

Articulating the market for clean cooking options

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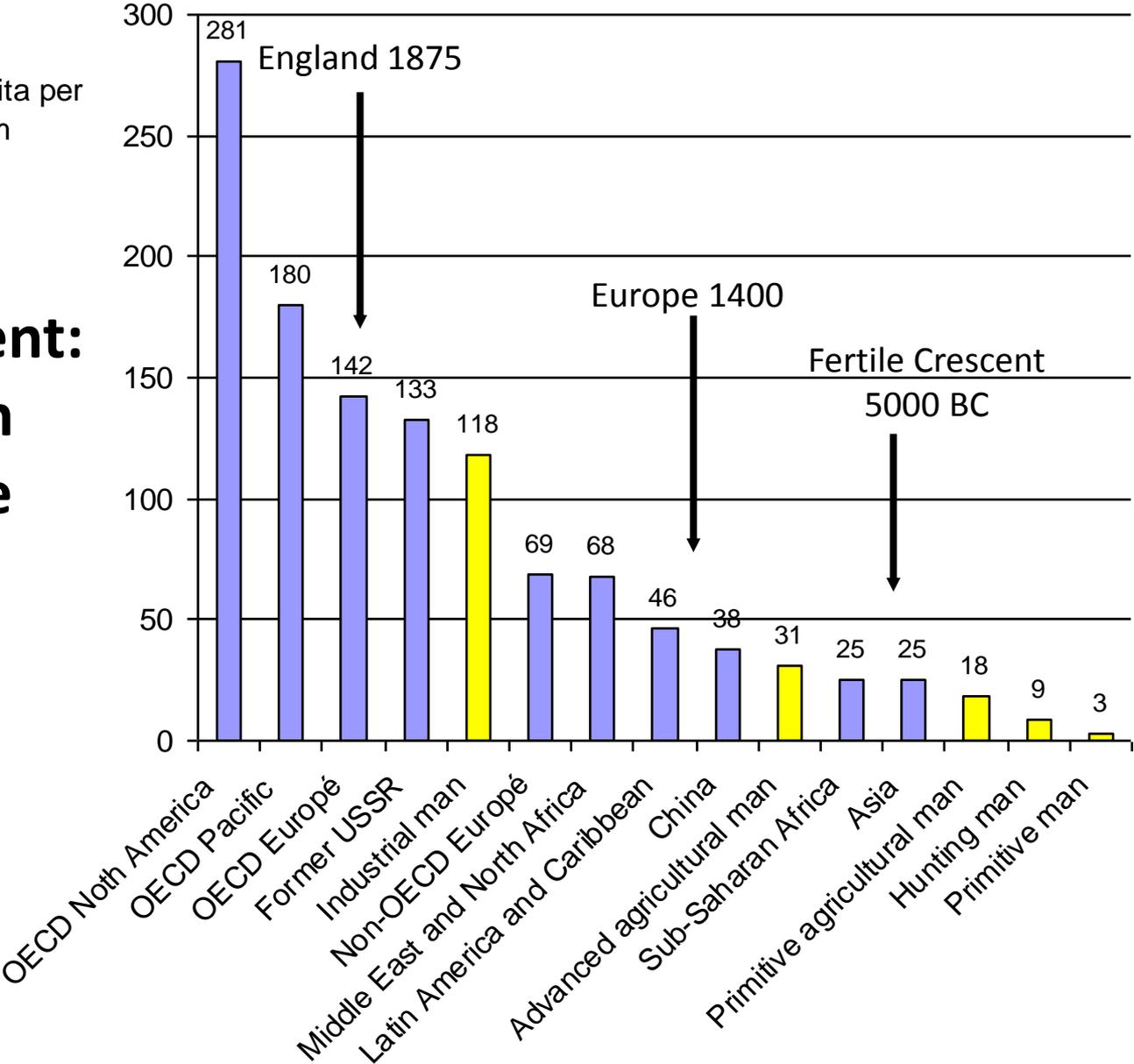
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Stockholm Environment Institute

- SEI Mission derives from the first United Nations Conference on the human environment in 1972 (known as the Stockholm Conference):
 - to support decision-making and induce towards sustainable development
 - Provide knowledge to bridge science and policy on environment and development issues
- Centres: Stockholm (HQ), Boston, York, Tallinn, Oxford, Bangkok, Dar es Salaam
- Research Themes:
 - Reducing Climate Risk
 - Managing Environmental Systems
 - Transforming Governance
 - Rethinking Development

Energy for Development: a long-term perspective

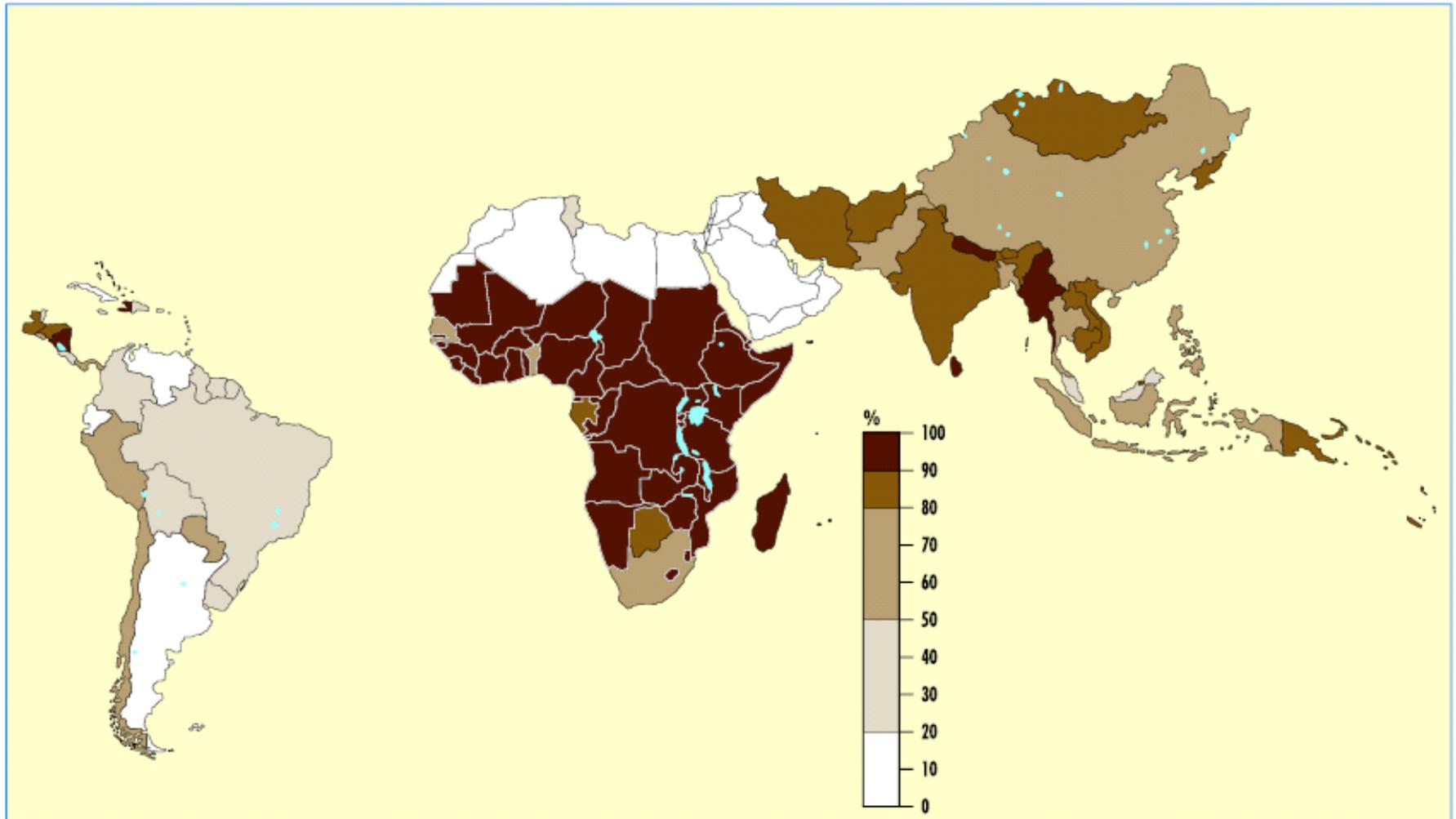
GJ per capita per annum



Energy-Environment-Development Driving Forces impacting access at household and institutional levels

- Biomass resource scarcity
- Demand for higher quality of energy services
- Energy security: local as well as national/global issue
- Socioeconomics of rapid urbanization and migration
- Rural development and livelihoods (e.g. charcoal)
- Rural environment/health - indoor air quality
- Future competitiveness of forest and agro-industries
- Availability of micro-credit and other financial mechanisms
- Kyoto Annex 1 countries seeking carbon credits
- New investment options: large untapped household market
- Dependence on imported fuels in volatile market
- Vulnerability of rural poor to energy and climate insecurity

Share of Traditional Biomass in Residential Consumption



The boundaries and names shown and the designations used on maps included in this publication do not imply official endorsement or acceptance by the IEA.

Source: IEA databases.

Source: IEA

Reliance on Traditional Biomass is high throughout Africa and Asia

- ❖ 2,6 billion are using traditional biomass for cooking
- ❖ 60% in India or SSA
- ❖ Absolute number in SSA is likely to increase, even if share decreases

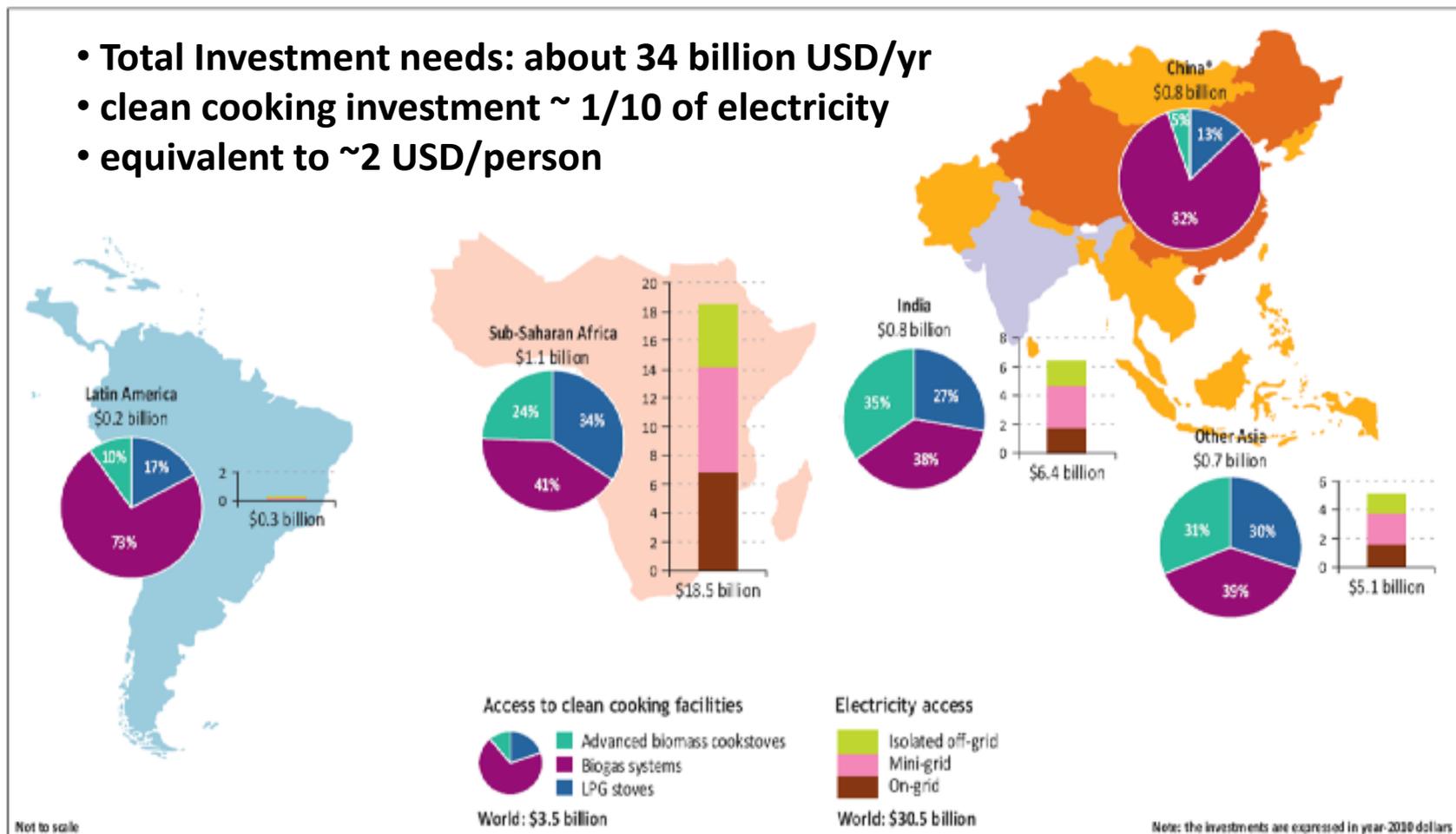
Relying on the traditional use of biomass for cooking

	Population (million)	Share of population
Africa	657	65%
<i>Nigeria</i>	<i>104</i>	<i>67%</i>
<i>Ethiopia</i>	<i>77</i>	<i>93%</i>
<i>DR of Congo</i>	<i>62</i>	<i>94%</i>
<i>Tanzania</i>	<i>41</i>	<i>94%</i>
<i>Kenya</i>	<i>33</i>	<i>83%</i>
Other sub-Saharan Africa	335	74%
North Africa	4	3%
Developing Asia	1 921	54%
<i>India</i>	<i>836</i>	<i>72%</i>
<i>Bangladesh</i>	<i>143</i>	<i>88%</i>
<i>Indonesia</i>	<i>124</i>	<i>54%</i>
<i>Pakistan</i>	<i>122</i>	<i>72%</i>
<i>Myanmar</i>	<i>48</i>	<i>95%</i>
<i>Rest of developing Asia</i>	<i>648</i>	<i>36%</i>
Latin America	85	19%
Middle East	0	0%
Developing countries	2 662	51%
World*	2 662	39%

Source: IEA 2011

Average additional annual investment required by region and technology under Energy Access scenario (IEA 2011 estimates)

- Total Investment needs: about 34 billion USD/yr
- clean cooking investment ~ 1/10 of electricity
- equivalent to ~2 USD/person

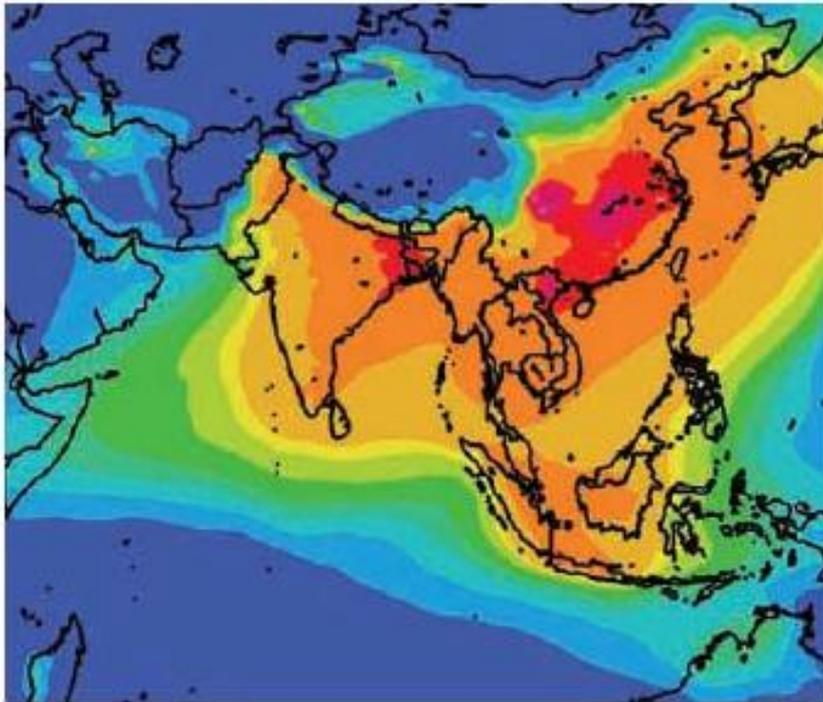


Not to scale

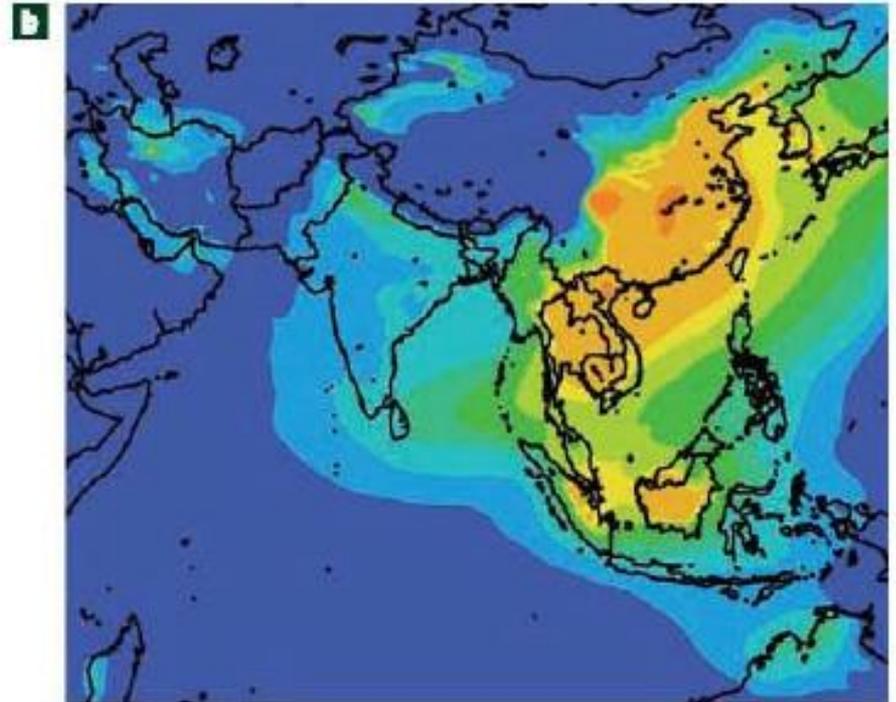
This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Significant black carbon reductions in Asia through clean cooking

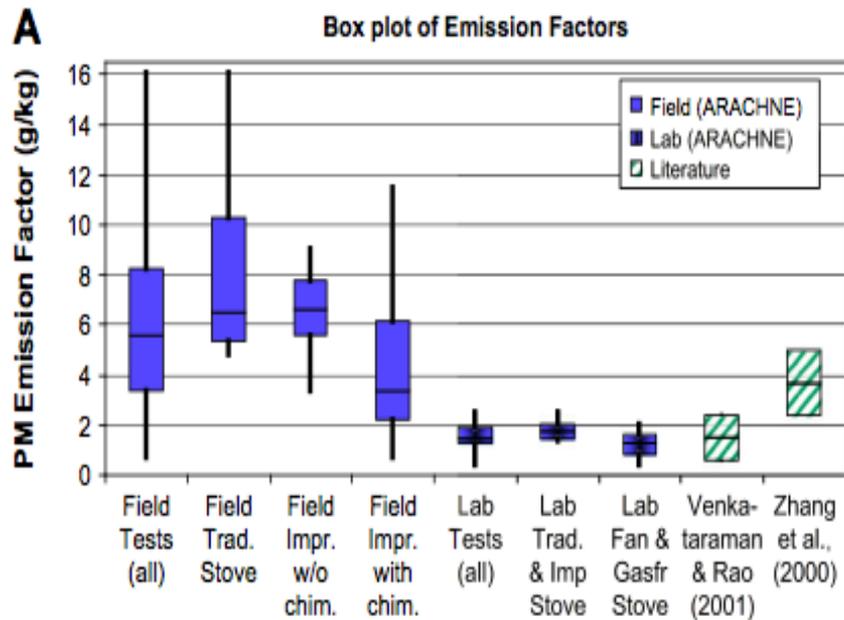
a) With Biofuel BC from cooking



b) Without Biofuel BC from cooking

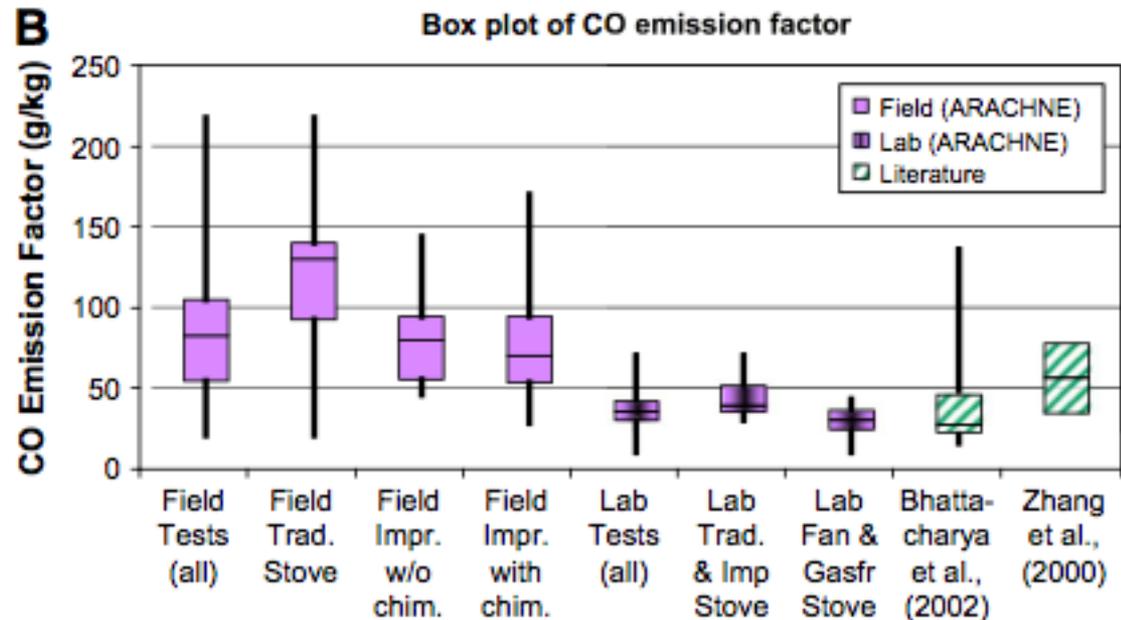


Source: Ramanathan and Carmichael, 2008; UNEP, 2011



Sometimes lab and field don't match:
 affected by some behavioural factors

Source: Roden, Bond, Conway, Osorto, MacCarty & Still, Atmospheric Environment, 2009



Non-technical and behavioural issues

- Economic/Financial:
 - Rate of time preference (discount rate)
 - Income effects and any relevant expenditure constraints
 - Type and availability of credit (if any)
- Socio-cultural
 - Taste/cuisine/preferences
 - Social norms
 - User and purchaser of stove not the same
- Institutional/Infrastructure (perceptions thereof)
 - Fuel availability and distribution system
 - Stove retail/distribution system
 - Operations/maintenance

Analytical Methods for evaluating household or consumer behaviour (list is non-exhaustive and not mutually exclusive)

- Scenario Assessments
- Market segmentation
- Transaction cost analysis
- User-centred or **ethnographic** approaches (qualitative)
- Pilot testing or field testing
- Stated Preference Surveys or **Choice Experiments**
- Revealed Preference Surveys
- **Discrete Choice Analysis**: logit/probit models (econometrics)
- Market simulation
- Contingent Valuation Methods

Approaches recently/currently being used by SEI are in **bold

User-Centered (Ethnographic) Approach

- *Generative* research methods to understand social, financial, emotional, technological, cultural factors affecting behavior/decision making
- An *ethnographic* approach originating in the social sciences, frequently applied by product/service designers
- Used to draw both *overt and tacit knowledge* from “users” - can support a user-based “design platform” for a new product (stove)
- Results in broad mapping of user’s context – useful for ensuring that appropriate parameters are included in further quantitative assessments.
- In depth, semi structured interviews with open ended questions
- Contextual Interviews (while cooking/making a stove, etc.)
- Core insights further categorized as Barriers vs. Incentives to switching to another stove => Key technical/design parameters for stoves
- In addition, Observed Opportunities: Key socioeconomic considerations such as households observed capacity to purchase other items
- Parameters: multiple fuels, safety, availability, aversion to smoke, etc.

Concluding Comments

- Primary goals are the provision of higher quality energy services and the reduction of local (indoor) air pollution)
- Climate mitigation becomes a **bonus** and a source of finance
- Behavioral aspects vary considerably and have often not been well-explored: need qualitative **and** quantitative methods
- Articulating the household energy market is a **multi-level** policy/institutional issue ranging from local assessments to national incentives to regional and global initiatives
- Recent SEI projects have aimed at generating knowledge at the **micro-level** in particular locations
- Can provide clues on how to proceed with replication and upscaling, stimulating new markets, designing new policies
- Regional programmes could help to cluster knowledge and connect to local and national needs

*Thanks for your
attention!*



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