The Holistic Feasibility Study of a National Scale-up Program for Ethanol Cookstoves and Ethanol Micro Distilleries (EMDs) in Ethiopia

Marketing Strategy for Ethanol to Household Cooking Fuel

December 2014

This Market Aspect of the holistic feasibility study focuses on consumers' awareness, attitude and perceptions towards ethanol fuel and stove and those of competing products, preferences and buying habits, analysis of most promising distribution models/ market mapping and value chain analysis and the proposed the market penetration strategy

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Acronyms

ACSI	Amhara Region Credit and Saving Institution
AETPD	Alternative Energy Technology and Promotion
BDS	Business Development Services
BEST	Biomass Energy Strategy
BLT	Brunches, Leafs and Twigs
CBOs	Community based Organization
CC Stove	Clean Cook Stove
CO2	Carbon dioxide
CRGE	Climate-Resilient Green Economy Initiative
CSA	Central Statistics Authority of Ethiopia
DAs	Development Agents
DBE	Development Bank of Ethiopia
DCSSCO	Dedebit Credit and Saving Share Company
E.C	Ethiopian Calendar
ECO	Energy Coordination Office
EFFORT	Endowment Fund for the Rehabilitation of Tigray
EIA	Ethiopian Investment Agency
EMDs	Ethanol Micro Distilleries
EPC	Ethiopian Petroleum Corporation
ESMAD	Energy Sector Mapping and Database Development
ETB	Ethiopian Birr (Currency)
FBOs	Faith Based Organization
FDRE	Federal Democratic Republic of Ethiopia
FGD	Focus Group Discussions
GHG	Greenhouse Gas
GIZ	German International Cooperation
gm	Gram
GTP	Growth and Transformation Plan
HH	Household
HHH	Head of Household
ICS	Improved Cookstove
IP	Investment Plan
Kg	Kilogram
MFI	Micro Finance Institution

MHGMEE	Moges Haileselassie General Metal & Engineering Enterprise (
MoFED	Ministry of Finance and Economic Development
MoH	Ministry of Health
MoU	Memorandum of Understanding
MoWIE	Ministry of Water Irrigation and Energy
MRV	Measuring, Reporting and Verification
MSE	Micro and Small Enterprise
MSEDA	Micro and Small Enterprise Development Agency
MtCO2e	Metric ton Carbon dioxide equivalent
NGOs	Non-Governmental Organizations
NICSP	National Improved Cookstove Programme
NOC	National Oil Company
OCA	Oromia Cooperative Agency
OCSSCo	Oromia Credit and Saving Share Company
PLC	Private Limited Company
PSI Ethiopia	Population Services International – Ethiopia
Q	Quintile
RE	Renewable Energy
REDD+	Reducing Emissions from Deforestation and Forest Degradation
REF	Rural Electrification Fund
RETs	Renewable Energy Technologies
SCIP	Strategic Climate Institutions Programme
SCR	Social Corporate Responsibilities
SNV	Netherlands Development Organization
TV	Television
TVETs	Technical and Vocational Education and Training
UN	United Nations
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
USD	United States Dollar (Currency)
VAT	Value Added Tax
Vs	Versus
WB	World Bank
YBP S.C	Yetebaberut Beherawi Petroleum Share Company
WHO	World Health Organization

Executive Summary

This report is the marketing aspect of "the Holistic Feasibility Study of a National Scale-up Program for Ethanol Cook stoves and Ethanol Micro Distilleries (EMDs) in Ethiopia" project. Therefore it comprises the analysis of major points/factors that are required to devise marketing strategy. The summarised analysis result is given below.

Fuel Type Use in Urban & Rural Households: Cooking fuel use trend in the surveyed households showing high dependence on fuelwood and charcoal.

- 95% of the urban hhds are using charcoal followed by 51% and 32% of the respondents that are using fuelwood and electricity respectively. Kerosene and LPG are used by 9% and 1% of urban households respectively
- 87% of the rural hhds are using fuelwood and 43% are using charcoal. The share of BLT, Crop residues and Dung is still countable especially in the surveyed rural households with the percentage of 25%, 20% and 4 % respectively
- Charcoal is the prominent types of fuel that is used by most of the **commercial sectors** followed by fuelwood and electricity with the percentage of 37%, 26% and 23% respectively.

Interest to use ethanol fuel and stove:

- Regardless of different fuel types use by households the respondents unanimously confirmed their interest to use ethanol fuel and stove. 91,92,93 and 88 percentage of the surveyed hhds that uses fuelwood, charcoal, kerosene and electricity respectively have shown interest to use ethanol for cooking, which indicates that the existence of huge interest. Similarly households in all income quintile in both urban and rural area uniformly expressed their interest to use ethanol. The main reason given by the remaining households, i.e. those households that are not interested to use ethanol fuel and stove is that they don't know or have no sufficient information about ethanol fuel and stove.
- Most of the institutions are also interested to use ethanol fuel with 89%, 75% and 92% for hospitals, schools and universities respectively
- Though there is diversified fuel type use at country level in the surveyed commercial sector 96% of the respondents are interested to use ethanol fuel and stove.

Awareness about ethanol:

- Awareness of hhds about ethanol fuel and stove is very minimal. However, both that are familiar with ethanol fuel and stove as well as those that are not interested to use ethanol fuel and stove in both urban and rural area.
- Almost 50% of the respondents in all social service institutions responded that they have heard about ethanol for cooking
- About 70% of the commercial sector respondent have no clue about ethanol fuel and stove

In general awareness about ethanol stove and fuel is very minimal in all market segments

Interest to new types of stove and fuel:

- About 92% of hhds at country level are interested to use new fuel and stove type. The main attributes that are sought by hhds in their new types of stoves and fuel are
  - cheap stove

- cheap fuel
- safety
- speed of cooking

- Unlike households & enterprises for the case of universities money doesn't seem an issue. What they are looking for is to have clean and efficient stove that can accommodate their mass cooking timely. Smokes, burn from the flames, uncleanness are the main inconveniences that they currently practiced and they are looking for an improved stove that can address all these. Similarly, multiple pot stove, clean, efficient, convenience are stated by the hospitals as the main attributes that they are looking for from the new stove/fuel. Unlike the other two affordability is one attribute mentioned by the schools in addition to convenience, clean, safe and fast to cook.

Consumer buying behaviour: Consumer buying behaviour "refers to the buying behaviour of final consumers, both individuals and households, who buy goods and services for personal consumption" (Kumar, 2010, p.218). **Decision making on purchasing household items** is a key factor that influence the consumer buying behaviour. Findings of our survey showed the existence of the uniform trend in both urban and rural areas in this regard. Both husband and wife take the lion share followed by wife and husband though there are some differences in selected regions. When we look at purchase decision makers of stoves, women takes the highest share followed by husband and wife. This can be from the higher affiliation that exists between the women and the stove. The other relevant aspect of marketing information is to have a clear idea on the hhd member who is the source of money for purchasing new stove.
In this aspect husbands are those takes the biggest share followed by both husband and wife and wife.

Willingness to pay: Willingness to pay is also one of the key characteristics of consumers buying behaviour.

Willingness to pay for ethanol fuel

- About 52% at the country as well as urban and rural hhds level gave the value of ETB 6-10 as the amount that they are **willing to pay for the litre of ethanol**, followed by (22%, 24% and 20%) and (15%, 11% and 17%) at country, urban and rural level those responded ETB 11-15 and ETB 0-5 respectively. This shows that it is only 22% of the respondents at country level and (24% and 20% at the urban and rural level) are those respond lies in the range of the current price of the ethanol fuel which is ETB 14.00.
- Still the issue of unfamiliarity with the ethanol fuel exists, the bigger share of the commercial sectors respondents (43%) are willing to pay ETB 6-10 followed by 35% and 11% of the respondents who are willing to pay ETB 11-15 and ETB 16-20 respectively. With the current price of ethanol that is ETB 14.00, about 50% of the respondents are fitting to the current price range.
- From social services, the 23% and 15% of the respondents from the university said that they are willing to pay ETB 16-17/litre and ETB 10-15 per litre respectively. Similarly 33% and 22% of the respondents from hospitals stated that they are willing to pay ETB 15-18 per litre and ETB 18-20 per litre respectively. For the case of

schools 25% of the respondents stated that they are willing to pay more than ETB 16 per litre. There are also some respondents who gave the value per month basis however as it is difficult to convert it to litre their feedback kept as it is so as to capture their capacity of monthly payment.

Willingness to pay for ethanol stove

- The bigger portion of the respondents (37%, 29% and 42% at the country, urban and rural level respectively) gave ETB 51-100 as the amount that they are **willing to pay for a single burner stove** followed by (19%, 22% and 17%) and (16%, 19% and 14%) at the country, urban and rural level respectively who responded ETB 101-150 and ETB 151-200 respectively. It is only 13%, 16% and 11%, 5%, 7% and 4% and 2% each of households at country, urban and rural level are those whose responded ETB 201-500 ETB 501-1000 and ETB >1000 respectively lies in the range of the current price of the locally produced single burner stove, i.e. ETB 385.00. However looking at the price of the imported single burner stove which is ETB 1,300 it is only 2% of the respondents at country, urban and rural level lies in that range as their respond is more than ETB 1,000.
- 43%, 51% and 38% at country, urban and rural level responded ETB 201-500 as the amount that they are **willing to pay for a double burner stove** followed by 18% and 19% of households at the country and rural level who have given ETB 151-200 and 18% of urban households who gave ETB 501-1000. In general looking at the current price of double burner stove which is the imported one i.e. ETB 1,900 only about 0.3% of the respondents at all levels stated that they are willing to pay more than 1000 though it can also be to the lower range i.e. a little bit more than ETB 1,000 instead of higher value that is closer to ETB 1,900.
- Higher share of the **respondents from commercial enterprise** (40%) responded that they are willing to pay ETB 0-200, followed by 27% and 16% who have responded ETB 201-300 and ETB 301-400 respectively **for the single burner stove.** For the double burner stove 22% of the respondents are willing to pay ETB 701-1000 followed by 17% and 15% who have responded ETB 401-500 and ETB 301-400 respectively.

The result of the study confirmed that in all of the three products willingness to pay information from the respondents will put the success of the project in question unless critical measure will be taken so as to address the pricing of the ethanol fuel (through clear and transparent pricing process, introduction of VAT exemption, etc) and also highly promoting the local production of the stove or if importing the whole part and/or parts of the stove is inevitable to treat the imported product as any other renewable energy technologies so that the related taxes can be exempted.

Existing distribution models of Cooking Devices

The survey result indicated that household's stove acquisition model is mainly market based except fuelwood stove where 51% in urban and 57% in rural areas are self-built or three stone stoves. The respond acquired from those households revealed that **shops are the prominent market place for the modern stoves** that are using modern fuels (LPG, Kerosene, and Electricity) and **open/local market are for the traditional stoves/improved stoves** that are using traditional fuels like fuelwood and charcoal. However, the share of charcoal user households that responded that they bought their charcoal stove from shops is also significant

with the percentage of 31% and 23% for urban and rural households respectively. This might be due to the portable nature of the charcoal stove.

Existing distribution models of Cooking Fuels

Similar to the cooking devices/stoves the distribution models/sales outlets of fuels are also depends on the nature of the fuel and its availability in the respective settlements.

- Supermarkets & fuel stations are found to be the main sales outlet place for LPG and fuel stations for kerosene though in the rural areas kerosene is bought from retailers.
- Retail and whole sell based local market is the basic sales outlet place for charcoal and fuelwood.

Similarly supermarkets/mini markets, fuel stations and local market can be the potential sales outlet to outreach to the public at large.

Supply of ethanol fuel and stoves

Ethanol fuel

Currently the sole supplier of ethanol fuel are the sugar factories which have targeted to produce 2.25 million tons of sugar and 181,604 meter cube ethanol and using up to 44,340 meter cube ethanol for blending purposes by the end of the GTP period. If the volume of the ethanol production is going to achieve the intended plan; the supply of ethanol that will be used as cooking fuel will not be a problem at all as the production much exceeds the amount that is allocated for blending purpose. Only in 2007 the corporation plan to produce 134.6 (000'm3) (134.6 million litre) of ethanol which is a huge amount that enable the scaling up project to kick off without a problem of supply though there is also a need to address other related issues like pricing, sustainable supply, standard, etc. If the EMD project is going to kick off it will definitely buffer the supply volume to the rural areas if the price and the quality competes with the one that is supplied by the sugar corporation.

Ethanol stoves

According to Moges Haileselassie General Metal & Engineering Enterprise, who is the active ethanol stove producers, there is a production capacity of 500 ethanol stoves per month if the market is well developed and sustainable demand is going to be created. However, there is also a need to engage more enterprises that can be actively involved in the production as well as distribution of the stove. In addition to that, until the local production is strengthening to the level of satisfying the demand that will be created, there might be a need to push the intervention that has been started by Gaia Association which is the pilot testing of locally assembled Flat pack (Start Stoves).

Market potential for ethanol fuel and stoves

There is significant interest on the use of ethanol fuel and stoves by all consumer segments (Households, social services (hospitals, schools and universities) and commercial enterprises (hotels, restaurants and coffee/tea rooms) that have been covered through this assessment.

However, for the success of the project there is a need to create a successful mix of the following market factors with the right people/stakeholders:

- the right product (sustainable supply of ethanol fuel and stove with the required standard)
- sold at the right price (affordable so as to reach to public at large)
- in the right place (through devising the right/effective distribution channel)
- using the most suitable promotion (that can positively influence the potential customer segments)[1]
- to the right people (focus on potential customer segment)

[1] Details given in the promotion part of the report

Background

Ethiopia is a country of 86.6 million people (the projected population figure for 2013 as per CSA-2012 poulation.pdf) living in an area of 1.1 million square kilometre. The population is growing at 2.6% annually and it is expected to reach 103 million by 2020 (CSA, 2011). The 'Household Consumption and Expenditure 2010-2011 Analytical Report of CSA' indicated that the household size of rural households are to some extent larger than the urban households i.e. rural households had on average 5.1 people while urban households had only 3.7 people. This figure had been 4.9 and 4.3 for the rural and urban households respectively in 2004/5. Though the national average size remained constant for both cases 2004/5 and 2010/11 which is 4.8 the average rural household size raised by 4% while the average urban household size decreased by 14%. Ethiopia has a predominantly agricultural economy and 84% of the population lives in rural areas directly or indirectly employed in agriculture and related activities. The average migration rate from rural to urban is 12.2% while urban to rural is 4.4%[2].

Ethiopia's Energy consumption is predominantly based on biomass energy sources that constitute an overwhelming proportion of more than 90% of the total national energy consumption of 2010. About 80 per cent of the biomass energy comes from woody biomass, and about 10 percent each from crop residues and animal dung. (Biomass Energy Strategy Document). The balance is met by commercial energy sources such as electricity and petroleum. Looking at the energy consumption by sector for 2010; the household and commercial sectors constitutes 93.6% of the total energy consumption while industry and transport took 0.8 % and 5.6% respectively.

The use of crop residues and animal dung to satisfy the household cooking energy demand cause direct effect on reducing agricultural productivity as it affects the level of soil fertility due to lacking the organic fertilizers which would have been gained from crop residues and animal dung. The majority of the households that is the rural households are the one severely affected by the biomass energy use. They are the one who are mainly affected from low agricultural productivity due to the use of crop residue and animal dung for cooking rather than being used for fertilizers and also with lack of closer access to fuelwood which as a result forced them to travel a long distance to meet their cooking energy need.

Rural households are exclusively dependent on biomass fuels as access to electricity and other conventional fuels is very little. Urban households use a more diverse range of fuels; however, even in urban areas 80% of households depend on biomass fuels for cooking (CSA, 2004). The average household spends 9% of its income on energy; cooking fuels account for 40% of this expenditure.3 The share of expenditure on fuelwood and other cooking fuels is greater for low income households compared to better-off households.

The social, economic, health and environmental implication of cooking fuel acquisition and consumption is very high. Over thirteen million households collect their cooking fuels. A typical

[2] CSA-National Statistics-The 2007 Population and Housing Census of Ethiopia

[3] Rapid Assessment and Gap Analysis on Sustainable Energy for All (SE4All): The UN Secretary General Initiative, Federal Democratic Republic of Ethiopia, Ministry of Water & Energy, Supported by UNDP, June 2012-Draft copy

household spends 500 hours annually on fuel collection[4]. Women and girls are discriminately affected with the adverse impacts of cooking fuel collection and use. Indoor air pollution is responsible for approximately 4.9% of the total burden of disease among all age groups in Ethiopia[5]. Excessive exposure to smoke due to burning of dry biomass for cooking is one cause of respiratory diseases which is responsible for up to 12% of total deaths in Ethiopia[6] and Indoor air pollution is responsible for approximately 4.9% of the total burden of disease among all age groups in Ethiopia

Heavy dependence and unsustainable use of biomass is a severe burden to the biomass resource base, with the amount of wood consumed[7] for cooking estimated at 76.5 million tons plus charcoal that is interpreted as fuelwood equivalent of 28.6 million tons annually, and the amount of animal dung and crop residues consumed are 22.8 and 19.7 million tons annually. Such heavy reliance on and inefficient use of biomass fuels make consumption exceed the sustainable yields. This means that a large portion of the biomass consumed is not-renewable and contributes to greenhouse gas (GHG) emission.

Recognition of the impacts has led government and non-government organizations to run energy efficiency and alternative fuel promotion programs in Ethiopia since the mid-1980s. A variety of clean cook stoves including efficient wood and charcoal stoves, ethanol stoves, and electric stoves have been disseminated. Significant achievements have been realized in the past two decades through these programs, the most prominent of which have been the cooking efficiency programs by the MoWIE and the GIZ and the National Biogas Program by the MoWIE and SNV. However, the fact of the higher population, the extended geographical location, financial constraints of the households to procure clean energy products, lack of proper integration among different development partners, lack of choosing the right product that are affordable and also can easily be adopted by the rural households, market barriers, etc. hinders the success of these initiatives so as to reach to the majority of the households.

Coming to intervention related to promoting ethanol as cooking fuel Gaia Association, MOKOBU Enterprise and Moges H.Selassie General Metal Works played key role in collaboration with the current Ministry of Water, Irrigation and Energy. The main objective of introduction of ethanol is to use it as an alternative to non-sustainable and highly polluting fuels, whether imported petroleum fuels or locally gathered/manufactured solid biomass fuels.

The pilot test that was conducted by Gaia Association to determine user acceptance of this new fuel and technology in Addis Ababa laid ground to have basic data and information to scale up the dissemination of ethanol fuel and stove as a solution for the household cooking energy need. As the assessment has tried to cover households from low, middle and high income group it was possible to get relevant and representative basic feedback from the users. This pilot study revealed that households confirmed that the ethanol-fuelled CC stove is more fuel efficient than other cook stoves, most notably the kerosene stove and more over it is safer compared to kerosene stove and fuel. This fact confirmed that if ethanol was more readily available and less

[4] ESMAD-Biomass Energy Report Final
[5] Source: Indoor air pollution-National Burden of Disease estimates- World Health Organisation 2007
[6] Source: WHO: Department of Measurement and Health information, December 2004
[7] Biomass Energy Strategy (BEST)-December 2013

costly than kerosene, there could be high potential for the CC stove to replace kerosene stoves in Addis Ababa. The study also indicated the related economic and social benefits on households as well as the potential positive impact on the environment and its contribution for promoting local economy mainly through private sector engagement in the promotion of the ethanol stove and fuel.

However, though UNHCR scaled up the program to cover around 4,000 Households in two refugee camps due to the socio economic benefits of ethanol for cooking, the promotion of this product couldn't go beyond dissemination of a couple of thousands of clean cookstoves commercially by the two private enterprises (MOKOBU and Moges). The main challenges that hinders the large scale dissemination of ethanol as a cooking fuel is that

- unsustainable supply of ethanol-supply interruption
- time to time increment of ethanol price
- the relevant high cost of ethanol stoves (mainly the imported ones)

In order to address these challenges Gaia designed projects, which are ongoing currently, that could support the sustainable supply of ethanol fuel and ethanol Clean Cookstove.

- Project-Demonstrating the feasibility of locally produced ethanol for household cooking in Addis Ababa (using molasses/fruit wastes as a feedstock)
- Project- Pilot Ethanol production From Sugar Cane for household cooking in Three Rural Areas (using sugar cane as a feedstock)
- To make the stoves affordable-
    - Efforts made to produce the stove parts locally
    - Designing of locally assembled Flat pack (Star Stoves) – Pilot Testing underway

The two private enterprises (MOKOBU and Moges) also played key role to keep the ethanol stove users on the pipeline by availing the ethanol fuel to those households that have already acquired/bought the CC stove.

However, though different initiations have been done so as to promote the large scale dissemination of ethanol fuel for cooking, it is found out there is still a need to do a national feasibility assessment that can answer the overall issues related to supply (fuel and stove), demand (users perspective at different consumer segments), market potential, economic feasibility, potential financing mechanism, etc

The Government of Ethiopia through its CRGE has also clearly indicated the importance of addressing households energy demand through renewable energy resources and clean energy technologies highly contributes in promoting green economy in the country.

Accordingly the current national development plan, called the Growth and Transformation Plan or GTP (MOFED, 2010), gives high priority to the energy sector and has set ambitious plans which also include improved cookstoves dissemination, where the current National Improved

Cookstove Program is part of and targets to disseminate nine million clean cookstoves by the year 2016.

Commercialisation approach and cooking energy

For successful implementation of ICS projects/program that adopts commercialized approach for the sake of sustainability, there is a need to devise a strategy that address the 5 Ps marketing mix (Product, Price, Place, Promotion, and People)[8]. Getting the right product that is needed by the people and has the required solution, with affordable price that make them believe that they paid for the value that they are looking for, at the right place where they can access it, by conveying the right promotional message that the consumers would like to hear and say about it. More over the consumers that love the brand of the product are also expected to be our promoter to the other people that we intend to serve and supply our product. When we review ICS intervention in different countries the main reasons for not achieving large scale dissemination of ICS is lack of having these marketing mix properly in place. There is either lack of awareness about the ICS that required to be promoted, if at all there is awareness; lack of access to the stoves and/or lack of finance (at users as well as producers level), etc. are the main challenge for the success of the intervention.

Generally in the promotion of such kind of social products which is designed to address basic social needs, social marketing plays key roles. While definitions of social marketing vary, three key elements commonly appear. First, that it is a systematic process phased to address short, medium and long term issues. Secondly, that it utilizes a range of marketing techniques and approaches (a 'marketing mix'). Finally, its primary aim is to achieve a particular 'social good' (rather than commercial benefit) with specific behavioural goals clearly identified and targeted.

As these products (ethanol clean cookstove as well as ethanol fuel) are not like any other commodities and they are significantly contribute to the social benefit of the public at large, any promotional tools that are devised should capitalize on this feature of the product i.e. social benefit. Therefore in the case of modern energy-related social marketing the 'social good' can be articulated in terms of achieving specific, achievable and measurable behavioural goals, relevant to improving access to modern energy use which as a result contributes to all multi-sectoral benefits i.e. environment, health, gender, livelihood etc.

Therefore, as market barriers are one of the main barriers that inhibits the large scale dissemination of ICS, this document mainly focused on analysing the existing marketing situation of ICS and fuels in general and ethanol cookstove and ethanol fuel in particular, the competitor stoves and fuel types that exists in the country, promotion and marketing interventions adopted in the country, the achievement made through the adopted promotion and marketing schemes, the problems encountered and measures taken while implementation of different promotion and marketing tools etc

Analysis of the existing situation will help this project to base the devising of the right promotion and marketing approach from the concrete reality on the ground.

[8] Details given in the promotion section of the report

Objective:

The promotion of ethanol clean cookstove and ethanol fuel so as to address the cooking energy need at different levels should adopt pure commercial approach for the sake of sustainability of the overall interventions. Therefore, it is very important to look at all aspects of the marketing components as part of major points to be addressed through the feasibility assessment.

Assessing the market viability of those products through market analysis are the key component of the feasibility assessment which otherwise will make the whole assessment document meaningless.

The specific objective of the marketing aspect of the assessment is to investigate consumers' awareness, attitude and perceptions towards ethanol fuel and stove and those of competing products, preferences and buying habits and analysis of most promising distribution models/ market mapping and value chain analysis and propose the market penetration strategy accordingly[9].

Methodology

Project planning phase/Inception phase

This involves desk review of relevant documents, observations, designing of survey tools, training to enumerators on proper administration of the survey tools, and systematic consultations with project staff/consultants and stakeholders.

Review of documents

Relevant project documentation and background information in relation to production, marketing, promotion and use of ICS in general and of Ethanol Clean Cookstove in Ethiopia have been reviewed. In addition to that the Gaia SCIP project proposal and the business plan have also been reviewed. This helps to understand the existing situation, i.e. efforts that have been taken so far mainly by Gaia Association and also by different stakeholders on the promotion of ethanol clean cookstove and EMD, the results achieved, the challenges faced & measures taken to address the challenges. The review findings are used as the base for devising the marketing strategy to be adopted by Gaia Association and its development partners. Policy and strategy documents of FDRE that have direct and indirect linkage with the promotion of Renewable Energy Technologies such as Clean Cookstoves and alternative fuels for cooking use in both households and institutions have also been reviewed.

Stakeholders' identification:

As energy is cross cutting issue and it generally contributes to sustainable development, different development partners are involved in one way or the other in the promotion of creating access to clean energy. Therefore, it is believed that having consultation with the relevant development

[9] Details of the study is stated in the ToR that is annexed to this document

partners will give us an overall insight about the possible ways of integrating the promotion of ethanol clean cookstove and ethanol fuel with potential partners in order to achieve the common objective. In this regard potential stakeholders at the federal and regional level to be included in the consultation process have been identified in close discussion with Gaia association. Checklists have also been designed so as to facilitate the consultation process with different stakeholders.

Development of survey tools

Following the review of background information, different sets of research instruments (questionnaire, focus group discussion checklists, etc.) have been prepared for the various respondent groups: rural and urban households, commercial businesses, and social institutions. As the market survey/assessment is also part of the overall survey, points that could help to capture basic market information have been included in the designed survey tools. The developed survey tools have different modules for different respondent group.

The survey tools that are developed to conduct the assessment are:

- Questionnaires (for different customer segments i.e. households and institutions),
- Focus Group Discussions (FGD)
- Brainstorming (consultants team and Gaia Associations),
- Semi-structured interview (stakeholders consultation)
- Documentation

Major points that are expected to be answered from the assessment with respect to the marketing aspects are:

- current cooking energy sources and expenditures
    a. types of cooking energy resources
    b. types of cooking device
    c. mode of acquisition of cooking energy fuels/stoves
    d. place from where households bought their current stoves/fuels
    e. cooking energy expenditure (fuel as well as stove)
    f. impression of customers about their existing fuels and stoves
    g. interest of customers to shift to new types of fuels
- Market information
    a. purchase decision
    b. awareness about ethanol for cooking (fuel and stove)
    c. preferred medias/ways for information dissemination
    d. interest to use ethanol fuel/stove
    e. willingness to pay and preferred mode of payment (for both ethanol fuel and ethanol stove)

Project implementation phase

The project implementation mainly focused on data collection using the developed survey tools, stakeholders' consultations and survey data analysis and report writing.

Data collection

The above stated survey tools (questionnaire, focus group, brainstorming, semi-structured interviews) have been used to collect primary data needed to address all the points of the feasibility assessment. Primary data has been crosschecked and complemented by the review of several documentations published on promotion of household energy technologies, climate change, environment, private sector development, etc in Ethiopia and abroad.

The questionnaire has been used to collect data from households and selected institutions while focus group and brainstorming techniques has been used to collect data from selected groups of households. Focus group/brainstorming guidelines has been developed in order to allow the enumerator to collect all needed data or information for a specific category of informant.

Semi-structured interviews have been used to collect data from other key informants and stakeholders at federal and regional level.

In order to clarify the developed tools to the enumerators that have been engaged in the collection of data/information, orientation/introduction of devised tools conducted and participatory discussion has been held among the enumerators and the consultant team. This helps to acquire quality data/information as well as to efficiently implement the data collection process.

Stakeholders' consultations

Stakeholders' consultation is one of the key tools that enable us to get relevant information on the thematic issues so as to base and enrich the assessment. The stakeholders' consultations have been done with different development partners that are expected to play key role for the success of this project. The consultation has been done at federal as well as at regional level as per the agreement reached with Gaia Association. The stakeholder consultation conducted with identified development partners GOs, financial institutions, private sectors, etc. and potential value chain actors so as to get clear overview of the existing situation as well as to identify the existing challenges and opportunities.

This consultation process has also assisted to introduce the project to stakeholders and get their inputs and support on project implementation so that the assessment study will have a broader perspective.

Main points of stakeholders' feedback during the stakeholders consultation is given below[10]:

[10] More elaborated version of the consultation findings is annexed to this document

Enablers: Policy, regulation

At this level, consultation has been made with selected federal and regional public sector institutions which are categorized as enablers and believes to have stake on creating conducive environment in the promotion of ethanol fuel and stove. The stakeholders that are contacted under this category are:

- Alternative Energy Development and Promotion Directorate, MoWIE
- Biofuel Development Coordination Directorate, MoWIE
- Tigray - Mines and Energy Development Agency
- Tigray-Bureau of Trade and Industry- MSE Promotion Core Process Unit
- Tigray- Environmental Protection and land use and Administration Agency
- Oromia Micro and Small Enterprise Development Agency
- Ethiopian Conformity Assessment Enterprise
- Ministry of Industry

There are some activities undertaken by AETPD and Biofuel development directorate that could support the promotion of biofuel in general and ethanol in particular. Summarised points of the consultation are annexed to this document. The main issues that are identified as main challenges are

- lack of standards on the product (both the stove and fuel) as to-date there is no national standard established on ICS and related fuels
- though there are valuable skills and mandates of different enablers (development partners) there is lack of proper integrated effort among them
- lack of awareness about ethanol use for cooking at different levels (at higher level as well as at households/users level
- fear that the price of the stove and the fuel could be higher that can be out of the reach of the public at large
- the fact that financial loan is not well acquainted to ICS related intervention
- lack of proper financial mechanism to promoters as well as users to support the intervention
- lack of incentive or existence of special interest rate for loans to encourage loan takers especially the stove/fuel users
- lack of use of the Social Corporate Responsibilities (SCR) opportunities of different potential organisations for the promotion of ICS
- medias overlooked the social benefits of such products and do not give special consideration on their price rates for promoting such products

Support providers

Institutions that are considered as support providers for the intended project and undergone through this consultation are:

- Development Bank of Ethiopia (DBE)
- Oromia Credit and Saving Share Company (OCSSCo)

- Oromia Cooperative Agency
- Oromia-Land Administration & Environmental Protection Bureau

Though all of these institutions are somehow one way or the other engaged in the promotion of RE technologies, their direct involvement on the promotion of cooking energy and stoves are very insignificant. The consultation finding shows that there is huge potential under these institutions to support this project at different levels though there is a need to have a clear strategy and implementation plan accordingly. The potential support especially from the financial institutions could be very vital to address the related bottlenecks at the producers/suppliers as well as at the users' level.

Common issues identified by these institutions as main challenges for successful implementation of this project are

- lack of products standard
- lack of awareness
- lack of risk fund (for financial institutions as per their experience on promoting RE technologies)

Potential Stakeholders - for promotion and marketing

Institutions that are identified as potential partners for Promotion and Marketing activities and covered through this consultation are:

- Ministry of Women, Youth and Children
- Tigray-Bureau of Women, Youth and Children Affair
- Ministry of Health
- Oromia-Health Bureau

Similar to the above category, all of these institutions have also significant potential to support and actively engage in the promotion of ethanol fuel and stove. Some of them have already engaged in the promotion of ICS one way or the other. They have strategies that enable them to actively engage in the promotion of ICS ('Ethiopian Women Development and Change Package' of the Ministry of Women, Youth and Children Affairs and the Building and Maintaining Healthful House Extension package of the Ministry of Health). Their institutional structure that goes to the level of kebele is one of their main asset to successfully reach the target group with the promotion and marketing tools that will be devised to promote this project. In fact this has also been recommended in the Investment Plan of the Fuel Saving Stove document produced by MoWIE.

Processing and service providers

Institutions that have been identified as processing and service providers and have been consulted are:

- Ethiopian Sugar Corporation
- Gaia Association
- MOKOBU Enterprise
- Moges Haileselassie General Metal & Engineering Enterprise (MHGMEE)

These institutions are engaged in the production and distribution of ethanol fuel and /or stoves. The five year strategic goal of the Ethiopian Sugar Corporation has clearly emphasized enhancing the production of bi-products of sugar to support that national energy supply and use of those of products for activities that have key economic services as part of its five main points. This indicates that enhancing the production volume of ethanol is one of the priority area of the corporation. The volume of the production of ethanol that is targeted to be achieved by the corporation is also a good indicator that confirms the availability of sufficient volume of ethanol as cooking fuel in the coming years.

Table 1: Annual Ethanol Production (E.C) in (, 000m3)[11]

No.	Factory/ Project	2005 (achievement)	2006 (plan)	2007 (plan)
1	Fincha	7.6205	20.00	20.00
2	Metehara	7.063	10.2	12.50
3	Wonji Shoa	-	-	10.299
4	Tendaho	-	11	40.4
5	Kesem	-	-	10.20
6	Arjo Dedessa	-	-	-
7	Beles 1	-	-	12.70
8	Beles 2	-	-	6.00
9	Kuraz 1	-	-	22.50
10	Others	-	-	-
	Total	**14.68**	**41.2**	**134.60**

The volume of ethanol distributed for household cooking use differs from year to year. The volume of ethanol that is distributed in the year 2005 is much higher compared to the year of 2004 and 2006

[11] Source: Ethiopian Sugar Corporation, Communication Directorate

Table 2: Ethanol for cooking distribution volume

Year (E.C.)	Amount (litre)	Price with VAT (ETB/litre)[12]	Price without VAT (ETB/litre)
2004	263,500	8.74	7.60
2005	600,520	8.74/12.40	7.60/10.78
2006	256,800	12.40/10.78	10.78/9.37

MOKOBU enterprise and MHGMEE are private organisation that are actively engage in the distribution of ethanol fuel and stove since the very beginning of the promotion of ethanol fuel and stove. MOKOBU promotes the imported ethanol stove while MGHMEE promotes the ethanol stove that is locally produced by its enterprise. Both of them also distribute ethanol fuel based on their quota that they received from the sugar corporation.

Issues that have been stated as main challenges and problems that inhibit large scale dissemination of the ethanol fuel and stove are bulleted below:

- unreliable supply of ethanol
- continuous and unrealistic increment of ethanol fuel price
- lack of awareness about ethanol fuel to be used as cooking fuel (at different level)
- lack of standards of the ethanol fuel
- lack of standards of the ethanol stove
- lack of structured marketing activities

Potential Distribution Channel

As it is seen in the above section the existing distribution channel is very limited and cannot exhaustively reach to the public at large when the scaling up project is going to be implemented. Therefore additional potential distribution channels has been identified and consulted accordingly. These institutions are

- Petroleum distributors/Fuel stations
    - Yetebaberut Beherawi Petroleum S.C (YBP)
    - National Oil Company (NOC)
- Supermarkets / Minimarkets
- National Alcohol and Liquor Factory

As existing sales outlets of similar cooking fuels and stoves like kerosene and LPG can also be the potential distribution channel for ethanol fuel and stove a consultation has been made with the institutions stated above. YBP and NOC have been contacted from the petroleum distributors/fuel stations.

[12] Having two ethanol price figures for the year of 2005 and 2006 is because of having different price index within the same year

With regard to ethanol fuel distribution YBP has shown big interest to the extent of opening additional sales outlet points as required. However, NOC is somehow reluctant to jump in to the ethanol distribution either through use of dispenser or the bottled ones as it believes that the business needs high capital investment. YBP is interested to be engaged in the distribution of ethanol through using both dispenser and bottled one. However, as any other businesses in order to invest in the required infrastructure that will support the distribution of ethanol, YBP also needs to have guarantee of sustainable supply of ethanol and stove with the affordable price to the public at large. YBP is interested to be engaged in the bottling process and also distribution of bottled packages. However, the price of ethanol should be able to give margins to accommodate all the costs related to the bottling and at the end that can be affordable by the users. There is also a concern that the current ethanol price is much exaggerated and might need to be revised looking at the production cost of ethanol so as to entertain all these attempts.

Selected supermarkets/Minimarkets that have been contacted is also interested to be engaged as distribution channel if the product has demand and the suppliers are providing the products in instalment basis.

The main objective of visiting the National Alcohol and Liquor Factory is because the factory is engaged in production and selling of Denatured alcohol and pure alcohol that is mainly consumed for clinical purpose and by hair dresser. However, the feedback acquired from the factory indicated that as the production volume of these products consists only 5% of the factory's total production there will not be surplus production of these products that could be distributed for household cooking purpose. Moreover, even if there is a surplus production as the production cost is somehow higher the final selling price is much higher (i.e. more than ETB 20/litre) which is much higher than the current ethanol price and as a result can raise the affordability issue.

Input providers

In this category **potential plastic bottle producers** are considered as the main input providers especially thinking of distribution of ethanol that is bottled in different volume sizes as the one aspect of supply mechanism. Therefore three plastic factories, Excel plastic factory, Universal plastic factory and Roha Pack PLC, have been visited. Except the last one the first two are not in the business of production of bottles as there is no sustainable demand and also the production cost of plastic bottles are much higher compared to other products that they prefer to produce currently.

Roha Pack PLC is producing different shapes and sizes of plastic containers that can be used for different households' and industrial products. Roha is plastic bottles supplier for the national alcohol and liquor factory including the bottles used for bottling 96-99% alcohol. Below the price quotation of different sizes of bottles that can be used for ethanol bottling.

Table 3: Price quotation of different sizes of plastic bottles

No.	Pet Bottle Size (litre)	Thickness (gm)	Price (ETB)	Price at factory gate (ETB)
1	1	39	3.65	3.47
2	1.5	39	4.23	4.02
3	2	48	4.28	4.07
4	5	110	12.44	11.82

The factory price has a 5% discount from the price that is available at their shop considering the transport cost. The coloured bottles are also costs more compared to the transparent ones.

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Policy environment for commercialization of ethanol for cooking

National Energy Policy

The FDRE has developed the first in kind national energy policy in 1994. The newly updated draft energy policy document that is formulated in February 2013 is the revised version of the 1994 national energy policy dedicated to address the limitation of the policy to address the current energy situation. The revision of policy document envisaged to enrich and update the policy so as to fit with the vibrant economic development of the country, and also to give emphasis to the development and utilization of renewable energy sources that support the climate resilient green economy strategy of the country. The updated energy policy has clearly put directions to guide energy sector development strategies and plans to meet the growing and changing energy demand of the citizens by taking technological advancements that make new fuels and energy conversion technologies into consideration.

As it is well explained in the introduction section of the policy document 'The Revised Policy is divided into five main sections: with **Section One** being an overview of the Ethiopian energy sector while **Section Two** discusses key issues identified in the energy sector. **Section Three** sets the energy policy goals and objectives in more concise and general terms. Supply and Demand side policy objectives are presented in **Section Four** together with available corresponding policy instruments for the sectors of electricity, hydrocarbons, bio-energy, and other renewable energies. The demand side policy objectives and policy instruments are further discussed subdivided into households, transport, industry, services and agriculture sectors. **Section Five** is dedicated to Cross Cutting Energy Policy Issues, namely the energy regulatory framework, energy sector governance, the establishment of strong institution and capacity building, integrated energy planning, energy efficiency and conservation, energy pricing, energy research and development, environment, gender, and Regional & international cooperation'.

Main Energy Policy Goal: The main energy policy goal is to ensure the availability, accessibility, affordability, safety and reliability of energy services to support accelerated and sustainable social and economic development and transformation of the country.

Energy Policy Objectives: The Energy Policy seeks to meet the following broad objectives which are characterized by six major areas that are bulleted below. Policy instruments have also been developed to attain each objectives.

- Improve the security and reliability of energy supply and be a regional hub for renewable energy
- Increase access to affordable modern energy
- Promote efficient, cleaner, and appropriate energy technologies and conservation measure
- Strengthen energy sector governance and build strong energy institution.
- Ensure environmental and social safety and sustainability of energy supply and utilization.
- Strengthen Energy Sector Financing

Through the policy instruments developed to attain each objectives, the following major energy issues are well highlighted and tried to be addressed.

- Energy poverty
- High dependence and unsustainable use of biomass resources
- Wasteful and inefficient energy production, transportation and utilization:
- Low institutional, human and technological capacity:
- Low private sector participation
- High dependence on imported petroleum fuels
- Climate change impacts on national development and energy sector strategy issues
- Weak enforcement of Standards and Regulations
- Inadequate transfer of technology and localization

The National Biofuel Policy and Its Relevance to Scaling up of Bioethanol Micro Distillers and Stoves

This document is very summarised and formulated through assessing the relevance of the biofuel policy to scaling up Bioethnaol Micro Distilleries (EMD) and its stoves.

The document encompassed basic and relevant issues so as to ensure the sustainability of the biofuel development. It also shows the existence of conducive policy environment in the country that can support the bio ethanol scaling up project. However the policy and strategy emphasized more to address the transportation issue though it also stresses on the use of pure ethanol for cooing to replace kerosene for household cooking purposes.

The policy also emphasized on encouraging private sector participation in feedstock production, bioethanol processing, stove manufacturing and retail and also Public institution to carry out research on feed stock production and bioethanol processing technology.

Remarks:

- The policy could be more comprehensive if it also addresses the promotion and marketing aspect of the bioethanol promotion the way that it has addressed the research component. A marketing strategy should be devised exclusively for the bio ethanol fuel and stove promotion that incorporates all marketing aspects of the technology as well as the services. This will help to establish sustainable bioethanol market in the country.
- The last session of the documents stated that the national biofuel policy and strategy is governed by the national forum consisting of all stakeholders that sits every two months. This is very important and will definitely support the success of the intervention. However, looking at the importance of other sectors input for the success of bio fuel promotion and also the impact of promotion of bio fuel in other sectors there is a need to explore other potential Ministries/Institutions and invite them to be in the national forum. With respect to promotion and information dissemination to the grass root level; Ministries like Gender and Health and also Medias can play key role. Therefore adding these three institutions in the national forum can add value for success of promotion of biofuel.

Climate-Resilient Green Economy initiative (CRGE)

CRGE devised by the government of Ethiopia with the vision of brining Ethiopia to the middle-income status by 2025 in a climate resilient green economy.

To follow a green growth path that fosters development and sustainability CRGE follows a sectoral approach and has so far identified and prioritized more than 60 initiatives under the four main pillars which could help the country achieve its development goals while limiting 2030 GHG up to 250Mt CO2e that is much less than the estimated figure under a conventional development path.

As part of the strategy, out of these initiatives the government has selected four initiatives for fast-track implementation as it this believed that they have the best chances of promoting growth immediately, capturing large abatement potentials, and attracting climate finance for their implementation. These initiatives are: exploiting the vast hydropower potential; large-scale promotion of advanced rural cooking technologies; efficiency improvements to the livestock value chain; and Reducing Emissions from Deforestation and Forest Degradation (REDD).

Addressing rural energy needs through promotion of efficient stoves is considered as part of fast track initiatives with the rationale of fuelwood usage is the largest sources of rural energy supply and one of the largest contributors to GHG emissions and also as efficient stoves can have massive benefits by increasing rural households income, health, women's empowerment, and education while decreasing emission by around 50 MtCO2e in 2030. As most of the households, particularly in rural areas, use highly energy-inefficient technologies (e.g., open fire or three-stone technology) it is clear that there is a huge improvement potential of this inefficient use so as to address forest deforestation as well as reduction GHG emission.

As part of REDD+ strategies promotion of efficient stoves and use of alternative fuel that are less carbon intense are also identified as levers so as to contribute to reducing demand for fuelwood.

In this regard the technologies and the substitute fuels mentioned in the CRGE are:

- Fuel-efficient stoves
    - Baking stoves, such as the Mirt for baking injera bread
    - Cooking stoves, such as the Tikikil for cooking
- Fuel-shift stoves
    - LPG stoves (mostly for cooking)
    - Biogas stoves (mostly for cooking)
    - Electric stoves and electric mitad (both cooking and baking – in rural areas without grid access, this can also include off-grid solar-powered stoves).

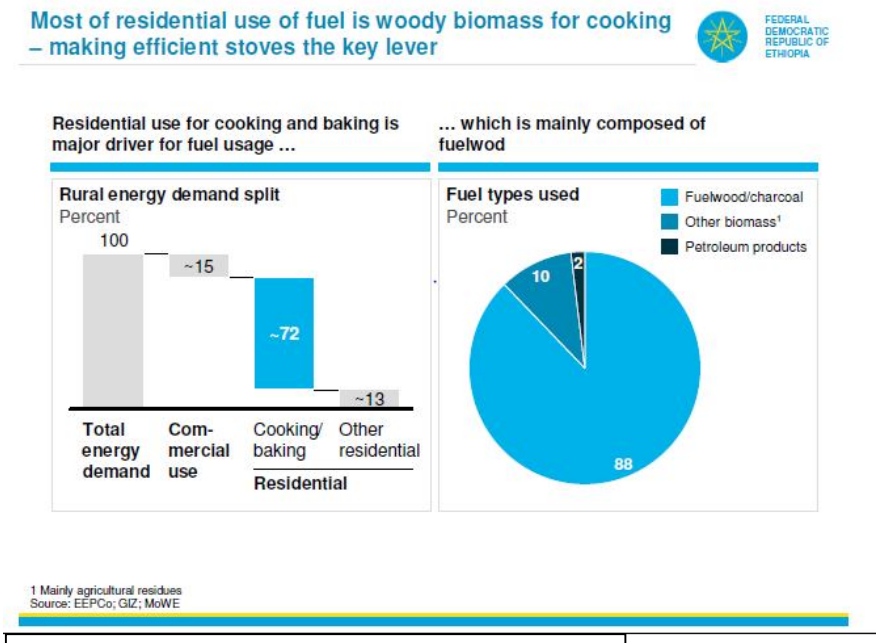
CRGE estimated that the total abatement potential of stoves is nearly 51 Mt CO2e in 2030. At 34.3 Mt CO2e, the scale-up of fuelwood-efficient stoves contributes the largest share of this total potential, 14.0 Mt CO2e can be achieved from electric stoves, 2.3 Mt CO2e from biogas stoves, and 0.6 Mt CO2e from LPG stoves.

Therefore, with clear direction of CRGE, if ethanol fuel as well as ethanol stove is incorporated as part of the intervention then the success for the promotion of ethanol fuel and stove will be significant.

Fuelwood-Efficient Stoves Investment Plan (2012-2015)-Final Version

As the GOE identified fuelwood-efficient and fuel-shift stoves as one of the immediate priorities to the development of Climate-Resilient Green Economy (CRGE), this Investment Plan has been formulated by the Ministry of Water Irrigation, and Energy.
The aspiration and focus of this initiative has two horizons i.e. (i) in the long term (2030) deploying 31 million fuelwood-efficient stoves in rural and urban areas, and (ii) in the short term (2015), 9 million stoves in rural areas.

The following chart indicates the rational why promotion of fuel efficient stoves gets priority to address the CRGE objectives.

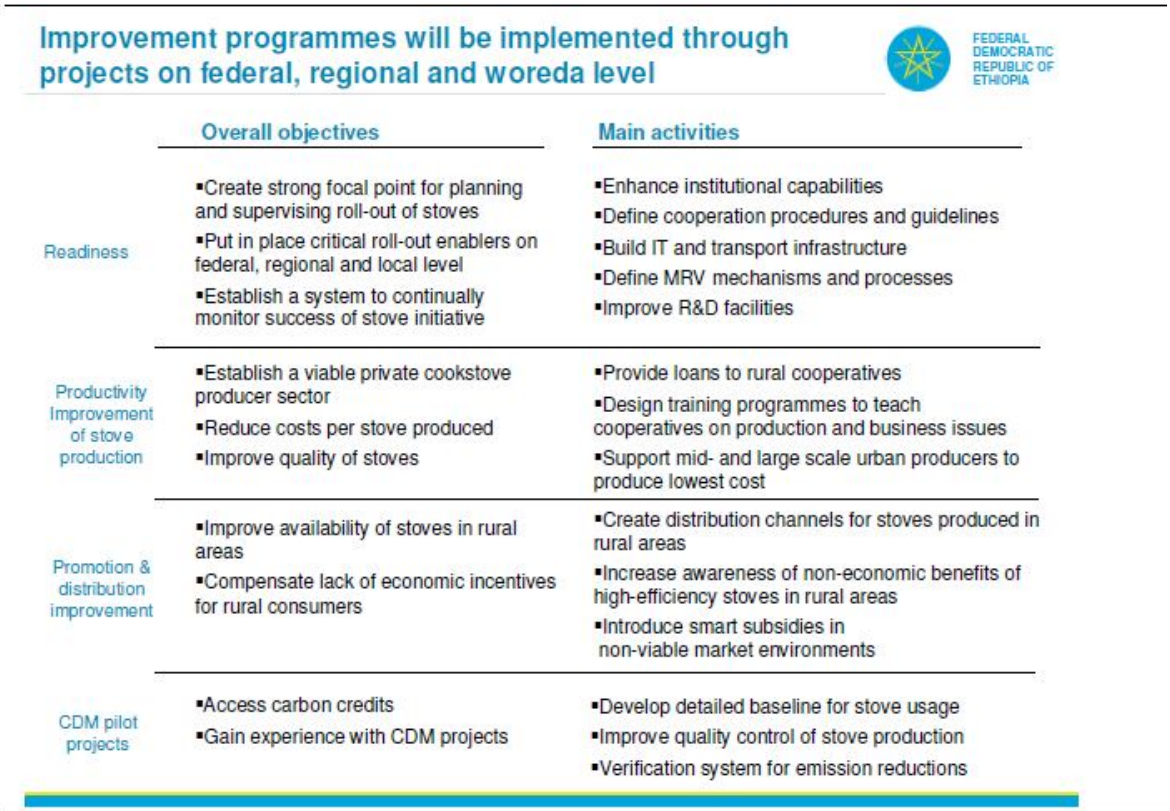


Source: Ethiopia ICS-Investment Plan-final

This Investment Plan (IP) describes how to achieve the GoE's 9 million stoves target by improving activities across the entire value chain of stove production and bundles these activities in improvement programmes.

In this context the IP addressed most of the potential barriers that hinders large scale dissemination of ICS especially in the rural areas.

As details of the improvement program, the Ethiopia ICS-IP document summarized the following key points.



Source: Ethiopia ICS-Investment Plan-final

The four main programs listed in the above table give clear guidance on how the ICS program should be developed so as to fit to the national ICS investment plan which has been developed to address basic potential barriers based on the experience acquired.

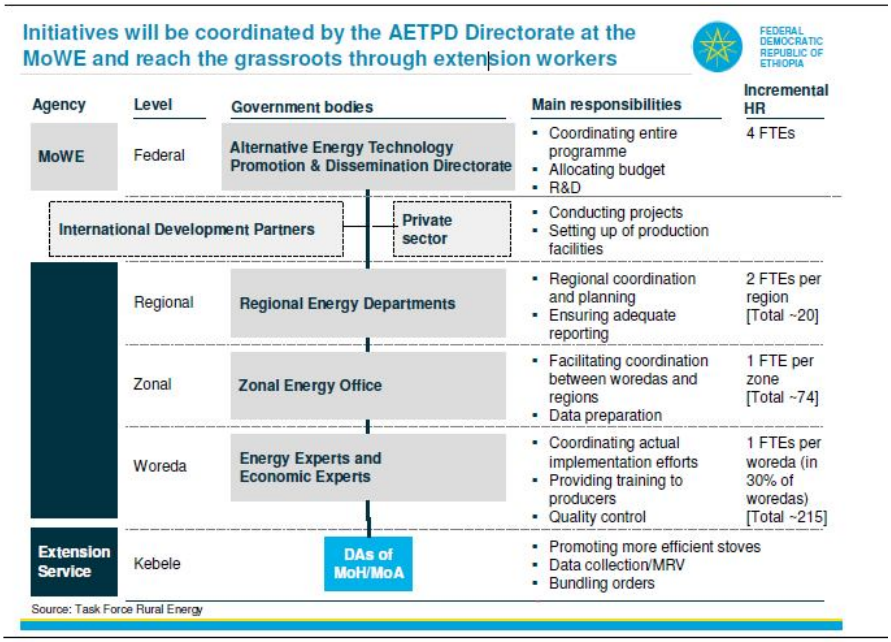
With regard to technology selection though this investment plan assumes the usage of Gonzyie and Tikikil stoves as technologies for baking and cooking stoves to calculate programme costs, it clearly stated that this is not a prescriptive decision on which technology must be used by producers. The only requirement the IP put is that fuelwood savings of the stove used is around 50%.

The importance of integrative effort with other development partners like Health and Agriculture sectors is also emphasized which is the key for sustainable intervention. In this regard it is also worth to incorporate Women's Affair offices as it has a very good extension structure that contributes for the success of the intervention, especially in promotion and marketing task through mobilization and awareness creation related tasks.

Institutional Set-up

- The ICS investment plan also tried to sketch the institutional set-up for successful implementation of projects related to ICS promotion. The sketch shows the engagement of major institution at different levels. The Alternative Energy Technology Promotion & Dissemination (AETPD) Directorate of the Ministry of Water Irrigation and Energy

(MoWIE) appointed as a coordinator unit to sustainable implementation of all ICS projects. AETPD will be the focal point for all activities relating to the development and supervision of the stove initiative. This encompasses overall national coordination and coordination with international organisations. A programme coordination bureau at the Directorate will be responsible for managing the budget, planning the roll-out, supervising Research and Development efforts, and disseminating results. This bureau will work in close alignment with the Environmental Unit of the MoWIE that forms the link to the CRGE initiative.



Source: Ethiopia ICS-Investment Plan-final

At the regional level, Regional Energy Departments will be responsible for regional coordination and planning of the scale-up and for ensuring appropriate reporting. Adaptation of stoves to specific local needs will also be possible in regional R&D labs. At the zonal level, the Extension services will work with the Zonal Energy Office to facilitate coordination between woredas and regions and to oversee reporting on stove distribution. At the woreda level, the Extension Services will work with energy experts and economics experts on coordinating actual implementation efforts, providing training to producers, overseeing quality control.

At the most local level of the kebele, the Extension Services will work with the health and agricultural Development Agents (DAs) to promote the use of high-efficiency stoves. They will also collect data for MRV assessments and bundle stove orders to increase efficiency. This work will be conducted by existing DAs.

The integrative effort with other ministries such as Ministry of Health (MoH) and Ministry of Agriculture (MoA) so as to reach to the grass root level is a well devised institutional set-up. In this case it would also be good to consider the Ministry of Women, Youth and Children Affairs as MoH and MoA so as to reach to the grass root level.

Summary of policy review

As it has clearly stated above the national energy policy devised with the objective of addressing key energy related issue of which the following bulleted ones are part of it.

- Energy scarcity
- High dependence and unsustainable use of biomass resources
- Low private sector participation
- High dependence on imported petroleum fuels
- Weak enforcement of Standards and Regulations

In this regard as the potential impact of the promotion of ethanol for cooking in addressing the above issues is significant, ethanol fuel and stove should be boldly seen in the policy as well as related strategy documents.

Though the CRGE document has also identified promotion of fuelwood efficient stoves and alternative fuels as part of REDD+ strategies, promotion of ethanol fuel and stove has not been considered at all though it will definitely has significant contribution to reduce fuelwood demand as well as reduction of carbon emission.

Therefore, with clear direction of CRGE, if ethanol fuel as well as ethanol stove are incorporated as part of the intervention then the success for the promotion of ethanol fuel and stove will be definitely significant.

Similarly the investment plan that has been produced by MoWIE as the main programme to achieve CRGE is the 'Fuelwood-Efficient Stoves Investment Plan (2012-2015)' as it is clearly stated in the CRGE that promotion of fuelwood efficient stoves is the main strategy of REDD+. Though this investment plan is technology neutral it exclusively focused on the efficient fuelwood stoves. It seems that it has no room to entertain ethanol fuel and stove within this investment plan.

Though the Biofuel policy states that it encourages the participation of private sectors in the biofuel development that includes bioethanol use for household cooking, the how question has not been clearly stated. The policy encourages public institutions to be engaged mainly on the research aspect and has totally overlooked the importance of promotion and marketing aspect. Even the biofuel forum doesn't consist of Ministries that could have significant impact on promotion and marketing interventions. Therefore it is advisable to incorporate those institutions in the national biofuel forum.

In general though the importance of efficient utilisation of biomass for cooking energy used is well recognised in the reviewed three policy and strategy documents, ethanol use for household cooking is somehow overlooked. Therefore for successful promotion of ethanol for cooking and the related stove with efficient private sector involvement and commercialised approach, the following elements of enabling environment should be addressed as a policy/strategy input.

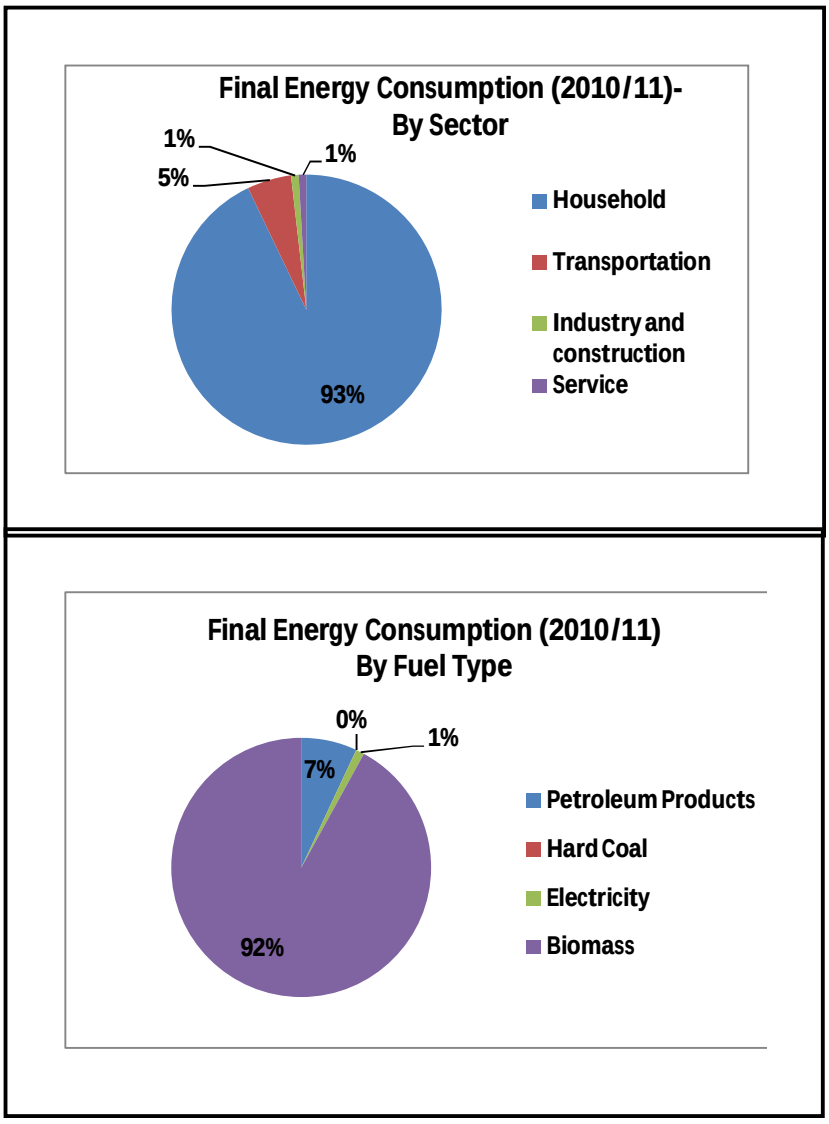
- Political will to create awareness about benefits of ethanol use as household cooking fuel at micro and macro level

- National strategy endorsing ethanol fuel and clean cookstove usage
- Clear enforceable regulations allowing/facilitates the local manufacture of the clean cookstove and/or import of parts of the stove if it is inevitable
- Supportive political environment for the ethanol business
    - pricing of ethanol-that can make it competitive to other fuels, laws, licenses, tax policies (e.g. VAT exemption), etc
    - that creates trust among promoters and to encourage them to actively engage in the business (availing sustainable supply of the ethanol for cooking, demonstrate equity between ethanol for blending & ethanol for cooking)
- Establish product standard for both the clean cookstove as well as the ethanol fuel. The product standard on the clean cookstove should be seen from performance, durability, safety and efficacy and on the ethanol fuel should be seen from the required alcohol content of ethanol and proper bottling perspectives. The involvement of MoWIE and Ethiopian Conformity Assessment Enterprise and Ethiopian Standard Agency is very imperative to address this issue.

Household Energy Sector and the Market System

In the context of Ethiopia, household energy takes the lion share of the national figure of the primary energy consumption. The Energy Balance 2010/11-MoWIE indicated that the household sector takes 93% of the final energy consumption and coming to the fuel type 92% of the final energy consumption of the same year was derived from biomass resource. Therefore this fact indicates that in the Ethiopia context when one talks about energy consumption it is mainly about household sector and biomass resource.

Figure 1: Final Energy Consumption



Though the biomass energy resource takes the biggest proportion the cooking devices used by households are different types that accommodates fuelwood, charcoal, agri-residues, electricity, petroleum fuels (kerosene and LPG) as per the availability and affordability as well as the convenience to the cooking habits/ requirements of those fuels to different households. The different types of stoves in the household sub-sector are categorized as "Traditional, Modern and Improved stoves". The traditional types of stoves can be constructed freely or be bought at the local markets. The stoves are assembled in such a way as to fit with the cooking device, the type of fuels used on it and the cooking places regardless of the performance and different technical parameters of the stoves. These stoves are mostly made of the local cheap materials available in the surrounding areas and are subject to modifications at different times by the users themselves, as different conditions appeared in regarding to their uses. Traditional stoves are such as open fire, enclosed stoves and traditional charcoal stoves.

Modern stoves are those developed for the utilization of modern fuels (kerosene, Liquefied Petroleum Gas and Electricity), and are produced taking the different stove technical and thermal performances (efficiency, fuel saving, durability, transportability, etc.) into account. Most of the modern stoves in use in Ethiopian households are imported though locally made ones that meet the unique cooking requirement of the households are available. Type of modern stoves in use by households are: Electric hotplate, Electric ring and Gas burners, Electric mitad, Kerosene stoves and clean cookstoves (ethanol stove).

Improved cook stoves (ICS) are those that are developed through an improved cook stoves program taking the energy scarcity of the country into account that comes from unsustainable usage of resources by the household sub-sector. These are efficient stoves as compared to the existing ones, suitable for basic cooking requirements of households, offer various user-conveniences such as cooking fast, clean, easy and safe, mobility for the advantage of space utilization and reduce health hazards. All these stoves are promoted commercially through decentralized private sector that are established by GIZ-ECO, MoWIE and Regional energy Bureau. Examples of these stoves are Baking stoves (Mirt injera stove, gonziye stove, Awramba stove, and cooking stoves (Tikikil stove, Lakech charcoal stove, Beehive charcoal stove.

The majority of Ethiopian households have two types of cooking requirements: 'Injera' baking and other cooking which includes cooking meat or vegetable stew (known as 'Wat'), tea and coffee making. Different household energy surveys reveal that injera baking takes 50% of the total household energy consumption. The type of cooking determines the type of fuel used in the households. Traditional fuels[13], except charcoal, are used for 'Injera'. Most commonly used are wood, branches, leaves and twigs, agri-residues and dung (more common in rural areas). Electricity for 'Injera' baking is common in urban areas. Almost all types of fuels (both biomass and non-biomass fuels) can be utilized for other cooking. The use of stoves are also unlike in different cooking requirement of households.

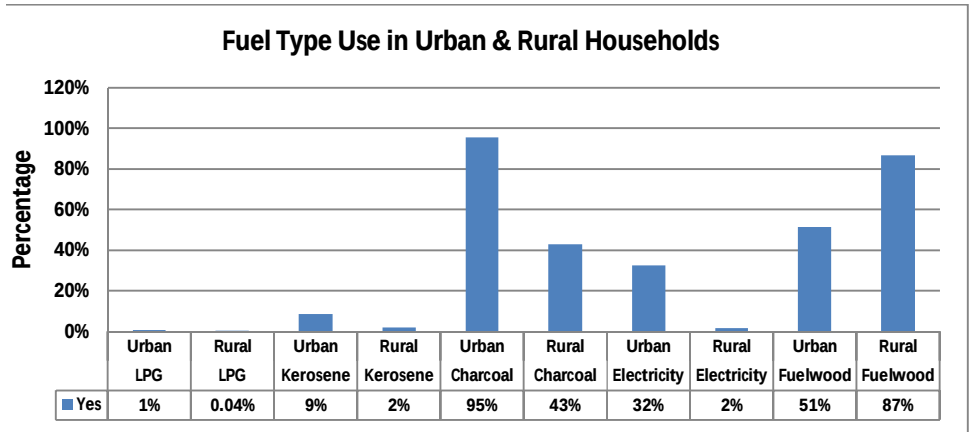


Figure 2: Fuel Type Use in Urban & Rural Households

Cooking fuel use trend in the surveyed households sho

[13]Traditional fuels are biomass fuels:- Fuel wood, roots, branches or leaves, agricultural residue, dung, charcoal, saw dust, bagasse and other fuels mainly wastes

wing high dependence on fuelwood and charcoal. From the total surveyed rural households 87% are using fuelwood and 43% are using charcoal. Though this survey mainly focused on the fuel types that are indicated in the graph below, the share of BLT, Crop residues and Dung is still countable especially in the surveyed rural households with the percentage of 25%, 20% and 4 % respectively. In the surveyed urban households, charcoal took the lion share followed by fuelwood and electricity with the percentage of 95%, 51% and 32% respectively. Only 0.15% of the households responded that they are using biogas for cooking.

Accordingly acquisition mode of cooking fuels and cooking stoves also depends on the types of fuels and stove types in the respective settlement areas as well as the consumer buying behaviour.

Consumer buying behaviour

Consumer buying behaviour "refers to the buying behaviour of final consumers, both individuals and households, who buy goods and services for personal consumption" (Kumar, 2010, p.218).

Knowing what benefits consumers are seeking is a key issue for marketing organization to effectively sells its products as it attributes to making decision. There are different trends on how households are making decision on purchasing household items. In some cases it is solely the responsibility of men or women. Mainly it can depend on the cultural factor and/or on the household member that brings a liquid money to the house. In this regard our survey result indicated that the bigger share on making purchasing decision lies on both husband and wife together with the percentage of 47%, 43% and 49% respectively at country level, urban and rural households followed by wife and husband in both cases with the percentage of 31% and 13% at country level, 34% and 9% for the urban households and 29% and 15% for the rural households respectively. This shows that in both urban as well as rural context the decision is made in consultation with both husband and wife uniformly and this is almost the same in all regions except Somali, Hariri, Diredawa and Addis Ababa where the wife took the higher share on making purchasing decision of major items in the household. The socio economic situation of the society & their closeness on geographical location can be a reason for these regions (Somali, Hariri and Diredawa) to have similar characteristics on this aspect.

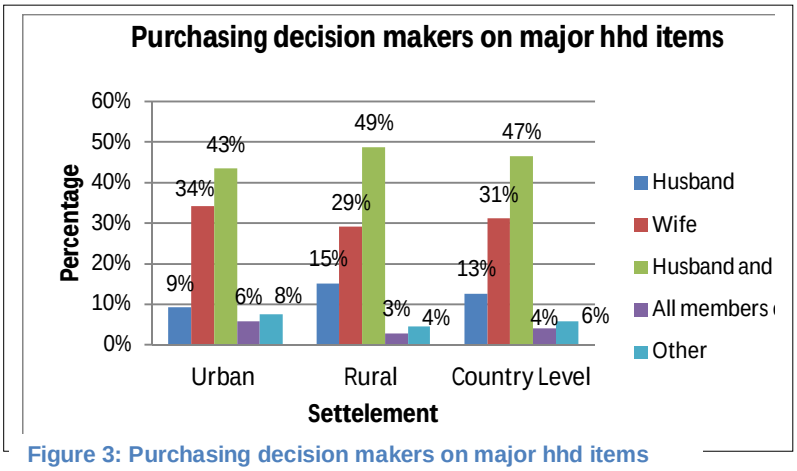


Figure 3: Purchasing decision makers on major hhd items

When we analyse the purchase decision of new stove scenario of HHDs, wives takes the bigger share at all level followed by both husband and wife and husband. Women's close involvement in the cooking activities makes women to be more involved and take decision whether to buy new stove or not. However in both cases i.e. purchase decision on major hhd items as well as new stove, wives role is very significant. Therefore, the marketing activities should be designed so as to be able to address mainly the women in general. Findings from the FGD also exhibited similar result i.e. 47% women, 41% both husband and wife and 10% men are the one who makes decision for purchasing stove.

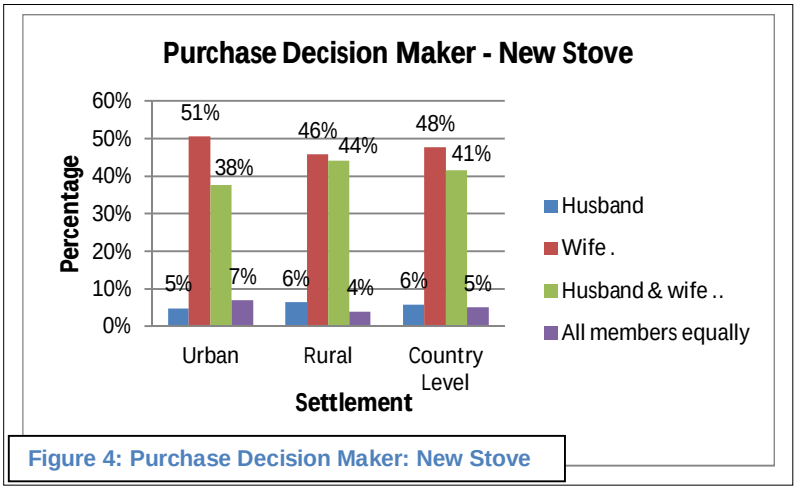


Figure 4: Purchase Decision Maker: New Stove

The other relevant aspect of marketing information is to have a clear idea on the hhd member who is the source of money for purchasing new stove. This survey result confirmed that husbands are those takes the bigger share in this aspect followed by both husband and wife and wife. In the rural context the husband's are leading with a big difference compared to the 'husband and wife'. This is mainly because men are the main bread winners who are the source of the money and controlling the household expenditure too. In the urban context the share of the husband, both husband & wife as well as wife is very close to each other in relation to 'source of money for purchasing stove'.

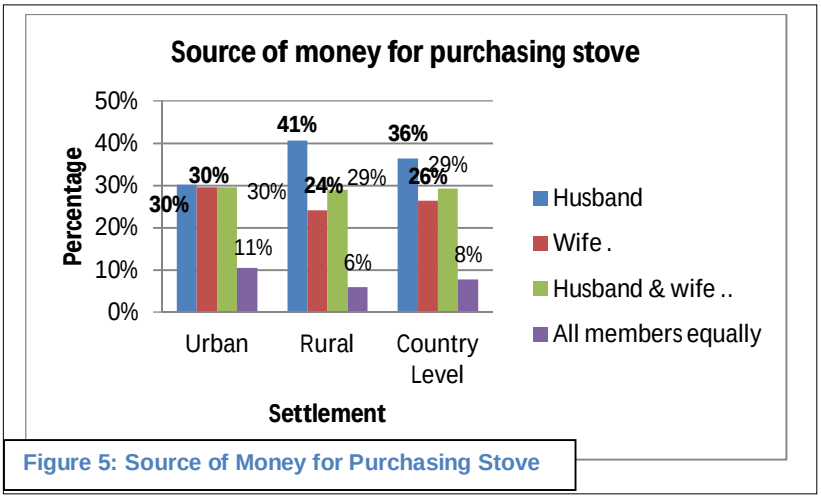


Figure 5: Source of Money for Purchasing Stove

This indicates that in the rural context there is also a need to do a lot to convince the husband as he is the one availing the money to procure the stove though the purchase decision is mainly made by the wife.

Willingness to pay:

As the awareness of the households about ethanol fuel and stove is very minimal it was difficult to get the realistic respond from the respondents though there is a huge interest to use a new

types of fuel/stove as well as ethanol fuel and stove. It is only 13% of the respondents at country level, 19% at urban and 9% at rural level said that they are aware about or familiar with ethanol use for cooking. The main question that they have been asking when they requested to respond to how much they are willing to pay for the litre of ethanol and the amount of ethanol that they are interested to buy was that how long will a litre burn, what can I cook with a litre of ethanol, etc. They have been told that it is almost similar to what they get from kerosene in terms of the output considering both the heating value of kerosene as well as the efficiency of the kerosene stove. Though the heating value of kerosene is higher than ethanol the better performance of the ethanol stove compared to the kerosene stove makes the ethanol fuel and stove comparable with the kerosene stove and fuel as a package.

Based on this description the households stated their willingness to pay for both the fuel as well as the stoves (both single burner and double burner stoves).

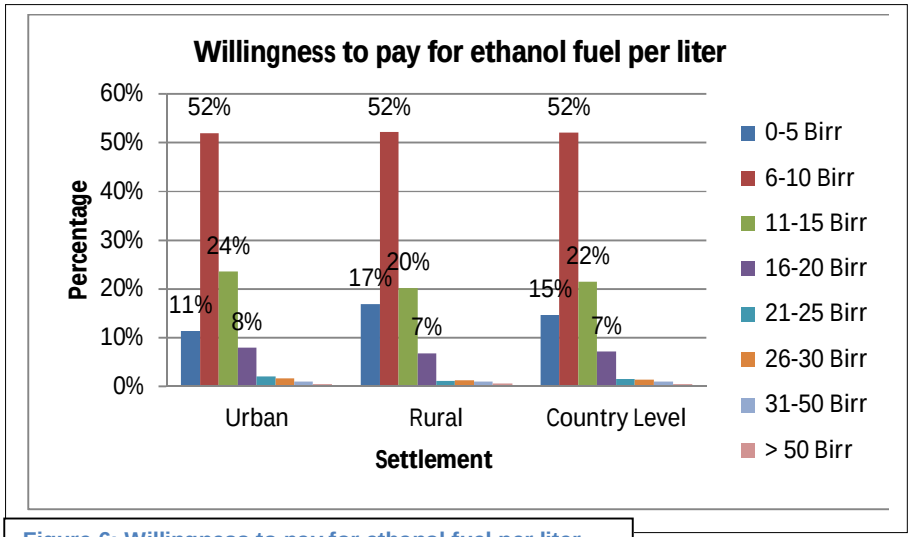


Figure 6: Willingness to pay for ethanol fuel per liter

Coming to the ethanol fuel the majority of the respondents about 52% at the national as well as urban and rural level gave the value of ETB 6-10, followed by (22%, 24% and 20%) and (15%, 11% and 17%) at country, urban and rural level those responded ETB 11-15 and ETB 0-5 respectively. Similarly the FGD result has also confirmed that 35% of the FGD participants are willing to pay ETB 6-10 per litre followed by 26% and 17% that stated ETB 11-15 and ETB 5.00 and below. This shows that it is only 22% of the respondents at country level and (24% and 20% at the urban and rural level) are those respond lies in the range of the current price of the ethanol fuel which is ETB 14.00.

Looking at both the single burner as well as double burner stoves the respond acquired from the households has shown that for the single burner stove as shown similar trend at country, urban and rural level. The bigger portion of the respondents (37%, 29% and 42% at the country, urban and rural level respectively) gave ETB 51-100 as the amount that they are willing to pay for a single burner stove followed by (19%, 22% and 17%) and (16%, 19% and 14%) at the country, urban and rural level respectively who responded ETB 101-150 and ETB 151-200 respectively. The FGD findings also indicates that 66% of the participants are willing to pay up to 150 birr followed by 30% of the participants who have said that they are willing to pay ETB 151-300. Comparing the households respond with the current price of the single burner stove It is only 13%, 16% and 11%, 5%, 7% and 4% and 2% each of households at country, urban and rural level are those whose responded ETB 201-500 ETB 501-1000 and ETB >1000 respectively lies in the range of the current price of the locally produced single burner stove, i.e. ETB 385.00. However looking at the price of the imported single burner stove which is ETB 1,300 it is only 2% of the respondents at country, urban and rural level lies in that range as their respond is more than ETB 1,000. Coming to double burner stove of those households that showed their interest to have a double burner ethanol stove, 43%, 51% and 38% at country, urban and rural level responded ETB 201-500 as the amount that they are willing to pay for a double burner stove followed by 18% and 19% of households at the country and rural level who have given ETB 151-200 and 18% of urban households who gave ETB 501-1000. The FGD result also shows that, 41% of the FGD participants are willing to pay ETB 301-500 followed by ETB 301-5[illegible] participants.

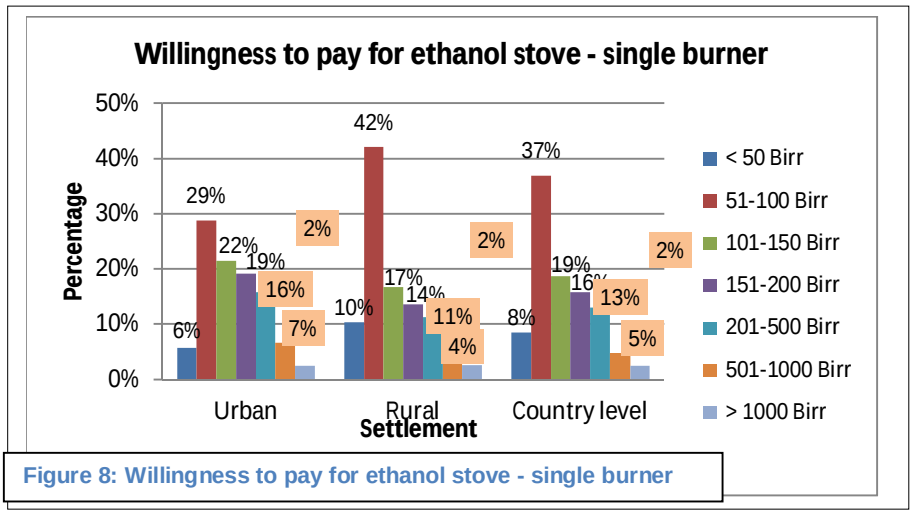


Figure 8: Willingness to pay for ethanol stove - single burner

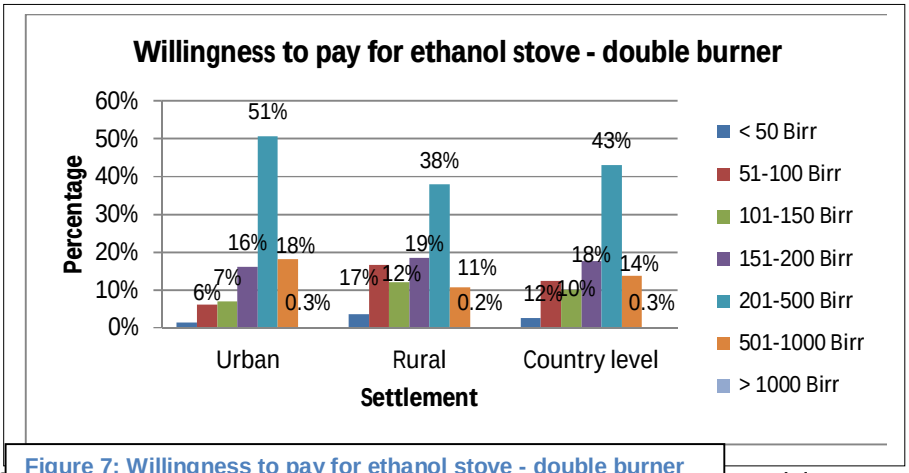


Figure 7: Willingness to pay for ethanol stove - double burner

In general looking at the current price of double burner stove which is the imported one i.e. ETB 1,900 only about 0.3% of the respondents at all levels stated that they are willing to pay more

than 1000 though it can also be to the lower range i.e. a little bit more than ETB 1,000 instead of higher value that is closer to ETB 1,900.

This shows how much it is a big issue on how to make the stove affordable to the bigger proportion of the society as 0.3% for the double burner stove and 2% for the single burner stove is very insignificant.

Preferred mode of payment for the stoves

With the price that the households are willing to pay for both types of the stoves they have also stated the mode of payment that they prefer to do the purchase. Almost half of the surveyed households at country level as well as in both urban as well as rural settlements are willing to pay cash while 37% and 36% of urban and rural households are preferring cash with six months credit and 12% and 16% preferring cash with one year credit for single burner stove.

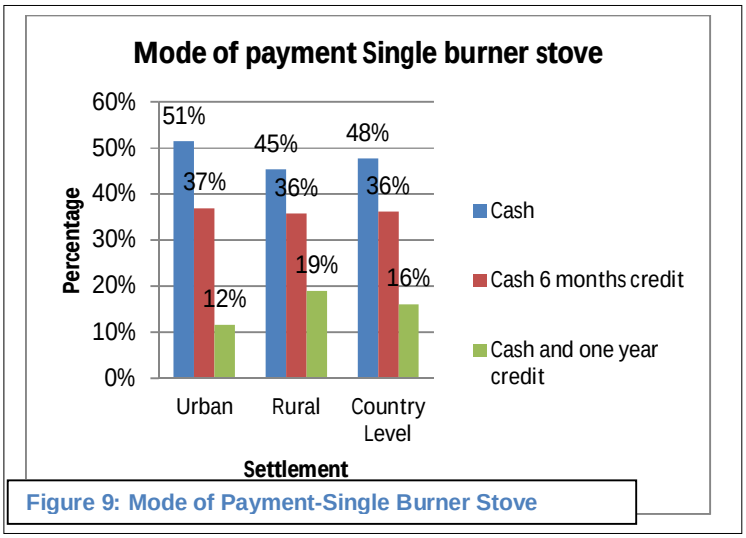


Figure 9: Mode of Payment-Single Burner Stove

For Double Burner stove-respondents in both settlements go for 6 months credit with 40% and 35% for urban and rural respectively. Cash payment took 38% and 34% while a one year credit payment took 22% and 31% for urban and rural households respectively. The share of the proportion of hhds that prefers cash and cash with 6 months credit is very close to each other, Even the share of hhds who said 'cash with one year credit' in very close to the other especially in the rural context. This clearly indicates that availing a consumer's credit facility is very imperative so as to address the interest of the stove users and for large scale dissemination of the stoves.

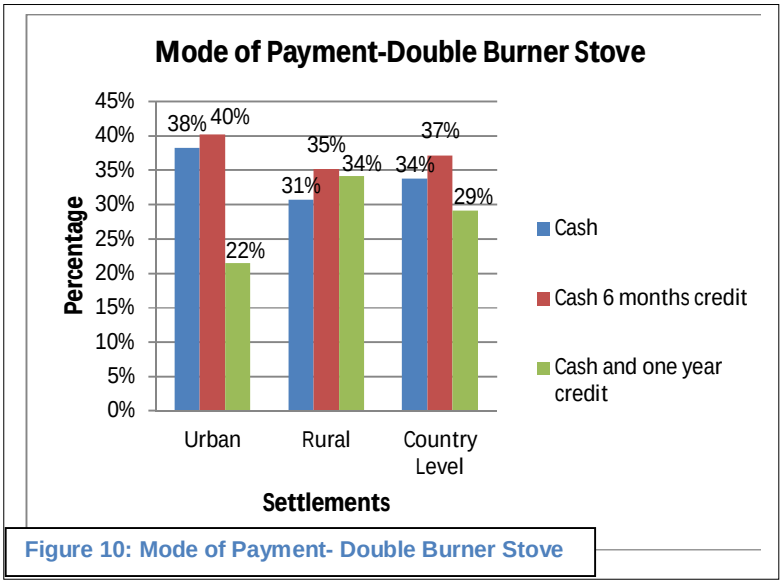


Figure 10: Mode of Payment- Double Burner Stove

Preferred volume of Ethanol for bottling

Checking on households those are interested to use ethanol for cooking about their capacity/interest on the volume of ethanol that they are interested to buy at once 5 litres, 2 litres and 1 litre are the quantity that are ranked at the top three at country level as well as for the case of urban households. In the rural context the rank is a bit changed to 1 litre followed by 5 litres and 2 litres. Therefore the bottling volume that needs to get focus should also be within these three categories.

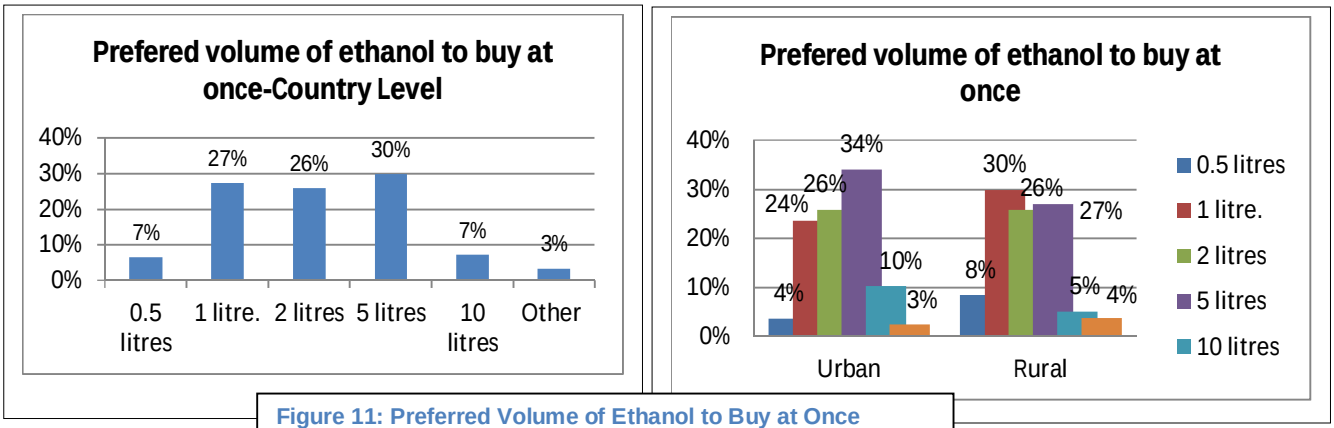
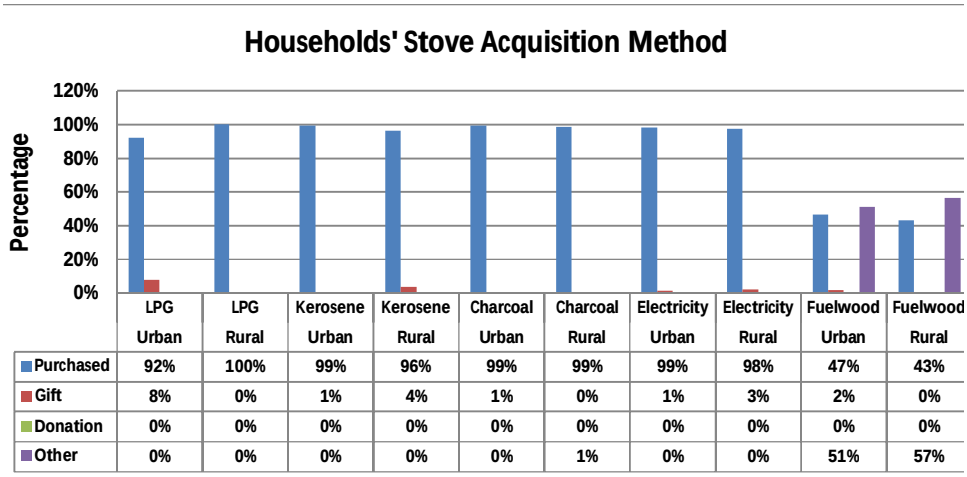


Figure 11: Preferred Volume of Ethanol to Buy at Once

Existing distribution models of Cooking Devices/Fuels

Existing distribution models of Cooking Devices

The study revealed that households' stove acquisition modalities are mainly market based where they have paid for the stove that they are using. The following graph shows stove acquisition



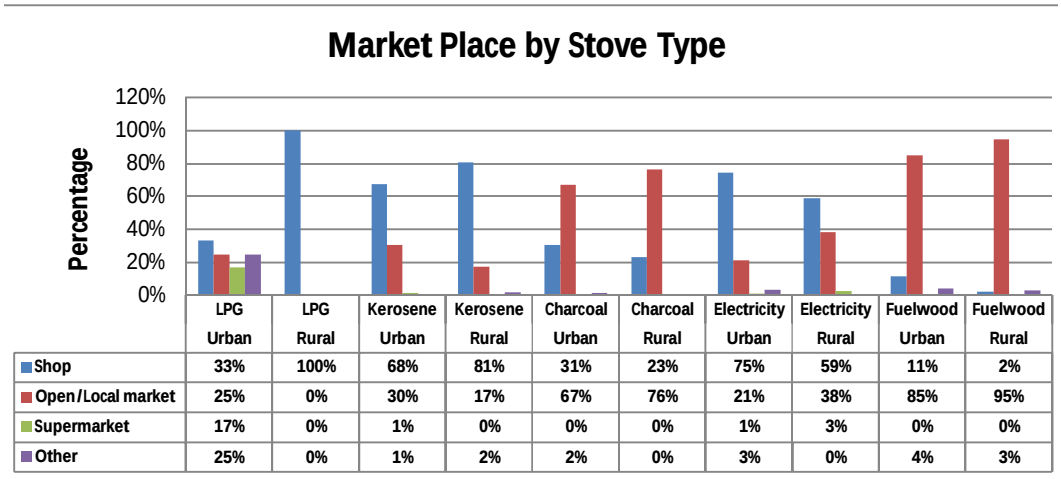
	LPG Urban	LPG Rural	Kerosene Urban	Kerosene Rural	Charcoal Urban	Charcoal Rural	Electricity Urban	Electricity Rural	Fuelwood Urban	Fuelwood Rural
Purchased	92%	100%	99%	96%	99%	99%	99%	98%	47%	43%
Gift	8%	0%	1%	4%	1%	0%	1%	3%	2%	0%
Donation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other	0%	0%	0%	0%	0%	1%	0%	0%	51%	57%

Figure 12: Household's Stove Acquisition Method

modalities of households.

The findings shows that almost all of the surveyed households have purchased their stoves except fuelwood stove where 'other' shows significant share which mainly represents self-built and three stove stoves.

The distribution channel of different cooking devises varies as per the nature of the cooking



	LPG Urban	LPG Rural	Kerosene Urban	Kerosene Rural	Charcoal Urban	Charcoal Rural	Electricity Urban	Electricity Rural	Fuelwood Urban	Fuelwood Rural
Shop	33%	100%	68%	81%	31%	23%	75%	59%	11%	2%
Open/Local market	25%	0%	30%	17%	67%	76%	21%	38%	85%	95%
Supermarket	17%	0%	1%	0%	0%	0%	1%	3%	0%	0%
Other	25%	0%	1%	2%	2%	0%	3%	0%	4%	3%

Figure 13: Market Place by Stove Type

device. The traditional types of stoves can be constructed freely or be bought at the local markets, modern stoves are mainly found in the local market, mini and super market as well as some shops, and similarly the improved stoves are also found at the local market, mini and super market, some shops as well as at the production sites of the stove producers. The following graph shows the existing distribution/sales outlets of different types of stoves as per the respond acquired from the households that are seen in the above chart.

The respond acquired from those households (given in the above chart) revealed that shops are the prominent market place for the modern stoves that are using modern fuels (LPG, Kerosene, and Electricity) and open/local market are for the traditional stoves/improved stoves that are using traditional fuels like fuelwood and charcoal. Shops are also found to be a market place for the charcoal stoves where 31% and 23% of the urban and rural charcoal users are bought their stove from. This might be due to the portable nature of the charcoal stove.

As it is only one household from all over surveyed rural households that responded that they use LPG for cooking, the high pick is seen as it competes with itself. This should not be seen as a special scenario.

Though it is not a cooking stove the use of electric mitad for baking injera is very prominent especially by the urban households where 30% of the total surveyed urban households owned their own electric mitad.

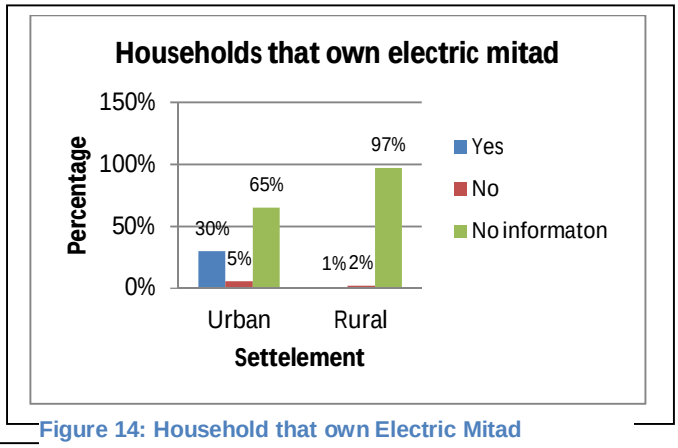


Figure 14: Household that own Electric Mitad

As it is seen in the chart below, paying cash is the modality how almost of all of those households managed to have their own electric mitad. This is a good indicative that households will do their best to pay for the stove if they convinced about the benefit that they get from that specific stove. As the price of the electric mitad is in the range of the price of the locally produced ethanol stove it could be a good indicative for the potential market of the ethanol stove.

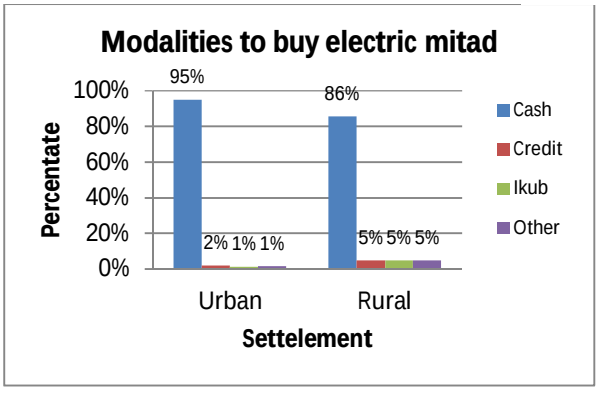
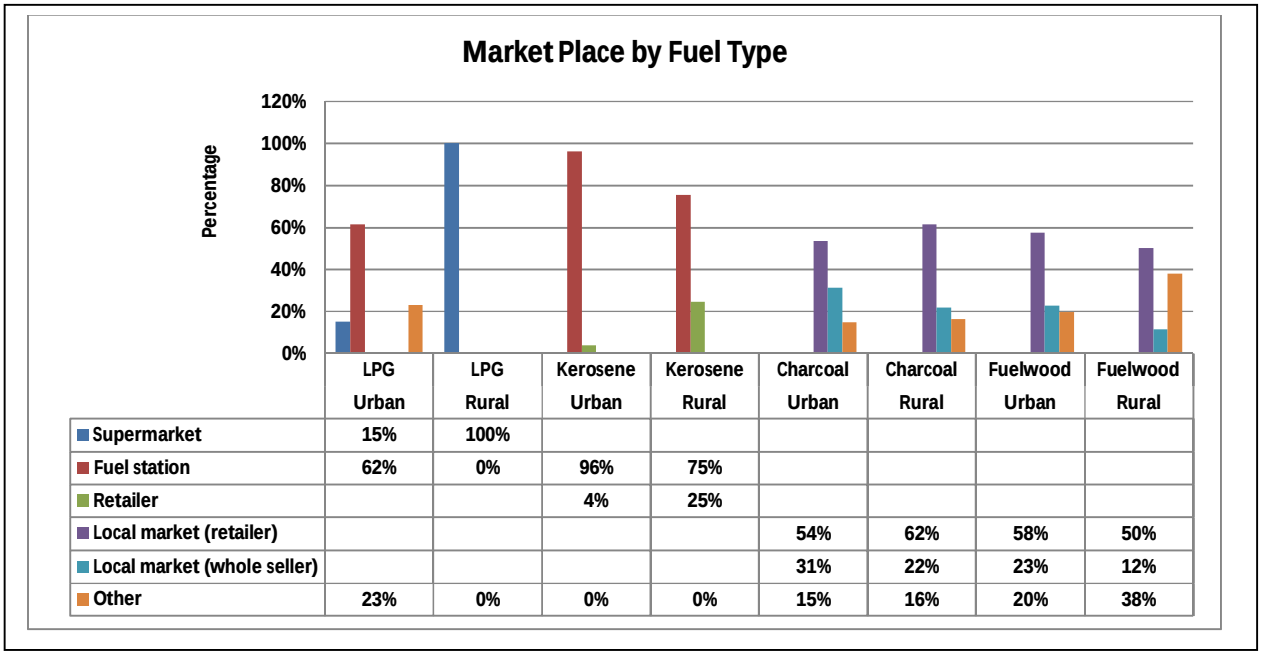


Figure 15: Modalities to buy Electric Mitad

Existing distribution models of Cooking Fuels

Similar to the stoves the distribution models/sales out lets of fuels are also depends on the nature of the fuel and its availability in the respective settlements. The following charts shows the sales

outlet of different cooking fuels as per the respond acquired from the surveyed households that uses the respective fuels.



	LPG Urban	LPG Rural	Kerosene Urban	Kerosene Rural	Charcoal Urban	Charcoal Rural	Fuelwood Urban	Fuelwood Rural
Supermarket	15%	100%						
Fuel station	62%	0%	96%	75%				
Retailer			4%	25%				
Local market (retailer)					54%	62%	58%	50%
Local market (whole seller)					31%	22%	23%	12%
Other	23%	0%	0%	0%	15%	16%	20%	38%

Figure 16: Market Place by Fuel Type

Similar to the sales outlet/the market place of the cooking stoves the market place of the cooking fuels is also categorised for the modern fuel and the traditional fuel. The sales outlet of the modern fuels are mainly fuel stations and supermarket for LPG and fuel stations for kerosene though in the rural areas kerosene is also bought from retailers. Retail and whole sell based local market is the basic sales outlet place for traditional fuels (charcoal and fuelwood).

Similarly supermarkets/mini markets, fuel stations and local market can be the potential sales outlet to outreach to the public at large

Existing financial support in the promotion of household energy technologies

In general it was very difficult to get financial support related to promotion of household energy technologies in the country. However, recently with the objective of promoting Renewable Energy Technologies (RETs) MFIs in cooperation of DBE are providing loans to private sectors engaged in the promotion of biogas technologies and solar products and to the users through using the different credit lines channelled through the DBE. However, so far financial support to the promotion of cooking energy technologies still remained unavailable for both the private sector as well as the users. But looking at the existing opportunity the DBE through the renewable energy fund credit line that it acquired from the world bank is interested to include the promotion of improved cook stove in this credit line which will also be channelled to different MFIs that are located in different regions.

The main challenge for providing loans to the cooking stoves users is the small monatory value that is attached to the technology/stoves which makes the loan administration cost very high and as a result causes the financial sectors to lose interest to accommodate it. With the special arrangement of organising the stove users it can be possible to use this opportunity related to financial support as per its application to address the dissemination of biogas and solar lighting products.

DBE as well as OCCSCo is interested to support the promotion of cooking devices same way as they are supporting the dissemination of solar lighting products and biogas. For this effect there is a need to have clear indication about the existence of sustainable demand of loan from the users so as to acquire those cooking devices.

Market enabling environment

(Such as MFI, Cooperatives, CBOs, FBOs, Medias, social marketing actors, etc)

Market enabling environment comprises a mix of factors in addition to the usual macro-level forces (political, social and economic) that includes, institutional capacity, regulatory framework, partnerships and collaboration with relevant stakeholders, financial incentives, etc.

This section will mainly focus on the stakeholders mapping and identification of areas of partnerships and collaboration. Collaboration of stakeholders from governments, nongovernmental organizations (NGOs), associations and private sectors in the promotion of the ethanol fuel and clean cookstove is very important. Stakeholders' involvement could be in different aspects of the intervention. The following table gives ideas on stakeholder mapping and potential area of cooperation as well as on elements of enabling environment that needs to be in place so as to create conducive market environment.

Table 4: Stakeholders mapping and area of cooperation among stakeholders

Categories of key factors	Elements of the enabling environment and potential area of cooperation
Policies/government roles	Political will to create awareness about benefits of ethanol use as household cooking fuel at micro and macro level.
	National strategy endorsing ethanol fuel and clean cookstove usage
	Clear enforceable regulations allowing/facilitates the local manufacture of the clean cookstove and/or import of parts of the

Categories of key factors	Elements of the enabling environment and potential area of cooperation
	stove if it is inevitable.
	Supportive political environment for the ethanol business • pricing of ethanol-that can make it competitive to other fuels, laws, licenses, tax policies (e.g. VAT exemption), etc • that creates trust among promoters and to encourage them to actively engage in the business (availing sustainable supply of the ethanol for cooking, demonstrate equity between ethanol for blending & ethanol for cooking)
	Establish product standard for both the clean cookstove as well as the ethanol fuel. The product standard on the clean cookstove should be seen from performance, durability, safety and efficacy and on the ethanol fuel should be seen from the required alcohol content of ethanol and proper bottling perspectives- The involvement of MoWIE and Ethiopian Conformity Assessment Enterprise and Ethiopian Standard Agency is very imperative to address this issue.
Partnerships and collaboration	Collaboration of stakeholders from governments, nongovernmental organizations (NGOs), and private sectors.
	Active community involvement/participation in the promotion and marketing interventions.
	Coordination between different levels of government and ministries. Active involvement of Ministry of Agriculture, Ministry of Health and Ministry of Women, Youth and Children Affairs and line bureau and offices at region and woreda levels in the promotion and marketing activities through their well-established structure that goes down to kebele level
Resources/economic	Availability of financial resources of implementing agency if

Categories of key factors	Elements of the enabling environment and potential area of cooperation
factors	working with public support (private company-engaged in the production and distribution of clean cookstoves and also ethanol fuels, NGO and/or government department- that promotes the use of ethanol for household cooking).
	Availability of financial resources of target community-(Affordability of both the clean cookstoves and the ethanol fuel to the targeted community).
	Technology choice (makes the clean cookstoves as well as the ethanol fuel competitors in terms of performance as well as price).
	Ongoing social marketing conducted in the promotion of different social products that can be capitalised for the promotion of ethanol use for household cooking. This will help to raise product/brand awareness of the ethanol fuel and stove. Cooperation with organisation like DKT Ethiopia, Bill and Melinda Gates, PSI Ethiopia, etc that promotes social products in the area of reproductive health, clean water supply, clean housing environment, etc are important resources/institutions to effectively implement the social marketing aspect of the ethanol use for household cooking.
	Government subsidies to target customers for product acquisition. This could be supportive if subsidies mechanism will be well devised so that it won't distort the market system.
	Availability of consumer financing for product or service purchase and commercial financing for supplier support. Capacitate the existing opportunity at the DBE and MFIs in the promotion of solar lighting products and biogas technologies.
Capacity-building and institutional	Training and workshops for community members that support the promotion of ethanol for cooking

Categories of key factors	Elements of the enabling environment and potential area of cooperation
strengthening	Technical assistance for implementing partners to strengthen capacity. This also contributes to further enhance the coordination and active engagement of regional partners in implementing the started biofuel project in five pilot regions
	Local manufacturing and distribution capability
Social factors	Women's involvement in interventions. Especially in mobilising rural households to access the ethanol fuel as well as the stove
	Capitalise on cultural belief/traditional knowledge of target population while designing promotion and marketing tools.
	Assess the existence of any incentives that is devised for reaching marginalized populations.
	Access to media coverage. National TV and Radio doesn't have a special consideration in the promotion of social products that provides social benefits. All types of advertisements are treated equally. Therefore there is a need to do advocacy work so that the national media can give special consideration to support promotion of social products as part of their Social Corporate Responsibilities (SCR). Local TV and radio stations can play key roles in broadcasting educative programme/infotainment as well as advertisement

Promotion and marketing activities

Promotion and marketing is one of the key intervention areas that contributes to efficient dissemination of improved cookstoves. As any other social products to successfully promote such products there is a need to work on enhancing people awareness so that behavioural change can be exhibited on the efficient utilisation of resources (energy, time and money).

Promotion and marketing tools devised

Different types of promotion and marketing tools devised and implemented by different development partners so as to reach to their respective target groups. Looking at the national interventions MoWIE and GIZ-ECO are coming to forefront in the implementation of full packaged of improved cookstoves activities. The experience gained in this aspect is enormous. Below the lists and description of promotion and marketing tools devised and implemented by GIZ-ECO.

Description of Promotion Tools Used[14]

- Production and distribution of **posters and user leaflets** (in amharic and oromiffa). These promotional materials provided to producers and different stakeholders working in related issues. The leaflet is used as installation manual for the users. In both cases the advantages of the stove is highlighted.
- Conducting **stove demonstration**, through live baking and public announcements, at different sites in the different towns where stove production units have been established. This activity is conducted in a place where it is believed that one can get high number of people as spectators. Injera is baked by the mirt stove openly to be seen by the public, as it is a good opportunity to show them the benefits/ merits of the stove. At this event, those spectators can get a chance to ask what ever issues they got in their mind related to the stove there at the spot. At this point addresses of producers are disseminated to the spectators.
- Participation on **trade fairs and exhibitions**. This is one of the powerful tools that enable one to promote his/her own product. This event is usually designed for 8-10 days. As it very common these days to get new products and also reduced price for some of existing ones people are looking forward to visit any occasions of trade fairs and exhibitions. So this event is mainly important to provide producers' address for those who are interested. As the stove is a bit heavy it might be inconvenient for some of the people coming from long distance to buy and go, so usually as they can have the producers' address they can buy from anywhere that they think is convenient for them. The other good part of this tool is one can address not only buyers/users but also people who are engaged in different developmental activities as well as higher officials, which is very important for further integration with interested stakeholders.
- **Sponsoring a theatre group** that toured around some of the towns where Mirt is produced and performed a small comedy play and show a short theatre that highlighted the different advantages of the mirt stove.
- **Sponsoring the weekly "Question and Answers" television program** that is prepared by Tamesol Communication and thereby releasing a television advertisement clip

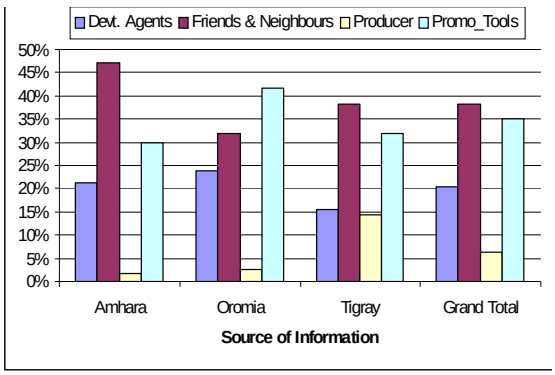
[14] Source: Mirt Impact Assessment Report-GTZ SUN Energy Project (the now GIZ ECO)

- **Medias (TV/ Radio)** are used to broadcast different educational films, advertisement clips and also to address the coherent effect of modern energy development and energy efficiency on other related sectors like environment, gender and health by integrating in different programs.
- **Billboards and signboards** are also used as information board to transmit basic issues by putting eye catching colourful pictures of the stove in use and some important mottos and information. Billboards have a size of 6x5 m for the bigger one and 3x5m for smaller one while signboards are with the same size of 2x1m.
- **Newspaper** is used for posting addresses of all producers in all regions where the project is intervening as well as to post some important issues that are related with energy in general and mirt stove in particular.
- **Sponsoring of magazine and bulletin** produced by different higher institutions, trade fair and exhibition events, etc, by using full page of the bulletin to post information about the impact of energy efficiency, benefits of alternative technologies in general and mirt stove in particular, is also a good tool for synergy effect as well as information dissemination.
- **Coupon system** is one of promotional tools used to subsidize limited number of stoves for first few buyers with in limited period of time.

Selected promotion and marketing tools

GIZ has commissioned an impact assessment study on the overall intervention of the project in Amhara, Oromia and Tigray regions of which the promotion and marketing is part of. The assessment has been done on users as well as market actors that have been engaged in the promotion of Mirt stove. Below the summarised findings of the assessment that gives rank for different tools as per the assessment result.

Figure 17: Source of Information about Mirt first



Households respond regarding their first source of information about the Mirt stove shows that from neighbours & friends followed by promotional tools.

Similarly the current household energy survey also revealed that Friends/Neighbours/Relatives is the main source of their first information about their current stoves followed by TV in the urban areas. Word-of-mouth is a powerful tool in promoting or demoting a product even though its coverage is narrow and only local. Word-of-mouth from early adopters of Mirt is also a very important tool of promotion particularly in the early stages of commercialization. It is an essential mechanism which influences customers to purchase the stove as it is a witness from a trusted source.

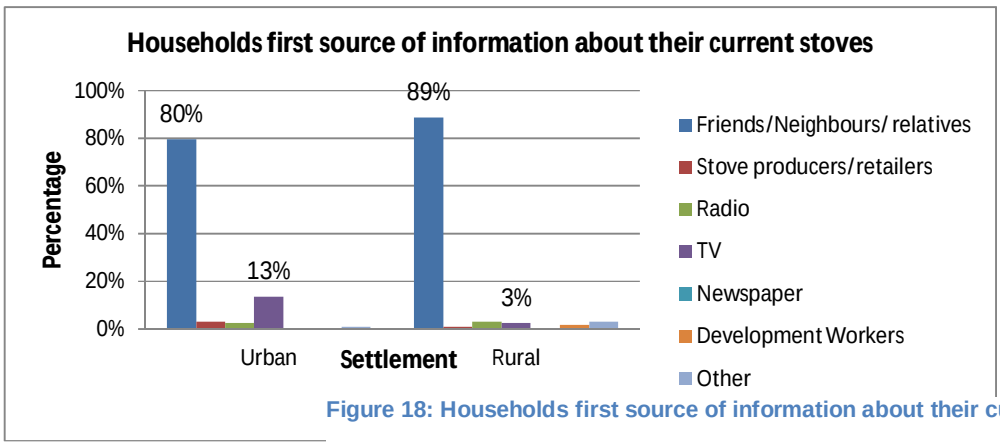


Figure 18: Households first source of information about their current stoves

The thorough assessment of GIZ ECO has also identified consumers' responses as to which promotion tools they know influenced their purchase decisions most which is not a measure of geographic coverage but effectiveness in terms of influence on consumers. The following graph shows the result of this analysis.

''[15]Other' means of promotion, apart from those directly implemented by the project, includes producers own efforts, awareness creation by development agents and most of all recommendations about the stove by relatives, neighbours and friends who are using it. Stoves recommendation by other users is the most effective promotion tool. Of the total number of consumers who heard about the stove from 'Other' sources, 97% purchased the stove. Cooking demonstration is the second most effective tool. Out of those consumers who got the chance to see the cooking demo, over 85% were influenced by it and purchased the stove. Some promotion tools such as cooking demos, theatre and publications had limited coverage but were influential on those who got the chance to watch them. When it comes to reaching the rural population, promotion tools such as TV ads are not applicable in most cases since TV set and the electricity which powers them are not available.''

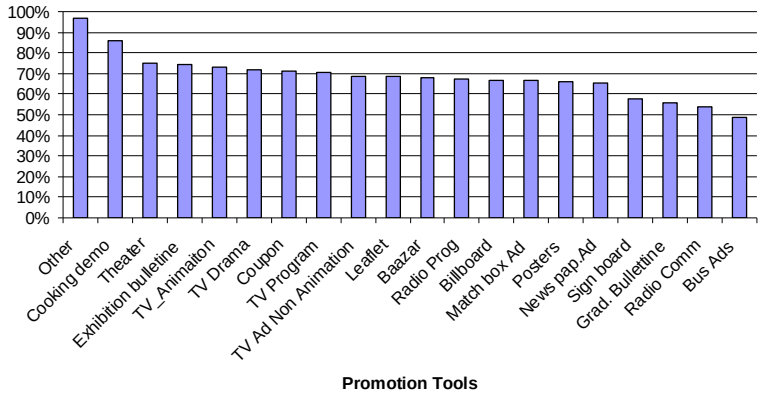


Figure 19: Effectiveness of promotion tools regardless of their geographic

When we look at the rural perspectives of the GIZ ECO-Impact Assessment report, the promotional tools that are most effective in reaching the rural population are summarized and presented in the figure below.

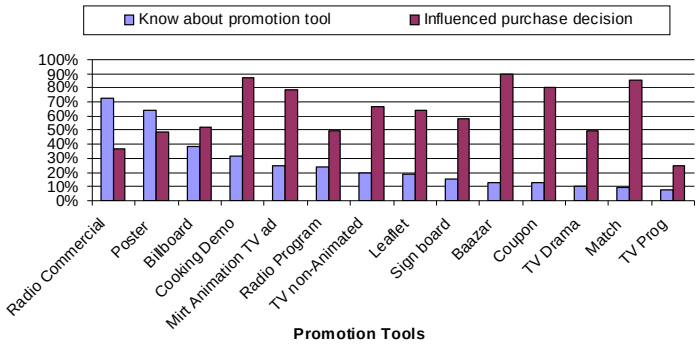


Figure 20: Promotion tools known by rural consumers and their influence on purchase decision

Radio advert found to be the most known promotion tool by rural consumers in that over 70% of them have heard it. In terms of influence however, only 30% of those who heard the ad were influenced by it to make purchase decisions. Following radio ads, posters and billboards come consecutively. Posters were distributed among rural population and local government administration offices. Billboards are permanently standing at main gates of towns where rural people see them when they come to towns on market days or for some other reasons. All cooking demos were conducted in towns where there were social gatherings like market places and church areas. Only 30% of rural consumers have seen cooking demos but a great majority of those who have seen the demos (85%) were influenced by it.

[15] Source: Mirt Impact Assessment Report-GTZ SUN Energy Project (the now GIZ ECO)

Points to be considered while developing promotion and marketing tools

Promotion and marketing activities is one of cost intensive component of projects. While developing promotion and marketing tools there is a need to have thorough assessment that could lead to having effective tools both in terms of output as well as cost. As it is seen in the previous section the wider geographical coverage of a tool doesn't guarantee on influencing the targeted customers to make decision on procuring the stove. Moreover, the tools that is effective in the context might not be that effective in the rural context. Therefore, we have to look at the most cost effective promotional tools that consider the target market. In this aspect one need to optimize a certain tool for both urban and rural coverage as well as effectiveness in influencing purchase decisions. Use of multiple promotion tools therefore seems inevitable to reach different market segments.

Ethanol Stove and Ethanol Fuel

People Awareness

Customers' awareness level about ethanol use for cooking is not that wide as per the findings of the assessment.

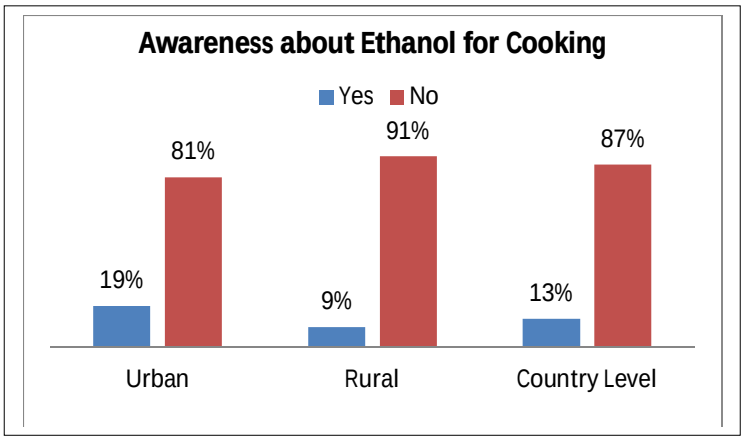


Figure 21: Awareness about Ethanol for cooking

Nationally only 19% of urban households and 9% of rural households have awareness about ethanol for cooking. Looking at the respective regions, the survey result indicated that number of households who heard or familiar with ethanol for cooking are relatively higher in SNNP, Dire Dawa and Somali with the percentage of 45%, 32% and 29% respectively from the total of the nd Tigray the number of households who are aware about ethanol is very insignificant (3% and 5% respectively). This indicates that there is a need to do a lot on awareness raising activities so that people awareness level will be enhanced. The FGD result also confirmed that the majority of the participants of FGD (93%) are not familiar with ethanol fuel and stove.

Those people who have awareness about ethanol for cooking got their first information from different sources. The information acquired from those households that are aware about ethanol for cooking revealed that Television took the lion share at the country level followed by Friends/Neighbours and Radio with the percentage of 50%, 26% and 22% respectively to be the main means of information for the first time.

Though similar trend is seen with regards to the first three top medias looking at urban and rural households separately, for the case of urban scenario, Television is taking the lead followed by Radio and Friends/Neighbours with the percentage of (64%, 20% and 15% respectively) and for the case of rural scenario, Friends/Neighbours taking the lead followed by Television and Radio with the percentage of (42%, 29% and 24% respectively). The FGD result also confirmed that Friends/ relatives (93% of the FGD participants) is the main media that hhds heard from about ethanol fuel.

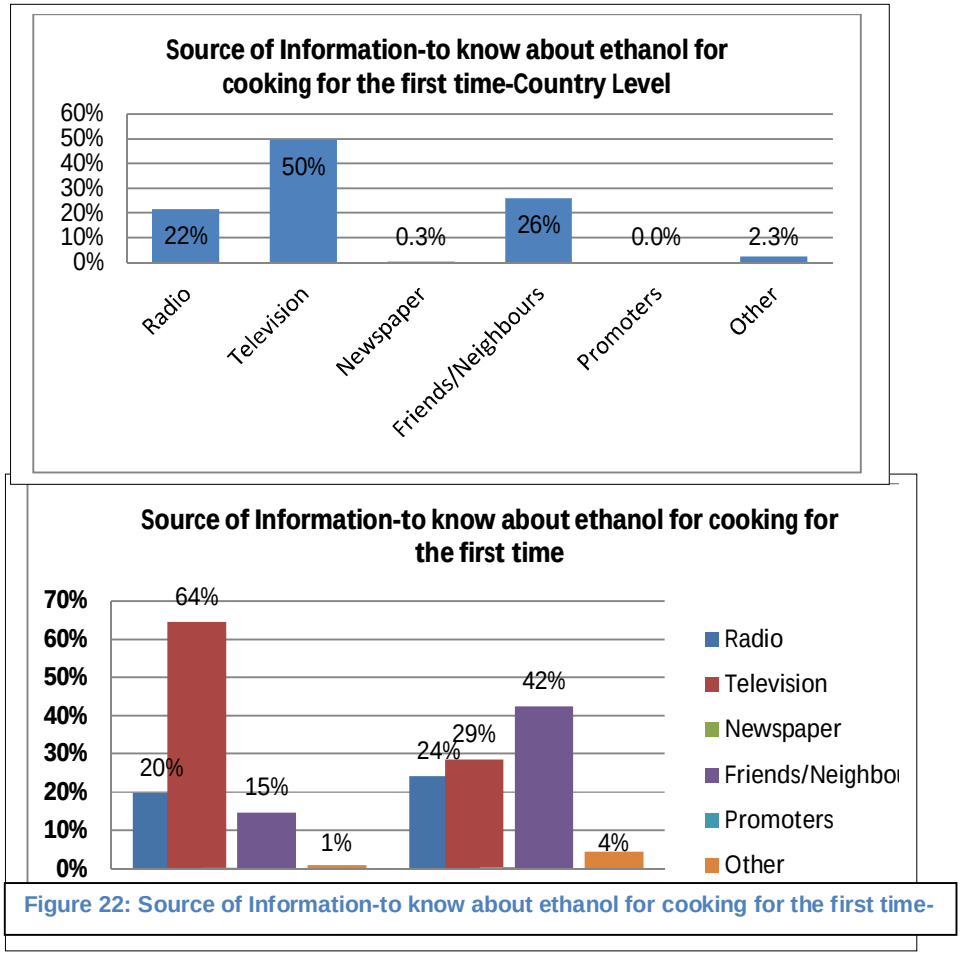


Figure 22: Source of Information-to know about ethanol for cooking for the first time-

Further to ranking the preferred media types assessed from the total surveyed households at country level, Television, Radio & Other are the first top three with the percentage of (34%, 24% and 18% respectively). Looking at the urban context; Television, Radio and Other with the percentage of (59%, 20% & 10% respectively) and in the rural context; Radio,

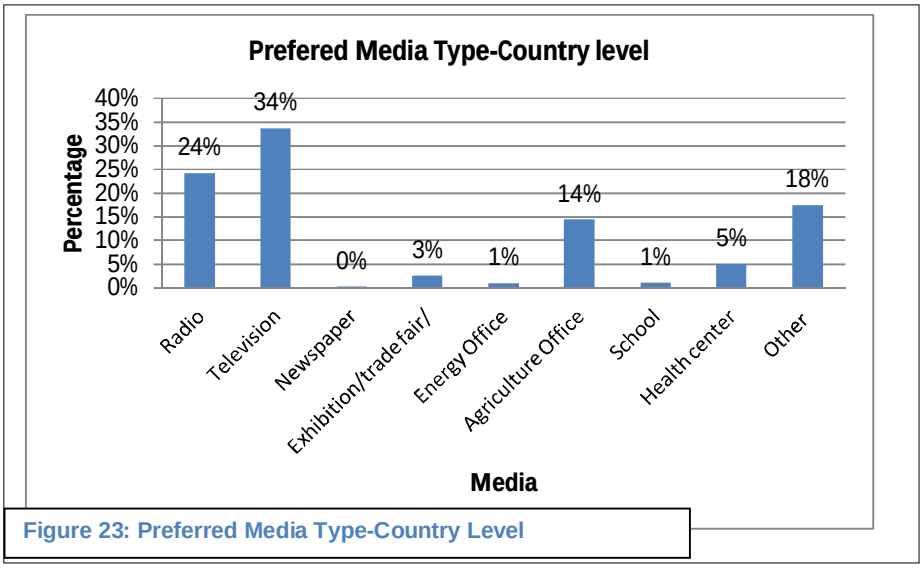


Figure 23: Preferred Media Type-Country Level

Other and Agricultural Expert with the percentage of (27%, 23% and 22% respectively) are found to be the first top three preferred medias respectively. Similarly the FGD result also confirmed that TV is the most preferred one with 19% followed by radio, kebele and coffee ceremony, with the percentage of 25%, 10% and 10% respectively.

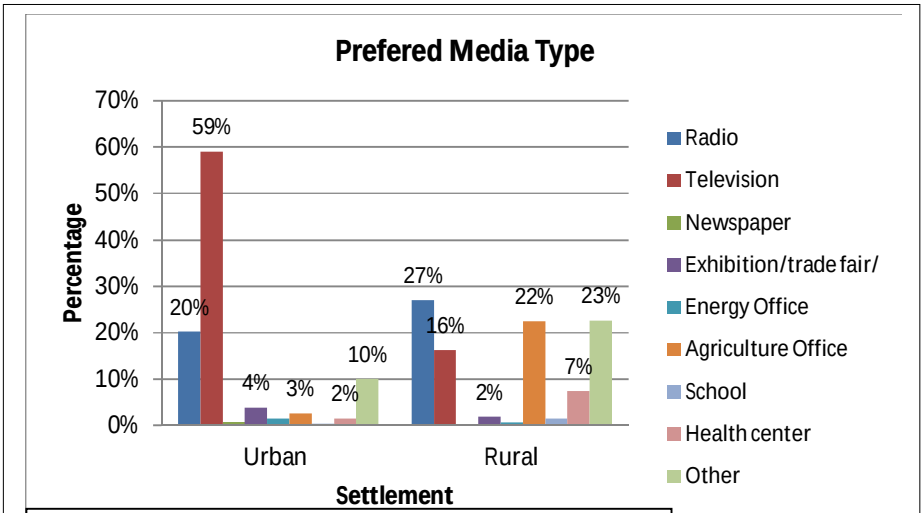


Figure 24: Preferred Media type-Urban/Rural

Qualifying hhds respond as "other", as it has significant share of the preferred media at the national as well as urban and rural context, is important. In this regard the main media types given as other has the following proportion. Of the total of 18%share of the preferred media categorised as "other" at country level 17% represents Neighbour and 15% represented by Kebele followed by Friends with the percentage of 11%.

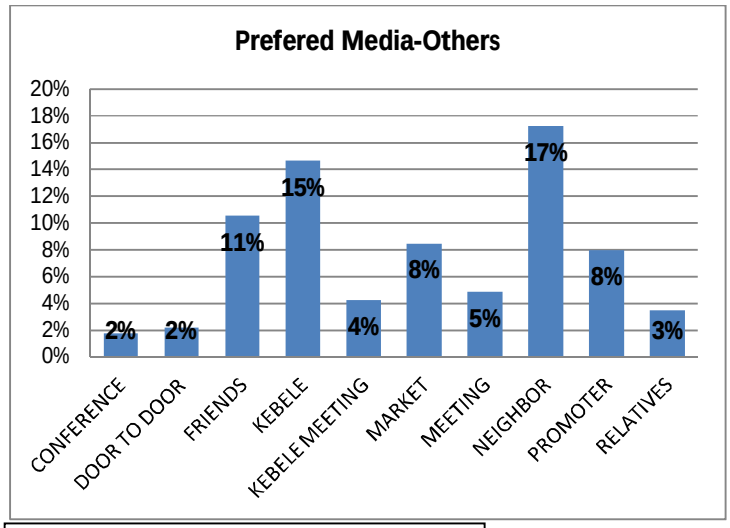


Figure 25: Preferred Media-Others

People perception and attitude towards ethanol stove and fuel and of those competing products

Almost all of the surveyed households are looking for having new stove and fuel. This indicates that they are unsatisfied about the type of stove and fuel that they currently use or it can also be that they are looking for a change. Unanimously in both urban and rural context 92% of the responded that they are interested to have new stove and fuel.

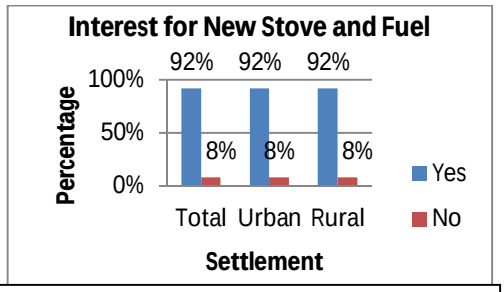


Figure 26: Households Interest for New Stove & Fuel

Similarly all the surveyed households, those that have awareness about ethanol as well as those who don't, have been requested about their interest to use ethanol for cooking. Almost all of the respondents/surveyed hhds have showed interest to use ethanol for cooking. This indicates that they are looking for ethanol stove and fuel to fill the gap that they are facing now with their current stove.

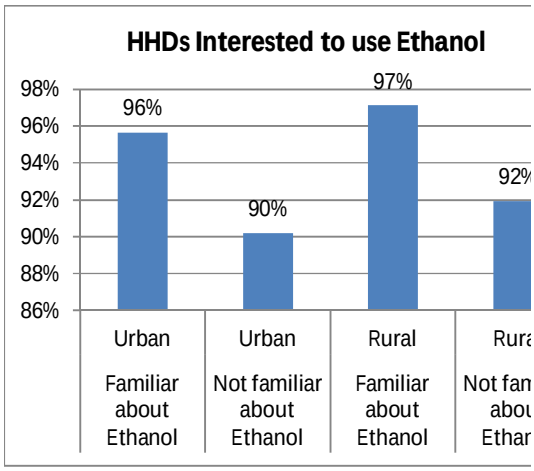


Figure 27: HHDs Interested to use Ethanol

Surprisingly while analysing households' interest to use ethanol in terms of the types of fuel that they are currently using, a very uniform trend is exhibited. Bigger share of HHDs that are using fuelwood, charcoal, kerosene and electricity have shown interest to use ethanol for cooking with the percentage of 91, 92, 93 and 88 respectively. Electricity users are those that has shown least interest though still it shows high figure which is 88%. This might be because they are already using high grade and clean energy source.

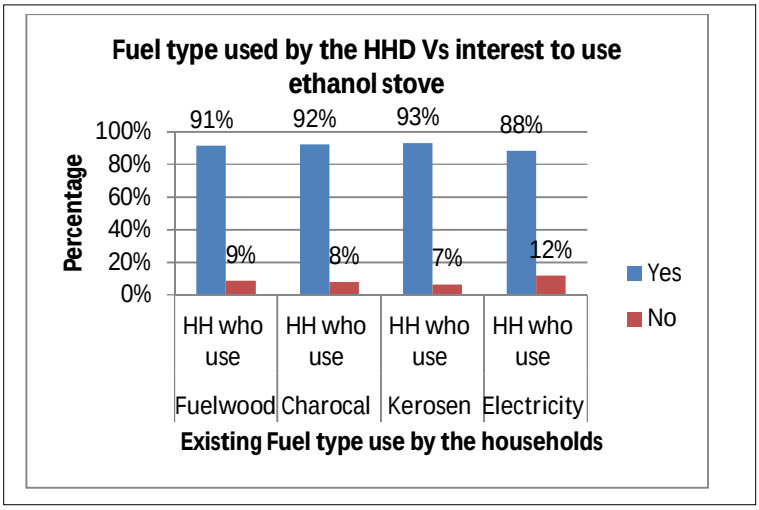


Figure 28: Fuel type used by the HHD Vs Interest to use Ethanol stove

The other factor that has been used to analyse household's interest is their income level.

Here also surveyed households in all income quintile uniformly expressed their interest to use ethanol. Though it is expected that the higher income level might show more interest in the urban context it is Q3 that shows highest interest with the percentage of 94% followed by Q4 with (93%) and Q2 & Q1 each with 91%. 84% of the respondents from Q1 also showed interest towards using ethanol for cooking. In the rural context the percentage of hhds that showed interest increased as per the quintile level (from Q1 to Q5) with percentage of 83, 91,96,98,98 respectively. The income quintiles categorisation represents he value that is stated in the table below.

Figure 29: HHDs Interested to use Ethanol fuel and stove per Quintile

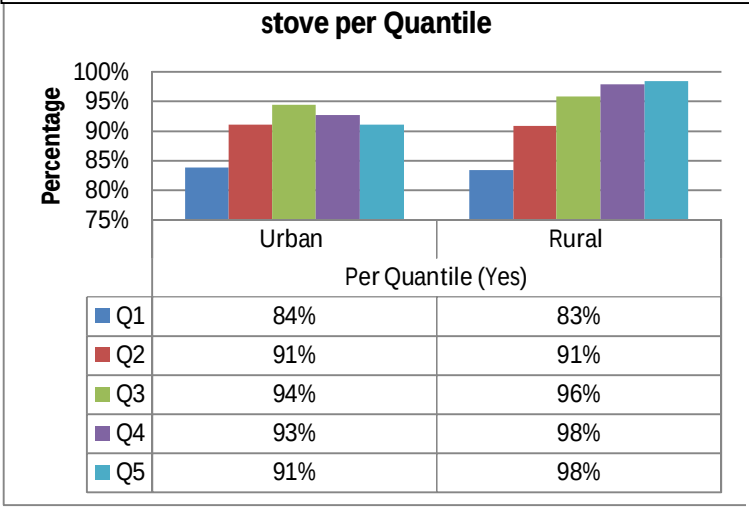
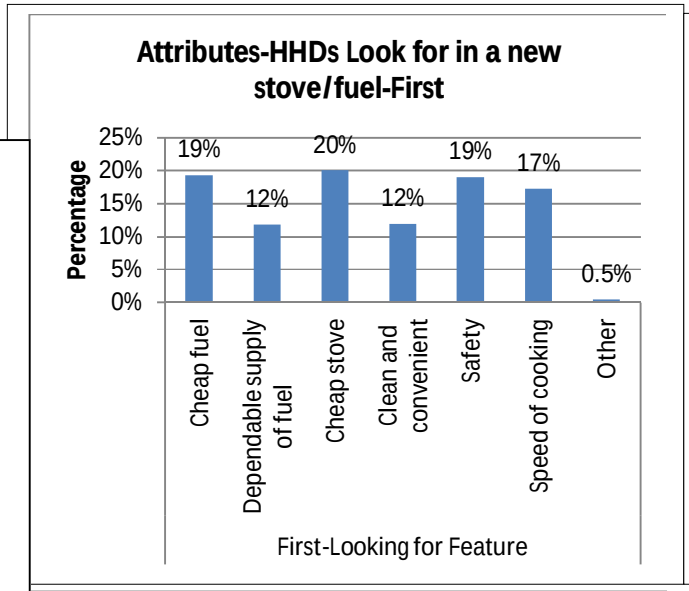


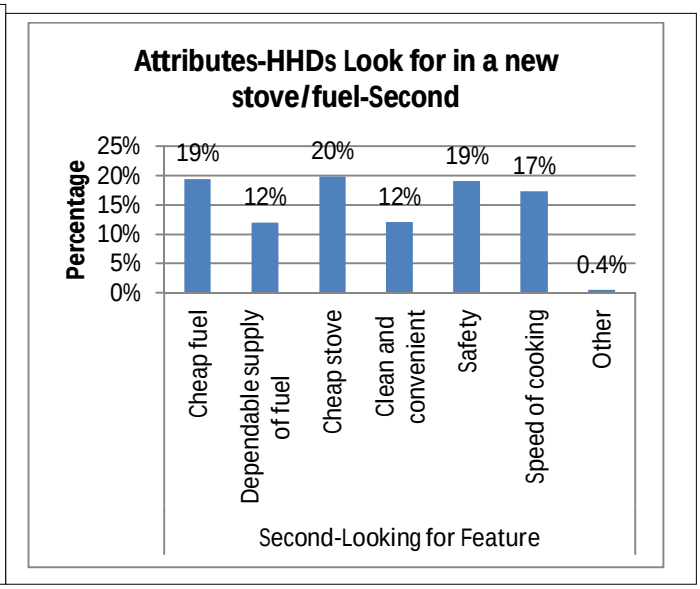
Table 5: Income group per Quintile

Income Group (ETB)	0.00-7,650	7,670-14,400	14,442-23,340	23,400-38,250	38,400-100,000
Quintile	Q1	Q2	Q3	Q4	Q5

Almost all of the surveyed households are interested to use ethanol stove and fuel. This indicates that they are looking for ethanol stove and fuel to meet to the features that they are expecting from the new stove and fuel and also to fill the gap that they are facing now with their current stove. Similarly all of the FGD participants (100%) have also showed interest to use ethanol fuel and stove.

Households respond with regard to the features that they look for in the new fuel and stove is mainly revolving around the issue related to cost. They have been asked to rank the features that they are looking for from first to seventh. Features that have got first and second rank by the respondents are very similar. As it is seen in the chart below; cheap stove, cheap fuel, safety and speed of cooking are the first four features that are ranked as first rank and second rank categories by the households. Even as third rank category cheap stove and cheap fuel got highest share with the 20% of the total respondents followed by safety and speed of cooking with the percentage of 18% and 17%.





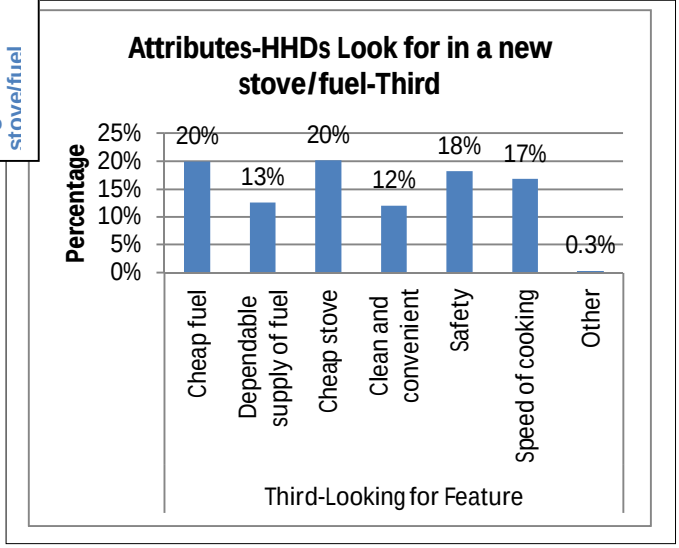


Figure 30: Attributes-HHDs Look for in a new stove/fuel

This clearly indicates that the main features that the hhds would like to get from the new stove/fuel that they are looking for are:

- Cheap stove
- Cheap fuel
- Safety
- Speed of Cooking

Regarding the attributes of the new stoves, the main features (the top four) that have been mentioned by the FGD participants are: cost effective/fair price, smokeless, availability and durability with the percentage of 23%, 21%, 10% and 10% respectively.

Fuel use shift

Households are shifting from using one type of fuel to other type due to different reasons. The reasons are mainly depend on the nature of the fuel and/or the type of cooking device that they have been using, change of housing situation, looking for better type of fuel, looking for cheaper price fuel, lack of convenient cooking place, etc

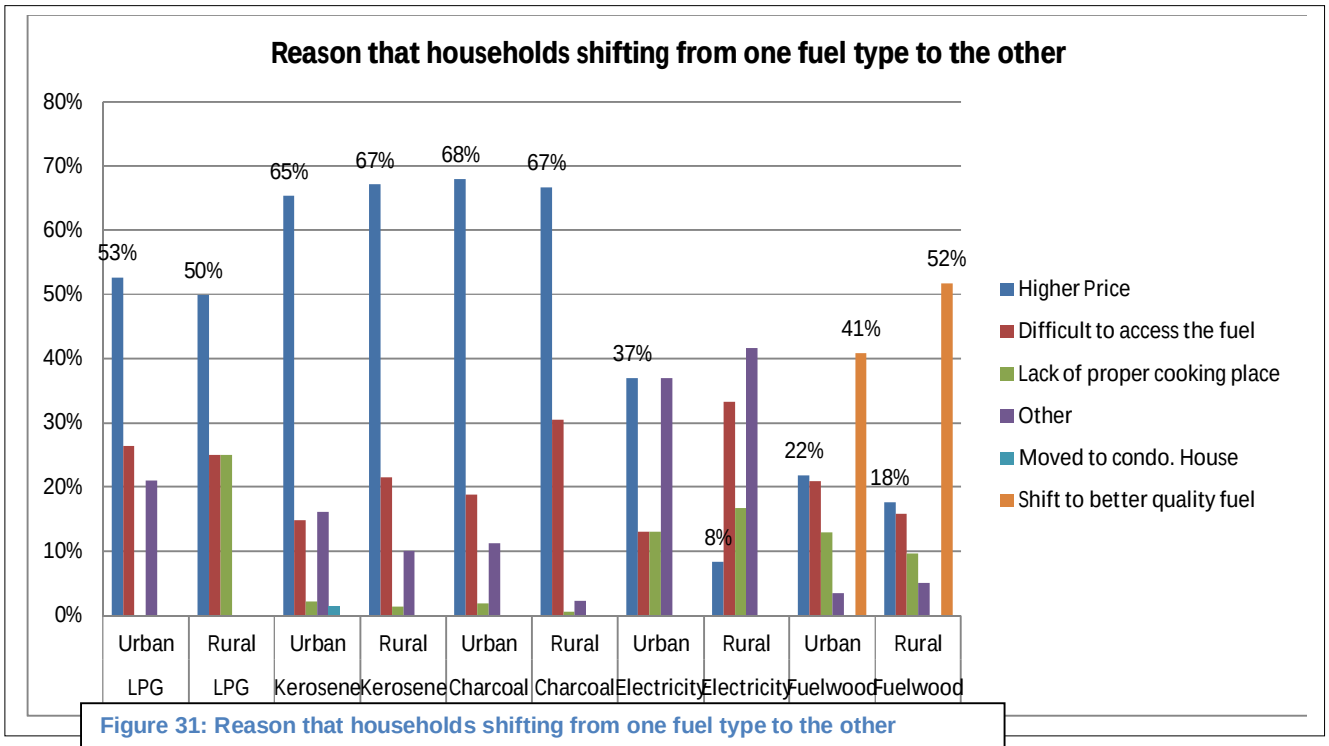


Figure 31: Reason that households shifting from one fuel type to the other

This study revealed that Higher Price is one of the main factor that hhds have been reasoning to shift to other types of fuel. This is seen mainly in Charcoal, Kerosene, LPG and Electricity users. Coming to fuelwood shift to better quality fuels is the main reason followed by higher price to shift from fuelwood use to other types of fuels.

This indicates that the fuel price plays significant role in shifting from one type of fuel to the other in almost all types of fuels and shift to better quality fuel is mainly for low grade fuel users that is fuelwood. Therefore for effective promotion of ethanol pricing of ethanol for cooking should be done systematically.

Households that are not interested to use ethanol stove and fuel have also given their own reason into why they are not interested. The main reason that was given by the respondents is that lack of knowhow about the fuel which took 62%, 73% and 54% at the country, urban and rural level respectively followed by expensiveness of the stove and the fuel respectively.

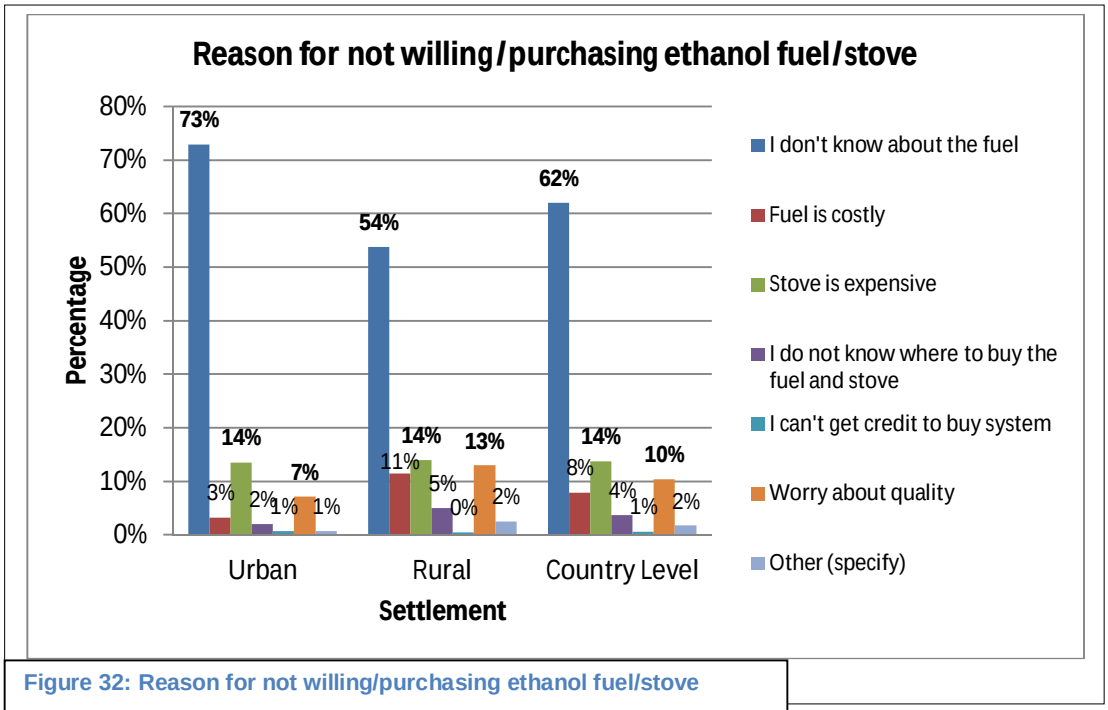


Figure 32: Reason for not willing/purchasing ethanol fuel/stove

Social services and commercial sectors

Representing institutions the survey has also covered selected social services and commercial sectors such as hospitals, schools and universities from the social services and hotels, restaurants and Café/tea room from commercial sectors as these institutions are also potential customers.

Social Services

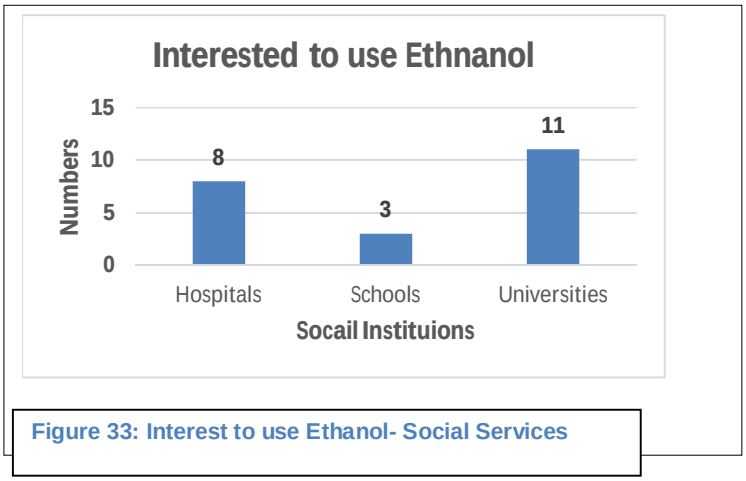


Figure 33: Interest to use Ethanol- Social Services

The survey had also targeted to capture information from selected social services like hospitals, schools and universities that can represent the surveyed regions. In this regard it was possible to cover 1 universities, 9 hospitals and only 4 schools in the assessment. As the intention of incorporating schools raised mainly so as to capture information from schools that have a school feeding program and as the survey team could manage to find only four schools in the surveyed regions, the

numbers of schools that are covered through this assessment is very minimal. However, knowing this situation, this report tries to indicate some of the major points that felt worth to do so. Coming to awareness almost 50% of the respondents (out of 12 universities, 9 hospitals and 4 schools with school feeding program) in all social service institutions responded that they have heard about ethanol for cooking. Most of the interviewed social institutions with the numbers of 8, 3 & 11 for hospitals, schools and universities respectively are interested to use ethanol fuel.

The interviewed universities gave different attributes to the new stove that they are interested to adopt. Unlike households for the case of universities money doesn't seem an issue. What they are looking for is to have clean and efficient stove that can accommodate their mass cooking timely. Smoke, burn from the flames, uncleanness are the main inconveniences that they currently practiced and they are looking for an improved stove that can address all these. Similarly, multiple pot stove, clean, efficient, convenience are stated by the hospitals as the main attributes that they are looking for from the new stove/fuel. Unlike the other two affordability is one attribute mentioned by the schools in addition to convenience, clean, safe and fast to cook.

Coming to willingness to pay for the fuel most of them expressed that it is difficult to put the earmarked price now as they couldn't figure out how much can they cook with a litre of ethanol. However as an indicative price they have given the following responds.

Willingness to pay for the ethanol fuel- Universities

Description	Numbers
ETB 16-17 per liter	3
ETB 10-15 per liter	2
ETB 200,000 per month	2
ETB 20,000 per month	1
Consumption depends on quality of stove and fuel	2
Can't decide now	2
Less than ETB 15,000 per month (the amount that they currently spend)	1

Table 6: Willingness to pay for the ethanol fuel/stove- Social services

Willingness to pay for the ethanol fuel- Hospitals

Description	Numbers
ETB 15-18 per liter	3
ETB 18-20 per liter	2
ETB 2,000 per month	2
Decision of the procurement committee	1
Other	1

Willingness to pay for the ethanol fuel- Schools

Description	Number
ETB 200-300/month	1
ETB 250/month	1
Not more than ETB 16 per litter	1
Decision of the education office	1

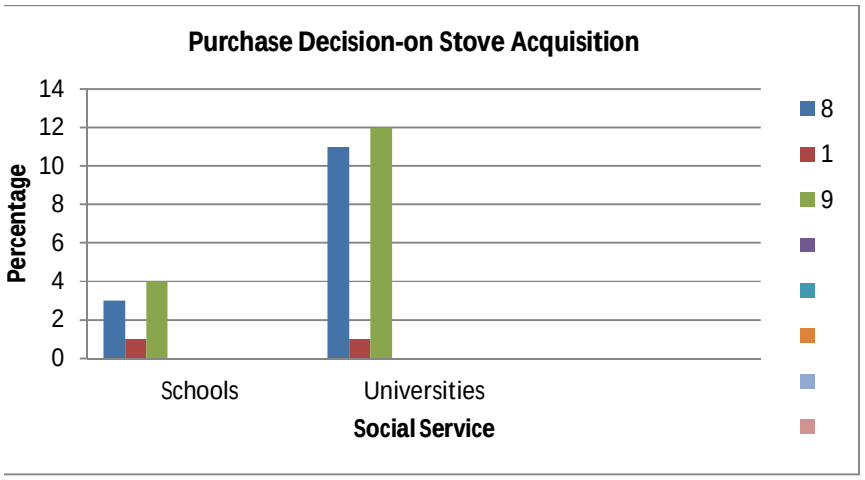


Figure 34: Purchase decision on stove acquisition-Social Institutions

Decision of buying stoves or other energy devices is mainly done by the Management in all cases followed by procurement committee for the hospitals and universities.

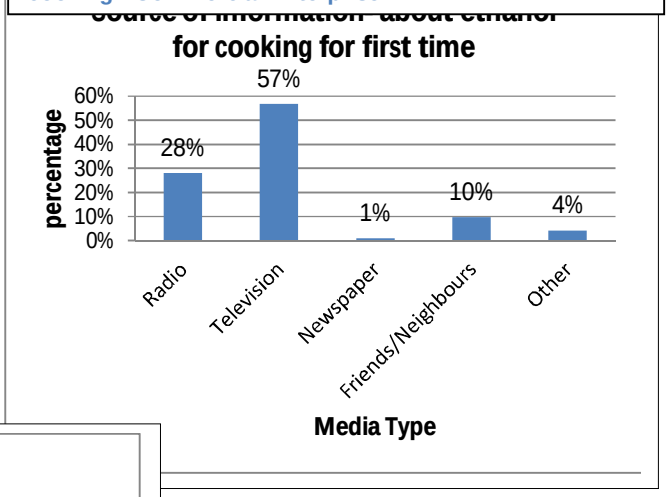
Due to their mass cooking practice most of them are going for more than 10 litre of ethanol to procure at once though still the question of how much can they cook with that amount exists. Regarding information dissemination and preferred media types TV is found to be the most preferred one by the hospitals and universities followed by radio and others. For the case of school radio, agriculture office, website, Gaia association and Dago system are given the same weight.

Commercial Enterprises

As commercial sector like hotels, restaurants and cafe/tea rooms are also consuming significant amount of energy for cooking they are considered as potential customer for ethanol fuel and stove. Therefore the assessment tried to capture basic information from selected hotels, restaurants and cafe/tea rooms representing the whole regions.

Coming to their awareness about ethanol for cooking, most of them (70%) have no clue about it and most of those that have some information about ethanol said that they got their first information through TV (57%) followed by radio and Friends/Neighbours. As preferred media type, still the lion share goes to TV followed by radio. Almost all of the respondents (96%) are interested to use ethanol fuel and stove.

Figure 35: Source of Information-about Ethanol for cooking - Commercial Enterprise



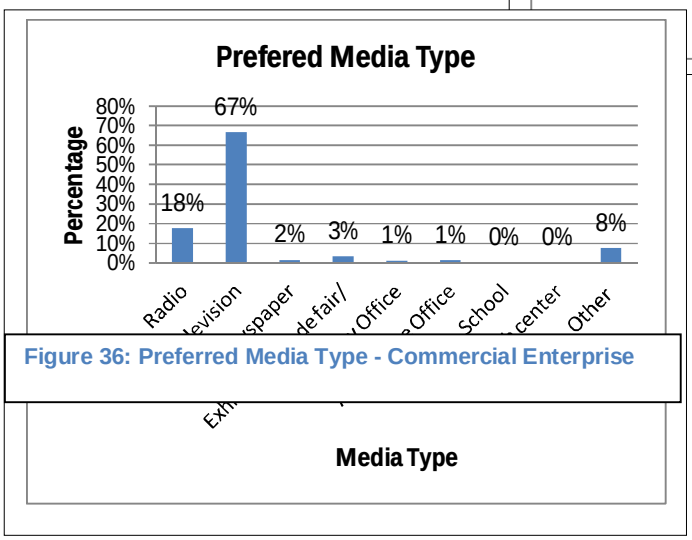


Figure 36: Preferred Media Type - Commercial Enterprise

Fuel Use Type-Commercial Enterprise

Charcoal is the prominent types of fuel that is used by most of the commercial sectors followed by fuelwood and electricity with the percentage of 37%, 26% and 23% respectively. This is commonly seen in all regions except Amhara where Electricity is taking the major share (31%) followed by charcoal (30%).

Though there is diversified fuel type use at country level 96% of the respondents are interested to use ethanol fuel and stove. 32% and 68% of the respondents that are interested to use ethanol fuel and stove are willing to buy single burner and double burner stoves respectively.

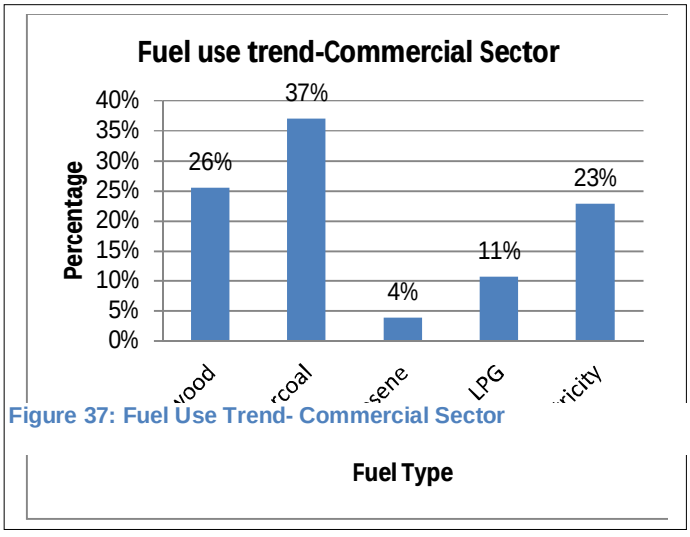


Figure 37: Fuel Use Trend- Commercial Sector

The preferred payment modality for procuring these stoves is mainly in cash (63%) followed by cash with 6 month credit (28%) and cash with 1 year credit (8%).

Willingness to pay-Commercial Enterprise

The surveyed enterprises that have showed interest to use ethanol fuel and stove have also indicated the amount that they are willing to pay for the ethanol fuel as well as for the two type of ethanol burners. Higher share of the respondents (40%) responded that they are willing to pay ETB 0-200, followed by 27% and 16% who have responded ETB 201-300 and ETB 301-400 respectively for the single burner stove. For the double burner stove 22% of the respondent are willing to pay ETB 701-1000 followed by 17% and 15% who have responded ETB 401-500 and ETB 301-400 respectively.

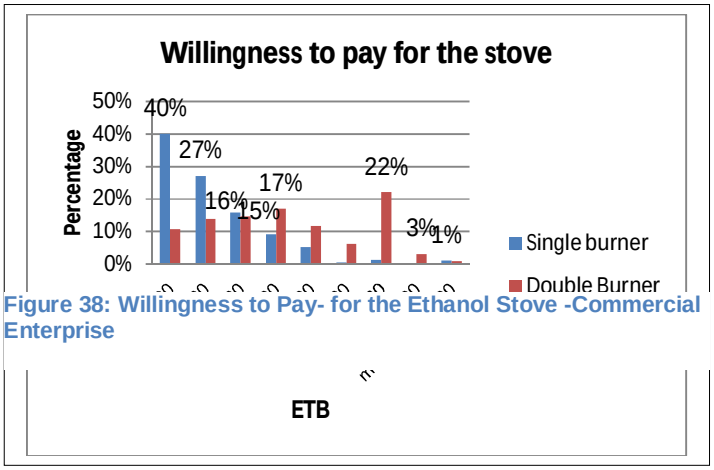


Figure 38: Willingness to Pay- for the Ethanol Stove -Commercial Enterprise

With the current price of the stoves, that is ETB 385 for locally produced and ETB 1,300 for imported single burner stove, only 16% of the respondents are fitting to the price of the locally produced stove and only 1% is fitting to the price of the imported single burner stove. Similarly for the double burner stove taking the price of the imported one which is ETB 1,900, maximum of 4% of the total respondents are fitting to this price. This indicates that in order to disseminate significant numbers of stoves to the users there is a need to encourage local production of the stoves as well as giving optimal price that can be affordable by the majority of the users.

Coming to willingness to pay for the fuel, still the issue of unfamiliarity with the ethanol fuel exists the respondents have given the following indicative figures. The bigger share of the respondents (43%) are willing to pay ETB 6-10 followed by 35% and 11% of the respondents who are willing to pay ETB 11-15 and ETB 16-20 respectively. With the current price of ethanol that is ETB 14.00, about 50% of the respondents are fitting to the current price range.

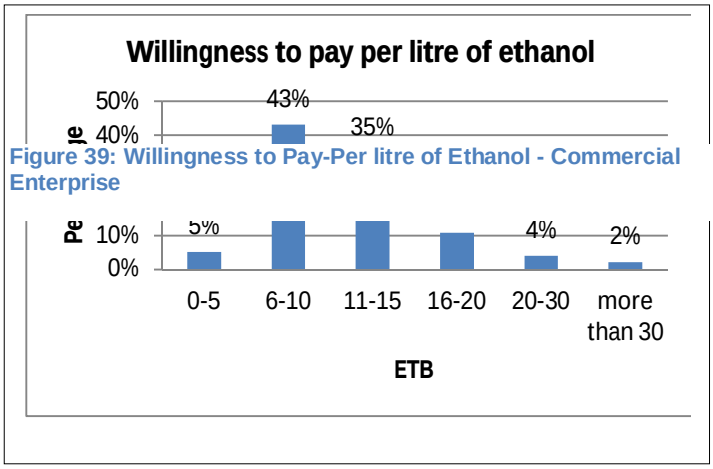


Figure 39: Willingness to Pay-Per litre of Ethanol - Commercial Enterprise

The preferred packing size by the respondents to buy at once is 5 litre volume with 55% of the respondents followed by 27% and 9% respondents who proposed to 10 litres and 1 litre volume of ethanol.

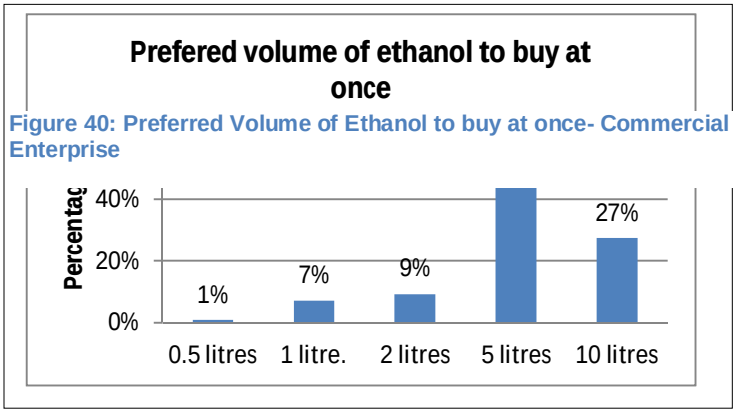


Figure 40: Preferred Volume of Ethanol to buy at once- Commercial Enterprise

Market Actors of Ethanol Stove and Fuel

The existing supply chain and distribution model of ethanol fuel and stove is very straight with the involvement of few market actors. Basically three organisations are engaged in the promotion and dissemination of both the ethanol fuel and stoves. Those organisations are Gaia Associations, MOKOBU enterprise and MHGMEE. The following diagram describes the existing and the proposed supply chain and distribution model for ethanol fuel and stove.

The proposed supply chain and distribution model can be seen as medium term and longer term models where the main differences are at the market actors. In the medium term it is very unlikely to have in place fuel stations that are going to put high investment cost on the ethanol distribution infrastructure. These key market actor needs to be very sure on the demand of ethanol for cooking before committing their resources in the distribution infrastructure. However, with thorough advocacy work it will be possible to bring 'bottlers' as part of the market actors in addition to the existing ethanol stove and ethanol fuel distributors. If the bottled ethanol in different volume exists then engaging different retailers so as to reach to different market segments will be materialised. Similarly at the 'users' level, it is advisable to be customer segment specific during market introduction phase and focus on customers like 'low hanging fruits'. These customer segments can be urban dwellers who can afford to pay for both the stove as well as the fuel & those households newly moved to or who lives in the apartments/condominiums as significant numbers of condominium houses are handed over to the urban dwellers and the ethanol fuel and stove well fits to the living situation of such housings. If proper marketing scheme that target these customer segments will be devised and the right product standard of (both ethanol fuel and stove) is going to be marketed then these market segment will be a potential promoters of ethanol fuel and stove for the upcoming market and to successfully implement the scaling up project.

Figure 41: Existing Ethanol stove & Fuel Market Map

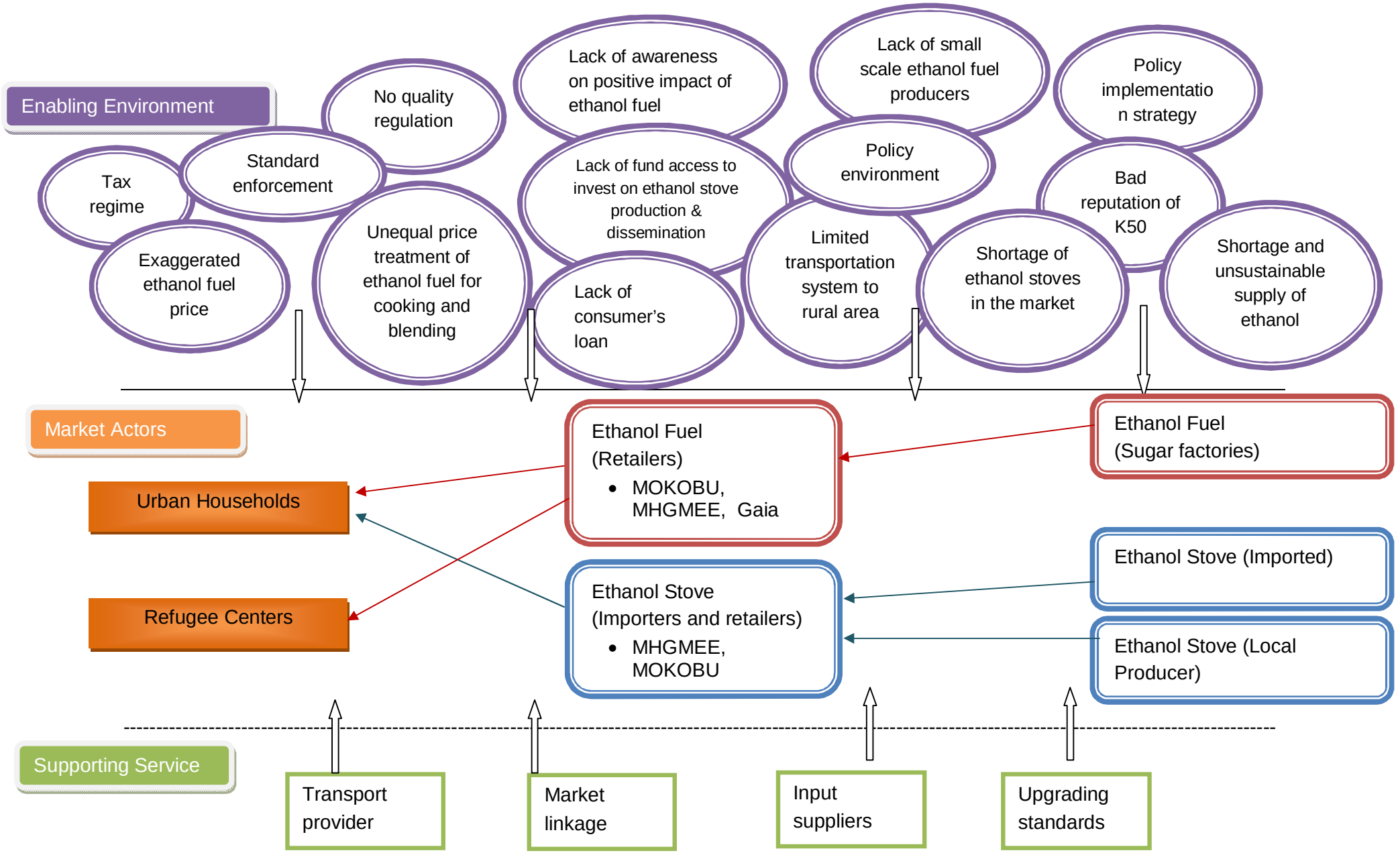
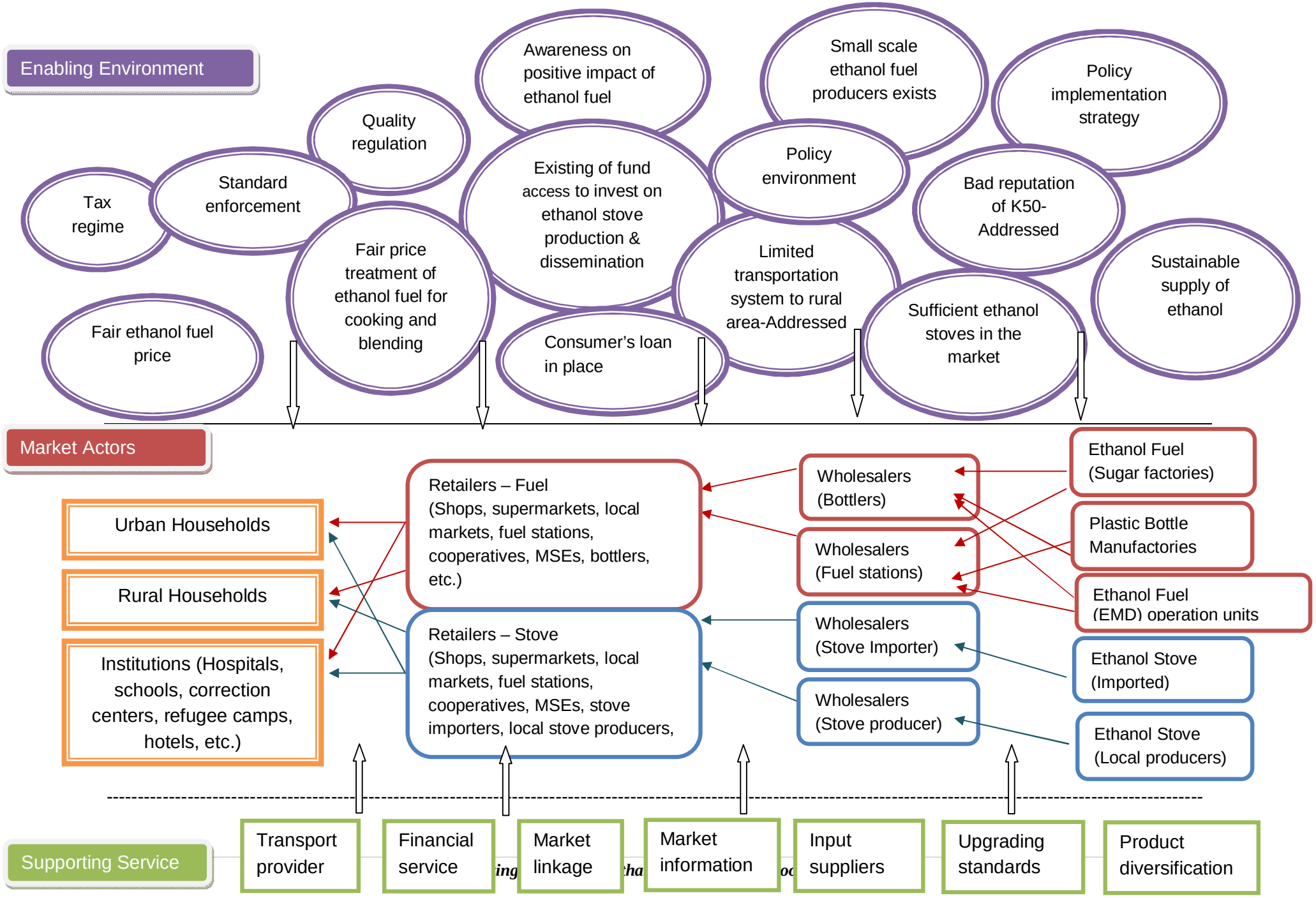


Figure 42: Proposed Ethanol stove & Fuel Market Map



The ethanol market map shows the current status and future of the ethanol stove and fuel market opportunities and constrains.

Enabling Environment

- **Tax regime:** currently, both ethanol fuel and ethanol stoves are liable for taxation. The cost of ethanol stove is quite expensive while compared with other types of stoves available in the market. This is due to the fact that the stoves are imported and highly taxed. These days the government commitment in the promotion of renewable energy technologies should be a good opportunity for applying the tax exemption on the ethanol products similar to the solar products imported from abroad. Therefore, If tax exemption is applied to both ethanol products it will give a chance to reduce the current magnified cost.
- **Exaggerated ethanol fuel price**: Similarly the price of the ethanol fuel itself has also shown drastic increment from the time that it was introduced in (2004) which was ETB 1.90 (VAT inclusive) at the factory gate and now reached to ETB 10.78 (VAT inclusive). Though this pricing system needs to be well reviewed, the VAT case on the ethanol fuel should also be revised.
- **No quality regulation:** This is the right time to act on having quality standard regulation on both ethanol fuel as well as stove as there is no existing strong quality control mechanism to regulate the market. Lack of quality regulation will give high opportunity for those who want to win the market by supplying substandard qualities of ethanol stoves as well as ethanol fuel.
- **Standard enforcement**: well-designed standards for both ethanol fuel and stoves have to be in place and the production companies should be enforced to keep the already defined standards. This will encourage other service providers (like financial institution) to actively engage in the promotion of the technologies
- **Lack of awareness on positive impact of ethanol fuel**: the assessment has indicated that the awareness of ethanol stove and ethanol fuel is almost none. Since this will be new product to the end users, it required intensive and effective promotional and awareness efforts to create positive images.
- **Lack of fund access to invest on ethanol stove production & dissemination**: in order to reduce the cost of the ethanol stove and to make them accessible scaling-up the local stove production is very important. Therefore, supporting the private sector to start up the stove production business through facilitating fund access could be one strategy to increase the production as well as to reduce the cost of the stove. Though currently only very few fuel stations showed their interest to be engaged in the ethanol fuel retailing business, others are afraid to jump into the business as it need high investment cost to build fuel tanks. If financial support like facilitation of credit is given, there could be a chance to attract them to start the business.
- **Lack of consumer's loan**: from the assessment it was found out that most of the households replied that the current price of the ethanol stove is quite expensive. In addition, in order to buy the ethanol stove paying at once will be a big challenge by the households and this can be tackled through facilitation of consumer's loans.
- **Bad reputation of K50**: The negative reputation of K50 is also another issue that could not be ignored and it required a lot of awareness activity to over win households threat.
- **Unequal price treatment of ethanol fuel for cooking and blending**: while we are looking at the price of the ethanol fuel we get different prices set by the fuel suppliers

for blending and non-blending purposes. This unfair treatment incur unnecessary cost on the stove users and also discourage the market actors in the value chain.

- **Lack of small scale ethanol fuel producers:** the only ethanol fuel suppliers in the country are the sugar factories and bringing small scale local ethanol fuel producers also very important to satisfy the future demand specially to reach to rural settlements.
- **Limited transportation system to rural area**: one of the major bottlenecks of ICS dissemination to the households is lack of proper infrastructure especially in the rural areas of the country.
- **Shortage of ethanol stoves in the market**: Currently, very few of the ethanol stove are imported and availed only in few urban areas and only one local production unit is engaged with medium production capacity. Considering the upcoming intensive ethanol promotional activities that will be taken in the near future the current supply of the ethanol stove is very unlikely to satisfy the expected demand. This has to be thoroughly considered before doing the promotional activities as promissory market without availing the products will highly hinders the expected result of the project as well as the already created market.
- **Shortage and unsustainable supply of ethanol**: unsustainable supply of the ethanol fuel for cooking is the main factor that hinders the large scale dissemination of ethanol fuel and stove. With the upcoming scaling up project this issue should be well addressed. A mechanism should be devised to expand its reach to the rural areas too. Currently, only few fuel stations showed their interest to be engaged in the retailing of ethanol fuel similar to the way they are doing for the promotion of kerosene believing that there will be sustainable supply of the fuel in the future. Availing ethanol for cooking sustainably will attract private sector to be engaged in the distribution of the fuel.
- Policy environment: The draft national energy policy, the CRGE document, the Investment Plan of the improved cooks stoves are some of the policy documents that fully support the promotion of ethanol fuel and stoves
- Policy implementation strategy: having policy implementation strategy is very important for the achievement and implementation of the devised policies

Market Actors

- **Ethanol fuel**, **ethanol stove** and **plastic bottles** are the major products that are seen in the market chain
- The **sugar factories** are the main ethanol fuel producers and main supplier of ethanol fuel to wholesalers which are **Bottlers and Fuel Stations**. The fuel stations will be wholesalers and supply the ethanol fuel to ethanol fuel retailers like shops, supermarkets, local markets, cooperatives, MSEs, etc. to expand the reach of the fuel. The retailers will be the main supplier of bottled ethanol fuel to the urban and rural households, and institutions. At the same time the fuel stations will be retailers and sell the ethanol fuel to the end user who would like to buy with their own fuel containers and fuel quantities.
- Plastic bottle manufacturers will provide empty bottles to the major ethanol fuel wholesalers. The ethanol fuel wholesalers will fill up the empty plastic bottles, seal, label them and supply the packed ethanol fuels to the retailers like shops, supermarkets, local markets, fuel stations, cooperatives, MSEs, etc. The retailers will

be the main supplier of bottled ethanol fuel to the urban and rural households, and institutions. The bottling size interest of the surveyed target segments showed that 5 litres, 2 litres and 1 litres for the urban and rural households and 10 litres for the institutions.

- The ethanol stoves are produced locally as well as in other countries. These production units are the main supplier of the ethanol stoves to ethanol stove wholesalers. In this market chain there will be two major wholesalers, the stove importers and stove producers, who will supply the ethanol stoves to retailers. The ethanol stove retailers will be the main supplier of the ethanol stove to urban and rural households, and institutions.
- The target users of ethanol stove and ethanol fuel are rural and urban households and institutions.

Supporting Service

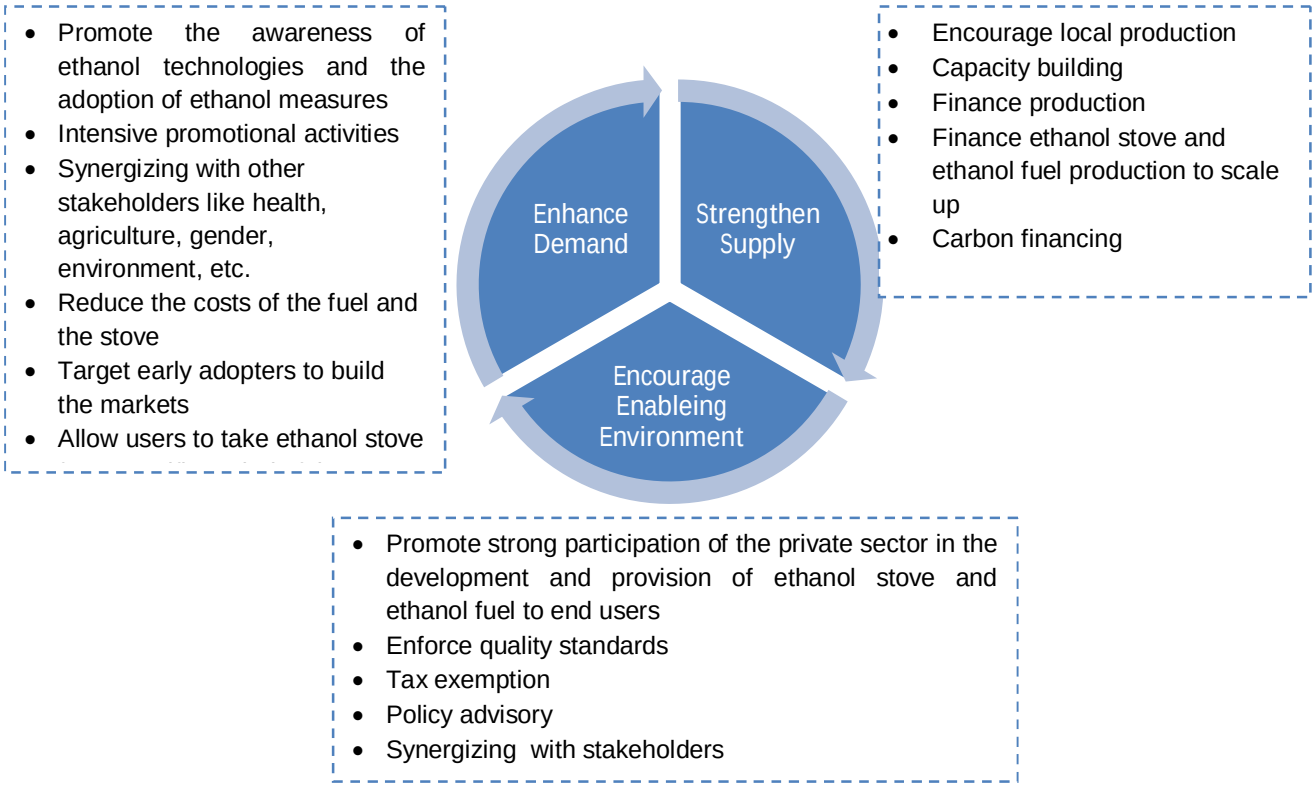
The supporting service providers are the major facilitator that enables the ethanol stove and fuel accessible and affordable.

- A **financial service provider** plays a big role in enhancing the ethanol market by supporting the marketers to be sustainably active in the market. The investment cost of ethanol stove importers/producers as well as ethanol fuel demands high capital. Wholesalers and retailers might also need financial support.
- If **transportation system** is also well coordinated, it will play important role in accessibility of ethanol fuel and stove.
- **Input suppliers**: farmers who supplies the feedstock (sugarcane) to the sugar factories and other appropriate feedstock to the EMD operation sites, Polyethylene suppliers to plastic bottle producers and metal suppliers who supplies the metals as raw material to those who are producing the stoves are the major input suppliers.
- **Market linkage**: market linkage is the backbone of the overall market mapping system. The linkage has to be established strongly in every steps of the value-chain in order to enhance and maintain the desired sustainable ethanol fuel and stove market.
- **Market Information:** Market information is very important throughout the overall value chain system. Every steps should go hand in hand with the updated market information for a better result.
- **Product diversification:** There is a need to have diversified products that can address the need for different market segments as well as that can more facilitate the overall promotion of the ethanol fuel and stove. This process should be continuous based on the market respond. For instance in order to address the need of institutions there is a need to have a new product as the current model is not compatible with mass cooking. A new product on the distribution chain can also be designed for better facilitation of the distribution process.

Promotion and Marketing Strategy

The marketing strategy of ethanol stove and ethanol fuel is defined based on the pillars that are enhance the product demands, strengthen the supply and encourage the enabling environment. Each pillar is found out as basic elements to create sustainable ethanol market.

Figure 43: Pillars for Marketing Strategy



Market Segmentation

Ethiopia is a much diversified country. The cooking habit and the type of food are different from place to places. Besides, the economic factor as well as the characteristics of decision making for purchasing new products is also diverse from one household to another. Thus, before developing the promotional tools it's very critical to work on market segmentation to design a marketing mix that precisely matches the expectation of targeted ethanol stove customers.

The purpose of Market segmentation is to define and subdivide a large homogenous market into clearly identifiable segment having similar needs, wants or demand characteristics. Consequently, the market segmentation for ethanol stove can be described as follows:

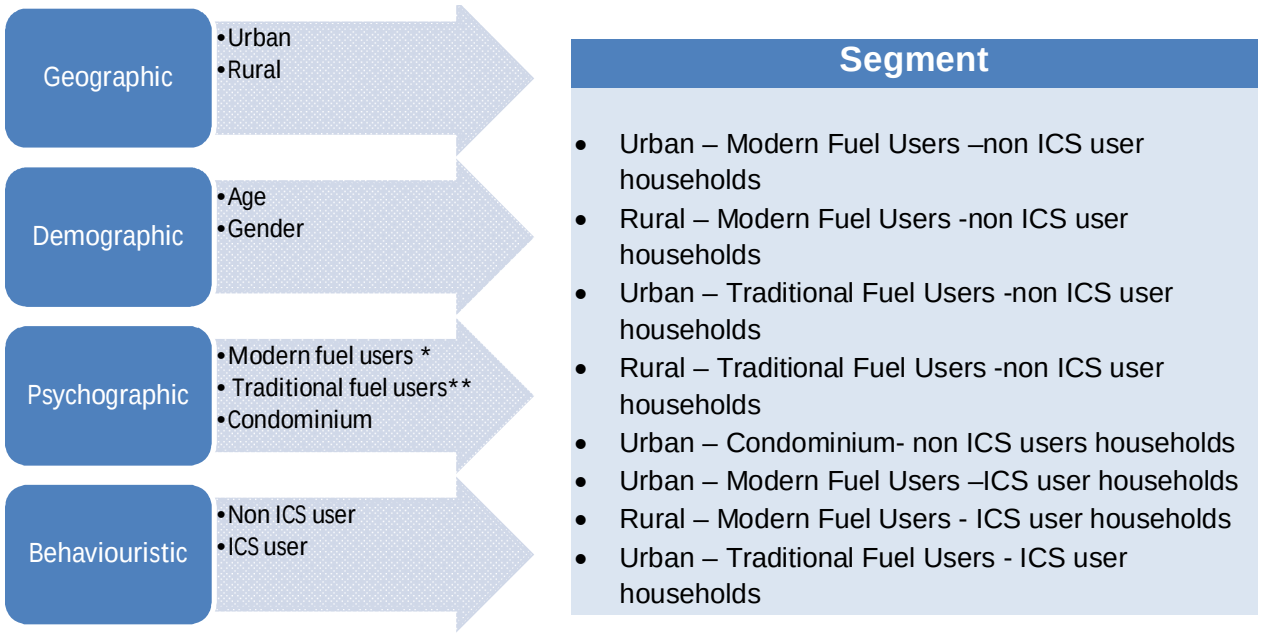


Figure 44: Market Segmentation of Ethanol fuel/stove

* (Kerosene, LPG & Elec.), ** (Charcoal, fuelwood, BLT)

The first segmentation is taken by considering the households settlement as urban and rural household targets. Following, modern fuel users (kerosene, LPG & Electricity) and Traditional fuel users (charcoal, fuelwood, BLT) are also taken as major ethanol market segmentation since the needs of the ethanol fuel and ethanol stove are highly depending on the type of fuel and stoves that the household are currently using. The study reveals that, fuel price plays significant role in shifting from one type of fuel to the other in almost all types of fuels as people are looking for cheaper type of fuel. Shift to better quality fuel is also one factor mainly for low grade fuel users that is fuelwood. Besides, from the assessment it was also able to understand that 83% of the total households who are living in condominium and who used to use kerosene are no longer using the kerosene fuel since they are shifting to the condominium houses. These households have said that cooking with kerosene is no longer comfortable in the condominiums. Therefore, since the percentage of the kerosene fuel shift is enormous it is believed that targeting condominium houses as one market segment is important. In addition, those who are using ICS and non ICS are also taken to be segmented to the ethanol market, as looking for better fuel and stove type is identified as one factor for the shifting from one fuel/stove type to the other. These behavioural changes are also making

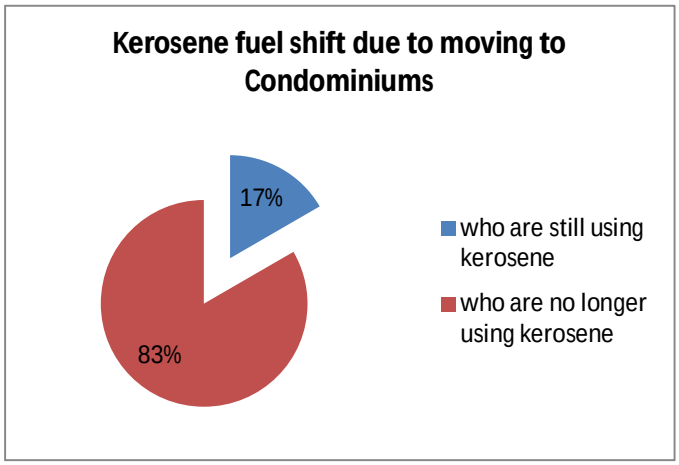


Figure 45: Kerosene fuel shift due to moving to Condominiums

the households to use the ICS. Therefore, targeting ICS user and non ICS users are taking in to consideration while working the market segmentation.

Market Mix Model:

Social marketing is a major strategy for the dissemination of ethanol stove and fuels to the end users. In order to implement the social strategy it is important to look into marketing model used the five popularly known market mixes that are product, place, price, promotion and people.

Figure 46: Market Mix Model

When marketing any products there is a need to create a successful mix of the following market factors to the right people and with the right people:

- the right product
- sold at the right price
- in the right place
- using the most suitable promotion
- to the right people

Product

Ethanol stove: Available in one or two burners, the clean cook uses a spill proof fuel canisters that hold up to 1.2 litres per filling, sufficient for a family's daily needs (4 ½ hours at full power), the stove rates at 65% efficiency and burns as hot as an LPG stove. It has a life of 10+ years. The stove known for safety, durability and power. It produced very low emissions and no soot. Therefore, our product's feature is cleanness, efficient, easy to use and durable which can be appreciated by the potential customers segments.

Ethanol Fuel: currently the fuel is being produced from by-product of sugar factories mainly from the three state owned sugar factories Methara, Fincha, and Tendaho. As per the annual ethanol production plan of the Ethiopian Sugar Corporation, 41.2 million litre of ethanol expected to be produced in 2006 E.C. And this figure will be raised to 134.6 million litre by 2007 by incorporating the production capacity of five new sugar factories. In this

context though the huge share of the produced ethanol will be used for fuel blending due to the excess production of ethanol, there will not be a problem to address the created demand of ethanol for cooking through the effort of the upcoming scaling up project. Therefore, as the ethanol fuel is locally produced and also its production volume will be significantly raised it can be successfully distributed to the potential customer segments.

Price:

Ethanol stove: There are two types of ethanol stoves i.e. single burner and double burner. There are two type of single burner stoves in the market, the imported one and locally produced one. The imported one costs ETB 1,300.00 and the locally produced one costs ETB 385.00. The double burner stove is mainly the imported one and it costs ETB 1,900.00

Ethanol Fuel: The price of ethanol is escalated from year to year. The recent revised price of ethanol for cooking is ETB 14.00 when it reaches to consumers. This price is inclusive of VAT. The fuel can be distributed in two ways.

The **first one** is through fuel stations that are willing to incorporate ethanol fuel as part of their product using dispensers similar to how they sell kerosene. The existing distribution channel i.e. through the MOKOBU, MGHMEE and Gaia Association can also remain as distribution channel as it helps those institutions to assure their customers, who bought stove from them, that they also sustainably supply them the fuel with the right quality standard.

The **other alternative supply mechanism** is distribution of bottled ethanol at different sizes so as to increase its outreaches. This can attract more private sectors to actively engage in the bottling process and distribute to different market chains as required. The existing distributors as well as fuel stations can also jump-in the bottling process and /or distribution of the bottled ethanol. The second option might increase the price of ethanol as it has additional cost i.e. the bottling process and the bottle itself. If the existing profit margin can have a room to buffer the bottling process cost then the only additional cost will be the price of the bottle. Through the discussion with the private sector that is going to be engaged in the bottling process, efforts should be done to make the additional bottle cost as one time cost so that in the future consumers can buy the fuel by changing the bottle that the consumers has already bought similar to the case of soft drink and beer bottles. The estimated price of the bottled ethanol in different volume sizes is given below.

Table 7: Estimated price of bottled ethanol

No.	Pet Bottle Size (litre)	Pet bottle Price (ETB)	Price of ethanol per litre (ETB)	Total Price (ETB)
1	1	3.65	14	17.65
2	1.5	4.23	14	25.23
3	2	4.28	14	32.28
4	5	12.44	14	82.44

For successful market introduction the price must be right. Consumer will need to buy in large numbers to produce a healthy profit and sustainable market. This fact should be well addressed by the ethanol producers and suppliers.

Place:

The ethanol fuel and stove must be in the right place at the right time. Making sure that both products arrive when and where they are wanted is an important operation. Therefore, we need to devise efficient market system that composes of the right market actors in the overall value chain.

Promotion: The potential customer segments need to be made aware of the existence and availability of the ethanol fuel and stove through promotion. Successful promotion at the end helps to spread costs over a larger output. Therefore, in order to boost the ethanol stove and fuel markets, Intensive promotional activities are very crucial.

Following the types of promotional tools with respect to selected media are described in several ways.

Proposed Promotional Tool Vs Market segmentation

Table 8: Promotional Tools

Code	Promotional Tools
1.	Billboards
2.	Signboards
3.	Leaflets (promotional , user manual)
4.	Posters (promotional, user manual)
5.	Newspaper
6.	Giveaway materials (pen, keychain, matchbox, etc.)
7.	TV advertisements
8.	Radio advertisements
9.	Radio programs
10.	TV programs
11.	Sponsoring media programs
12.	Stove Demonstration
13.	Exhibition and trade fairs
14.	Stakeholders workshop
15.	Stove award to prominent individuals
16.	SMS through mobile phones
17.	Mobile video units

Table 9: Market Segments Versus Promotional Tools

Segment	Promotional Tool																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Urban – Modern Fuel Users –non ICS user households	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X
Rural – Modern Fuel Users - non ICS user households	X	X	X	X			X	X	X	X	X	X		X	X	X	X
Urban – Traditional Fuel Users -non ICS user households	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X
Rural – Traditional Fuel Users -non ICS user households	X	X	X	X			X	X	X	X	X	X		X	X	X	X
Urban – Condominium- non ICS users households	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X
Urban – Modern Fuel Users –ICS user households	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X
Rural – Modern Fuel Users - ICS user households	X	X	X	X			X	X	X	X	X	X		X	X	X	X
Urban – Traditional Fuel Users - ICS user households	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X
Rural – Traditional Fuel Users - ICS user households	X	X	X	X			X	X	X	X	X	X		X	X	X	X

People: the pure commercial marketing approach is a development activity taking into consideration of people. The stoves and the fuel will be used by the people and it involves several stakeholders and market actors to disseminate in both urban and rural areas.

Key Messages

During the assessment, it was tried to understand the key elements that users are looking or expecting from the ethanol stoves. Both the urban and rural households have indicated that they are looking for cheap fuel and cheap stove followed by safety and speed for cooking.

Based on the findings and in order to win the customers' demands the following key messages are selected and proposed to be used in every promotional tool that are going to be produced.

- Affordable!
- Safe!
- Fast Cooking!

Usually households and other potential users are considering prices of ICS as very expensive which cannot be affordable by them. In this case in order to convince them that the ICS is affordable it is advisable to use key message that adopts comparison advertisements, for instance explain the price of the stove as well as the fuel in terms of their common products. The comparison can be in terms of chicken, wheat, maize, eucalyptus tree, etc. based on what the households especially the rural ones are engaged in producing. This will help them to easily understand the price of the stove as well as the fuel as it is interpreted in terms of the product that are well acquainted with.

Preferred means of information to know about ethanol

In order to promote the ethanol stove and ethanol fuel to the urban and rural households it was tried to identify the preference means of information by the potential customer segments.

As it has already been described in detail in the awareness section of this report at country level, Television, Radio & Other[16] are the first top three with the percentage of (34%, 24% and 18% respectively).

Looking at the urban context; Television, Radio and Other with the percentage of (59%, 20% & 10% respectively) and in the rural context; Radio, Other and Agricutural Expert with the percentage of (27%, 23% and 22% respectively) are found to be the first top three prefered medias respectively.

Therefore, as per the findings of the assessment, it's recommended to focus on those top three promotional activities with mix of other types of promotional activities that are recommended in the above section.

[16] Other is mainly represented by Neighbour, kebele and friends.

Preferred TV and Radio Stations.

As broadcasting advertisement is one of the key marketing tools commonly used in the country, the assessment tried to capture the TV and Radio stations mainly used by the potential customer segments. Though there is no much optional channels of TV in Ethiopia, the result revealed that 69% of them are preferred ETV followed by 11% EBS and 8% TV Oromiya. Similarly for radio programs the top three selected radio stations are National radio with 33%, followed by Radio Oromiya with 25% and Fana FM. 21%.

Preferred TV and Radio Programs

While looking into preferred TV and radio programs Drama and news, Drama, and News are taking 33%, 29% and 26% respectively. Therefore, it is recommended that the TV commercials to be aired during Drama and News times to reach its target.

Similarly the respondents in both urban and rural area have suggested to air radio advertisements during NEWS followed by Drama and News, Drama, and News and Sport with percentage of 60%, 11%, 7%, and 7% respectively. This indicated that the higher percentage is during the news. Therefore, for radio advertisements it's highly recommended to air the advertisements between news times.

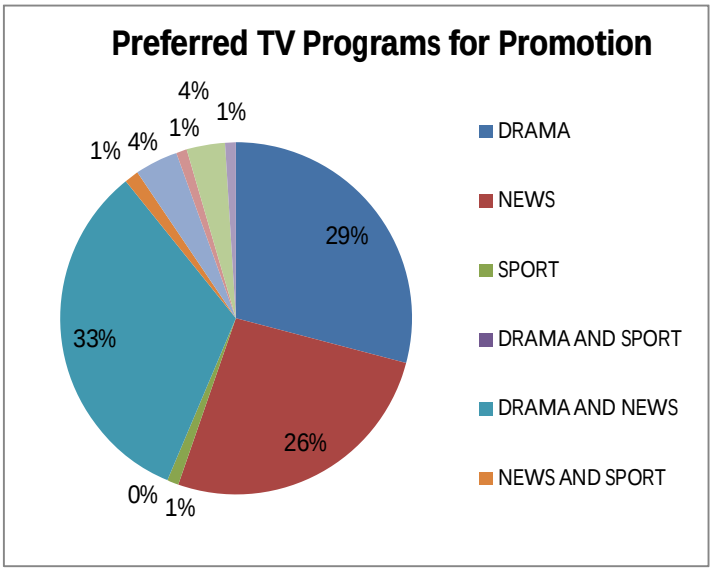


Figure 47: Preferred TV Programs for Promotion

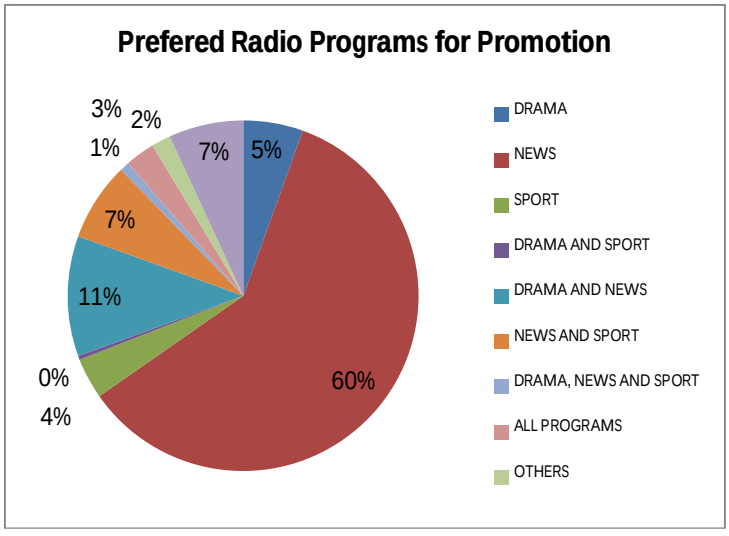


Figure 48: Preferred Radio Programs for Promotion

Points to be considered while developing promotional tools

Use simple language: The messages that needs to be used for promotional materials should be targeting different groups of people with social, demographic and economic characteristics. (e.g. gender, age, educational background, lifestyle, urban, rural, high income, low income, etc.) Our message must consider all those factors to reach more people. Influential wordings and message that can answer the needs/expectation of the users towards those products/services as well as with product benefits, features as per the Unique Selling Proposition (USP) should be developed to be used through selected promotional tools

Use celebrities: Celebrities are powerful to convince more people and that is why they become famous. Most people are intending to pay attention to famous people. People want to use what the celebrities are using and may think that the product is best.

Short message: It is very important to keep the length of the advertisements precise, specific, and to the point. People do not give attention for long talks. Beside, most types of advertisements are expensive. Therefore, our messages have to be simple, clear and short as much as possible.

Create a memorable image: Simple but unexpected is often the best route to take. The image that we need to develop must be recognizable not only instantly but long after. Well-designed logos are a best way for appealing image that will stick in the mind of viewers. Commonly used style or format used by promotional materials will keep audiences in track (e.g. Cooperate design guidelines, jingle, key messages, models, colours, etc. repeat them over and over)

Include all relevant messages: In order to have a comprehensive message first it's very important to list down the messages that we want to include in our advertisement. Those messages can be expressed in the advertisements either in written or dialogue or image forms.

Gender sensitive: Cooking practice is mostly taken as women's headache while it requires both genders' attentions as they both are benefiting. Make men's to be involved in household cooking issues as most of the times they are the one who has the purchasing powers.

Analogy: An analogy comparison between products made for purpose of explanation or clarification that can help customers to make decision. However, this need to be done very meticulously as it also may create a vice versa result

Not imitate other advertisements: The advertisement that we want to use must be genuine. There is a very high computation of different products in the market and every second several types of advertisements are deployed through different media. Uniqueness is a key element for good advertisement to be recognized.

Humour: It grabs people attention and it's a powerful persuasion technique. When we laugh, we feel good. It helps to connect the good feeling to the product. Making the consumer laugh, thereby making our products more likeable and memorable!

Bring positive image: Our message must bring positive images to get the attention of the targeted group and convince that our product is the best solution for their problem.

Only truth: Never lie about your product. Bad news is very fast to reach to more people that good news. If something wrong found out about our product from what is being told in our advisement, whatever weight it has, it demolish the market of our product so fast.

Fact base: Facts are easy to be recognized and good ways of proofing the products as they are best. Besides it will give a chance to audiences to compare the products with other issues in a simple form.

Jingle: Crating strike and memorable future by creating good jingle for the product which may remain in mind of the target group long after.

Association: Its one of a persuasion technique that tries to link a product or a service with something already liked or desired by the targeted customers.

Challenge Customers: good to create a message that challenges customers to think of a good reason why not to purchase a product.

Repetition of Key Messages: Getting our product to stick by repeating key messages in our several promotional tools. Our key messages must be designed systematically.

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