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Ashden India
Renewable Energy Collective

COOKING ENERGY SERVICE DECISION SUPPORT TOOL

USER HANDBOOK 2015

Funded by GIZ & Developed by AIREC

COOKING ENERGY SERVICE DECISION SUPPORT TOOL

A User Handbook

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Funded by

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Prepared by

Ashden India Renewable Energy Collective (AIREC)

Authors

Priyadarshini Karve

Saili Jahagirdar

Coordination and editing

Smita Rakesh

Design and layout

Swapnil Gaikwad

Photo credits

Saksham Nijhawan

Tool funded by GIZ and developed by Ashden India Renewable Energy Collective (AIREC).

PREAMBLE

Cooking energy is a daily need for every household. It touches multiple social, socio-economic, political, and environmental aspects. Majority of people in India still cook on firewood and other solid biomass fuels. Majority of people also aspire for LPG for cooking, not just because of its convenience and cleanliness but also because it is a 'modern' cooking technology.

With the exception of LPG and electricity - based cooking technologies, manufacturers as well as distribution networks have emerged mostly in response to the criteria set by government schemes, or national and international agencies concerned primarily with either health or environmental impacts.

The consumers (the actual end users, i.e., cooks, the heads of the family who make the ultimate buying decision, and other family members) have remained outside this entire process unless product developers and disseminators have specifically sought their inputs and involvement. As a result, the cooking energy service that needs to be delivered by an energy device has not been paid much attention. The focus has remained mostly on attributes that are perceived as important and beneficial for the consumers by other stakeholders, but not necessarily by the consumers themselves.

The broad purpose of the AIREC Cooking Energy Service Decision Support Tool is to bring the delivery of cooking energy service to the consumers, at the centre of the decision making process for zeroing in on products to develop/promote/market, while not sacrificing on the overarching environmental and health considerations. However, so far there was no simple way to evaluate all the various products available on a comparative scale, to enable this shift, in an objective and technology-neutral manner. The tool tries to address this lacuna.

The Cooking Energy Tool provides a mechanism that allows various cooking energy products to be compared on a common footing with respect to the quality of 'service' desired by the stakeholders and without any bias towards or against any one type of technology. The 'service' parameters have been defined so as to address the concerns of the various stakeholders related with the cooking energy sector.

The tool was funded by GIZ and developed by Ashden India Renewable Energy Collective (AIREC). The core team comprised of Priyadarshini Karve, Rekha Krishnan, and Svati Bhogle, while inputs were sought from a wide spectrum of experts, policy makers, researchers, manufacturers, practitioners, consumer representatives from various fields related to cooking energy technologies ranging from wood burning stoves to LPG. The methodology recommended by the tool has also been field tested at eleven locations in different parts of India, with the help of local organisations.

INTRODUCTION

The **AIREC** Cooking Energy Decision Support Tool or Cooking Energy Tool, in short, is a decision support tool, developed to capture the priorities of all the relevant stakeholders for selection of the most appropriate solution as a household cooking energy device. The broad purpose of the Tool is to ensure that 'the delivery of cooking energy service' to the end user is at the centre of the decision making process for product selection, without sacrificing on the overarching environmental and health considerations. While this need has been felt for a long time, so far there was no simple way to evaluate all the various products available on a comparative scale, in an objective and technology-neutral manner. This tool tries to address this lacuna. The service parameters have been defined so as to address the concerns of the various stakeholders related with the cooking energy sector.

The tool is available open-source, for everyone to use and can be accessed from the AIREC website (www.ashdenindiacollective.org). In order to ensure that the tool is used effectively and the results are interpreted correctly, AIREC conducts regular training programs for different stakeholder segments. GIZ is providing support to conduct some of these trainings.

WHO SHOULD USE THE TOOL AND WHY?

The tool can help decision making at various levels in the cooking energy sector, as described in Table 1.

Table 1: Tool users and expected outcomes

Stakeholders	Outcomes
Distributor and Project Implementer	Which cooking energy product is more likely to be acceptable and successful in a given area/socio-economic group?
Manufacturer and Technology Developer	How ready are people in different areas/socio-economic groups, etc., to accept a particular cooking energy product? What needs to be improved in a given product? What needs to be highlighted in marketing a given product for a specific target audience, or in general? What new products need to be developed or new features added to existing products to deliver better cooking energy service?
Regulator and Funder	How do various available products rank in meeting cooking energy service requirements in various locations/project areas, etc.? How can "graded" incentives be provided to create a level playing field for various products, on the basis of what priorities of which stakeholders are met to what extent? How can awareness campaigns etc., be designed to change cook/buyer preferences, to bring better alignment between local and global concerns?

WHAT IS COOKING ENERGY SERVICE?

Total seven characteristics with three sub-characteristics each have been identified as cooking energy service parameters through a consultative process involving stakeholder groups in different parts of India. We believe that these parameters collectively represent the cooking energy service as perceived by all stakeholder groups.

The following stakeholder groups have been considered:

- Cook
- Buyer (Decision Maker / head of family)
- Manufacturer (including installer, builder, etc) and Technology Developer
- Distributor (including all elements in supply chain up to last mile retailer) and Project Implementer (Government or Non-government welfare agencies)
- Regulator (National / International policy and law makers) and Funder (donors, lenders, etc)

The service parameters and whose concerns are addressed by them are described in Table 2.

Table 2: Cooking Energy Service Parameters

	Characteristics		Sub-Characteristics	Description	Addresses Concerns of
A	 Versatility_1	A1	Boiling Performance	Time taken to bring water to boil from room temperature, with recommended procedure of use. Important for rice and curry making.	Cook, Buyer
		A2	Roasting Performance	Time taken to increase the temperature of a girdle to 200 deg C starting from room temperature, with recommended procedure of use. Important for roti making.	Cook, Buyer
		A3	Frying Performance	Time taken to increase the temperature of oil in a frying pan to 200 deg C starting from room temperature, with recommended procedure of use. Important for cuisine consisting of fried foods.	Cook, Buyer
B	 Versatility_2	B1	Time for 'TEMPERATURE CHANGE'	Time from carrying out the recommended procedure for temperature change to actual detection of change in temperature at the heat transfer interface by 5 deg C.	Cook
		B2	Ability to cook multiple items simultaneously	Number of items that can be cooked at the same time.	Cook
		B3	Ability to deliver non-cooking thermal energy services	Number of heat-based non-cooking services available as a bye product of cooking such as hot water, or space heating, or food drying, etc.	Cook

C	 Economics	C1	Operating expense	Cost of fuel/energy source for one day's cooking	All stakeholders
		C2	Capital cost per year of expected life	MRP in Indian Rupees divided by expected lifetime in years as per the specifications given by the manufacturer	All stakeholders
		C3	Possible earning from use	Does the recommended process of use of the device lead to production of any saleable bye products? Does the device get carbon credits the income from which is passed on to the user? Does the device have a nonzero scrap value after being used as a primary cooking device over the expected lifetime? Does the manufacturer offer a discount on new device purchase on return of used/scraped device?	Cook, Buyer
D	 Safety	D1	Smoke and Soot Emissions	Measurement as per the national/ international air quality standards and corresponding test protocols applicable to the technology	Cook, Manufacturer, Project Implementer, Regulator, Technology Developer
		D2	Stability	Place the device with the cooking vessel size recommended by the manufacturer on a tiltable platform. The angle of tilt at which the assembly topples over is a measure of stability.	Cook, Manufacturer, Project Implementer, Regulator, Technology Developer
		D3	Temperature of Outer body	Measurement of temperature of the outer surface of the device, as per the national/ international standard test protocol applicable to the technology	Cook, Manufacturer, Project Implementer, Regulator, Technology Developer
E	 Device Supply & Support	E1	Installation required or not	Some technologies require assembly and installation, whereas some are ready to use on unpacking.	Manufacturer, Distributor, Project Implementer
		E2	Support provided or not	User training or sufficiently detailed training manual - pictorial and/or multi-lingual, service and maintenance support, replacement warranty, credit or instalment or any other user-friendly payment options	Cook, Buyer, Manufacturer, Distributor, Project Implementer
		E3	Manufacturing capacity	How many units are manufactured per month?	Distributor, Project Implementer, Funder
F	 Environmental Impacts	F1	Energy Efficiency	Test to be conducted as per the national standard (if not available, then international standard) for that particular type of device	Buyer, Manufacturer, Project Implementer, Funder, Regulator, Technology Developer
		F2	Carbon Emission Reduction Potential	How much green house gas emission is avoided by replacing the three stone fire with the given product, calculated using standard methodologies, recommended by UNFCCC or Gold Standard, etc?	Funder, Regulator
		F3	Carbon footprint over lifecycle	Green house gas emissions resulting from manufacture, wear and tear during use, and disposal at the end of useful life of the cooking energy device	Funder, Regulator
G	 Fuel/ Energy Source	G1	Multi-fuel or not	Can the stove be operated with various fuel types or only specific standardised fuel is required?	Cook, Buyer
		G2	Availability of fuel/ energy source locally	Is the fuel/energy source recommended by manufacturer available locally or not?	Cook, Buyer, Distributor
		G3	Fuel processing required by user or not	Can the available fuel be used directly or requires some processing by the user before use?	Cook

HOW TO USE THE TOOL?

The tool has two parts.

Part 1 allows the tool user to get an idea of the preferences of various stakeholder groups, for the various cooking energy service parameters, separately and collectively.

Part 2 is to be used if the tool user has already shortlisted potential products. It allows the tool user to get 'score cards' for the products under consideration. The actual performance of the products can then be mapped onto the preferences of the stakeholders, to get an idea of the extent of acceptance for each of the products under consideration, for each stakeholder group separately, or collectively for all stakeholder groups.

Data collection, data entry and analysis formats are provided in the form of excel worksheets. The calculations involved in the analysis are built into the worksheets, and the outcomes for both Parts of the Tool are obtained in the form of tables and charts, that are easy to interpret for most purposes, as well as allowing deeper analysis, if required.

PART 1 OF THE TOOL

The implementation of the Part 1 of the Tool can be mainly divided into three steps as below:

DATA COLLECTION

The data collection templates are explained in Appendix A. The printable templates are worksheets in the file AIREC_CESDST_DATA_COLLECTION_TEMPLATE.xlx.

Table 3: Stakeholder V/s Data Collection Template

Sr. No	Stakeholders	Refer Template
1	Cook	Survey – COOK or BUYER, FGD – COOK or BUYER
2	Buyer	Survey – COOK or BUYER, FGD – COOK or BUYER
3	Manufacturer and Technology Developer	Interview – MNFCTR - TECHDEV
4	Distributor and Project Implementer	Interview - DSTRBTR - PROJIMPL
6	Regulator and Funder	Interview – REGLTR - FNDR

GENERAL GUIDELINES FOR DATA COLLECTION

- Various characteristics and sub-characteristics should be explained to the respondents. Use Table 1 for explaining meanings and descriptions of each parameter. Appendix A also gives additional tips for data collection for each template. Additionally, the explanations and examples given in Table 4 also may be found useful.
- We are using two methodologies for Cook and Buyer groups, viz. a survey and a focused group discussion (FGD). This is mainly because these are the most important stakeholders, and therefore it is crucial to understand their preferences correctly. However, in most cases these groups are likely to be semi-literate or illiterate and may find it difficult to express their preferences numerically. Surveys allow one on one interaction where the surveyor can educate the respondent regarding the parameters while FGD allows the group to discuss the parameters with their peers. Collectively, the two processes should give a fairly good picture of the preferences of these stakeholder groups. However, in case the tool is being used with a community where such a difficulty is not envisaged, any one of the two methods may be used for data collection.
- Field testing of the tool showed that certain parameters are too technical for cook/buyer groups to understand and are also irrelevant from the point of view of their perception of cooking energy service. The tool user can therefore take the approach of assigning a 0 preference to these parameters for these stakeholder groups, and taking them out of the survey/FGD formats.

  This is allowed ONLY for the following parameters:

E3: Manufacturing Capacity

F2: Carbon Emission Reduction Potential

F3: Carbon Footprinting over lifecyle

  However, do not take the main charcteristics (i.e., E: Device supply and support, and F: Environmental impacts) out of the questionnaire.
- The surveyor/interviewer should take care not to guide the respondents in deciding on their preferences. They should limit their explanations only to conveying what each parameter refers to in the context of the cooking energy service.

HOW TO USE THE EXCEL FILES FOR DATA ENTRY AND ANALYSIS

We recommend that you keep a master copy that can be used as a reference, and make a copy to use for data entry and analysis.

DATA FILE

Refer to the excel file named **AIREC_CESDST-DATA.xlsx.** Hereafter, this file is refered as DATA file. There are worksheets assigned to each stakeholder group in this file. Please add the data for ALL respondents in a stakeholder group in ONE worksheet, corresponding to the relevant template. For example, data from surveys of all Cooks will go in one worksheet titled 'Survey - COOK'. The data from surveys of Buyers should not go into this worksheet, but the worksheet titled 'Survey - BUYER' should be used for the same. The data from interviews of all Manufacturers and Technology Developers should be entered in a single worksheet titled 'Interview - MNFCTR - TECHDEV, etc.

REFER SHEET: PRIMARY INFORMATION

Insert data in green highlighted cells. The values in these cells would be either 0 or 1.

ON EACH WORKSHEET:

Column A in the sheet is the questions asked during the survey. **DO NOT EDIT OR CHANGE ANY INFORMATION IN THIS COLUMN.**

- Each subsequent column is dedicated to one respondent. Fill answers pertaining to each respondent against the respective questions.
- For textual entry, if the answer is not known, leave the cell blank.
- For numerical entry, type appropriate value. Do not leave any cell blank. If the value is not known, enter '0'.

DO NOT EDIT OR CHANGE ANY INFORMATION IN THE 'AVERAGE' COLUMN.

- If you need to add more columns for respondents in any of the worksheets, please add the columns **BEFORE** the Average column.
- Please cross check that the preference weights assigned to the three sub-characteristics in each group, add to 10, and the preference weights assigned to the seven main characteristics add to 20, for each respondent. Do not enter the input of a respondent if either of these checks fails.

ANALYSIS FILE

Refer to the excel file named **AIREC_CESDST_ANALYSIS.xlx.** Hereafter, this file is refered as **ANALYSIS** file. There are four work sheets within this, of which the first two refer to Part 1 of the tool.

Only the cells highlighted in **GREEN** colour have to be filled by the tool user.

FOR SHEET 'STAKEHOLDER DATA'

- Please decide and enter skew value against a stakeholder category. The tool users have to decide the skew value themselves.
- In case some stakeholder groups have not been considered for data collection, please assign the value 0 to their skew.
- The skew values to be assigned depend on the number of stakeholder groups for which data has been collected. For example, if four stakeholders are considered, the most important stakeholder may be assigned the skew value 4, and the least important stakeholder may be assigned the skew value 1.
- Preferably the highest and second highest skew values should be assigned to Cook and Buyer. In any case, the skew value for these two stakeholder groups should **NEVER** be set to zero.
- In case the tool users do not want to discriminate between the stakeholders, the skew value 1 should be assigned to ALL stakeholders being considered.

- In the ANALYSIS file, go to 'Data' 'Edit Links', and ensure that the path and file name of the linked DATA file is correct.
- In case the ANALYSIS file does not appear to be automatically updating, please check if a 'security warning' is informing that the file has not been automatically updated. You will have to enable updating for the Tool to proceed.

DO NOT EDIT OR CHANGE ANY OTHER INFORMATION ON THIS WORKSHEET. All the cells other than the skew will get populated automatically once the DATA file is populated, and correctly linked.

FOR SHEET 'OUTCOME-STAKEHOLDER'

DO NOT EDIT OR CHANGE ANY INFORMATION IN THIS SHEET.

- This sheet is for observation and analysis purpose only. The tables and graphs will get automatically populated. No data entry is required in this sheet.

HOW TO INTERPRET OUTCOME?

Once all the data is filled in into the DATA file and appropriate skew values are filled in into the ANALYSIS file, the output can be seen in the form of conditionally formatted tables and bar charts on the worksheet 'Output – Stakeholder' of the ANALYSIS file.

The first table and chart represent stakeholderwise preferences for the various cooking energy service parameters, in a comparable form. The cells in the table are formatted such that coloured bars appear in each cell, the length of the bar being proportional to the value of the stakeholder preference index in that cell. In the bar chart, each bar represents a specific stakeholder's (colour of the bar) preference index value (height of the bar) for a specific parameter.

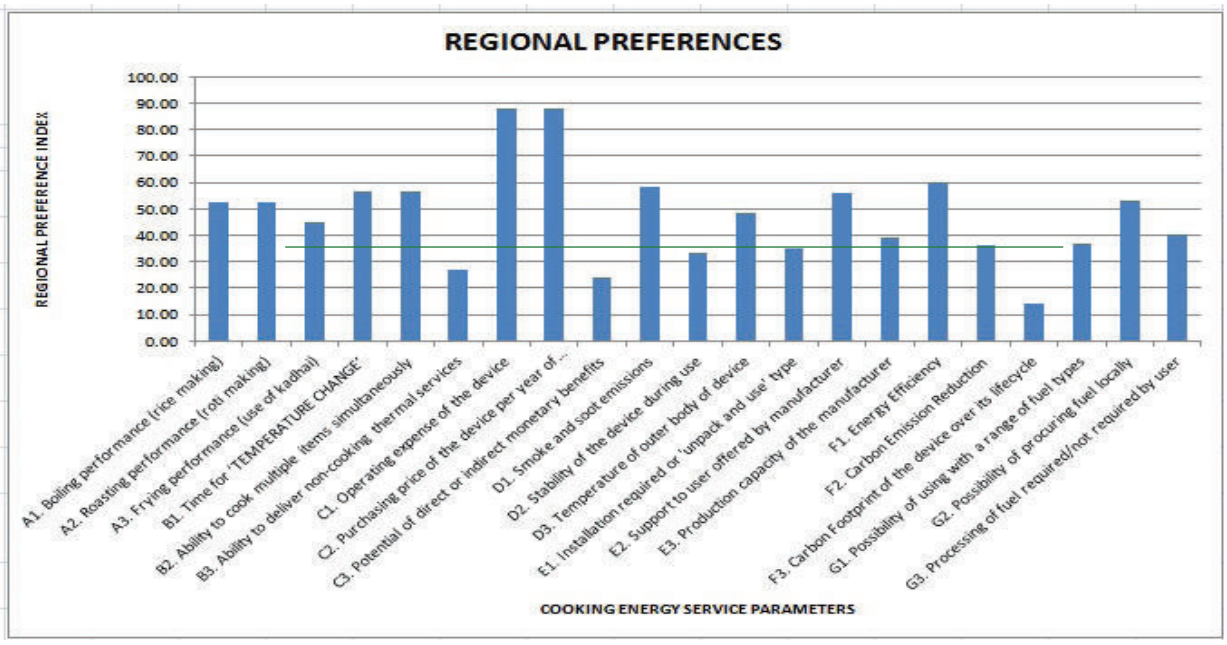
This is an example of how the table may look like. In this case, data is collected from Cook, Buyer, Project Implementer, and Technology Developer stakeholder groups.

		STAKEHOLDER PREFERENCE INDEX				
CHARACTERISTICS	SUBCHARACTERISTICS	WEIGHT*SKEW				
		COOK	BUYER	MANUFCTURER / TECHNOLOGY DEVELOPER	DISTRIBUTOR / PROJECT IMPLEMENTER	REGULATOR / FUNDER
Versatility_1	A1. Boiling performance (rice making)	14.00	10.50	10.50	10.50	7.00
	A2. Roasting performance (roti making)	14.00	10.50	10.50	10.50	7.00
	A3. Frying performance (use of kadhai)	12.00	9.00	9.00	9.00	6.00
Versatility_2	B1. Time for 'TEMPERATURE CHANGE'	12.00	15.00	10.50	12.00	7.00
	B2. Ability to cook multiple items simultaneously	12.00	15.00	10.50	12.00	7.00
	B3. Ability to deliver non-cooking thermal services	6.00	0.00	9.00	6.00	6.00
Economics	C1. Operating expense of the device	16.00	20.00	20.00	16.00	16.00
	C2. Purchasing price of the device per year of expected lifetime of the device	12.00	20.00	20.00	16.00	20.00
	C3. Potential of direct or indirect monetary benefits	12.00	0.00	0.00	8.00	4.00
Safety	D1. Smoke and soot emissions	6.00	12.00	15.00	10.50	15.00

The second table and chart represent the regional preferences. This table too has been formatted such that all the regional index values that are greater than 50% of the maximum value in the column will be highlighted. In the bar chart, each bar represents a regional preference index value (height of the bar) for a specific parameter.

For most tool users, the regional preference index data may be the useful one to focus on. The parameters that correspond to the highlighted values in the table (or the parameters for which the bar heights are more than 50% of the maximum bar height in the chart) are the ones that all stakeholders collectively favour the most. Therefore any cooking energy technology to be introduced in that region, needs to score high on these parameters, to increase its chances of being acceptable to all stakeholders. The limit of 50% works quite well as long as the data is for 2-3 stakeholder groups. As more stakeholder groups are consulted, it may become necessary to consider the limit as 60-75% of the maximum regional preference index value. The conditions of the specific situation may also dictate this limit. Please use your own discretion in this matter.

The following is an example of the regional preferences graph. In this case, data is collected from Cook, Buyer, Project implementer and Technology developer stakeholder groups. The preferences of all stakeholders are given the same skew (the skew values entered in the table on 'Stakeholder Preferences' worksheet are 1 for all four stakeholders).



The tallest bar in the graph is roughly 60 units long, so all parameters for which the bars are above 30 are considered important for the region.

If the tool user is interested in a more detailed analysis, the stakeholder-wise data will be useful for answering the following type of questions:

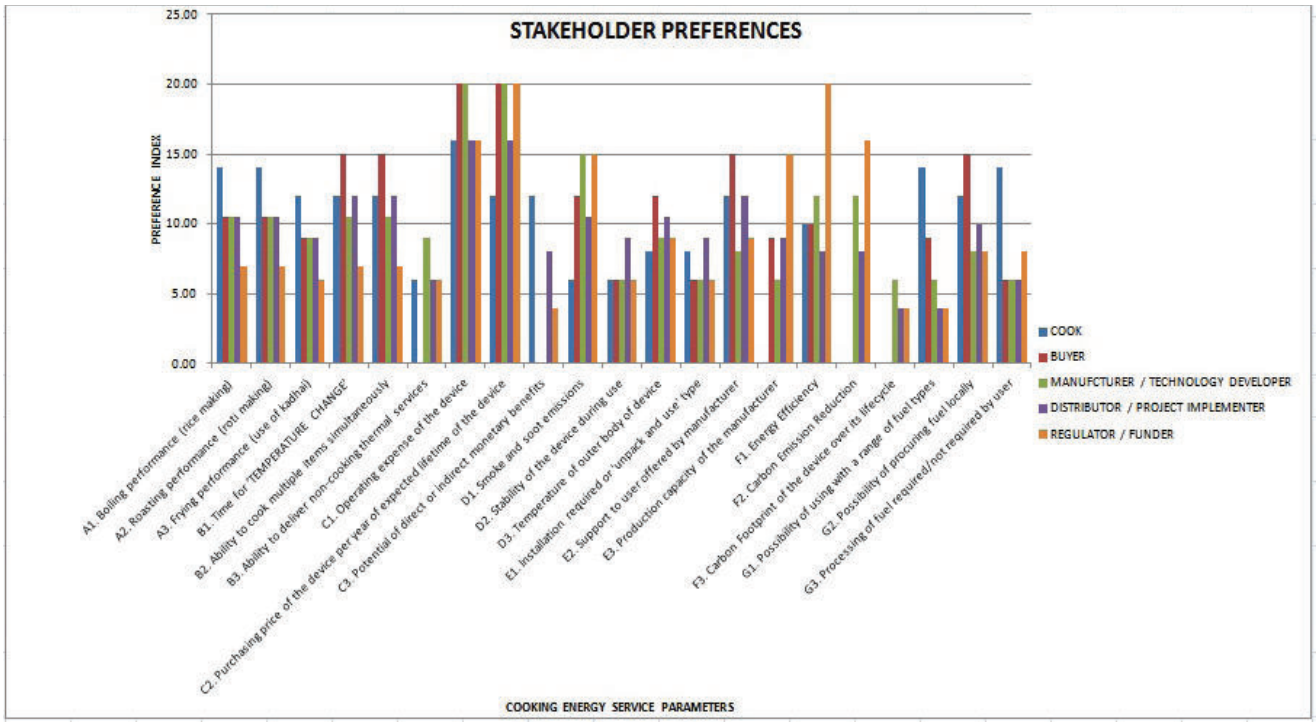
What is the mismatch between preferences of Cooks and Buyers? This can give useful inputs for marketing/awareness raising messages for these stakeholders.

What is the mismatch between preferences of Cooks and Manufacturers/ Technology Developers? This can give useful inputs for research and development to add / modify features of an existing product.

What is the mismatch between preferences of Cooks/Buyers and Regulators? This can give useful inputs for designing awareness raising messages aimed at the Cooks and Buyers. At the same time, understanding the differences is important for the Regulators to ensure that the regulations are rooted in realistic perceptions.

Using the Tool before and after an intervention in the form of a marketing/awareness raising campaign or demonstrations of specific new products, etc., will provide useful inputs into effectiveness of the intervention in changing preconceived notions, if any.

The following is an example of the stakeholder preferences graph for the same example used for the regional preference graph.



PART 2 OF THE TOOL

Part 2 of the Tool can be used to understand the acceptability of specific products, if and when a shortlist of products is being considered. For this purpose, it is necessary to evaluate the shortlisted products on the 21 cooking energy service parameters, in a way that the performances can be compared on equal footing. The marks obtained by the products, when combined with the preferences of the stakeholders, give useful insights into acceptability of the products in a particular region.

UNDERSTANDING THE MARKING SCHEME FOR PRODUCTS

Table 4: Marking scheme for evaluation of products

	CHARACTER-ISTICS	SUB-CHARACTERISTICS	EVALUATION TEST	MARKING SCHEME
		A1. Boiling performance (rice making)	Time taken to bring water to boil from room temperature, with recommended procedure of use.	Time less than 25% or more of the LPG stove time = 10, Time less than LPG stove by 10-25% = 8, Time within 10% of LPG stove time = 5, Time more than LPG stove by 10-25% = 2, Time more than 25% of the LPG stove time = 0
A	 **Versatility_1**	**A2. Roasting performance (roti making)**	Time taken to increase the temperature of a gridle to 200 deg C starting from room temperature, with recommended procedure of use.	Time less than 25% or more of the LPG stove time = 10, Time less than LPG stove by 10-25% = 8, Time within 10% of LPG stove time = 5, Time more than LPG stove by 10-25% = 2, Time more than 25% of the LPG stove time = 0
		A3. Frying performance (use of kadhai)	Time taken to increase the temperature of oil in a frying pan to 200 deg C starting from room temperature, with recommended procedure of use.	Time less than 25% or more of the LPG oven = 10, Time less than LPG oven by 10-25% = 8, Time within 10% of LPG oven = 5, Time more than LPG oven by 10-25% = 2, Time more than 25% of the LPG oven = 0
It is important for the manufacturer of the product under consideration to recommend the procedure for each of the above operations. The marks to be given are in comparison with cooking time for the same end result as with an LPG stove using the corresponding procedures suited to LPG stove.				
		B1. Time for 'TEMPERA-TURE CHANGE'	Time from carrying out the recommended procedure for temperature change to actual detection of change in temperature by 5 deg C.	Instantaneous like LPG stove = 10, Within 2 min = 8, Between 2-5 min = 5, More than 5 min = 0
B	 **Versatility_2**	**B2. Ability to cook multiple items simultaneously**	Number of items that can be cooked at the same time.	Ability to cook more than two items at a time: 10, Ability to cook two items at a time: 8, Ability to cook one item at a time: 5
		B3. Ability to deliver non-cooking thermal services	Number of heat-based non-cooking services available as a bye product of cooking such as hot water, or space heating, or food drying, etc.	Ability to perform one or more other thermal services besides cooking: 10, Ability to do only cooking: 5

It is important for the manufacturer of the product under consideration to recommend the procedure for temperature change. The marks to be given are in comparison with corresponding time for the same end result as with an LPG stove using the appropriate procedure suited for LPG stove.

	Economics	**C1. Operating expense of the device**	Cost of fuel/energy source for one day's cooking	Amount less by 25% or more of the LPG stove = 10, Amount less by 10-25% of the LPG stove = 8, Amount within 10% of LPG stove =5, Amount more by 10-25% of LPG stove =2, Amount more by more than 25% of LPG stove = 0
C	 **Economics**	**C2. Purchasing price of the device per year of expected lifetime of the device**	Use the data given by manufacturer. MRP in Indian Rupees divided by expected lifetime in years	Amount less by 25% or more of the LPG stove = 10, Amount less by 10-25% of the LPG stove = 8, Amount within 10% of LPG stove =5, Amount more by 10-25% of LPG stove =2, Amount more by more than 25% of LPG stove = 0
		C3. Potential of direct or indirect monetary benefits	Does the recommended process of use of the device lead to production of any saleable bye products? Does the device get carbon credits the income from which is directly or indirectly passed on to the user? Does the device have a nonzero scrap value after being used as a primary cooking device over the expected lifetime? Does the manufacturer offer a discount on new device purchase on return of used/ scraped device?	YES to FOUR questions = 10, YES to THREE questions = 8, YES to TWO questions = 5, YES to ONE question = 2, YES to ZERO questions = 0

For C1, the calculation depends not just on the product, but also on the specific conditions prevalent in the region under study. The tool user will have to collect the data required for this, both for LPG and the product under consideration. For example, if the product under consideration is a portable improved wood burning stove, and the area under consideration is an urban slum, the fire wood will be purchased rather than collected. If the cost of firewood is INR 15 per kg, and a typical daily meal of a representative family (say, two adults and two children) requires about 4 kg of wood, the daily fuel cost is INR 60. Suppose a family of equivalent size cooking the same meal in the same agriclimatic zone uses an LPG cylinder (14.2 kg) every 45 days, and the cost of subsidized LPG cylinder is INR 450. In that case the daily cost for cooking on an LPG stove is INR 10. Based on this comparison, the improved cookstove is much more than 25% more expensive, and will score 0.

However, if the same comparison was being made in a rural area, where generally the fuel wood would be collected rather than purchased, the daily cost of cooking on firewood would be zero. The same stove would in that case score 10 for this parameter.

In some circumstances similar conditions may come into play for C2, if the MRP of the product varies with region. Also, the expected lifetime of the product may also vary with climatic conditions. For example metallic products tend to corrode much faster in the coastal regions.

C3 is not in comparison with any reference.

		D1. Smoke and soot emissions	Measurement as per the national/international air quality standards and corresponding test protocolas applicable to the technology	BOTH CO and PM2.5 meet standards = 10, BOTH or either CO and PM2.5 are exceeding standard by not more than 10% = 8, ANY ONE or BOTH standards not met (measurement is less than the standard by more than 10%) = 0
D	 **Safety**	**D2. Stability of the device during use**	Place the device with the cooking vessel size recommended by the manufacturer on a tiltable platform. The angle of tilt at which the assembly topples over is a measure of stability.	Tilt angle more than 25% of that for LPG stove =10, Tilt angle more than 10-25% of that of LPG stove = 8, Tilt angle with 10% of that of LPG = 5, Tilt angle less than 10-25% of that of LPG stove = 2, Tilt angle more than 25% of that for LPG stove = 0
		D3. Temperature of outer body of device	Measurement of temperature of the outer surface of the device, as per the national/international standard test protocol applicable to the technology	The outer temperature of the device is equal to the room temperature =10, The outer temperature of the device is higher than the room temperature but less than 60 deg C = 8, The outer temperature of the device is higher than 60 deg C = 0.
D1 depends on the emission standards applicable in the area under consideration. From the marking scheme you can see that in view of clean cooking being a priority, the evaluation scheme is fairly intolerant. It is strongly recommended that the test data from a laboratory authorised to carry out the recommended tests as per the prevalent standards be used for marking on this parameter. Both D2 and D3 are in comparison with LPG, which is the current ideal, in terms of both the parameters.				
		E1. Installation required or 'unpack and use' type	As per instructions provided by manufacturer	Unpack and use without any preparatory arrangements (e.g., mounts, platform, piping, etc.) = 10, Requiring some level of assembly (all parts included in the pack, to be just fitted together as per instructions), DIY type = 8, Unpack and use with some preparatory arangements (e.g., mounts, platform, piping, etc.)= 5, Requires assembly with some additional components to be obtained independently, but still DIY type OR Requires installation by a trained personnel authorised by manufacturer = 2
E	 **Supply and Service**	**E2. Support to user offered by manufacturer**	As per information provided by manufacturer on the following counts: (a) user training or sufficiently detailed training manual - pictorial and/or multi-ligual, (b) service and maintenance support, (c) replacement warranty, (d) credit or instalment or any other user-friendly payment options	ALL FOUR offered = 10, ANY THREE offered =8, ANY TWO offered = 5, ANY ONE offered = 2, NONE offered = 0
		E3. Production capacity of the manufacturer	As per information provided by manufacturer	Within India, monthly output possible above XX per month =10, From outside India, monthly output above XX per month = 8, Within India, monthly output possible below XX per month = 5, From outside India, monthly output below XX per month = 2.

E1 and E2 are self evident, as defined above. In the case of E3, the tool user needs to decide on what xx will work for him/her in the given situation where the Tool is being used. For example, if the tool user is a funder that wants to select solar cookers for distribution to 1,00,000 households over two years, then they will need to purchase 50,000 solar cookers every year. This requires that the manufacturer of the product under consideration should have a production capacity of at least 5000 cookers per month. The evaluation of the product for this parameter will then be based on this number. In keeping with the national policy of 'make in India', the evaluation scheme also favours products manufactured in India, against imported products.

		F1. Energy efficiency	Test to be conducted as per the national standard (if not available, then international standard) for that particular type of device	Efficiency equal to or more than the national standard = 10, Efficiency below the national standard within 10% = 8, Efficiency less than national stanadard by more than 10% = 0
F	 **Environmental Impacts**	**F2. Carbon emission reduction**	Assuming the maximum GHG emissons of 1 ton CO_2 eq per ton of fire wood used in a traditional wood stove, the emissions can be estimated in terms of potential fuel wood saving.	GHG emissions reduced by 75% or more comapred to Firewood = 10, GHG emissions reduced by 50-75% compared to Firewood = 8, GHG emissions reduced by less than 50% of Firewood = 5, GHG emissions within 10% of that of Firewood= 2, GHG emissions more than 10% of that of Firewood = 0
		F3. Carbon footprint of the device over its lifecycle	Carbon footrprinting of the production and disposal processes. Comparison with respect to carbon footprint of LPG stove	CF less by 25% or more compared to LPG stove = 10, CF less by 10-25% compared to LPG stove = 8, CF within 10% of that of LPG stove = 5, CF more by more than 10% compared to LPG stove = 0

For F1, it is strongly recommended that test data from a laboratory authorised to conduct testing as per prevalent efficiency standard be used.

For F2, the calculation can be done using the same data of energy output Vs energy input as obtained from energy efficiency measurement, assuming a calorific value of 4200 kcal/kg for fire wood. For example: Suppose an LPG stove was being marked on this parameter. 1 kg of LPG @ 12,000 kcal/kg used with a 60% efficient LPG stove gives, 7200 kcal energy output. To achieve the same energy output with a 10% efficient traditional wood stove, using firewood of calorific value 4200 kcal/kg would require nearly 17 kg firewood. This means 1 kg LPG replaces 17 kg firewood. However, use of LPG involves a carbon emission of about 3 kg per kg of LPG used. Thus, the avoided carbon emission is 17 kg – 3 kg = 14 kg, which is 82% of that of firewood. Therefore the LPG stove will score 10 on this scale. Please note that if a product based on a renewable fuel (e.g. biogas) or a renewable energy source (e.g. solar energy) is being considered, its carbon emission can be assumed to be zero, and therefore its score will be 10 (100% emission reduction). Even a stove using renewable biomass fuels (e.g., pellets or briquettes made from organic waste) will get a score of 10. For non-renewable fuels, the data on carbon emissions can be obtained from sources available on the internet, such as IPCC Emission Factor Database. The method given here is a very approximate calculation, help of experts can be taken to make a more accurate estimation, if desired.

For F3, assistance of experts may be required, for carbon footprinting calculations based on lifecycle analysis of the products under consideration, as well as an LPG stove product already available in the same market. In the long run, we hope that manufacturers may be encouraged to provide carbon footprint information on their products. In the short term, we strongly encourage the tool users to take the help of locally available experts in this estimation. In case estimation is not practically possible for one or more of the products under consideration, 5 marks may be assigned to ALL products under consideration.

		G1. Possibility of using with a range of fuel types	Information given by manufacturer + Location specific data	Operates with varied fuel types (e.g. traditional stove operating with cowdung cakes to biomass briquettes) = 10, Operates only with a single standard fuel/energy source recommended by manufacturer (e.g., LPG) = 5
G	 **Fuel/Energy Source Related Issues**	**G2. Possibility of procuring fuel locally**	Information given by manufacturer + Location specific data	Reommended fuel(s)/energy source(s) produced using local resources within 10 km area of user household = 10, Reommended fuel(s)/energy source(s) available through supply chain within 10 km area of user household = 8, Reommended fuel(s)/energy source(s) produced using regional resources but beyond 10 km area of user household = 5, Reommended fuel(s)/ energy source(s) available through supply chain but beyond 10 km area of user household = 2
		G3. Processing of fuel required/not required by user	Information given by manufacturer + Location specific data	No processing required =10, Processing time less than XX min = 8, Processing time XX min = 5, Processing time more than XX min = 2

G1 is self evident. G2 is location specific, and information may be obtained from the field for marking this parameter.

For G3, the XX needs to be chosen by the tool user based on local conditions and the prevailing experience of the cooks/user families. For example, if the area is such that the family members need to spend 1 hr daily on fire wood collection, spending about 30 min on preparing the feedstock and dealing with the slurry of a biogas plant on a daily basis could be acceptable. However, suppose, the prevalent practice in the region is to use agricultural residue as fuel, which is anyway available from own farm, and brought home on the way back, without any extra time input. In such a situation, the 30 min required for preparations for a biogas plant is too long. Thus, in the first scenario, the tool user may take the XX as 60 min, resulting into a score of 8 for the biogas plant, whereas in the second scenario, if the tool user chooses XX to be 0, the score for biogas will be 2.

It must be noted here that the evaluation scheme is suggestive, and can be modified. However it is important that the same evaluation scheme is used for marking ALL products under consideration in the same study, to ensure fair comparison between the products on equal footing.

We hope that in the long run, standard and more rigorous test protocols may be recommended for all the parameters of cooking energy service. In an ideal scenario, there will be laboratories that are certified to produce a score card for each product on the basis of these 21 parameters, rather than just test reports on efficiency and emissions. That will make this analysis easy for the tool users. However, in the absence of such mechanism, the above marking scheme has been recommended. Any suggestions for its improvement/simplification are most welcome.

HOW TO USE THE EXCEL FILE

- The worksheet titled 'Product Assessment' in the ANALYSIS file is to be used for this section.
- Add product information in the green highlighted cells in the Symbol | Product table.
- Columns are provided for MARKS of products under consideration titled T1, T2, etc.
- The data in these columns has to be filled by tool user as per marking scheme (put values only in green highlighted cells).

DO NOT EDIT OR CHANGE ANY OTHER INFORMATION IN THIS SHEET.

- The other columns in this worksheet will get automatically populated provided the worksheet 'Stakeholder Preferences' has been populated.

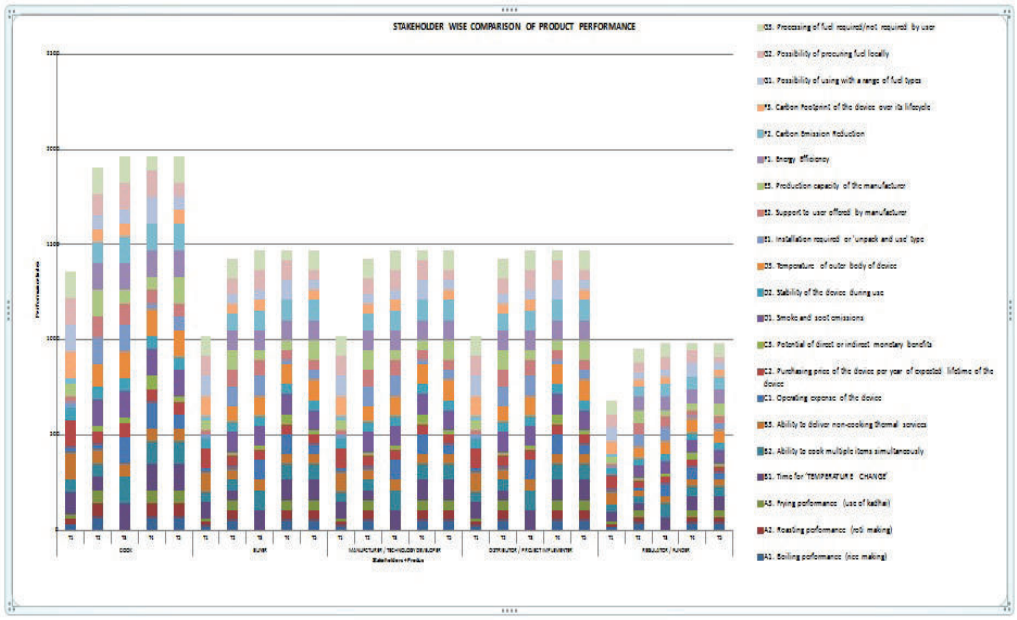
The worksheet 'Outcome - Product' gets automatically populated. **DO NOT EDIT OR CHANGE ANY INFORMATION IN THIS SHEET.**

HOW TO INTERPRET OUTCOME?

The output of this part of the Tool can be seen in the form of conditionally formatted tables and bar charts on the worksheet 'Output – Product' of the ANALYSIS file.

The first table and chart represent stakeholderwise scores for the products under consideration for the various cooking energy service parameters, in a comparable form. The cells in the table are formatted such that coloured bars appear in each cell, the length of the bar being proportional to the value of the stakeholder preference index in that cell. In the bar chart, each bar represents a particular product under consideration. The bars are grouped as per stakeholder groups. The height of each bar is divided into coloured segments. Each segment represents a cooking energy parameter and its length represents the corresponding marks.

An example of the stakeholderwise product performance graph is shown below.



In this case the same stakeholder preference data as used in the example for Part 1 is used.

The products assessed are:

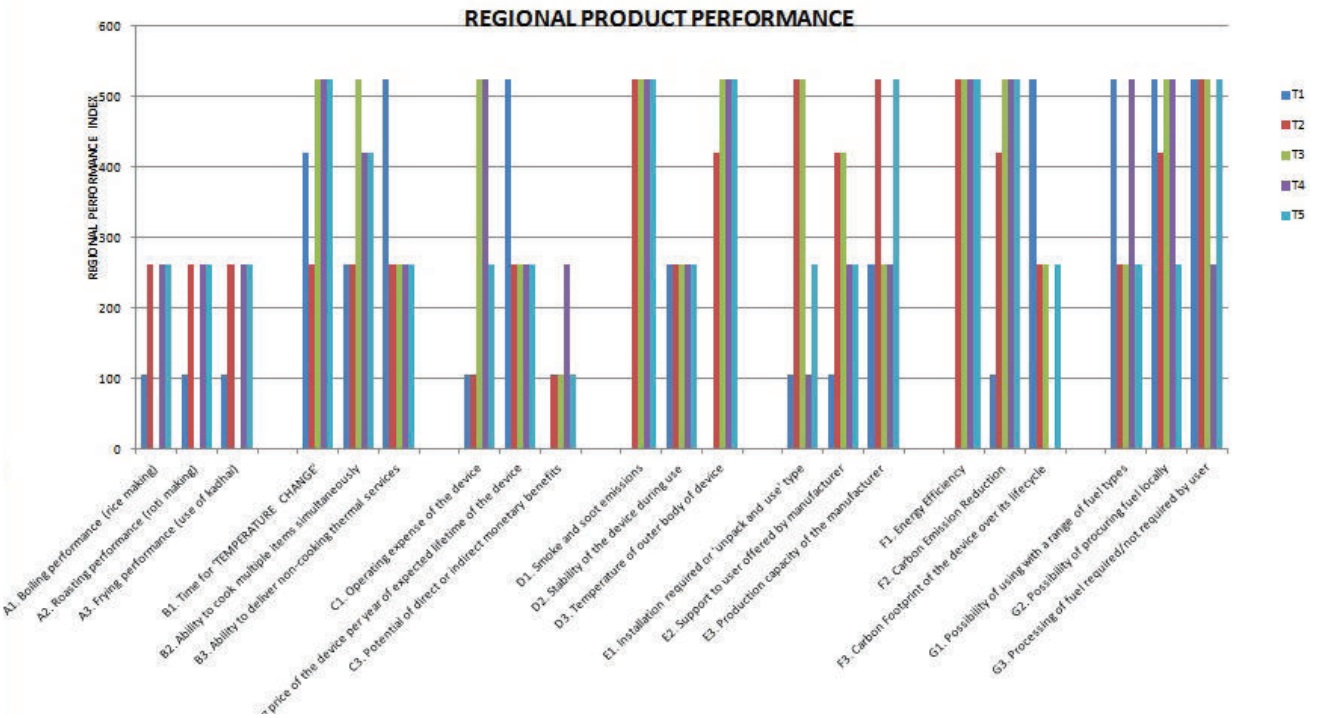
***T1**: Traditional mud stove*
***T2**: Portable forced draft stove*
***T3**: Box type solar cooker*
***T4**: Dung based biogas*

The second table and chart represent the regional scores. This table too has been formatted such that all the regional score values that are greater than 50% of the maximum value in the column will be highlighted. The marks for each product are added at the bottom of the column to give a total 'score' of the product for the given region. In the bar chart, each bar represents the regional score for a particular service parameter (height of the bar) of a specific product (colour of the bar).

For most tool users, the regional product performance data may be the useful one to focus on. Simplistically, the product for which the total Regional Score is highest, has the greatest likelihood of success in the region/project. From another perspective, the products that have the maximum highlighted cells against parameters in the table (or the products for which maximum number of bars have heights more than 50% of the maximum bar height in the chart) are the ones that all stakeholders collectively might favour the most. This will be useful for a Distributor or a Project Implementer or a Funder to select products for marketing/dissemination in a region. Comparison of the performances of various products will also give useful insights to Manufacturers and Technology Developers.

In this case too, the limit of 50% will work reasonably well in most situations, where not more than 2-3 stakeholder groups may be considered. In case, preferences of more stakeholder groups are being considered, or if the situation demands more stringent service delivery criteria, the limit can be changed to more than 50%. It is however NOT recommended to change the limit to less than 40%.

The following is the regional product performance graph for the same example as mentioned above, and the chart with the actual scores is shown below it.



CHARACTERIST	SUBCHARACTERISTICS	REGIONAL SCORE				
		T1	T2	T3	T4	T5
Versatility_1	A1. Boiling performance (rice making)	105	263	0	263	263
	A2. Roasting performance (roti making)	105	263	0	263	263
	A3. Frying performance (use of kadhai)	105	263	0	263	263
Versatility_2	B1. Time for 'TEMPERATURE CHANGE'	420	263	525	525	525
	B2. Ability to cook multiple items simultaneously	263	263	525	420	420
	B3. Ability to deliver non-cooking thermal services	525	263	263	263	263
Economics	C1. Operating expense of the device	105	105	525	525	263
	C2. Purchasing price of the device per year of expected lifetime of the device	525	263	263	263	263
	C3. Potential of direct or indirect monetary benefits	0	105	105	263	105
Safety	D1. Smoke and soot emissions	0	525	525	525	525
	D2. Stability of the device during use	263	263	263	263	263
	D3. Temperature of outer body of device	0	420	525	525	525
Supply and Service	E1. Installation required or 'unpack and use' type	105	525	525	105	263
	E2. Support to user offered by manufacturer	105	420	420	263	263
	E3. Production capacity of the manufacturer	263	525	263	263	525
Environmental Impacts	F1. Energy Efficiency	0	525	525	525	525
	F2. Carbon Emission Reduction	105	420	525	525	525
	F3. Carbon Footprint of the device over its lifecycle	525	263	263	0	263
Fuel/Energy Source	G1. Possibility of using with a range of fuel types	525	263	263	525	263
	G2. Possibility of procuring fuel locally	525	420	525	525	263
	G3. Processing of fuel required/not required by user	525	525	525	263	525
Total Regional		5,093	7,140	7,350	7,350	7,350

The overall score for biogas is more than that of both forced draft stove and solar cooker in this example. The graph and chart can be used to understand what are the parameters on which one product scores less than the others and so on.

If the tool user is interested in a more detailed analysis, the stakeholderwise data will be useful for answering the following type of questions:

Which of the preferences of Users and Buyers are not being met by a specific product? This can give useful hints for further modification in the product.

Which of the preferences of Users and Buyers are being met by a certain product better than competing products? The marketing of that product can then focus on these service features.

Are there products that meet predominantly the preferences of the Regulators or Funders but are scoring low on the preferences of Users and Buyers? This is a 'red flag' for Regulators or Funders that such products, if pushed in the region with whatever incentives may end up lying unused at the household level.

The above are just illustrative questions. Basically this analysis will help identify products that are likely to reasonably satisfy all stakeholders in a region/project area.

UNDERSTANDING THE LOGIC BEHIND THE TOOL

Note: It is not absolutely essential to understand this section in order to use the tool, however, having this understanding will help gain more insights from the outcomes of the tool, and do some additional analysis of the data.

THE FOLLOWING DEFINES THE TERMS USED IN THE TOOL, AND EXPLAINS SOME OF THE CALCULATIONS

SKEW

The SKEW value decides the importance to be given to the preferences of the stakeholder category.

Assigning a SKEW helps increase or decrease the 'voice' of a particular stakeholder group. These numbers will 'skew' the outcome of the tool in favour of those stakeholders for whom the values are set higher.

WEIGHT_1

This defines the priorities of the stakeholder group for the seven main characteristics. A priority is assigned for each characteristic, with maximum value for most important characteristic, from the viewpoint of each stakeholder. This is therefore the first level of stakeholder preference (STAKEHOLDER PREFERENCE – 1).

WEIGHT_2

This defines the priorities of sub-characteristics within each characteristic. A priority is assigned for each sub-characteristic, with maximum value for most important sub-characteristic, from the viewpoint of each stakeholder. This is therefore the second level of stakeholder preference (STAKEHOLDER PREFERENCE – 2)

WEIGHT

The WEIGHT for each sub-characteristic is a combination of each WEIGHT_1 with the three WEIGHTS_2 nestled under it, so that it represents the COMBINED STAKEHOLDER PREFERENCE for that particular parameter.

This is an important part of the Tool, and needs to be properly understood by the tool users. For example, a Cook may value 'Versatility' more than 'Economics', while a Buyer may rate 'Economics' higher. But there are three parameters each nestled under each of these two, and the Cooks and Buyers may assign different importance to these features within the main characteristic. Thus, for example, even if the Buyers care very little for the 'Versatility_2' he/she may still feel that 'Ability to cook multiple items simultaneously' may be relatively more important than 'Time for TEMPERATURE CHANGE'. However, the Cook may feel exactly opposite. The way WEIGHT_1 and WEIGHT_2 combine to generate WEIGHT, tries to capture all these finer nuances.

STAKEHOLDER PREFERENCE INDEX

For each stakeholder, the WEIGHT for each characteristic is combined with the SKEW value assigned to that stakeholder group. This gives the STAKEHOLDER PREFERENCE INDEX. The following table shows an example. for one characteristic marked by a stakeholder group in a particular way, with the stakeholder group having a SKEW of 3.

Characteristic	WEIGHT_1	Sub-characteristics	WEIGHT_2	COMBINED STAKEHOLDER PREFERENCE 'WEIGHT' = (WEIGHT_1 x WEIGHT_2)	STAKEHOLDER PREFERENCE INDEX (SKEW x WEIGHT)
C. Economics	2 (out of maximum 10)	C1. Operating Expense of the device	4 (out of maximum 10)	2x4 = 8	3x8= 24
		C2. Purchasing price of the device per year of expected lifetime of the device	3 (out of maximum 10)	2x3 = 6	3x6= 18
		C3. Potential of direct or indirect monetary benefits	3 (out of maximum 10)	2x3= 6	3x6= 18

REGIONAL PREFERENCE INDEX

This is the sum of all stakeholder preference indices for that characteristic.

MARKS

Marks represent quantification of the performance of specific products against each cooking energy service parameter.

The marking scheme does not follow uniform logic for all the parameters. Some parameters are marked on the basis of certain desirable features being present or not (e.g., Potential of monetary benefit on use). Some parameters are to be marked on the basis of the performance of the product against existing standards (e.g., fuel use efficiency).

There are a few parameters for which the marking is on the basis of comparison with traditional wood stove, considering the wood stove in a negative light. For example, a product scores higher, the more carbon emission reduction it achieves in comparison with traditional wood stove.

A few parameters are marked in comparison with LPG. There are two types of logic applied in this case. For some parameters, LPG is considered as the ideal (e.g., all the Versatlity_1 parameters), whereas for some LPG is considered in the negative light. Thus, for example, a product scores higher if its lifecycle carbon emissions are less compared to a typical LPG stove.

Marking against some parameters, in addition to one of the above criteria, also depends on

the specific conditions of the region/project for which the Tool is being used. For example, marking against the daily cost of cooking is based on prevalent local conditions.

We are also aware that not all parameters are totally independent of each other. For example, the cost of cooking is to an extent dependent on fuel use efficiency. However, these two parameters have totally different implications for different stakeholders. The Buyer, if asked, may not give much importance to fuel use efficiency, but gives more importance to the running cost of the product. On the other hand, the cost of fuel is not TOTALLY dependent on efficiency alone, and therefore the monetary parameter would be useless for a Technology Developer. This is sufficient justification for considering the two parameters as independent for the purpose of this Tool.

STAKEHOLDER-WISE SCORE

This is a combination of stakeholder preference index with marks assigned to the product for that sub-characteristic.

The logic is explained in the following example. Consider a stakeholder category with a skew value of 3, having the Stakeholder Preference Indices as in the previous table. The following table shows how the Stakeholder Preference Index may combine with marks scored by a product for the corresponding characteristic.

Characteristic	Sub-characteristics	STAKEHOLDER PREFERENCE INDICES	MARKS	STAKEHOLDER-WISE SCORE= MARKS x STAKEHOLDER PREFERENCE INDEX
C. Economics	C1. Operating Expense of the device	24	10	10x24 = 240
	C2. Purchasing price of the device per year of expected lifetime of the device	18	10	10x18 = 180
	C3. Potential of direct or indirect monetary benefits	18	5	5x18 = 90

REGIONAL SCORE

This field adds all the stakeholder-wise scores for each sub-characteristic of each product to generate a score, which is the regional score for that product for that sub-characteristic.

The regional scores for all the parameters calculated for a particular product can be added to generate a 'grand score' for that product. A simplistic comparison of products is possible simply on the basis of these 'grand scores'. However, we strongly recommend that the tool users base their decisions of comparative analysis of scores on the various parameters, rather than focusing only on the 'grand score'.

APPENDIX A

DATA COLLECTION TEMPLATES (explained)

SURVEY OF COOK / BUYER	INSTRUCTIONS FOR DATA COLLETOR
Village Name	
1. Name:	
2. Address:	
3. Main income generating activity of the household:	This question provides background information which may be used for more detailed analysis of respondent's feedback.
4. Type of house:	This question provides background information which may be used for more detailed analysis of respondent's feedback.
a. Well built/Makeshift	
b. Multiple rooms/single room	
c. Thatch roof/tin or tile roof/slab roof	
d. Any other (specify)	
5. Mark all the items in the household:	This question provides background information which may be used for more detailed analysis of respondent's feedback.
a. Television set(s)	
b. Radio set(s)	
c. Dish antenna(s)	
d. Landline phone(s)	
e. Mobile phone(s)	
f. Fan(s)	
g. Cooler(s)	
h. Air Conditioner(s)	
i. Refrigerator(s)	
j. Food processor(s)	
k. Motorcycle(s) or other motorized two wheeler(s)	
l. Car(s)	
m. Anything else that surveyor may want to make a note of	
6. Type of kitchen: Corner of living space/separate room part of the house/ separate room away from the house/covered but open space part of the house/covered but open space away from the house/open to sky space part of the house/open to sky space away from the house/Any other (specify)	This question provides background information which may be used for more detailed analysis of respondent's feedback.
7. Mark all types of cooking energy devices in the household	This question provides background information which may be used for more detailed analysis of respondent's feedback.
a. Three stone stove	
b. Traditional constructed wood burning stove – single pot hole/multiple pot hole	
c. Improved constructed wood burning stove – with/without chimney	
d. Improved portable natural draft wood burning stove – single pot hole/ multiple pot hole	

e. Improved portable forced draft wood burning stove – single pot hole/ multiple pot hole	
f. Light biomass stove (sawdust/rice husk/leaf litter/other - specify)	
g. Biogas – dung based/toilet based/other organic waste based	
h. LPG stove – single burner/multiple burner/cooking range (with oven)	
i. Kerosene stove – wick/pressurised	
j. Solar cooker – box type/parabolic/other design - specify	
k. Induction stove – single plate/multiple plate	
l. Electric cooker/oven	
m. Any other	
8. Describe the food items and quantities of typical meals cooked during a normal day in the household.	This question provides background information which may be used for more detailed analysis of respondent's feedback.
Morning:	
Noon:	
Afternoon:	
Evening:	
9. Suppose you are offered a new type of cooking energy device. Please answer the following questions based on what you want the new cooking energy device to do for you, as a primary or main cooking energy device in your kitchen.	It will help if you actually carry some marbles and cards with the options written down (or drawn pictorially), and ask the respondents to actually distribute the marbles, and then note the final outcome in the survey form. For the tool to operate, it is not essential that the preferences be in the form of whole numbers. If the respondents want, please allow them to mark 0.5, 3.5 etc.
A. Please arrange the following features of VERSATILITY_1 in the order of most important to least important that you desire in the new cooking energy device. You are given 10 tokens that you need to distribute over the following three features. You should give more tokens to the feature that is more important and less tokens to the feature that is less important.	These three questions are not about specific performance of the cooking energy device currently experienced/known. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Boiling performance (rice making)	
Roasting performance (roti making)	
Frying performance (use of kadhai)	
B. Please arrange the following features of VERSATILITY_2 in the order of most important to least important that that you desire in the new cooking energy device. You are given 10 tokens that you need to distribute over the following three features. You should give more tokens to the feature that is more important and less tokens to the feature that is less important.	These three questions are not about specific performance of the cooking energy device currently experienced/known. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Time for 'TEMPERATURE CHANGE'	
Ability to cook multiple items simultaneously	This is not necessarily just about number of burners. For example, a solar cooker has only one surface receiving solar light, but can accommodate containers with various food items at the same time.
Ability to deliver non-cooking thermal services	This is about heat-based non-cooking services available as a bye product of cooking such as hot water, or space heating, or food drying, etc.
C. Please arrange the following features of ECONOMICS in the order of most important to least important that you desire in the new cooking energy device. You are given 10 tokens that you need to distribute over the following three features. You should give more tokens to the feature that is more important and less tokens to the feature that is less important.	These three questions are not about specific performance of the cooking energy device currently experienced/known. This is to ascertain which of the parameters are perceived as less/more important by the respondents.

Operating expense of the device	
Purchasing price of the device per year of expected lifetime of the device	Example: An improved stove costing Rs.1000 and lasting for 2 years, is more expensive (1000/2 = 500) compared to a solar cooker costing Rs.4000 but lasting 10 years (4000/10 = 400). Therefore the parameter is not about just cost, but cost AND durability. The question is will the respondents take this ratio into consideration while making their buying decision? If only purchase price is important for them, they are actually giving low preference to this parameter.
Potential of direct or indirect monetary benefits	This is not about money 'saved' in terms of time saved on wood collection, or less medical bills, etc. This is specifically about money 'earned'. This could be in terms of a sellable bye product like charcoal, or certified emission reduction. It could also be in terms of scrap value, or some buy back scheme for used products. The question is not about whether the respondents are currently getting any such benefits, but it is about whether having the possibility of such benefit will impact their decision to use/buy a particular product or not.
D. Please arrange the following features of SAFETY in the order of most important to least important that you desire in the new cooking energy device.	These three questions are not about specific performance of the cooking energy device currently experienced/known. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Smoke and soot emissions	
Stability of the device during use	
Temperature of outer body of device	
E. Please arrange the following features of DEVICE SUPPLY AND SUPPORT in the order of most important to least important that you desire in the new cooking energy device.	
Installation required or 'unpack and use' type	This is not related to the type of cooking energy device currently being used, or whether the respondent prefers one type over the other. This is about whether this in itself is a deciding factor in use/purchase of a device.
Support to user offered by manufacturer	The expected support is in terms of user training/manual, service and spare parts, replacement guarantee, and alternative payment options for purchase. The question is not about whether the support is currently available, but whether having the support will impact the buying decision.
Production capacity of the manufacturer	May be explained and respondents encouraged to assign preference. Alternatively the preference can be set to 0 by default, and the respondents are asked to distribute the coins on two parameters only.
F. Please arrange the following features of ENVIRONMENTAL IMPACTS in the order of most important to least important that you desire in the new cooking energy device.	If two of the three parameters are set to zero, it is equivalent to assigning all the ten tokens to the remaining one parameter. However, this will not adversely impact in the overall calculation. However, please DO NOT remove ENVIRONMENTAL IMPACTS from the characteristics in Q.9.

Energy Efficiency	Can be explained in terms of fuel consumed per meal cooked. The question is not related to the current experience of the respondent, but the idea is to ascertain if the respondents think about this factor in deciding to use/buy a particular device.
Carbon Emission Reduction	May be explained and respondents encouraged to assign preference. Alternatively the preference can be set to 0 by default.
Carbon Footprint of the device over its lifecycle	May be explained and respondents encouraged to assign preference. Alternatively the preference can be set to 0 by default.
G. Please arrange the following features of FUEL/ENERGY SOURCE RELATED ISSUES in the order of most important to least important that you desire in the new cooking energy device.	The three questions are not about current practice. These are about whether the corresponding features are important in deciding to use/buy a particular device.
Possibility of using with a range of fuel types	
Possibility of procuring fuel locally	
Processing of fuel required/not required by user	
10. Please arrange the following characteristics in the order of most important to least important that you desire in the new cooking energy device. You are given 20 tokens that you need to distribute over the following features. You should give more tokens to the characteristic that is more important and less tokens to the characteristic that is less important.	These parameters can be understood in terms of the sub-characteristics that the respondents have already voted on. In this case too, use of marbles, etc., may prove convenient. For the tool to operate, it is not essential that the preferences be in the form of whole numbers. If the respondents want, please allow them to mark 0.5, 3.5 etc.
Versatility_1	
Versatility_2	
Economics	
Safety	
Device supply and support	
Environmental impacts	
Fuel/energy source related issues	
11. Are there any other features or characteristics that are important to you but are missing from the above lists?	This will be useful information for further improvements in the Tool.

Note: *In the FGD, encourage the participating group to discuss and figure out what each parameter means from their perspective. They should be corrected or informed only if they are going totally off track, or cannot figure out what something means at all.*

FGD-COOK/BUYER	INSTRUCTIONS FOR DATA COLLETOR
Village Name	
List of attendants	
Address:	
1. Suppose You are offered a new type of cooking energy device. Please answer the following questions based on what you want the new cooking energy device to do for you, as a primary or main cooking energy device in your kitchen.	It will help if you actually carry some marbles and cards with the options written down (or drawn pictorially), and ask the respondents to actually distribute the marbles, and then note the final outcome in the survey form. For the tool to operate, it is not essential that the preferences be in the form of whole numbers. If the respondents want, please allow them to mark 0.5, 3.5 etc.
A. Please arrange the following features of VERSATILITY_1 in the order of most important to least important that you desire in the new cooking energy device. You are given 10 tokens that you need to distribute over the following three features. You should give more tokens to the feature that is more important and less tokens to the feature that is less important.	These three questions are not about specific performance of the cooking energy device currently experienced/known. This is to ascertain which of the parameters are perceived as less/ more important by the respondents.
Boiling performance (rice making)	
Roasting performance (roti making)	
Frying performance (use of kadhai)	
B. Please arrange the following features of VERSATILITY_2 in the order of most important to least important that that you desire in the new cooking energy device. You are given 10 tokens that you need to distribute over the following three features. You should give more tokens to the feature that is more important and less tokens to the feature that is less important.	These three questions are not about specific performance of the cooking energy device currently experienced/known. This is to ascertain which of the parameters are perceived as less/ more important by the respondents.
Time for 'TEMPERATURE CHANGE'	
Ability to cook multiple items simultaneously	This is not necessarily just about number of burners. For example, a solar cooker has only one surface receiving solar light, but can accommodate containers with various food items at the same time.
Ability to deliver non-cooking thermal services	This is about heat-based non-cooking services available as a bye product of cooking such as hot water, or space heating, or food drying, etc.
C. Please arrange the following features of ECONOMICS in the order of most important to least important that you desire in the new cooking energy device. You are given 10 tokens that you need to distribute over the following three features. You should give more tokens to the feature that is more important and less tokens to the feature that is less important.	These three questions are not about specific performance of the cooking energy device currently experienced/known. This is to ascertain which of the parameters are perceived as less/ more important by the respondents.
Operating expense of the device	

Purchasing price of the device per Year of expected lifetime of the device	Example: An improved stove costing Rs.1000 and lasting for 2 years, is more expensive (1000/2 = 500) compared to a solar cooker costing Rs.4000 but lasting 10 years (4000/10 = 400). Therefore the parameter is not about just cost, but cost AND durability. The question is will the respondents take this ratio into consideration while making their buying decision? If only purchase price is important for them, they are actually giving low preference to this parameter.
Potential of direct or indirect monetary benefits	This is not about money 'saved' in terms of time saved on wood collection, or less medical bills, etc. This is specifically about money 'earned'. This could be in terms of a sellable bye product like charcoal, or certified emission reduction. It could also be in terms of scrap value, or some buy back scheme for used products. The question is not about whether the respondents are currently getting any such benefits, but it is about whether having the possibility of such benefit will impact their decision to use/buy a particular product or not.
D. Please arrange the following features of SAFETY in the order of most important to least important that you desire in the new cooking energy device.	These three questions are not about specific performance of the cooking energy device currently experienced/known. This is to ascertain which of the parameters are perceived as less/ more important by the respondents.
Smoke and soot emissions	
Stability of the device during use	
Temperature of outer body of device	
E. Please arrange the following features of DEVICE SUPPLY AND SUPPORT in the order of most important to least important that you desire in the new cooking energy device.	
Installation required or 'unpack and use' type	This is not related to the type of cooking energy device currently being used, or whether the respondent prefers one type over the other. This is about whether this in itself is a deciding factor in use/purchase of a device.
Support to user offered by manufacturer	The expected support is in terms of user training/manual, service and spare parts, replacement guarantee, and alternative payment options for purchase. The question is not about whether the support is currently available, but whether having the support will impact the buying decision.
Production capacity of the manufacturer	May be explained and respondents encouraged to assign preference. Alternatively the preference can be set to 0 by default, and the respondents are asked to distribute the coins on two parameters only.
F. Please arrange the following features of ENVIRONMENTAL IMPACTS in the order of most important to least important that You desire in the new cooking energy device.	If two of the three parameters are set to zero, it is equivalent to assigning all the ten tokens to the remaining one parameter. However, this will not adversely impact in the overall calculation. However, please DO NOT remove ENVIRONMENTAL IMPACTS from the characteristics in Q.9.
Energy Efficiency	May be explained in terms of fuel consumed per meal cooked. The question is not related to the current experience of the respondent, but the idea is to ascertain if the respondents think about this factor in deciding to use/buy a particular device.
Carbon Emission Reduction	May be explained and respondents encouraged to assign preference. Alternatively the preference can be set to 0 by default.
Carbon Footprint of the device over its life cycle	May be explained and respondents encouraged to assign preference. Alternatively the preference can be set to 0 by default.
G. Please arrange the following features of FUEL/ENERGY SOURCE RELATED ISSUES in the order of most important to least important that you desire in the new cooking energy device.	The three questions are not about current practice. These are about whether the corresponding features are important in deciding to use/buy a particular device.

Possibility of using with a range of fuel types	
Possibility of procuring fuel locally	
Processing of fuel required/Not required by user	
2. Please arrange the following characteristics in the order of most important to least important that you desire in the new cooking energy device. You are given 20 tokens that Yesou need to distribute over the following features. You should give more tokens to the characteristic that is more important and less tokens to the characteristic that is less important.	These parameters can be understood in terms of the sub-characteristics that the respondents have already voted on. In this case too, use of marbles, etc., may prove convenient. For the tool to operate, it is not essential that the preferences be in the form of whole numbers. If the respondents want, please allow them to mark 0.5, 3.5 etc.
VERSATILITY_1	
VERSATILITY_2	
Economics	
Safety	
Device supply and support	
Environmental impacts	
Fuel/energy source related issues	
3. Are there any other features or characteristics that are important to you but are missing from the above lists?	This will be useful information for further improvements in the Tool

INTERVIEW QUESTIONNAIRE:

INTERVIEW – TECHNOLOGY DEVELOPER	INSTRUCTIONS FOR DATA COLLETOR
1. Name	
2. Address	
3. (For MANUFACTURER) Description of Business:	This question provides background information which may be used for more detailed analysis of respondent's feedback.
a. Year of establishment:	
b. Annual production capacity for cooking energy devices:	
c. Do you also manufacture products outside cooking energy sector:	
4. (For MANUFACTURER) Brief description of cooking energy devices and market segments	This question provides background information which may be used for more detailed analysis of respondent's feedback.
5. (for TECHNOLOGY DEVELOPER) Objective of intervention in the cooking energy sector	This question provides background information which may be used for more detailed analysis of respondent›s feedback.
6. (for TECHNOLOGY DEVELOPER) Brief description of previous engagement in the sector	This question provides background information which may be used for more detailed analysis of respondent›s feedback.
7. Suppose you are considering a new type of cooking energy device to sell. Please answer the following questions based on what you want the new cooking energy device to do.	For the tool to operate, it is not essential that the preferences be in the form of whole numbers. If the respondents want, please allow them to mark 0.5, 3.5 etc.
A. Please arrange the following features of VERSATILITY_1 in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of the cooking energy device currently being sold. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Boiling performance (rice making)	
Roasting performance (roti making)	
Frying performance (use of kadhai)	

B. Please arrange the following features of VERSATILITY_2 in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of the cooking energy device currently being sold. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Time for 'TEMPERATURE CHANGE'	
Ability to cook multiple items simultaneously	This is not necessarily just about number of burners. For example, a solar cooker has only one surface receiving solar light, but can accommodate containers with various food items at the same time.
Ability to deliver non-cooking thermal services	This is about heat-based non-cooking services available as a bye product of cooking such as hot water, or space heating, or food drying, etc.
C. Please arrange the following features of ECONOMICS in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of the cooking energy device currently being sold. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Operating expense of the device	
Purchasing price of the device per Year of expected lifetime of the device	Example: An improved stove costing Rs.1000 and lasting for 2 years, is more expensive (1000/2 = 500) compared to a solar cooker costing Rs.4000 but lasting 10 years (4000/10 = 400). Therefore the parameter is not about just cost, but cost AND durability. The question is will the respondents consider this parameter while thinking about cooking energy service? If only purchase price is important for them, they are actually giving low preference to this parameter.
Potential of direct or indirect monetary benefits	This is not about money 'saved' in terms of time saved on wood collection, or less medical bills, etc. This is specifically about money 'earned'. This could be in terms of a sellable bye product like charcoal, or certified emission reduction. It could also be in terms of scrap value, or some buy back scheme for used products. The question is not about whether any product is currently providing any such benefits, but it is about whether this feature is considered useful by the respondent.
D. Please arrange the following features of SAFETY in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of the cooking energy device currently being sold. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Smoke and soot emissions	
Stability of the device during use	
Temperature of outer body of device	
E. Please arrange the following features of DEVICE SUPPLY AND SUPPORT in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	
Installation required or 'unpack and use' type	This is not related to the type of cooking energy device currently being offered, or whether the respondent prefers one type over the other. This is about whether the respondent thinks of this as a factor influencing the business processes.

Support to user offered by manufacturer	The expected support is in terms of user training/ manual, service and spare parts, replacement guarantee, and alternative payment options for purchase. The question is not about whether the support is currently offered, but whether such support is considered important by the respondent.
Production capacity of the manufacturer	This is not about the current production capacity. It is about whether the respondent thinks that this will be a critical parameter for the clients in deciding whether to choose their product or not.
F. Please arrange the following features of ENVIRONMENTAL IMPACTS in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of the cooking energy device currently being sold. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Energy Efficiency	
Carbon Emission Reduction	May need to be explained to the respondent. This is not about whether the current product reduces carbon emissions or not, and to what extent. The question is about whether the respondent thinks this parameter important enough to take into consideration.
Carbon Footprint of the device over its life cycle	The concept may be explained to the respondent. The value need not be known for the current product. The question is about whether the respondent thinks this parameter important enough to take into consideration.
G. Please arrange the following features of FUEL/ENERGY SOURCE RELATED ISSUES in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific conditions experienced by the target users. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Possibility of using with a range of fuel types	
Possibility of procuring fuel locally	
Processing of fuel required/Not required by user	
6. Please arrange the following characteristics in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 20 tokens over the seven options, and assign numbers (high for high preference) accordingly.	These parameters can be understood in terms of the sub-characteristics that the respondents have already voted on. For the tool to operate, it is not essential that the preferences be in the form of whole numbers. If the respondents want, please allow them to mark 0.5, 3.5 etc.
Versatility_1	
Versatility_2	
Economics	
Safety	
Device supply and support	
Environmental impacts	
Fuel/energy source related issues	
7. Are there any other features or characteristics that are important to you but are missing from the above lists?	This information is useful for further improvements in the Tool.

INTERVIEW – PROJECT IMPLEMENTER	INSTRUCTIONS FOR DATA COLLETOR
1. Name	
2. Address	
3. (For DISTRIBUTOR) Description of Business:	This question provides background information which may be used for more detailed analysis of respondent's feedback.
a. Year of establishment:	
b. Annual sales for cooking energy devices:	
c. Do you also sell products from outside cooking energy sector:	
4. (For DISTRIBUTOR) Brief description of cooking energy devices and market segments	This question provides background information which may be used for more detailed analysis of respondent's feedback.
5. (For PROJECT IMPLEMENTER) Objective of intervention in the cooking energy sector	This question provides background information which may be used for more detailed analysis of respondent›s feedback.
6. (For PROJECT IMPLEMENTER) Brief description of previous engagement in the sector	This question provides background information which may be used for more detailed analysis of respondent›s feedback.
7. Suppose you are considering a new type of cooking energy device to sell. Please answer the following questions based on what you want the new cooking energy device to do.	*For the tool to operate, it is not essential that the preferences be in the form of whole numbers. If the respondents want, please allow them to mark 0.5, 3.5 etc.*
A. Please arrange the following features of VERSATILITY_1 in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of the cooking energy device currently being sold. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Boiling performance (rice making)	
Roasting performance (roti making)	
Frying performance (use of kadhai)	
B. Please arrange the following features of VERSATILITY_2 E in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of the cooking energy device currently being sold. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Time for 'TEMPERATURE CHANGE'	
Ability to cook multiple items simultaneously	This is not necessarily just about number of burners. For example, a solar cooker has only one surface receiving solar light, but can accommodate containers with various food items at the same time.
Ability to deliver non-cooking thermal services	This is about heat-based non-cooking services available as a bye product of cooking such as hot water, or space heating, or food drying, etc.
C. Please arrange the following features of ECONOMICS in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of the cooking energy device currently being sold. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Operating expense of the device	
Purchasing price of the device per Year of expected lifetime of the device	Example: An improved stove costing Rs.1000 and lasting for 2 years, is more expensive (1000/2 = 500) compared to a solar cooker costing Rs.4000 but lasting 10 years (4000/10 = 400). Therefore the parameter is not about just cost, but cost AND durability. The question is will the respondents consider this parameter while thinking about cooking energy service? If only purchase price is important for them, they are actually giving low preference to this parameter.

Potential of direct or indirect monetary benefits	This is not about money 'saved' in terms of time saved on wood collection, or less medical bills, etc. This is specifically about money 'earned'. This could be in terms of a sellable bye product like charcoal, or certified emission reduction. It could also be in terms of scrap value, or some buy back scheme for used products. The question is not about whether any product is currently providing any such benefits, but it is about whether this feature is considered useful by the respondent.
D. Please arrange the following features of SAFETY in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of the cooking energy device currently being sold. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Smoke and soot emissions	
Stability of the device during use	
Temperature of outer body of device	
E. Please arrange the following features of DEVICE SUPPLY AND SUPPORT in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	
Installation required or 'unpack and use' type	This is not related to the type of cooking energy device currently being offered, or whether the respondent prefers one type over the other. This is about whether the respondent thinks of this as a factor influencing the business processes.
Support to user offered by manufacturer	The expected support is in terms of user training/ manual, service and spare parts, replacement guarantee, and alternative payment options for purchase. The question is not about whether the support is currently offered, but whether such support is considered important by the respondent.
Production capacity of the manufacturer	This is not about the current production capacity of the suppliers. It is about whether the respondent thinks that this is a critical parameter for their business activity.
F. Please arrange the following features of ENVIRONMENTAL IMPACTS in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of the cooking energy device currently being sold. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Energy Efficiency	
Carbon Emission Reduction	May need to be explained to the respondent. This is not about whether the current product reduces carbon emissions or not, and to what extent. The question is about whether the respondent thinks this parameter important enough to take into consideration.
Carbon Footprint of the device over its life cycle	The concept may be explained to the respondent. The value need not be known for the current product. The question is about whether the respondent thinks this parameter important enough to take into consideration.
G. Please arrange the following features of FUEL/ENERGY SOURCE RELATED ISSUES in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific conditions experienced by the target users. This is to ascertain which of the parameters are perceived as less/ more important by the respondents.
Possibility of using with a range of fuel types	

Possibility of procuring fuel locally	
Processing of fuel required/Not required by user	
6. Please arrange the following characteristics in the order of most important to least important that your product(s) should have to sustain in the market. Suppose you are distributing 20 tokens over the seven options, and assign numbers (high for high preference) accordingly.	These parameters can be understood in terms of the sub-characteristics that the respondents have already voted on. For the tool to operate, it is not essential that the preferences be in the form of whole numbers. If the respondents want, please allow them to mark 0.5, 3.5 etc.
Versatility_1	
Versatility_2	
Economics	
Safety	
Device supply and support	
Environmental impacts	

INTERVIEW - REGULATOR / FUNDER	**INSTRUCTIONS FOR DATA COLLECTOR**
1. Name	
2. Address	
3. Objective of intervention in the cooking energy sector	This question provides background information which may be used for more detailed analysis of respondent's feedback.
4. Brief description of previous engagement in the sector	This question provides background information which may be used for more detailed analysis of respondent's feedback.
5. Suppose you are considering a new type of cooking energy device. Please answer the following questions based on what you want the new cooking energy device to do.	For the tool to operate, it is not essential that the preferences be in the form of whole numbers. If the respondents want, please allow them to mark 0.5, 3.5 etc.
A. Please arrange the following features of VERSATILITY_1 in the order of most important to least important for a cooking energy device for your target group, as per your perception. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of a cooking energy device under consideration. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Boiling performance (rice making)	
Roasting performance (roti making)	
Frying performance (use of kadhai)	
B. Please arrange the following features of VERSATILITY_2 in the order of most important to least important for a cooking energy device for your target group, as per your perception. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of a cooking energy device under consideration. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Time for 'TEMPERATURE CHANGE'	
Ability to cook multiple items simultaneously	This is not necessarily just about number of burners. For example, a solar cooker has only one surface receiving solar light, but can accommodate containers with various food items at the same time.
Ability to deliver non-cooking thermal services	This is about heat-based non-cooking services available as a bye product of cooking such as hot water, or space heating, or food drying, etc.

Fuel/energy source related issues	
7. Are there any other features or characteristics that are important to you but are missing from the above lists?	This information is useful for further improvements in the Tool.
C. Please arrange the following features of ECONOMICS in the order of most important to least important for a cooking energy device for your target group, as per your perception. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of a cooking energy device under consideration. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Operating expense of the device	
Purchasing price of the device per Year of expected lifetime of the device	Example: An improved stove costing Rs.1000 and lasting for 2 years, is more expensive (1000/2 = 500) compared to a solar cooker costing Rs.4000 but lasting 10 years (4000/10 = 400). Therefore the parameter is not about just cost, but cost AND durability. The question is will the respondents consider this parameter while thinking about cooking energy service? If only purchase price is important for them, they are actually giving low preference to this parameter.
Potential of direct or indirect monetary benefits	This is not about money 'saved' in terms of time saved on wood collection, or less medical bills, etc. This is specifically about money 'earned'. This could be in terms of a sellable bye product like charcoal, or certified emission reduction. It could also be in terms of scrap value, or some buy back scheme for used products. The question is not about whether any product is currently providing any such benefits, but it is about whether this feature is considered useful by the respondent.
D. Please arrange the following features of SAFETY in the order of most important to least important for a cooking energy device for your target group, as per your perception. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of a cooking energy device under consideration. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Smoke and soot emissions	
Stability of the device during use	
Temperature of outer body of device	
E. Please arrange the following features of DEVICE SUPPLY AND SUPPORT in the order of most important to least important for a cooking energy device for your target group, as per your perception. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	
Installation required or 'unpack and use' type	This is not related to the type of cooking energy device currently being considered, or whether the respondent prefers one type over the other. This is about whether the respondent thinks of this as an important factor.
Support to user offered by manufacturer	The expected support is in terms of user training/ manual, service and spare parts, replacement guarantee, and alternative payment options for purchase. The question is not about whether the support is currently offered, but whether such support is considered important by the respondent.
Production capacity of the manufacturer	This is not about the current production capacity. It is about whether the respondent thinks that this factor is important for achieving their objective.

F. Please arrange the following features of ENVIRONMENTAL IMPACTS in the order of most important to least important for a cooking energy device for your target group, as per your perception. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific performance of a cooking energy device under consideration. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Energy Efficiency	
Carbon Emission Reduction	This is not about whether a specific product under consideration reduces carbon emissions or not, and to what extent. The question is about whether the respondents think this parameter important enough to achieving their objective.
Carbon Footprint of the device over its life cycle	The value need not be known for any products under consideration. The question is about whether the respondents think this parameter important to achieving their objectives.
G. Please arrange the following features of FUEL/ENERGY SOURCE RELATED ISSUES in the order of most important to least important for a cooking energy device for your target group, as per your perception. Suppose you are distributing 10 tokens over the three options, and assign numbers (high for high preference) accordingly.	These three questions are not about specific conditions experienced by the target users. This is to ascertain which of the parameters are perceived as less/more important by the respondents.
Possibility of using with a range of fuel types	
Possibility of procuring fuel locally	
Processing of fuel required/Not required by user	
6. Please arrange the following characteristics in the order of most important to least important for a cooking energy device for your target group, as per your perception. Suppose you are distributing 20 tokens over the three options, and assign numbers (high for high preference) accordingly.	These parameters can be understood in terms of the sub-characteristics that the respondents have already voted on. For the tool to operate, it is not essential that the preferences be in the form of whole numbers. If the respondents want, please allow them to mark 0.5, 3.5 etc.
Versatility_1	
Versatility_2	
Economics	
Safety	
Device supply and support	
Environmental impacts	
Fuel/energy source related issues	
7. Are there any other features or characteristics that are important to you but are missing from the above lists?	This information is useful for further improvements in the Tool.

The Ashden India Renewable Energy Collective (AIREC) is the network of India-based winners of the prestigious Ashden Awards. The Ashden Awards are international awards given to organisations promoting pro-poor and sustainable energy interventions. AIREC endeavours to develop a favourable ecosystem for large-scale deployment of decentralised renewable energy solutions in ways that spur economic growth and social development, while protecting the local and global environment.

smita@ashdenindiacollective.org | www.ashdenindiacollective.org | @AshdenIndiaREC

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