



Supportive Environments for Healthy Communities

USAID/WASHplus

Light My Fire! Gauging Consumer Preference\$\$: Improved Cookstoves in Bangladesh

Helen Petach, USAID

Elisa Derby, Winrock International

Mini-U 2015



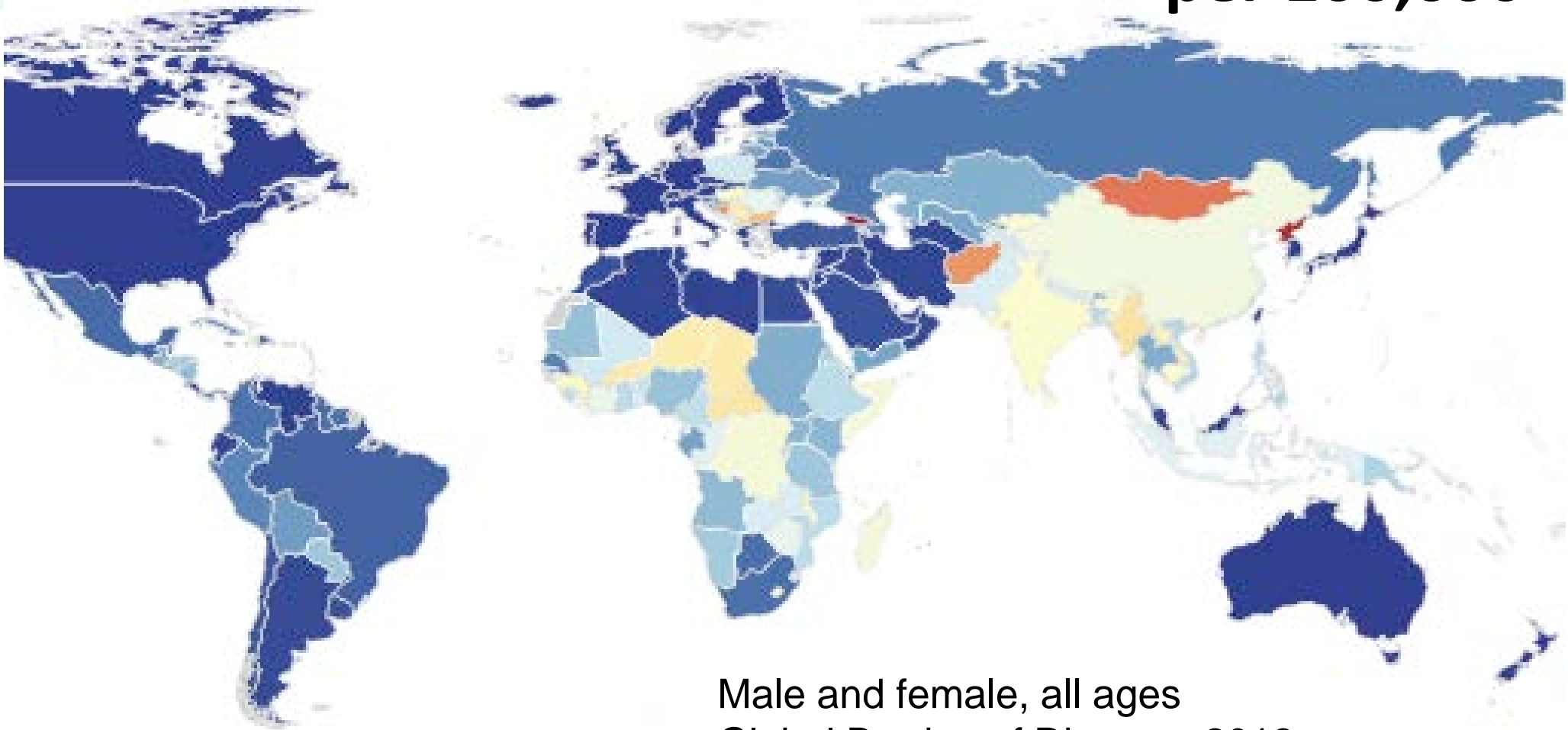
What is WASHplus?

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 household air pollution (HAP).

Winrock leads HAP activities

Deaths attributed to HAP per 100,000



Male and female, all ages
Global Burden of Disease, 2012



Ranking of Risk Factors

Sub Saharan Africa

2010 Mean rank (95% UI)

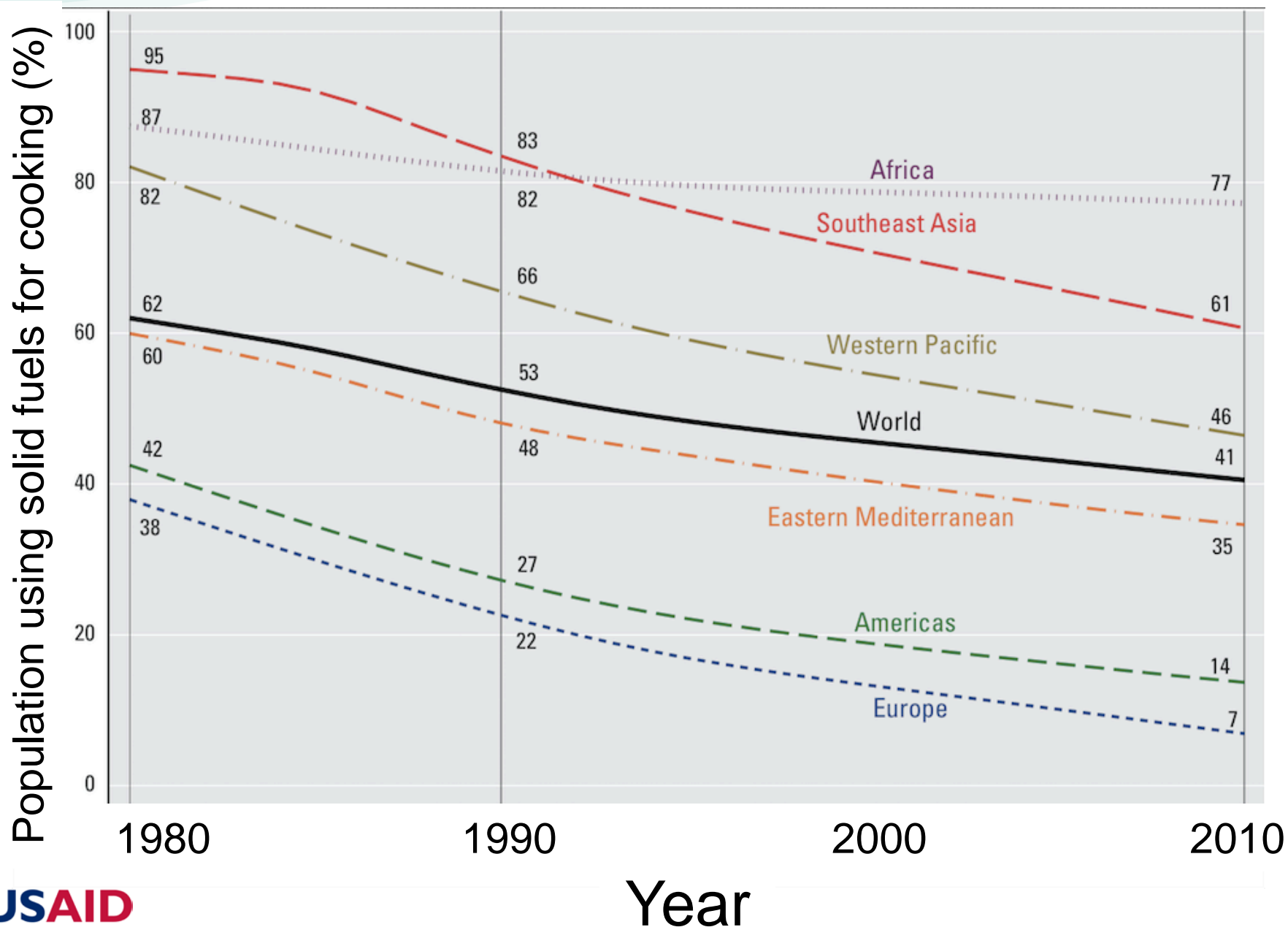
- 1 High blood pressure
- 2 Childhood underweight
- 3 Household air pollution

South Asia

2010 Mean rank (95% UI)

- 1 Dietary risks
- 2 High blood pressure
- 3 Household air pollution

Population using solid fuels for cooking



Kenya “improved cookstove”



Biomass combustion

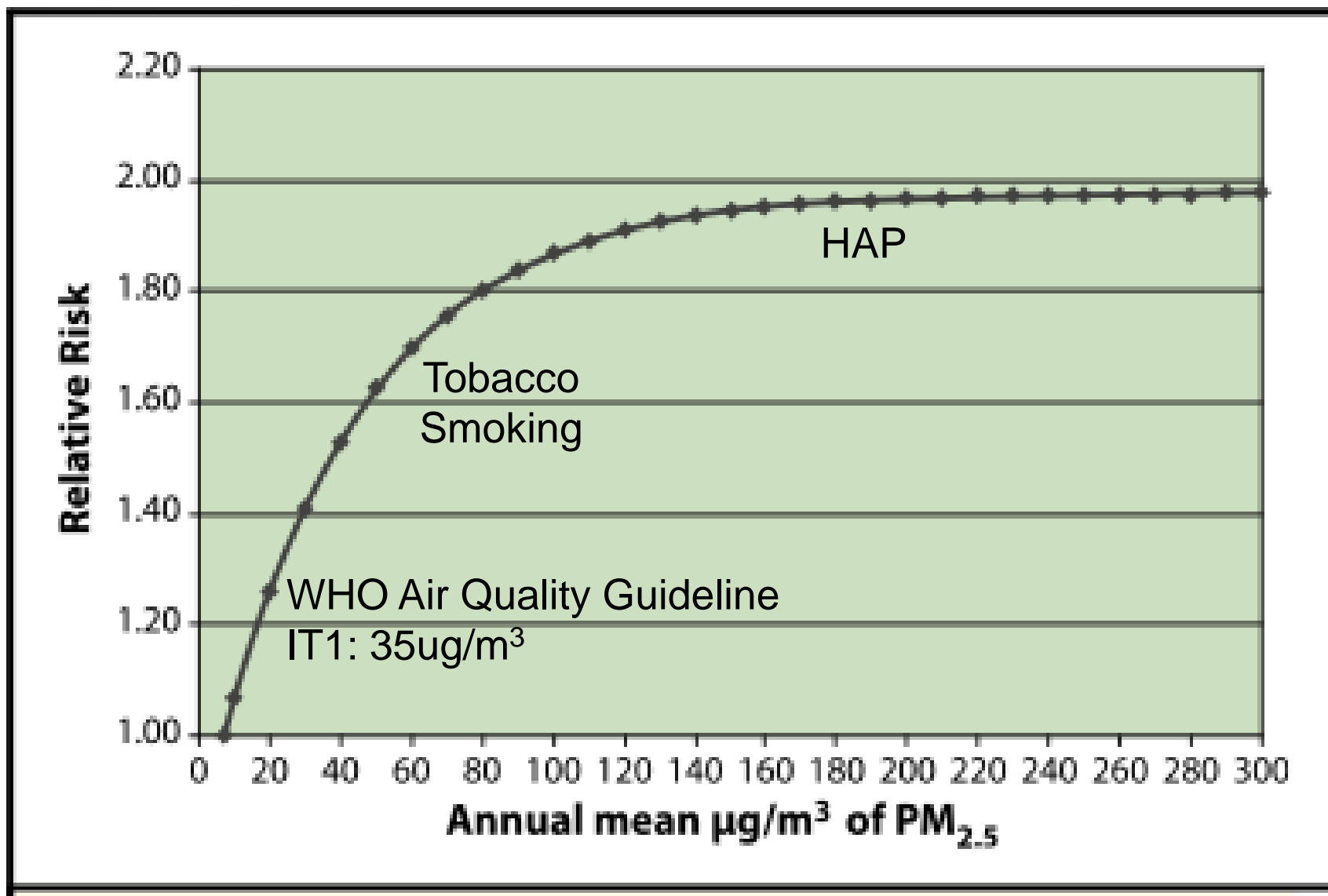
TLUD wood bundle (1 burn)



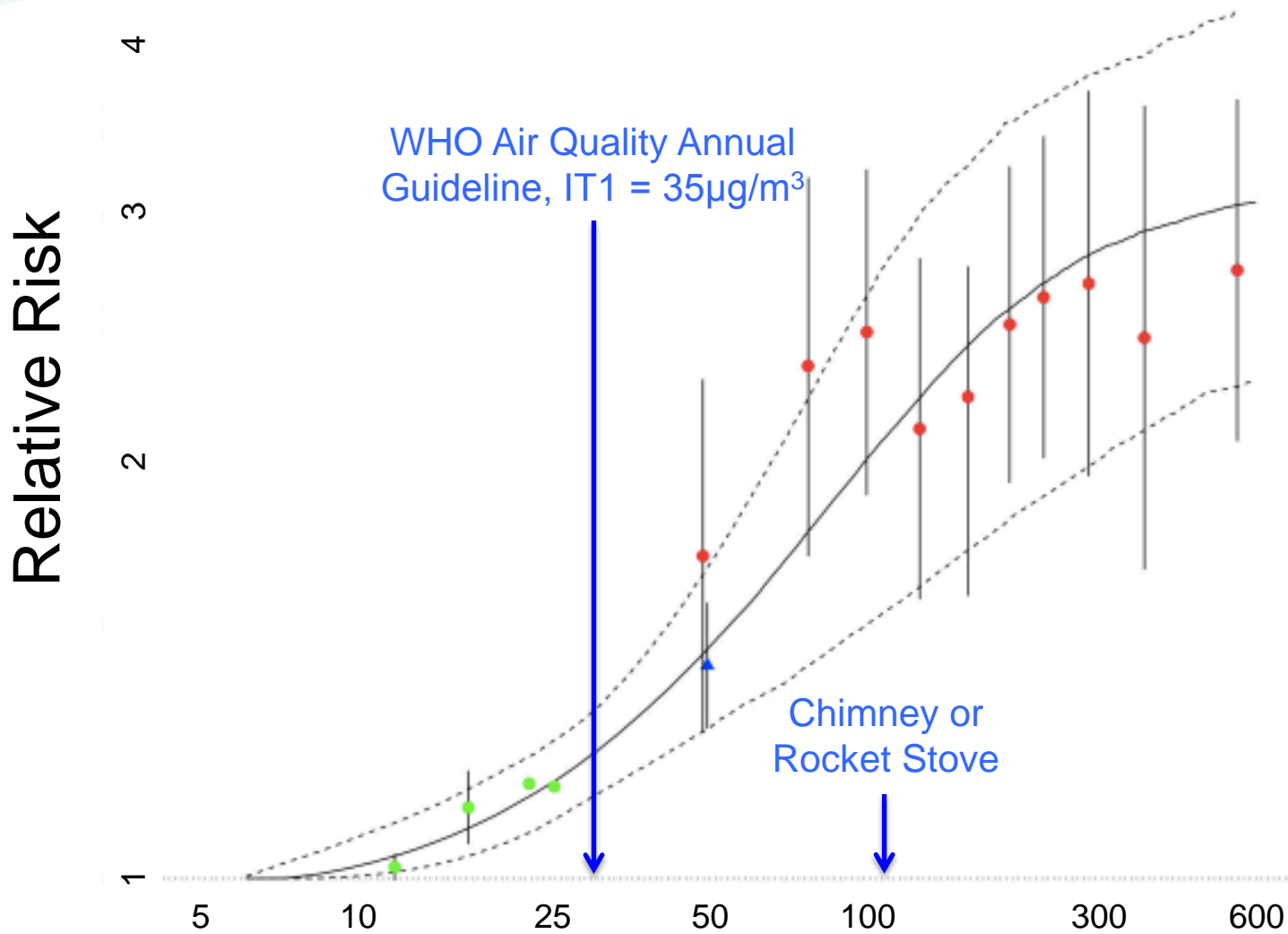
Biomass for one day in Kenya
mud stove



How clean is clean enough?



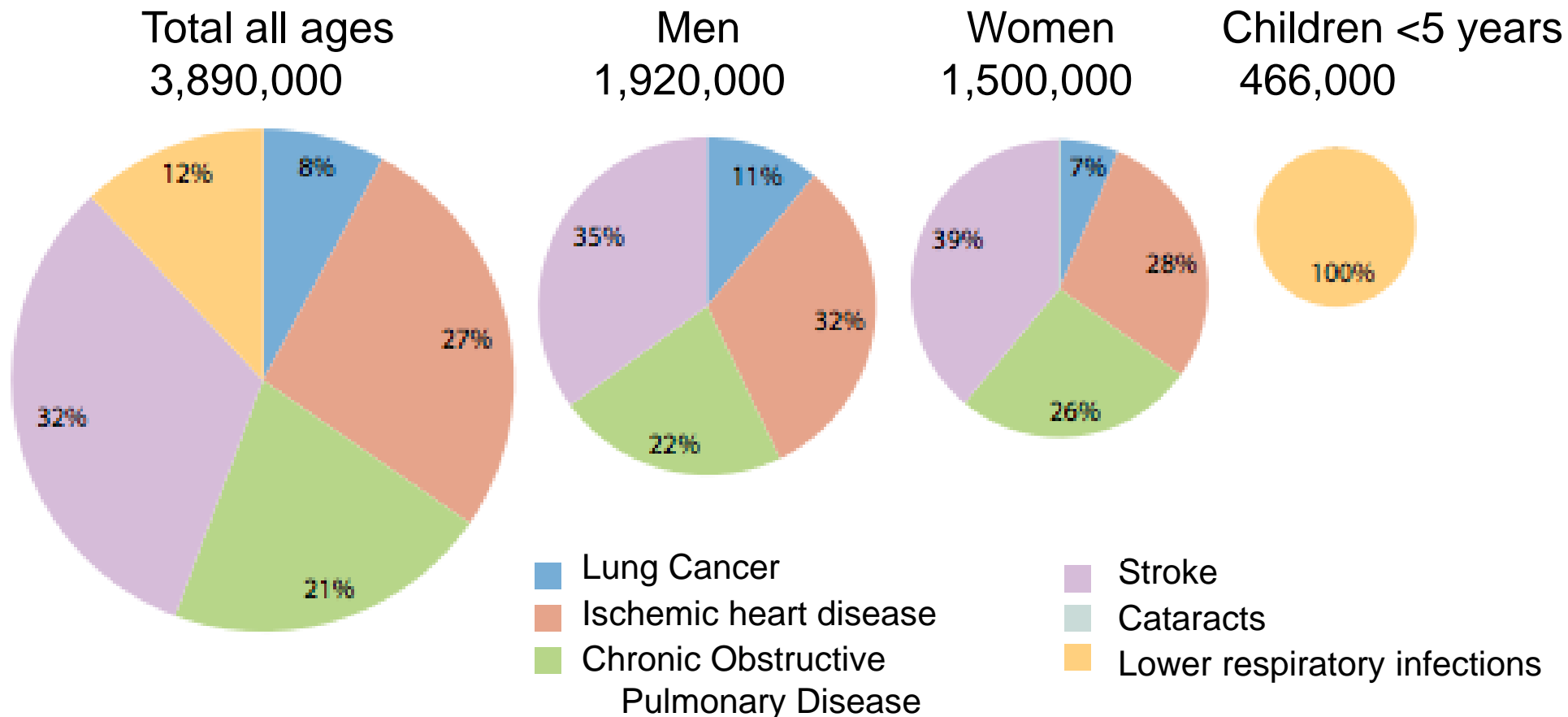
Relative Risk of ALRI in Children



Particulate Matter 2.5 $\mu\text{g}/\text{m}^3$

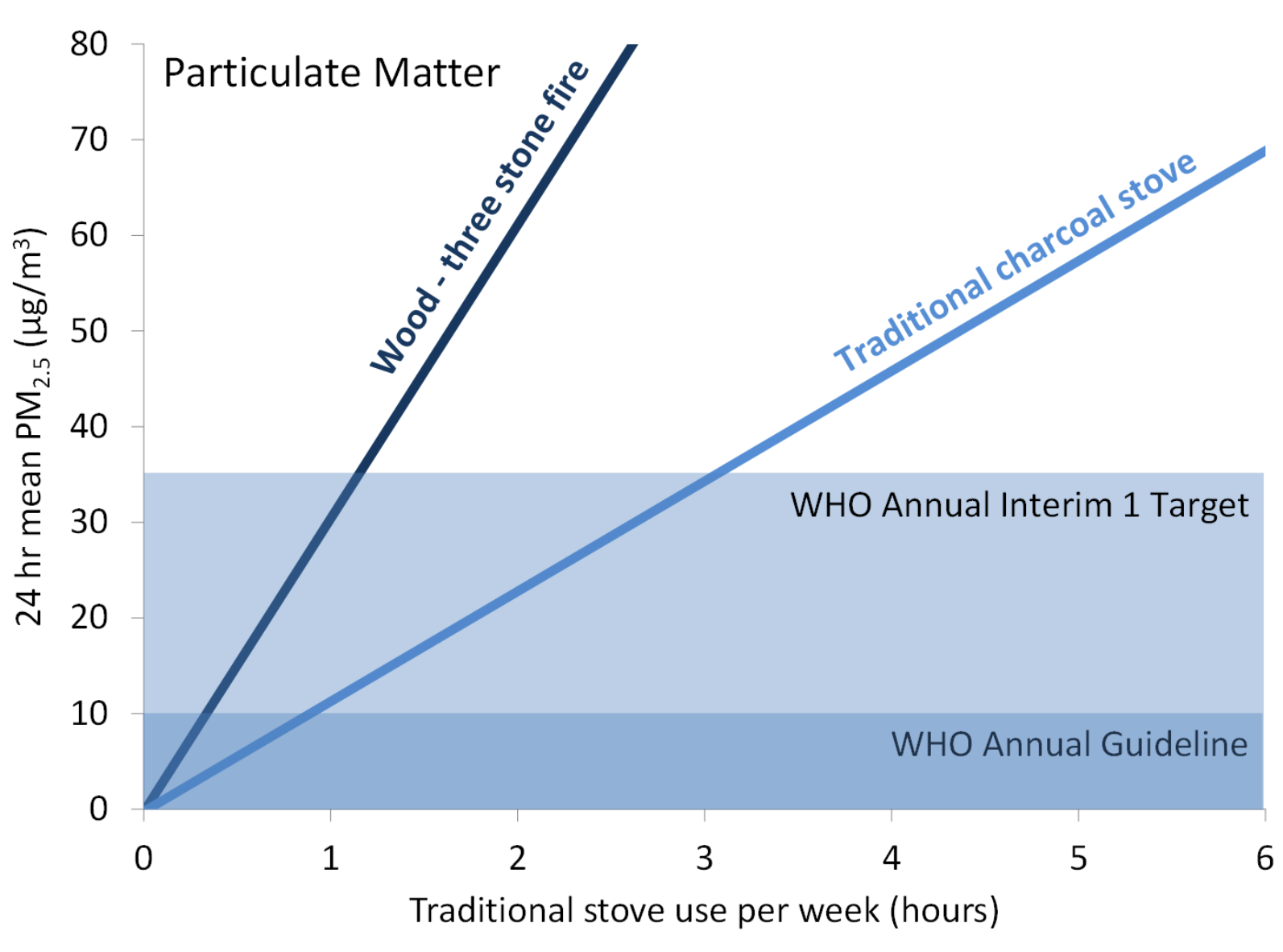
Causes of HAP Deaths

HAP Deaths

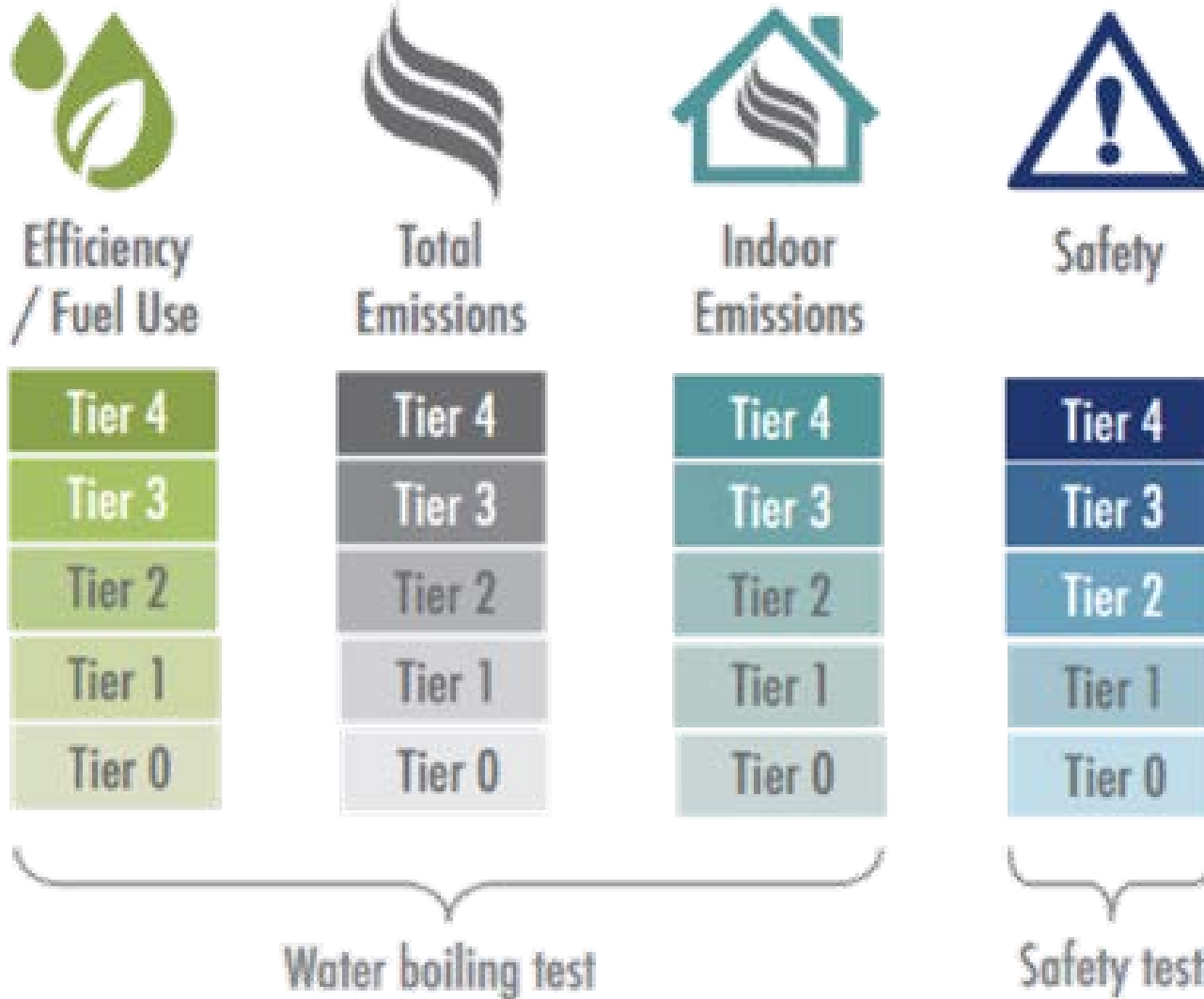


Children: 6.8 million deaths annually; 7% are from HAP

WHO Target: Burn wood <1 hour/week



Stove performance step improvements



Challenges

- No “one size fits all” cookstove
- Lab performance ≠ field performance
- The “best” stoves can be unappealing to cooks
- Stove “stacking” is the norm
- Lack of HAP health risk awareness
- Poverty
- Higher priorities for \$
- Lack of HH purchase decision making power

Behavior Change

Initial adoption:

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 use:

1. Cooking needs
2. Fuel availability, preparations requirements
3. Correct operation/maintenance
4. Stoves 'delivering' benefits consumers want

Bangladesh 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, 120 households
- Semi-structured questionnaires- qualitative & 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

Consumer Preference, WTP

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 Smart Stove

- Single-pot portable natural draft gasifier stove



Alpha Renewable Energy Eco Chula

- Single-pot portable fan (forced air) gasifier stove (battery/solar powered)

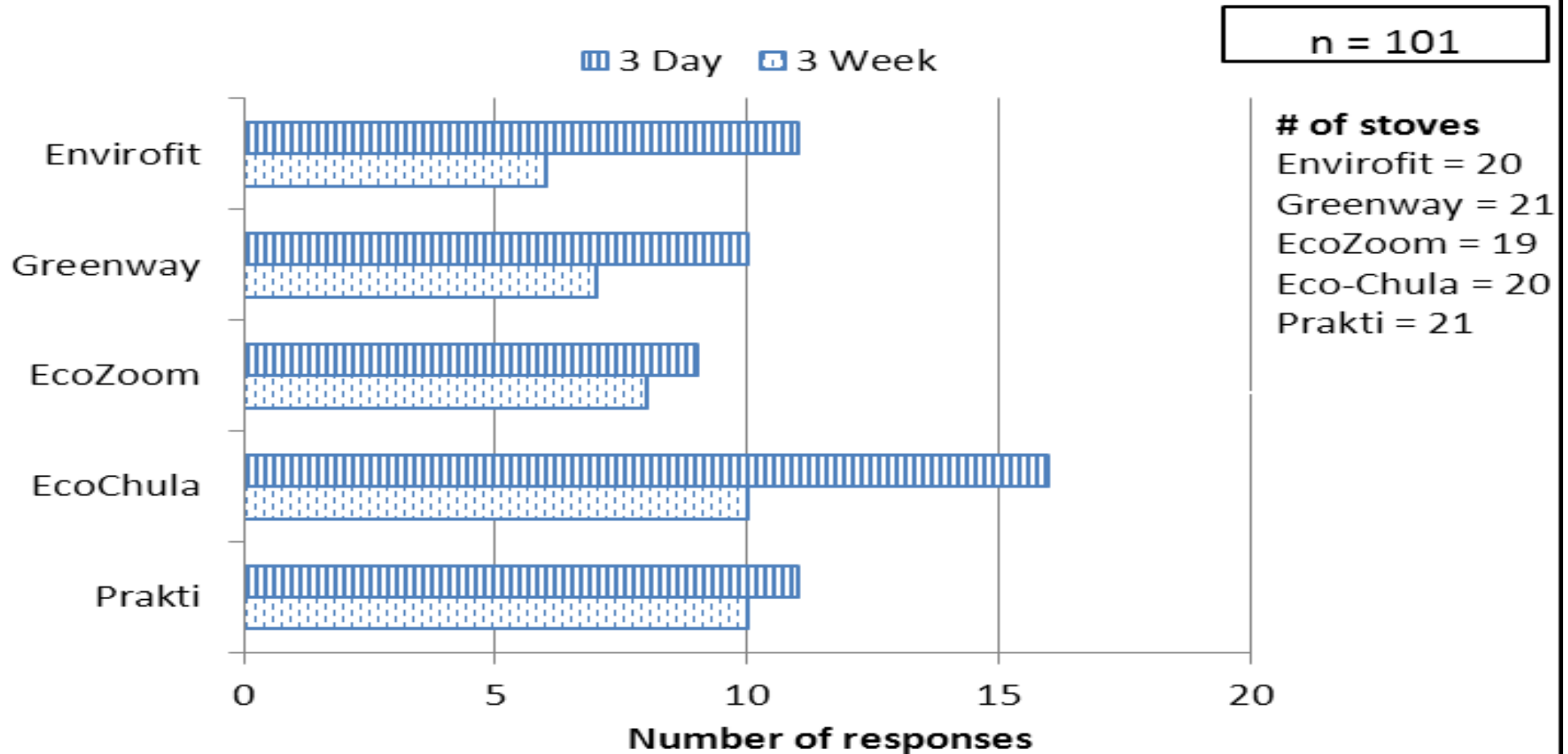


Key Preference Findings

- 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
- 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

Decreasing satisfaction over time

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



KPTs and SUMS Findings

Cross-sectional KPT, 116 study households, 24 control HHs
IAP monitoring in a subset of 7 households: PM_{2.5} and CO

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!

KPT findings

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

Willingness to Pay

Auction: 105 study participants given the option to purchase the stoves at market value (\$19-54). 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 (\$19-54). 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.

WASHplus contacts

Elisa Derby, WASHplus HHE Specialist
Winrock International
617-524-0466
ederby@winrock.org

Julia Rosenbaum, WASHplus Deputy Director
and Senior Behavior Change Specialist
FHI 360
202-884-8838
jrosenbaum@fhi360.org

USAID Contacts:

Helen Petach, hpetach@usaid.gov

Merri Weinger, MWeinger@usaid.gov