

Reducing Indoor Air Pollution in Sri Lanka



- Is the Situation Improving?

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Outline of Presentation



1 Introduction

2 Review of Current Situation

3 Measures to reduce IAP in future

1 Introduction

- IAP – linked to exposure to emissions from biomass combustion
- 2.4 billion people in the world use biomass for cooking and heating purposes
- IAP is responsible for killing over 1.6 million of people in poor countries / year (WHO 2002)

2 Current Situation



- i Changing Fuel Choice
- ii Use of Improved Cook Stoves
- iii Kitchen Improvement Activities

i Fuel Choice

Annual Household Expenditure on various cooking options

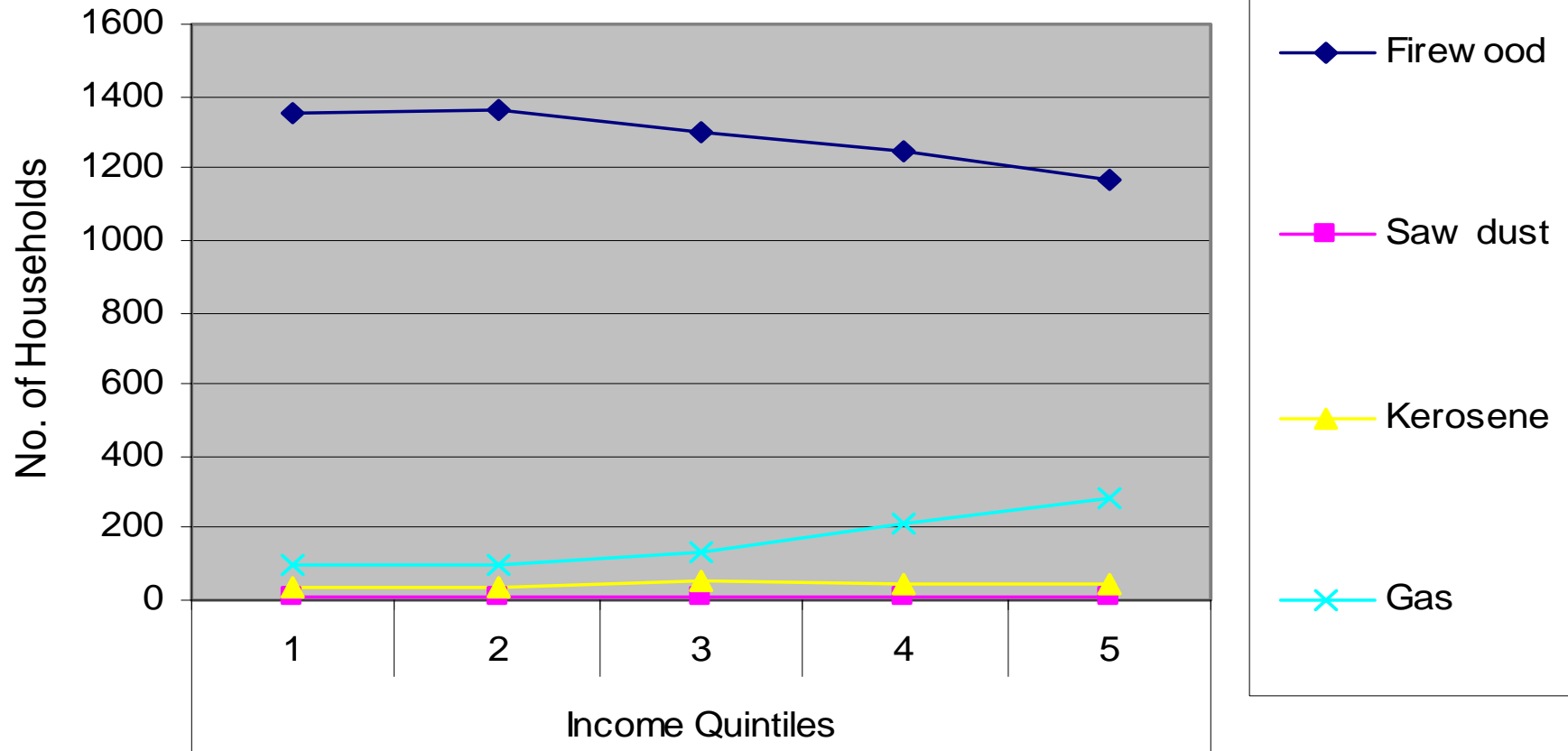
Fuel Choice	Average Annual Expenditure/ Household
Kerosene *	1277
Firewood	1813
LPG	2489

Source: Authors calculation based on Sri Lanka Integrated Survey 1999/2000.

** Kerosene is used for both cooking and lighting purposes*

i Fuel Choice (3)

Figure 2: Fuel choice for cooking & income levels of households



Source: Authors calculations based on Sri Lanka Integrated Survey ,2000

i Changing Fuel Choice (4)

- Socio economic & cultural factors

- Education level
- Family income- purchasing power
- Availability & access to firewood/LPG
- Traditions

- 14.5 % uses LPG

(From 1986- 2003/2004 -> 457% increase)

- The majority -- 83% uses firewood

(From 1986 -2003/2004 12% reduction) (CBSL 2004)



ii Use of Improved Cook Stoves

- Cook stoves development -- 1950s
- Focused on Energy use efficiency
- Currently popular -- Anagi –2
- Anagi 2 – result of joint collaboration –CEB
ITDG & Small tile manufacturers
- IDEA – production, marketing & distribution of
Anagi2

iii Use of Improved Cook Stoves(3)

Utilization of different cook stoves among rural and urban Households

Type of Cook Stove	% of Households	
	Rural	Urban
Traditional three stone stoves (TCS)	47	56
Semi enclosed stoves (SES)	32	31
ICSs (Anagi & Sarvodaya)	21	13

Source: ECF 2000

ii Use of Improved Cook Stoves(3)

- Cook Stove Programmes– Govt. & NGOs
 - 800,000 ICS have been distributed
(25 % of the households in Sri Lanka)
 - US \$1.5 million has been spent since 1971
 - Estimated financial benefits – US\$ 37.5million including health and environmental benefits
(ITDG 2004)

ii Use of Improved Cook Stoves(4)

Effectiveness of Cook Stove Program in reducing IAP

Type of Stove	Energy efficiency (%)	Annual Firewood Consumption (kt)	Total Annual Emissions (kt)
			TSP
TCS	8	5029.5	38.2
SES	13	2281.6	20.1
ICS	18	1015.9	10.2

Source: Perera & Sugathapala, 2002

ii Use of Improved Cook Stoves(5)

- Emissions of pollutants – unavoidable
 - Heterogeneous nature of combustion process
 - Lack of control due to design constraints
- Arrangements to send smoke out of the kitchen
 - Chimney/smoke hood
 - improved ventilation arrangements



iii Kitchen Improvement Activities

- IDEA -kitchen improvement activities with the help of other NGOs Eg. Weeraketiya
- Construction of chimney hoods
- Improvements in ventilation arrangements
- Measures to keep the kitchen clean and ergonomically efficient

3 Measures to reduce IAP in Future

- Creating Awareness among public
- National level coordinated effort in R&D
- Holistic approach in R&D
- Linkages between Govt., NGOs and Private sector – facilitate & fasten the commercialization of innovations
- Quality Assurance– National level institutional capacity to provide quality standards

3 Measures to reduce IAP in Future (2)

- Interventions at source of smoke
 - Switching to more cleaner fuel
 - Use of improved Cook Stoves
 - Incorporated with a Chimney (Eg C. America)
 - Biomass gasification based improved cook stoves

3 Measures to reduce IAP in Future (3)

- Interventions directed towards the environment
 - Smoke hoods, improved ventilation arrangements -- Kenya
 - Kitchen arrangements -- IDEA

3 Measures to reduce IAP in Future (4)

- Interventions aimed at user
- *Operational measures*
 - Use of dry firewood, use of lid, good maintenance
- *Behavioral changes*
 - Reduce the time spend on cooking, Keeping children away during peak cooking times

Thank You !

i Fuel Choice(3)

Fuel use for cooking by Sri Lankan Households

Type of Fuel use	As a percentage total households		
	1986/87	2003/04	% change
LP Gas	2.6	14.5	457
Firewood	95.1	83.1	-12

Source: Central Bank of Sri Lanka , 2003