Project Update: April 2017

1. Preamble

Over-exploitation of woody species in Guinea Savanna zone of Nigeria for domestic fuelwood is a threat to biodiversity loss. The use of inefficient biomass cooking devices also has direct implications on household health. The study is therefore based on the premise that the use of improved cooking technology by rural households will directly lead to efficient use of fuelwood energy, reduce the quantity of fuelwood used, and subsequently reduce the pressure on natural forests. Furthermore, improved cook stove will contribute to welfare of households by reducing the burden of firewood collection, reduce indoor air pollution and associated health implications.

2. Constitution of the Project Team

The project commenced in February 2017 with the constitution of the Project Team. The team consists of experienced senior researchers and postgraduate students with backgrounds in Forest Economics, Biodiversity Conservation, Agricultural Economics, Agricultural Extension, and Statistic.

Series of meeting were organized after the team was brought together to clearly explain the project goal, tasks to undertake and timelines. The first task given to the entire team members were to search and read extensively on the lessons and challenges of previous and existing projects on efficient and improved cook stoves in developing countries. The team met on different occasions to interact and discuss information obtained from literature and those that could be of assistance in implementing the present project were filtered out.

3. Interactive and Discussion Sessions by the Project Team

3.1. Interactive and Discussion Sessions by the Project Team
As earlier stated, series of interactive sessions were organized by the project team to discuss and share lessons from the previous projects read in literature. In addition to the literature review, videos on actual implementation and production of efficient cook stoves were downloaded from YouTube and watched together by the project team. Specifically, success stories and challenges encountered in the previous projects on introduction and adoption of efficient cook stoves in developing countries was the focus of the discussions and interactions. The information gathered and shared greatly assisted the project team in understanding some factors affecting introduction, adoption, and utilization of improved and efficient cook stoves in rural communities. Most importantly, lessons obtained from previous projects are to guide the project team on what to do and avoid in the introduction of the intended efficient cook stoves as a means of protecting natural forests.

The interaction sessions also included criteria for selection of project locations, design of the project tool, and logistics for selection of the targeted respondents.

3.2. *Discoveries from Literatures Search on Fuelwood Use and Efficient Cook stoves*

The team accepts that findings from previous projects will significantly contribute to the success of the present project. Hence, a joint decision was made to compile vital discoveries that could guide strategy for the project implementation. On this note, the team identified the following vital points in literature to guide the cook stove project implementation:

- Around the world, over two billion people rely on burning solid fuels (wood, dung, crop residue, garbage, or coal) for cooking, heating, and lighting (IEA, 2010).

- Generally, fuelwood is used in open fires, which, apart from having low energy efficiency, are a source of indoor air pollution with serious health effects, particularly on women and small children (Barnes *et al.*, 1994; Bates *et al.*, 2005; Saatkamp *et al.*, 2000; Smith *et al.*, 2000).

- Inefficient cook stoves cause air pollution resulting in premature deaths of nearly 600,000 in Africa each year, in addition to other associated implications on environment and biodiversity loss (WEO, 2015).

- "The main criterion for judging the relative success of diffusion interventions by an intervening or change agency is usually the rate of adoption of an innovation, which is the number of people or families acquiring an innovation (Rogers, 2003)". However, the degree of use of innovation is an important but often overlooked component in determining the extent of diffusion of an innovation (Pine *et al.*, 2010).

- Adoption and utilization rates of cook stoves still remain low in developing countries (Manibog, 1984; Rosa *et al.*, 2014; Shankar *et al.*, 2014).

- The low durability of previous improved cook stove designs has resulted in abandonment by some rural communities (World Bank, 2011).

- Existing research on improved cook stoves has mainly focused on technology development or measuring the environmental effects of burning solid fuels (Johnson *et al.*, 2009; Smith *et al.*, 2000).

- Economic barriers to purchasing and maintaining non-traditional stoves have inhibited adoption (Makame, 2007; Gordon, 2007; Edelstein *et al.*, 2008; Bhattari and Risal, 2007; Bazilian, 2011; Person, 2012).

- In some situations where the efficient stoves were freely given or through subsidies, users do not adopt or sustain exclusive use (Rosa *et al.*, 2014; Troncoso *et al.*, 2007; Romieu *et al.*, 2009). This means that there are other non-economic factors that influence stove adoption and sustain use (El Tayeb Muneer and Mukhtar Mohamed el, 2003; Ruiz- Mercado *et al.*, 2011).

- In the cook stove design and production, there has been overlooked of social

aspects of rural life such as traditional cooking practices, and understanding of the implication of these practices on adoption and utilization (Manibog, 1984; Ruiz-Mercado *et al.*, 2011; Barnes, 2014; Bielecki and Wigenback, 2014).

From the foregoing, it is pertinent to understand the socio-economic factors in the rural area that may affect adoption and utilization of efficient cook stove prior to introduction. Also, the livelihoods of the rural communities needed to be properly studied and understood. Most importantly, the design and production of the efficient cook stoves should be adapted to available rural resources and local setting.

3.3. *Project Location and Respondents*

The project targeted households located in the savanna zone of Kwara State where charcoal production and firewood collection by households is highly predominant. Information obtained was that women are responsible for cooking and collection of firewood in the study area. Hence, the study is focused on women as the main respondents, and they will be sampled in households. However, the location and the targeted respondents will be confirmed through a reconnaissance survey.

3.4. *Design of Tool for Data Collection*

The tool adopted for data collection is a structured questionnaire. With the available information in the literature, a draft of the questionnaire was produced. The questionnaire focused on:

- Demographic information of the respondents;
- Cooking dynamics, and tasks in household;
- Fuel procurement (including expenditure, time use, drudgery, and safety);
- Alternative clean energy;
- Income earned through use of current cook stove;
- Satisfaction with their current cook stoves;
- Cooking safety and health; and
- Consent to participation in Awareness Campaign Forum.

4. Next Step of the Project

A date was fixed to carry out reconnaissance survey to local communities that met all the identified selection criteria. Focus was on communities located in the savanna zone of Kwara State where charcoal production and firewood collection for household fuelwood is highly predominant. Plan was to purposively select four communities for the survey and project implementation.

At the end of the interactive sessions, all the members of the project team testified that these have significantly increased the level of understanding of the project and subsequent implementation in the field. This will go a long way in achieving the project goal.

Interactive Sessions among the Project Team on Literature Review and Watching of Videos on Previous Cook stoves Projects

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