbaum et al) The KPT was carried out using a cross-sectional study design in 116 study households and 24 control households. (Rosenbaum et al) Two approaches were used to measure the extent to which households adopted the new stoves and the manner in which they integrated them into their cooking and kitchen management practices: self-reported use of stoves at the end of each 24-hour KPT monitoring period and stove use monitoring sensors (SUMS). (Rosenbaum et al)

The SUMS recorded the stove temperature every 10 minutes for a total of approximately 10 days; the resulting temperature profiles were then analyzed to determine the frequency of "cooking events" (i.e., number of times the stoves were lit) per day.(Rosenbaum et al)The impact of the interventions on household air quality was explored during the KPT monitoring; illustrative (not statistically significant) results were collected from measures of minute-by-minute kitchen concentrations (in a location approximating the breathing zone of the cook) of small particles (PM2.5) and carbon monoxide (CO). (Rosenbaum et al)The impact of the interventions on women and children's exposure was explored in the same subset of homes by monitoring the 24-hour exposure to CO of both the cook and one child under the age of 5 in the household. (Rosenbaum et al)

WASHPLUS FINDINGS FOR KPT & SUMS

ICS fuel efficiency was measured using a KPT in 116 study households and 24 control households, and temperature-logging sensors (SUMS) affixed to all stoves in the house collected data on the frequency of cooking periods. (Rosenbaum et al) Usage patterns captured during KPT monitoring suggest the intervention stoves were commonly used by the study households, but in all cases, did not fully displace the use of the traditional stoves. (Rosenbaum et al) Four out of the five stoves were found to reduce fuel use by at least 16 percent to 30 percent, a range that may be artificially low due to underreported fuel mixing in control homes. (Rosenbaum et al)

CONSUMER RESPONSE TO NEW ICS TECHNOLOGY IN BANGLADESH

All the ICS users that were surveyed were in favor of the new technology for all the stove types presented to the end users. Female cooks felt that the taste of their food was the same when cooked on an ICS vs. the traditional stove. (Rosenbaum et al) About two-thirds of the study participants said food tastes the same, with the others equally split between saying it was better (21) or worse (19). (Rosenbaum et al) Respondents overwhelmingly felt the stove used less fuel than their old stove, with three-fourths of the group seeing fuel savings. (Rosenbaum et al) Interestingly, about a fifth of the participants thought the stoves used more fuel, which is interpreted in the discussion section. (Rosenbaum et al)

When asked about differences in smoke produced, a vast majority (86) said the ICS produced less smoke than their traditional stoves. (Rosenbaum et al) Husbands present at the time of the survey who answered the question had basically the same impressions as their wives regarding the reduction in smoke from the new ICS. (Rosenbaum et al) When asked if the ICS had any impact on cooking pots, just over half the users (63) felt the new stoves kept their pots cleaner, a few saw no impact (15), and a third(41) felt it made the pots dirtier than the traditional stove. (Rosenbaum et al) Some users “jammed” the ICS with wood to make flames visibly meet the cooking pot, which would clearly affect impressions and cookstove performance. (Rosenbaum et al) A major obstacle reported is that the cooking time was slower using the ICS. Three-fourths of respondents (93) reported slower cooking time, a fifth (20) reported faster, and just a few (3) respondents said cooking time was the same. (Rosenbaum et al)

Women noted that changes were required to their cooking style, including the need to prepare all ingredients before initiating cooking and to sit in front of the stove tending the fire

(as opposed to multi-tasking) while cooking. (Rosenbaum et al) Dislikes and suggestions for improvement fell into two general categories, those that can be addressed through fairly simple modifications to the stove design and others more appropriately addressed through point-of-purchase consumer education and follow up from service agents or health outreach workers. (Rosenbaum et al)

The most overarching complaint about all the cookstoves included in the trial was their inability to cook large volumes of food in large pots, especially the Prakti and Grameen Greenway cookstoves. (Rosenbaum et al) Study participants compensated for this by jamming the stove with more fuel and wrestling with large pots, which rendered some stoves less stable. (Rosenbaum et al) As is common with other stove studies, participants were unaccustomed and/or unwilling to chop wood into small pieces, thus complaints were made about the size and angle of the wood opening. (Rosenbaum et al) In addition, traditional stoves are constructed so as to allow a "natural feed" of large wood pieces and other agro fuels and dung sticks; because the opening into the combustion chamber angles downward, the fuel naturally slides further into the combustion chamber as it burns. (Rosenbaum et al) Consumers missed this feature on the new stoves; improved stoves have a horizontal fuel entry, so fuel must be manually pushed into the stove as it burns. (Rosenbaum et al) Lastly, consumers found excess ash collected in the stove and suggested a tray for easy emptying. [20]In case of the Prakti stove the major complaint was that the second pot was not effective for cooking. (Rosenbaum et al) For the Grameen Greenway stove a major complaint was that the stove is not stable. (Rosenbaum et al)

APPENDIX 6.COLLOBORATION DISCUSSION BETWEEN USAID CCEB AND CHEVRON CSR UNDERWAY

The USAID CCEB program has been in conversation with Chevron Bangladesh who is currently supporting the implementation of the project, "Improving the Quality of Life through Alternative Livelihood Options" for the community of Chevron's Moulvibazar gas field. The intention for USAID CCEB is to help Chevron reach out to 10,000 ICS beneficiaries in the Moulvibazar and Bibiyana areas of Sylhet through Chevron CSR assistance. The ICS field trip taken to Sylhet by the USAID CCEB team in June showcased that there is indeed a need for ICS new technology in the remote parts of Bangladesh. The tenets of the proposal set forth by the USAID CCCEB program for the ICS new technology implementation has been verbally discussed and informally shared with Chevron CSR. Chevron has been made aware that for the proposal to be put into effect, a Global Development Alliance may need to take place between Chevron CSR and USAID Bangladesh. For the 2nd year, it is strongly recommended that the proposal below be shared formally with Chevron and after an understanding is reached, a GDA be initiated.

CHEVRON'S TWO YEAR PROJECT CURRENTLY UNDERWAY

Chevron's current CSR two-year project aims at empowering the community(near Chevron's Moulvibazar gas field) through the provision of skill training, literacy and knowledge transfer in a range of income-generating activities that seek to enhance the overall quality of life for 1,000 families and protect the environment. The project interventions (Solar Photovoltaic Panels to 150 households and five schools, 500 Improved Cooking Stoves and two small biogas plants) will lead to a range of socioeconomic benefits, primary among which is a marked savings in monthly household costs incurred in fuel and firewood. These savings will be retrenched into a gamut of livelihood development programs and micro-enterprises for which the beneficiaries were trained at the outset of the project. Chevron will be the key funder and management authority of the project while Center for Natural Resource Studies (CNRS), along with technical assistance from Grameen Shakti (a sister concern of Grameen Bank), will act as both implementer and operator. The other partners, Spaandan-B and Agami will co-finance the project.

Chevron's current two year project is in line with Bangladesh's renewable energy goals and supports meeting of the UN Millennium Development Goals and is believed to achieve the following: (Baseline and Readiness Assessment, Chevron)

- The introduction of reliable and renewable energy sources – solar photovoltaic (PV) panels to 150 disadvantaged households and five schools in two villages. Also part of the project will be the introduction of 500 Improved Cooking Stoves (ICS) for healthier and environmentally friendly cooking and two small biogas plants that will aim to convert 'wastes into wealth' and present an environmentally-friendly option through the reduced use of chemical fertilizers;
- Provision of skilled training and knowledge transfer for the prime purpose of capacity building in a number of alternative livelihood options, thereby directly benefitting 1,000 families living in and around Chevron Bangladesh's Moulvibazar gas field;
- Savings in fuel costs (viz., kerosene and/or firewood) to the tune of BDT 7,000-8,000 (US$ 103 – US$ 118) a family/year. This will create an opportunity for the community to start savings-led livelihood development programs and specific income-generating activities for which training has been provided;
- Improvement in literacy rates by enabling children to study and read indoors after dark using electric lighting, rather than light from candles or lamps;
- Mitigation of health hazards stemming from the fact that women and children breathing in kerosene fumes inhale the equivalent of smoke from two cigarette packs a day;
- Reduced dependence on firewood, thereby mitigating the impact resulting from deforestation. The project area is of special strategic significance as it is located in the immediate vicinity of Chevron's Moulvibazar gas plant. The area is considered to be a hub of biodiversity in the country and is hence most affected by deforestation.
- At least partially solving some problems inherent in microfinance; e.g., administrative difficulties in administering the loan packages, high interest rates that are often not conducive to repayment. By engendering a system through which the project beneficiaries maintain monthly savings that are retrenched back into their own livelihood development initiatives, the dependency on loans is substantially reduced.
- Strengthening Chevron Bangladesh's reputation with the local communities living around the Moulvibazar gas facility in light of the impending drilling program, scheduled for 2011-2012, thereby maintaining its 'Social License to Operate'.

The direct beneficiaries are the local communities of two villages in Kalapur Union, where the Chevron Bangladesh's Moulvibazar field in Block 14 is located, in Srimangal District under Moulvibazar District of Northeastern Bangladesh. (Baseline and Readiness Assessment, Chevron)The current project will take effect through community consensus building, participatory needs and readiness assessment, establishing the baseline scenario, technical and financial assistance towards introduction of alternate efficient energy, capacity building for O&M, support for alternate green business and resource generating activities, ecosystem conservation, lessons learnt and communication planning. (Baseline and Readiness Assessment, Chevron) The project will also publish learning materials, e.g. user manual for installation and O&M, to fuel the future expansion potential of the intervention. (Baseline and Readiness Assessment, Chevron)

Chevron's CSR project will support development of Village Development Organizations (VDO), for which the community will select the members, in association with the local government institutions to create a window of operation in the communities. (Baseline and Readiness Assessment, Chevron)A multi-year action plan will be developed to lay the initial foundation stones and for the project period. Selection of interventions and beneficiaries will be done through the committee to avoid confusion and conflict. This Organization will identify the scheme and beneficiary selection criteria for each intervention. (Baseline and Readiness Assessment, Chevron)

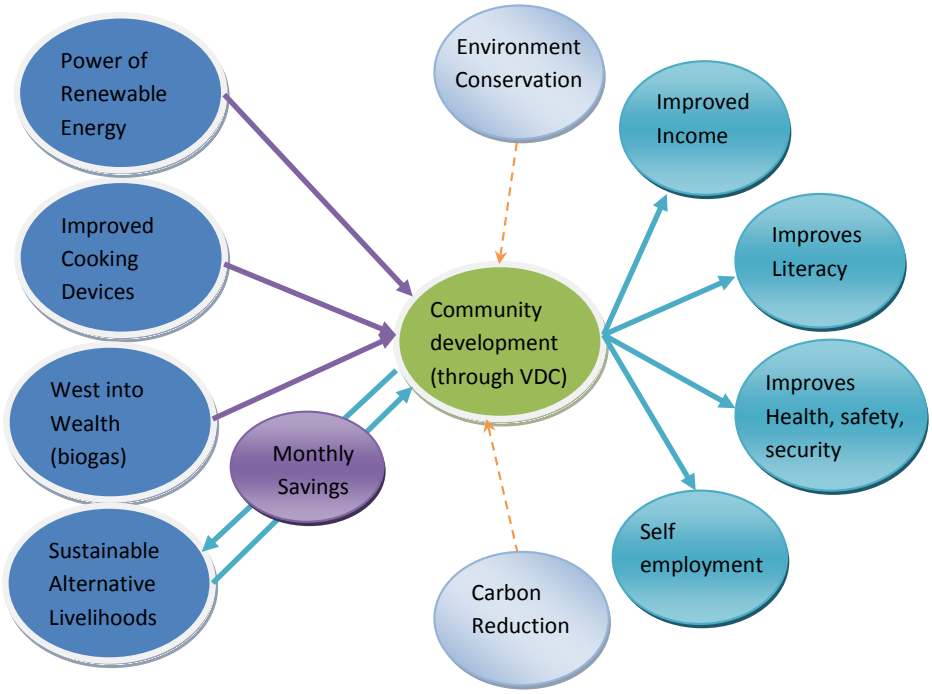

Figure 66: Chevron CSR Community Development Vision ((Baseline and Readiness Assessment, Chevron)

USAID & CHEVRON PARTNERSHIP – WHAT WOULD IT ENTAIL?

In keeping with the above vision, the USAID CCEB project has been working closely with the Chevron CSR leadership group to augment their services and help initiate new ICS technology within the region. Conversations are well underway between the teams and it is understood that a Global Development Alliance would need to be created between both Chevron and USAID for the following proposal to be implemented.

Objectives of the Proposed Partnership between Chevron CSR and USAID Bangladesh:

- Mobilize community people to understand existing situation regarding IAP and the ill effects on one's health
- Develop and apply behavioral change communication and social marketing strategies to ensure adaptation of improved behaviors and community participation
- Promote appropriate and user-friendly ICS technologies in rural as well as sub-urban communities in Bangladesh
- Develop community catalysts/entrepreneurs to process promotion and commercialize households energy technology

- Develop a commercial initiative for the production and sales of cookstoves for economic sustainability
- Measure the quantity of CO2 reduced from the project
- Secure carbon finance for its long term sustainability

Duration of the Project:

The duration of the CCEB project is five years but Chevron could in fact initiate project activities that could last longer if the interest and demand for ICS technology prevails in the specified areas (Bibiyana and Moulvibazar under the Sylhet district).

Beneficiaries:

- Low incomes households in rural and semi-urban areas
- Food producers
- Restaurant owners

➔ Total number of beneficiaries that could be assisted through the ICS effort: 10,000 end users

Location:

The ICS implementation of the new technology is proposed to take place in 10 selected unions of Bibiyana and Moulvibazar under the Sylhet district

Description of the USAID and Chevron ICS effort:

1. <u>Implementation process:</u>

If an understanding is in fact signed between Chevron CSR and USAID Bangladesh, the project envisioned by the USAID CCEB effort will be implemented as follows:

- Training will be arranged for the project staff, partner organization, catalysts, entrepreneurs and community people for capacity building via Chevron project assistance.
- Three ICS new technology models, previously ascertained by the WASHPlus effort will be selected for the proposed project. The USAID CCEB team would propose to work with Chevron CSR to pick the necessary models and then prefer to let the community choose the appropriate model for their lifestyle.
- It is recommended that there be one Project Coordinator, two Monitoring Officers, two Marketing Officers and one Program Officer at the field level. The Project

Coordinator will be responsible for the overall management of the program. He/she will maintain liaison with Chevron and update them about the progress of the project from time to time. The Monitoring Officer will provide technical support and training to field level staff as and when necessary and they will also conduct field visit frequently. The Marketing Officer will be responsible for demand creation and Program Officer is responsible for ensuring technical support to stove maker (catalysts) and entrepreneur and also for trouble shooting.

- Approved catalysts (stove makers) will be selected from the community and will be developed by providing need based training. For promotion and marketing, film show, folksong, courtyard meeting, and school session/demonstration will be undertaken as social marketing activities and in addition IEC materials will be developed and distributed.
- A monitoring mechanism will be developed and necessary format will be developed for monitoring purpose. The quality of the stove will be assured by the project. The service delivery mechanism will be ensured and in doing so, an ICS manufacturing facility cum service center may be established to produce/assembly stove locally, as well as different parts of the stoves.

2. *Proposed Intervention:*

- Community mobilization

As one of USAID CCEB's objectives is to engage the communities in the ICS project, the intent is to select catalysts among the inhabitants. Chosen in function of their poor income and their high motivation, they will attend "community catalyst training". This is expected to enable the creation of local employment opportunities for poor people. Furthermore, community will be mobilized when it will select its appropriate stove model after attending a presentation about advantages and disadvantages of each model.

- Social marketing and behavior change communication

To popularize improved cookstoves among communities, the USAID CCEB with Chevron Bangladesh will use different marketing tools such as flip charts, posters, billboards, demonstration centers, motivational film, and school sessions or exhibitions.

To promote best practice and convince people to change their way of cooking, the USAID and Chevron led partnership is proposed to develop behavior change communication techniques focused on IAP risks. This will be done in collaboration

with SMC, which has been a pioneer in Bangladesh in this field and has been identified as a marketing partner for USAID CCEB. Below is a detailed description of different promotional and marketing tools which will be used during the project period:

- Film show: VERC/GIZ/Grameen Shakti has already developed many video films highlighting problems caused by indoor air pollution and also technical aspects of the stoves. The film will help to raise awareness among different audiences and mobilize people.
- Folksong: As a popular means of communication, a folk song will be developed.
- Courtyard meetings: To educate community people, regular hygiene and technology related discussions focusing on IAP risks and climate change discussions will be held.
- School sessions/demonstrations: USADI CCEB proposes that students could play a significant part in demand creation and awareness building exercises. As such, this initiative could organize lecture sessions on climate change and indoor air pollution in primary to high level educational institutions.

3. <u>Capacity building</u>

Since USAID CCEB's aim is to transfer technology and knowledge to the locals, the USAID-Chevron CSR partnership will propose different types of training for local stove builders, project staff and other interested parties and develop different manuals that will be shared with the community.

The different trainings will include the following:

- Training on ICS: Organized for project staff, community catalysts and other stakeholders. We can raise their level of awareness regarding the impact of health hazards, demerits of traditional cookstoves and advantages of ICS
- Training on Entrepreneurship Development: This will be organized for existing and potential entrepreneurs, so that they have a better understanding of their roles and responsibilities, some marketing tools and knowledge on pricing strategies.

4. <u>Entrepreneurship development</u>

In order to create local ICS employment, USAID CCEB can use the current business module identified for ICS entrepreneurs who would enable Chevron ICS identified

entrepreneurs to become ICS assemblers, manufacturers, distributors and retailers. As a result, stove production centers will be created to foster a local network.

Three types of entrepreneurs will be supported:

- Manufacturing/Assembly entrepreneurs: to manufacture and supply one or more components of ICS
- Installation entrepreneurs: to purchases components from the manufacturing entrepreneurs and install fuel efficient cookstove on a turn basis for customers
- Retail/Distributor entrepreneurs: to buy one or more components from the manufacturing entrepreneurs and sell the components retailed to the installation entrepreneurs or to the customers directly

5. *Monitoring and Quality Control:*

In the project lifetime, an ongoing monitoring and evaluation is proposed to be carried out by both USAID CCEB and Chevron CSR to ensure sustainability of the ICS project. The monitoring will be conducted in the following ways:

- Participatory Monitoring at Community Level: Chevron project dedicated members will monitor the community ICS activities regularly, by using participatory monitoring tools which will be facilitated by project staff
- Area level Monitoring: The Area Coordinator and Technical Officers will regularly monitor the Union level field activities; at least one time per month, s/he will have to visit all Unions under the working area and submit the monthly monitoring report to CCEB Office in Dhaka
- Monitoring from HQ: The USAID CCEB leadership team will coordinate and monitor field activities regularly. The team will also visit the project areas for ensuring quality. An ongoing quarterly report system will be implemented

HOW WILL CHEVRON BENEFIT?

The project will demonstrate Chevron Bangladesh's commitment to the north-eastern region, not just Moulvibazar and Bibiyana, but other adjacent districts where it has its plants in production. This requires a strategic engagement with key stakeholders through project partnership. Furthermore, the reputation of the company will be enhanced by publicity of project activities and achievements. Similarly, the positive impact of the Community Based Organization (CBO) and associated small scale livelihood based entrepreneurship development activities will further re-enforce Chevrons reputation. One

of the main objectives of the project is to increase Chevrons profile and admiration among community members and local governments.

The project seeks to maximize positive impacts on current and future environment, community business and livelihoods, universal education, and engage with and balance the needs of our stakeholders. Sustainable community engagement initiative will involve effective stakeholder engagement from the very outset of the planning, interventions and management. The project will be carried out in partnership with host communities, aid agencies and the associated NGOs. Capacity building is an important outcome of this project, both in communities and with partner organizations.

The community engagement strategy is also a core component of Chevron's corporate responsibility. It involves the following elements:

- Community mobilization
- Social marketing and behavior change communication
- Capacity building
- Entrepreneurship development
- Establishment of ICS Production canter at locally

It is critical to involve the community in the needs assessment process in order to develop an appropriate and sustainable solution that meets the need of a diverse group of stakeholders. The community is being engaged through assessment (stakeholder identification, information gathering, and situation analysis), planning (activity planning, budgeting), implementation (project monitoring, stakeholder coordination and communication), to programmatic review (participatory evaluation, lessons learned, etc.). Critical elements of community involvement in the project include:

- Community will partner the management of the system
- Community commits resources to implement and maintenance
- Key decisions made with the community involved (informed by awareness of technical, environmental and economic constraints)
- Improving peoples livelihood is the primary goal (not application of technology)
- Local capacity building is key

Finally, Chevron Bangladesh's reputation will be enhanced among a wider audience since the focus of the project extends to economic development which will create tangible, visible impacts in people's lives. The project can serve as a model for

community development that can be adopted by local government, NGO's and other private companies.

EXPECTED RESULTS AND IMPACTS

Expected results:

- Increased adoption of recommended improved technologies and practices for household energy use
- 3 manufacturing centers will be established locally
- Reduce exposure to indoor air pollution (PM & CO) for women and children;
- 1500 stove builders/distributors/retailers developed by installing ICS at the community level
- 10,000 different types of ICS sold and operating in good condition
- Improved enabling environment for further household energy and health activities
- Increased access to improved technologies for cooking and heating
- Increased awareness on effective health and energy-related behavior and technology use in households, with resulting changes in attitude
- Increased participation of women in the decision making process at households as well as at community level
- Empowered women at the community level for changing their livelihood status as well as leadership quality, through entrepreneurship development activities
- Developed rural entrepreneurs (especially women) to commercialize households energy technology
- Strengthen market system for improved household energy technologies

Impacts:

This project has environmental, social and economic impacts:

- At the environmental level, most of the fuel wood in Bangladesh comes from unsustainable logging of local forests. Burning less fuel wood reduces greenhouse gas emissions and protects national forests.
- As far as social benefits are concerned, the ICS reduces smoke, thus improving user's health condition. Moreover, using less fuelwood means less time spent gathering wood; time that can now be dedicated to education, or other positive activities. Since almost all cookstove users are female, the ICS helps reduce gender disparity and has a positive impact on women.

- The money saved by families on fuel expenses can now be spent on health, education or new economic activities
- Manufactured locally, small scale business and new jobs are created for ICS producers and grate manufacturers. Another relevant benefit is the transfer of improved technology to local people

Risks and Mitigation:

The project has some risks which could be mitigated by USAID CCEB measures:

- As cooking in traditional stoves has become a norm for majority of the population in Bangladesh, it will be a challenge to change people's behaviors: USAID CCEB marketing and communication actions will help to mitigate this risk
- Economic factor is one of the major constraints for installing the ICS for the poorest people: local MFIs as identified by both USAID CCEB and Chevron CSR will be involved to make access to finance easier for ICS entrepreneurs

Sustainability:

After one year, it is estimated that a significant number of ICS will be sold in the community under the project. One ICS reduces 1.06 tons of CO2. The dissemination of 10,000 ICS can therefore reduce 10,600 tons of CO2 which will enable the community to receive a fund of $73,140 USD that can be used to bear costs of following years.

Besides, under the project, a good number of community catalysts and entrepreneurs will be developed to carry out the project activities after withdrawing the donor support. On the other hand, the development strategy itself is sustainable: mainstreaming adapted technologies in the private sector, working with catalyst, using locally materials available and without subsidy and market distortion. Hence, once the project is over, the market forces will keep spreading the stoves and their benefits without external support.

Figure 67: Demand driven workshop in Srimangal

Figure 68: Demand driven workshop in Bibiyana

Figure 69: Local Entrepreneur in Bibiyana

Figure 70: Local Entrepreneur in Srimangal

APPENDIX 7.COLLOBORATION DISCUSSION BETWEEN USAID CCEB AND SHELL FOUNDATION

During the first year work plan there has been in-depth discussion conducted between USAID CCEB ICS team and Shell Foundation and Envirofit teams to define ways that would enable Envirofit to easily enter the Bangladesh market space. The discussion led to the attendance of Shell Foundation attending the ICS Market Facilitation Platform where they presented lessons learnt in the creation of a successful ICS value chain in different countries throughout the globe. Shell Foundation has vetted Envirofit to be one of the global leaders in Improved Cookstove technology. Based on the past experience and relationship built between Shell Foundation and Envirofit, USAID CCEB has been working to reach an understanding with both Envirofit and Shell Foundation on how they can effectively enter the Bangladesh ICS industry.

The discussions paved the way for both Envirofit and Shell Foundation to attend the ICS Market Facilitation Platform which enabled the Managing Director, Harish Anchan to sit with Rahima Afrooz and strike initial conversations in how to best move forward in the import of Envirofit products into the country. As the USAID CCEB team has been in discussion with Rahima Afrooz in in getting involved in the production of new ICS technology, the connection between Envirofit and Rahima Afrooz has paved a path for another MoU that could potentially be signed in the coming 2nd year. It is recommended that the USAID CCEB effort continue to facilitate these conversations and help minimize the effort associated with importing these products into the country. For USAID CCEB and Shell Foundation to move forward, it has been suggested to Shell Foundation that a Global Development Alliance be built between USAID Bangladesh and Shell Foundation and/or Envirofit to enable a cohesive way to import the ICS products and set up a sustainable product assembly plant within the country.

SHELL FOUNDATION AND ENVIROFIT'S PARTNERSHIP OVERVIEW

The sale and adoption of goods that deliver a range of health, livelihood, gender and environmental benefits and cost from just a few to several hundred dollars – such as improved cookstoves, solar lanterns and water purifiers – have proved particularly challenging due to a wide range of factors, including: affordability, diverse consumer needs and desires (rarely does 'one-size-fit-all'), the difficulty of supplying bulky products to remote or poorly served regions and the fact that they are usually 'push' products.

For the past 12 years, Shell Foundation has been trying to tackle these market barriers with a view to developing sustainable markets where these products sell (and their benefits are felt) at scale – as part of its wider mission to catalyze enterprise-based solutions to global development challenges.

Since 2002, Shell Foundation has been working to develop a market for more efficient, 'improved cookstoves' (ICS) that significantly reduce fuel use, emissions and cooking time for people who rely on biomass fuels. Between 2002 and 2007, Shell Foundation ran extensive pilots with nine partners in seven countries, gaining substantial knowledge of technologies, cooking fuels, dissemination models and markets for ICS.

In 2007, Shell Foundation formed a long-term partnership with Envirofit International, a social enterprise based in the US, and together began to develop a business-based model to design, produce and sell a range of clean cookstoves that are affordable, durable and desirable. Shell Foundation formed a strategic partnership with Envirofit to create a pioneer in design, mass manufacturing and commercial routing of high-quality ICS to the market, with more than 500,000 ICS sold to-date across India, Africa and Latin America.

Envirofit stoves improve fuel efficiency by 60%, cut cooking times and reduce emissions by 80%. The stoves sell for US$15 to US$30 and are built to last, coming with a five year warranty. Envirofit has a large portfolio of stoves that meet different customer needs and fuel types.

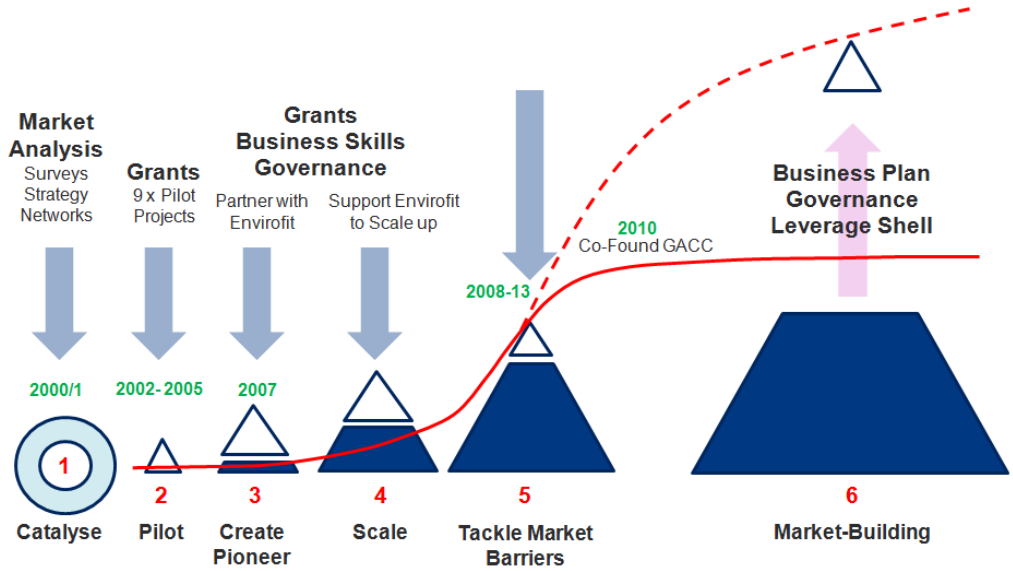

Figure 71: Shell growing the ICS Value Chain

By focusing on monitoring and evaluation, in collaboration with partners such as Berkeley Air and Aprovecho, Shell Foundation has achieved a (widely accepted) standard for improved stoves and a methodology for sound field testing;

As a co-founder of the Global Alliance for Clean Cookstoves (GACC), Shell Foundation is playing a central role in wider sector development, mainly through promoting a 'market based approach' and through leveraging others, including Shell the company, to join the GACC. Overall, our clean cookstoves programme has improved the lives and livelihoods of over four million people and reduced carbon emissions by 1.25 million tons. The GACC working group is focusing on developing guidance for rating cook stoves with the ISO on indicators such as fuel use, total emissions, indoor emissions and safety.

Shell Foundation's 'more than money' support to Envirofit has helped develop several alternative routes to market and innovative finance solutions (carbon and consumer finance). An example a partnership in India is with Indian microfinance institution, Grameen Koota (GK), where Shell Foundation and Envirofit combined stove promotion activities with stove loans to address both lack of awareness and price barriers simultaneously. We managed to do this at a cost of US $4 per stove sold during our campaign. As sales continued to increase, this cost would also reduce to a level that could be built into a US$30 stove loan – thus making this route self-financing and scalable. This partnership tackles the price/ affordability issues, by allowing people to pay for the stove in $ 1-$ 2 installments.

Shell Foundation's and Envirofit's experience in the space of developing markets and ecosystems in Africa and India and Latin America have highlighted that the ICS ecosystem is complicated and there are a number of areas across the supply chain that need to be well thought out. Shell Foundation and Envirofit have had many lessons learned at every level of the supply chain and have created some innovative solutions to the number of barriers that exist in the ecosystem.

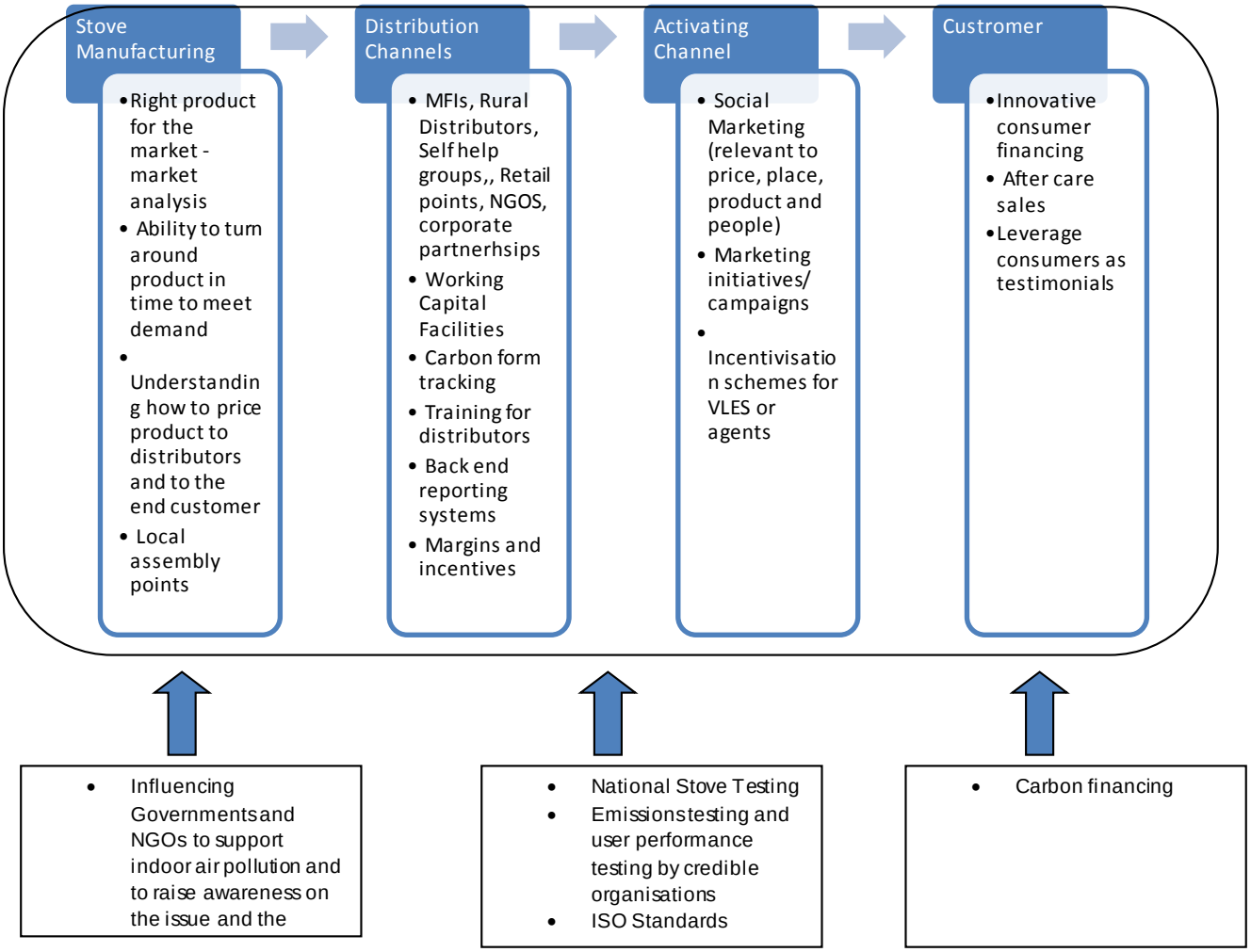

Figure 72: Shell Foundation and Envirofit Ecosystem employed to promote new ICS technology

Shell Foundation and Envirofit's experience in clean cook stoves in Africa, Asia and Latin America has demonstrated that awareness, affordability, availability and accountability are some of the barriers to reach the "last mile customer": Shell Foundation and Envirofit have addressed each of these barriers by working with partners.

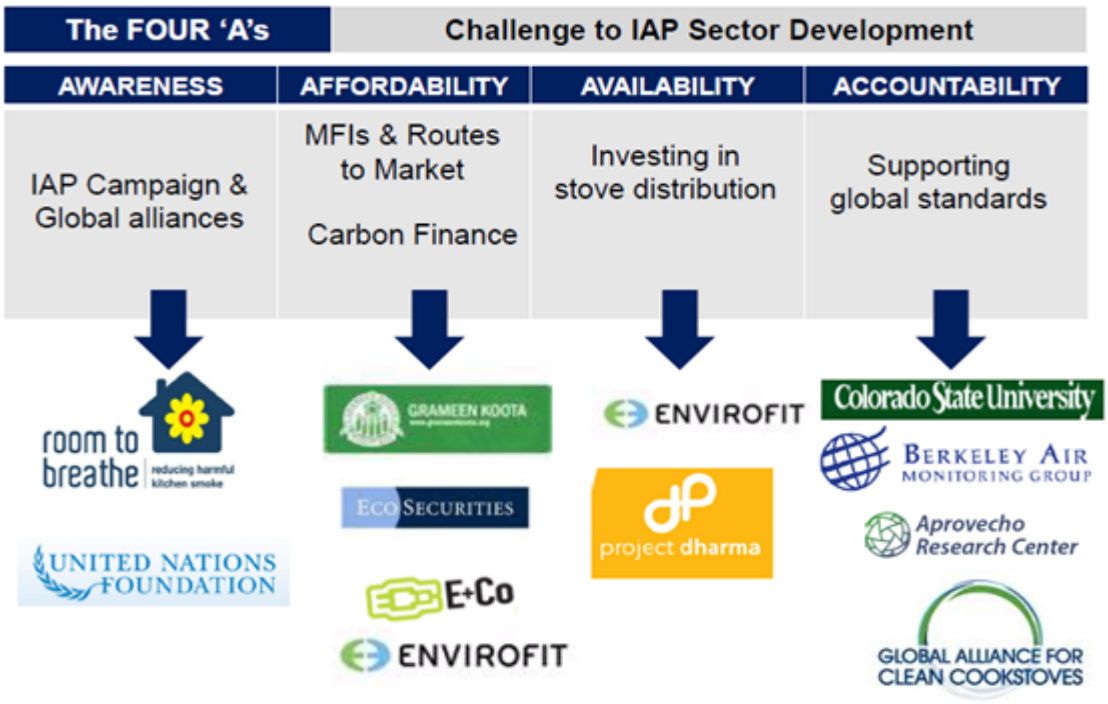

Figure 73: Shell Foundation's 4 A's – Awareness, Affordability, Availability and Accountability

SHELL FOUNDATION AND ENVIROFIT'S PROPOSED APPROACH:

Shell Foundation and Envirofit would be keen to partner with USAID Bangladesh to transfer the valuable lessons learned from our experiences in Africa and India, which will support the investment into building a sustainable and scalable market for clean cook stoves in Bangladesh. Shell Foundation would be willing to be an advisor throughout the process of building the ecosystem and sharing lessons learned from similar markets so that we reach to scale quicker. Shell Foundation would be interested in this partnership if the partners involved leverage off these lessons learned

Shell Foundation believes that Envirofit is the best stove manufacturer in the market after 5 years of testing all stoves in the market. Shell Foundation also believes that Envirofit is the only manufacturer who has sold 550,000 stove to date and has the capacity from a back end and front end perspective to support USAID to meet their target of 350,000 households in 5 years in a new market.

Shell Foundation and Envirofit looks to form a detailed proposal for USAID CCEB, outlining the work-scope and budget required to initiate the development, production and distribution and sale of 0.5M – 1M improved cook stoves in a 5 year period. It is recommended that

USAID CCEB should continue to facilitate these discussions with both Shell Foundation and Envirofit to establish a new ICS technology leader in the market space.

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