

Consumer Preference & Willing to Pay Studies: Nepal & Bangladesh



Consumer Preference

Why is consumer preference so important?

Cooking is personal, if cooks don't like or can't buy the stoves, they won't use them; no benefits!

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

Study Objectives

- Elicit desired ICS attributes/perceived benefits
- Compare consumer reactions to five ICS types
- Assess willingness to pay, consistency of use
- Test efficiency, impact on household fuel use
- ***Make recommendations to USAID/CCEB and AEPC to expand the selection of improved cookstoves (ICS) offered in each country***

Baseline options

Bangladesh



Nepal

Consumer preference trials

TIPS includes semi-structured questionnaires-
qualitative and quantitative elicitation questions

- Baseline/demographic
- Stove installation (e.g. 5 stove models; 140 HH)
- 3-6 day initial assessment/problem solving
- Endline survey (at 4/8/12 weeks)
- Market demos and FGDs
- Willingness to Pay (2 methods)
 - Add-on monitoring
 - Fuel wood usage (CCT, KPT)
 - Stove usage (SUMS)
 - Indoor air pollution monitoring

Market Demos & FGDs



CCTs and KPTs

CCT: Assess stove performance in local context (fuel use and cooking time); controlled setting pre-trials



KPT: Assess impact of stove on HH fuel consumption

Stove Use Monitoring

Stove usage measurement sensors (SUMs)

- temperature-sensitive iButton data loggers
- record stove temperature every 10 minutes
- determine how long/often stoves used

Maxim iButton



WTP methodologies

Determine how consumers value and are willing to pay for these technologies, including through installment plans

- Auction/bargaining in Nawalparasi: participants invited to bargain for stove; lump sum or installment payment options
- Buy-back in Dang: participants given stove as gift, offered a cash buy-out



Consumer preference trials

	Bangladesh	Nepal
Stove types	5 imported	4 imported, 1 local
Households	120	140*
Geography	8 villages across 2 districts	4 villages across 2 districts*
Trial duration	3 weeks	4-7 months*
KPTs	116 intervention 24 control	123 intervention 27 control
SUMS	Intervention in all study HH, traditional in ½ of study HH	Intervention and traditional stoves in all study HH
IAP monitoring	Limited sample	None

Nepal study challenges

- April – May earthquakes
 - Loss of Dolakha district
 - IRB delays
- Accidental fire first day in field
- Political unrest, delays in field visits
 - Inability to reach Dang = 4 month gap in SUMS data
 - KPT, endline and WTP delayed from Sept to Dec in Dang (into winter)

Changes from BD to Nepal

- Added **FGDs**
- Moved CCTs prior to TIPs
- Had cooks practice on stoves in homes prior to CCTs
- Included local “improved” stove in the mix
- Some stoves modified by manufacturers to address Bangladesh findings
- More buy-back WTP families
- **Others?**

Study stoves

Envirofit Z3000

- Single-pot built-in-place rocket-design stove

EcoZoom Dura

- Single-pot portable rocket-design stove

Prakti LeoChimney

- Two-pot metal chimney stove

Greenway SmartStove/JumboStove

- Single-pot portable natural draft gasifier stove

Alpha Renewable Energy EcoChula

- Single-pot portable fan stove (battery/solar)

Xunda Field Dragon

- Single-pot portable rocket-design stove

Local AEPC-promoted mud/chimney stove

- Double-pot built-in-place mud stove

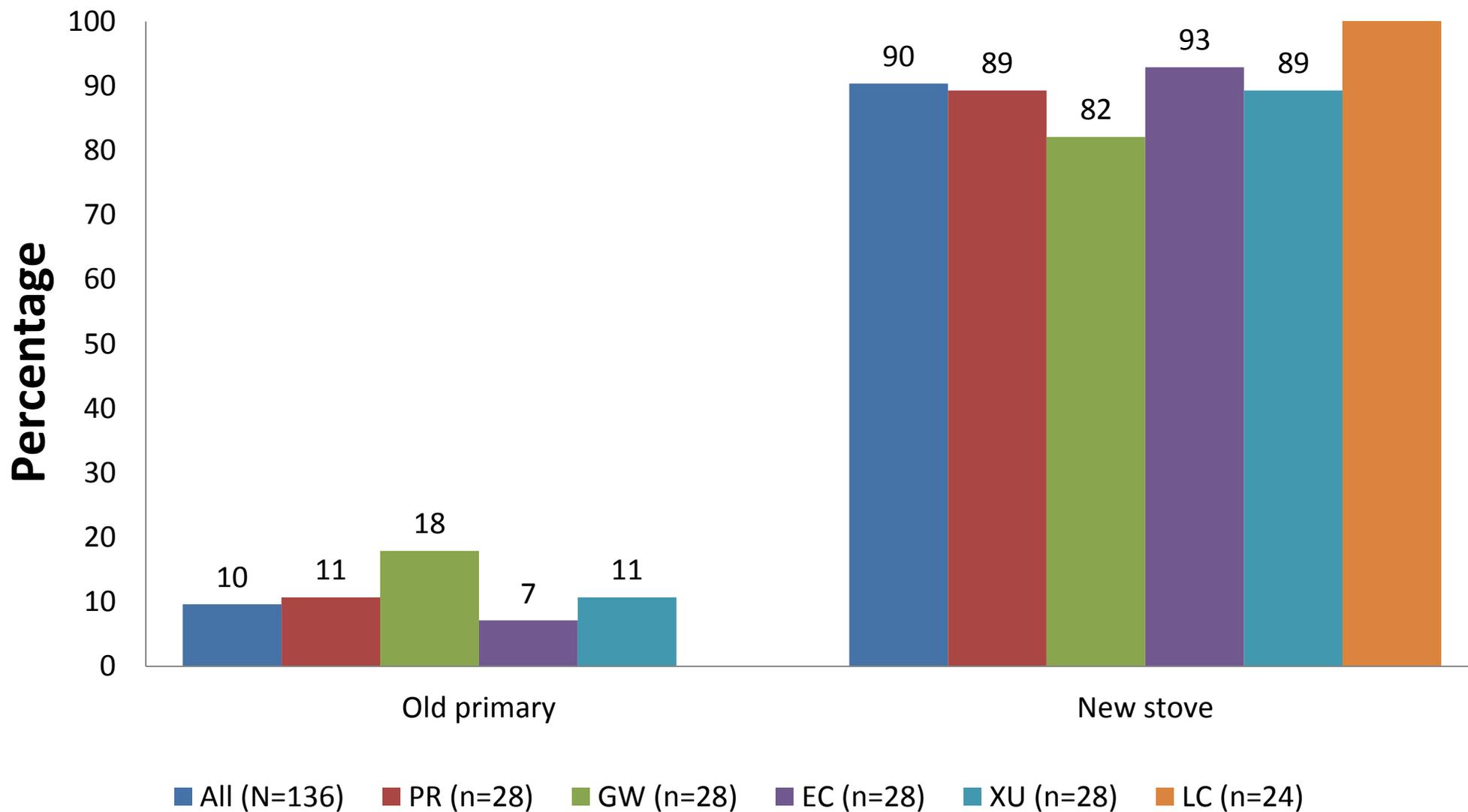


Nepal study sample

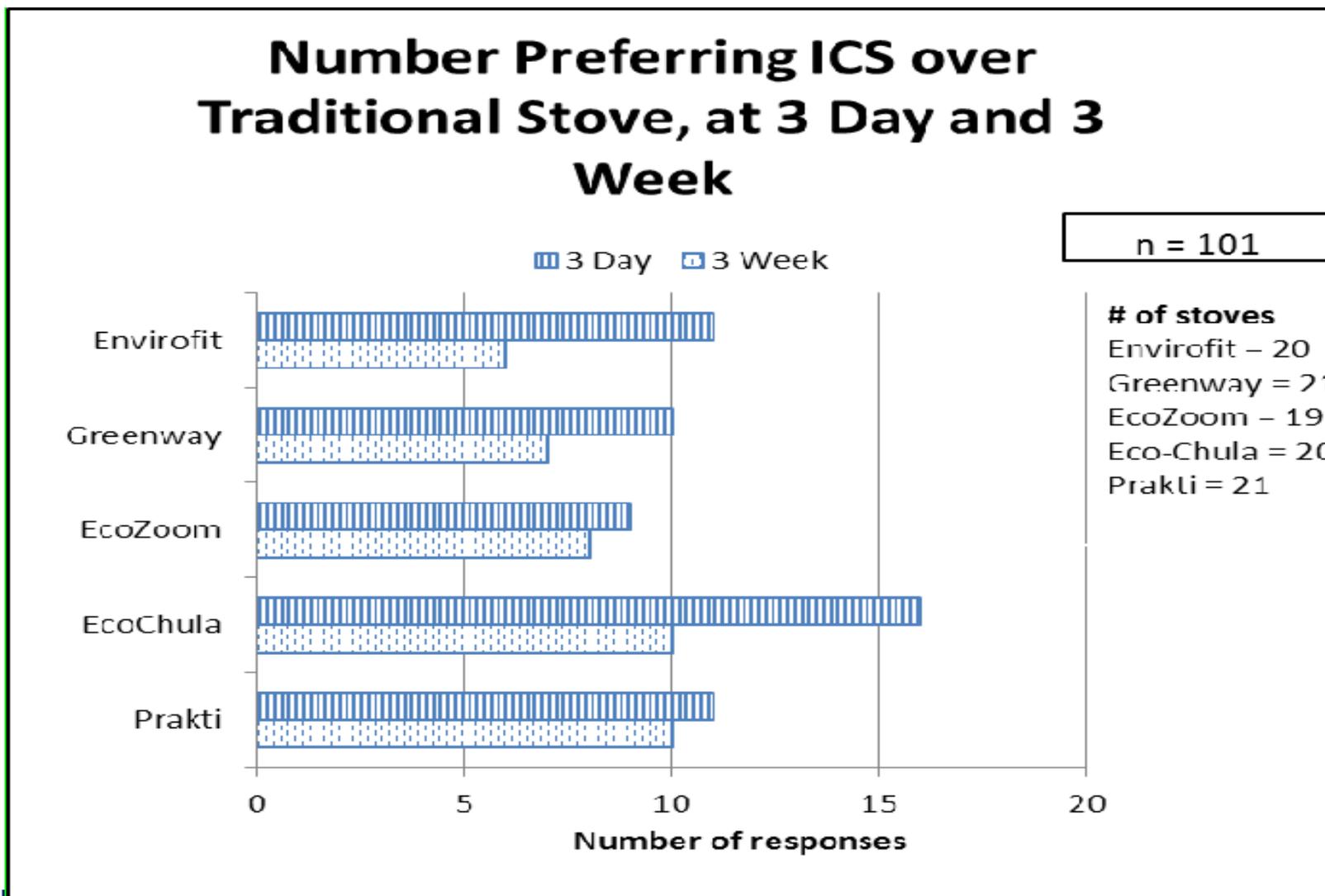
- Nawalparasi & Dang
- Most families 4-5 people; average = 5
- Primary wood fuel usage, mostly gathered
- Poor, but not the very bottom of the pyramid
- All participants 18-50yo; ~50% were 21-30 yo



Nepal: preference for new stoves over traditional stoves



Bangladesh: preference for ICS over traditional stoves



Drivers for ICS preference

Important stove qualities	Dislike about old stove	Reason for preferring ICS
Consumes less firewood	Uses a lot of firewood	Uses less firewood
Emits less smoke	Emits a lot of smoke	Emits less smoke/ reduces health problem
Easy to light	Difficult to light	Easy to light (24%)
Easy to cook		Is right height to sit and cook
Appropriate for the cooking pots	Pots get too dirty	Pots are cleaner
	Looks ugly	Aesthetics, looks nice
		Cooks food quickly, Portable/ good to handle

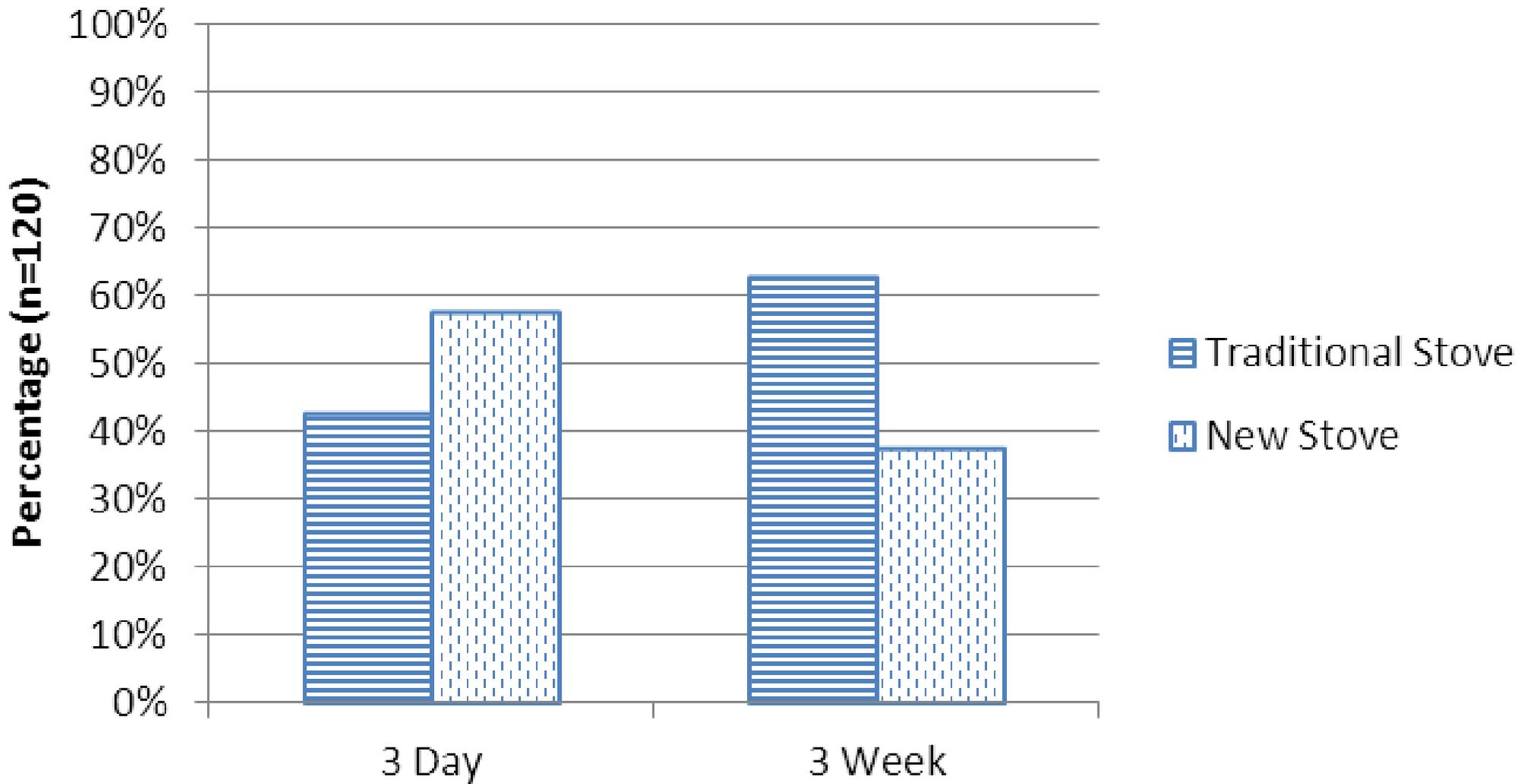
BD drivers of preference



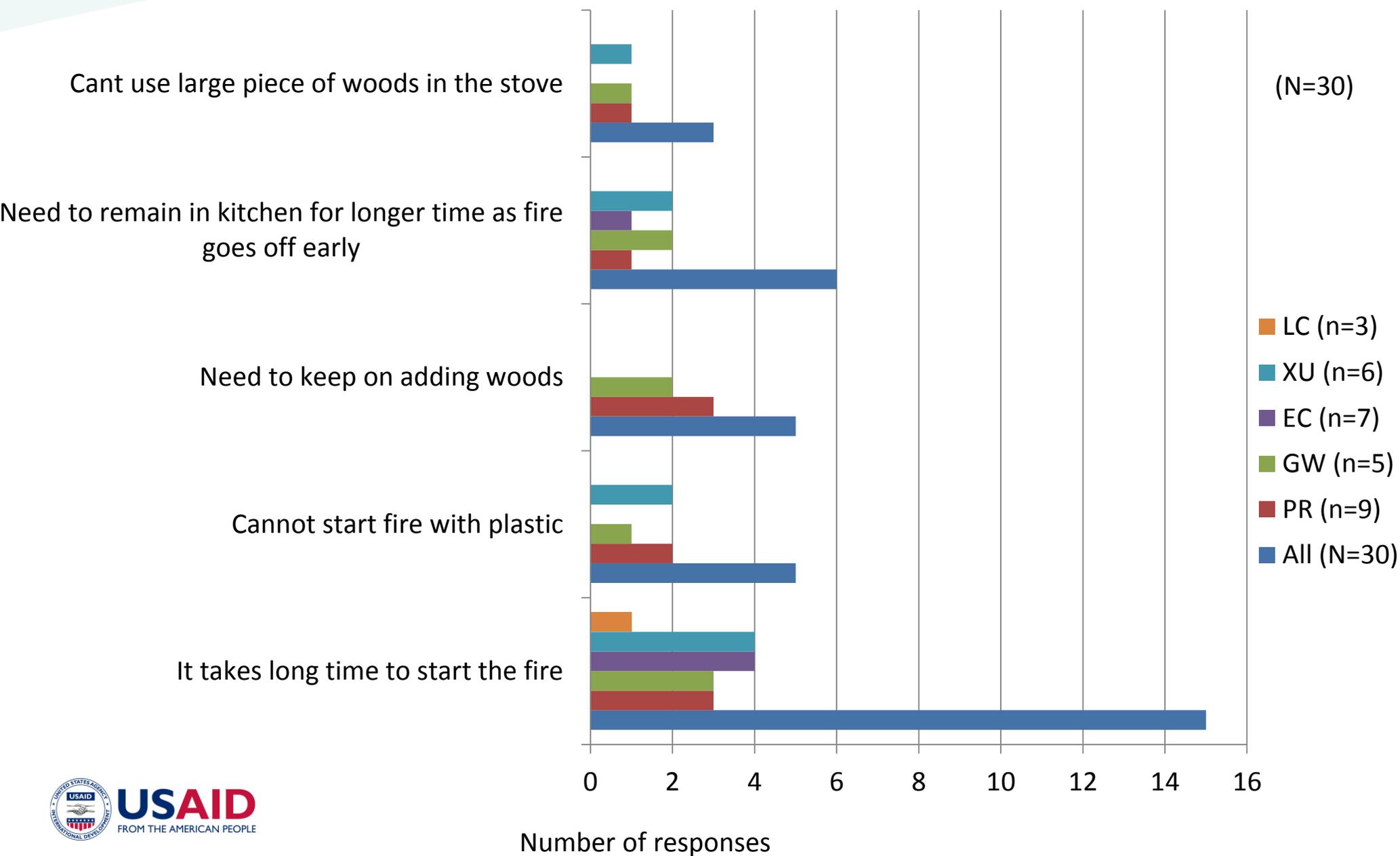
Nepal preference over time



BD preference over time



Problems identified by cooks



Nepal: who would buy?

What Kind of People Would Use This (These) New Stoves?	Frequency n = 136	Percentage (%)
Ordinary person	128	94.1
Poor people	16	11.8
Thrifty	11	8.1
Modern	8	5.9
People who are taken as a example in society	8	5.9
Respected person	3	2.2
Smart	2	1.5

Market demo preferences

- **Prakti** liked for its chimney and two pot holes
- **EcoChula** liked for its solar-powered fan
- Many undervalued the price by nearly half, “more expensive than LPG stoves”
- Expected to see stoves with different fuel options; solar or electric powered



Willingness to Pay: Nepal

Auction/bargaining: 70 households/Nawalparasi

- Stoves offered at discounted market value (\$6-43)
- 37 bargained; all 37 purchased the stove
- 23 cash payments, 14 on installment plan

Buy back: 66 households/Dang

- Stoves offered as gifts, cash buy-out option (\$6-43)
- 8 opted for the (relatively significant) cash
- 58 preferred to keep their stove!

Willingness to Pay: Bangladesh

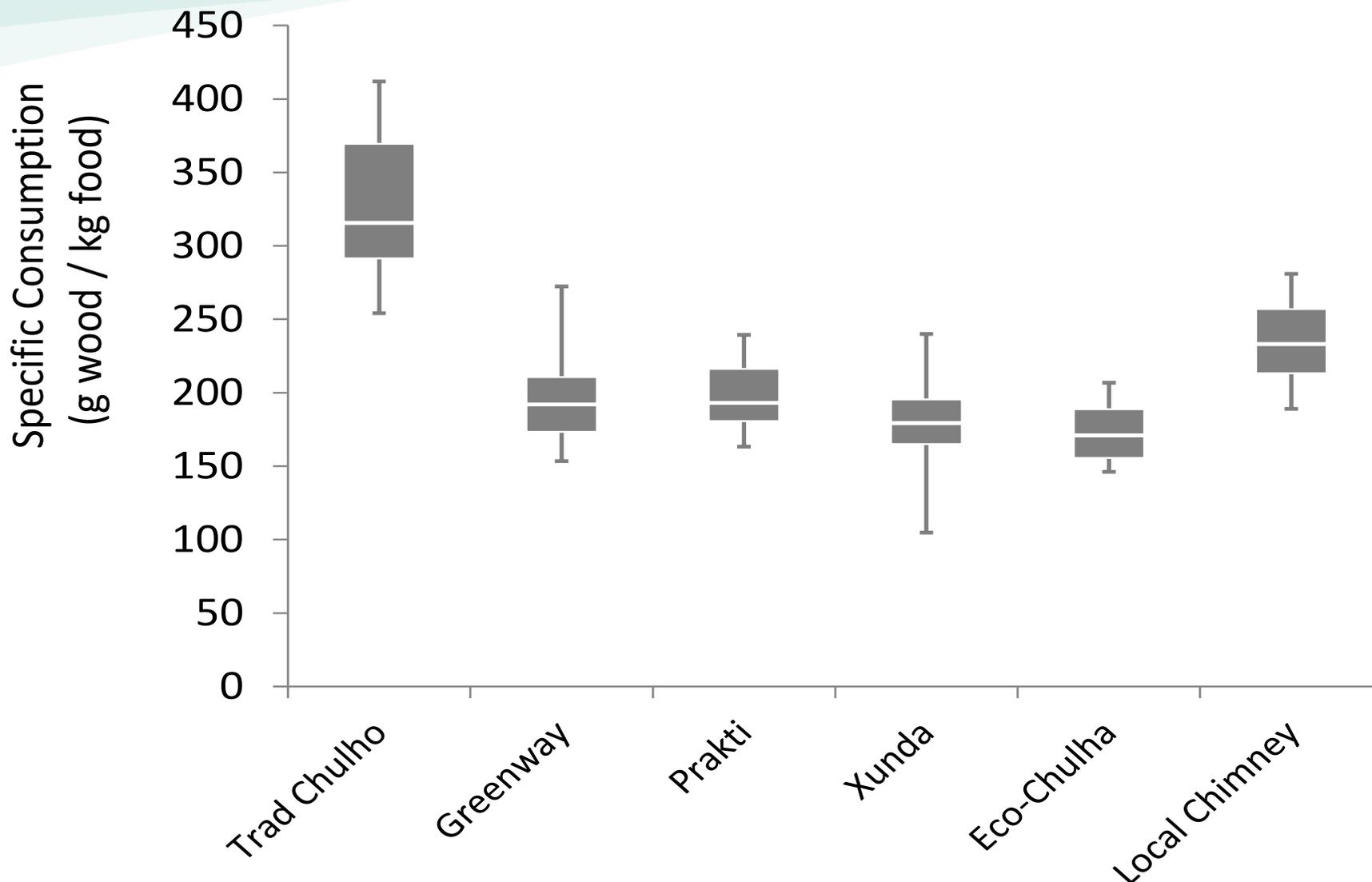
Auction/bargaining: 105 study participants

- Stoves offered at discounted market value (\$19-54)
- Only 1 purchased the stove

Buy back: 15 study participants

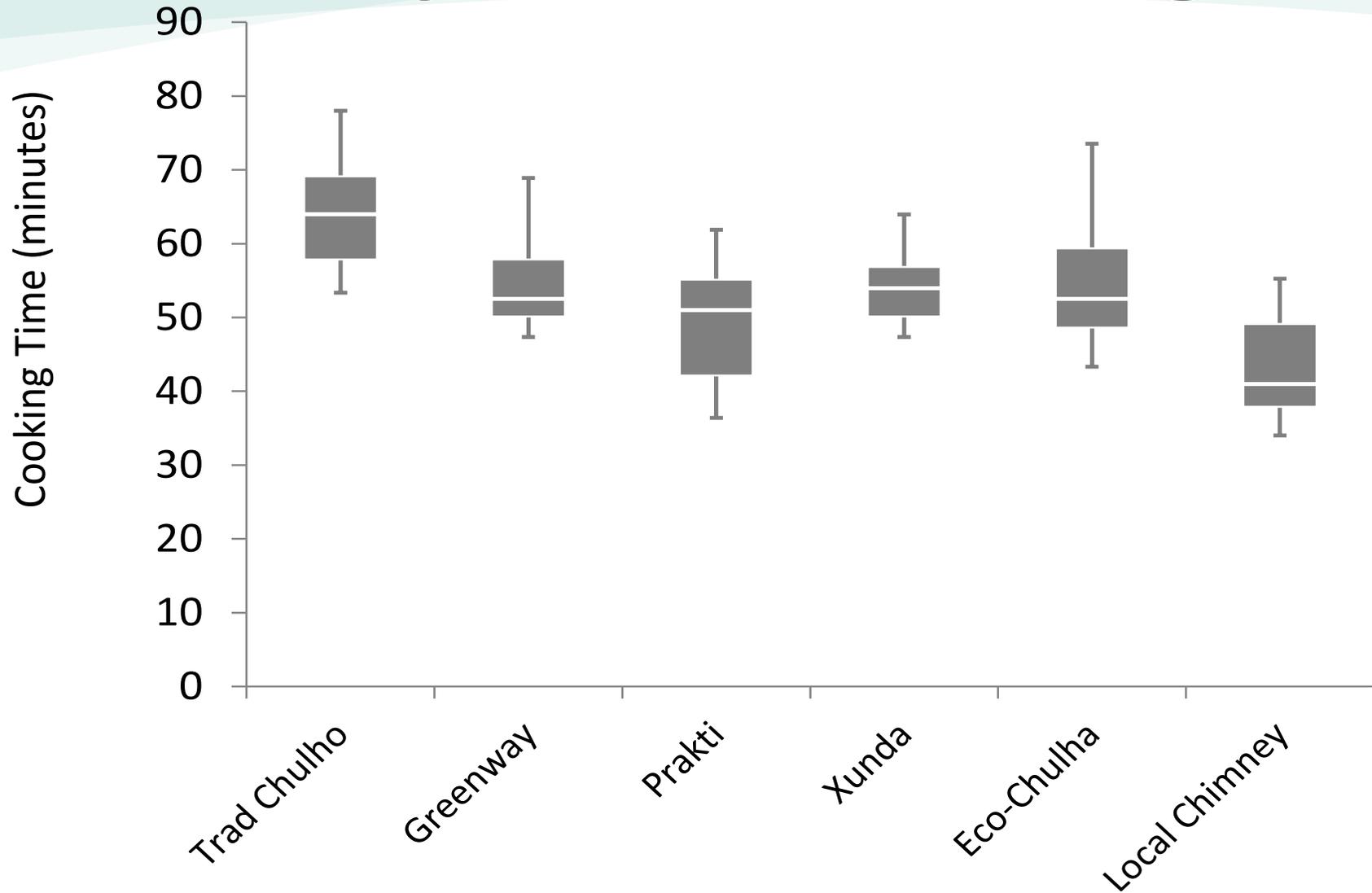
- Stoves offered as gifts, cash buy-out (\$19-54)
- 3 opted for the (relatively significant) cash
- 12 preferred to keep their stove!

Nepal CCT: Fuel Savings



Significant fuel savings for all stoves: 29-47%

Nepal CCT: Cooking Time



Significantly reduced cooking times for all stoves: 15-33%

KPTs and SUMS

Distinct differences between Nawalparasi and Dang:

- Nawalparasi = outdoor stoves for animal feed/alcohol common (77%; Dang only 16%)
- Nawalparasi KPT in Sept
- Dang KPT in Dec

Cross-sectional

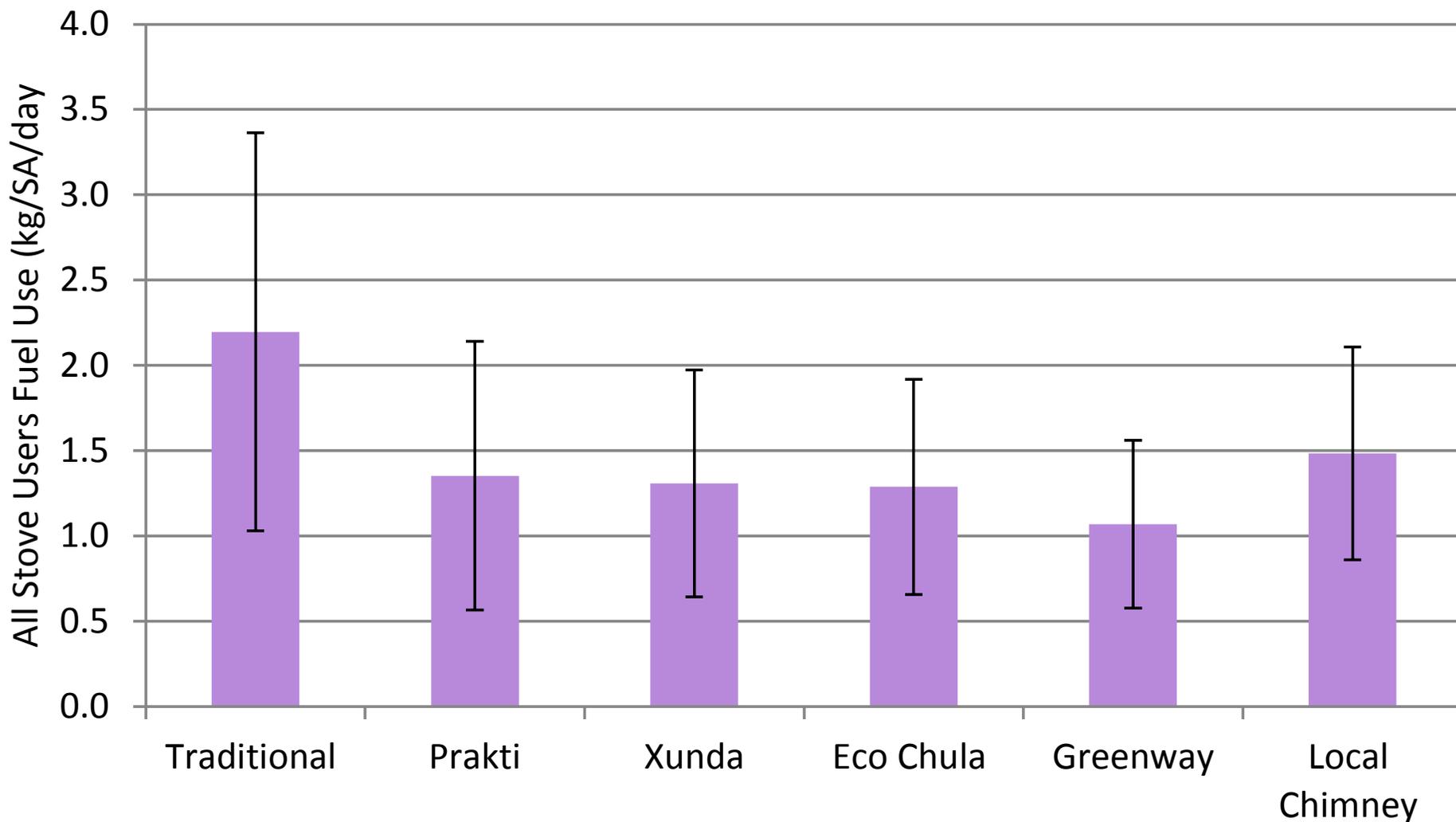
- 123 study households
- 27 control households



Stove use in Nawalparasi

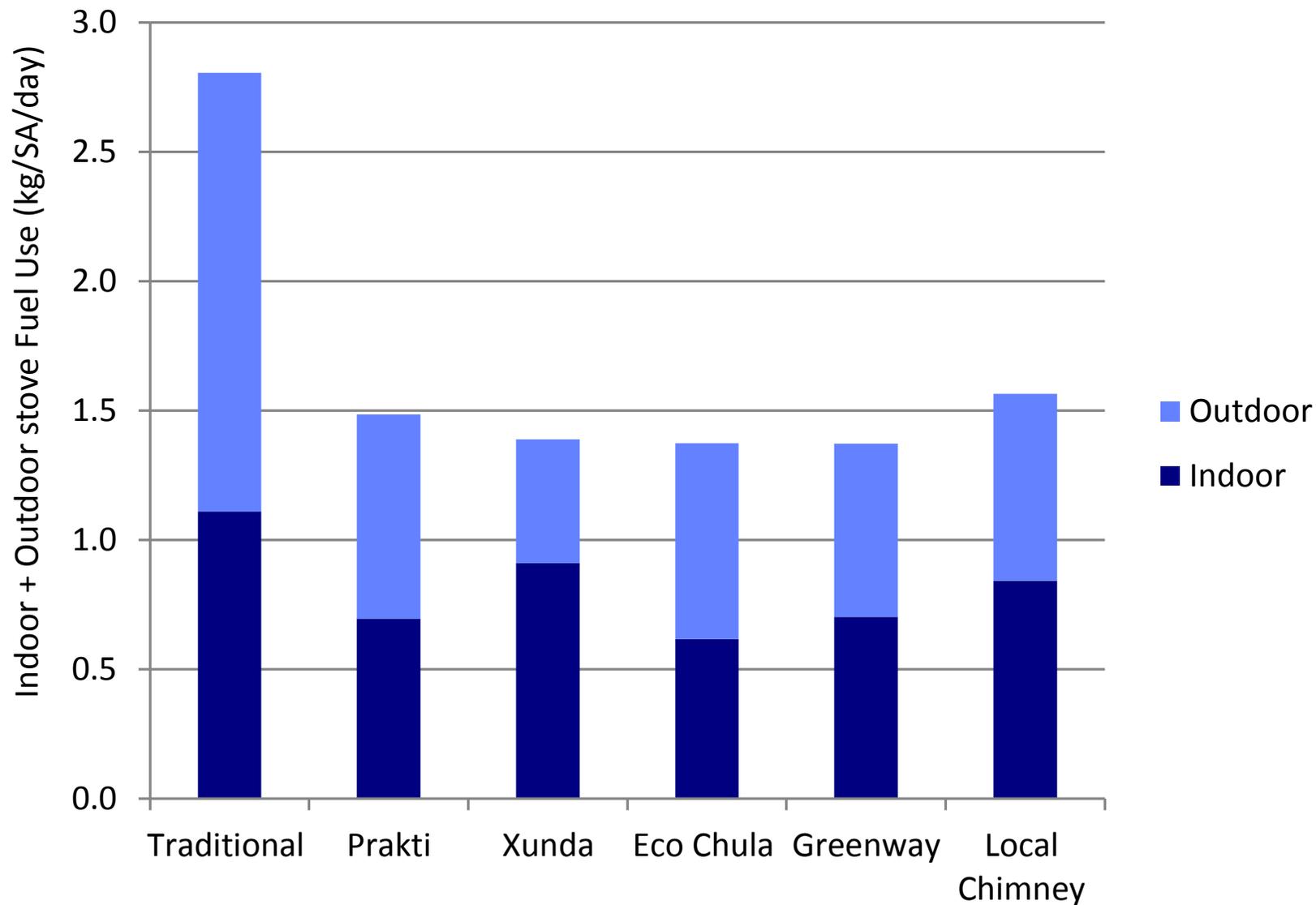
- Improved stove use in Nawalparasi relatively consistent over the four month study period, except:
 - EcoChula usage decreased with time
 - Local Chimney usage increased with time
- Greenway, Prakti, and Xunda = significantly more use than traditional stove
- EcoChula and Local Chimney used regularly but not significantly more than traditional stove

Fuel use in Nawalparasi (trad+ICS)



Significant fuel savings: 32-50%

Fuel use in Nawalparasi



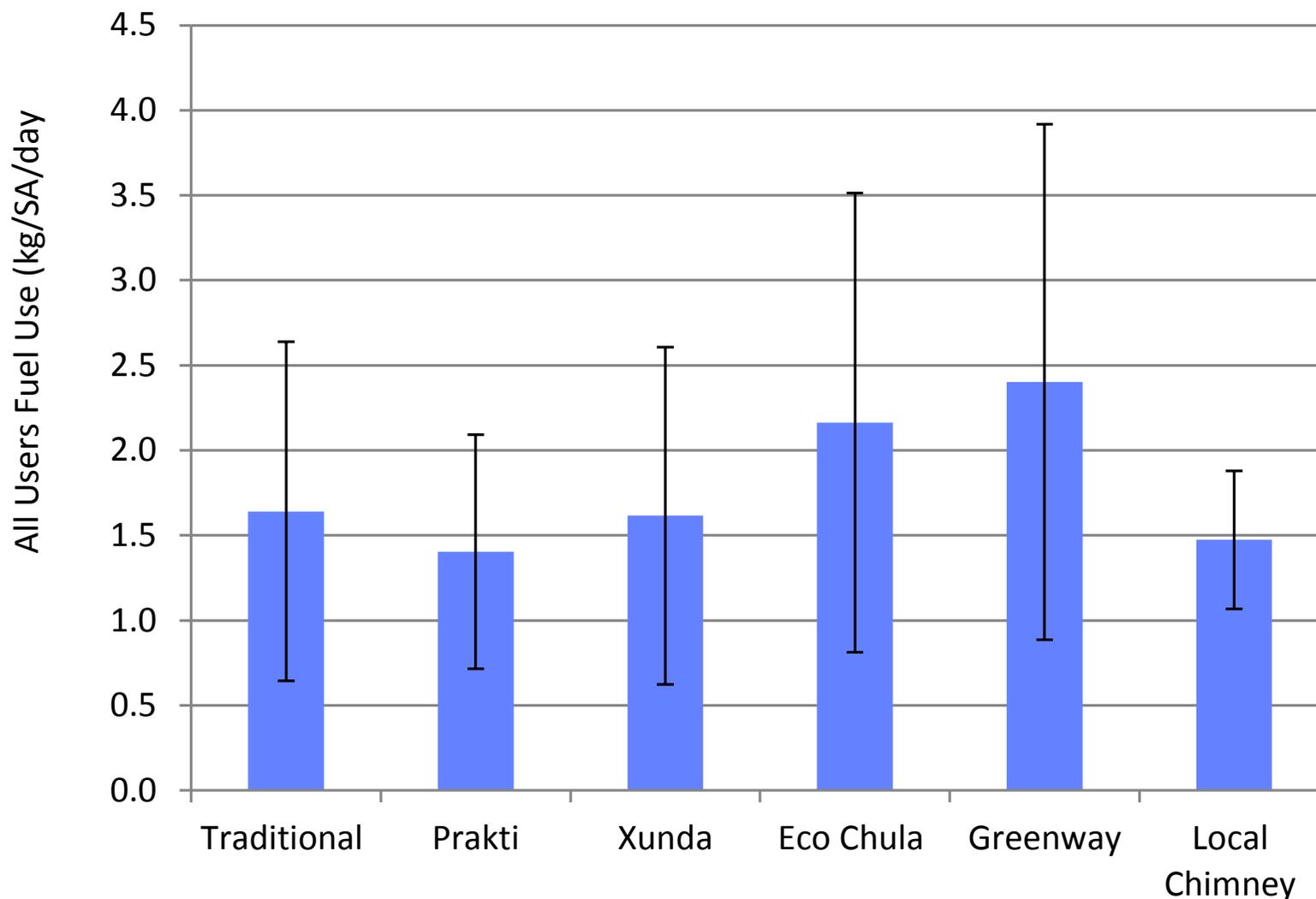
Stove use in Dang

- Improved stove use in Dang was consistent over the first three months, except:
 - Local Chimney usage decreased with time

Then a 4-month gap in SUMS data

- By December all ICS use was low, and traditional stove use went up
- ICS use was ***in addition to*** typical traditional stove cooking

Fuel use in Dang (trad+ICS)



No significant fuel savings; min ICS use add'l to trad use

Stove use in Dang

- Latent heat use in the colder months
- Despite not using them, 80%+ preferred the ICS at endline in Dec
- Went back to using the improved stoves in summer

Study outcomes

Bangladesh: The majority of study households did not prefer study stoves over traditional stoves, and were not willing to pay for them.

- CCEB decided to NOT add those particular models into their portfolio, but used features feedback to identify/develop appropriate local models— credits study with consumer choice break-through

Nepal: Enthusiastic support of study stoves over traditional stoves, majority willingness to pay

- Recommendation to AEPC for inclusion of these or similar models into national stoves program

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