



Access to Energy &

Economic Development

Energy poverty

Definition: lack, scarcity or difficulty in accessing modern energy services by households, in particular it refers to

- Access to electricity
- Access to modern and clean cooking facilities

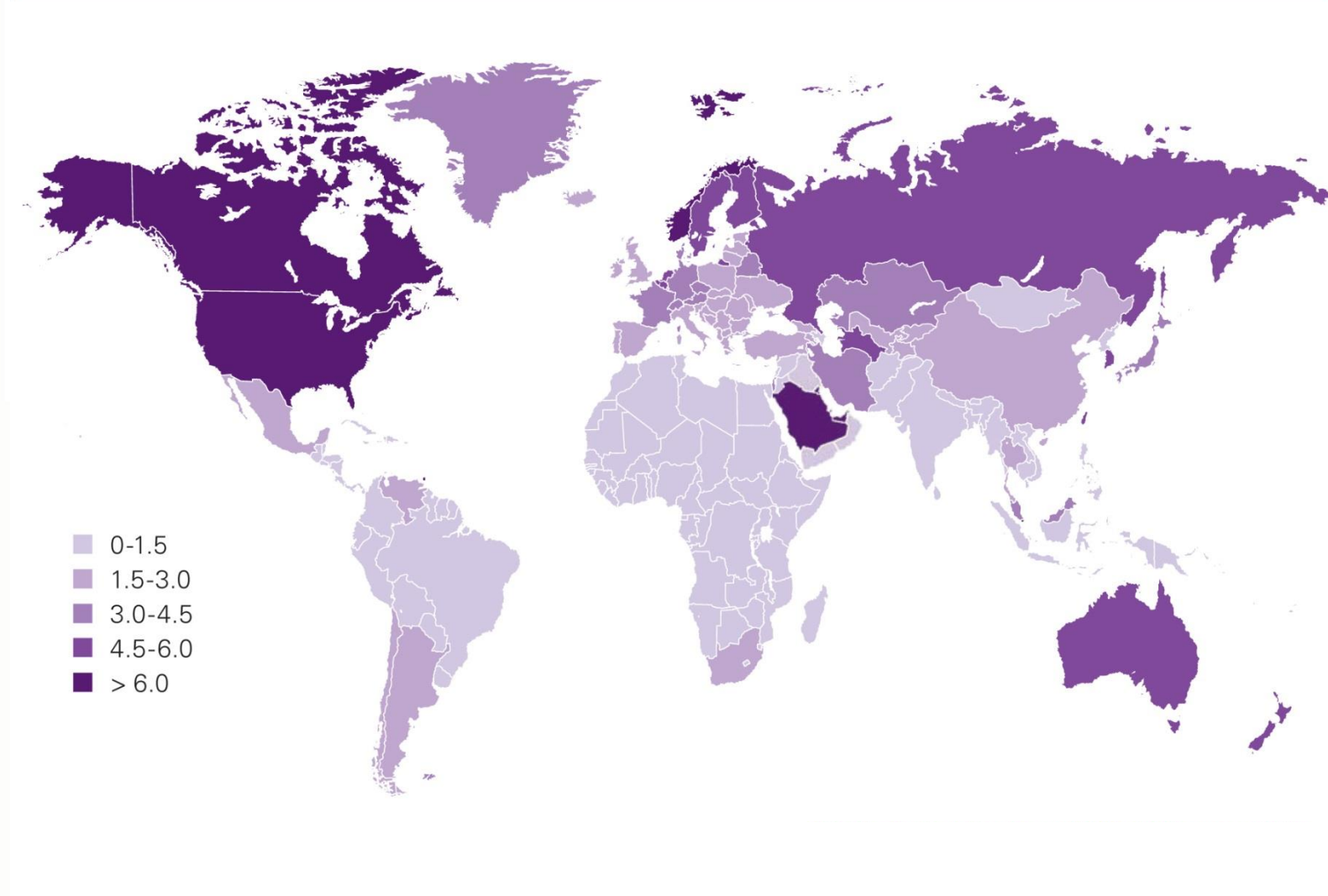
Access to electricity

- Basic needs: basic energy services in terms of electricity for lighting, health, education, communication and community services (5 GJ/capita*year)
- Productive use: electricity and fuels to increase productivity in agriculture, commercial activities and transportation (10 GJ/capita*year)
- Modern society: more domestic appliances for cooling, heating and private transportation (25 GJ/capita*year)
- Higher energy consumers: EU average (75 GJ/capita*year)= half the US average



Primary energy consumption per capita 2014

Tonnes oil equivalent



Lack of access to modern and clean cooking facilities

- Use of traditional cookstoves (unhealthy and inefficient)
- Use of traditional solid fuels like biomass, wood, coal, crop residues, and animal dung



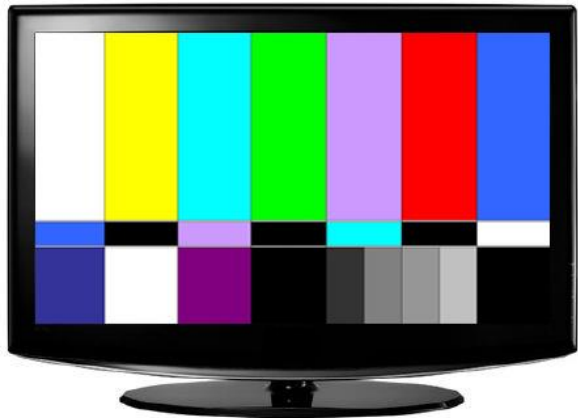
Energy poverty at global level

Number of people without access to modern energy services, by region, 2011 (million)

	Without access to electricity		Traditional use of biomass for cooking*	
	Population	Share of population	Population	Share of population
Developing countries	1 257	23%	2 642	49%
Africa	600	57%	696	67%
Sub-Saharan Africa	599	68%	695	79%
Nigeria	84	52%	122	75%
South Africa	8	15%	6	13%
North Africa	1	1%	1	1%
Developing Asia	615	17%	1 869	51%
India**	306	25%	818	66%
Pakistan	55	31%	112	63%
Indonesia	66	27%	103	42%
China	3	0%	446	33%
Latin America	24	5%	68	15%
Brazil	1	1%	12	6%
Middle East	19	9%	9	4%
World***	1 258	18%	2 642	38%

Why is electricity important?

Quality of life



Education and healthcare



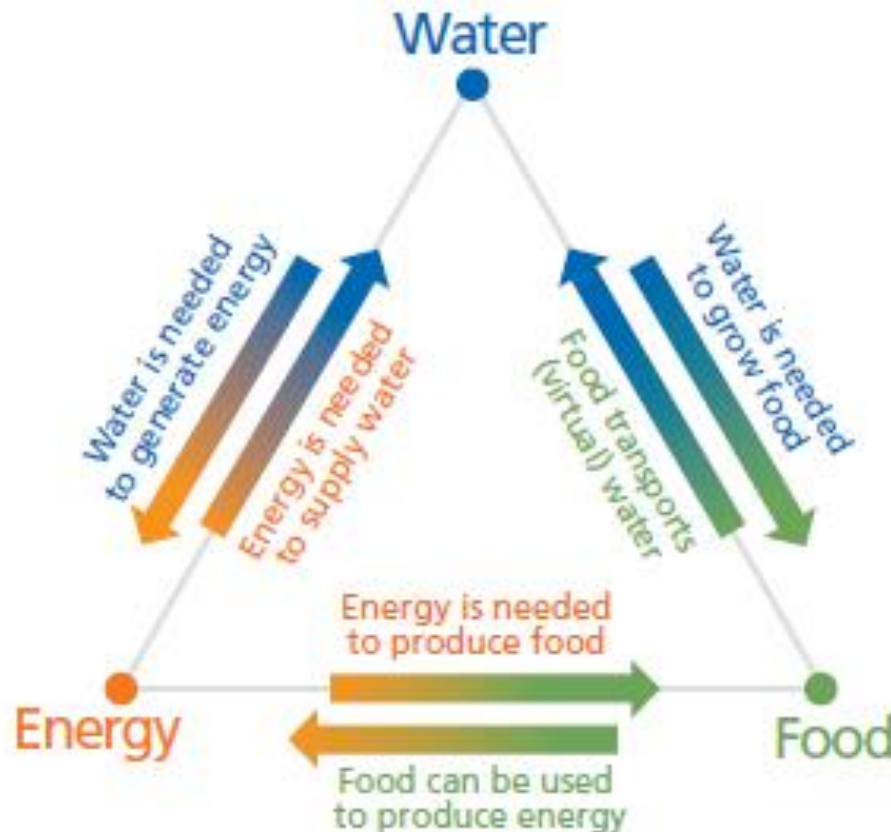
Job creation, innovation, productivity, entrepreneurship



Food security



Energy is also inter-related to other fundamental resources for human life and economic development: food and water



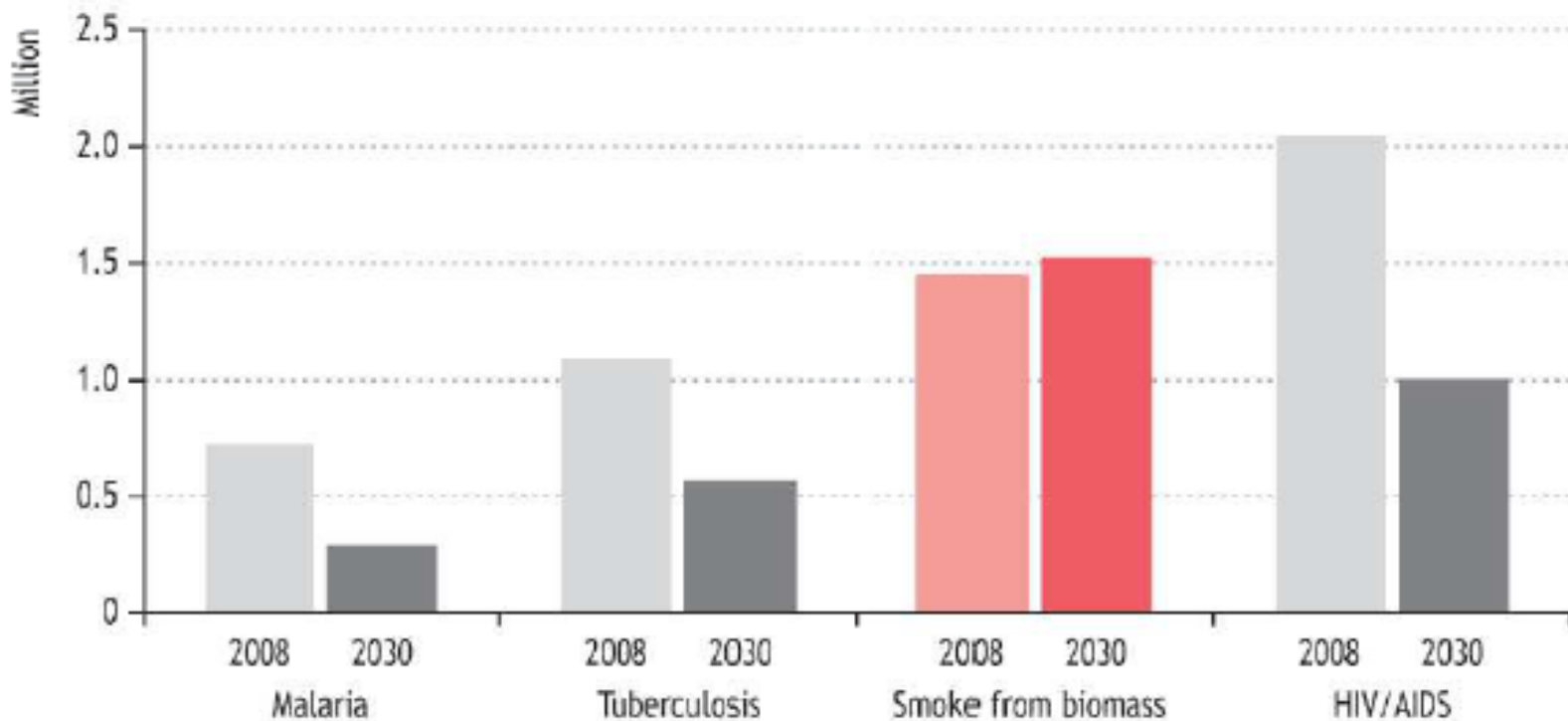
Why is access to modern fuels
and cookstoves important?

Air pollution and health, particularly for women and girls



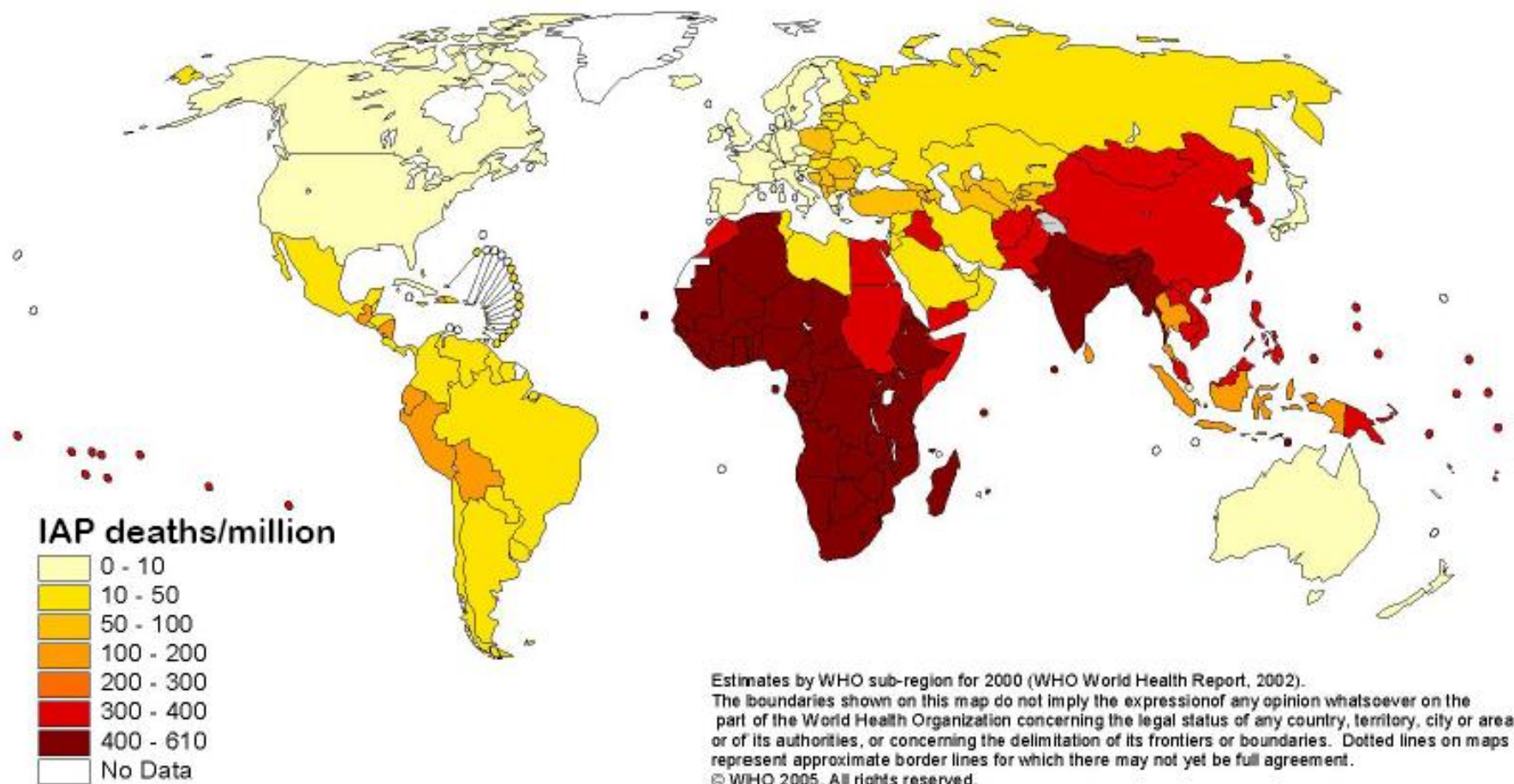
Traditional cookstoves and health

Figure 5: Premature annual deaths from household air pollution and other diseases



Sources: Mathers and Loncar (2006); WHO (2008); Smith *et al.*, (2004); WHO (2004) and IEA analysis.

Deaths from indoor smoke from solid fuels



Environment: deforestation & loss of biodiversity



Environment: greenhouse gas emissions & climate change



Female time allocation, economic opportunities and efficiency saving



So, what to do?



SUSTAINABLE DEVELOPMENT GOALS

By 2030:

- ensure universal access to affordable, reliable and modern energy services
- increase substantially the share of renewable energy in the global energy mix
- double the global rate of improvement in energy efficiency
- enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
- expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support

How?

Strategies for increasing access to electricity

- **Improve access through centralized systems**
 - Increase generating capacity
 - Extend electric transmission and distribution system
- **Foster off-grid systems, particularly for rural electrification**
 - Exploit local energy resources
 - For electricity generation: combine conventional (diesel generator) with non-conventional (photovoltaic, wind, micro hydro, etc) solutions

Barriers impeding access to electricity

- **Need of large infrastructures and investments (public and private partnerships)**
- **Availability of several and different technological solutions: need to adapt to the local context and combine interventions with capacity building**
- **Involvement of local communities**

Strategies for improving access to modern energy services for cooking

- Promoting use of Improved Cookstoves still using traditional fuels (short term)
- Shift to modern fuel (kerosene , gas, electricity), in the longer term

The cookstove and fuel ladder

Traditional cook stoves

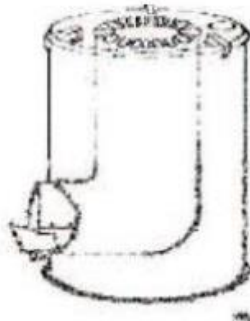
Traditional wood stoves



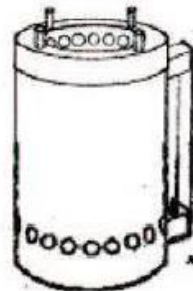
Charcoal stoves



Rocket wood stoves

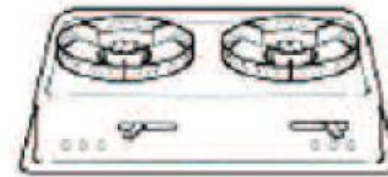


Gasifiers



Modern Energies Stoves

Gas stoves



Liquid stoves

Barriers impeding access to modern cookstoves

- **Economic constraints**
- **Information**
- **Cultural and behavioural barriers**
- **Role of others (imitation, leaders, etc)**

Our research project

Information and social network in the decision to adopt efficient cookstove: an experimental design for Mali

Partnerships: FGF, FEEM, USAID, GERES (French NGO)

Timing: Aug 14 – Sep 15

Location: Bamako, Mali

Malian urban context:

- 95% use solid fuels for cooking
- only 6% have access to clean fuels
- less than 0.5% use improved biomass cookstoves



Thank you