

Please note that this presentation was given during the United Nations Climate Change Conference (COP-15) in Copenhagen, December 7-18, 2009 for more information please visit

<http://www.cop15.state.gov/> .





# Cleaner Cook Stoves for Developing Countries: Improving Health, Reducing Climate Change

Evan Haigler

Partnership for Clean Indoor Air

# Impact Carbon's Mission

- Reduce poverty
- Improve health
- Protect local environments



Reducing Carbon Emissions  
and Verifying Carbon Offsets



- 501(c)3 nonprofit organization that develops high quality emissions reduction projects with the highest local social and environmental benefits.
- Formerly a research Center at UC Berkeley (CEIHD)



# Cooking With Solid Fuels

- Almost 3 billion people burn solid fuels indoors for home cooking and heating.
- The number of people using these fuels is expected to rise substantially by 2020.
- More than 1.6 million people, mainly women and children, die prematurely each year from breathing elevated levels of indoor smoke.



# A Little Perspective on Poor Air



**Chicago, IL: August 16, 2000**  
**PM<sub>2.5</sub> < 10 µg/m<sup>3</sup>**

**Chicago, IL: August 26, 2000**  
**PM<sub>2.5</sub> = 34 µg/m<sup>3</sup>**

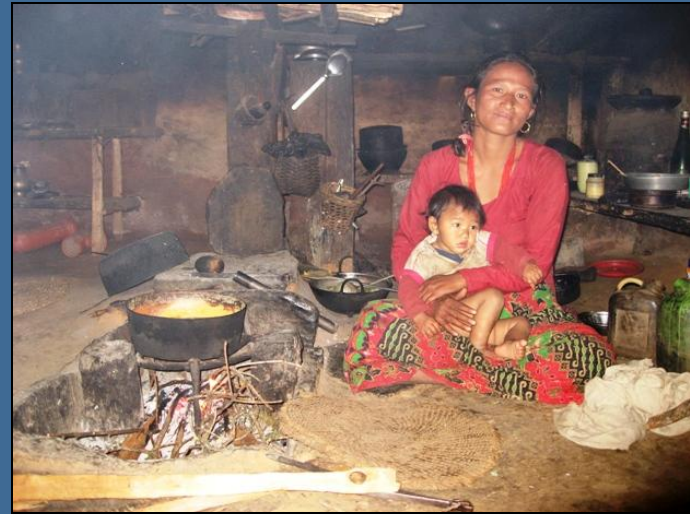
**Home with Open Fire (Guatemala)**  
**Peak PM<sub>2.5</sub> = 8670 µg/m<sup>3</sup>**  
**Typical 24-hr : 100s-1000s µg/m<sup>3</sup>**

**Some Pollutants in Indoor Smoke**

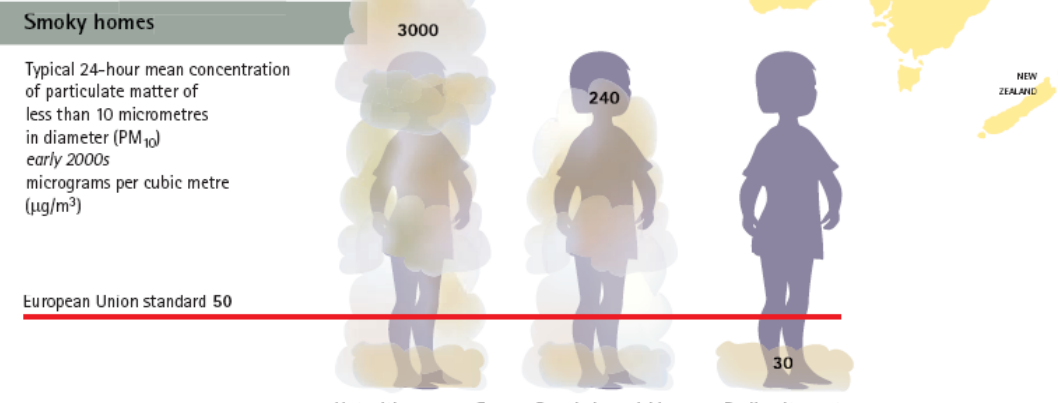
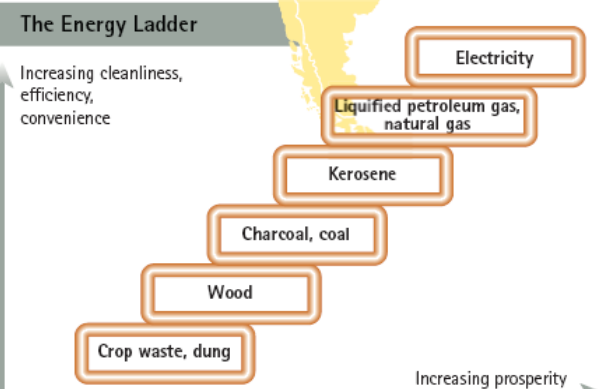
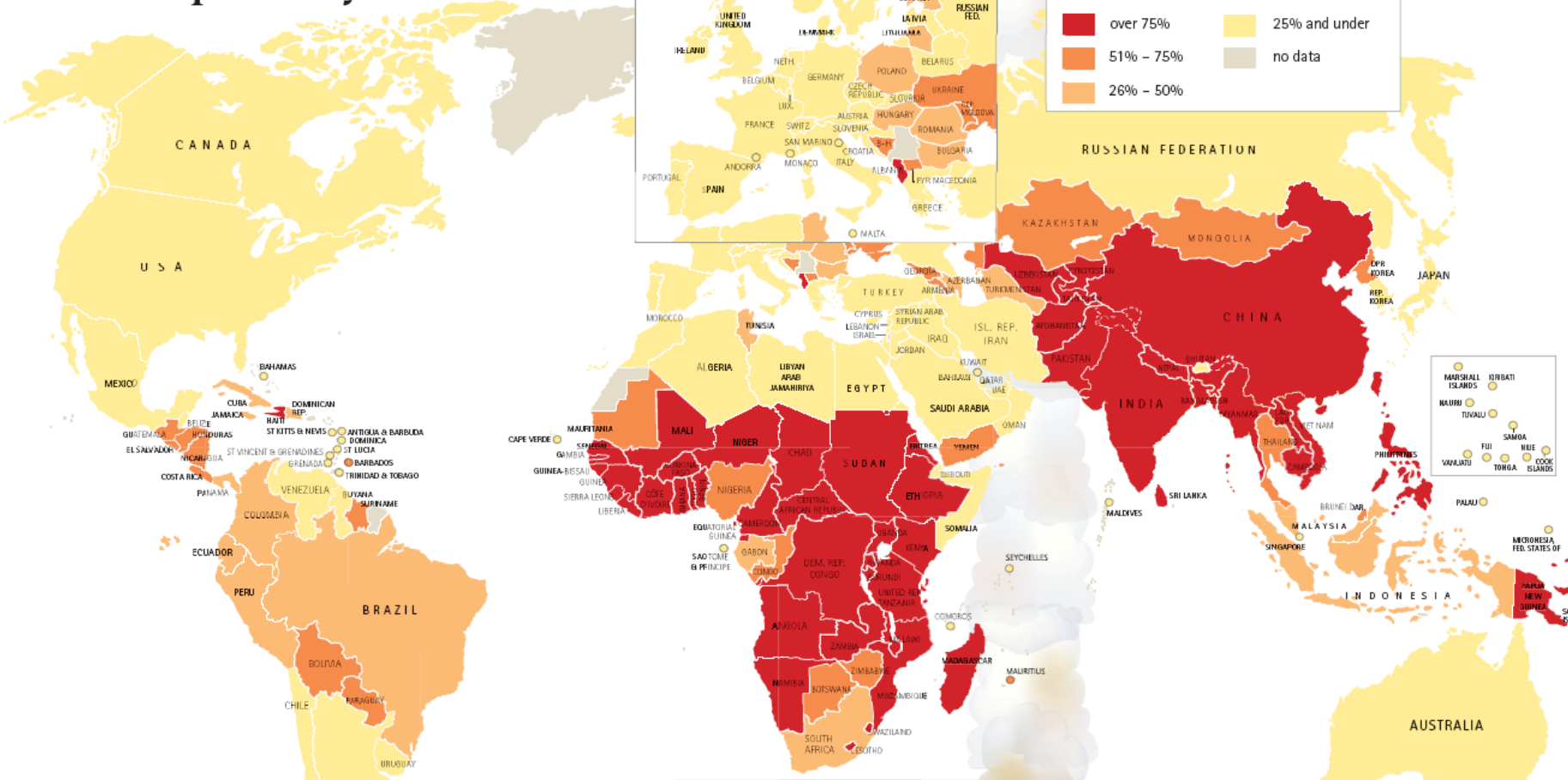
**Criteria Pollutants:** PM<sub>2.5</sub>, CO, NO<sub>2</sub>,  
**Toxics:** formaldehyde, benzene, 1-3 butadiene, benzo[α]pyrene  
**For Coal:** SO<sub>2</sub>, As, Pb, Hg, & F

Ambient Air	Annual		24-hour	
	EPA Standard	WHO Guideline	EPA Standard	WHO Guideline
PM <sub>2.5</sub>	15.0 µg/m <sup>3</sup>	10.0 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>	25.0 µg/m <sup>3</sup>

# Harm to Women and Children

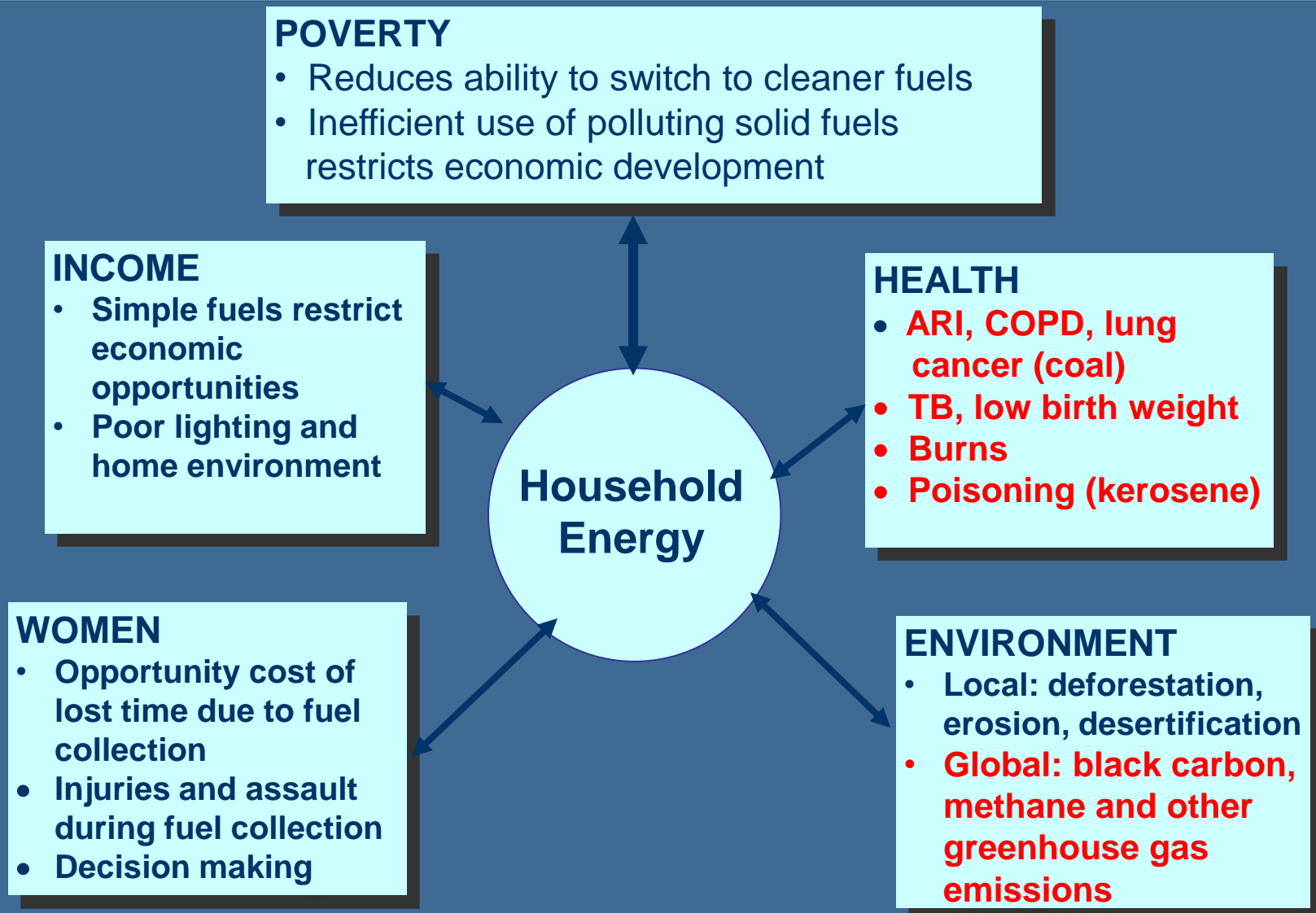


# Indoor Smoke: Breaking Down Respiratory Defences





# Health, Socioeconomic & Environmental Impacts



# Today You'll Be Hearing About

- **Health Effects:** Dr. William Martin, Associate Director, National Institute of Environmental Health Sciences, National Institutes of Health, USA
- **Black Carbon:** Professor V Ramanathan, Scripps Institution of Oceanography, University of California at San Diego, USA
- **Commercialization of cleaner stoves:** Sam Bryan, Technical Director of Carbon Finance Projects, GERES

# Partnership for Clean Indoor Air (PCIA)



- More than 330 organizations from the public and private sector working in 115 countries to ensure that every family is using clean burning, fuel efficient, reliable, affordable and safe cooking and heating technologies and fuels.

# PCIA's Mission

- Improve health, livelihood, and quality of life through reduced exposure to air pollution, primarily among women and children, from household energy use in developing countries.



# Improving the Lives of Millions of Families

- In 2008, Partner's efforts resulted in 800 thousand households adopting cleaner, more efficient cooking practices, improving the health and quality of life of 8.4 million people around the world.



# Current Partnership Activities

Strengthening exchanges and networks.

Building local and regional capacity.

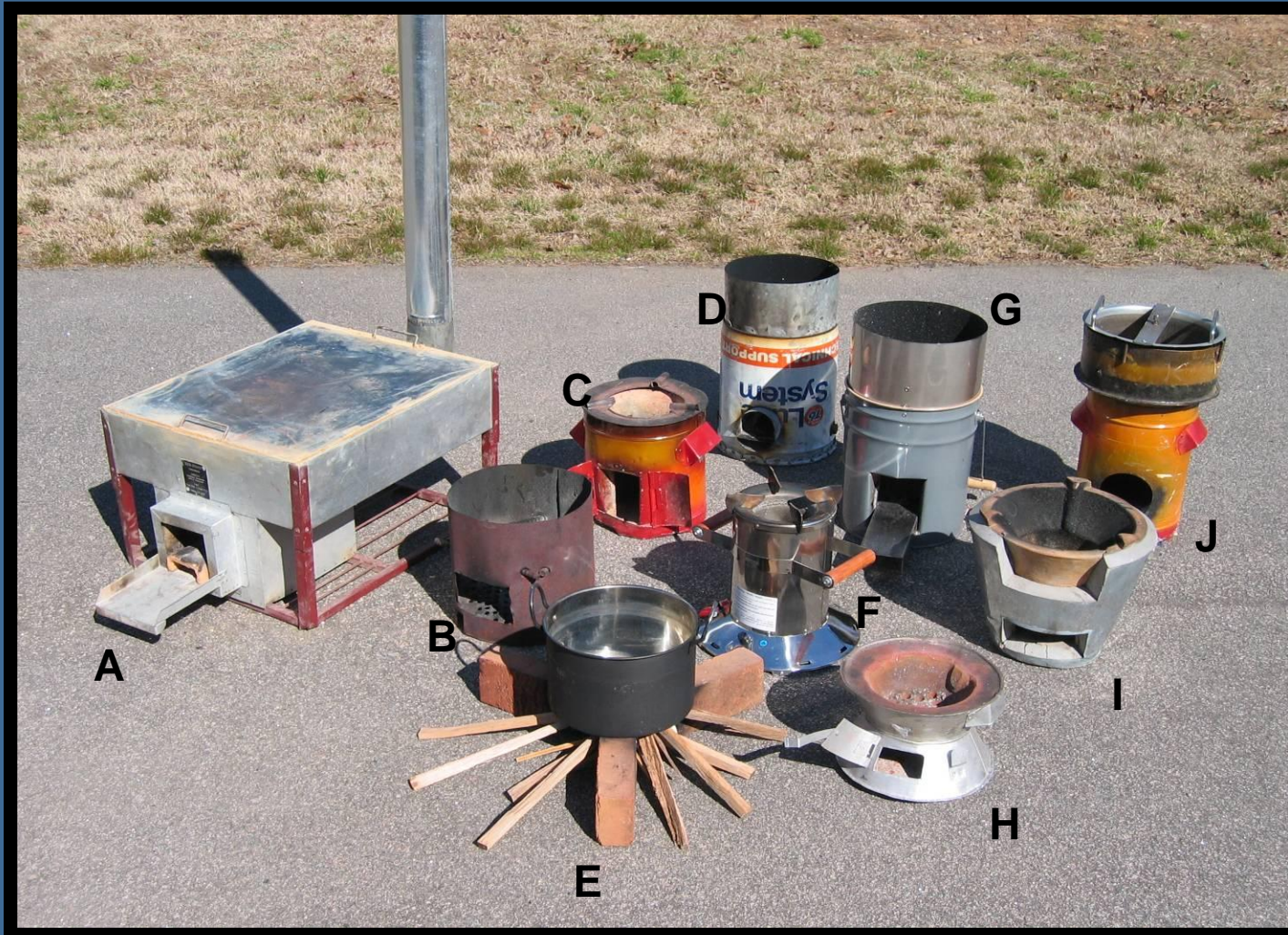
Developing tools and resources.

Implementing, replicating, and scaling-up sustainable stove projects.

Ensuring that all stoves reduce fuel use and emissions.



# PCIA Activities – Stove Testing



- A. Ecostove
- B. VITA
- C. UCODEA char
- D. WFP rocket
- E. 3-stone fire
- F. Philips HD4010
- G. 6-brick rocket
- H. Lakech char
- I. NLS
- J. UCODEA rocket

# Monitoring Indoor Air Pollution





# Clean Stoves Entering the Market

Semi-Industrial  
Manufacturers



**Cambodia: GERES charcoal stove**

Over \$1M in carbon financing received in 2008

Innovative  
Element



**Guatemala: HELPS wood stove (tortillas)**

Very high quality stove for local use; very safe stove



**Uganda: Ugastove**

1<sup>st</sup> stove to get carbon credits under Gold Std.



**StoveTec 2-door stove (charcoal or wood)**

Mass manufactured at low cost; combustion chamber can stand alone

Multinational  
Corporations



**Oorja pellet stove (formerly BP)**

Emerging markets strategy; pellets from local ag waste

Innovative  
Element



**EnviroFit/Shell Foundation wood stove**

5-yr warranty on metal combustion chamber (can be stand-alone, too)



**Philips wood fan stove**

Extremely clean, but pricey; not yet in market



**Bosch-Siemens plant oil stove**

Major focus is to ensure sustainable oil production

# Quantifying Carbon Reductions

- An improved stove may reduce GHG emissions by ~1-4 tons of CO<sub>2</sub>-e per year
  - Example: Patsari Stove in Mexico
    - 3.1 tCO<sub>2</sub>-e/year for CO<sub>2</sub> & CH<sub>4</sub>
    - 3.9 tCO<sub>2</sub>-e/year for w/CO & NMHCs too
- Use of improved stoves reduces black carbon emissions and could thus achieve near-term reductions in current warming

# Opportunities for Action

- Increase the capacity of Partner organizations to certify carbon offsets for global markets
- Leverage expertise and resources with PCIA Partners to quantify GHG emission reductions
- Raise awareness of GHG and black carbon emission reductions at Biennial PCIA Forum in Latin America in 2011
- Join the Partnership ([www.PCIAonline.org](http://www.PCIAonline.org))