

Market Development Initiative for *Bondhu Chula* in Creating Entrepreneurs: A Case from *Kachuai* Union, *Patiya* Upazila, Chattogram

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ABSTRACT

The purpose of the study is to assess the effectiveness of the project, “Market Development Initiative for Bondhu Chula”. Most people in the rural area of Bangladesh use a traditional cooking device. Biomass is the primary source of energy for cooking devices. The limitations of traditional cooking devices demand the introduction of Bondhu Chula, which is claimed to be energy efficient and environment-friendly. Hence potential entrepreneurs were trained to produce and sell this new device. The study employed a qualitative approach. Fourteen stakeholders were interviewed. The study found that users were not aware of this, and the local government representatives were not sensitized. Only 4 per cent of households at Kachuai union of Patiya upazila of Chattogram were found to use Bondhu chula – a fact, which indicates that the project failed to create entrepreneurs. However, the users, and women, in particular, were found to be happy to use this cooking device as it is less time consuming, energy-efficient, less costly and easy to cook.

Keywords: *Bondhu Chula*, improved cooking stoves (ICS), *Chula*

INTRODUCTION

Most of the rural Bangladeshi people use traditional cook-stove for cooking. The common sources of energy for them are wood, tree branches, and leaves, crop residues, jute sticks, cow dung, etc. (Danlam, et al. 2015). On the other hand, traditional cooking creates suffering to female and children from indoor pollution. However, to collect the energy materials for cooking, deforestation occurs. To address this issue, the Directorate of Environment developed a project. “Market Development Initiative for *Bondhu Chula* Project” is for creating entrepreneurs who produce *Bondhu Chula* (energy efficient cooking stove innovated by Bangladesh Council of Scientific and Industrial Research) and market those to the rural household. Almost 3.5 lac *Bondhu Chula* has been installed, and almost five thousand entrepreneurs are created by that project (GoB 2015). Energy is not the number one problem for the human being, rather food, water, health, environment, education, democracy considered serious issues for human life. However, energy is the centre of them all (Armaroli & Balzani 2006). The energy system has two main sides. One is end-user energy, and the other one is the supply side energy. End-user energy is the final or usable energy utilized in the household, industries, services and other areas. On the other hand, supply-side energy

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deals with energy extraction, conservation, transportation and distribution (Armaroli & Balzani 2006). In most of the countries, biomass is the most important source. Since long this has been using in many countries. Almost 50% of the world population depends primarily on biomass (Hoque et al. 2010). Devi & Kamala (2016) concluded showing the biomass dependency as energy sources in the rural household in India. They have also mentioned the rural peoples' ignorance about the thermal efficiency of traditional cooking devices. Moreover, they have portrayed that rural people are resistant to change to the modern energy efficient cooking device. This paper aims to assess the effectiveness of the project in terms of creation of *Bondhu Chula* entrepreneurs, its effect on the health of female and children. Also, the environmental effect is explored through this paper. The objectives of the paper are as follows:

1. To identify the number of users of *Bondhu Chula* in the study area of Bangladesh.
2. To explore the entrepreneurship development status by analyzing the production and marketing of *Bondhu Chula* in the rural areas of Bangladesh.
3. To identify the reduction of health risk associated with the traditional cooking method of female and children.
4. To identify whether the *Bondhu Chula* is socially accepted or not.

The research questions are as follows:

1. How many families are using the *Bondhu Chula* in *Kachuai* union, *Patiya* upazila, *Chattogram*, after the project intervention?
2. How entrepreneurship development is increased through *Bondhu Chula*?
3. How much of health risk of women and children associated with the traditional cooking method is decreased by using *Bondhu Chula*?
4. How rural society is benefitted from this project?

Problem Statement

Bangladesh is a highly populated country. Most of the people live in the villages. Natural gas is not an easy energy source in those villages (Hoque et al. 2010). The Technical Project Proposal of this project observes that commonly wood, jute sticks, etc. are used as a means of fuel. This constitutes about 60% of total household consumptions in the rural areas. Annual household biomass consumption is 44 million tons and 79% of the country's total biomass consumption. Fuel wood constitutes 41% of total biomass cooking energy. Less than 10% of people in Bangladesh have access to modern fuels. More than 90% of people use solid fuels for cooking, including 60% of urban households and almost all rural households. The biomass consumption pattern is most likely to remain the same for many more years (GoB 2015). The traditional method of cooking also produces too much smoke, which ultimately leads to some extent of air pollution (Ahamed et. al 2013). Female and children are used to staying at home most of the time. The traditional cooking system creates smoke and others; this is hazardous for the health of female and children of the rural area of Bangladesh. Conversely, a higher need for energy material constitutes a higher degree of deforestation. The rapidly expanding population and heavy reliance on biomass have put pressure on Bangladesh's limited forest resources. Fuel wood is becoming increasingly scarce and more expensive, which has pushed many consumers towards other forms of biomass such as crop residues, rice husk briquettes and cow dung (GoB 2015).

To reduce the adverse environmental effect and to reduce the health hazard of female and children, the traditional method of building “*chula*” needs to be converted to energy efficient *chula*. In addition to that sustainable presence of the entrepreneurs in the rural market is a necessity. A German International Organization Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) is the Technical Partner of the Project, started promotion of improved cooking stoves (ICS) in December 2005. They were using the clay stove model developed by IFRD (Institute of Fuel Research & Development) of BCSIR (Bangladesh Institute of Scientific and Industrial Research). The GIZ had an objective on the establishment of a self-sustaining supply chain for stoves. Training of stove builders was an integral part of that. Dissemination of the ICS was quite rapid, but monitoring showed that the quality of the stoves built was not always according to design standards - as each clay stove is built *in situ* the margin for error is quite high. To overcome the quality problem, GIZ introduced in 2010 concrete as the material for manufacturing ICS. This allowed mass production and significantly better adherence to quality standards. This ICS has been branded as *Bondhu Chula*. For accelerated dissemination of stoves, GIZ started to work with sanitary shops and masons as they are already in the business of working with concrete. Based on the experiences, GIZ and DoE formulated the joint project “Market Development Initiative for *Bondhu Chula*” (GoB 2015). Systematic research on this particular project is not available. The project is prepared by the Department of Environment under the Ministry of Environment, Forest and Climate Change and implemented locally. It is quite evident that there are still millions of people who are using traditional *chula*, and the market share of *Bondhu Chula* is yet to be achieved significantly. Although the Department of Environment is moving towards the 3rd phase of this project, the self-sustainable characteristic of this project must be evaluated through the eyes of the local users, entrepreneurs, public representatives, and the implementers.

The research is significant as there is a paucity of research on this issue. However, there are some researches available on clean energy consumption pattern of the household both at home and abroad. The government of Bangladesh takes a project through the ministry/division. It was evident sometimes that the desired outcomes are not attained. For that reason, working on a projects’ effectiveness creates scope for future researchers for further development to undertake new projects. Time is the primary constraint to conduct this research. However, taking only one union as a sample is also limiting the scope of this study.

CONCEPTUAL FRAMEWORK

From the conceptual framework, the paths and achievements of the entrepreneurs of *Bondhu Chula* are portrayed. Dahunsi (2016) proposes a conceptual framework in the context of Africa, where all of its components are related in a complex web. They are highly interactive and dependent on each other. The significant components he mentioned are enlightenment, the present state of energy, provision, and usage, monitoring energy provided, energy management and efficiency, alternative energy, research and development, and govt. policies.

The idea of the conceptual framework of this study is to put the importance of entrepreneur development as well as to place emphasis on the issue of health hazards of female and children in the rural parts of Bangladesh. The social and environmental welfare in that area is also aligned with the research. “The Market Development Initiative for *Bondhu Chula*” is a project of the Department of Environment. The successful creation of the *Bondhu Chula* entrepreneurs can be considered as a success of the said project. According to McCoy (1986), there is no standard methodology to measure project success. Besides, Wateridge (1998) mentioned that not many people seriously considered about project success.

On the other hand, Baccarini (1999) observes that the Logical Framework Method (LMF) provides enough understandings for project success. He mentioned that the inputs and outputs are the subjects to project management success and purpose and goal are for product success, which ultimately leads towards project success. The following figure by Baccarini (1999) shows the link:

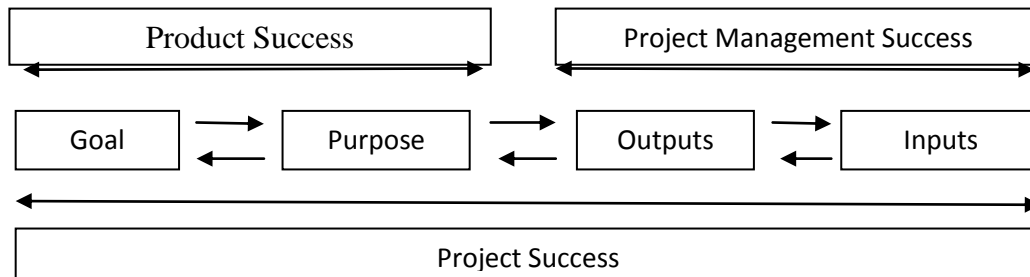


Figure: 1 Link Between LMF and Project Success Source: (Baccarini 1999 p. 28)

By collecting the data from the project area, the success of outputs, purpose, and goal achieved, i.e. the LFM is tested. It is the test for in-depth analysis compared with actual achievement and will also focus on the outputs relating to cost, process, and overall relevance. The framework is described and shown below:

Bondhu Chula

The Directorate of Environment has initiated a project named “Market Development Initiative for *Bondhu Chula* project”. The goal of the project is clean air. One objective is the reduction of greenhouse gas emissions and indoor air pollution. One output target of the project is 5.0 lac installed *Bondhu Chula* and to create 5000 entrepreneurs (GoB 2015). In the GoB (2015) it is noted that almost 3.5 lac *Bondhu Chula* has been installed and almost five thousand entrepreneurs are created by that project. Each union has at least two entrepreneurs.

Awareness Building

An old age discourse is, “knowledge is power”. Over the years it is found to be true. It is essential for the end users to be well informed about the sources of energy and the type of cooking devices (*chula*) they used for cooking. This knowledge has been transmitted to the local people, and they are well aware to use *Bondhu Chula*. There are means to transmit this knowledge. The project has a monitoring team. One of the significant responsibilities of the team is to monitor the produced components of ICS at the factory, after installation at the household and as well as in regular interval on the functionality of the ICS (GoB 2015). However, there is no local level committee formed in the project proposal.

The Increase of Market Share

The GoB (2015) shows that through the “Market Development Initiative for *Bondhu Chula* Project” 5000 entrepreneurs are ready to operate, two for each union. They are given

necessary management and production training. The entrepreneurs are the leading players to sell *Bondhu Chula* in the market. The rural people traditionally built their own *chula*. This is the knowledge they had received over time. The costing of building this type of traditional *chula* is negligible (Hoque et al. 2010).

The Increase of Local Usage of Bondhu Chula

The increase of the awareness of the local people and the availability of the product together creates a synergistic effect over the entire marketing process and ultimately, the usage of this product will increase. A comprehensive approach towards the popularizing the new idea replacing the traditional *chula* by involving the key stakeholders in the rural area can ensure the product success of the project (Baccarini 1999).

Entrepreneur Development

The awareness building on the energy efficient ICS can create interest of the rural people. They also will consider cost-effectiveness and health issue. The increase in the sale of the product helps the entrepreneurs to be settled in the market. Some of the users or other people are interested in involving in the business and thus the awareness also be increased. The market force itself is in operation and the entrepreneurship development happens.

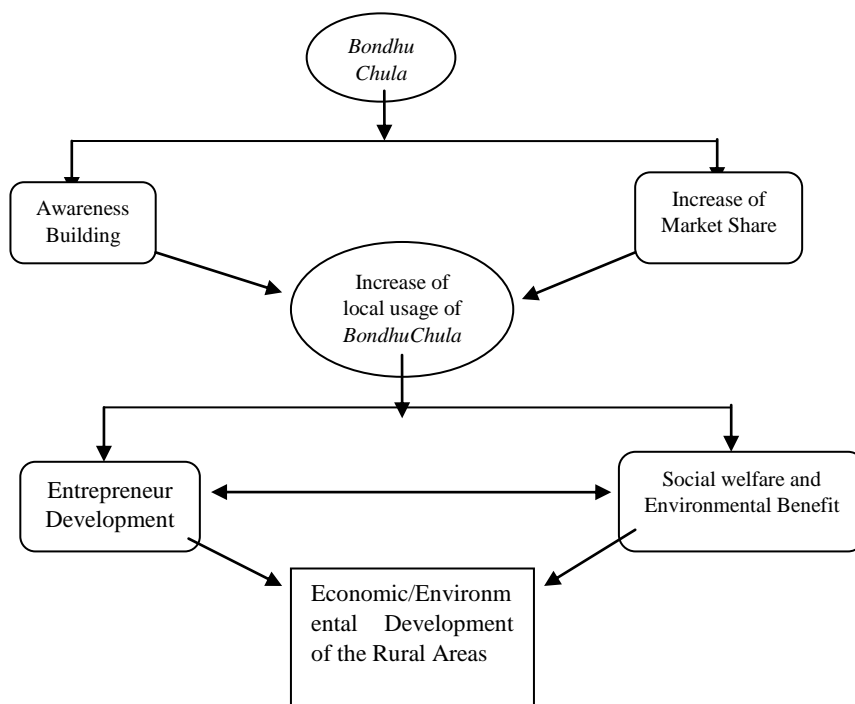


Figure 2: Conceptual framework for the achievements of the Market Development Initiative for Bondhu Chula Project

Social Welfare and Environmental Effect

This business ultimately helps the local people who are using the *Bondhu Chula*. The women and children who are in most vulnerable condition feel relieved since the usage of traditional *chula* is reduced, which causes air pollution as well as relatively high energy-related expenses. In addition to that, the increase of business provides jobs and earnings to some of the local people raised. There is a linkage between entrepreneurship development and social welfare and environmental effect. The increase of entrepreneurship development increases social welfare and also it has a positive effect environment. Both of the entrepreneurship development and social welfare ultimately lead the rural area to a positive economic and environmental impact.

METHODOLOGY

This is a qualitative study, and the study area was at *Kachuai* union of *Patiya* upazila, *Chattogram* district. Information was from the entrepreneur who produced and sold *Bondhu Chula* in that area. Information was from the entrepreneur who produced and sold *Bondhu Chula* in that area. Data from the local representatives and a local level officer were also collected. Semi-structured questionnaires were used to collect information. This assessment was conducted through inter-personal interviews. *Patiya* upazila consists of 22 Unions and one pourasava. The project covers the entire upazila. The urban people have reasonable access to electricity, gas, Liquefied Petroleum Gas (LPG). Conversely, rural people have a maximum dependency on biomass fuel. The users of *Bondhu Chula* are rural women. They have reasonable understandings about the effectiveness of the *Bondhu Chula*. So it was necessary to interview them. For that reason, the rural part of the upazila was chosen as the study area.

The purposive sampling method was applied to select the study area and the sample. In addition to that, some secondary data was also collected. It is a qualitative study employing semi-structured questionnaire to interview the respondents. The sample size of the study is 14 (one officer, two representatives, one entrepreneur and ten female). There was no entrepreneur at *Kachuai* union, so the entrepreneur from the adjacent union was taken as a sample. However, as all the female respondents who were the users of *Bondhu Chula* were providing almost the same data, there was no reason to take more respondents from that group.

DISCUSSIONS AND FINDINGS

Users of Bondhu Chula

The total number of respondents is 14. Of them, 11 are female, and 3 are male. Ten respondents are the chief cooks for their households. From the two local representatives, 1 is a male member, and the other one is a female member. Interview of 1 male officer from Bondhu Foundation is also conducted. At the beginning, it was tried to identify the total number of *Bondhu Chula* users of *Kachuai* union, *Patiya* upazila, *Chattogram* district. The union road is well-connected with the upazila sadar and the district. The electricity

connection was good. Almost all the houses of the union have electricity connections. From the interview of the male member (public representative), it is found that most of the workable force were actively generating income. The number of people living under the poverty line is negligible. On the contrary, the number of middle and upper-middle income is also low. This indicates that households of that union have not much disposable income in their hand. It is found from the officers' interview that the number of the total household of that union is about 3000. Of them, only about 120 houses are using *Bondhu Chula*. Although the project is in operation for a few years, they can intervene only 4% of the household of *Kachuai* union. The percentage is quite low. From the user's perspective, it is found that they (female-cook) considered the *Chula* very useful and environmentally friendly as well as cost effective. So the low-level market attainment of *Bondhu Chula* in that union appeared as a question of the efficiency of the project officers.

Entrepreneurship Development and Installation of Bondhu Chula

From the Log Frame Matrix, it was found that one of the objectively Verifiable Indicators (OVI) is the number of entrepreneurs and the number of *Bondhu Chula* installed. The Means of Variations (MOV) is counting the number of *Bondhu Chula* Installed. From the interview with the responsible officers of *Bondhu Chula* in *Patiya* Upazila, it is found that only around 120 *Bondhu chula* were installed in *Kachuai* union. The number of Households there, is near about 3000. This reflects only 4% market on this issue has been grabbed by *Bondhu Chula*. Moreover, OVI focuses on entrepreneurship development. Basic training was provided to the potential entrepreneurs of the study area. Through the data collection, it is found that in the *Kachuai* union, there was no active entrepreneur. People had no option but to buy *Bondhu Chula* from the sellers of other unions or nearby pourasava. A few potential entrepreneurs were given training, but they have not started their operation yet. That is one of the reasons for not achieving the desired number of installed *Bondhu Chula* in *Kachuai* union.

From the interviews with the users, i.e. female cook of the household, it is seen that they felt comfortable when cooking using *Bondhu Chula*. They said that the cooking time is less for *Bondhu Chula* compared to the traditional *chula*. No smoke comes out from that, and this *chula* is energy efficient. They need less wood, straw or leaves than the past. However, what they have found that there was less campaign or marketing for *Bondhu Chula*. When asked, they said that no local government representatives had ever talked on this *chula* issue. On this particular issue, when this matter is discussed with the female member of the union, she has replied that from now on, she will campaign to the people of this union. She also has mentioned that no government officials ever raised this matter as an issue to discuss. Almost the same response came from the male member. He also has added that they hardly bother about the cooking issue as it was a matter of women's world. The awareness building was not done properly. People are not actually sensitized about the usefulness of *Bondhu Chula*. Since there was no active entrepreneur in the *Kachuai* union, the interview of the nearest entrepreneur from *Patiya* pourasava was taken. He seems a successful businessman. According to him, he owns a large market share. He is selling one unit of *Bondhu Chula* at Tk 1500. The price is much higher compared to the cost of production plus profit. When responding to the question related to the reasons for the high price, he has mentioned that because of the asbestos pipe instead of PVC, the cost goes high. The monopolistic nature of this market had forced the poor rural people to buy relatively high priced *Bondhu Chula*. This is another reason why the people from adjacent *Kachuai* union are reluctant to install *Bondhu Chula* for their usage. However, that entrepreneur also argued that financial support from the banks and support from the local government can help them to grow as a sustainable

entrepreneur. The feedback system from the stakeholders is not found in the project system. One of the important criteria to achieve the goal of the project is feedback from the stakeholders. Customer satisfaction can be understood from it. So it is important to achieve product success.

Health Issues

The respondents were asked whether they have any idea about the risk associated with the uses of traditional *chula*. All of them responded that they had no idea on this issue. However, most of the female respondents replied that the cooking became comfortable with *Bondhu Chula*. One of the respondents said that her 6-month baby stayed with her at the time of cooking, but her daughter faced no physical disturbance yet. The female respondents also said that they are not facing breathing or cough problems. The data related to the health issue is unavailable. There is no baseline survey done on this issue. There is no mechanism maintained by the government on preserving medical data of the citizen of Bangladesh. So that it was not possible to compare and validate the findings from the interviews. However, it is deemed that the housewives are happy on the health-related issue associated with using *Bondhu Chula*.

The Economic and Environmental Benefit

The local representatives and entrepreneurs responded that *Bondhu Chula* has both economic and environmental benefits. The female respondents also said that the *Bondhu Chula* is cost effective. They have mentioned that less amount of wood is required to cook. So that the expenditure on energy becomes lower. Their cooking time reduces a lot. Their time saved, and they can use their saved time for other family and social purposes. They can spend more time on their kids. Baccarini (1999) mentioned that the Logical Framework Method provides enough understandings for project success. He also stated that product success and project management success ultimately lead to project success. In this case, the research questions were set on the basis of the Objectively Verifiable Indicators. It is found that the number of installed *Bondhu Chula* is only about 4% of the total household at *Kachuai* union. Moreover, there is no active entrepreneur in that union. However, in case of clean air and health benefit associated with using *Bondhu Chula*, the users found that as a better option. This shows the product failure instead of product success mentioned by Baccarini. From the discussion, it is seen that the people, as well as the local representatives, are also not much aware of *Bondhu Chula*. In the Annex – VII of the project proposal, it is seen that there is a monitoring team headed by the Project Director. This committee consists of six members.

The primary responsibilities of the monitoring team as per MoU are:

- The monitoring team will be monitoring the produced components of ICS at the factory, after installation at the household and as well as in regular interval on the functionality of the ICS.
- This monitoring committee shall function under the overall supervision of DoE (GoB 2015).

The entire project situation of *Kachuai* union reflects a lack of supervision. Awareness among the public is very low. The local representatives are also not sensitized at all. The local administration has no idea about the project, and there is no supervision done by them. This shows the Project Management failure instead of Project Management Success mentioned by Baccarini (1999). Nath et al. (2013) found in their study that biomass,

kerosene, and electricity are used by rural people. They found that well-off family spends more on high-quality fuel. The poor family mostly depends on biomass and traditional cooking device. They also mentioned that the traditional cooking device generates more smokes. This smoke pollutes the kitchen environment. This causes burning and tearing, headache and breathing problems.

Table 1: Thematic findings of the 14 respondents

| Theme | Female cooks (10 nos) | Entrepreneur (1) | Local representatives (2 nos) | Officer (1) |
|---|---|--|---|--|
| Entrepreneurship Development and number of <i>Chula</i> installed | There is no seller in Union | There is no other buy from me | Better air quality | Training provided but they did not start a business; Of the 3000 households, only 120 households are using |
| Health Issue | No smoke; Clean air; Less time needed for cooking; No breathing and cough problem | Provides clean air; Good for health | Not much idea but probably it has some positive impact on health | Good for health |
| The economic and environmental benefit | Energy efficient; Less wood required; Less energy cost | Less energy cost | The cooking device is good for the environment; Less wood required. | Value for money; Both the buyers and seller get benefits |
| Other | Can give more time to other family issues | Loan facility from the banks should be given | The project should involve the local administration for developing more awareness Female Union member herself not aware. | |

This finding corroborates the findings of this study that the people of *Kachuai* also depend on the traditional cooking device compared to only 4% of the households are using *Bondhu Chula*. Lack of awareness causes the low level of uses of ICS in the *Kachuai* union.

CONCLUSIONS AND RECOMMENDATIONS

Bondhu Chula is a practical, low cost, environment-friendly improved cooking device. Although the financial exposure of this project is not high, the impact of ICS is very high. This project ensures employment through entrepreneurship, reduces the energy cost of the relatively low-income group of the rural parts of the country, creates a clean air at home and ultimately contributes comprehensive benefit to the society. Specific recommendations are as follows:

- to ensure the success of the project, effective monitoring is important. The Department of Environment can engage upazila administration by developing a monitoring committee headed by Upazila Nirbahi Officer. Once the local administration is sensitized, the union chairman and the members will automatically be aware.
- The feedback system is to be introduced to understand the level of stakeholder's satisfaction.
- The trained-up potential entrepreneurs need motivation. The local members can play a vital role to make them active. However, the training sessions are also needed to be monitored. By ensuring the participation of the entrepreneurs in the business, the monopolistic market can be uprooted. Banks and other financial institution can finance them, which can solve the startup shortage of funds.

Bangladesh is in the course of graduation to a middle-income country. To have stable economic growth and to be in the course of the graduation and to be a developed country by 2041, efficient and effective project management is necessary. By meeting time, cost and quality; by ensuring the quality of the project management process and by satisfying the stakeholders, the success of the *Bondhu Chula* project can be ensured. Although the documentation shows that the overall employment generation by this project is satisfactory, the actual scenario of *Kachuai* union is substandard. The reasons that slow down the ultimate goal of the project are uncovered in the research. From those findings, the gap can be minimized, and the contributions of this project in creating entrepreneurs will be increased.

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