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From the Lab to the Field and Back

TOOLKIT TO ASSESS USER NEEDS

Social Context, Gender, and User Needs in the Design and Promotion of Clean Stoves in Indonesia

East Asia and Pacific

A product of the EAP Gender and Energy Facility and the Clean Stove Initiative

WORLD BANK GROUP

moving towards gender equality
East Asia & Pacific
Gender Practice

ASTAE
Asia Sustainable and Alternative Energy Program

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Social, Urban, Rural & Resilience

These tools are part of a program on social and gender aspects of the development and promotion of clean stoves. Grounded in extensive research in Indonesia, the series consists of practical documents that can be used to integrate social and gender dimensions into work on clean stoves in East Asia and the Pacific and beyond. The target audience is clients and development partners active in the development and promotion of clean stoves. The documents produced by the work program may be downloaded from https://www.astae.net/publication/social-gender-support-to-indonesia-CSI.

The development of the tools presented herein and guidance for their application can be found in the companion publication in the series, entitled "Guidance Note on User Needs." That publication describes the development and application of a new protocol for testing clean stoves within their gendered social context.

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Tool 1: Instructions for Conducting Assessments of Clean Stoves in their Social and Gender Context

Equipment/Materials Required

- Cookstove(s) to be tested
- Cookstove(s) to be used as baseline
- Cooking pots in the most common/traditional sizes
- Fuel for stove (use of locally available biomass is recommended, particularly when quality and moisture content of biomass are relevant variables to assess stove performance)
- Scale for weighing biomass
- Ziploc bags to store biomass samples that will serve to calculate biomass moisture content
- Tape measure
- Stopwatch
- Observation form
- Interview form
- Pens and notepads
- Food ingredients required to prepare common meals

General Instructions for Observers

Preparation

- Ensure that baseline stoves, pots, and dishes to be prepared are commonly used and representative of common practice in the area.
- Define the amounts to be cooked[1] and weigh the cooking ingredients to ensure that each tester has the exact same amounts.
- Ensure that all testers use the same pot types and sizes and that these have no soot buildup. If testers are using their own pots, be aware that soot can reduce heat transfer to pots, affecting the results.

Instructions to Testers

- At the beginning of the session introduce the purpose of the stove assessment process and clearly explain that the focus is on stove performance, not the cook.
- Aim at creating rapport and a relaxed environment.
- Assure the tester that you will answer all questions they may have about operation.
- Ensure that the tester is comfortable giving feedback and discussing the pros and cons of stoves.

1. A reference point could be the average household size in the region.

Observation and Note-Taking

- Measure the length and diameter of the biomass before and after preparation for use.
- Weigh the biomass prepared for use; weigh the remaining biomass once the cooking session has been completed, including any remaining unburned pieces.
- Take fuel sample to measure the moisture content (see below).
- Make sure to take time for key activities (fuel preparation, ignition, cooking cycle, etc.) and record the times.
- Count the times testers need to get the results they want in key operations (ignition, heat regulation, etc.).
- Observe the results of testers' actions and their understanding of use cues, and note all the observations.

Stove Manual

- Provide the stove operation manual, answer all questions, and note the questions asked.
- Clarify that you will answer questions about stove operation posed during the test.
- Write down all questions asked about stove operation.

Calculating Fuel Moisture Content[2]

- Cut the wood into a size of around 3 cm^3. For one sampling approximately 3 pieces of wood are needed. Put these samples in the Ziploc plastic bag and zip tightly. Indicate the place, date, and type of wood you include in the sample.
- Weigh each sample using the OHAUS analytical scale 200 gr (3 digit).
- Put sample into electric oven for 24 hours at temperature of 105°C.
- Take out of the oven and put on the desiccator to cool for 10 minutes.
- After cooling, weigh each sample on the same analytical scale.

Input data into spreadsheet using the SeTAR MC1.14:2013 protocol. From these data the average moisture content of the fuel will be determined.

2. Guide to Measuring Moisture Content prepared by Prianti Utami from Yayasan Dian Desa (YDD), Indonesia.

Tool 2: Example of Forms Used to Conduct Structured Observation in Indonesia

Form 1: Placement and Operation Manual

Tester:

Stove tested:

**** DO NOT GIVE INSTRUCTIONS ON PLACEMENT****

Structured observation	Observer's comments
1. User has	
a. traditional kitchen	
b. modern kitchen	
2. The clean stove is placed in	
a. traditional kitchen	
b. modern kitchen	
3. The stove is placed on	
a. the floor	
b. a table/ raised surface	
4. Stove placement decision is	
a. immediate explain (cues)	
b. after one change explain:	
c. after 2 changes or more explain:	
5. User asks where stove should be placed	
a. no	
b. yes	
6. User asks for approval on placement	
a. no	
b. yes	
7. Provide the stove operation manual	
a. user reads the manual and asks no questions	
b. user reads the manual and asks questions write questions:	
c. user does not read the manual	

Form 2: Fuel Preparation

Tester:

Stove tested:

**** DO NOT GIVE INSTRUCTIONS ON PLACEMENT****

Structured observation	Observer's comments
8. Type of fuel used (describe)	
9. Size of fuel before preparation (measure)	
10. Take a sample (moisture content)	
11. Weigh total fuel prepared	
12. Time fuel preparation process from start to end	
13. Number of trials to get fuel size/amount right:	
14. Describe the cues used to assess correct fuel size/amount	
15. Describe the testers' emotional state during fuel preparation	
16. Upon completion ask if:	
a. the fuel size is	
1. smaller	
2. same	
3. larger than usual	
b. preparation was	
1. easier	
2. same	
3. more difficult than usual	
c. it takes	
1. less	
2. same	
3. more time than usual	
d. they would be willing to do this everyday	
e. some family member/other person would help with this task	

Form 3: Ignition

Tester:

Stove tested:

**** DO NOT GIVE INSTRUCTIONS ON PLACEMENT****

Structured observation	Observer's comments
17. Time needed to ignite the stove (min):	
18. Trials needed to ignite the stove (number):	
19. Questions asked by testers (number): Write questions:	
20. Description	
a. User ignites stove easily; no issues	
b. User does not understand ignition instructions (manual)	
c. User cannot find ignition cues in design	
d. User does not find ignition controls	
e. User cannot ignite stove without help	
f. Other:	
21. Q: compared to your biomass stove ignition is:	
a. Same	
b. Easier What is easier?	
c. More difficult What is more difficult?	
22. Ask: Does it take .... time to light this stove?	
a. same	
b. shorter	
c. longer	
23. Q: How did you feel igniting the stove?	

Form 4: Operation

Tester:

Stove tested:

**** DO NOT GIVE INSTRUCTIONS ON PLACEMENT****

Structured observation	Observer's comments
24. Pot stability: a. stable b. unstable (describe issue) 1. pot size vs. burner size 2. pot form vs. burner design 3. weight content 4. unstable placement (stove on earth surface) 5. other:	
25. Time needed for cooking each dish (min):	
26. Heat regulation: trials needed for desired power (number)	
27. Heat regulation: questions asked (number) Write questions:	
28. Heat regulation issues: a. tester cannot understand controls b. controls do not respond as intended c. response time (too low-too fast) d. fuel related e. other:	
29. Attention requirement a. user cannot leave the stove unattended b. user can prepare some ingredients while using stove c. user can take simultaneous care of other activities (preparation ingredients, washing utensils, other chores)	
30. Q: Compared to your biomass using this stove is: a. Easier to use What is easier? b. More difficult to use What is more difficult? c. It is the same level of difficulty	

(continued)

Structured observation	Observer's comments
31. Q: Does it take ..... time to cook with this stove? a. more b. less c. same 32. Compared to your stove this stove is: a. more powerful b. less powerful c. same 33. How did you feel cooking with the stove?	

Form 5: Resulting Food

Tester:

Stove tested:

**** DO NOT GIVE INSTRUCTIONS ON PLACEMENT****

Structured observation	Observer's comments
34. Taste (scale): a. excellent b. very good c. good d. somewhat good e. bad 35. Texture: a. right texture b. too soft c. too hard 36. Compare result with you stove: a. better b. worse c. same	

Form 6: Interview Suggested Guide

Tester:

Stove tested:

**** DO NOT GIVE INSTRUCTIONS ON PLACEMENT****

Structured observation	Observer's comments
37. Usual cooking episodes: a. Once a day b. Twice a day c. Three or more times a day	
38. Do you work outside the home? (Include non-paid work in the field) a. yes b. no	
39. Fuels used in household	
40. Stoves used (number & type)	
41. Simultaneous burners used regularly (number)	
42. Compared to your stove the clean stove is: a. 1. faster 2. slower 3. same 4. don't know b. 1. more powerful 2. weaker 3. same 4. don't know c. 1. easier to use 2. harder to use 3. same 4. don't know d. 1. easier to ignite 2. harder to ignite 3. same 4. don't know	

(continued)

Structured observation	Observer's comments
e. 1. can use usual biomass 2. cannot use usual biomass 3. don't know	
f. 1. safe 2. unsafe 3. don't know	
g. 1. cleaner 2. smokier 3. same 4. don't know	
h. 1. more efficient use of fuel 2. less efficient use of fuel 3. same use of fuel 4. don't know	
i. 1. more stable 2. less stable 3. same 4. don't know	
j. 1. more comfortable 2. less comfortable 3. same 4. don't know	
k. 1. hard to understand 2. easy to understand 3. don't know	
43. What do you like in the clean stove? Why?	

(continued)

Structured observation	Observer's comments
44. What do you dislike in the clean stove? Why?	
45. Fuel preparation for the clean stove compared to your stove is a. harder b. easier c. same d. don't know	
46. What do you think this stove could be good for: a. boiling water b. frying c. simmering d. steaming e. Other?	
47. Do you think this stove could be used for a. heating the room b. drying wood c. drying harvest d. other?	
48. How much would you pay for it?	
49. Would you need to ask your husband if you would want to purchase the stove?	
50. Would you consider credit to buy this stove?	
51. If you could choose between this stove and another type of stove (e.g. LPG) what would you prefer? Why?	
52. Please rate the stove (select the most salient preferences identified during exploratory stage)	

Table 1. Example of features selected for Indonesia

Feature\rating	5 Fully satisfied	4 Satisfied	3 Neutral	2 Somewhat dissatisfied	1 Completely dissatisfied
Ignition					
Power					
Speed					
Easiness					
Cleanliness					
Efficiency					