RCDC

Gender and Livelihoods Impacts of Clean Cookstoves in South Asia (Odisha)

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(A part of study 'Gender and Livelihoods Impacts of Clean Cookstovees in South Asia'

(Year 2014)

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List of Acronyms

COPD	Chronic Obstructive Pulmonary Disease
FED	Fuel Efficient Device
FGD	Focussed Group Discussion
GV	Gram Vikash
HH	House Hold
ICS	Improved Cook Stove
IMMT	Institute for Minerals and Materials Technology
LAMP	An grassroots NGO
MIT	Michigan Institute of Technology
MNES	Ministry of Non-Conventional Energy Sources
MNRE	Ministry of New and Renewable Energy
NGO	Non Government Organisation
NPIC	National Programme on Improved Stove
OFSDP	Odisha Forest Sector Development Programme
OREDA	Odisha Renewable Energy Development Agency
OTELP	Odisha Tribal Empowerment and Livelihoods
RCDC	Regional Centre for Development Cooperation
SHG	Self Help Group
SPV	Special Purpose Vehicle
TERI	The Energy and Resource Institute
VSS	Van Suraksha Samiti
WHO	World Health Organisation
WORLP	Western Odisha Rural Livelihoods Programme

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1. INTRODUCTION

1.1 Background

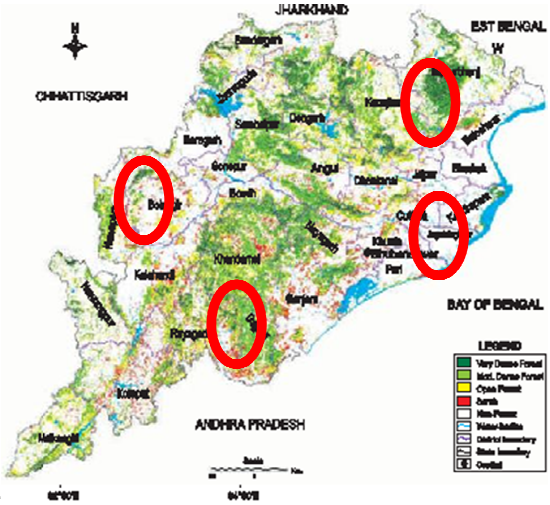
Since the time human learnt that food when cooked becomes tastier and easy for the body, cooking has become integral and indispensable. As the human learnt more and more the use of fire in general and cooking in particular, the burden of cooking has fallen on women. Many call it a division of labour and natural role play by women in a family centric societal structure. Stoves are integral to cooking. Many societies adopt different kinds of stoves. All traditional stoves have gradually evolved over the time based on availability of fuel and other materials at local levels. Designs of the stoves are also influenced by food taste, family size and other societal requirements.

Society is not static. It always changes which also influences ways and style of cooking and food habits. That in turn is influenced by many other factors, including availability of fuel, economic capacity, safety, convenience etc. In the recent years, improved cook stoves have been in more focus of players in energy sector. A need for the same has also been felt. Changes in perception, technological innovations and deteriorating fuel sources have lent fuel to such requirement. Many studies, research and developments are underway around the world to improve efficiency of the cook stoves to reduce burden of the person cooking, to reduce cost of cooking and to reduce burden on fuel sources. Now-a-days cooking methods and stoves used is considered as a very important socio-economic indicator. Cooking, especially cooking through traditional means is being growingly considered as hazardous.

There is another important aspect of the cook stoves. As women largely shoulder majority of the burden they naturally become exposed to allied hazards while cooking. They also additionally get exposed to the hazards of collecting fuel. Although most research and development do consider all the above parameters, still, acceptance and adaptation of improved cook stoves have not been very encouraging. Many feel that a major impediments for acceptance of some stunning innovations in cook stoves lie in a lack of proper design that cater to the local and micro specific needs, availability at the local level and/or cost of the technology. That is the immense challenge for the scientists, innovators, marketers, facilitators and the community members. Early

Forest Cover

District	Coverage(%)
Balangir	14.2
Gajapati	57.5
Kendrapada	7.3
Mayurbhanj	38.3
Odisha State	**31.4**

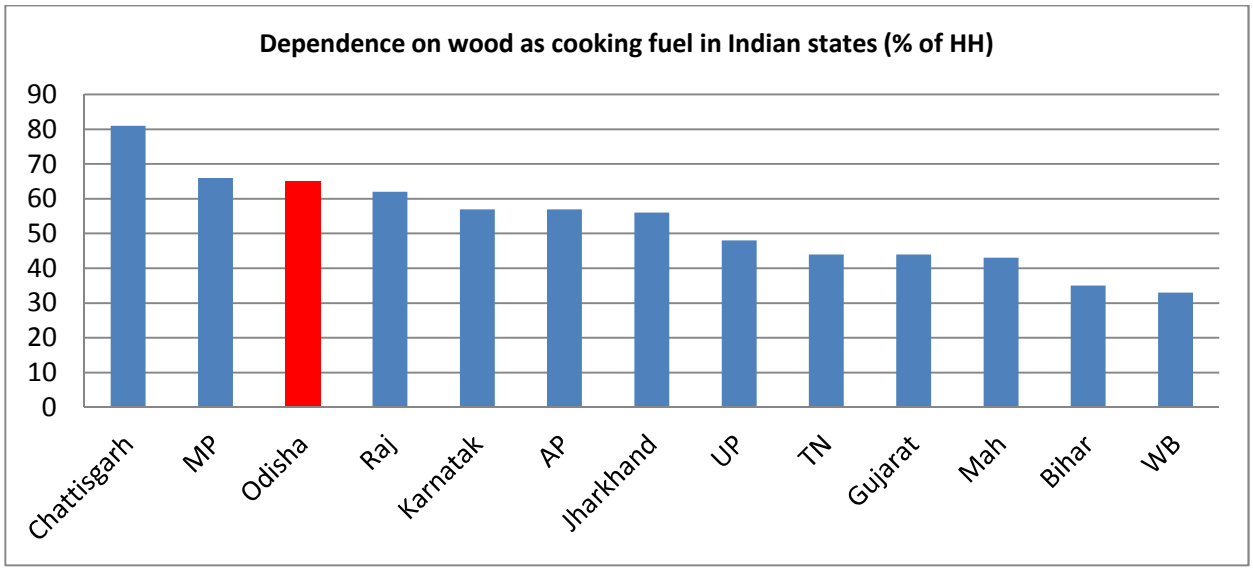


Forest cover map of Odisha
(Source: India State of Forest Report, 2011)

solution to these problems is highly required because good solutions will have multi-faceted impacts on energy, convenience, pollution and prosperity indicators.

Odisha is the poorest state of India. It bears the ignominy of having the highest percentage of rural poverty. Compared to many other states Odisha also some quality forest coverage. Odisha has forest cover in 48,903 sq km area according to the State of Forest Report, 2011. This is about 31.41 per cent of the state's total area. As per the 2001 Census survey, Odisha has 29,032 forest /forest fringe villages. This is 60.7 percent of total villages in the state of Odisha. Being close to the forest, and absence other easier source most of the rural households depend on wood as the primary fuel. Similarly, Odisha has two major coal mining areas. So in large areas coal is also used as fuel. However in many areas of the state wood is a scarce commodity and coal is an illegal collection. Thus many households depend on agriculture residue, dried cow dung cakes and small farm residues etc to fuel their stoves.

As per enumeration of the 2011 Census, Odisha is among the most fuel-wood dependent state. About 65 percent of households of the state depend on fuelwood for their cooking requirements. This is third highest among major Indian states. Only Madhyapradesh and Chattishgarh have higher dependence on fuel wood than Odisha.



Penetration of modern cooking mediums like LPG gas, electric induction etc have remained out of bound for most households. Government and many non-government actors have made efforts to induce people's interest in 'gobar/bio gas' plants, improved stoves, and/or other renewable cooking mediums like solar cook stoves etc. through incentives and subsidies.

In such circumstances, an invigorating thrust on providing people with a variety of cookstove models, marketing network, and competitive pricing has to be priority of government, non-government organisations, companies and other players.

RCDC was a partner of Practical Action Consulting Limited to assess the cook stove situation in Odisha and try to find out the issues therein the cook stove chain.

1.2 Objective of the study

The main objective of this study is to analyze the impacts of clean cooking solutions on women in Odisha State in India. Specific objectives include:

- Analyze and document, through systematic surveys, the impacts of clean cook stoves on women users and their families with respect to overall quality of life, livelihood enhancement, and gender equity
- Carry out market assessments of cook stoves, including market chain actors, supporting services and enabling environment (using Practical Action's Participatory Market Mapping approach), including an analysis of the impacts of women entrepreneurs involvement in the cook stove value chain in terms of:
- On-the-ground assessment of women's active roles in various areas of the improved cook stoves value chain from material collection, production, marketing and distribution.
- Women's contribution in the cook stoves value chain with respect to women's specific skills in marketing and social mobilization; the resultant influence on adoption rates, sustained use and project effectiveness.
- Impact of women's economic activity in cook stoves business on their quality of life, livelihood enhancement, and their positions in their households and society.
- Opportunities costs and benefits to the women entrepreneurs in cookstove value chain.
- Collect, compile and analyze best practices around the creation of livelihood opportunities for women and how to overcome key barriers on women's involvement in a range of areas.
- Understand the complete process of cook stoves adoption and use from a gender perspective, in terms of women's preferences in stove design, their gender roles (women are generally in charge of using the stoves, and fuel collection, while men often control the family finances and make household decisions, particularly on whether or not to purchase an improved cook stove), effectiveness of cookstove technology information channels in reaching women, implications on efficient and low emissions cookstove use and maintenance.
- Generation and dissemination of recommendations for innovative distribution models that help reach the last mile.
- In the context of this study, clean cooking solutions focus primarily on improved biomass-based cookstoves, but also analyse, through its partners, networks and in-depth literature review, the sale and use of other cooking solutions such as kerosene and LPG. The study aims to generate policy recommendations tailored to improve influencing performance in both national and global clean stove access processes.

1.3 Rational of study

There have been several important reasons for this study to be conducted. Firstly, the traditional cookstoves have become a burden on women, who have been socially conditioned to see it as their primary duty, making it a habit for them[1]. Secondly, the are many allied risks attached to the cooking scenario within a household such as- health issues, environmental concerns, risk of burning, increased cost, economic

[1] Revati Dhoble and Sreymsa Bairiganjan (2009); "Cooking practices and cook stoves field insights: A Pilot study with User Experience with Traditional and Improved Cookstoves", Institute for Financial Management and Research, Centre for Development Finance, Chennai

insecurity as well as climate change impact causing deforestation[2]. Thirdly, poor ventilation in the households increases particulate pollution causing severe damage to the family members. This study in a state such as Odisha becomes crucial for the everyday hazards faced by the rural communities, especially women.

Further this study will enhance our understanding and conditions of the rural households in Odisha which suffer from the use of cookstoves which hamper health and economic conditions, mainly affecting women and children.

1.4 Limitation of the study

The study is limited to studying wood fuelled improved cook stove models which are in use or have been used by the end users; the issues there in; and stake holders in their value chain. The survey was further limited to study of five models of cook stoves. The study included household level survey of 200 households in four widely separated rural regions of Odisha and two urban centres of the state. Yet, it cannot be said that the sample was representative of the whole state because of (a) relatively small sample size; and (b) huge diversity in ethnic, topographic, geographic coverage and societal functioning. Cook stoves related indicators differ not just from models to models, but also from individual to individual. Thus extrapolating the information from survey of the sample households may not be adequate to represent the whole state. The survey was conducted is a very small time span. Thus observation of the behavior in different seasons may not have been appropriately mirrored in the answers because of memory decay factors. While these were the limiting factors of the survey, the study also had major limitations on review of literatures. There is a limited research on improved stove in the study districts as well as in Odisha. As a result, getting secondary information for the present study has been quite difficult. There have not been a lot of media coverage either of the issues.

[2] Pandey, D. (2001). Fuelwood Studies in India – Myth and Reality. In Fuelwood – Crisis or Balance? (Chapter 5) Proceedings from workshop on the Sida-supported CIFOR (Centre for International forestry Research) project "Fuelwood – Crisis or Balance?"

2. LITERATURE REVIEW

Not many quality and comprehensive research have been done in this field in Odisha. Still a lot of books, reports, articles, etc relating to cook stove studies in the state were accessed from different sources like resource organisations, NGOs, internet, etc. This gave an opportunity to identify the study areas, the existing stove use system and also to identify the grey areas and decide on the methodology of the study. Secondary information was collected from various sources like internet, NGOs, Forest department's OFSD programme (OFSDP), TERI, Odisha government's OTEL programme (OTELP), OREDA etc and reviewed to have an understanding.

2.1 Household Energy and Stoves Scenario

Self sufficiency on a sustainable basis is important with regard to consumption of household energy in Odisha. Economic development has directly impacted the energy consumption increasing it manifold[3]. This calls for a need to shift from the over-utilization of traditional sources of energy to environmental friendly sources saving resources while increasing energy efficiency. The increasing dependence on fossil fuels such as coal, petroleum and natural gas for electricity has created an imbalance in the ecosystem. Therefore one needs to look for viable alternatives such as: 1. Conservation of energy and 2. Environmental friendly renewable sources of energy[4].

A developing country such as India and a growing economy of Odisha requires more energy but not at the cost of sacrificing health, environment and the natural resources. Not only has the urban population become more dependent on these resources but also the rural population which requires a suitable alternative. Technology has paved way for newer alternatives such as: biogas plants, smokeless stoves, solar water heaters, solar cookers, street lights, pumps, wind electric generators, biomass gasifies and small hydro-electric generators. Renewable sources cover 9% of the power installed in India, which can be further used for protecting the environment and reducing pollution[5]. The Energy Conservation Act of 2001 provides institutional and regulatory measures at both the centre and state level to promote energy efficiency.

Over 2 billion people in the developing world use biomass as the primary source of household energy for cooking activities, agriculture, boiling water and heating[6]. The biomass used on many occasions is extracted from the local forests and wastelands causing heavy deforestation as well as impacts on the health of people during the burning of the biomass. Ecological conservation through the use of traditional fuel stoves unlike the technologically equipped cooking techniques which produce harmful emissions is imperative. Using technology is important but it needs to be carefully done in order to preserve the surroundings.

[3] Link: http://www.odisha.gov.in/p%26c/Download/2006-07/eco-11%20C%20A.pdf. Accessed on 4th December 2013
[4] Link:http://www.odisha.gov.in/portal/LIWPL/event_archive/Events_Archives/131World_Energy_Saving_Week.pdf. Accessed on 24th November 2013
[5] Ibid.
[6] Link: http://mageep.wustl.edu/RESEARCH/Short%20Project%20Summary%20-%20FES-MAGEEP%20Cookstive%20Study.pdf. Accessed on 27th November 2013

In Odisha, the cookstoves situation has been fairly deteriorating as it is home to the poorest people in India where 40% of the population lives below the poverty line[7]. The reliance on traditional fuels is 90% higher in rural areas such as Odisha. Few studies conducted in the state concerning the cookstoves situation have highlighted the detrimental impact it has had on households, particularly women who are exposed to high levels of smoke. The study led by MIT Center for Energy and Environmental Policy Research in collaboration with other organizations in 2012, confirms this by stating that almost 27% of women had 10ppm reading or 10 parts-per-million (6-9ppm reading indicates smoke in the lungs, while 10ppm or more accounts for high levels of smoke) indicating the level of smoke in the lungs which would equal smoking 10 cigarettes in a day.

The illnesses reported during the study were extremely high among women. Almost 90% complained of some ailment in a period of 30 days highlighting the severe impact the cookstoves and the smoke were having on them. Baseline surveys also showed poor health among children who too spent a significant amount of time at home.

2.2 Key players of cookstove market system

The overall market size in India is 235 million households, more than the total market sizes of many other developing countries combined. The easiest consumer segment to target would likely be the low and mid-high solid income solid fuel purchasers – a market of 33 million (or 14% of the overall market). A larger and more challenging market would be rural solid fuel collectors who could benefit most from cookstoves, and make up 45% of the market – however, given that they don't have a history of paying for fuel, it would be harder to break into. However, a key challenge for all segments will be to ensure that the cookstove is affordable enough for the end-consumer (either by bringing down the price point or by enhancing the availability of consumer financing options)[8].

The Key players of Cookstove Market System in Odisha are as follows:

- Government department/ agency/organisation
- Private Companies
- NGO
- Communities

Government department/ agency/organisation:

In odisha government owned agency/organisation like OREDA, MNRE, OTELP, OFSDP, etc as a key players of cookstove marketing system. MNRE has been continuously engaged in various new improved cookstoves initiative that aims to facilitate the development on the next-generation of bio-mass stoves for household cooking and their widespread development[9].

Unicus Engineering, Bhubaneswar already sold around 1,00,000 number of Harsh Multifuel family type stove through OREDA during the period of 1999-2002 under NPIC programme of Government of India. 4000 number of Harsh community stove through OREDA under MNES programme during the year 1999. Besides

[7] Rema Hanna, Esther Duflo, Michael Greenstone (2012); "Up in Smoke: The Influene of Household Behavior on the Long-Run Impact of Improved Cooking Stoves"
[8] India Cookstoves and Fuel Market Assessment, Global Alliance for Clean Cookstoves.
[9] http://www.inspirenetwork.org/mnre/New_India_cookstove.htm

OREDA, supplied huge quantity of above stove (around 30000 number) to forest department, NGOs and individual customers, etc. They are able to produce 5000 units or family type stove every month[10]. OFSDP Project has some financial provision for per household for construction and maintenance of fuel efficient devices such as fuel efficient stove to reduce fuel wood consumption[11].

Private Companies:

In India, the market is dominated by two large players, Envirofit and Oorja, both have been financed with the aim of achieving sales on a large scale. Their common objective is to sell millions. In comparison, Prakti is relatively new to the market and has a laboratory oriented approach to product development. Prakti has not adopted any expensive communication strategies nor developed a national brand. The team's experience and values have driven the company towards a local based model working with different manufacturers and supply chains in the hope of achieving scale[12].

Establishing a supply chain to reach the end consumers can be a long process. The institutions and companies involved need employees with knowledge of market developments, installation and maintenance processes. This can be difficult and expensive to find. Many developers are now sourcing alternative methods for distribution such as Prakti in India which uses successful chains already established by other institutions. Prakti is currently working with SELCO India who is in turn using a supply chain already established by their solar products[13].

Most enterprises that are engaged in the production and distribution of energy efficient cook stoves have been in business for only the last 10–15 years. Of these, very few players cater to small commercial establishments. TERI, for instance, has developed the clean combustion cook stove to meet domestic. Similarly, Prakti Design launched the Orka stove to meet cooking requirements. These cook stoves are fuel agnostic and are designed to operate with various types of biomass fuels such as wood, charcoal[14]. Currently, companies engaged in manufacturing energy efficient cook stoves use existing distribution channels to access potential markets as this does not require significant investment. They sell their products through multi-product rural distributors and retailers, who also sell other energy products such as LPG stoves and fuel. In addition, cook stove manufacturer's partner with microfinance institutions (MFIs) and NGOs to use their local networks[15]. One of the key players in cook stove industry is Envirofit India Pvt. Ltd.—founded by Shell Foundation, and Envirofit International, a US-based not-for-profit, sells energy efficient cook stoves to poor consumers. Having started operations in January 2008, Envirofit India has so far sold 50,000 stoves in india.[16] The cook stoves are available in 5 models with their prices ranging from INR 500 (~ US$ 9) to INR 2,000 (~US$ 35).

[10] http://unicusindia.net/aboutus.html
[11] http://www.ofsdp.org/Publication/Guidelines_Ecodevelopment.pdf
[12] Cookstoves and Markets: Experiences, Successes and Opportunities, GVEP Interbational.
[13] Cookstoves and Markets: Experiences, Successes and Opportunities, GVEP Interbational.

[14] http://www.villgro.org/report/Sustaintech_Nov26.pdf
[15] Case Study Series, Sustaintech India Private Limited, Villgro Innovatin Foundation.
[16] "Rural India gets a lifesaving cookstove". *Livemint.com.*22 April 2009.
<http://www.livemint.com/2009/04/21190721/Rural-India-gets-a-lifesaving.html>

NGO:

A local NGO, Gram Vikas, obtained funding to subsidize the construction of 15,000 improved stoves in rural Odisha. The improved stoves ("chulas" in Hindi) were developed and tested by a local NGO, the Appropriate Rural Technology Institute. The chulas are made of mud, and have two pots and an enclosed cooking flame, which in lab settings decreased cooking times and fuel use; a chimney directs smoke out of the room. Gram Vikas subsidized the stove cost by contributing the materials, the design, and the mason, but households were responsible for providing the mud for the base, labor, and a payment of Rs. 30 (about US$0.75) used to pay the person who assisted in building and maintaining the stoves. The total cost of the stove was approximately $12.50. In addition to building the stoves, Gram Vikas provided information on and encouraged use of the new stoves. For example, training sessions on proper use and maintenance were held during the construction. Good users were also identified within each village and hired to help promote the use of the stoves and alert Gram Vikas if any stove was in need of repair[17].

Communities:

An understanding of the past efforts in cook stove dissemination within India provides valuable learning opportunities for those involved in the design of a suitable market driven strategy. In many cases the 'end user' or 'beneficiary' is familiar through many development oriented programmes, with the process of installing domestic wood burning stoves, the type of which are constructed by trained masons from locally available materials. However these stoves are prone to problems, masons are apt to changing the stove design and omit key performance indices such as fuel efficiency and indoor air quality, characteristics central to the idea of an improved stove. This resulted in large scale rejection by users of what was essentially a cheap but badly constructed stove. Rejection of the stoves had no direct financial implications for the consumer, as they had either received the goods free or at a nominal cost. If the consumer had purchased the stove themselves at full price, one can assume that they would have demanded performance, warranty and other after sales services. In short, the lack of personal investment in the stoves due to the subsidies available created profound issues of indifference on the part of the user in terms of valuing and maintaining their stoves[18]. In a market driven approach the reasons for non-acceptance of an improved stove would therefore be totally at variance with the rejection of the highly subsidised or public sector driven models. For a stove to be sold through market mechanisms i.e. supply and demand, the stove would need to meet the needs of the customer, be aspirational and affordable. The supplier would also need to be a delivery mechanism in place with the scope to reach the majority of customers, who live in rural areas.

2.3 Gender, Livelihood and Health Impact of Stoves

The subjugation and oppression of women stems from the economic situation, making the men more dominating. Cooking stoves become an important factor in the upliftment of the situation of women who mainly contribute in the household. Add time spent by women in the HH. Being directly involved in cooking and other household activities, these stoves can make a significant impact on their lives. Women have been pro-active in demanding these smokeless stoves which not only have a positive impact on their health but

[17] http://www.povertyactionlab.org/evaluation/cooking-stoves-indoor-air-pollution-and-respiratory-health-india
[18] Cookstoves and Markets: Experiences, Successes and Opportunities, GVEP Interbational.

also help them economically[19]. But women's perspectives have not been usually given priority or ignored by the rest of the family members because of their social status[20].

The biomass fuels give rise to indoor air pollution and the traditional cooking stoves too cause a similar situation leading to respiratory and serious health concerns. As noted by the World Health Organization (WHO) in 2002, the exposure to indoor air pollutants is a major risk for Chronic Obstructive Pulmonary Disease (COPD) in adults and acute lower respiratory infections (ARI) among young children. The stoves which are usually found inside the houses even in the rural areas have little or no ventilation[21]. The black smoke from the stoves stains the inner walls of the houses clearly hinting at the high levels of pollutants the household member's intake or lives in. Since women are more active in the private arena or the household, the risks are much higher for them causing more difficulties performing these basic physical activities.

The poorer areas of Odisha use traditional solid fuels such as firewood, cow-dung, crop residue because of their economical conditions. The burning of this firewood indoors causes health hazards affecting their future as well as their livelihood. According to a survey conducted by MIT in Odisha, about one-third of all adults and half of the children experienced symptoms of respiratory illness in Ganjam, with 10% of adults and 20% of children suffered with severe cough[22].

The correlation between traditional stoves and respiratory illness suggests a serious need for interventions such as smokeless stoves which can protect the health of people as well as the environment.

Researchers Revati Dhoble and Sreymsa Bairiganjan (2009) undertook a study on cooking practices and cook stoves field insights which was published by Institute for Financial Management and Research- Centre for Development Finance, and found that in Odisha tribal household could not afford multiple stoves and were still using the traditional home made stoves for cooking. The cook stoves are usually built outside the house where the smoke is directly let out into the atmosphere without bothering the women who are cooking. Fisherman's household in a coastal village in Odisha, where designs were drawn around the stove during festivities. For major decision relating to stove like procurement of new stoves, decisions are taken by the male earning member of the family.

Rema Hanna, Esther Duflo, Michael Greenstone (2012)[23] revealed that in rural Odisha, households failed to use the improve stove regularly or appropriately, did not make the necessary investments to maintain them properly, and usage rates ultimately decline over time. On the benefits of the improved stove that laboratory tests showed to reduce indoor air pollution and require less fuel but study found that meaningful reduction in smoke inhalation in the first year, there is no effect over longer time horizons. It is also found that there is no evidence of improvements in lung functioning or health and there is no change in fuel consumption (and presumably greenhouse gas emissions). The difference between the laboratory and field findings appear to result from households' revealed low valuation of the stoves.

[19] Link: http://practicalaction.org/docs/energy/docs48/bp48_pp23-26.pdf. Accessed on 2nd November 2013
[20] Esther Duflo, Michael Greenstone and Rema Hanna, « Indoor air pollution, health and economic well-being », S.A.P.I.EN.S [Online], 1.1 | 2008, Online since 19 December 2008, Connection on 11 October 2012.
[21] Link: http://web.mit.edu/ceepr/www/publications/reprints/Reprint_205_WC.pdf. Accessed on 5th November 2013
[22] Link: http://web.mit.edu/ceepr/www/publications/reprints/Reprint_205_WC.pdf. Accessed on 5th December 2013
23 Rema Hanna, Harvard University, NBER, and J-PAL, Esther Duflo, MIT, NBER, and J-PAL, Michael Greenstone, MIT, NBER and J-PAL (2012). Up in Smoke: The Influence of Household Behavior on the Long-Run Impact of Improved Cooking Stoves. MIT Center for Energy and Environmental Policy Research.

In 2008, Gram Vikas and the Centre for Microfinance were undertaken a study to analyze the impact on health of stove users. Initial findings show that women who have the clean stoves are less likely to have high CO readings than are women who do not—and the difference is statistically significant.

2.4 Women involvement in the cookstove market value chain

While women are disproportionately impacted by the negative impacts of cooking on open fires and traditional cookstoves, they play a crucial role in the adoption and use of clean cooking solutions because of their responsibilities as cooks and managers of their households. Women can play a unique role within the cookstove and fuel value chains, as they often excel in entrepreneurial activities and can leverage their existing networks for distribution, marketing, and sales[24]. One cannot design clean cookstove and fuels solutions without the full participation and input of women. It is important to identify gender and empowerment activities that are required to scale up the clean cookstove and fuel markets, and ensure that women are economically empowered through these emerging markets[25].

To ensure successful adoption of clean cookstoves and fuels, training on the operation and maintenance of clean cookstoves is critical. Women can often play a central role in addressing these demand-side challenges, as they often excel in entrepreneurial activities and can be pivotal in the creation of distribution and repair networks[26].

2.5 Key barriers on women's involvement in cook-stove market

A lot of barriers bar women from venturing into the cookstove market system. Some of them are listed below:

- Rural community which is largely a close society.
- Confined to household chores: The society is patriarchal in nature. Women are mostly confined to the household level work.
- Household burden: Burden of nurturing children, looking after the family members and other household works like cooking, cleaning, washing and livestock rearing etc takes most of the woman's time. She gets very less opportunity for other works. If at all she gets then that further adds to her burden in most cases.
- Poverty: Poverty limits the household's overall investment/entrepreneurship scope. That gets further reflected in women's investment decisions.

- Ignorance of cook stove business: Not many women are aware about cook stove options or their market. They are very less informed about the harmful affects of the traditional cookstoves and/or better impacts of improved cook stoves. Further, they have very limited exposure to better cook stove facilities. Thus, they set a very low benchmark for themselves.

24 Esther Duflo, Michael Greenstone and Rema Hanna, « Indoor air pollution, health and economic well-being », S.A.P.I.EN.S [Online], 1.1 | 2008, Online since 19 December 2008, Connection on 11 October 2012.

[25] Banerjee A. & E. Duflo (2007). The Economic Lives of the Poor. Journal of Economic Perspectives, 21(1): 141-167.

[26] Bruce N., R. Perez-Padilla & R. Albalak (2000). Indoor Air Pollution in Developing Countries: A Major Environmental and Public Health Challenge. Bulletin of the World Health Organization 78(9): 1078-92.

- Limited success of the ICSs: Many models of ICSs have been promoted or used by different communities or stakeholders. But they have not made major inroads. They have technical limitations, lesser adaptability, expensive and other limitations which hinder or adversely impacts promotion of the stoves.

2.6 Household Energy policies and Programmes, and Gender

Energy has been the buzz word these days. Both the Central and State governments have developed various schemes and policies on energy. However, the focus on energy has mostly be on energy production (like electricity), and their distribution. Not much effort has gone to energy security, particularly energy security or cooking options for the vulnerable communities. The government has, however, some major programmes on improved cook stoves. This initiative mostly got momentum in the 1980s. A lot of thrust was give on bio-gas and improved cook stoves mostly through incentivised and subsidised schemes. Institutions like agriculture universities, and branches of department of science and technology started research and innovations in the field. Later private players also came to the action.

Numbers of Renewable Energy Schemes (RES) have been formulated by the Ministry of Non-Conventional Energy Sources (MNES), Government of India for saving energy. Odisha Renewable Energy Development Agency (OREDA) is planning, executing, coordinating, monitoring and evaluating various RES programmes in the State.

Under Solar Photovoltaic Systems (SPV) electricity is provided to unelectrified areas of the State through SPV Home Lighting Systems, SPV Street Lighting Systems, SPV Lanterns, and SPV Pumps etc. Under National Project on Biogas Development (NPBD) (Family Type Biogas Plants) a large number of Biogas Plants (Family Type) are being installed in the State[27].

In 2009, the Ministry of New and Renewable Energy (MNRE) announced the National Biomass Cook-stoves Initiative (NBCI)[28]. The primary aim was to enhance "the availability of clean and efficient energy for the energy deficient and poorer sections of the country". The NBCI is envisaged to be structured differently from the earlier National Programme on Improved Stoves (NPIC); and aims to build on the several successes of that program while also drawing lessons from the experience gained from its implementation. This initiative includes a series of pilot scale projects using several commercially available and better cook stoves and different grades of process biomass fuel. This will help in exploring deployment of a range of technologies, biomass processing and delivery models leveraging public-private partnerships.

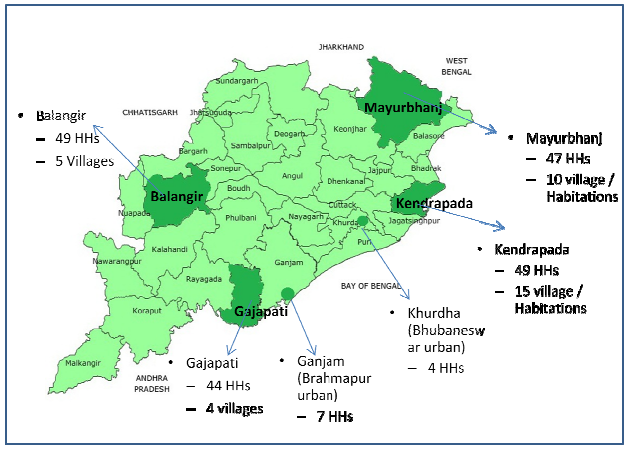
Odisha state has agreed to work towards the development of an inclusive state renewable energy policy that establishes a long term target of renewable energy, aligns well with National Action Plan of Climate Change (NAPCC) and connects with efforts on rural electrification[29]. The draft state climate change action plan also talks of energy policy at the grassroots and household level.

[27] http://www.odisha.gov.in/portal/LIWPL/event_archive/Events_Archives/131World_Energy_Saving_Week.pdf
[28] http://www.mnre.gov.in/schemes/decentralized-systems/national-biomass-cookstoves-initiative/
[29] http://www.climateparl.net/cp/319

3. Study Methodology

3.1 Sampling, Study Area and Data

The sample size of household survey was total 200 HHs. The HHs covered six districts out of 30 districts of the state. Thus one-fifth of the districts in Odisha, spread over four different regions of the Odisha state were covered.



Of the 200HHs, 189 were rural households and 11 were urban households. There was a careful consideration to also include some urban households for the survey. However numbers were not fixed. The urban survey was conducted after the survey in rural areas. Since, the urban settlements using wood fuelled cook stoves are similar in nature, we believed that 11 samples will be quite representative.

The first tier of sampling was involved in identification of districts for the survey. The considerations were many: such as, use of improved cook stoves, varieties of improved cook stoves, representation of various societies, style of living, geographic locations, ethnic diversities and other such aspects. From districts the next consideration to identify the villages having improved cook stove using households. RCDC used its NGO network to identify such areas and took help of such organisations to reach the areas. To identify households (representing different socio-economic status, stove use, fuel usage, cooking practices) within each village, the study used judgmental sampling[30], by transect walk and also focused group discussions.

Major parameters considered to find out a representative sample:

- Socio-economic-cultural-geographical representation
- Use of cook stoves (improved cook stoves/ traditional cook stoves)
- Use and availability of fuel types
- Fuel use pattern and cooking practices

Table 3.1.1 : HHs samples and their representation

Area	HHs surveyed (Nos)
Whole sample	200
Balangir district	49
Gajapati district	44
Kendrapada district	49
Mayurbhanj district	47
Bhubaneswar City (Khordha district)	4
Brahmapur City (Ganjam district)	7

A careful consideration was to limit sample size at the village level to a maximum of 10 households. This was intended to cover more than three villages in a district. Another careful consideration was to cover at least

[30] A sampling technique based on a researcher's decision as to which households will be suitable for the study given the limited time to conduct the study.

10 percent women headed households in the sample. This was to see how and whether women headed households differ, which is crucial for the understanding of the role of women and its impact on clean cookstoves. Gender, being the primary aspect of the study requires analysis of women headed households. Further, since this study aimed to find differential impacts of improved cook stoves vis-à-vis traditional cook stoves it had been decided to cover a total of 160 improved cook stove using households and along with them 40 households which are not using improved cook stoves, as a control group. The non-cookstoves using samples were also taken from the same settlements from where we took improved cook stoves using samples. Rather a careful consideration was taken to cover traditional cook stove using households who are neighbour of improved cook-stove using households because such a sample has larger potential to give a rationally comparable indicators. All urban samples were from the slums of two large cities of the state, i.e., Bhubaneswar and Brahmapur and it used purposive sampling technique. In this technique the researcher chooses the sample based on who they think would be appropriate for the study keeping the objective of the study in mind.

3.2. Data collection tools

The survey used secondary as well as primary information for the study. Secondary information largely comprised of study of literatures which included research literatures, promotion literatures, progress reports by facilitating agencies, government policies and guidelines, government orders etc.

For primary data collection the study used following tools:

- Household Survey of ICS using households and the non-ICS using HHs in the same locality.
- Case study
- Interview methods
- Focus Group Discussion
- Participant observation

The HHs survey questionnaire/interview schedule had been provided to RCDC by Practical Action Consulting Limited. Odia version of that questionnaire was used to facilitate faultless understanding of the queries/questions both by the respondents as well the surveyors

Qualitative survey technique was an important part of the survey. It involved interaction and focused discussions with users, non-users, and other stakeholders. To facilitate the process Practical Action Consulting Limited had provided checklists. Observation was a major tool used for the survey as well. This entailed 'participant observation' which is an appropriate data collection method for a qualitative research paradigm[31].

Content analysis of various policy papers, government recommendations, study reports, newspaper clippings and magazine articles on the subject in addition to the tools listed earlier has been undertaken to understand the cookstoves situation in Odisha. The overall reporting format was made available to us by the hosting organization. This was used to represent our evaluation and numerical tabulation of our findings in Odisha.

[31] Gans, Herbert, 'Participant observation in the era of "ethnography"', Journal of Contemporary Ethnography 28, No. 540, 1999, p. 545.
Goffman, Erving, 'On fieldwork', Journal of Contemporary Ethnography 18, No. 123, 1989, p. 125

3.3 Data analysis

The Practical Action Consulting Limited had prepared a data tabulation application which was developed on Microsoft Access format. The quantitative data were analysed largely with help of Microsoft Excel application. Once the data were collected from primary and secondary sources, the qualitative data were coded into different thematic categories according to the general responses received.

Inferences were taken from tools which captured qualitative data. They are largely represented through small case studies and photographs.

4. RESULT AND DISCUSSION

4 Characteristics of the Surveyed Households

4.1 Family size and composition

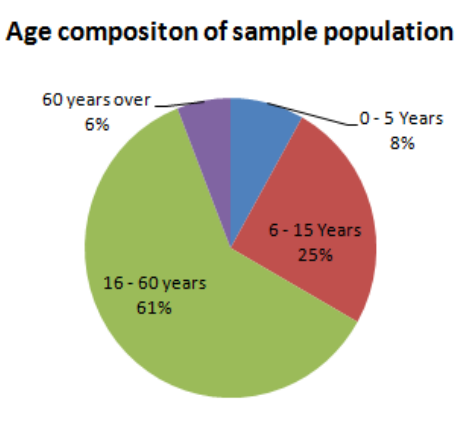
Most of the sample households covered in the study is traditional rural joint families. The average household size is 5. It was seen that the households not having ICS are larger in size. This probably indicates that the larger the size of the households, the poorer it is and limits its focus on improved cook stoves which is not one of their priorities.

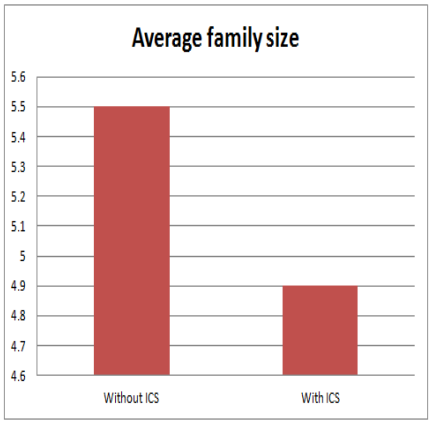
Most of the households are male-headed families. About 12.5 percent of the households surveyed are women headed. However, this figure does not exactly represent indicator of household status. This is because a conscious decision was adopted to cover at least 10 percent women headed households in the survey, to understand the difference in dynamic of this group, particularly on decision making and household cooking practices.

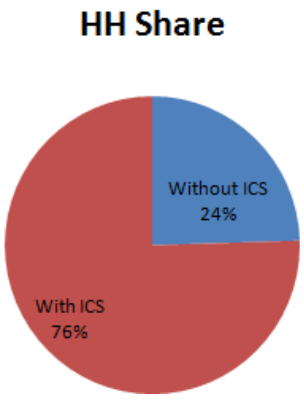
Most of the population of the surveyed households belong to 16-60 year age group. They constitute nearly 61 percent of the sample population. People in school going age group of 6-15 years constitute more than 25 percent and the next highest group. Children below the age group constitute 8 percent of the total sample population. Gender imbalance was not an issue among the samples.

Table 4.1.1: Composition of sample households

Description	Unit	Without ICS	With ICS	t-stat
Number of HHs	Nos.	49	151	200
Percentage of female headed HHs.	%	15	12	12.5
Total Family Size (Average family size)	Nos./HHs	5.5	4.9	5







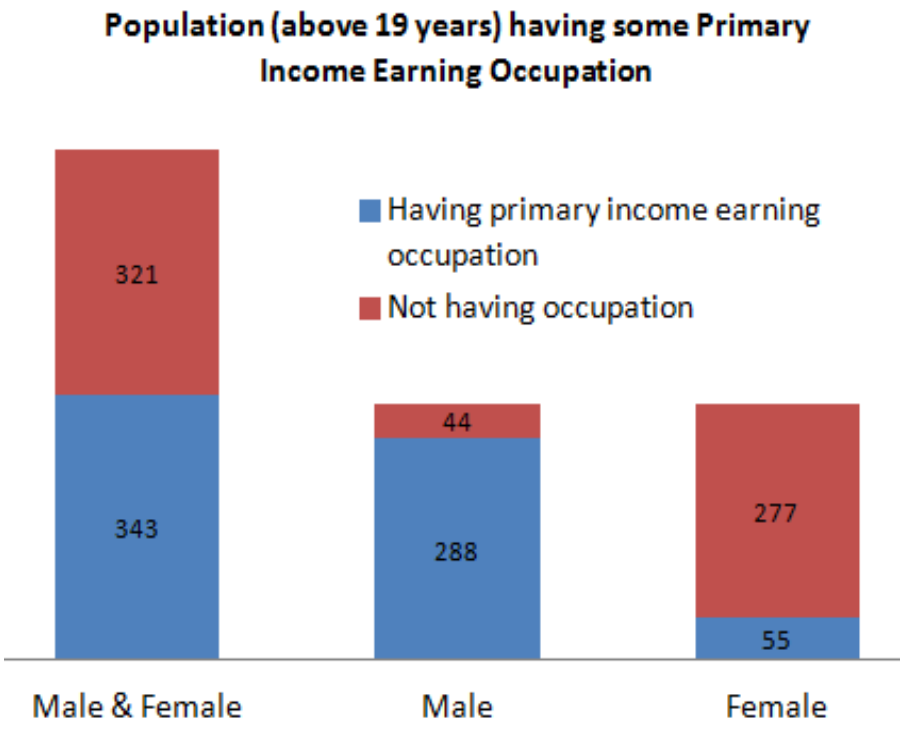
It shows that a significant portion of the sample population is in the productive age group while the next highest age group is that of the school going segment.

4.2 Occupation

Agriculture is the primary occupation of all the sample households, over 68% of all households. Daily wage constitute the next significant occupation. For ease of reporting we have clubbed occupation of non-timber based forest collection along with agriculture. (Refer to Table 4.2.2). The daily wage labour includes work such as -

About 25 percent of the surveyed households had more than one occupation. About 86 percent of those households have a agriculture-wage labor combination or primary occupation. Household level primary occupation gives an overall indication of agriculture and wage labour dependent occupation. Agriculture is largely of subsistence nature which will figure out in the later sections.

A look at individual occupation indicators further substantiates this. The surveyed households have 664 adult members. Male and female constitute exactly the same number. The following table gives an indication about their primary occupations.

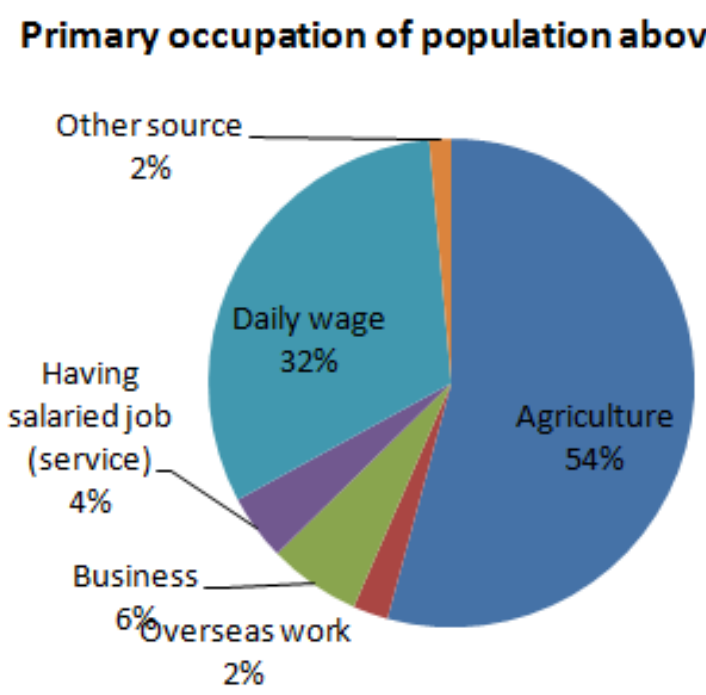


Out of a total of 664 adult members from surveyed households 334 members have some kind of income earning occupation as their primary source of income. There is a big disparity between male and female as far as income earning from primary occupation is concerned. While 288 male members earn income, only 54 female members have reported income earning source. This means that of the total members who reported income sources, as high as 84.2 percent are male members while female members constitute only 16.8 percent. These statistics help us make the assumption that women having no income have less purchasing power but greater role in determining the need for ICS, whereas women earning income have a higher say in the purchasing of ICS.

There is another very important aspect of primary occupation. The table above largely considers income earning occupation. House making, in strict sense, is not an income earning occupation. As high as 221 members, all female, reported house making as their primary work. But they also reported wage earning, supplementing in their family agriculture and income from *kenduleaf, mahua, fuel* collection etc as their secondary source of occupation. So although women give a lot of time for household chores which is very important and productive, but since such activity does not earn direct income in cash for the households their contribution to the households is ignored. This aspect of their engagement must be considered with a lot of weight. This simply means that work done outside the household is given more value. The women understand the need for ICS because of their engagement in the cooking activities.

Table 4.2.1: Primary occupation of adult members of 18 or above years (% in relation to adult members for total, male and female)							
Sl No	Indicator	Total		Male		Female	
		No	%	No	%	No	%
1	Agriculture	186	54.39	170	59.03	16	29.63
2	Overseas work	8	2.34	8	2.78	0	0.00
3	Business/trade	21	6.14	20	6.94	1	1.85
4	Having salaried job (service)	15	4.39	11	3.82	4	7.41
5	Daily wage	108	31.58	77	26.74	31	57.41
6	Other sources	5	1.17	3	0.69	2	3.70
7	House-making (Housewife)	221	33.28	0	0	221	66.57

Table 4.2.1 gives indication on dependence on a source of income. The table shows dependence based on percent depending on a particular income source and their percent in relation to total members having some kind of income earning occupation.



As can be seen from the table 54 percent of income earning members depends on agriculture. About 31.6 percent of income earning members gets their income from daily wage earning. Business, service or salary related income was the source for only about 11 percent of income earning members.

We find an interesting observation here. Agriculture is the income earning occupation for 59 percent of males while it is only 30 percent in case of females. Daily wage earning is the biggest source of income earning occupation for females. As high as 57 percent of women who have reported income depend on wage earning for that income.

Analysis of secondary income gives some more insight. A total 287 members, comprising 114 female and 173 male, of the surveyed households reported supplementary income earning occupation. This means that about 43 percent of the members in the surveyed households reported secondary occupation. Of the total adult male members nearly 87 percent reported secondary occupation while only 34 percent female reporting secondary occupation. Women are largely too occupied with house making. Table 4.2.2 gives additional information about supplementary occupation.

Table 4.2.2 Supplementary occupation of adult members of 18 or above years (% in relation to adult members in the segment)							
Sl No	Indicator	Total		Male		Female	
		No	%	No	%	No	%
1	Agriculture	82	29.60	40	23.81	42	38.53
2	Overseas work	0	0.00	0	0.00	0	0.00
3	Business/trade	10	3.61	9	5.36	1	0.92
4	Working in industry	0	0.00	0	0.00	0	0.00
5	Salaried job (service)	0	0.00	0	0.00	0	0.00
6	Daily wage	182	65.70	120	71.43	60	55.05
7	Other sources	12	4.33	2	1.19	2	1.83
8	House making	4	1.44	0	0.00	4	3.67

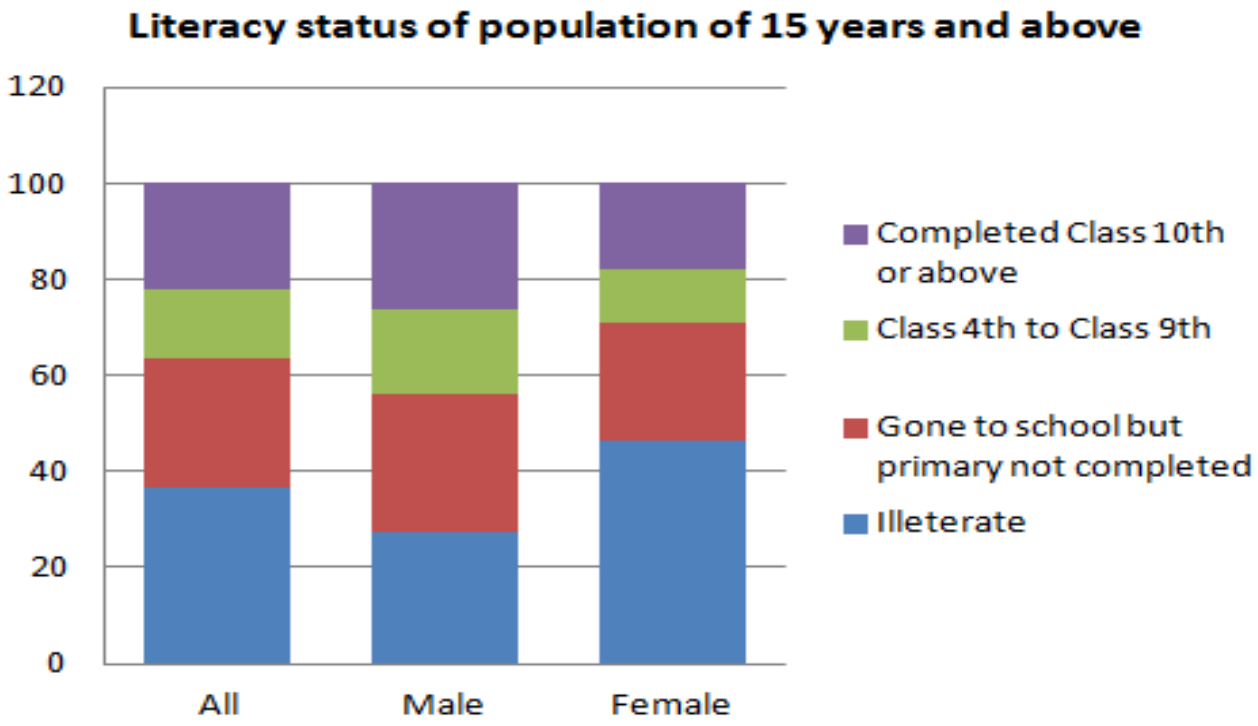
Daily wage is the biggest secondary occupation source; for 71 percent male and 55 percent female. Agriculture is the next important secondary source of occupation for 24 percent male and 39 percent female. Other occupations are quite insignificant.

This table taken with indicators from the information on primary occupation gives an overall status about income and occupation of the surveyed population. They clearly point out at a very poor society which is mostly dependent on subsistence agriculture and wage labour.

4.3 Education status

Education status of the survey population reflects underdeveloped characteristics of population. For simplified understanding we shall club the surveyed population into three groups, (a) members over 15 years of age, and (b) members in the school going age group of 6 to 14. For analysis of education status we are excluding population in the age group of five years and below. Table 4.3.1 indicates status of surveyed population in the age group of 16 years and above.

Table 4.3.1: Education status of members in the age group of 15 years and above							
Sl No	Indicator	Total		Male		Female	
		No	%	No	%	No	%
1	Population in the age group of 16 years and above	686	100	343	50	343	50
2	Illiterate	253	36.88	94	27.41	159	46.36
3	Gone to school but primary not completed	183	26.68	98	28.57	85	24.78
4	Class 4th to Class 9th	98	14.29	61	17.78	37	10.79
5	Members completed class 10th or above	152	22.16	90	26.24	62	18.07

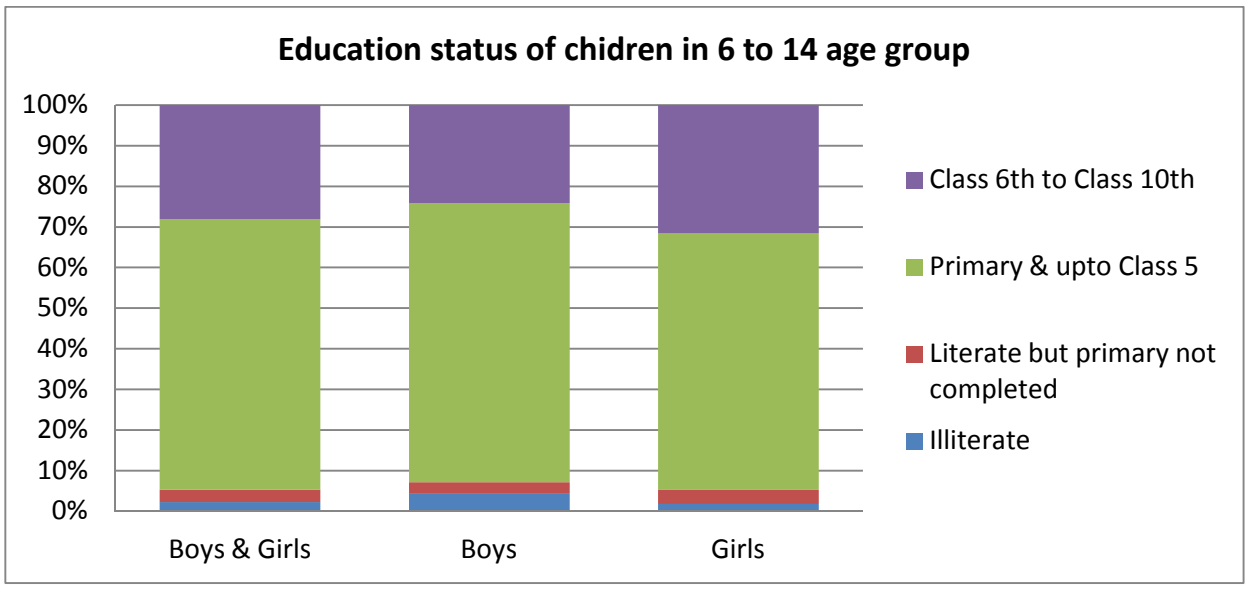


An underdeveloped status of sample population is further exemplified by the fact that as high as 37 percent of the population in the age group of 15 years and above are illiterate and a further 27 percent have not completed primary education. Taken together as high as 65 percent of the population in the age group are not literate or very inadequately literate. Within this segment women illiteracy rate is a staggering 46 percent. A further 25 percent among women have not completed lower primary education. About 14.3 percent of the people in this age group have completed education between class 4 and class 9. Here also women fare very poorly. Only 11percent women have done this level of education. About 22 percent of population have completed studies up to class 10th or more. Low levels of education and literacy directly impacts the ICS usage as the benefits are not deduced while the negative impact of traditional cookstoves is not known.

Education status of school going children in the age group of 6 to 14 years is very encouraging. There are no illiterate girl in this age group. Besides percent of girls read or reading in between class 6 and class 10 is higher than that of the boys. Table

Table 4.3.2: Education status of children in the age group of 6 and 14

Sl No	Level	Boys & Girl		Boys		Girls	
		No	%	No	%	No	%
1	Illiterate	5	2.21	5	4.46	2	1.75
2	Literate but primary not completed	7	3.10	3	2.68	4	3.51
3	Primary and upto Class 5	149	65.92	77	68.75	72	63.16
4	Class 6th to Class 10th	63	27.87	27	24.11	36	31.58
	Total	226	100	112	100	114	100



As can be seen above rate of illiteracy among girls is low compared to boys. There are more illiterate boys than illiterate girls. Besides, there are more girls in class 6 to class 10 compared to boys. This shows both boys and girls are going to school and at least in this age group no discrimination is found.

4.4 Income Level

Direct question or query on annual income was not put during the survey. However, indication about economic status of the surveyed households can be gauged from type of house they have and consumer goods items they possess. Since the sample population is predominantly rural population landholding status also gives good insight. The following tables give information on those parameters.

Table 4.4.1: Type of house roof

Sl No	Type of roof	Number	%
1	Houses with thatched roof	126	63.0
2	Houses with tiles / sheets	59	29.5
3	Houses with RCC roof	15	7.5

Figures in the table indicated that 63 percent of surveyed households have houses with thatched roof. This is considered as the lowest class of house. Only 7.5 percent households have houses with roof cover. This indicates large scale poverty condition of the sample households.

Table 4.4.2 gives indication of consumer items possessed by the surveyed households. About 66.5 percent of households possess mobile phones. A mobile phone, especially possessing one, is no more synonymous with economic condition. This has become very common in all parts and has been a recent phenomenon. Barring phones all other indicators point to a subsistence kind of living. Only one household has gas stove. Only 12.5 households have motorcycle or moped/scooter. TV is the other preference of the households and 22.5 percent of the households possess television sets. There is very little to mention about other consumer items as they give a clear status of underdeveloped characteristics of the sample households. About 84 percent of the households have livestocks like cattle, sheep etc. This shows their dependence on livestock based farming system.

Table 4.4.2: Possession of household assets			
Sl No	**Indicator**	**Number**	**%**
1	HHs having TV	45	22.5
2	HHs having room heater and/or fan	26	13
3	HHs having water filter	8	4
4	HHs having pressure cooker	29	14.5
5	HHs having radio	22	11
6	HHs having mobile phone	133	66.5
7	HHs having LPG cylinder	2	1
8	HHs having mixer/grinder	8	4
9	HHs having motorcycle	22	11
10	HHs having moped / scooter	3	1.5
11	HHs owning live stocks	168	84

Information relating to land holding give further insight into the household's economic condition. Though the survey did not assess quantum of land possessed by the households it assessed whether they possess land or not and if yes whether the land has irrigation cover or not.

Table 4.4.3 gives information about land holding of the sample households.

Table 4.4.3: Land possession by households			
Sl No	**Landholding status**	**Number**	**%**
1	Landless	37	18.5
2	Having irrigated land	52	26
3	Having unirrigated land	111	55.5

Most of the surveyed households do possess land. However 18.5 percent of the household are land less and this is not a small figure either. About 26 percent of the households have irrigated land while the others have non-irrigated land only. This re-establishes the agriculture centered society.

The indebtedness figures do not give a very clear indication. The surveyed households are mostly adjusting to their economic capabilities. They mostly trying to deal with whatever is available and are not very concerned about taking loans. Following table gives information about household's indebtedness.

Table 4.4.4: Indebtedness status of households			
Sl No	Indebtedness / Loans	Number	%
1	Daily consumption purposes from informal sources	7	3.5
2	For production purposes from informal sources	1	0.5
3	For other purposes from informal sources	18	9
4	Borrowing from institutional agencies	52	26
5	No indebtedness	125	62.5

Out of a total of 200 sample households 125 households reported that they do not have any loans on them. Of the total households 26 percent have borrowed from institutional agencies like banks and micro finance organisations. About 13 percent households have borrowed from informal sources.

The above indicators shows that the sample households are mostly poor and maintain a subsistence living. Their spending is mostly on consumption. An investment for a good cook stove has not yet been a priority for them.

4.5 Food habits and cooking methods

Though food habits of the sample households have many things in common but they also differ a lot. Rice is the staple food for all the surveyed households. Most of the households love food hot and hence cooking is done more than once in almost all houses.

4.5.1 Number of rooms and location of kitchen

Cooking is done in a specified place in most traditional houses. All the households mostly do their own cooking. Community cooking is not very prevalent except during functions. The surveyed households have very poor housing infrastructures. Table 4.5.1.1 gives indication of location of kitchen in the households.

Table 4.5.1.1: Place of cooking

Sl No	Indicator	Number	%
1	HHs mostly cooking in a room used for living or sleeping	41	20.5
2	HHs mostly cooking in a separate building used as kitchen	00	0
3	HHs mostly cooking a separate room in same building used as kitchen	125	62.5
4	HHs mostly cooking in outdoor open area	01	0.5
5	HHs mostly cooking in outdoor but having covered roof	33	16.5

As can be seen from the above table 62.5 percent of the have separate room in the same building which is used as kitchen. About 17 percent of the households cook outdoors. But as high as 20.5 percent of the households do the cooking in a place which is also used for living or sleeping. These are mostly the houses which have very few rooms or space. Such kind of arrangement puts both the cook as well as other members of the family, especially children, exposed to the emissions which have an adverse impact.

Further indication can be drawn from where children do their studies when they are at home. The following table gives indication of those:

Table 4.5.1.2: Place where children study at home

Sl No	Indicator	Number	% (of HHs having students)
1	In the kitchen	11	7.7
2	In another part of the house	119	83.2
3	Out of doors	2	1.4
4	Another house or building	11	7.7
5	No specific place or homework not done	0	0

About 7.7 percent of the households which have school going children do their studies in the kitchen itself. This is a hazardous situation. They mostly do this because of unavailability of other sources and to use the lighting sources economically. In 83 percent of households with school going children, the students do their studies in another part of the house. From this we find that most of the students do their home works away

from the kitchen. One noticeable aspect about place of reading in the house was not covered in the survey format but came during the FGD. In most of the villages students read in groups, mostly a private tuition kind of surrounding. Probably this shows why a significant number of households reported that their children read away from the kitchen or cooking place. It is women who are mostly in the kitchen area.

Main food items and cooking sessions

Rice is the staple food of almost the whole sample population. That forms the main item for at least two times a day for most households in the rural areas. In the southern Gajapati district millet is a very prominent cereal. Along with rice the households normally take one or more supporting items like chips, roast, pulses and curry. Normally the mail cereal cooking is done by boiling. But other items like curry etc may also involve roasting and frying. Tea is growing in popularity. This seems to be a recent phenomenon.

Table 4.5.2.1 : Cooking sessions and main food items

Sl No	Food habit / indicators of the households	Numbers	%
1	HHs which had only one session of cooking in 24 hours	1	0.5
2	HHs which had two or more sessions of cooking	199	99.5
3	HHs which had three or more sessions of cooking	99	52.4
4	HHs which had four or more sessions of cooking	5	2.6
5	HHs which had tea and/or breakfast in 24 hours (All such cooking was mostly done in the first session. In 85 of 89 cases tea and snacks was cooked in the first session, i.e., in the morning)	89	47.1
6	HHs which had rice in at least one session of cooking	189	100
7	HHs which had rice in at least two sessions of cooking	181	95.8

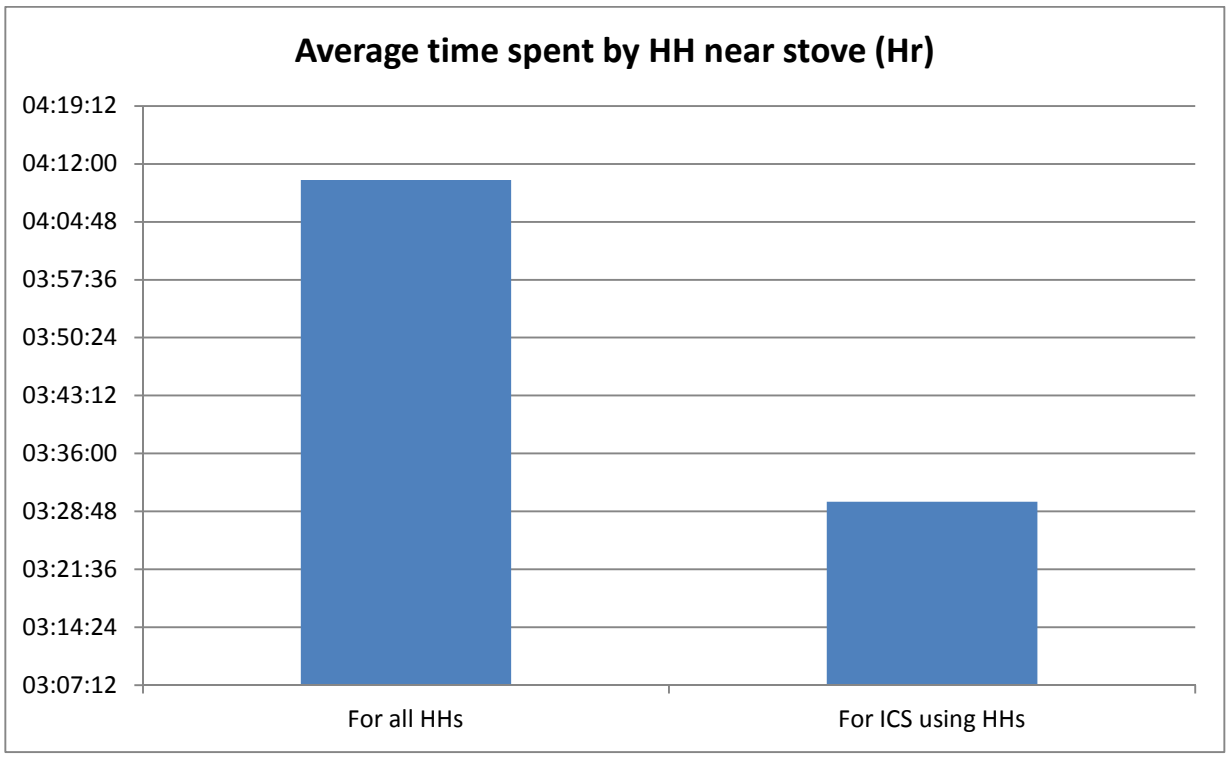
As can be seen from the table rice was cooked in all households and if any household had only one session of cooking then that was rice. Similarly 95.8 percent of cooking session involved rice when in households which reported more than two sessions of cooking. Nearly all, 99.5 percent to be precise, of surveyed household rice was cooked in two sessions. Households had further session of cooking mostly for breakfast, snacks or for tea etc. About 52 percent of households reported three or more sessions of cooking.

On an average a cook spent 3 hours and 40 minutes near the stove in a day. Average cooking time for surveyed households was 4 hours 10 minutes. This is quite a significant time.

Table 4.5.2.2 Average time spent by a cook near a stove

Sl No	Indicator	Number
1	Average time spent by a cook near the stove in a day	3hr 40 min
2	Average time spent by members of HHs near the stove in a day	4 hr 10 min
3	Average time spent by a cook near the stove (for households which reported use of improved cook stoves)	3 hrs 15 min
4	Average time spent by members of HHs near the stove (for households which reported use of improved cook stoves)	3 hrs 30 min

A noticeable distinction was found with regard to time spent by cooks near stoves for ICS and non-ICS using households. Those households which are using ICS spent about 25 to 40 minutes less time in a day. An average household spent about 4 hr 10 minutes near the stove. In comparison household using ICS reported lesser time spent near the stove.



Above indicators sum up that improved cookstoves has reduced cook's exposure to stoves.

4.6 Types of fuel and stoves in use for cooking

The surveyed households are mostly rural households. Villages that the survey covered in Mayurbhanj and Gapati districts have dense to moderately dense forest very close to the villages. The villages covered in Mayurbhanj district like very close to Similipal biosphere which hosts the densest forest in Odisha. Being very close to forest, their dependence on wood as fuel is naturally very high. Villages covered in Balangir do also depend on fuel wood. But they mostly depend on the local bushes, village forests and nearly forest which lie relatively far off compared to Mayurbhanj and Gajapati districts. Villages covered by the study in Kendrapada are very close to sea. The Bhitakanika sanctuary which includes biodiversity rich mangrove forest is very close to the villages covered in Kendrapada district. But normally the forest area is a protected and restricted area. The lands in Kendrapada do not have much tree cover. Though fuel wood is a scare commodity in Kendrapada, still people's first preference is fuel wood. However, prevalence of use of cowdung, other residue, agriculture residue is more prominent in Kendrapada compared to other two districts.

4.6.1 Types of fuel and stoves in use (predominantly ICS users), and reasons for the stove selection

Fire wood is the principal fuel for most kind of cooking for both improved cook stove using as traditional stove using households. That is very evident from the following table.

Table 4.6.1.1 Fuel used for different requirements by sample households										
Sl No	Parameter	Unit	Wood	Dung	Agri residue	Oth residue	Charcoal	Kerosene	LPG	Other
1	For cooking (including boiling waters for drinking)	No.	165	14	12	2	3	3	1	0
		%	82.5	7	6	1	1.5	1.5	0.5	0
2	For making tea/coffee	No.	149	8	25	5	0	8	2	0
		%	75.6	4.1	12.7	2.5	0	4.1	1	0
3	For lighting	No.	0	0	0	0	0	101	0	99
		%	0	0	0	0	0	50.5	0	49.5
4	For room heating	No.	0	0	0	1	0	0	0	0
		%	0	0	0	100	0	0	0	0
5	For heating water for other purposes	No.	146	10	30	2	2	2	0	1
		%	75.7	5.2	15.6	1	1	1	0	0.5
6	For spirits brewing for self-consumption	No.	9	0	0	0	0	0	0	0
		%	100	0	0	0	0	0	0	0
7	For cooking food/drink for selling	No.	3	0	0	0	0	0	0	0
		%	100	0	0	0	0	0	0	0
8	For cooking animal feed	No.	141	8	22	2	0	1	0	0
		%	81	4.6	12.7	1.15	0	0.6	0	0
9	Other task 1 (paddy parboiling)	No.	98	0	73	18	0	0	0	0
		%	51.9	0	38.6	9.5	0	0	0	0
10	Other task 2 (functions and feasts)	No.	23	0	0	0	0	0	1	0
		%	95.8	0	0	0	0	0	4.2	0

As can be seen from the above table, 82.5 percent of surveyed households used wood as fuel for their main cooking. Cow dung and agriculture residue are the second and third most used fuel for cooking main food. Apart from main food, wood was the main fuel for other cooking.

Table 4.6.1.2: Fuel and their use by households (in %)								
Fuel	Main food	Tea/coffee	Other water heating	Spirit brewing	Cooking for sale	Cooking animal feed	Paddy parboiling	Functions and feasts
Wood	82.5	75.60	75.7	100	100	81	51.9	95.8
Cow dung	7	4.1	5.2	0	0	4.6	0	0
Agri residue	6	12.7	15.6	0	12.7	0	38.6	0
Other residue	1	2.5	1	0		1.15	9.5	0

The above table clearly shows use of wood and the fuel by majority of households. The above table also shows that paddy parboiling, though not a regular activity, is a common requirement in most households. Parboiling of paddy is the only parameter where agriculture residue was used by a significant portion of households.

As wood is the most used fuel the stoves used are wood-fuelled stoves. Table 4.6.1.3 depicts use of stoves by the surveyed households.

Table 4.6.1.3: Types of stoves that the HHs use

Sl No	About the stoves	Number	% (of total sample HH)
1	HHs using wood fuelled stoves (both traditional and improved)	194	97.0
2	HHs owning wood-fuelled improved cook stove	151	75.5
3	HHs owning LPG cylinder and stove	2	1.0
4	HHs having Kerosene stove	12	6.0
5	HHs having coal/briquettes Chula	6	3.0
6	HHs using electric heater	1	0.5

About 194, or 97 percent, households have stoves that use wood as fuel. This includes 75.5 percent households which also have wood fuelled improved cook stove. The other important fuel used for cooking is Kerosene.

The above table may give an impression that a considerably high proportion of households have ICS. But that is not the general trend of the surveyed villages, the region or of Odisha. This was a specific study to assess ICS and thus the methodology was designed to cover villages where ICS using households reside. In a general and uncontrolled scenario proportion of improved cook stove using households are very few.

The reason for choosing wood fuelled stoves is quite natural because of traditional use of wood and forest being closer to the villages. Besides these wood fuelled stoves also can use other locally available agri or other residues of dry cowdung as fuel. However, there are some reasons for choosing ICS. Most of the ICS possessing households have adopted those because the stoves have been either promoted or supplied by external agencies. Such promoting agencies have varied primary target while pushing use of improved cookstoves. Some of the major objectives that the promoting agencies had were to reduce drudgery of women, reduce dependence on forest, and reduce pollution and take less time to cook.

Table 4.6.1.4: Cost of the improved cook stoves

Sl No	Parameters/indicators	Number/Price	%
1	HHs who purchased stoves or are aware of their cost price (among ICS using HHs)	84	55.63
2	HHs who own improved stoves but are not aware about their cost (among ICS using HHs)	67	44.37

As can be seen from the above table about 56 percent of the households having ICS have purchased the stoves or at least know about the price of the stoves. The rest 44 percent of the households do not even know about the price. This shows that in those cases the stoves were clearly supply driven and were largely provided free of cost.

The following table gives a brief description of the stoves and the agencies involved directly with the community in promotion of the stoves.

Table 4.6.1.5: Brief description about the cook-stoves				
Parameter	Districts			
	Kendrapada	Mayurbhanj	Gajapati	Balangir
Involvement of external support agency	Yes	Yes	Yes	Yes
Supporting agency	RCDC (NGO)	Sambandh (NGO) RRDO(NGO)	Gramvikas (NGO) SWASS (NGO)/OTELP	Gramvikash (NGO) Forest Department (Govt)
Name of the stove	Jeevan Jyoti	TERI-SPT 0610 Supernova	Annapurna	Prayagni (Forest department) Annapurna (Gramvikas)
General description about the stove	Round shaped independent unit, made of iron, scope for single cook, requires small size wood. Ideal for small family size. Can be moved from one place to other.	Quite improved, relies on gasification technology. Comes with a fan to provide oxygen and also a solar power provision energise the fan.	Improvement of traditional kind of mud cook stoves. The stoves are fitted with an iron/concrete chimney and also a fan to facilitate burning. They have scope for cooking two items at a time. Stays fixed to a place.	The Prayagni model is Rectangle shaped (like a box) stove made of iron. The top of stove is about 1.5 X 1.5 feet in size. It requires small size wood. Can be moved from one place to other. The Annapurna model is similar to that of Gajapati model.
Benefits of the improved cook stoves	Less fuel wood, less smoke, Mobility, Low maintenance.	Very efficient, can use wood as well as other residues. Consumes very less fuel, level of fire can be controlled easily, smoke emission is very less, is movable.	Localised technology, Less fuel wood, less smoke, similar to traditional stoves, can cook more than one item at a time.	For Prayagni: Less fuel wood, less smoke, Mobility, Low maintenance, less fear of getting burnt. For Annapurna: Similar to Mayurbhanj.
Demerits of the improved cook stoves	Not very fit for different biomass – it is largely good for wood only, it takes some time	Quite costly. After DFID subsidy, the promoting organisation give further subsidy. The households	Cleaning chimney is a problem, removing ash is also a problem.	Prayagni: Difficultry in repairing, difficulty in removing ash, risky for HHs having small

	to start burning, requires small wood size, fit only for small size family, not very fit for roasting.	pay Rs 2700 as their contribution.		children. Annapurna: Same as that of Gajapati
Cost of the improved cook stove	Rs 780	Rs 2,700	Rs 230	Rs 230
Fuel	Wood (small size)	Wood (but some HHs also use agri waste, small wood, cow dung etc)	Wood (but some HHs also use agri waste, small wood, cow dung etc)	Prayagni: Wood (small size) Wood (but HHs also use agri waste, small wood, cow dung etc)
Average time saved because of ICS use	0.30 hr to 1 hr	0.30 hr to 2 hr	1 hr	1 hr

4.6.2 Satisfaction with the existing stoves

Satisfaction levels with the existing stoves vary. The following table captures indicators related to satisfaction about traditional stoves by the households which only use traditional stoves.

Table 4.6.2.1 Satisfaction level of households not using ICS

Sl No	Indicator	No	%
1	Households not using traditional stoves	49	24.5 (of total sample)
2	Households happy with existing stove	21	43.8 (of traditional using HH)
3	Household desirous to change to other type of stoves	27	56.2 (of traditional using HH)

Table 4.6.2.1 shows that 56.2 percent of the households still using only traditional stoves say that they will like to change to other type of stoves. This also means that they are not very happy with their traditional stoves and given an opportunity and capacity they will like to change to other type of stoves. 43.8 percent of the households still using traditional stove, however, say that they are happy with the existing stoves. These figures give very good insight into the experience and knowledge of the traditional cook stove using households. This aspect is very important because all the non-ICS using households also come from the same villages and same localities as the ICS using households. Thus they have a good idea about the ICS being used by other households in their neighborhood. About 43.8 percent households say that they are happy with their traditional stoves. That also means that they do not see much prospect or potential of the ICS that they have seen or heard. However majority of traditional cook stoves using households do evince an interest in other improved types of cook stoves. The households who wished to change to other ICS are impressed by the wood-fuelled ICS. This is because they believe that other households have benefitted from improved cookstoves as they require less time to cook, require less fuel wood and also are less exposed to smoke. Two households said that they will like to change to gas stoves instead of wood fuelled improved stoves. These two households were from the slum areas in the urban settlements.

Opinions from improved cook stove owning households also give indication that households are happy with improved cook stoves. Of the 151 ICS possessing households, 54 households report that ICS is much better than their traditional cook stove. Most of these users are women and being the end user their need for ICS is seen to be increasing gradually as the benefits of it are slowly being realized. The following captures views of ICS possessing households vis-à-vis their traditional stoves.

Table 4.6.2.2: ICS using household's perception about the stove and use

Sl No	Indicator	Number	% (of ICS using HHs)
1	HHs reporting that ICS is much better than their traditional stove	54	35.76
2	HHs reporting that ICS is a bit better than their traditional stove	83	54.97
3	HHs reporting that ICS is about the same than their traditional stove	02	01.32
4	HHs reporting that ICS is a bit worse than their traditional stove	02	01.32
5	HHs reporting that ICS is much worse than their traditional stove	10	06.62
6	HHs reporting that they use ICS all the time	105	69.54
7	HHs reporting that they use ICS most of the days	12	07.95
8	HHs reporting that they have used ICS for very few days	17	11.26
9	HHs having ICS in good condition	121	80.13

The above table clearly shows that most of households perceive that ICS is better than their traditional stove. As high as 35.76 percent of ICS using households believe that ICS is much better, while a further 55 percent of ICS using household rate it a bit better than traditional stoves. Together they constitute nearly 90 percent of ICS using households.

About 69.54 percent of the ICS possessing household reported that they use ICS on all days since they have the stove. A further 7.95 percent household informed that they use ICS most of the days. This shows that most of the households having ICS do regularly use the stove. However, 11.26 percent households also reported that have used ICS stoves for very few days.

Most of the households only used ICS for cooking. About 84.1 percent of the ICS using households reported that they rarely use other stoves along with ICS stove. About 8.6 percent of the ICS using households reported that they also use traditional stove most of the time along with ICS. This shows that the households positively accept ICS.

About 80.13 percent of the improved cook stoves were found to be in good condition. Most of the households found not using the ICS were found in Balangir where the stoves were supplied by OREDA a decade and more ago. In fact, many households reported that the stoves were never properly used because of many problems like the heating of the stove, requirement of small pieces etc. In other places use of improved stoves have been a recent phenomenon. In Mayurbhanj distrit it has started only four-five months back. In Kendrapada district the stoves are use since about a year. So, they are relatively new. The study could not properly assess durability of the stoves. However, the Annapurna stoves on Gajapati and Balangir districts were looked like the most used stoves. They are in use since more than three years in both Gajapati and Balangir districts.

4.7 Gender and Livelihood Impact of Stoves

The study found very close relationship of types of stoves used with hardship of women and on livelihoods. Livelihoods related benefit from improved cook stoves mostly accrue through time gained and used for other purposes. Use of ICS did lead to reduction of time required to collect fuel. ICS also reduced cooking time. Though during interaction it was also described that a lot of respondent that ICS also has resulted in more productive time because of reduction in health irritants like headache, eyesore etc.

4.7.1 Responsibility of cooking and fuel collection/purchase*

It is quite well known that burden or responsibility of cooking for the family lies with women members. The study also found that along with cooking the burden of collecting fuel also largely falls on the women. This is evident from the following table where women were involved in collection of fuel in 147 households – out of a total of 183 households which reported that they collect fuel wood. Women are the predominant collector of cow dung, agriculture residue, other residue, and fuel wood from neighborhood or nearby forest.

Table 4.7.1.1: Responsibility of fuel collection in households which collects fuel

Sl No	Indicator	Number	%
1	HHs which reported collection of fuel wood for whole or part of their fuel requirement	183	91.5
2	HHs where women members mostly or partly collect fuel	147	73.5
3	HHs where only male members mostly or partly collect fuel	142	71.0

Females are the predominant fuel collector where fuel is collected through head loads. Males are the predominant collector where fuel is collected through cart, cycle or similar mediums.
However, purchase of fuel is mostly a male dominated activity. The following table provides indications of male dominance with regards to purchase of fuel.

Table 4.7.1.2: Responsibility of fuel purchase in households which purchases*

Sl No	Indicator	Number	%
1	HHs which reported purchase of fuel wood (excluding electricity and kerosene)	47	23.5
2	HHs where females are responsible for purchase of fuel (other than kerosene and grid electric)	06	03.0
3	HHs where males are responsible for purchase of fuel (other than kerosene and grid electric)	31	15.5
4	HHs which reported purchase of kerosene	199	99.5
5	HHs where male members are responsible for kerosene purchase	166	83
6	HHs where female members are responsible for kerosene purchase	33	16.5

** Kerosin and electricity were not used as fuel energy in most households. But all households bought such fuel for lighting their houses or other requirements.*

This table shows that when it involves collection of fuel the burden largely falls on females. But while it is purchase of fuel that involves money spending decision and also a visit to market place or shop, male members shoulder that responsibility.

4.7.2 Fuel saving and drudgery reduction

The survey threw conclusive indication that improved cook stoves have contributed to saving of fuel and reduction of drudgery. We have already discussed in earlier sections of the report that a very high portion of the households did report that they save considerable time by cooking through ICS. About 127 households or 84.1 percent of the ICS using households reported various benefits because of ICS use. The benefit they listed out are: less smoke, less time to cook, less time to collect fuel, the ease in shifting the stove etc. The following table lists out some indication of indirect impact of ICS cook stoves.

Table 4.7.2.1: Reported benefits that indirectly lead to livelihood gains or drudgery reduction (% in relation to total ICS using HH)

Sl No	Parameter	Number	%
1	HHs reporting that ICS has led to some kind of benefit	127	84.10
2	HHs reporting saving of time due to cooking through ICS	111	73.51
4	HHs which reported that they are using the time saved from cooking for other uses	112	74.17
5	HHs which reported that time saved from cooking is used to give more care to children	48	31.79
6	HHs which reported that time saved from cooking is used for income generating activities	18	11.92
7	HHs which reported that cooking timed saved is used for participation in community meetings	29	12.21
8	HHs which reported that cooking time saved is used to meet friends and relatives	11	07.28
9	HHs which used the time saved from cooking for other purposes	07	04.64
10	HHs which reported that use of ICS requires less fuel	102	67.55

Households that used improved cookstoves reported that they save about 00 hr 57 minutes in cooking time only. The above table indicates that nearly 12 percent of the ICS possessing households used the time, saved from cooking, for income generating activities. This is a livelihoods enhancing activity. A further 12 percent of the households used time saved for participation in community meetings. They have an indirect positive bearing on livelihoods. This table captures impact of ICS on saving cooking time and through that their impact on livelihoods enhancement of the respective households. This clearly indicates that time saved through use of cook stoves does lead to livelihoods enhancement and better social engagements. Time saved means less exposure to fire and cooking hazards. This way women's exposure to difficult condition, health impacts and physical hardship gets reduced. Table 4.7.2.1 shows that about 67.55 percent of households with ICS do believe that use of ICS involves less use of fuel. This directly means that the households spend that much less time for collection or purchase of fuel. Since the primary burden of collection of fuel largely falls on female members, any reduction in fuel use means lesser drudgery for women.

4.7.2.1 Access to fuel

The surveyed households toil for their fuel. Most of the households collected their fuel. Following table gives indication of household's access to fuel.

Table 4.7.2.1.1: HH's access to different fuel (excluding electric and kerosene)

Sl No	Indicator	Number	% (of all sample HH)
1	HHs that collect fuel	183	91.5
2	HHs that collect firewood	176	88.0
3	HHs that collect cow dung	37	18.5
4	HHs that collect agriculture and other residue	41	20.5

The above table shows gross dependence of the people on collecting bio-mass for their fuel needs. About 91.5 percent of the sample households collect their fuel. This also means that about 8.5 percent of the sample households do not collect and mostly rely on purchase of fuel. The table further shows that 88 percent of the households collect firewood, 18.5 percent collect cow dung and about 20.5 percent of sample households collect agriculture and other residue for use as fuel. The very fact that the families resort to collection of the fuel indicates their very limited purchasing capacity. Because of their low income the households prefer not to spend their money purchasing fuel used for cooking. However, as we see in this report almost all the household do purchase kerosene and also grid supplied power, mostly for lighting and not cooking. The table 4.1.2.1.2 indicates the place from where the households collect their fuel.

Table 4.7.2.1.2: Place of collecting fuel

Sl No	Indicator	Number	% (of HHs which use that fuel)
1	HHs which collect firewood from forest	149	84.7
2	HHs that collect firewood from village surrounding, including own fields	27	15.3
3	HHs which collect cow dung from own cowshed, own fields or within the village area	37	100.0
4	HHs which collect agriculture and other residue from own home/backyard, or within the village area or places not very far from the house	41	100.0

The above table shows that as high as 84.7 percent of household that collect wood for fuel collected those from forest. About 15.3 percent of the wood collecting households made their collection from with their village area or own field etc. This shows that forest is the main source of fuel wood collection. All of the households that reported collection of cow dung or agriculture/other residue collected their fuel from own home or backyard or within the village area or very close by areas.

While location of the fuel sources gives important indication on how far they travel to access the resources, the table 5.1.2.1.3 indicates time and frequency of collecting the fuel.

Table 4.7.2.1.3: Fuel collection - Frequency of trips, average trip time and average load per trip

Sl No	Indicator	Avg frequency / yr	Avg time spent per collection trip	Avg load /per collection trip
1	Collecting wood from forest	61.9	3 hrs 38 mins	22.3 Kg
2	Collecting wood from village area, own fields etc	88.6	2 hrs 37 mins	16.3 Kg
3	Collecting cow dung	108.9	1 hr 27 mins	2.9 Kg
4	Collecting agriculture and other residue	143.2	1 hr 32 mins	3.1 Kg

The above table clearly shows that both the average load and time required for collection of wood from forest is significantly higher. However the frequency to visit forest for fuel wood collection is lower that other sources. This is because forests from which the households collect their fuel wood lies at farther distance. Besides, cow dung and agriculture & other residues are mostly collected quite frequently from local sources. Thus their collection frequency is more and quantity collected is less. Many of the surveyed households collect both fire wood as well as other source of biomass fuel like cow dung, and residues. Many

households use agriculture and other residues to induce firing the hearth. Few households also use as the main source of cooking and for use like paddy parboiling. Cow dung is used after their collection, processing and drying. The time thus includes all the activities starting from collection to end processing.

4.7.3 Time saving

Time saving aspects has already been dealt with to some extent in earlier paragraphs through dissection of other indicators.

4.7.3.1 Time for collecting fuel and trend

Here we dissect time saving aspects of ICS through analysis of time spent in fuel collection by ICS using households and traditional stove using households. The following table gives indication of that.

Table 4.7.3.1.1: Time required for collection of fuel by different stove using categories

Sl No	Indicator	Avg time spent per collection trip (for whole sample)	Avg time spent per collection trip (for ICS users)	Avg time spent per collection trip (for traditional stove users)
1	Collecting wood from forest	3 hrs 38 mins	3 hrs 07 mins	3 hrs 48 mins
2	Collecting wood from village area, own fields etc	2 hrs 37 mins	2 hrs 16 mins	2 hrs 46 mins
3	Collecting cow dung	1 hr 27 mins	1 hr 10 mins	1 hr 31 mins
4	Collecting agriculture and other residue	1 hr 32 mins	1 hr 05 mins	1 hr 41 mins

The above table gives clear indication that ICS using households spend less time than traditional stove users. However, the difference does not seem to be too big. One reason for this being so may be because the respondents gave an approximate time rounded up to nearest 30 minute slot. This aspect requires a bit more in depth study. Still, the above figures give a clear indication that ICS using households spend less time on collection of fuel. While time required has thrown definite and clear indicators, an analysis of number of trips made did not give any definite trend. Both ICS using as well as traditional cook stove using households did not have much difference with regard to trips made for collection of fuel wood. This may be due to a broad and casual calculation of days by the respondents.

4.7.3.2 Time for cooking

The study gave clear indication that ICS using households spent less time for cooking. This has been already dealt with in paragraph 5.1.2**.** Improved cook stove using households have reported that on an average they save 00 hr 57 minutes on cooking by using improved cook stove. The time spent is very significant because on an average a household spends 4 hours 10 minutes. Thus an average ICS using households saves nearly one-fourth of time required for cooking.

4.7.4 Indoor Air Pollution and Health

The survey tried to capture information about pollution both through responses from the respondents as well as through surveyor's own observation. There is a great deal of knowledge among the surveyed households that smoke is a form of pollution and that is problem which should be tackled. The following table captures views of survey households on pollution, especially smoke.

Table 4.7.4.1: Perception of kitchen smoke			
Sl No	Indicator	No	%
1	Households who believe that smoke is a problem and requires solution	182	91
2	Households who reported that they have taken efforts to reduce smoke	144	72
3	Households who reported action to reduce smoke through ICS means	116	80.56 (of all HHs reporting smoke reducing effort)

About 91 percent of the sample households do believe that smoke during cooking is a problem. This shows considerable awareness among the members that smoke is a problem and requires to be solved. About 144 households reported that they have taken effort to reduce smoke. About 80.56 percent of these households reported that ICS is the alone or one of the means that they have taken to reduce smoke pollution

The following table analyses opinion of ICS using households. This gives better indicators to compare pollution related indicators as these households use or have used both traditional cook stoves as well as ICS. The following table shows responses of ICS using households about air pollution during cooking.

Table 4.7.4.2: Response of ICS using household on air pollution			
Sl No	Indicator	Nos	% (of ICS using HHs)
1	HHs which reported that ICS emits less smoke compared to traditional stoves	144	95.36
2	HHs which reported that ICS emits more smoke compared to traditional stoves	0	0.00
3	HHs which reported that ICS emits more smoke compared to traditional stoves	4	2.65
4	HHs who made no observation on the above	3	1.99

As can be inferred from the above table an overwhelming proportion of households using ICS reported that ICS emits less smoke than ICS. No household reported that ICS emits more smoke than traditional cook stoves.

Observation of surveyors also substantiated this aspect of ICS. Surveyors found level of indoor air pollution a bit higher in houses where ICS is being used. Cooking places had visible black stains on the walls as well as the dampened ceilings.

4.7.4.1 Reported health problems

The survey found that incidence and prevalence of health problems, that can be associated to fuel of stove related exposure, is significantly higher among non-ICS using households.

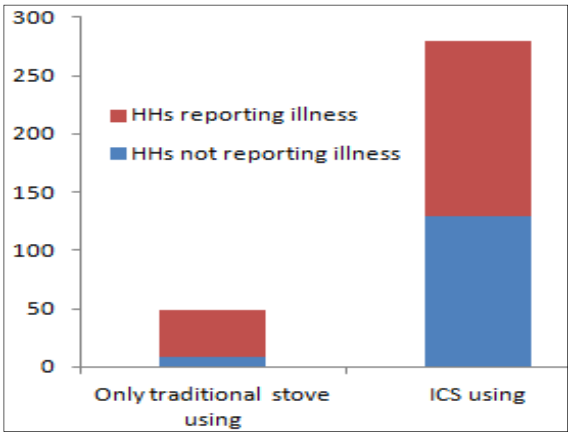
The table 4.7.4.1.1 captures survey findings on associated health impacts.

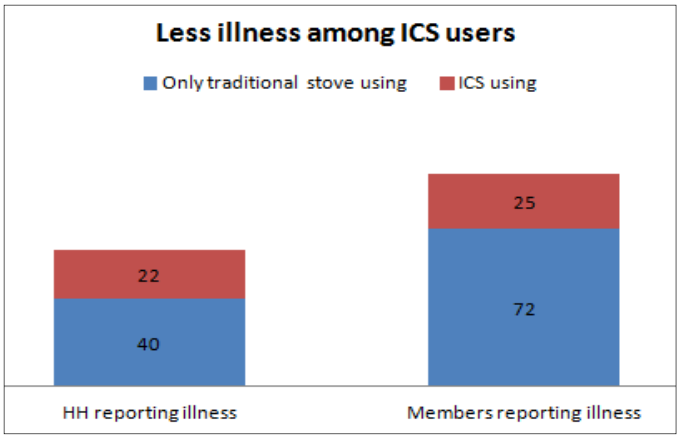
Table 4.7.4.1.1: Health problems associated with cooking or cook stoves

Sl No	Indicators	Numbers	%
1	Members who reported associated health problems	97	9.74 (% of total sample population)
2	HHs which reported at least one member having associated health problems	62	31 (% of total sample HH)
3	HHs which reported that more than one member of the HH had associated health problems	27	13.5 (% of total sample HH)
4	Female members having associated health problem	75	77.32 (% of members reporting health problems)
5	Only traditional cook stove using HHs that reported at least one associated health problem in the family	17	62.96 (% of HHs reporting associated health problems
6	Traditional cook stove using HHs which had associated health problem in the family	17	34.69 (% of traditional cook stove using HH)
7	ICS using HHs which had associated health problem in the family	10	6.22 (% of ICS using HH)

About 9.74 percent of the sample population had health problems in the one year period preceding the survey date. When we compare health problem information of ICS using and traditional cook stove using households we get a very clear picture of higher prevalence of health problems in households which do not use ICS. The above table shows that 34.69 percent of total traditional cook stove using household reported health problems in their family. This was significantly less in ICS using households where only 6.22 percent of ICS using households reported health problem. We can presume that the type of cook stoves households use has a very large bearing on the health However, we must not rule out other external factors influencing this asymmetry. Most of the traditional cook stove using households are poorer compared to ICS using households. Besides, family size also matters. A big family is likely to have more incidences of health problems than a small family as a big family is also indicative of a poorer living standard or poor development level.

The above table also clearly gives indication of how women face the brunt of cooking or cook stove related illness. About 77.32 percent of total members who reported health problem are female.





Even more significant is the incidence of higher level of illness among non-ICS using households compared to improved cook stoves using households. Out of 62 households which reported illness as high as 40 HHs are only traditional cook stoves using households. Similarly, out of 97 members who reported illness, 72 are from only traditional cook stoves using households. This shows an overwhelming rate of illness among only traditional cook stove using households compared to improved cook stove using households.

4.7.4.2 Treatment, health expenditure and days lost

This section discusses expenditure made on treatment and productive days lost due to illness. The following table captures survey information. The survey threw interesting findings. It found that mosto of the patients were women. Here we have to carefully consider that respondents were requested to provide information of diseases which can be caused by smoke, fire, or load related strains. The respondents, thus, mostly provided relied on symptoms like cough, head reeling, eye problem, back pain, body pain, burning etc to answer queries on health problem and treatment. There were other illness in the families but for the purpose of this study we tried to study diseases which can be related to cooking or fuel related factors.

Table 4.7.4.2.1: Treatment, health expenditure and days lost of HHs reporting health problems

Sl No	Indicator	**Number**	**Unit**
1	Members for whom expenditure was made to get advice	11	Person
2	Average expenditure on advice	Rs 218	Of affected members who spent on advice.
3	Members for whom expenditure was made for treatment and medicine	46	Person
4	Average expenditure on treatment and medicine	Rs 1,883	Of affected members who spent on treatment and medicine.
5	Members for whom expenditure was made for travel to get treatment	31	Person
6	Average expenditure on travel for treatment	Rs 365	Of affected members who spent on travel
7	Members for whom expenditure was made for travel to get treatment	10	Person
8	Average expenditure on travel for treatment	Rs 760	Of affected members who spent on other expenditure like lodging, food etc
9	HHs which reported man days loss due to associated illness	41	Person days lost/yr
10	HHs which reported loss of attendant's man days	105	Person days lost/yr
11	Average loss of patient's productive days	9.40	Days/per patient who lost productive days/yr
12	Average man days lost by patient attendants	4.38	Days/ per patient who lost productive days /yr

The above table gives indication about expenditure incurred and person days lost due to illness. A total of 46 members reported incur of expenditure due to illness. Most of members failing ill also lost person days.

A total of 41 members reported loss of person days due to illness. Attendant's loss of person days is more than the patient's loss of person days.

We have observed how incidence of illness is more among only traditional cook stove using households. Thus, an incidence of loss of person days and thus loss of income is more in only traditional stove using households. Similarly, medical expenditure among traditional cook stove using households is higher compared to improved cook stove using households.

4.8 Gender equity

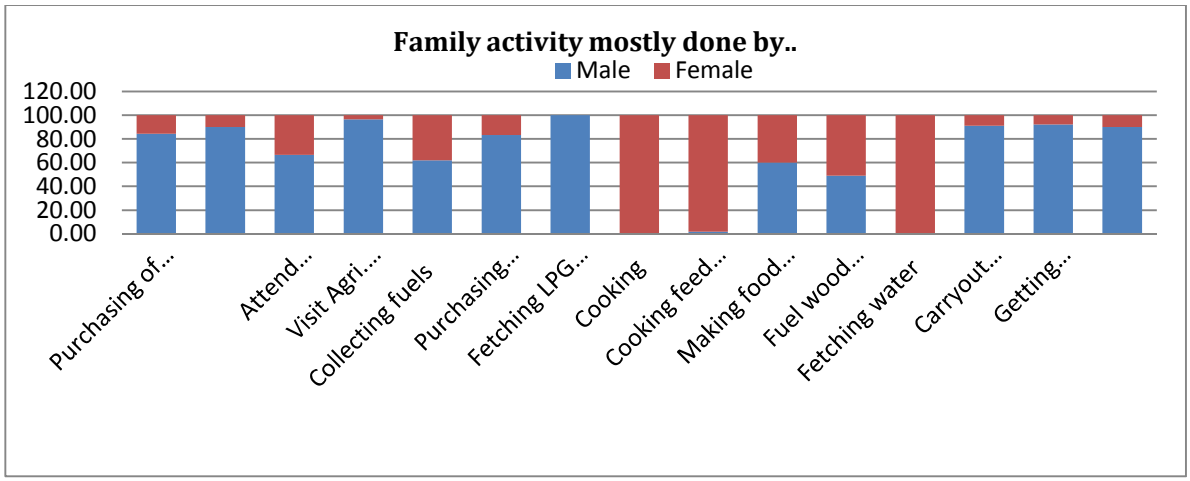
4.8.1 Gender aspects of activities and decision taking

This section looks into responsibility and decision taking roles played by males and female members of the house. The following table looks at distribution of responsibility in the house.

Table 4.8.1.1: Who does what activity in the household

Sl No	Activity	Mostly done by (No)	
		Male	Female
1	Purchasing of daily household items from the market	169	31
2	Selling agricultural and livestock products	145	16
3	Attend community/NGO/Group meetings	129	65
4	Visit Agri. Service centre or veterinary for advice	84	3
5	Collecting fuels	122	75
6	Purchasing fuels – making payment	145	29
7	Fetching LPG Cylinder	2	
8	Cooking	0	195
9	Cooking feed for animal (if any)	3	167
10	Making food and drink for sale (if any)	3	2
11	Fuel wood processing (cutting, drying)	96	100
12	Fetching water	0	196
13	Carryout farming activities	165	16
14	Getting update information by watching TV, listening radio or reading newspaper	153	13
15	Visiting banks and MFIs	108	12

While the above table/graph show sharing of roles by different gender groups in the sample households the following chart captures the male female activity sharing in percentage terms.



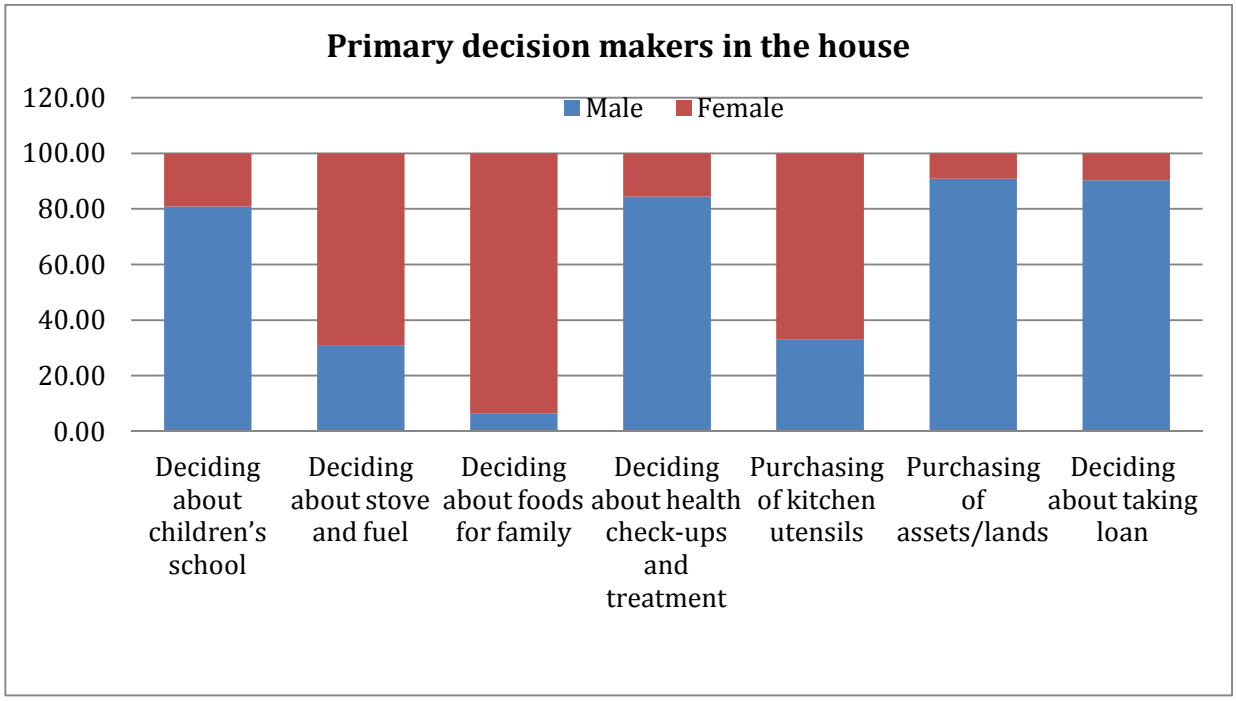
The above chart clearly shows that women shoulder almost full or near full burden of carrying out activities like cooking, fetching water, and cooking feed for animal. They also share significantly to collecting fuel and fuel processing. But when it comes to purchasing or making a decision on expenditure male have dominated. This shows that there is clear gender segmentation and we may say gender discrimination among the family members when it comes to carrying out important regular activities in a house.

Similar gender segregation can be found out from analysis of who ultimately decides in the family. The following table captures characteristics of the survey households.

Table 4.8.1.2: Primary decision taker in the house

Sl No	Decision	Male (No)	Female (No)
1	Deciding about children's school	152	36
2	Deciding about stove and fuel	62	138
3	Deciding about foods for family	13	187
4	Deciding about health check-ups and treatment	163	30
5	Purchasing of kitchen utensils	66	134
6	Purchasing of assets/lands	180	18
7	Deciding about taking loan	168	18

The chart below captures information shown in the above table.



As can be easily assessed from the above chart, in most households, male take primary decision with regard to purchasing of assets, taking loan, children's school. Women take primary decision on foods for the family, purchasing kitchen utensil and foods for the family. This shows that women are the primary decision maker only with regard to feeding the household members. Besides, they have relatively bigger say on matters of stove and fuel. So, there is clear gender segregation as far as taking decisions is concerned. The overall society is prominently male dominated, especially when it comes to taking the final decision on finances.

4.9 Women empowerment

Women's economic contribution to the household or to the society is often grossly undermined as their contribution is very difficult to be judged in economic terms.

4.9.1 Involvemet in social groups

The self help group movement has helped in mobilization of women to a great extent. Many of the survey households are members of social groups.

The following table captures women of sample household's involvement in social groups.

Table 4.9.1.1: Women's involvement in local social groups

Sl No	Indicator	Number
1	Total HHs involved in social groups	74
2	Women members involved with social groups as leader or functionary	9
3	Members whose groups only deal saving and loan	8
4	Members whose group is involved with savings as well s other activities	70
5	Total members whose group is engaged in income generating activities	20
6	Total members whose group is engaged in cook stove associated activities	10
7	No of SHGs which is involved in activities associated with cook stoves	01
8	Members whose group is mostly engaged in doing social activities like cleaning, cooking etc	07

As can be seen above 74 of the 200 households covered in the survey are members of the social groups, mostly self help groups. Normally only one member of the households becomes member of the group. Almost all the groups do saving and some lend to members of the group. Twenty members are engaged with groups which are actively doing income generating activities. Out of these 10 members are engaged in manufacturing of cookstove parts, mostly the chimneys and stove making. The study found that all the NGOs and government agencies have supplied stoves to households through SHGs. In other words, SHGs have been the medium to reach households and prepare them to adopt newer technologies. In Mayurbhanj new SHGs have been formed with the primary aim to promote use of ICS. The SHGs have helped identify households and also in motivating the members to buy improved stoves, even though they cost Rs 2700.

4.9.2 Cook stove market system and women involvement

In the entire study of sample households only one village, Raibada village in Gajapati district, had some kind of direct role of women in the production and/or market system. In that particular village one SHG is producing stove accessories and marketing those. The scale is not very large though. They got the training support from local NGOs and Gramvikas. In fact, from the household study it is quite evident that the improved cook stove, especially wood fuelled cook stoves, is at an absolutely nascent stage. Very few people know about improved cook stoves and even fewer have access to that. Wherever we see improved cook

stove that is mostly supply dominated where the supplier is both the government and non-government agencies.

In other villages' government and non government agencies distributed the improved Chulha. In some villages Gram Vikas distributed Chulhas based on lottery system. Winners in the first lottery received the chulha in 2006 and winner of second lottery received chulha in 2008.

The following table captures response of ICS using respondents on how they came to know about the stove and who motivated them.

Table 4.9.2.1: Information and motivation source for ICS using households

Sl No	Source of information / motivation	No	%
1	NGO officials (includes NGO involved in government t programmes like OTELP, OFDSP etc)	136	90
2	Neighbours/relatives	3	2
3	Producer / company	3	2
4	Self	9	6

As can be seen from the above table most households got to know about the stoves through NGOs. However, this indicator may not represent overall scenario of the state. As ICS penetration is pretty limited in Odisha, the study reached to ICS using households through the NGOs and government schemes/programmes which had improved cook stove components. Most of such schemes are also being implemented at the grassroots through NGOs.

5. COOK STOVE MARKET SYSTEM

While cook stove marketing as a business is still at nascasent stage, the existing cook stove market system in Odisha looks quite complex in nature. Marketing of improved cookstoves have largely followed a two way approach. On one hand it is the market based approach and on the other hand development assistance to the communities. To improve the supply chain, it is imperative to create a viable large scale stove industry and wide spread improved stove so that many organizations adopt a marker orient approach through to the end user.

The study directly covered four broad models of stoves. They are:

1. Jeevan Jyoti (Envirofit) in Kendapada district
2. SPT 0610 in Mayurbhanj district
3. Arti and Annapurna in Balangir district
4. Annapurna and ORKA in Gajapati district

Besides these improved stoves, people are also manufacturing the traditional Stove for their domestic use as well as for their livelihood. The traditional potter community known as Kumbar community traditionally makes Chulha to be used in domestic. They also sold in local market. The users directly purchase from them. In some cases trained Self Help Groups (SHGs) members are also installing the smokeless stove for their domestic use only. For instances, SHGs members are participated in the training called 'Chulha installation'. After the training programme they got the idea of Chulha installation. By preparing chulha some of them became resource person and installing chulha in their villages and nearby villages. Some of them can install 7-8 chulha per day and they are charging Rs.30 to 40 per chulha.

5.1 Stove market supply chain

The stove market supply chain is in its initial stage in Odisha. All stoves have largely reached the target group through facilitation of external agencies – like NGOs or CSR activities. The study, which largely focussed on rural areas, did not find evidence of direct marketing by manufacturer and distributors.

Establishing a supply chain to reach the end consumers can be a long process. The above mentioned four improved stoves are provided directly by various agencies to the communities for their domestic use. The Jeevan Jyoti stove is a product of Envirofit, which markets its products through proper distributers. So, Jeevan Jyoti stove has entered Odisha through the distributors and from there the stove sell in retail shop. The consumers also directly purchase this stove from retail shop. The manufacturer of Annapurna Stove is RBS group of companies which has its manufacturing unit in Himachal Pradesh. This stove is also marketing through the distributors and retailers in Odisha.

On the other hand there is a traditional stove which is manufactured by potters and smokeless stove is installed by some members of SHGs as organisations/ agencies have adopted strategies for promotion of improved stove through SHGs. Traditional clay cookstoves can be divided into fixed and non-fixed cookstoves. The fixed cookstove, either home-made or bought from a potter/local market place, is placed on the ground and fixed with clay plaster. The numbers of burners generally vary from one or two. The non-fixed stove is generally a one burner stove, either domestically made or bought from a potter/ local market place.

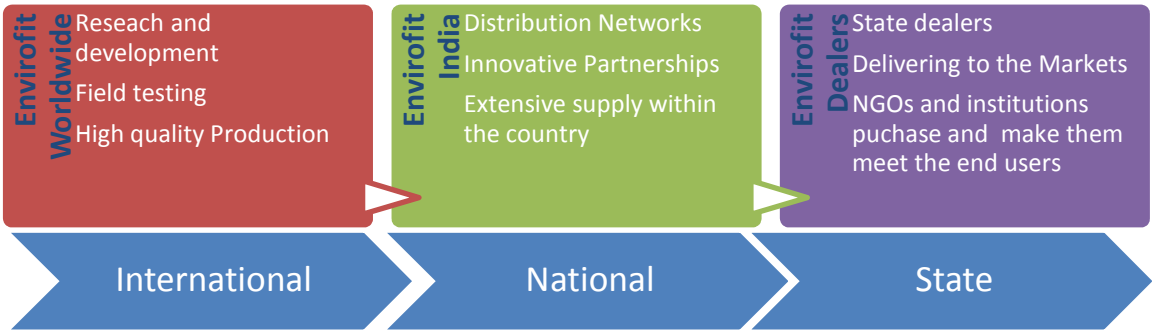
Unfortunately a wide number of cook stoves in the open market are not need based and at times lack certain practical aspects as a result of not being used for a long time. As a result supply chain of cook stove in Odisha is not so strong. Developing a supply chain is easier provided the technology is appropriate as per the needs of consumer.

1. Model 'Jeevan Jyoti' (Envirofit) in Kendapada district:

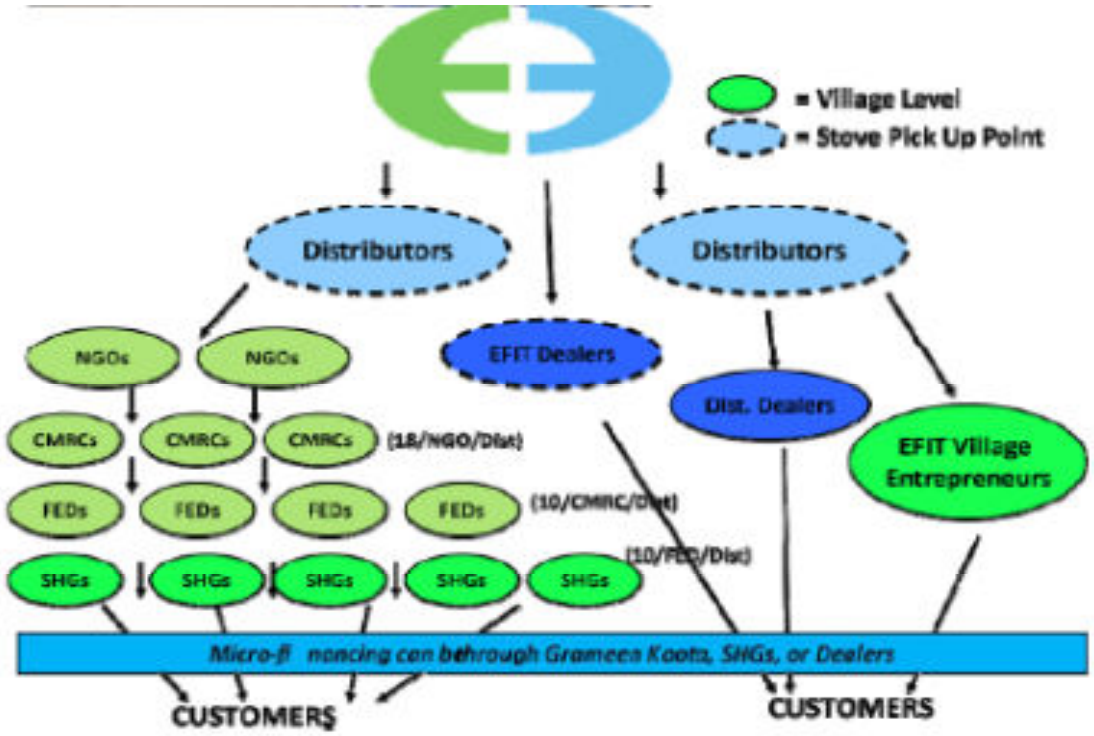
Envirofit's B-1100 Cookstove model is a low-cost cookstove, which includes a ceramic chamber that has been developed to vastly reduce fuel consumption, emissions and cooking time.

As per claims made by the manufacturer the stove has following features:

- Significantly reduces toxic emissions by up to 80%
- Contains ceramic combustion chamber
- Uses 50% less fuel than traditional open fire cooking
- Reduces cooking time by nearly 60%
- Easy to use, clean and maintain – no blow pipe required!



Distribution and Sales



2. Model 'SPT 0610' in Mayurbhanj district

TERI with financial support from DFID has designed and developed need based energy efficient biomass cook stoves for India. After development of stoves, TERI tested them in the laboratory as well in the field at actual cooking conditions to get the perfect results and opinions from the users i.e. rural households. Through extensive research TERI has developed a single pot top loading forced draft cook stove – SPTL0610 – being manufactured by Pheonix Udyog Ltd., situated at Kala Amb, Himachal Pradesh. The Single Pot Top Loading (SPTL) cook stove assembly consists of four major parts,

- Combustion Chamber (reactor)
- Outer body
- Inner sheet for filling insulation material
- Fan with motor
- Power pack

Implementation of improved cook-stoves has clear health, financial and environmental benefits over traditional mud-stoves that are commonly used in rural households. However, lack of awareness of these benefits makes it difficult to persuade the rural consumer to adopt improved biomass cook-stoves. This leads to a lack of a natural demand for improved cook-stoves. It is imperative that these challenges are overcome. TERI is implementing this model in association with SG Foundation and other local agencies.

Key feature of the stove are:

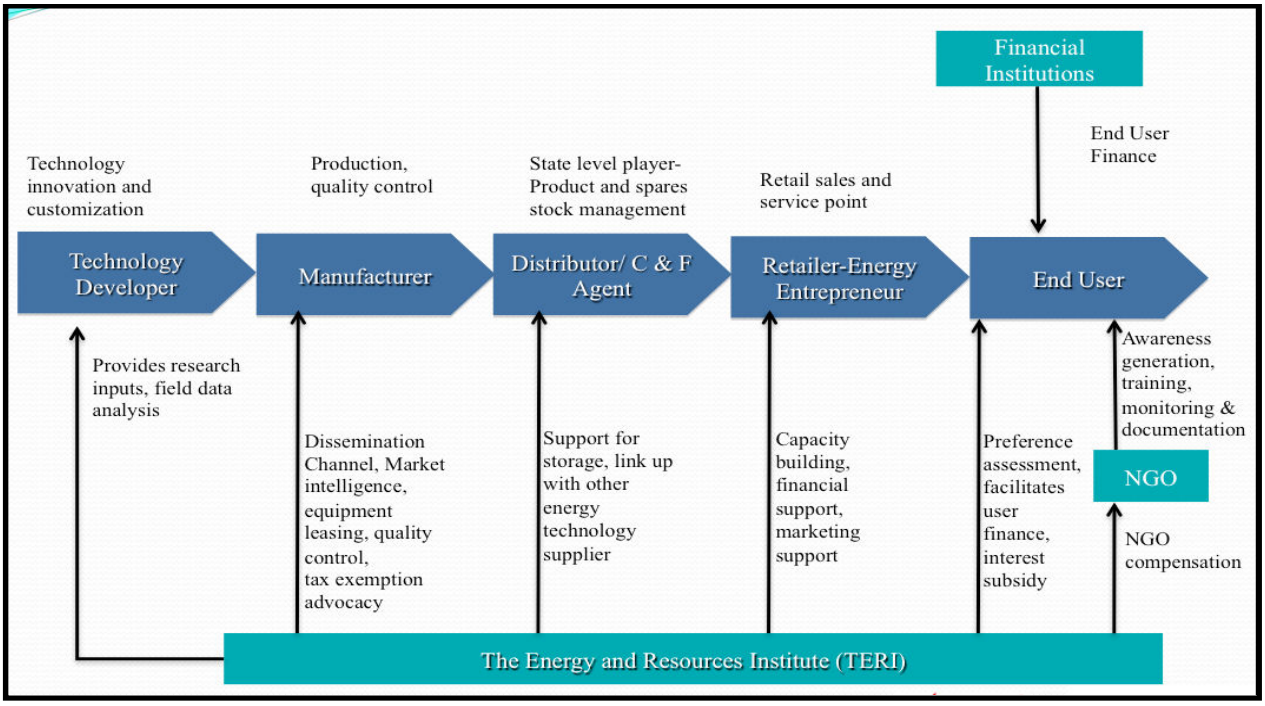
- Can use all types of biomass as fuel - twigs, firewood, cattle dung, dry leaves
- Refractory castable with steel exterior
- High speed fan to supply air into the combustion chamber
- Fan powered by battery
- Battery can be charged with solar/ AC power supply
- Low maintenance costs

As per manufacturer of the stove, efficiency and output of the stove is as follows:

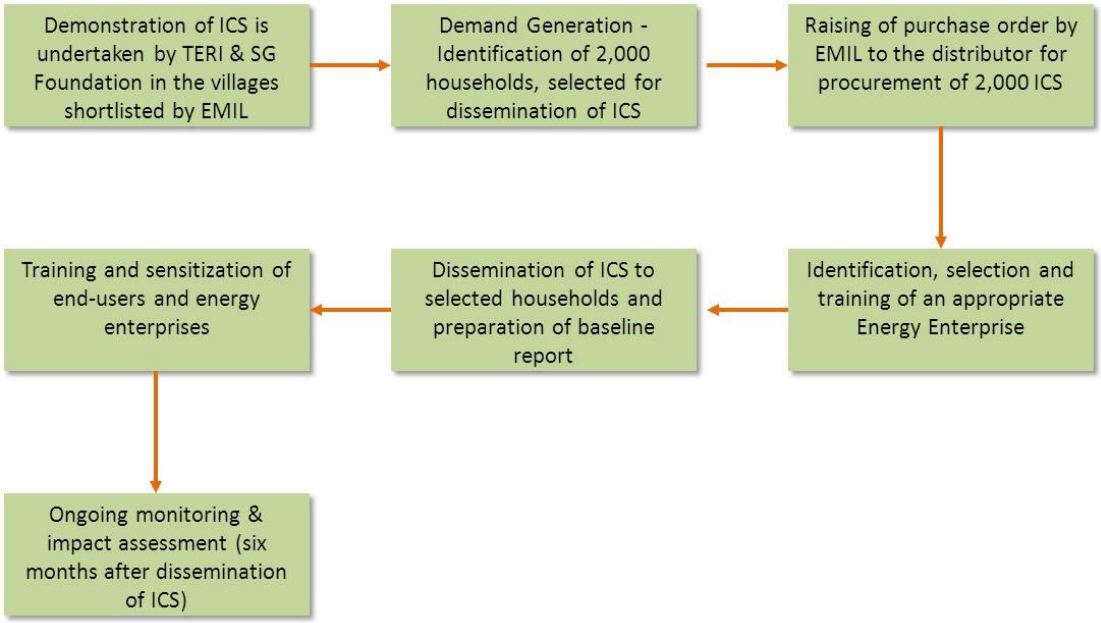
- Thermal efficiency: 36.84%
- CO: 2.25 g/Mjd
- TPM: 147.40 g/MJd
- Power output: 1.08 kW

As per raw observation of the sample population which uses this stove. The stove:

- Consumes 25% less fuel
- Takes 25% less cooking time
- Causes 50% less smoke in kitchen



Business value chain of SPTL 0610 model:



3. Model 'Arti' and 'Annapurna' in Balangir district

'Annapurna' improved cookstoves have been facilitated by NGO Gram Vikas. This is largely an improvement of the traditional types of stoves. Input cost of this cookstove is around Rs. 280. However, Gram Vikas had subsidized the cookstove by doing away with the making charge of Rs 80 and employing its own technicians to help the beneficiaries in building the stoves. The raw materials required for the stove such as metal plates and chambers were also provided at subsidized prices by Gram Vikas. The household contributed to small investments by purchasing the chimney pipe and providing the mud. The male member from the household also contributed his time in assisting the Gram Vikas technician to build the stove. The design of the stove is very close to the traditional clay cookstove with the exception of having a metal plate inside, which improve the insulation of the cookstove to burn the wood more effectively.

Gram Vikas received fund from ICCO (Inter Community Church Organisation) to subsidize the construction of around 15000 improved stoves in rural Odisha over five years. During this time ARTI, an NGO developed improved stove called "improved Laxmi Stove" and commercialised it. Gram Vikas installed the ARTI's improved model stove with little modification, which was suit to local condition. However, ARTI does not

have any role in installing and maintaining the stoves. The raw material required for the stove such as metal plates, chimney pipes and mud. The chulha were installed by Gram Vikas's technician with support from beneficiaries. The design of the chulha is very close to the traditional clay chulha with the exception of having a metal plate inside, which improve the insulation of the chulha to burn the wood more efficiency. The chulha possess two pots (for simultaneously cooking), and a chimney to redirect smoke outdoors.

Gram vikas promoted the Chulha through a lottery based system. Winners in the first lottery installed chulha in 2006 and winner in second lottery installed chulha in 2008. Gram Vikas also provided information and encouraged use of the new stoves. After that many households interested to adopt the improved stove. Training programme organised on proper use and maintenance. Good users were also identified within each village and hired to help promote the use of the stoves and alert Gram Vikas if any stove was in need of repair.

The cooking practices were same as compared to traditional chulha, however because of the chimney most of the smoke is let out of the kitchen. The users were more pleased regarding reduced blackening the walls.

'AARTI' stoves were procured and supplied about five to ten years ago by OREDA under government of India government national programme on Improved Cook stoves. Among the stoves studied under this study, this stove was the least preferred and least used. Only government departments and agencies are involved in the marketing of the stove. Community participation was not found.

5.2 Input and support services

The major improved cookstoves in Odisha are Jeevan Jyoti (Envirofit), Annapurna, Prayagni, Arti and ORKA. These improved cookstoves were deployed via the government and NGOs like Gram Vikas, RCDC either free to the end user or at highly subsidized rates. More recently, however, social enterprises like Kalinga commercial and Aditya Solar have attempted to sell stoves at near full cost.

5.3 Enabling environment

The National Programme on Improved Stove (NPIC) is in operation in the State since 1983-84 with the objective of providing smoke-less fuel efficient improved Stove of both fixed & portable type. Implementation of the scheme is funded both by the Govt. of India & the State Govt. During 2003-04 OREDA has constructed 2000 Fixed Type Improved Stove in the State.

The Govt. of Odisha, in the Panchayati Raj Department, has decided in principle that 1 portable Stove will be supplied to each Indira Awas Yojana (IAY) beneficiary. Similarly, there is also a proposal to supply Community Stove to all schools covered by Mid-day Meal Programme.

Similarly NGO like LAMP organized training programme for construction of smokeless wood stove (stove) in Mayurbhanj district of Odisha for increase in the income level.

Government owned agency like OFSDP and OTELP have been providing training to member of SHGs on installation of smokeless Stove in their respective project area.

In 2005, Gram Vikas (GV), an NGO constructed 15,000 improved stoves in the state. The stoves (called stoves in Oriya and Hindi) had been developed by a local NGO, the Appropriate Rural Technology Institute (ARTI). They were made primarily of mud and used traditional biomass fuels, but they featured two pots (for simultaneous cooking), an enclosed flame (for greater efficiency), and a chimney to redirect smoke outdoors.

5.4 Women's involvement

Women in Odisha are involved primarily in the process of installation. The training of the installation was provided by NGO's such as Gram Vikas and Sambandh to women who in turn are using this practice themselves. Women are primarily associated with this but are not visible in the other aspects of the value chain system. Some women groups are involved in the making of traditional stoves which are produced and marketed by women. Mud stoves when become non-functional are discontinued giving no scope for repair.

TERI's cookstove activities in the state involve women SHGs in the process of training for installation. The SHG's are also involved in the selection of beneficiaries. They are paid Rs. 250 for selecting each appropriate beneficiary by TERI.

5.5 Stove production by women as entrepreneurs

In Odisha generally stoves are produced by following ways:

- Installation of earthen Stove by own for domestic use
- Manufacture of earthen chullha by potters
- Installation of earthen stove by trained women through various organizations and agency
- Marketing of improved stove by various agency and these stoves are manufactured outside Odisha

So, in this context women don't directly get involved as an entrepreneur but they act as support service providers by helping their husband for manufacturing of earthen stove.

5.6 Types of enterprise

In Odisha generally organisations like TERI, OFSDP, etc involved mainly women and their groups, from tribal and rural areas who are provided with hands on training for the proper construction and maintenance of the fixed type stoves.

For instances, Padma Jal of Gudvela, Balangir participated in the training of Smokeless Chulah in the year 2007 in the village, organized by WORLP. Since then, she has got an idea to prepare that stove and motivate women of her SHG as well as other women of the watershed area. By preparing the stove, she has gradually become a resource person for the training and participation in the training of the watershed areas. She has

moved to other villages and has installed the stoves and thereby earned some amount of skills. She is charging Rs.50.00 for installation of one stove and her capacity to install a stove per day is 7-8 in number. While interacting, she informed that she takes interest in learning new ideas through which she can help others as well as earn some amount for financial security.

5.7 Initial investment and source of investment money

There is no investment required for the SHGs. The SHGs play the role of a facilitator for selection of right kind of beneficiaries for the distribution of Stove. In some cases the SHG members are getting training from agencies and installing the Stove in their nearby villages.

5.8 Time involvement in stove production enterprise

In some pockets of Odisha, Kumbar communities are producing the traditional Stove for their local domestic use. In the stove making process men play a vital role whereas women help them by providing support. The stove production is basically seasonal in nature.

5.9 Production and sell

The potters are producing the Stove in their home and sell it in the local weekly market. But in some cases the traders visit the production centres to buy stoves in bulk. Producers have their regular buyers. In some places in Gajapati district, local traders transport the stove from the producers through Lorries. A lorry can accommodate about 400 stoves at a time and then supply it to the retail shops in Berhampur. In some cases, the stoves are also transported to Bhubaneswar (Unit 1 haat spread over a distance of 250 km) for marketing the product.

5.10 income, expenditure and net income

The families who are manufacturing the stove sell it in the local market at an average of Rs. 250 per Stove. But in some cases members of SHGs install the Stove and make an income out of it. For Instance, Members of Maa Bhairabi and Maa Parbat SHG of Tabhapal VSS in Pallhara FMU of Deogarh belong to the potter caste. They realized the income potential from the mass production of smokeless Chullah for installation in project VSS. They immediately mastered the manufacturing skill and started installing it in the neighboring VSS. They could articulate its advantages with fellow women in other VSS, while women to women communication worked wonders. They installed 2187 FED (Fuel Efficient Devices) across 29 VSS of the FMU and in the process made a net income of more than one lakh Rupees.

In Odisha, generally an organization like TERI involved the women SHGs to identify the beneficiaries for Stove distribution. For instance, SHGs of Thakurmunda area, Mayurbhanj district identifying beneficiaries and distribution of Stove to right kind of beneficiaries as a result they are getting Rs. 250 per beneficiary.

5.11 Supports from external support organizations

The SHG members receive training from external agencies like TERI, OTELP, OFSDP, etc for installation of Stove. But they do not get any direct support from any other external organization to undertake Stove in an enterprise mode.

5.12 Required support to enhance the enterprise

They require the market information for the stove marketing. To undertake Stove as an enterprise SHGs are required to give their inputs in infrastructure, input and marketing support from Government and Non Government organizations.

5.13 Satisfaction with the business

The potters are satisfied with their business as it is a seasonal business for them. SHGs members are not satisfied because even though they receive training from the organization yet they start as an enterprise for enhancing their income.

5.14 Quality assurance mechanism

There is no quality assurance mechanism because they are doing it on adhoc basis and not in a proper planned manner. Since this a very new market in Odisha, quality assurance is yet to be streamlined.

5.15 Main barriers for you to expand your business

As women are not directly involved in Stove production, they only install the stove. There is no such barrier for stove production. This is only caste based probation. Lack of women's involvement in the production, manufacturing as well as marketing is limiting the growth of this market in Odisha in very many ways.

5.16 Socio-cultural barriers

There are no socio-cultural barriers for stove production. For the Kumbar community, it is a caste based occupation and women are installing stove because of their interest. Culturally women are seen responsible for the household hence their involvement in the cookstoves system is promoted yet not implemented. They have not been absorbed into the value chain system although they are the prime end users. Men dominate the market system creating barriers for women's direct involvement in the process.

5.17 Women as workers in stove manufacturing companies

Women from Odisha are not working in stove manufacturing companies because stoves are imported from outside. The Stove is not manufactured in Odisha.

5.18 Number of staff and gender composition

As mentioned above individual women are not directly involved as stoves promoters and technicians. Organizations like OTELP, TERI, etc promote the stoves through the SHGs.

5.19 Gender preferences in stove production

Since the direct production of cook-stoves is not carried out in the state and is in its nascent form, gender preferences related to cookstove production cannot be deduced easily.

5.20 Positive and negative aspects for making women involved in stove production

As primary users of the product it would be a positive feature to involve women in stove production, but a negative could be the regulating mechanism of the system, which in this case needs to be done by a third party, such as the organizations.

5.21 Staff - gender policy of the stove manufacturing companies

Different agencies have different structures and policies. Some include them in the installation process (TERI) while they are missing in many others. Manufacturing companies do not have any staff-gender policy as no evidence for women's involvement was seen.

5.22 Women's involvement as the Stove Promoters and Technicians

As mentioned above individual women are not directly involved as stoves promoters and technicians. Organizations like OTELP, TERI, etc promote the stoves through the SHGs.

5.23 Years of involvement and support of family members

The stove manufacturing system has very recently taken shape in Odisha. Women have been involved as promoters and not technicians as recently as a year ago. They have promoted these cookstoves with the help of being a part of SHG's. Some have done it individually as well. Women have been supported by the family members. They want women to be involved in the process.

5.24 Types stove produced, annual production and sell

In our study, we found 3 main stoves which are being produced at present. The other variety of stove is not under production any more. The annual production and sale of the cookstoves in Odisha could not be ascertained as respondent agencies did not have information.

5.25 Stove sell/distribution channel and working modality

Institute for Minerals and Materials Technology (IMMT) and ORIDA are the major players who produce the cookstoves. Earlier cookstoves were procured by ORIDA through government interventions. These cookstove technologies are then used by manufacturers who are distributing and marketing the product under their respective banners. This is then passed on to the consumers according to the demand situation.

5.26 Key barriers/challenges including socio-cultural

Women have not been trained to play a role in entrepreneurship, manufacturing, distribution, technical knowledge, providing maintenance or repairing. They have no working capital which is another major hindrance, while they remain dependant on the system which is governed by their male counterparts.

5.27 Satisfaction with the business and annual income

Assessing women's satisfaction with the business was extremely difficult as they were not involved technically. As promoters they have been given an opportunity but not trained well enough to take it up further. They require more training and inclusion within the market chain.

On an average the SHGs make Rs. 2000 annually as an additional income. It may vary from one SHG to another, depending on the number of members and the demand.

5.28 Time dedication in this profession

It is a part time profession where the number of hours varies for most who give 4-5 hours weekly. This might vary according to the demand situation.

5.29 External support

External support is provided by NGOs who hold training programs for women. No other external support is provided per say.

5.30 Required support to enhance the business

Women have not been directly involved hence working capital and training for manufacturing, producing, and knowing technicalities is important.

5.31 Access to finance and the main decision maker

SHGs are linked to the bank but they do not play a major role of decision making as they are the installers and end users. They have not played any role in production or manufacturing.

5.32 Stove marketing

Women sell locally made improved Stove in local Haats on a weekly basis. The study found one SHG which is manufacturing ventilation pipe and selling those. Direct consumers and local traders purchased the stove from the manufacturers. But the scale of operation is very low.

5.33 Stove distribution

In Odisha, the following agencies/organisations distribute the cook stoves for free and at subsidized rates.

- Odisha Renewable Energy Development Agency (OREDA)
- Odisha Tribal and Empowerment Livelihood Programme (OTELP)
- Odisha Forestry Sector Development Programme (OFSDP)
- Local NGOs like Gram Vikas, RCDC and many more

But, recently, social enterprises like Kalinga commercial, Aitya Solar shop, etc have attempted to sell improved stoves at full cost through their retail channel

5.34 Repair and maintenance

In most cases, when the improved cook stoves are damaged, they don't repair it and people stop using the improved stoves because they don't have time to repair when once the workload increases. They have them in their homes, but in turn use their traditional stoves.

5.35 Women involvement in organizations supporting clean cookstove activities

Women in the study area do not get involved with organizations that support the cleaning of the stove.

5.36 Women involvement in implementation of stove projects and programs

Women in the study area do not get involved with organizations that support the cleaning of the stove.

5.37 Women involvement in Policy making

In Odisha, women are yet to realize the stove use pattern and its positive impacts. So, in nut shell women are yet to come forward for the policy making process.

5.38 Cookstoves business and its impact on women's economic activity and livelihood

As mentioned earlier, most of women are involved in the installation of Stove in their respective areas and there income level has increased substantially. Two cases are also cited above.

5.39 Opportunities costs and benefits to the women entrepreneurs in cookstove value chain.

There is a lot of scope for women to get involved in the cook stove value chain as producers and as entrepreneurs. Entrepreneurship in supplying cookstoves is relevant in Odisha and is the need of the hour as it serves the urgent needs of millions at the "bottom of the pyramid" who can be profitable (and thus sustainable and scalable) as well. Because charcoal and firewood are the two main sourced of fuel used in Odisha. So, wood produce burning stoves will be useful to general consumers because it will match products to need.

5.40 Interest, Possibilities, Opportunities and barriers for women involvement in cookstove market system

SHGs women are primarily interested for getting involved in stove marketing system as production, seller, entrepreneurs, etc. But they require a handholding support like training on marketing skills, entrepreneurships, etc. There are opportunities to rural women to become small scale entrepreneurs through manufacture and installation of earthen stove, chimneys and cowls etc thereby becoming self-sufficient and financially independent.

5.41 Contribution and role of women involvement in stove market system in increasing clean cookstove stove adoption

As SHGs women are involved in stove installation in their respective areas and the installation stove is improved version of traditional stove because it controls the smoke to some extent. The message also spreads from one village to another and women are aware of it. Hence, there is an increased trend of smokeless stove adaptation.

5.42 Cookstoves adoption and use from a gender perspective

5.42.1 Preferences and requirement of women in improved cookstoves (Women's preferences in stove design)

Stoves used by the women are mostly made of mud. Their preference would include stoves which emit less smoke, requires less fuel supply and produces more heat to cook food faster. These features were primary for the women in having an improved design.

5.42.2 Role and involvement of women in stove selection and design

Women get what is supplied in the region. They are not involved in the selection process of the stove or the design.

5.42.3 Effectiveness of cookstove technology information channels in reaching women, stove adoption and maintenance

NGOs are making an effort to reach the end users and involve them, but being a completely new market and a new concept in Odisha the process is very slowly picking up.

5.42.4 Contribution and role of women in increasing stove adoption

Women SHGs play a major role in increasing adoption of the stove. The efficient stoves are popularized through these women's groups in the villages. Yet, being a new market which is still to be explored to its fullest in Odisha, the stoves are slowly gaining prominence.

6. Conclusion and Recommendations

There are a wide variety of cook stove technologies on the market today – ranging from traditional stove to basic improved to renewable energy solutions. While there is a thriving and growing set of private sector actors (and NGOs) in the sector, the majority of them are small and have yet to scale up to meet the magnitude of the problem. The government's intervention in cook stove programme is in initial stage. However, cook stoves have become a popular focus area for donor agencies and multilateral programs and new programs on supporting research, financing and implementation are beginning to emerge. There is also mismatch in supply and demand in the industry. In order to scale up both the supply and demand for cookstoves, support is required in four areas: (i) facilitating greater partnerships between stakeholders and sharing of knowledge within the sector, (ii) developing and promoting acceptable and minimum standards for stove performance, (iii) promoting awareness of cookstoves and the positive benefits they hold, and (iv) providing and promoting a wider base and diversity of financing options available to both consumers and suppliers.

Cookstove sector has struggled to reach scale. There are literally number of improved stove designs and many examples of small pilot projects delivering anecdotal positive impacts, but only a very few have reached any kind of scale or attempted to measure the health, climate, economic or environmental impact in a robust, impartial and systematic way. For example, ten years after the start of India's National Improved Stoves Programme, improved stoves accounted for less than seven percent of all stoves in use (ESMAP & World Bank, 2001). This limited large-scale impact can inpart be explained by insufficient interaction with end users and high subsidies in the energy sector. The study highlight some of the recommendation for future action are as follows:

a. Participatory Approach
    - Analysing gender roles and dynamics in the community
    - Strategy to be developed for the involvement of men
    - Identify and build local partnerships with trusted individuals and organizations, including women's groups
    - Gender sensitive training programmes on relevant topics- concerning opportunities and stove options
    - Conduct surveys, FGD's and interviews with the beneficiaries

b. Product Design
    - Women's input is crucial in the designing of the stove
    - The control is regulated by the women
    - The product is designed such that it can be used for a long time
    - Engaging women can help generate demand, create appropriate products, and increase adoption

c. Observation and Monitoring
    - Conduct cookstove performance tests with local stakeholders in the field to ensure performance
    - Women cooking on both- the traditional cookstove and the improved model should be monitored
    - Engage the community members and take their feedback

d. Production
    - Women can be economically empowered in the production of clean cookstoves. As producers, women become experts in the products they use regularly and are likely to further help generate awareness and demand among a wider cadre of consumers. They can also leverage their networks to scale distribution, particularly among female
    - Integrate livelihood opportunities for women in manufacturing processes that involve producing components locally
    - Work with SHGs to scale efforts, build capacity and provide a support system
    - Provide training on quality assurance and quality control
    - Provide production manuals

e. Consumer Finance
    - Consumer finance options enable women to purchase clean cooking solutions. When diverse finance options are available to purchase expensive products, consumers have more purchasing power and are able to consider higher-priced, but better-quality options
    - Emphasize money management and savings in trainings
    - Consider flexible repayment plans, micro-consignment or rent-to-own schemes
    - Providing consumer finance directly through the project or develop partnerships to provide direct access to credit for purposes

f. Supplier Finance
    - Women led business are unique as they can connect directly with investors and lead the business
    - Train women borrowers and financial management and provide mentorship
    - Gender and rural micro-finance
    - Provide financial support to reduce their risk lending to cooking sector business
    - Conduct education and advocacy to increase the ability and willingness to lend to women energy entrepreneurs

g. Distribution
    - Women are often organized in networks that can reach vast new customer segments. They have access to hard-to-reach households, can utilize woman-to-woman marketing techniques, and are trusted promoters of household products among their peers
    - Create market maps to better understand the distribution channels and opportunities
    - Offer trial periods for women distributors
    - Create central product hubs
    - Gender-informed marketing messages and methods to raise awareness
    - Create a tiered system of accountability
    - Provide incentives
    - Opportunities for successful women to share their experiences to identify and recruit new women for leadership roles
    - Engage men in transportation services (bicycles or any socially acceptable transportation)

h. After-Sales service
    - Women are well-positioned to ensure proper maintenance and care of improved cooking solutions. Users are not always aware of how to properly use and maintain their clean cooking technologies and fuels, leading to shortened product lifespans. Woman-to-woman knowledge transfer in maintenance is often more effective than man-to-woman knowledge transfer, particularly in conservative communities. Women can implement trial periods and warranties more easily because they have direct access to users
    - Provide support networks and oversight
    - Provide warranties with women servicing and repair/maintenance needs

In order to have a concrete understanding further research is required with a representative sample size.

ANNEXURES

ANNEX 1: SURVEY INSTRUMENTS

Annex 1.1: **Information schedule / questionnaire (Odia version of the english questionnaire)**

ପାରିବାରିକ ପ୍ରଶ୍ନାବଳୀ

ସାକ୍ଷାତକର୍ତ୍ତାଙ୍କ ପାଇଁ ସୂଚନା:

ଏହି ପ୍ରଶ୍ନାବଳୀର ତିନିଟି ଭାଗ ରହିଛି

ପ୍ରଥମ ଭାଗ: **ସାଧାରଣ ପୃଷ୍ଠଭୂମି**

ଦ୍ୱିତୀୟ ଭାଗ: **ସ୍ୱାସ୍ଥ୍ୟଗତ ପ୍ରଭାବ**

ତୃତୀୟ ଭାଗ: **ଉନ୍ନତ ଚୁଲା ସମ୍ବନ୍ଧିତ**

ଦୟାକରି ହାଲୁକା କଳା ରଙ୍ଗ ଦିଆଯାଇଥିବା ସ୍ଥାନରେ ଲେଖନ୍ତୁ ନାହିଁ। ଯଦି ଗୋଟିଏ ପରିବାର ପାଇଁ କୌଣସି ପ୍ରଶ୍ନ ପ୍ରାସଙ୍ଗିକ ନୁହେଁ ତେବେ ସେହି ସ୍ଥାନରେ ଦୟାକରି (--) ଚିହ୍ନ ଦିଅନ୍ତୁ।

ପ୍ରଥମ ଭାଗ: ସାଧାରଣ ସୂଚନା

ସାକ୍ଷାତକାର ନିଆଯାଇଥିବା ତାରିଖ: ---------- ପରିବାର ସଂଖ୍ୟା: ----------

ଦେଶ:----------ରାଜ୍ୟ:---------- ଜିଲ୍ଲା: ---------- ଗ୍ରାମ: ----------

ବସତିର ପ୍ରକାର: ସହର ☐ ଆଂଶିକ ସହର: ☐ ଗ୍ରାମାଞ୍ଚଳ: ☐

ପ୍ରଶ୍ନକର୍ତ୍ତାଙ୍କ ନାମ:----------

ଉତ୍ତରଦାତାଙ୍କ ନାମ: ---------- ବୟସ: ----------, ଲିଙ୍ଗ: ----------

ଉତ୍ତରଦାତାଙ୍କ ପରିବାର ମୁଖ୍ୟଙ୍କ ସହିତ ସମ୍ପର୍କ: ---------- ପରିବାରର ସଦସ୍ୟ ସଂଖ୍ୟା: ----------

ଗାଁ ମାନଙ୍କରେ ଏହି ସର୍ଭେ ପାଇଁ ଭିନ୍ନଭିନ୍ନ ବର୍ଗର ପରିବାର ବଛାଯିବ (ଯଥା ଗରିବ, ମଧ୍ୟମ ଗରିବ, ଭଲ ଚଳଣି)। ସେହିଭଳି, ସର୍ଭେ କରାଯାଉଥିବା ପରିବାର ମଧ୍ୟରୁ ୭୫ ପ୍ରତିଶତ ବା ପ୍ରତି ଚାରିଟି ପରିବାରରୁ ତିନିଟି ପରିବାର) ସ୍ୱଚ୍ଛ ରୋଷେଇ ଚୁଲା ବ୍ୟବହାର କରୁଥିବା ଆବଶ୍ୟକ। ଅବଶିଷ୍ଟ ୨୫ ପ୍ରତିଶତ ସର୍ଭେ ପରିବାର ପାରମ୍ପରିକ ଚୁଲା ବ୍ୟବହାର କରୁଥିବା ପରିବାର ରହିବେ। ସର୍ଭେ କରାଯାଉଥିବା ମୋଟ ପରିବାର ମଧ୍ୟରେ ଅତି କମ୍‌ରେ ପାଞ୍ଚ ପ୍ରତିଶତ ମହିଳା ମୁଖ୍ୟ ଥିବା ପରିବାରକୁ ସାମିଲ କରିବା ପାଇଁ ପ୍ରୟାସ କରାଯିବ।

A.1 ପରିବାରର ବୈଶିଷ୍ଟ୍ୟ

ଆଇଡି ନମ୍ବର		ଲିଙ୍ଗ	ବୟସ		ଶିକ୍ଷା ସ୍ଥିତି	କେବଳ ୬-୧୪ ବର୍ଷ ବୟସର ପିଲାଙ୍କ ପାଇଁ			ବୃତ୍ତି (କେବଳ ବୟସ୍କଙ୍କ ପାଇଁ)	
						ଶିଶୁଟି ବର୍ତ୍ତମାନ ପଢୁଛି କି ?	ଯଦି ପଢୁନାହିଁ-କାରଣ କ'ଣ ?	କାମ କରୁଛନ୍ତି କି ?	କୃଷି-୧ ବିଦେଶରେ କାମ-୨ ବ୍ୟବସାୟ-୩ ଶିଳ୍ପ-୪ ଚାକିରୀ-୫ ଛାତ୍ର-୬ ଦିନ ମଜୁରିଆ-୭ ଅନ୍ୟାନ୍ୟ (ନିର୍ଦ୍ଦିଷ୍ଟ ଦର୍ଶାନ୍ତୁ-୮	
	ପରିବାର ସଦସ୍ୟଙ୍କ ନାମ (ଉତ୍ତରଦାତା ପରିବାରର ମୂଖ୍ୟଙ୍କ ଠାରୁ ଆରମ୍ଭ କରନ୍ତୁ)	ପୁ- ୧ ମ- ୨	ସମ୍ପୂର୍ଣ୍ଣ ହୋଇଥିବା ବୟସ	ଗତ କାଲି ସମୁଦାୟ କେତେ ସମୟ ରୁଲାନିକଟରେ ସମୟ ଦେଇଛନ୍ତି*	ବିଦ୍ୟାଳୟରେ କେତେବର୍ଷ ବିତାଇଛନ୍ତି ସମ୍ପୂର୍ଣ୍ଣ ଅଶିକ୍ଷିତ - ୦, ଶିକ୍ଷିତ କିନ୍ତୁ ପ୍ରାଥମିକ ପଢା ସମାପ୍ତ କରିନାହାନ୍ତି - ୯୯, ଅନ୍ୟାନ୍ୟ କ୍ଷେତ୍ରରେ ପଢିଥିବା ଶେଷ ଶ୍ରେଣୀ	କେବେ ପଢି ନାହିଁ - ୧ ଘରେ କାମ କରିବା ଜରୁରୀ - ୨ ପଢାଖର୍ଚ୍ଚ ତୁଲାଇ ହେଲାନି - ୩	ହଁ - ୧ ନା - ୨	ହଁ - ୧ ନା - ୨	ମୂଖ୍ୟ ବୃତ୍ତି	ଗୌଣ ବୃତ୍ତି
୧	**ପରିବାରର ମୂଖ୍ୟ :**									
୨										
୩										

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୬										
୭.										
୮.										

- ବିଶିଷ୍ଟ ଦ୍ରଷ୍ଟବ୍ୟ – ଏଠାରେ ଚୂଲିର ନିଆଁଠାରୁ ତିନି ମିଟର ଦୂରତା ପର୍ଯ୍ୟନ୍ତକୁ ପାଖ ବୋଲି ବୁଝାଯିବ ।

H2_1 ଆପଣ ସାଧାରଣତଃ କେଉଁଠାରେ ରୋଷେଇ କରନ୍ତି ? ରହିବା କିମ୍ବା ଶୋଇବା ଲାଗି ବ୍ୟବହୃତ କୋଠରୀରେ : ୧ ରୋଷେଇଲାଗି ବ୍ୟବହୃତ ହେଉଥିବା ଅଲଗା ଏକ କୋଠାଘରେ : ୨ ସେହି ଘରର ଏକ ସ୍ୱତନ୍ତ୍ର କୋଠରୀରେ : ୩ ଘର ବାହାରେ-ଖୋଲା ସ୍ଥାନରେ : ୪ ଘର ବାହାରେ- କିଛୁ ଆଚ୍ଛାଦ ଅଛି : ୫ ଅନ୍ୟାନ୍ୟ (ତାହା ବିଷୟରେ ଟିକିଏ ବିଶଦରେ ଲେଖନ୍ତୁ) : ୬	ଗ୍ରୀଷ୍ମ ଋତୁରେ : ..... ଶୀତ ଋତୁରେ: ..... ବର୍ଷା ଋତୁରେ:	
H2_2 ଯଦି ଘରେ ସ୍କୁଲ ଯାଉଥିବା ପିଲା ଅଛନ୍ତି, ସେମାନେ ନିଜର ଘର ପାଠପଢା କେଉଁଠାରେ କରିଥାନ୍ତି ? ରୋଷେଇ ଘରେ : ୧ ଘରର ଅନ୍ୟ ଏକ ସ୍ଥାନରେ : ୨ ଘର ବାହାରେ : ୩ ଅନ୍ୟ ଏକ ଘର କିମ୍ବା କୋଠାଘରେ : ୪ କୌଣସି ସ୍ୱତନ୍ତ୍ର ଘର ନାହିଁ କିମ୍ବା ପାଠପଢା କାର୍ଯ୍ୟ କରୁନାହାନ୍ତି : ୫	ଗ୍ରୀଷ୍ମ ଋତୁରେ : ..... ଶୀତ ଋତୁରେ: ..... ବର୍ଷା ଋତୁରେ:	
H2_3 ଆପଣଙ୍କ ଘରେ ସମୁଦାୟ କେତୋଟି କୋଠରୀ ରହିଛି ?		

H_3 ଘରୋଇ ଜାଳେଣୀର ପ୍ରକାର ଏବଂ ବ୍ୟବହାର

H3_1 ଏଠାରେ ଉଲ୍ଲେଖ ଥିବା ବିଭିନ୍ନ ଜାଳେଣୀର ସୂଚୀରୁ କେଉଁ ଜାଳେଣୀକୁ କେଉଁ ବ୍ୟବହାର ପାଇଁ ମୁଖ୍ୟ ଓ ଦ୍ୱିତୀୟ ମୁଖ୍ୟ ଜାଳେଣୀ ଭାବରେ ବ୍ୟବହାର କରନ୍ତି ?

୧. କାଠ ୨. ଗୋବର ଘସି ୩. କୃଷିଜାତ ଅବଶେଷ (କୁଟା/ପାଳ) ୪. ଅନ୍ୟାନ୍ୟ ଅବଶେଷ	୫. କୋଇଲା ୬. କିରାସିନି ୭. ଏଲ୍‌ପିଜି ଗ୍ୟାସ୍ ୮. ସୌରଶକ୍ତି କୁଜର ୯. ସୌରଶକ୍ତି ଚାଳିତ ବୈଦୂତିକ କୁଜର	୧୦. ବୈଦ୍ୟୁତ ଶକ୍ତିରେ ଚାଲୁଥିବା ଚୁଲା (ହିଟର, ଇଣ୍ଡକସନ) ୧୧. ବ୍ୟାଟେରୀ ୧୨. ମହମବତୀ ୧୩. ଜୈବ ଇନ୍ଧନ (ବାୟୋ/ଗୋବର ଗ୍ୟାସ) ୧୪. ଅନ୍ୟାନ୍ୟ

ଯଦି 'ଅନ୍ୟାନ୍ୟ' ଜାଳେଣୀ ବ୍ୟବହାର ହେଉଅଛି ତେବେ ତାହା ବିଷୟରେ ବିଶଦରେ ଉଲ୍ଲେଖ କରନ୍ତୁ	**ଅନ୍ୟାନ୍ୟ ଜାଳେଣୀ :**	

	ପ୍ରମୁଖ ଜାଳେଣୀ	**ଦ୍ୱିତୀୟ ମୁଖ୍ୟ ଜାଳେଣୀ**
H3_1_1 ରୋଷେଇ (ପିଇବା ପାଇଁ ଯଦି ପାଣି ଫୁଟାଯାଉଥାଏ ତାହା ମଧ୍ୟ)		
H3_1_2 ଚା / କଫି ତିଆରି କରିବା ପାଇଁ		

H3_1_3 ଆଲୋକ ଜଳାଇବା ପାଇଁ		
H3_1_4 ଘରକୁ ଗରମ କରିବା ପାଇଁ		
H3_1_5 ଅନ୍ୟ ବ୍ୟବହାର ଉଦ୍ଦେଶ୍ୟରେ ପାଣିକୁ ଫୁଟାଇବା ପାଇଁ		
H3_1_6 ନିଜର ବ୍ୟବହାର ଉଦ୍ଦେଶ୍ୟରେ ମଦ ରାନ୍ଧିବା ପାଇଁ		
H3_1_7 ବିକ୍ରୟ ଉଦ୍ଦେଶ୍ୟରେ ଖାଦ୍ୟ / ପାନୀୟ ରୋଷେଇ କରିବା ପାଇଁ		
H3_1_8 ପଶୁପକ୍ଷୀଙ୍କ ଖାଦ୍ୟ ରୋଷେଇ କରିବା ପାଇଁ		
H3_1_9 ଅନ୍ୟ କାମ ୧ (କାମଟି କଣ ନିମ୍ନରେ **H3_2** ସ୍ଥାନରେ ଉଲ୍ଲେଖ କରନ୍ତୁ)		
H3_1_10ଅନ୍ୟ କାମ ୨ (କାମଟି କଣ ନିମ୍ନରେ **H3_2** ସ୍ଥାନରେ ଉଲ୍ଲେଖ କରନ୍ତୁ)		

H3_2 ଯଦି ଅନ୍ୟ କାମ ପାଇଁ ବୁଲା ବ୍ୟବହାର ହେଉଥାଏ, ଦୟାକରି ତାହା ବିଶଦରେ ଉଲ୍ଲେଖ କରନ୍ତୁ ।	ଅନ୍ୟ କାମ ୧ **=**	
	ଅନ୍ୟ କାମ ୨ **=**	

C. ରୋଷେଇ ପାଇଁ ଜାଳେଣୀ ଆବଶ୍ୟକତା

C.1 ଆପଣ ରୋଷେଇ ଲାଗି କେଉଁ ପ୍ରକାରର ଉପକରଣ ବ୍ୟବହାର କରୁଛନ୍ତି ?

କ୍ରମିକ ସଂଖ୍ୟା	ଷ୍ଟୋଭର ପ୍ରକାର *	ଚୁଲା/ଷ୍ଟୋଭ ଭଳି ଉପକରଣର ସଂଖ୍ୟା	ଜାଳେଣୀ	ଯଦି ଆପଣଙ୍କର ଷ୍ଟୋଭ/ଚୁଲା ଅଛି			ମୁଖ୍ୟ ଖାଦ୍ୟ ରୋଷେଇ ଲାଗି ବ୍ୟବହାର ହେଉଥିଲେ (C ଲେଖନ୍ତୁ), ଚା ଜଳଖିଆ ପାଇଁ ବ୍ୟବହାର ହେଉଥିଲେ (T ଲେଖନ୍ତୁ), ଘର ଉଷୁମ ଲାଗି (H ଲେଖନ୍ତୁ), ଗୃହପାଳିତ ପଶୁଙ୍କ ଲାଗି ଖାଦ୍ୟ ପ୍ରସ୍ତୁତ କରୁଥିଲେ (F ଲେଖନ୍ତୁ), ବିକ୍ରୟ/ବ୍ୟବସାୟ ପାଇଁ ରୋଷେଇ ହେଉଥିଲେ (B ଲେଖନ୍ତୁ), ଅନ୍ୟାନ୍ୟ ବ୍ୟବହାର ପାଇଁ (O ଲେଖନ୍ତୁ)	ଏହାର ସବୁଠାରୁ ପ୍ରମୁଖ ବୈଶିଷ୍ଟ୍ୟ କ'ଣ ?	ଏହାର କେଉଁ ବୈଶିଷ୍ଟ୍ୟ ଆପଣଙ୍କୁ ଖରାପ ଲାଗେ ?
				ପ୍ରତି ଚୁଲାର ଦାମ	କିଣିଥିବା ବର୍ଷ	ବର୍ତ୍ତମାନ ଚୁଲା/ଷ୍ଟୋଭ କେଉଁ ସ୍ଥିତିରେ ଅଛି : ଖରାପ ଅଛି = ୧ ମୋଟାମୋଟି ଭଲ ଅଛି = ୨ ବହୁତ ଭଲ ଅଛି = ୩ (ଆପଣଙ୍କ ନିଜ ନିରୀକ୍ଷଣ ଅନୁସାରେ ବା ଆପଣଙ୍କୁ କୁହାଯାଇଥିବା ଅନୁସାରେ)			
ପ୍ରଥମ									
ଦ୍ୱିତୀୟ									

ତୃତୀୟ									
ଚତୁର୍ଥ									

* ବିଭିନ୍ନ ଚୁଲା ପାଇଁ କୋଡ୍ ନମ୍ବର :

ଏଲପିଜି ଗ୍ୟାସ ଚୁଲା ଏବଂ ସିଲିଣ୍ଡର = ୧ ; କେରୋସିନ ଷ୍ଟୋଭ୍ = ୨ ; ଉନ୍ନତ କାଠ ଚୁଲା = ୨ ; କୋଇଲା/କୋଇଲା ଗୁଳା ଚୁଲା = ୪ ; ଭାତରନ୍ଧା କୁକର୍ = ୫ ; ବୈଦ୍ୟୁତିକ ହିଟର = ୬ ; ତିନିଗୋଡିଆ ଲୁହା ଆଧାରିତ ଚୁଲା ବା ତିନିଟି ପଥର ଦେଇ ତିଆରି ହୋଇଥିବା ପାରମ୍ପରିକ ଚୁଲା = ୭ ; ପାରମ୍ପରିକ ମାଟି ଚୁଲା = ୮ ; ରକେଟ୍ ଷ୍ଟୋଭ = ୯ ; ବାୟୋ ଗ୍ୟାସ୍ = ୧୦ ।

*ଯଦି ବାୟୋଗ୍ୟାସ ହୋଇଥାଏ ତେବେ ଦୟାକରି ତାହାର ସାଇଜ୍ ବା ଆକାର ଉଲ୍ଲେଖ କରନ୍ତୁ)

C.2 **ଯଦି ଆପଣ ବା ଆପଣଙ୍କ ପରିବାର ରୋଷେଇ ପାଇଁ ଜାଳେଣୀ ସଂଗ୍ରହ କରନ୍ତି ବା ଜାଳେଣୀର ପ୍ରକ୍ରିୟାକରଣ କରନ୍ତି, ତେବେ ନିମ୍ନରେ ଦିଆଯାଇଥିବା ଟେବୁଲ ବ୍ୟବହାର କରି ଆପଣ ସଂଗ୍ରହ ପାଇଁ କେତେ ଦୂରକୁ ଯାଆନ୍ତି, ବିଭିନ୍ନ ସମୟରେ କେତେ ସମୟ ଲାଗେ, କିଏ ସଂଗ୍ରହ କରନ୍ତି ଆଦି ବିଷୟରେ ଦୟାକରି ସୂଚନା ଦିଅନ୍ତୁ ।**

ସାଧାରଣତଃ କିଏ ସଂଗ୍ରହ କରନ୍ତି ସ୍ଥାନରେ ଏହି କୋଡ୍ ବ୍ୟବହାର କରନ୍ତୁ, ମହିଳା ରାନ୍ଧୁଣିଆ - ୧; ସ୍ୱାମୀ/ସ୍ତ୍ରୀ -୨; ଝିଅ/ବୋହୂ -୩; ପୁଅ -୪; ବାପା/ଶ୍ୱଶୁର -୫; ମା/ଶାଶୁ-୬; ପୁଅୁରା/ଝିଆରୀ -୭; ଅନ୍ୟାନ୍ୟ -୮

ଜାଳେଣୀର ପ୍ରକାର (କାଠ,	କେଉଁ ଋତୁରେ ଏହା ମୁଖ୍ୟତଃ	କେଉଁଠୁ ମିଳେ	ଜାଳେଣୀ ପାଇଁ ବାହାରିକି	ବର୍ଷରେ କେତେ ପରିମାଣ ସଂଗ୍ରହ କରନ୍ତି	**ସାଧାରଣତଃ କିଏ ସଂଗ୍ରହ**

ଗୋବର ଘସି, କୋଇଲାମୁଣ୍ଡା, ଚାଷରୁ ବଳକା ଦ୍ରବ୍ୟ, କୋଇଲା ଇତ୍ୟାଦି)	ସଂଗ୍ରହ କରାଯାଏ ? ଦୟାକରି କ୍ରମରେ ଲେଖନ୍ତୁ		ଫେରିବା ପାଇଁ କେତେ ସମୟ ଲାଗେ ? (ସଂଗ୍ରହ ଓ ପ୍ରକ୍ରିୟାକରଣ ପାଇଁ)	ୟୁନିଟ	ପରିମାଣ	ୟୁନିଟ ପ୍ରତି କିଲୋଗ୍ରାମ	**କରନ୍ତି ?** ଯଦି ଏକାଧିକ ବ୍ୟକ୍ତି ଯାଉଥାନ୍ତି ତାଙ୍କୁ ମଧ୍ୟ ସାମିଲ କରନ୍ତୁ ।
କାଠ			__ ଘଣ୍ଟା _____ ମିନିଟ				
ଗୋବର ଘସି			___ ଘଣ୍ଟା _____ ମିନିଟ				
କୃଷିଜାତ ଅବଶେଷ (ଯଥା – ହରଡ ଡାଙ୍ଗି, ପାଳ, ଧାନକଣ୍ଡା/ଚଷୁ ଇତ୍ୟାଦି)			___ ଘଣ୍ଟା _____ ମିନିଟ				
			___ ଘଣ୍ଟା _____ ମିନିଟ				

C.3 ଯଦି ଆପଣ କ୍ରୟ କରୁଛନ୍ତି ତେବେ ଜାଳେଣୀର ପରିମାଣ ଏବଂ ମୂଲ୍ୟ

କ୍ରମାଙ୍କ	ଜାଳେଣୀ	ଥରେ କିଣିବା ପାଇଁ କେତେ ସମୟ ଲାଗେ	ବର୍ଷରେ କେତେ ଥର କିଣିବାକୁ ପଡେ	ସାଧାରଣତଃ କିଏ କିଣିବାକୁ ଯାଆନ୍ତି (ପୁରୁଷ/ମହିଳା/ ବାଳକ/ ବାଳିକା)	ଜାଳେଣୀକୁ ଅଣାଯିବାର ମାଧ୍ୟମ	କ୍ରୟ		
						ୟୁନିଟ	ୟୁନିଟ ମୂଲ୍ୟ	ବର୍ଷରେ ମୋଟ କ୍ରୟ (ଟଙ୍କାରେ)
୧	ଜାଳେଣୀ କାଠ							
୨	ଏଲପିଜି / ଗ୍ୟାସ							
୩	କିରାସିନି							
୪	କୋଇଲା							
୫	ବିଦ୍ୟୁତ							
୬	କୃଷି ବର୍ଜ୍ୟ							
୭	ଗୋବର ଘସି							
୮	ଅନ୍ୟାନ୍ୟ (ବିଶଦରେ ଲେଖନ୍ତୁ)							

***** ବିଶେଷ ଦ୍ରଷ୍ଟବ୍ୟ: ଯଦି ଉତ୍ତରଦାତା ସମୁଦାୟ ବର୍ଷର ହିସାବ କରିବାରେ ଅସୁବିଧା ଅନୁଭବ କରନ୍ତି ତେବେ ସର୍ଭେ କରୁଥିବା ବ୍ୟକ୍ତି ଉତ୍ତରଦାତାଙ୍କଠାରୁ ତଥ୍ୟ ବୁଝି ନିଜେ ବର୍ଷର ତଥ୍ୟ ପୂରଣ କରିବେ ।

C.4 ବିଗତ ୨୪ ଘଣ୍ଟା ମଧ୍ୟରେ ରୋଷେଇ ସମ୍ବନ୍ଧରେ (ପାହାନ୍ତିଆ ସକାଳରୁ ଆରମ୍ଭ କରନ୍ତୁ)

ଯଦି ନିମ୍ନ ଟେବୁଲରେ ଦିଆଯାଇଥିବା କୌଣସି ପର୍ଯ୍ୟାୟରେ ରୋଷେଇ ହୋଇନାହିଁ ତେବେ 'ରୋଷେଇ ହୋଇନାହିଁ'ଲେଖନ୍ତୁ। ଉଦାହରଣସ୍ୱରୂପ ଯଦି ଗତ ୨୪ ଘଣ୍ଟା ମଧ୍ୟରେ କେବଳ ତିନିଟି ସମୟରେ ରୋଷେଇ ହୋଇଥିଲା ତେବେ ନିମ୍ନ ଟେବୁଲରେ ଚତୁର୍ଥ, ପଞ୍ଚମ ଓ ଷଷ୍ଠ ପର୍ଯ୍ୟାୟରେ 'ରୋଷେଇ ହୋଇନାହିଁ' ଲେଖନ୍ତୁ।

ରୋଷେଇ ପର୍ଯ୍ୟାୟ	କ'ଣ ରୋଷେଇ ହୋଇଥିଲା ?	କେଉଁ ଚୁଲା ବ୍ୟବହାର ହୋଇଥିଲା ?	ସେହି ପର୍ଯ୍ୟାୟ ରୋଷେଇ ପାଇଁ କେତେ ସମୟ ଲାଗିଥିଲା		କିଏ ରୋଷେଇ କରିଥିଲେ (ମହିଳା, ପୁରୁଷ, ବାଳକ, ବାଳିକା)
			ଘଣ୍ଟା	ମିନିଟ	
ପ୍ରଥମ ପର୍ଯ୍ୟାୟ (ଆରମ୍ଭ ସମୟ -)					
ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (ଆରମ୍ଭ ସମୟ -)					
ତୃତୀୟ ପର୍ଯ୍ୟାୟ (ଆରମ୍ଭ ସମୟ -)					
ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ (ଆରମ୍ଭ ସମୟ -)					
ପଞ୍ଚମ ପର୍ଯ୍ୟାୟ (ଆରମ୍ଭ ସମୟ -)					
ଷଷ୍ଠ ପର୍ଯ୍ୟାୟ (ଆରମ୍ଭ ସମୟ -)					

ଜାଳେଣୀର ପ୍ରକାର ପାଇଁ ନିମ୍ନ ପ୍ରଦତ୍ତ କୋଡ୍ ବ୍ୟବହାର କରନ୍ତୁ

ରୋଷେଇ ହୋଇନାହିଁ =୧	କୃଷିଜାତ ବଳକା = ୪	କିରାସିନି = ୭	ବିଦ୍ୟୁତ = ୧୦
କା୦ =୨	ଅନ୍ୟାନ୍ୟ ବଳକା = ୫	ଗ୍ୟାସ =୮	ଅନ୍ୟାନ୍ୟ = ୧୧
ଗୋବର ଘସି = ୩	କା୦ କୋଇଲା = ୬	ସୂର୍ଯ୍ୟତାପ ଚୁଲା = ୯	

H6.1 ଘର ଭିତରେ ଧୂଆଁକୁ ଉପଶମ କରିବା ପାଇଁ ପଦକ୍ଷେପ

H6.1 ଆପଣ କ'ଣ ଭାବନ୍ତି ଯେ ରୋଷେଇ ସମୟରେ ଜାଳେଣୀରୁ ବାହାରୁଥିବା ଧୂଆଁ ଏକ ସମସ୍ୟା ଏବଂ ତାହାର ସମାଧାନ ଆବଶ୍ୟକ ?	ହଁ – ୧ ନା - ୨		

H6.2 ଆପଣଙ୍କର ରୋଷେଇଶାଳରେ ଧୁଆଁକୁ କମ୍ କରିବା ପାଇଁ ଆପଣ କିଛି ବ୍ୟବସ୍ଥା କରିଛନ୍ତି କି ?	ହଁ - ୧ ନା -୨ (ଯଦି ଉତ୍ତର 'ନା' ତେବେ ସିଧା ସପ୍ତମ ପରିଚ୍ଛଦକୁ ଯାଆନ୍ତୁ)		
H6_2. ଯଦି ହଁ, ସେଗୁଡ଼ିକ କଣ (ଏକରୁ ଅଧିକ ମଧ୍ୟ ଚୟନ କରାଯାଇପାରିବ । ନିମ୍ନରେ ପ୍ରଦତ୍ତ କୋଡ୍ ବ୍ୟବହାର କରନ୍ତୁ): ଉନ୍ନତ ଚୁଲା ଓ ଚିମ୍ନିର ବ୍ୟବହାର କରୁଛନ୍ତି = ୧ ଉନ୍ନତ ଚୁଲା ବ୍ୟବହାର କରୁଛନ୍ତି କିନ୍ତୁ ଚିମ୍ନି ନାହିଁ = ୨ ଧୁଆଁ ଆବରଣ ବ୍ୟବହାର କରୁଛନ୍ତି = ୩ ରୋଷେଇ ଘରର ବାୟୁ ଚଳାଚଳ ବ୍ୟବସ୍ଥାରେ ଉନ୍ନତି କରାଯାଇଅଛି = ୪ ଅପରିଷ୍କାର ଜାଳେଣୀ ବଦଳରେ ପରିଷ୍କାର ଜାଳେଣୀ ବ୍ୟବହାର କରୁଛନ୍ତି(ଯଥା ଗ୍ୟାସ, ବିଦ୍ୟୁତ ଇତ୍ୟାଦି) = ୫ କେବଳ ଶୁଖିଲା ଜାଳେଣୀ ବ୍ୟବହାର କରୁଛନ୍ତି = ୬ ଅନ୍ୟାନ୍ୟ = ୭		
H6_2.2 ଯଦି 'ଅନ୍ୟାନ୍ୟ' ଦୟାକରି ପରିବର୍ତ୍ତନଗୁଡ଼ିକ ଏଠାରେ ବିଶଦରେ ବର୍ଣ୍ଣନା କରନ୍ତୁ			
C.6.3 ଯିଏ ସାଧାରତଃ ରୋଷେଇ କରନ୍ତି ସେ ରୋଷେଇ ଏବଂ ଶକ୍ତି/ଜାଳେଣୀ ପରିଚାଳନା ସମ୍ବନ୍ଧରେ କିଛି ପ୍ରଶିକ୍ଷଣ ବା ଟ୍ରେନିଂ ପାଇଛନ୍ତି କି ? ହଁ – ୧, ନା – ୨			

HA. ପରିବାରର ସମ୍ପତ୍ତି ଓ ଆୟର ସ୍ଥିତି

HA.1 ଭୂ-ସମ୍ପତ୍ତି ବା ଜମି ବାଡି (ଉପଯୁକ୍ତ ସ୍ଥାନରେ √ ଚିହ୍ନ ଦିଅନ୍ତୁ)

i. ଭୂମି ହୀନ
ii. ୧ ହେକ୍ଟରରୁ କମ୍ ଅଣ-ଜଳସେଚିତ ଜମି ଅଛି ବା ଅଧା ହେକ୍ଟର ବା ତହିଁରୁ କମ୍ ଜଳସେଚିତ ଜମି ଅଛି
iii. ୧ ରୁ ୨ ହେକ୍ଟର ଅଣ-ଜଳସେଚିତ ଜମି ଅଛି ବା ଅଧା ହେକ୍ଟରରୁ ୧ ହେକ୍ଟର ଜଳସେଚିତ ଜମି ଅଛି
iv. ୨ ରୁ ୫ ହେକ୍ଟର ଅଣ-ଜଳସେଚିତ ଜମି ଅଛି ବା ୧ ହେକ୍ଟରରୁ ୨.୫ ହେକ୍ଟର ଜଳସେଚିତ ଜମି ଅଛି
v. ୫ ହେକ୍ଟରରୁ ଅଧିକ ଅଣ-ଜଳସେଚିତ ଜମି ଅଛି ବା ୨.୫ ହେକ୍ଟରରୁ ଅଧିକ ଜଳସେଚିତ ଜମି ଅଛି

HA. 2 ବାସଗୃହର ପ୍ରକାର

i. ବାସହୀନ/ଗୃହହୀନ
ii. କଚ୍ଚା ଘର
iii. ଅଧା ପକ୍କା
iv. ପକ୍କା ଘର
v. ସହର ଭଳି ଘର

HA. 3 ପରିବାର ସଦସ୍ୟଙ୍କ ପୋଷାକପତ୍ର

i. ଦୁଇ ଯୋଡାରୁ କମ୍
ii. ଦୁଇ ଯୋଡାରୁ ଅଧିକ କିନ୍ତୁ ଚାରି ଯୋଡାରୁ କମ୍
iii. ଚାରି ଯୋଡାରୁ ଅଧିକ କିନ୍ତୁ ଛଅ ଯୋଡାରୁ କମ୍
iv. ଛଅ ଯୋଡାରୁ ଅଧିକ କିନ୍ତୁ ଦଶ ଯୋଡାରୁ କମ୍

v. ଦଶ ଯୋଡାରୁ ଅଧିକ

HA. 4 ଖାଦ୍ୟ ସୁରକ୍ଷା

i. ବର୍ଷରେ ଅଧିକାଂଶ ଦିନ ଗୋଟାଏ ବେଳାରୁ କମ୍ ଖାଇବା ମିଳେ
ii. ସାଧାରଣତଃ ଦିନକୁ ଗୋଟାଏ ବେଳା କିନ୍ତୁ ବେଳେବେଳେ କମ୍
iii. ବର୍ଷ ସାରା ଦିନକୁ ଗୋଟାଏ ବେଳା
iv. ସାଧାରଣତଃ ଦିନକୁ ଦୁଇ ବେଳା କିନ୍ତୁ ବେଳେବେଳେ ଅଭାବ ହୁଏ
v. ବର୍ଷସାରା ଯଥେଷ୍ଟ ଖାଦ୍ୟ

HA. 5 ପରିମଳ

i. ଖୋଲାରେ ବା ବାହାରେ ମଳତ୍ୟାଗ
ii. ସାମୁହିକ ପାଇଖାନା ଅଛି କିନ୍ତୁ ତାହାକୁ ଜଳଯୋଗାଣ ବ୍ୟବସ୍ଥା ଠିକ୍ ନାହିଁ
iii. ସଠିକ୍ ଜଳଯୋଗାଣ ବ୍ୟବସ୍ଥା ଥାଇ ସାମୁହିକ ପାଇଖାନା
iv. ସଠିକ୍ ଜଳଯୋଗାଣ ବ୍ୟବସ୍ଥା ଥାଇ ସାମୁହିକ ପାଇଖାନା ଅଛି ଓ ସଫା କରିବା ପାଇଁ ସଫେଇ କର୍ମଚାରୀ ଅଛନ୍ତି
v. ଘରୋଇ ପାଇଖାନା

HA.6 ବ୍ୟବହାରିକ ଦ୍ରବ୍ୟ ଓ ପଶୁ ସମ୍ପଦର ମାଲିକାନା

ଦ୍ରବ୍ୟ / ସମ୍ପଦ	ସଂଖ୍ୟା
ଟେଲିଭିଜନ	
ବିଦ୍ୟୁତ ଚାଳିତ ପଙ୍ଖା	
ଘର ଉଷୁମ କରିବା ପାଇଁ ରୁମ୍ ହିଟର	
ପ୍ରେସର କୁକର	
ରେଡିଓ	
ମୋବାଇଲ ଫୋନ୍	
ଗ୍ୟାସ ସିଲିଣ୍ଡର	
ମିକ୍ସର / ଗ୍ରାଇଣ୍ଡର	
ମୋଟର ସାଇକଲ	
ଦୁଇ ଚକିଆ ମୋପେଡ ବା ସ୍କୁଟର	
କାର	
ଟ୍ରାକ୍ଟର	
ପାୱାର ଟିଲର	
ଧାନ ଅମଳ ଯନ୍ତ୍ର / ହାର୍ଭେଷ୍ଟର	
ପଶୁ ସମ୍ପଦ (ଦୟାକରି ପ୍ରକାର ଉଲ୍ଲେଖ କରନ୍ତୁ)	
ପାଣି ପମ୍ପ	
ପାଣି ଫିଲ୍ଟର	

HA.7 **ପରିବାରର ଶ୍ରମ ସମ୍ବନ୍ଧିତ ସ୍ଥିତି**

i. ଗୋଟି ଶ୍ରମିକ
ii. ମହିଳା ଓ ଶିଶୁ ଶ୍ରମିକ
iii. କେବଳ ବୟସ୍କ ମହିଳା ଶ୍ରମିକ, ବାଳ/ଶିଶୁ ଶ୍ରମିକ ନାହାନ୍ତି
iv. କେବଳ ବୟସ୍କ ଶ୍ରମିକ
v. ଅନ୍ୟାନ୍ୟ

HA.8 **ଋଣଗ୍ରସ୍ତତା ସମ୍ବନ୍ଧିତ ସ୍ଥିତି**

i. ଦୈନିକ ଖର୍ଚ୍ଚବର୍ଚ୍ଚ ଚଳାଇବା ପାଇଁ ଅଣଆନୁଷ୍ଠାନିକ ସୂତ୍ରରୁ ଋଣ (ଯଥା – ବନ୍ଧୁ, ସମ୍ପର୍କୀୟ ବା ମହାଜନଠାରୁ)
ii. ଲାଭକାରୀ /ଉତ୍ପାଦନକାରୀ ବା ଉପାଦେୟ ବ୍ୟବହାର ପାଇଁ ଅଣଆନୁଷ୍ଠାନିକ ସୂତ୍ରରୁ ଋଣ (ଯଥା – ବନ୍ଧୁ, ସମ୍ପର୍କୀୟ ବା ମହାଜନଠାରୁ)
iii. ଅନ୍ୟାନ୍ୟ ବ୍ୟବହାର ପାଇଁ ଅଣଆନୁଷ୍ଠାନିକ ସୂତ୍ରରୁ ଋଣ (ଯଥା – ବନ୍ଧୁ, ସମ୍ପର୍କୀୟ ବା ମହାଜନଠାରୁ)
iv. ଆନୁଷ୍ଠାନିକ ସୂତ୍ରରୁ ଋଣ (ଯଥା – ବ୍ୟାଙ୍କ, ସମବାୟ ଇତ୍ୟାଦି)

v. କିଛି ଋଣ ନାହିଁ

HA.9 **ବାହାର ଅଞ୍ଚଳକୁ କାମ ପାଇଁ ପଳାୟନର କାରଣ କଣ**

i. ସାଧାରଣ କାମ
ii. ସାମୟିକ ବା ଋତୁଗତ ନିଯୁକ୍ତି
iii. ଅନ୍ୟାନ୍ୟ ପ୍ରକାରର ଜୀବିକା ପାଇଁ
iv. ବାହାରକୁ କାମ ପାଇଁ ଯାଆନ୍ତି ନାହିଁ
v. ଅନ୍ୟାନ୍ୟ କାରଣ

HA.10 **କେଉଁ ପ୍ରକାରର ସହାୟତା ଚାହାନ୍ତି**

i. ଶ୍ରମ ନିଯୁକ୍ତି/ରୋଜଗାର
ii. ସ୍ୱ-ରୋଜଗାର
iii. ପ୍ରଶିକ୍ଷଣ ଓ ଦକ୍ଷତା ବୃଦ୍ଧି
iv. ଘର ପାଇଁ ସାହାଯ୍ୟ
v. ଲକ୍ଷେ ଟଙ୍କାରୁ ଅଧିକର ଋଣ/ରିହାତି ବା ଆଦୌ କିଛି ସହାୟତା ଆବଶ୍ୟକ କରନ୍ତି ନାହିଁ

G. ଲିଙ୍ଗ ସମ୍ବନ୍ଧିତ ସୂଚନା

G.1 ପରିବାର କିଏ ନିମ୍ନରେ ଦର୍ଶାଯାଇଥିବା ନିଷ୍ପତ୍ତି ନିଅନ୍ତି (ପୁରୁଷ / ମହିଳା / ବାଳକ / ବାଳିକା

ନିଷ୍ପତ୍ତି	ପ୍ରାୟତଃ	ବେଳେବେଳେ
(କ) ପିଲାମାନଙ୍କ ବିଦ୍ୟାଳୟ ସମ୍ବନ୍ଧରେ		
(ଖ) ଚୁଲା ବା ଜାଳେଣୀ ସମ୍ବନ୍ଧରେ		
(ଗ) ପରିବାର ପାଇଁ ଖାଦ୍ୟ ସମ୍ବନ୍ଧରେ		
(ଘ) ସ୍ୱାସ୍ଥ୍ୟ ପରୀକ୍ଷା ଓ ଚିକିତ୍ସା		
(ଙ) ରୋଷେଇ ପାଇଁ ଉପକରଣ କ୍ରୟ		
(ଚ) ଜମି ବାଡି ବା ଅନ୍ୟ ସମ୍ପତ୍ତି କ୍ରୟ		
(ଛ) ଋଣ ନେବା ସମ୍ବନ୍ଧରେ		

G.2 **ପରିବାରର କିଏ ନିମ୍ନରେ ଦର୍ଶାଯାଇଥିବା କାମଗୁଡିକ କରନ୍ତି (ପୁରୁଷ/ମହିଳା/ବାଳକ/ବାଳିକା)**

କାମ	ପ୍ରାୟତଃ	ବେଳେବେଳେ
(୧) ବଜାରରୁ ନିତିଦିଆ ଦୈନିକ ସଉଦା ଆଣିବା		
(୨) କୃଷି ଦ୍ରବ୍ୟ ଓ ପଶୁ ସମ୍ବନ୍ଧିଜ ଦ୍ରବ୍ୟ ବିକିବା		
(୩) ସାମାଜିକ ବୈଠକ. ଏନଜିଓ ବୈଠକ / ଗ୍ରୁପ ବୈଠକରେ ଯୋଗଦାନ		
(୪) କୃଷି ସହାୟତା କେନ୍ଦ୍ର ବା ପଶୁ ସହାୟତା କେନ୍ଦ୍ରକୁ ପରାମର୍ଶ ପାଇଁ ଯିବା		
(୫) ଜାଳେଣୀ ସଂଗ୍ରହ		

(୬) ଜାଳେଣୀ କ୍ରୟ – ଦେୟ ପ୍ରଦାନ		
(୭) ଗ୍ୟାସ ସିଲିଣ୍ଡର ଆଣିବା		
(୮) ରୋଷେଇ କରିବା		
(୯) ପଶୁମାନଙ୍କ ପାଇଁ ଖାଦ୍ୟ ପ୍ରସ୍ତୁତି/ରାନ୍ଧିବା (ଯଦି ଥାଏ)		
(୧୦) ବିକ୍ରୟ ପାଇଁ ଖାଦ୍ୟ ବା ପାନୀୟ ପ୍ରସ୍ତୁତ କରିବା (ଯଦି ଥାଏ)		
(୧୧) ଜାଳେଣୀ କାଠ କାଟିବା ଓ ଶୁଖାଇବା		
(୧୨) ପାଣି ଆଣିବା		
(୧୩) ଚାଷ କାର୍ଯ୍ୟ କରିବା		
(୧୪) ଟିଭି, ରେଡିଓ, ଖବରକାଗଜ ଆଦିରୁ ତଥ୍ୟ ପାଇ ସଦ୍ୟତମ ସୂଚନା ଆହରଣ କରିବା		
(୧୫) ବ୍ୟାଙ୍କ, ସୋସାଇଟି ଭଳି ସଂସ୍ଥାମାନଙ୍କୁ ଯିବା		

G 3. **ପରିବାର ସଭ୍ୟଙ୍କ ବର୍ତ୍ତମାନର ନିବେଶ ପ୍ରାଥମିକତା (ସବୁଠାରୁ ଯାହାକୁ ଅଧିକ ପ୍ରାଥମିକତା ଦେବେ ତାହାକୁ ପ୍ରଥମେ ଲେଖନ୍ତୁ)**

ପ୍ରାଥମିକତା	୫ଟି ପ୍ରମୁଖ କାର୍ଯ୍ୟ	
	ପୁରୁଷ ସଭ୍ୟମାନଙ୍କ ପାଇଁ	ମହିଳା ସଭ୍ୟମାନଙ୍କ ପାଇଁ
ପ୍ରଥମ ପ୍ରାଥମିକତା		
ଦ୍ୱିତୀୟ ପ୍ରାଥମିକତା		
ତୃତୀୟ ପ୍ରାଥମିକତା		
ଚତୁର୍ଥ ପ୍ରାଥମିକତା		
ପଞ୍ଚମ ପ୍ରାଥମିକତା		

SG: **ସମାଜିକ ସମ୍ପଦ/ଅର୍ଥ**

SG 1. ଆପଣ କିମ୍ବା ଆପଣଙ୍କ ପରିବାରରେ କେହି ଶକ୍ତି ବ୍ୟବହାର ସମ୍ବନ୍ଧିତ ବା ମହିଳା ସଶକ୍ତିକରଣ ସମ୍ବନ୍ଧିତ ଆନୁଷ୍ଠାନିକ/ଅଣ-ଆନୁଷ୍ଠାନିକ/ପାରମ୍ପରିକଗୋଷ୍ଠୀର ସଭ୍ୟ ଆଛନ୍ତି କି ? ଯଦି ହଁ

ପରିବାର ସଭ୍ୟଙ୍କ ନାମ	ଗୋଷ୍ଠୀର ନାମ	ଗୋଷ୍ଠୀରେ ତାଙ୍କର (ମହିଳା/ପୁରୁଷଙ୍କ) ଭୂମିକା	ଗୋଷ୍ଠୀର କାର୍ଯ୍ୟକଳାପ

Part B: ସ୍ୱାସ୍ଥ୍ୟ ଓ ଶରୀର ସୁସ୍ଥତା

W1 ବିଗତ ଏକ ବର୍ଷରେ ବା ଗତ ୧୨ ମାସ ମଧ୍ୟରେ ପରିବାରର ସଦସ୍ୟଙ୍କ ସ୍ୱାସ୍ଥ୍ୟ ଅବସ୍ଥା ସମ୍ବନ୍ଧରେ ସୂଚନା ପାଇଁ - (ଆପଣ କେବଳ ସମ୍ବନ୍ଧିତ ରୋଗ ବିଷୟରେ ହିଁ ପ୍ରଶ୍ନ କରନ୍ତୁ । ଯଥା - ଶ୍ୱାସପ୍ରଶ୍ୱାସ ଜନିତ ଅସୁସ୍ଥତା, ଲାଗି ରହୁଥିବା କାଶ, ଶ୍ୱାସ, ଆଜମା, ଶ୍ୱାସନଳୀ କ୍ୟାନସର, ଟ୍ୟୁବରକୁଲୋସିସ, ନିମୋନିଆ ଓ ଅନ୍ୟ। ଶ୍ୱାସପ୍ରଶ୍ୱାସ ସମସ୍ୟା ; ଦୀର୍ଘ ଦିନ ଧରି ଆଖିରେ ଜ୍ୱଳନ, ମୋତିଆବିନ୍ଦୁ, ବୁଲି ନିଆଁରେ ପୋଡି ହେବା, ମୁଣ୍ଡବ୍ୟାଥା, କାଠଆଦି ଓଜନ ଜିନିଷ ବୋହିବା କାରଣରୁ ପୀଡାଦାୟୀ ପିଠି ବା ମେରୁଦଣ୍ଡ ସମସ୍ୟା ଇତ୍ୟାଦି ଅସୁସ୍ଥତା ବିଷୟରେ ହିଁ ପ୍ରଶ୍ନ କରନ୍ତୁ ।)

	W1 – ସୁସ୍ଥତା ସ୍ଥିତି ଓ ସ୍ୱାସ୍ଥ୍ୟ												
	ନାମ	ବୟସ	ଲିଙ୍ଗ	ଧୂମପାନ କରନ୍ତି କି ? ହଁ / ନା	ଲକ୍ଷଣ	ଆପଣ ଚିକିତ୍ସା ଲାଗି କେଉଁଠାରୁ ଉପଦେଶ ଗ୍ରହଣ କରନ୍ତି ? ୧. ସ୍ୱାସ୍ଥକେନ୍ଦ୍ର ୨. ହାସପାତାଳ ୩. ବ୍ୟକ୍ତିଗତ ସ୍ୱାସ୍ଥ୍ୟ ଚିକିତ୍ସକ ୪. ସ୍ଥାନୀୟ ଚିକିତ୍ସକ ୫. ଘରେ ଚିକିତ୍ସା ୬. କିଛି ବି କରିନଥିଲେ ୭. ଅନ୍ୟାନ୍ୟ (ବିଶଦରେ ଉଲ୍ଲେଖ କରନ୍ତୁ)	ଯଦି, ସ୍ୱାସ୍ଥ୍ୟ ସମସ୍ୟା ପାଇଁ ଉପଦେଶ ନେଇଥିଲେ ତାହା ପାଇଁ ଆପଣ କେତେ ଟଙ୍କା ଦେୟ ଦେଇଥିଲେ ?	ସ୍ୱାସ୍ଥ୍ୟ ଚିକିତ୍ସା ଏବଂ ଔଷଧ ଲାଗି କେତେ ଟଙ୍କା ବ୍ୟୟ କରିଥିଲେ ?	ପରିବହନ ବା ଯିବା ଆସିବାରେ କେତେ ଟଙ୍କା ଖର୍ଚ୍ଚ ହୋଇଥିଲା ?	ଚିକିତ୍ସା ସମୟରେ ଅନ୍ୟାନ୍ୟ ଖର୍ଚ୍ଚ (ଯଥା - ଲଜିଂ,ଖାଦ୍ୟ. ପାନୀୟ ଇତ୍ୟାଦି)	ଯଦି ଚିକିତ୍ସା କରିନାହାନ୍ତି କାହିଁକି ? ୧. ଟଙ୍କା ନାହିଁ ୨. ନିକଟରେ କୌଣସି ସ୍ୱାସ୍ଥ୍ୟ ସୁବିଧା ନାହିଁ ୩. ସ୍ୱାସ୍ଥ୍ୟକେନ୍ଦ୍ରରେ ଡାକ୍ତର କିମ୍ବା ଔଷଧ ନାହିଁ ୪. କେହି ଡାକ୍ତରଖାନାକୁ ନେବାଲାଗି ନାହାନ୍ତି ୫. ଅନ୍ୟାନ୍ୟ (ବିଶଦ ତଥ୍ୟ ଦିଅନ୍ତୁ)	ରୋଗଲାଗି ରୋଗୀର କେତେଦିନ ନଷ୍ଟ ହୋଇଛି (ଯଥା - କାର୍ଯ୍ୟଦିବସ, ସ୍କୁଲ ଅନୁପସ୍ଥିତି ଇତ୍ୟାଦି)	ଯତ୍ନ ନେଉଥିବା ଲୋକଙ୍କର କେତେ ଦିନ ନଷ୍ଟ ହୋଇଛି
୧													
୨													
୩													

৮													
৯													
১০													

Part C: ଷ୍ଟୋଭ ବା ଚୁଲା ବିଷୟରେ

କେବଳ ପାରମ୍ପରିକ ଚୁଲା ବ୍ୟବହାରକାରୀଙ୍କ ପାଇଁ

TS **– ପାରମ୍ପରିକ ଚୁଲାର ବ୍ୟବହାର (ଉପଯୁକ୍ତ ସ୍ଥାନରେ √ ଚିହ୍ନ ଦିଅନ୍ତୁ)**		
TS1 ଆପଣ କାହିଁକି ଏବେ ବି ପାରମ୍ପରିକ ଚୁଲା ବ୍ୟବହାର କରୁଛନ୍ତି ?	i. ମୁଁ ଘର ଭିତରେ ଧୁଆଁ ହେଲେ କ'ଣ ଖରାପ ପ୍ରଭାବ ପଡେ ତାହା ଜାଣି ନାହିଁ ii. ଉନ୍ନତ ଚୁଲା/ସ୍ୱଚ୍ଛ ଜାଳେଣୀ ସହଜରେ ଉପଲବ୍ଧ ନାହିଁ iii. ଖର୍ଚ୍ଚ ବହନ କରିବାର ସାମର୍ଥ୍ୟ ନାହିଁ iv. ପାରମ୍ପରିକ ପଦ୍ଧତି/ପରମ୍ପରାକୁ ବଦଳାଇବା ପାଇଁ ଚାହୁଁ ନାହିଁ v. ପରିବାରର ଅନ୍ୟ ସଦସ୍ୟଙ୍କ ପାଇଁ ଏହା ଏକ ପ୍ରମୁଖ ପ୍ରସଙ୍ଗ ନୁହେଁ vi. ଆମର ଆବଶ୍ୟକତା ପାଇଁ ପାରମ୍ପରିକ ଚୁଲା ହିଁ ଭଲ vii. ଅନ୍ୟାନ୍ୟ (ବିଶଦରେ ଉଲ୍ଲେଖ କରନ୍ତୁ)	....
SH2 ଆପଣ ବର୍ତ୍ତମାନ ଥିବା ଚୁଲାରେ ସନ୍ତୁଷ୍ଟ ଅଛନ୍ତି ନା ଅନ୍ୟ କୌଣସି ପ୍ରକାରର ଚୁଲା ବ୍ୟବହାର କରିବା ପାଇଁ ଚାହାନ୍ତି ?	1 = ବର୍ତ୍ତମାନର ଚୁଲାରେ ଖୁସି ଅଛି 2 = ଅନ୍ୟ ପ୍ରକାର ଚୁଲା ବ୍ୟବହାର କରିବା ପାଇଁ ଚାହିଁବି	
SH3 ଯଦି ଆପଣ ଚୁଲା ବଦଳାଇବା ପାଇଁ ଚାହାନ୍ତି ତେବେ ତାହାର ମୂଖ୍ୟ କାରଣ କ'ଣ ?		
SH4 ଯଦି ଆପଣ ଚୁଲା ବଦଳାଇବା ପାଇଁ ଚାହାନ୍ତି ତେବେ କୋଉ ପ୍ରକାରର ଚୁଲା ପସନ୍ଦ କରନ୍ତି ?		
SH5 ନୂଆ ପ୍ରକାର ଚୁଲା ପାଇଁ ଆପଣ ସର୍ବାଧିକ କେତେ ଟଙ୍କା ବ୍ୟୟ କରି ପାରିବେ ?		

କେବଳ ଉନ୍ନତ ଚୁଲା ବ୍ୟବହାରକାରୀଙ୍କ ପାଇଁ

SH **– ଉନ୍ନତ ଚୁଲା ବ୍ୟବହାର**		
SH1.1 ଆପଣ କେଉଁ ପ୍ରକାରର ଉନ୍ନତ ଚୁଲା/ଜାଳେଣୀ ସାଧାରଣତଃ ବ୍ୟବହାର କରୁଛନ୍ତି ?		
SH1.2 ଆପଣ ଉନ୍ନତ ଚୁଲା/ଜାଳେଣୀ ବିଷୟରେ କେମିତି ଜାଣିଲେ ? ଆପଣଙ୍କୁ କିଏ ଉନ୍ନତ ଚୁଲା ବ୍ୟବହାର କରିବା ପାଇଁ	i. ଏନ୍.ଜି.ଓ. ର କର୍ମକର୍ତ୍ତା ii. କୋ-ଅପରେଟିଭ / ସମବାୟ	.....

ପ୍ରେରଣା ଦେଲେ ? (ଏକ ବା ତାହାରୁ ଅଧିକ ଉତ୍ତର ମଧ୍ୟ ହୋଇପାରେ। ଯଦି ଏକାଧିକ ଉତ୍ତର ଥାଏ ତେବେ ପସନ୍ଦ କ୍ରମେ ତାହାକୁ ଲେଖନ୍ତୁ)	iii. ପଡୋଶୀ/ବନ୍ଧୁବାନ୍ଧବ iv. ପ୍ରସ୍ତୁତ କର୍ତ୍ତା / କମ୍ପାନୀ ଏଜେଣ୍ଟ v. ନିଜେ vi. ଅନ୍ୟମାନେ (ଦୟାକରି ଉଲ୍ଲେଖ କରନ୍ତୁ) …..	…….. …….. …….. …….	
SH1.3 ତାହା କିଣିବା ବା ବସାଇବା ଦିନଠାରୁ ଆପଣ ତାହାକୁ କେତେ ଦିନ ବ୍ୟବହାର କରିଛନ୍ତି ?	1= ସବୁବେଳେ 2 = ଅଧିକାଂଶ ଦିନ 3 = ପ୍ରାୟ ଅଧା ସମୟରେ 4 = ଅଧାରୁ କମ୍ ସମୟରେ 5 = ଖୁବ୍ କମ୍ ଦିନ		
SH1.3.1 ତାହାକୁ ପ୍ରତି ଦିନ ବ୍ୟବହାର ନ କରିବାର କ’ଣ ? (ଏକାଧିକ କାରଣ ମନେକଲେ ଦର୍ଶାଇ ପାରନ୍ତି)	1 = ପାରମ୍ପରିକ ଚୁଲା ବ୍ୟବହାର କରିବା ଅଧିକ ପସନ୍ଦ 2 = ବ୍ୟବହାର କରିବାରେ ଅସୁବିଧା ଲାଗୁଛି 3 = କିଛି ଲାଭ ହେଉ ନାହିଁ 4 = ଅନ୍ୟାନ୍ୟ କାରଣ		
SH1.3.2 ଯଦି ‘ଅନ୍ୟାନ୍ୟ କାରଣ’ ଥାଏ ତେବେ ତାହାକୁ ବିଶଦରେ ଉଲ୍ଲେଖ କରନ୍ତୁ			
SH1.4 ଉନ୍ନତ ଚୁଲା ବ୍ୟବହାର କରିବା ବେଳେ ଆପଣ ସେହି ଏକା ସମୟରେ ଅନ୍ୟ ପ୍ରକାରର ଚୁଲା ପ୍ରାୟ ବ୍ୟବହାର କରନ୍ତି କି ?	1 = ସବୁବେଳେ 2 = ଅଧିକାଂଶ ବେଳେ 3 = ଅଧା ସମୟରେ 4 = ଅଧାରୁ କମ୍ ସମୟରେ 5 = କେବଳ ବେଳେବେଳେ 6 = ଆଦୌ ନୁହେଁ		
SH1.5 ଆପଣ ସେହି ଏକା ସମୟରେ ଅନ୍ୟ ଚୁଲା କାହିଁକି ବ୍ୟବହାର କରନ୍ତି ?	1 = ଏହା ଆମର ଚଳଣୀ/ଅଭ୍ୟାସ 2 = ଜଲ୍‌ଦି ହୋଇଯାଏ 3 = ଘରକୁ ଉଷୁମ ରଖିବା ପାଇଁ 4 = କାରଣ ମୁଁ ଏକା ସାଙ୍ଗରେ ଦୁଇଟି ଭିନ୍ନ ଖାଦ୍ୟ ରୋଷେଇ କରିବା ଚାହେଁ 5 = ଅନ୍ୟାନ୍ୟ କାରଣ		
SH1.6 ଯଦି ‘ଅନ୍ୟାନ୍ୟ କାରଣ’ ଥାଏ ତେବେ ତାହାକୁ ବିଶଦରେ ଉଲ୍ଲେଖ କରନ୍ତୁ			
SH2.1 ଉନ୍ନତ ଚୁଲାର ସ୍ଥିତି କେମିତି ଅଛି ?	1= ଭଲ 2 = ଚଳଣୀୟ 3 = ଖରାପ		
SH2.2 ଆପଣଙ୍କ ପାରମ୍ପରିକ ଚୁଲା ତୁଳନାରେ ଉନ୍ନତ ଚୁଲା କେମିତି ?	୧ = ବହୁତ ଭଲ ୨ = ଟିକିଏ ଭଲ ୩ = ସେହି ସମାନ		

	୪ = ଟିକିଏ ଖରାପ ୫ = ବହୁତ ଖରାପ		
SH2.3 ଯଦି ଉତ୍ତର ଖରାପ ଥାଏ ତେବେ ଉନ୍ନତ ଚୁଲାର କ'ଣ ଦେଖି ଆପଣ ତାହାକୁ ପାରମ୍ପରିକ ଚୁଲାଠାରୁ ଖରାପ ବିବେଚନା କରନ୍ତି ?			
SH3.1 ପାରମ୍ପରିକ ଚୁଲା ତୁଳନାରେ ଉନ୍ନତ ଚୁଲାରେ ରୋଷେଇ କଲେ...	1 = ଖୁବ୍ ଅଧିକ ସମୟ ଲାଗେ 2 = ଟିକିଏ ଅଧିକ ସମୟ ଲାଗେ 3 = ପ୍ରାୟ ସମାନ ସମୟ ଲାଗେ 4 = ଟିକିଏ କମ୍ ସମୟ ଲାଗେ 5 = ଖୁବ୍ କମ୍ ସମୟ ଲାଗେ		
SH3.2.1 ଯଦି ଉନ୍ନତ ଚୁଲାରେ ରୋଷେଇ କଲେ କମ୍ ସମୟ ଲାଗୁଥାଏ ତେବେ ଦିନକୁ ପ୍ରାୟ କେତେ ସମୟ ବଞ୍ଚିଯାଏ ?			
SH3.2.2 ଯଦି ସମୟ ବଞ୍ଚେ ସେହି ସମୟକୁ କେମିତି ବ୍ୟବହାର କରନ୍ତି ?	1 = ପିଲାପିଲିଙ୍କ ଯତ୍ନ ପ୍ରତି ଅଧିକ ସମୟ ଦିଅନ୍ତି 2 = ଆୟ ସୃଷ୍ଟିକାରୀ କାମ କରନ୍ତି 3 = ସାମାଜିକ ସଭାମାନଙ୍କରେ ଯୋଗ ଦିଅନ୍ତି 4 = ବନ୍ଧୁବାନ୍ଧବଙ୍କୁ ଭେଟନ୍ତି 5 = ଅନ୍ୟାନ୍ୟ (ବିଶଦରେ ଉଲ୍ଲେଖ କରନ୍ତୁ)		
SH3.3 ପାରମ୍ପରିକ ଚୁଲା ତୁଳନାରେ ଉନ୍ନତ ଚୁଲାରେ ...	1 = ବହୁ ଅଧିକ ଧୁଆଁ ହୁଏ 2 = ଟିକିଏ ଅଧିକ ଧୁଆଁ ହୁଏ 3 = ପ୍ରାୟ ସମାନ ଧୁଆଁ ହୁଏ 4 = ଟିକିଏ କମ୍ ଧୁଆଁ ହୁଏ 5 = ବହୁତ କମ୍ ଧୁଆଁ ହୁଏ		
SH3.4 ଉନ୍ନତ ଚୁଲାକୁ ସଫା କରିବାରେ କିଛି ଅସୁବିଧା ହୁଏ କି ?	1 = ହଁ 2 = ନା		
SH3.5 ଯଦି ଅସୁବିଧା ହୁଏ ନାହିଁ, ଆପଣ ତାହାକୁ କେମିତି ସଫା କରନ୍ତି?			
SH3.6 ଯଦି ଅସୁବିଧା ହୁଏ, ସେହି ଅସୁବିଧାକୁ କେମିତି ଦୂର କରିପାରିବା ?			
SH3.7 ଆପଣଙ୍କ ଉନ୍ନତ ଚୁଲା ଠିକ୍ ଅବସ୍ଥାରେ ଅଛି କି ?	1 = ହଁ 2 = ନା		
SH3.7.1 ଯଦି ଠିକ୍ ଅବସ୍ଥାରେ ନାହିଁ ତେବେ ସମସ୍ୟାଟି କ'ଣ ?			
SH 3.8 ଉନ୍ନତ ଚୁଲାରେ ରୋଷେଇ କରିବା କେତେ ସହଜ ?	1 = ବହୁତ ସହଜ 2 = ସହଜ 3 = ଚଳିବ 4 = ଟିକିଏ କଷ୍ଟ 5 = ବହୁତ କଷ୍ଟ		
SH3.8.1 ଯଦି କଷ୍ଟ, ତାହା ରୋଷେଇ କରିବା ପାଇଁ କାହିଁକି କଷ୍ଟ ?			

SH3.9 ଉନ୍ନତ ଚୁଲା କେତେ ସୁରକ୍ଷିତ (ଯଥା - ଶିଶୁଙ୍କ ଜଖମ) ?	1 = ବହୁତ ସୁରକ୍ଷିତ 2 = ସୁରକ୍ଷିତ 3 = ଚଳିବ 4 = ସୁରକ୍ଷିତ ନୁହେଁ 5 = ଆଦୌ ସୁରକ୍ଷିତ ନୁହେଁ		
SH3.9.1 କାହିଁକି ଏହା ସୁରକ୍ଷିତ ନୁହେଁ ବୋଲି ଆପଣ ଭାବନ୍ତି ?			
SH4.1 ଉନ୍ନତ ଚୁଲା ଆପଣଙ୍କ ପରିବାର ପାଇଁ କ'ଣ ସୁଫଳ/ଲାଭ ଦେଇଛି (ତିନିଟି ସୁଫଳ/ଲାଭର ଉଦାହରଣ ଦିଅନ୍ତୁ)	1. 2. 3.		
SH4.2 ଯଦି ଉନ୍ନତ ଚୁଲାର କିଛି କୁଫଳ ବା ସମସ୍ୟା ଥାଏ ତେବେ ଉନ୍ନତ ଚୁଲାର ତିନିଟି ମୁଖ୍ୟ ସମସ୍ୟା ବା ଯାହା ଆପଣଙ୍କୁ ଭଲ ଲାଗେ ନାହିଁ ତାହା ଦୟାକରି କୁହନ୍ତୁ ।	1. 2. 3.		
SH4.3 ଆପଣଙ୍କ ଆବଶ୍ୟକତାକୁ ସୁହାଇବା ପାଇଁ ଆପଣ ଚୁଲାରେ କିଛି ବୈଷୟିକ ପରିବର୍ତ୍ତନ କରିଛନ୍ତି କି ?	1 = ହଁ 2 = ନା		
SH4.4 ଚୁଲା କିଣିବା ବା ହାସଲ କରିବା ଦିନଠାରୁ ଆପଣଙ୍କ ଘରକୁ ଚୁଲା ପ୍ରସ୍ତୁତ କାରୀ/ଯିଏ ଯୋଗାଇଥିଲେ/ଯିଏ ପ୍ରୋତ୍ସାହିତ କରିଥିଲେ ସିଏ ବା ତାଙ୍କ ପ୍ରତିନିଧି ଆସି ଚୁଲାକୁ ପରୀକ୍ଷା କରି ଦେଖିଛନ୍ତି କି ?	1 = ହଁ 2 = ନା		
SH4.5 ଯଦି ହଁ, ତେବେ କେତେ ଥର ?			
SH4.6.1 ଉନ୍ନତ ଚୁଲାକୁ ଆପଣ କିଛି ଲାଭକାରୀ ବ୍ୟବହାର ବା ରୋଜଗାର ପାଇଁ ବ୍ୟବହାର କରୁଛନ୍ତି କି ?	1 = ହଁ 2 = ନା		
SH4.6.2 ଯଦି ହଁ, ତେବେ ଦୟାକର ବିଶଦରେ ଉଲ୍ଲେଖ କରନ୍ତୁ			
SH4.6 ଆପଣ ଏହି ଚୁଲାରେ ସନ୍ତୁଷ୍ଟ ଅଛନ୍ତି କି ଅନ୍ୟ ପ୍ରକାରର ଚୁଲା ବଦଳାଇବା ପାଇଁ ଚାହାନ୍ତି ।	1 = ବର୍ତ୍ତମାନର ଚୁଲାରେ ସନ୍ତୁଷ୍ଟ ଅଛି 2 = ଅଲଗା ପ୍ରକାରର ଚୁଲା ବଦଳାଇବା ପାଇଁ ଚାହେଁ		
SH4.7 ଯଦି ବଦଳାଇବା ପାଇଁ ଚାହାନ୍ତି. ତେବେ କେଉଁ ପ୍ରକାର ଚୁଲା ଆପଣଙ୍କ ପସନ୍ଦ ?			
SH4.8 ଆପଣ ଚୁଲା ବାବଦରେ ସର୍ବାଧିକ କେତେ ଟଙ୍କା ବ୍ୟୟ କରି ପାରିବେ ?			

ତଥ୍ୟ ସଂଗ୍ରହ କରୁଥିବା ସର୍ବେକ୍ଷଣକାରୀଙ୍କ ନିଜସ୍ୱ ସୂଚନା ବା ତାଙ୍କୁ ଯେମିତି କୁହାଗଲା

O.1 ରୋଷେଇ ଘରର ବାୟୁ ଚଳାଚଳ ବ୍ୟବସ୍ଥା କେମିତି ଅଛି (ଯଥା – ଝରକା/କବାଟ	ଖୁବ୍ ଭଲ = ୧ ଖରାପ = ୪		

କେତେ ବଡ, ଅଲଗା ଭେଣ୍ଟିଲେଟର ବ୍ୟବସ୍ଥା ଇତ୍ୟାଦି)	ଭଲ = ୨ ଅତି ଖରାପ =୫ ଚଳିବ = ୩		
O.2 ରୋଷେଇ ଘରର ଛାତର ପ୍ରକାର (କେବଳ ରୋଷେଇ ଘର – ସମୁଦାୟ ଘର ନୁହେଁ)			
ମାଟି = ୧ କାଠ ସିଲିଂ = ୩ ଟାଇଲ = ୫ ଛାତ = ୨ ନଡା ଛପର = ୪ ଅନ୍ୟାନ୍ୟ = ୬			
O.3 **ରୋଷେଇ ଘରର ଛାତରେ ସ୍ଥାୟୀ ବାୟୁ/ଧୂଆଁ ନିର୍ଗମନ ବ୍ୟବସ୍ଥା** କିଛି ନାହିଁ **= 1** ଛୋଟଛୋଟ ଜଣା ବା ମେଲା ସ୍ଥାନ (୧୦ ସେମିରୁ କମ୍ ବ୍ୟାସ ଆକାରର) **= 2** ବଡବଡ ଜଣା ବା ମେଲା ସ୍ଥାନ (୧୦ ସେମିରୁ ଅଧିକ ବ୍ୟାସ ଆକାରର) **= 3**			
O.4 ରୋଷେଇ ଘରେ ଧୂଆଁ/ଧୂମର ମାତ୍ରା (ନିଜେ ଦେଖି ଲେଖନ୍ତୁ) – ଯେଉଁଠାରେ ପରିବାରର ଲୋକେ ଅଧିକାଂଶ ସମୟ ବିତାନ୍ତି	ଅଧିକ **= 1** ମଧ୍ୟମ **= 2** କମ୍ **= 3**		
O.5 ଅଧିକ ବ୍ୟବହାର ହେଉଥିବା ଚୁଲା ଓ ଚିମ୍ନିର ସ୍ଥିତି କେମିତି ଅଛି	ଖୁବ୍ ଭଲ = ୧ ଖରାପ = ୪ ଭଲ = ୨ ଅତି ଖରାପ =୫ ଚଳିବ = ୩		
O.6 ଅନ୍ୟ କ'ଣ ଦେଖିଲେ (ଯଦି କିଛି ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଅନୁଧ୍ୟାନ ଥାଏ)			

Annexure 1.2 Traslated Checklist for Focus Group Discussion

FOCUS GROUP DISCUSSION (FGD) QUESTIONNAIRE
(Traditional Stove Users and ICS Users)

[redacted]

Location and date
Region: _____, District: _____, City/Village: _____
Date: _____

NO.	QUERY CHECK LIST	NOTES
1	ଆପଣଙ୍କ ଘର ଭିତରେ ଧୂଆଁ ହେବା ଏକ ବଡ ପରିବେଶଗତ ଓ ସ୍ୱାସ୍ଥ୍ୟ ସମସ୍ୟା ବୋଲି ବିଚାର କରନ୍ତି କି ? ଯଦି ହଁ କାହିଁକି**?**	
2	ଘର ଭିତରେ ଧୂଆଁ ବା ବାୟୁ ପ୍ରଦୂଷଣକୁ କିଏ ଅଧିକ ଭୋଗନ୍ତି ? ଦୟାକରି ବିଶଦରେ କାରଣ କହନ୍ତୁ ?	–
3.	ସାଧାରଣତଃ ଜଣେ ରୋଷେଇ ପାଇଁ କେତେ ସମୟ ରୋଷେଇଶାଳରେ ବିତାନ୍ତି ?	–
4.	ସାଧାରଣତଃ ଘରର କେଉଁଠାରେ ରୋଷେଇ ହୁଏ ?	–
5,	କେଉଁ ସବୁ କାରଣକୁ ଦେଖି ସେଠାରେ ରୋଷେଇ କରାଯାଏ ?	–
6	ଆପଣ ରୋଷେଇ ପାଇଁ ସାଧାରଣତଃ କେଉଁ ପ୍ରକାରର ଚୂଲା ଓ ଜାଳେଣୀ ବ୍ୟବହାର କରନ୍ତି ?	– Fuel: - Stoves:
7.	ଚୂଲା/ଜାଳେଣୀ ନେଇ ଆପଣ ଖୁସି ଅଛନ୍ତି କି ?	–
	ତାହାର ଭଲ ଦିଗ ବିଷୟରେ କୁହନ୍ତୁ ? (ବିଶେଷକରି ସ୍ୱାସ୍ଥ୍ୟ, ଆୟବ୍ୟୟ, ଆରାମ, ଉପଲବ୍ଧିତା ଆଦି ବିଷୟରେ)	–
	ତାହାର ଖରାପ ଦିଗ ବିଷୟରେ କୁହନ୍ତୁ ? (ବିଶେଷକରି ସ୍ୱାସ୍ଥ୍ୟ, ଆୟବ୍ୟୟ, ଆରାମ, ଉପଲବ୍ଧିତା ଆଦି ବିଷୟରେ)	–

	ଆପଣ ନିକଟ ଭବିଷ୍ୟତରେ ଜାଳେଣୀ ବଦଳାଇବା ପାଇଁ ଚାହାନ୍ତି କି ? ଯଦି ହଁ କାରଣ -	–
	ଆପଣ କେଉଁ ଚୁଲା/ଜାଳେଣୀକୁ ସବୁଠାରୁ ଭଲ ବୋଲି ବିବେଚନା କରନ୍ତି ଯାହାକୁ ଆପଣ ନିକଟ ଭବିଷ୍ୟତରେ ହାସଲ କରିବା ପାଇଁ ଚାହାନ୍ତି ? ଯଦି ଏକାଧିକ ଇଚ୍ଛା ଥାଏ ତେବେ କ୍ରମ ଅନୁସାରେ କହନ୍ତୁ ।	–
5.	ଆପଣ ଘରେ ପ୍ରସ୍ତୁତ ହେଉଥିବା ପ୍ରମୁଖ ଖାଦ୍ୟ କଣ ? – ପ୍ରାୟତଃ ପ୍ରସ୍ତୁତ ହେଉଥିବା ଖାଦ୍ୟ – ରୋଷେଇ ପ୍ରଣାଳୀ - ଆପଣ ପ୍ରତି ମିଲ୍‌କୁ ସ୍ୱତନ୍ତ୍ର ଭାବରେ ରୋଷେଇ କରନ୍ତି କି (ଯଥା – ଜଳଖିଆ, ମଧ୍ୟାହ୍ନ ଭୋଜନ, ରାତିର ଖାଦ୍ୟ) ? – ଆପଣ ବିକ୍ରୟ ପାଇଁ ରୋଷେଇ କରନ୍ତି କି ?	
4	ଆପଣ କେଉଁଠାରେ ରୋଷେଇ କରନ୍ତି ? ଆପଣଙ୍କର ସ୍ୱତନ୍ତ୍ର ରୋଷେଇଘର/ ରୋଷେଇଶାଳ ଅଛି କି ? ଆପଣ ମୂଖ୍ୟ ଘରେ ରୋଷେଇ କରନ୍ତି ନା ଘର ବାହାରେ ରୋଷେଇ କରନ୍ତି ?	
6	ଆପଣ ଉପଯୋଗ କରୁଥିବା ପ୍ରତ୍ୟେକ ଜାଳେଣୀରେ ମାସକୁ କେତେ ଟଙ୍କା ଖର୍ଚ୍ଚ କରନ୍ତି ? (ପ୍ରତି ଜାଳେଣୀ ପାଇଁ ସ୍ୱତନ୍ତ୍ର ଭାବରେ ଉଲ୍ଲେଖ କରନ୍ତୁ । ଯଦି ଟଙ୍କାରେ ଖର୍ଚ୍ଚ ହୋଇ ନାହିଁ ତେବେ ସମୟ ଓ ଶ୍ରମରେ ଉଲ୍ଲେଖ କରନ୍ତୁ)	
	ଜାଳେଣୀ କାଠ ସଂଗ୍ରହ କରିପାଇଁ ଲାଗୁଥିବା ସମୟ ଗତ ତିନି ବର୍ଷ ତୁଳନାରେ କମିଛି ନା ବଢ଼ିଛି ?	
	ଜାଳେଣୀ କାଠ ସଂଗ୍ରହ କରିପାଇଁ ଯିବାକୁ ପଡୁଥିବା ଦୂରତା ଗତ ତିନି ବର୍ଷ ତୁଳନାରେ କମିଛି ନା ବଢ଼ିଛି ?	
	ଜାଳେଣୀ କାଠ ସଂଗ୍ରହ, ପ୍ରକ୍ରିୟାକରଣ ଓ ବ୍ୟବହାରରେ ଆପଣ କିଛି ସମସ୍ୟା ବା ଅସୁବିଧାର ସମ୍ମୁଖୀଣ ହୁଅନ୍ତି କି ?	

7	ଆପଣ ବର୍ତ୍ତମାନ ବ୍ୟବହାର କରୁଥିବା ଚୁଲିର ଦାମ କେତେ ? (ପ୍ରତ୍ୟେକ ପ୍ରକାରର ଚୁଲି ପାଇଁ ପୃଥକ ଭାବରେ ଦର ଦିଅନ୍ତୁ ।) ତାହା କେତେ ସମୟ ଧରି କାମ କରିଥାଏ (ବର୍ଷ ବା ମାସ) ?	
9	ବଦଳ ଜାଳେଣୀ/ଚୁଲାରେ କଣ ସବୁ ବୈଶିଷ୍ଟ୍ୟ ରହିବା ଉଚିତ ବୋଲି ଆପଣ ବିଚାର କରନ୍ତି ? - ବ୍ୟବହାର କରିବାରେ ସହଜ - ଶୀଘ୍ର ରୋଷେଇ - ରୋଷେଇ ଖର୍ଚ୍ଚ କମ୍ ହେବା – ଧୂଆଁ କମ୍ ହେବା – ସ୍ୱଚ୍ଛ / ସଫା – ବିଭିନ୍ନ ବ୍ୟବହାର ପାଇଁ ଉପଯୋଗୀ ହେବା – ଅନ୍ୟାନ୍ୟ	
10	ଯଦି ଆପଣ ଅନ୍ୟ ପ୍ରକାରର ଜାଳେଣୀ/ଚୁଲା ବ୍ୟବହାର କରିବା ପାଇଁ ଚାହାନ୍ତି ତେବେ ତାହା ପାଇବା ପାଇଁ ସବୁଠାରୁ ଭଲ ବାଟ କଣ ? – କେଉଁ ଯୋଗାଣକାରୀ ? ଦୋକାନ ଇତ୍ୟାଦି (ଚୁଲା ଓ ଜାଳେଣୀ ପାଇଁ) – ଚୁଲାକୁ ଆପଣ କେମିତି କିଣିବା ପସନ୍ଦ କରିବେ - ନଗଦ ଦେଇ ବା ଉଧାରୀ ? ଯଦି ଉଧାରି କେମିତି ପରିଶୋଧ କରିବେ ? – ସଞ୍ଚୟ/କୋ-ଅପରେଟିଭ ଆଦି (ଟଙ୍କା ବିଷୟକ) – ସର୍ବାଧିକ କେତେଟଙ୍କା ଦେଇ ପାରିବେ ?	
12	ଆପଣଙ୍କର ରୋଷେଇ ସମ୍ବନ୍ଧିତ ଆବଶ୍ୟକତା ବା ଆପଣ ଦେଖିଥିବା ବିଭିନ୍ନ ଜାଳେଣୀ/ଚୁଲା ବିଷୟରେ ଆପଣ ଆଉ କିଛି କହିବା ପାଇଁ ଚାହିଁବେ କି ?	
13	ଚୁଲା / ଜାଳେଣୀ ବାଛିବାରେ ମହିଳାମାନଙ୍କର କଣ ଭୂମିକା ଓ ସୀମିତତା ଆପଣ ଲକ୍ଷ୍ୟ କରିଛନ୍ତି ?	
12	ମହିଳାମାନଙ୍କ ସମ୍ବନ୍ଧରେ ବା ପୁରୁଷ-ମହିଳା ସମାନତା ସମ୍ବନ୍ଧରେ ଆଉ କିଛି କହିବା ପାଇଁ ଚାହାନ୍ତି କି ?	

Annexure 1.3: Check for Key Informant – Entrepreneur and Distributors

6. KEY INFORMATION INTERVIEW QUESTIONNAIRE – ENTREPRENEURS AND DISTRIBUTERS

Investigator's Name: _____

A. Area identification

Region	
District	
City/Town	
District	
Village	

B. Background of the entrepreneur

Name of Institution	
Formally registered or not	
Type of enterprise (producer / distributer)	
Name of the entrepreneur	
Male / Female	
Age	
Education	
Main occupation	
Secondary occupation	
Phone	

1. When was your enterprise established (year, month)?

2. What is the form of business organization *(private, PLC, Share company, other)***?**

3. How many stoves have already been sold, including type of stoves?

4. **What is the capacity of your organisation to manufacture/sell stove per month, and in which areas?**

5. **How many months does the factory operate in a year? Please list monthly production of stoves (the last 12 months).**

#	Month	Stoves (Quantity/month)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

6. **What is the average income, expenditure and net income of by manufacturing and selling stoves per year?**

7. **Have you received any supports from external support organizations? (training, material, financial support etc.)**

8. What are the main barriers for you to expand your business?

Raw materials:
Manpower:
Financing:
Others:

9. How many women are working in your organization in stove manufacturing and supply process and in what positions? What are positive and negative aspects for making them involved in this activity?

10. Other relevant issues

Annexure 1.4: Checklist for key information

7. KEY INFORMATION INTERVIEW QUESTIONNAIRE – TECHNICAL PROMOTOR

Investigator's Name: _____

C. Area identification

Region	
District	
City/Town	
District	
Village	

D. Background of the Technician/Promoter

Name of the Technician/Promoter	
Male / Female	
Age	
Education	
Main occupation	
Secondary occupation	
Phone	

11. From when are you engaged in this job (year, month)?

12. How many stoves have already been sold, including type of stoves?

13. How many months doesyou work in a year? Please list monthly sales of stoves (the last 12 months).

#	Month	Stoves (Quantity/month)
1		
2		
3		
4		
5		
6		

7		
8		
9		
10		
11		
12		

14. What is your net annual income?

15. What are the main barriers for you to expand your business?

16. Are you working independently or in group?

17. Have you received any supports from external support organizations? (training, material, financial support etc.)

18. Other relevant issues

ANNEXURE 2: LIST OF TABLES

ANNEXURE 3: LIST OF STAKEHOLDER MEETING PARTICIPANTS

PARTICIPANT LIST

Workshop on Gender and Livelihoods Impact of Clean Cook-stoves
Venue: DRTC-CYSD, Bhubaneswar
Date: 6th March 2014

Sl. No	Name	Name of the Organization & Address	Email & Contact Number
1.	Shishira Kumar Mishra	SWAD, Sakhigopal, Puri	shishiraswad@gmail.com Ph.No- 9861102298
2.	Dr. Mahendra Kumar Mohanty	CAET, OUAT, Bhubaneswar	mohanty65m@gmail.com Ph.No- 9437065318
3.	Kailash Chandra Dash	RCDC, HIG-26, K-6, Phase-II, Kalinga Vihar, Bhubaneswar-751019	kailash@rcdcindia.org Ph.No- 9938066010
4.	Bhaskar Chandra Pradhan	CCWD	bhaskarpradhan1977@yahoo.co.in
5.	Debabrata Das	RCDC, Kusupur, Balikuda, Jagatsinghpur	Ph.No- 9938870832
6.	Jhurilata Rout	Tentulibelari, Balikuda, Jagatsinghpur	
7.	Susama Patri	Tentulibelari, Balikuda, Jagatsinghpur	
8.	Basundhara Tripathy	RCDC, HIG-26, K-6, Phase-II, Kalinga Vihar, Bhubaneswar-751019	Ph.No-7750000727
9.	Chhabi Naik	Kathuagunda, Rajnagar, Kendrapara	
10.	Sarita Samal	Kathuagunda, Rajnagar, Kendrapara	
11.	Niranjan Giri	RCDC, Dera, Rajnagar, Kendrapara	Ph.No 8018315680
12.	Arun Kumar Sekhar	Dulal, Baripada	sekhararun@gmail.com Ph.No- 9439378192
13.	Ashok Satapathy	FES, Angul-759122	
14.	Shikha Srivastava	Practical Action, Bhubaneswar	
15.	Hemanta Bag	RCDC, HIG-26, K-6, Phase-II, Kalinga Vihar, Bhubaneswar-751019	
16.	Jyoti Prakash Samamtaray	Care India, Bhubaneswar	
17.	Sushanta Kumar Sahoo	Association for Social Service & Rehabilitation of the Aged (ASSRA), New Delhi	
18.	Arun Kumar Hial	Practical Action, Bhubaneswar	
19.	B.P Bhattacharya	S.G. Foundation, Keonjhar	
20.	C.V. Krishan	Creat, 2172, Banja	Ph.No-9437015904

		Apartment, Unit-6, Bhubaneswar	
21.	Sanjoy Patnaik	Landesa	Ph.No- 9437011818
22.	Priyadarshini Sahu	SRCW, Toshali Bhavan	sahu_priyadarshini@yahoo.co.in Ph.No- 9938057072
23.	Anantagopal Sahoo	JKS, Brahmapur, Ganjam	anantagsahoo@gmail.com Ph.No-7809012712
24.	Dillip Subudhi	RCDC, HIG-26, K-6, Phase-II, Kalinga Vihar, Bhubaneswar-751019	dillip.subudhi@mail.com Ph.No- 9439076322
25.	Sarat Tripathy	RRDO, Thakuramunda, Mayurbhanja	Ph.No- 9438281567
26.	Bighneswar Sahu	Asst, Editor, Samdrusti, Bhubaneswar	Ph.No- 9437920447
27.	Gadadhra Pradhan	GDAF, Bhubaneswar	gadadharpradhan@gmail.com Ph.No- 861079131
28.	Abhinandan Jens	Suparnova Technology, Bhubaneswar	Ph.No- 8895435871
29.	Sushant Kumar Das	Pradan, Bhubaneswar	Ph.No- 8895568788
30.	Amrita Patel	SRCW, WRCD, Govt. of Odisha	