



Supportive Environments for Healthy Communities

USAID/WASHplus Bangladesh

Assessing Consumer Needs, Preferences
and Willingness to Pay for Improved Cookstoves

Presented by WASHplus

September 2013



What is WASHplus?

WASHplus is a five-year (2010-2015) cooperative agreement funded through USAID's Bureau for Global Health, managed by FHI 360 with Winrock and CARE as core partners.

WASHplus supports healthy households and communities by creating and supporting interventions that lead to improvements in access, practice and health outcomes related to water supply, sanitation, and hygiene (WASH) and indoor air pollution (IAP).

USAID/ Bangladesh requested WASHplus assistance in exploring key consumer issues to contribute to CCEB, Global Alliance and other stakeholder efforts. Cross-cutting collaboration/funding (USAID Health and Energy, Asia Regional Bureau, Bangladesh mission; and State/GPI)

Challenges

If improved cookstoves have so many benefits, why is the problem so difficult to solve?

1. No “one size fits all” cookstove
2. Lab performance ≠ field performance
3. The “best” stoves can be unappealing to cooks
4. Stove “stacking” is the norm
5. Lack of IAP health risk awareness
6. Poverty
7. Higher priorities for \$
8. Lack of HH purchase decision making power

Behavior Change

Improved cookstove adoption depends on:

1. Access
2. Affordability (including financing)
3. Decision making power for purchases
4. Awareness and prioritization

But getting a stove into someone's home is only half the battle....

Sustained improved cookstove use depends on:

1. Correct operation and maintenance
2. Fuel availability and requirements
3. Cooking needs
4. Stoves “delivering” benefits consumers want

**WASHplus also focuses on other BC techniques to lower exposure
BC of users AND implementers**

Bangladesh Study Objectives

Phase 1: Consumer needs, preferences, and willingness to pay to increase the adoption and correct and consistent use of improved cookstoves in Bangladesh. (Dec 2012 – May 2013)

Phase 2: Marketing and behavior change strategy, evidence-based approaches to increase the uptake of stoves, practical “how-to” tools. Tools and resources for other Asia regional cookstove programs and implementers. (June – Dec 2013)

Strong focus on evidence-based programming and gender.

Builds on USAID-funded Winrock market assessment and other regional inputs. Results will feed into Bangladesh Mission’s CCEB program, Global Alliance activities, Bangladesh Country Action Plan, World Bank/IDCOL activities.

Current Options:



Left: Traditional sunken-hole stove (2 pot version)

Right: Bondhu chula; the current model of improved stove most widely disseminated in Bangladesh. Built-in place chimney stove.

Consumer Preference Trials

In home testing over time

Phase 1: Household consumer preference trials:

- 5 stove types * 3 homes ea. * 2 divisions
 - * 4 villages ea. = 120 hh
 - Barisal (south) villages: Billobari, Bihangal, Ichakathi, and Gonpara
 - Sylhet (NW) villages: Jangail, Kewa, Tilargaon, and Kunarchor
- Representative of market – wood as primary fuel
- Semi-structured questionnaires- qualitative and quantitative
 - ✓ Installation and baseline
 - ✓ 3 day initial assessment/problem solving visit
 - ✓ 21 day final survey
- Willingness to pay assessment, 2 methods
- Kitchen Performance Tests
- SUMS monitoring
- IAP monitoring

5 Stoves Tested

With focus on type, not brand per se



- EcoZoom Dura
- Envirofit Z3000
- Prakti LeoChimney
- Greenway Smart Stove
- Alpha Renewable Energy Eco Chula

Consumer Preference, WTP



EcoZoom Dura

- Single-pot portable rocket-design stove
- Mass manufactured in China by Shenzhou Stove Manufacturers, sold globally
- Ceramic combustion chamber with refractory metal liner, reinforced metal doorframe, carry handles and removable stick support system

Consumer Preference, WTP



Envirofit Z3000

- Single-pot built-in-place rocket-design stove
- Imported stainless steel body and cast iron drip pan, with mud/bricks built around it on-site
- Requires 2-3 days to dry before use
- Cheapest of the 5 stoves, most like traditional and bondhu chula

<http://www.envirofit.org/products/?pid=3/>

Consumer Preference, WTP



Prakti LeoChimney

- Two-pot metal chimney stove
- Stove imported and chimney constructed locally in Bangladesh by tinsmiths
- Currently used primarily in Nepal and India
- Second burner has lower fire-power; first burner should be used for boiling.

<http://www.praktidesign.com/leo-wood.html>

Consumer Preference, WTP



Greenway Smart Stove

- Single-pot portable natural draft gasifier stove
- Natural draft air mixing allows for more complete combustion and therefore lower emissions than a typical rocket or other non-draft improved stove
- Stainless steel combustion chamber
- Currently sold in Bangladesh

<http://www.grameeninfra.blogspot.in>

Consumer Preference, WTP



Alpha Renewable Energy Eco Chula

- Single-pot portable fan (forced air) gasifier stove
- Battery-powered with solar battery charger
- Stainless steel body
- Most complete combustion, so lowest fuel use and total emissions
- Comes in 4 sizes

<http://www.sujalaam.com/eco-chula.html>

Our Study Sample

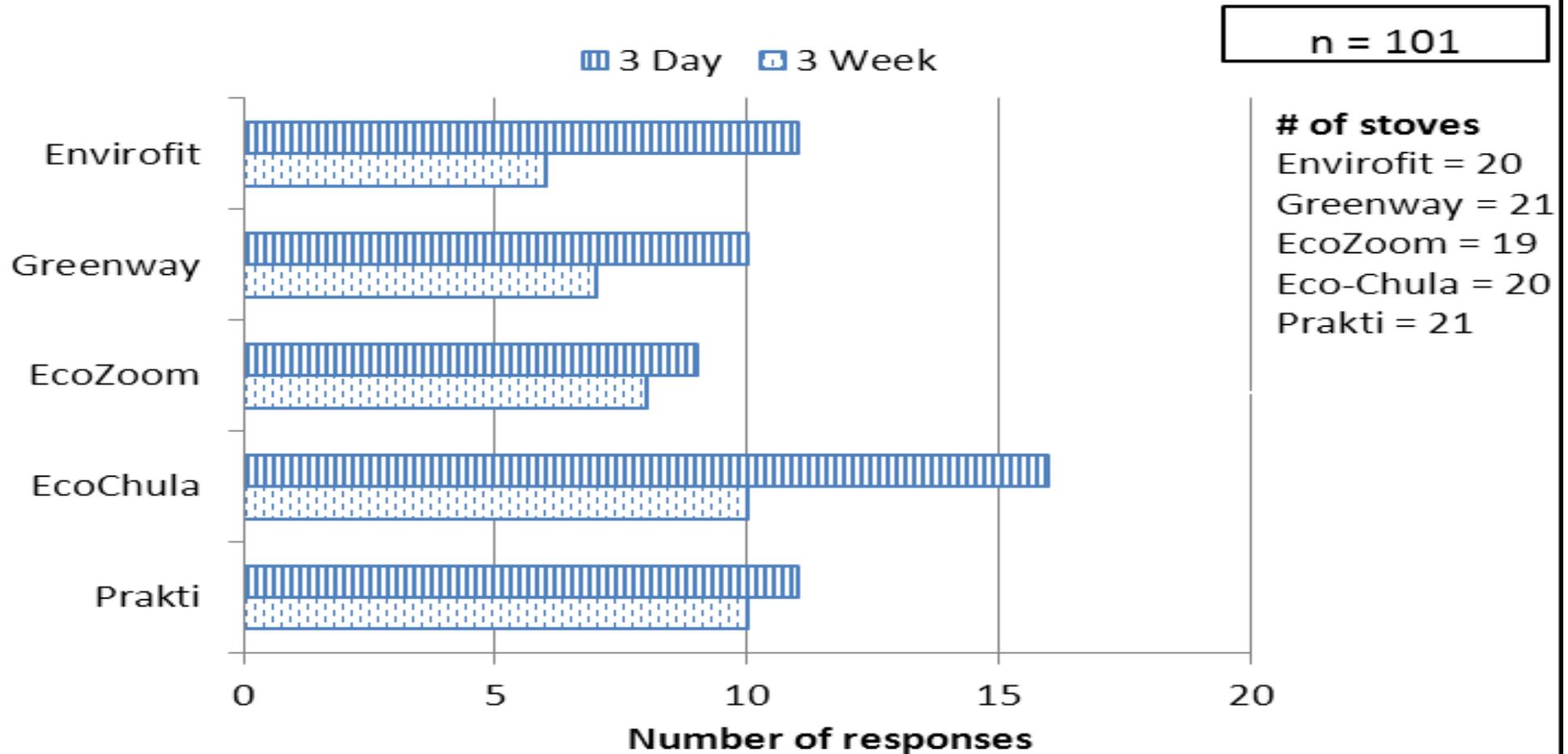
- Barisal (south) villages: Billobari, Bihangal, Ichakathi, and Gonpara
- Sylhet (NW) villages: Jangail, Kewa, Tilargaon, and Kunarchor
- Most families 4-5 people; average size of 5.3
- Primary wood fuel usage
- Poor, but not the very bottom of the pyramid
- All participants were 16-65 years old; about 60% of participants were cooks below 35 years old

Key Findings

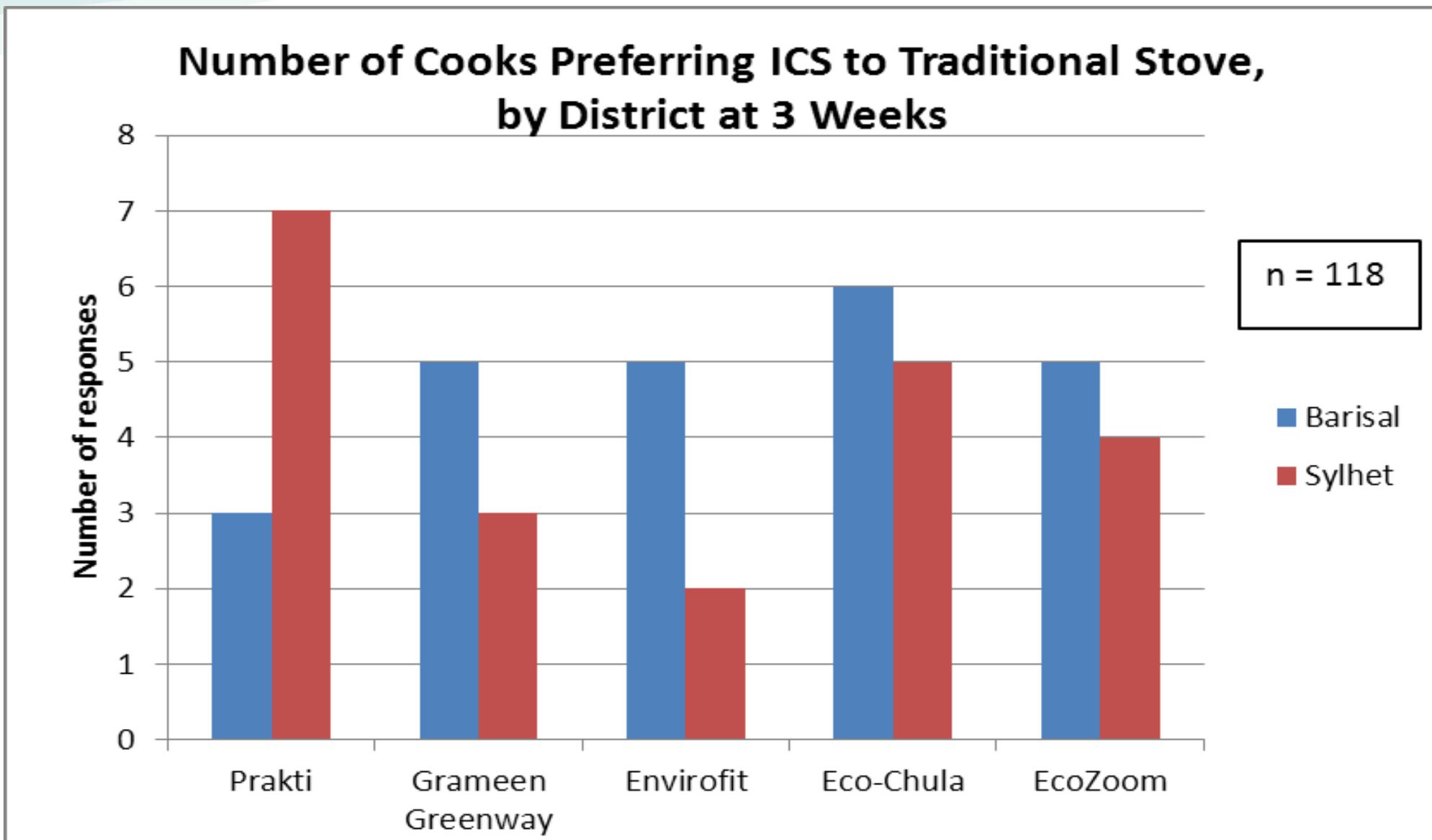
- Still, households felt ALL STOVES WERE GOOD STOVES and recognized many benefits
- NONE of the 5 stoves (as currently produced) meet all or even most – consumer needs
- However NONE would completely replace traditional stoves
- Cook satisfaction with the improved stoves DECREASED over the 3 week trial when compared to their responses after 3 days of use
- Consumers most appreciated the Prakti and Eco-Chula stoves, with the preference for each stove varying by district

Decreasing Satisfaction Over Time

Number Preferring ICS over Traditional Stove, at 3 Day and 3 Week

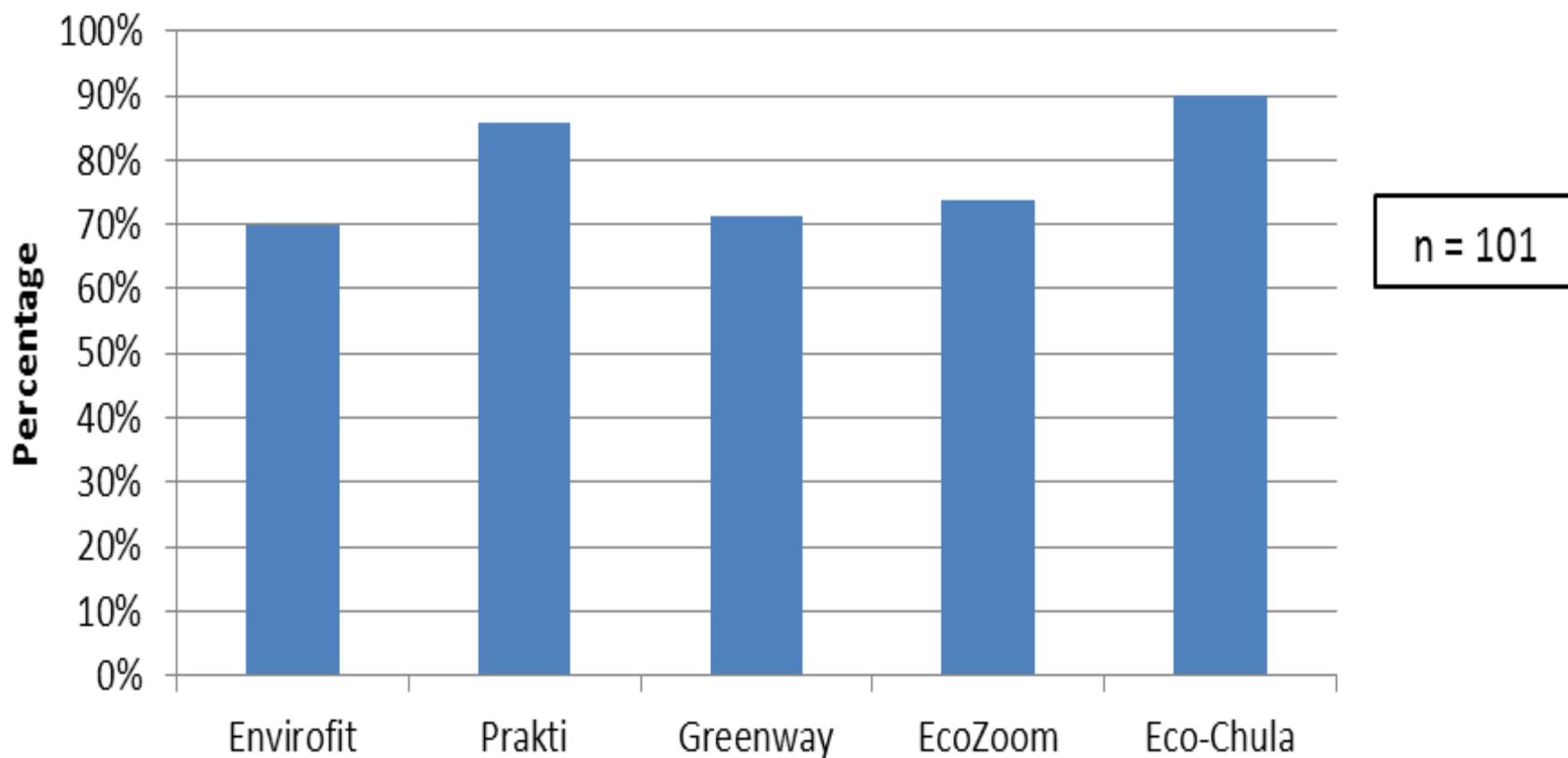


Preferences by District



Overall Non-relative Opinions

Improved Cookstove is Good



What did people like about the stoves?

Well manufactured

Less soot/cleaner

Looks nice

Less firewood/fuel

Portable/good handle

Emits less smoke

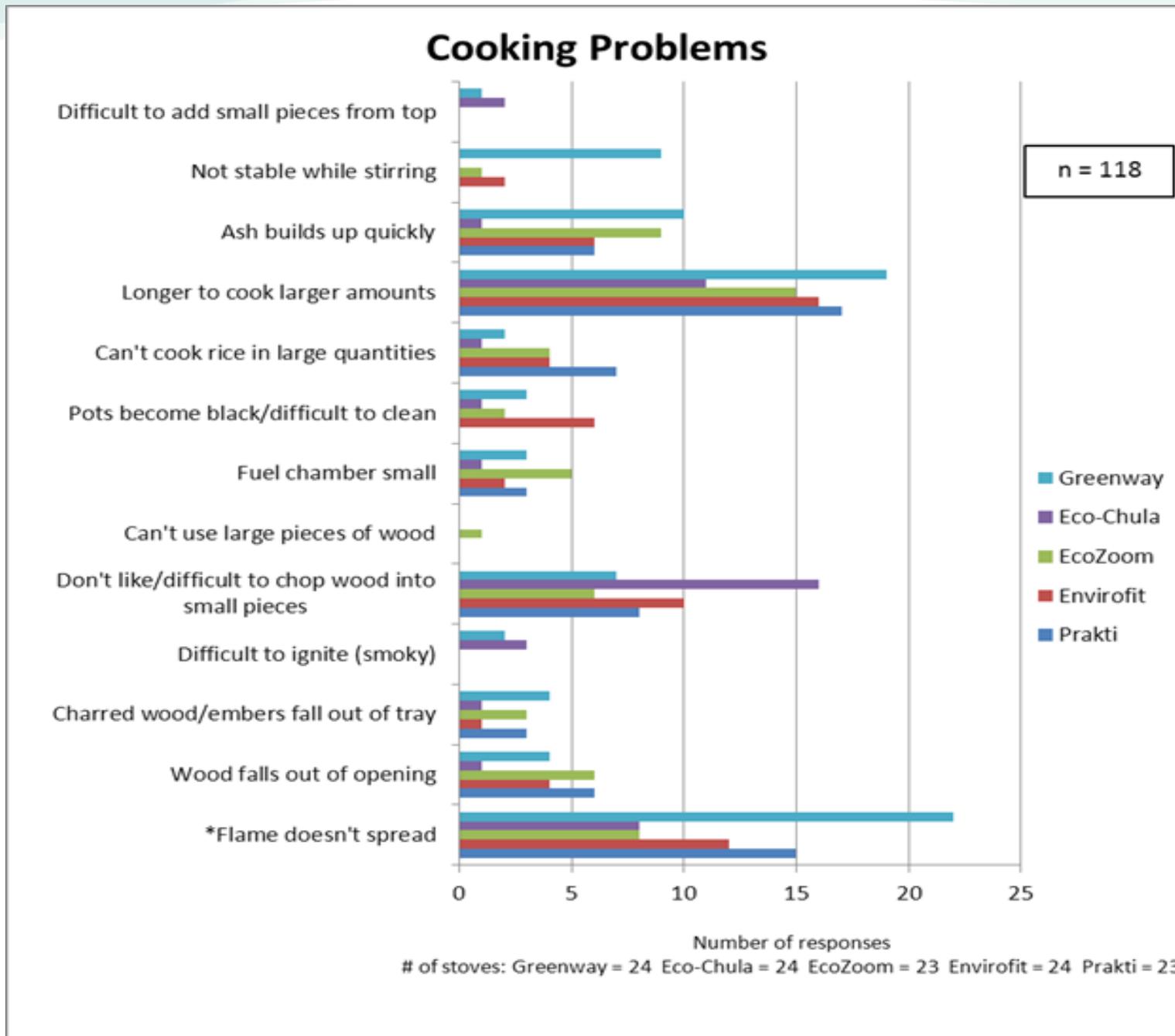
Cooks food quickly

Easy to light

Problems Encountered & Solutions Suggested by Users

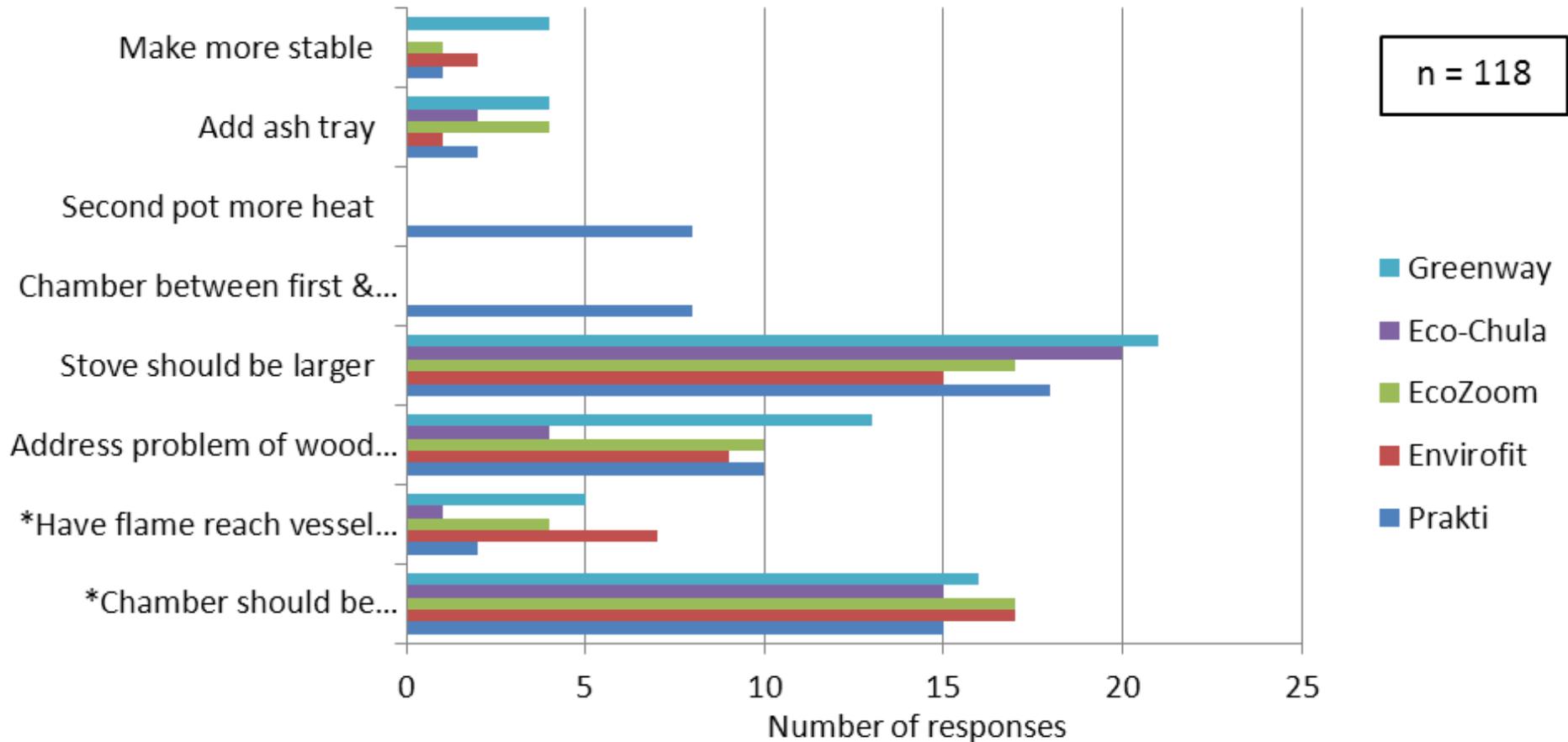
Problems	Solutions
Not stable while stirring	Make the stove stable
Ash builds up quickly	Add ash tray
Cannot cook in second pot due to lack of heat	Increase heat in the second pot by placing fuel chamber between first and second pot
Cannot cook large quantities of food like rice and takes longer to cook large quantities	Larger sizes of stoves should be available
Fuel chamber small so wood fall off the opening and charred wood and embers fall out	Fuel chamber should be larger
Cannot use large wood pieces/cannot chop wood pieces, cannot effortlessly feed wood.	Address problems related to wood size
Flame does not spread	Flame should reach vessel and be visible
Difficult to ignite , and add small wood pieces, Pots become black and difficult to clean.	-These 'changes' or 'solutions' revealing, but not something recommended for modifications/ implementation

Problems Identified by Cooks



Suggested “Improvements”

Changes to Make Stove Better



of stoves: Greenway = 24 Eco-Chula = 24 EcoZoom = 23 Envirofit = 24 Prakti = 23

Who would buy stoves?

What Kind of People Would Use This (These) New Stoves?	Frequency n = 120	%
Small families	54	42
Modern people	52	43
Thrifty people	25	21
Simple, ordinary family	16	13
Someone people respect	11	9
People/families living in cities	9	8
Small families who buy fuel	8	7
Smart people	8	7
People living in rented apartment	7	6
Rich families	4	3
Bachelor	3	3

Kitchen Performance Tests

Funded through S-GPI Grant

- Best practice for accurately estimating daily household fuel consumption
- Three-day fuel weighing monitoring
- Cross-sectional study design
- 116 study households, 24 control households
- IAP monitoring in a subset of 7 households: PM_{2.5} and CO

KPT findings

- Households using all but one model of improved stove (alongside their traditional stove) used 16-30% less fuel
- Households using the one built-in-place stove (Envirofit) used 17% more fuel – installation and consumer education problem?
- All stoves reduced IAP

Stove Use Monitoring System (SUMS)

- Button-sized temperature sensing data-loggers
- Tracks actual stove usage
- Used on all improved stoves and half of existing traditional stoves in study homes

SUMS findings

- All homes used improved stoves, but none did so exclusively
- All homes used ALL stove less once we stopped coming to do daily Measurements!



Willingness to Pay

Auction: 105 study participants given the option to purchase the stoves at the market value. Only one opted to do so, and a second nonparticipant neighbor purchased a stove.

Buy back: 15 households were offered the stoves as gifts, then given an option of a cash buyout at market value. Only three opted for the (relatively significant) cash; ***the other 12 preferred to keep their stove!***

When acquisition barriers were removed, householders valued the stoves.

WTP Stove Values

Stove model	Stove value (US\$)	Buy-back offer, lowest sale price (US\$)	Stove value (BD taka)	Buy-back offer, lowest sale price (BD taka)
Prakti	70	38	5000	3000
Greenway	45	29	3300	2400
Envirofit	40	24	3000	2000
Eco-Chula	70	54	5000	4300
EcoZoom	35	19	2600	1600

Next Steps

- ***Need for stove design improvements for the Bangladesh market and further consumer preference testing!***
- WASHplus Bangladesh Phase 2 runs through Dec:
 - Develop a generic marketing and behavior change strategy
 - Identify key segments most ready to purchase ICS
 - Apply a “4Ps” analysis (product, place, price and promotion) to the Bangladesh cookstove market: product, place, price and promotion for each segment
 - Concept test key elements of these approaches; and
 - Develop practical “how-to” tools to contribute to the goals and results of USAID energy and health objectives in Bangladesh

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