



# Energy poverty: Definition

No universally accepted definition of minimum energy access

## **Affordability definition:**

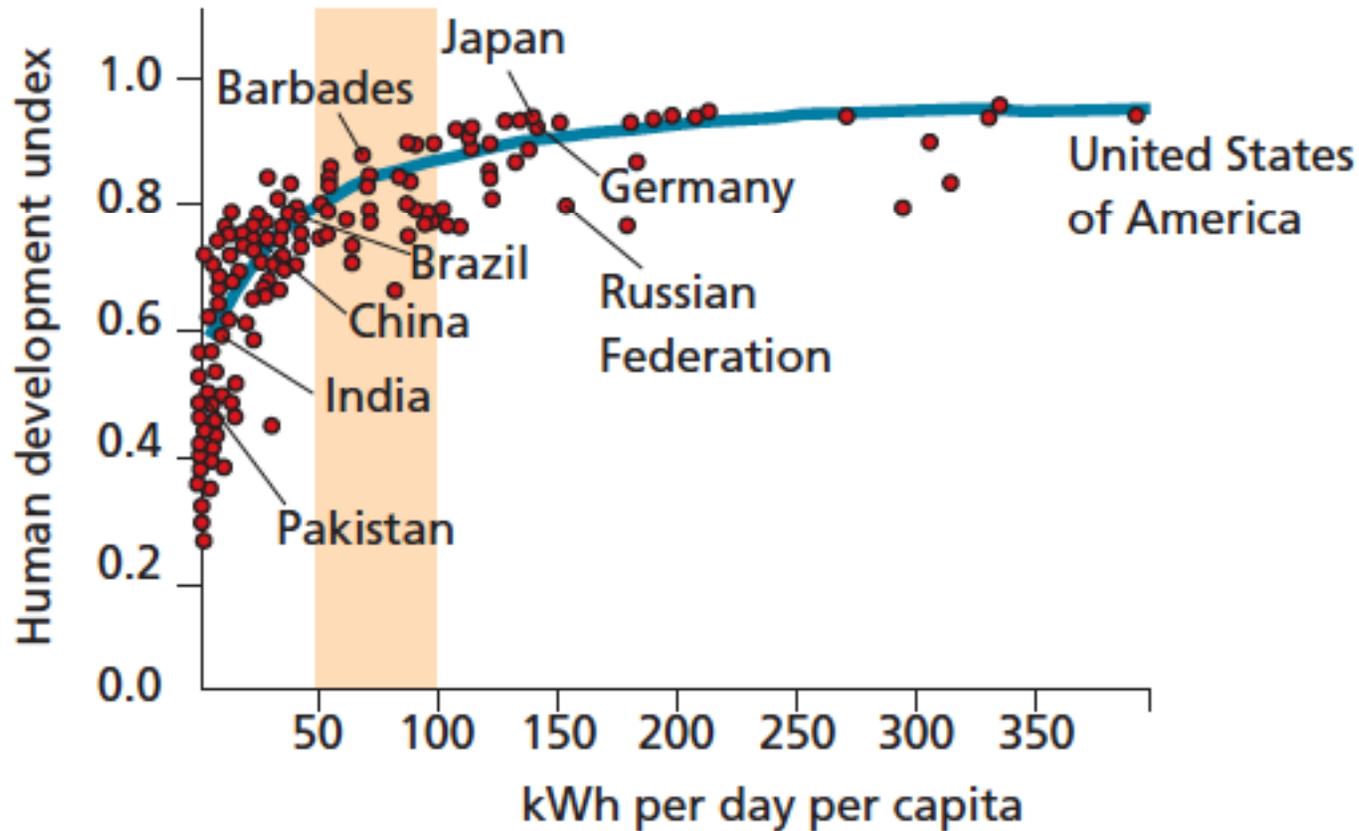
–British: A household is said to be in fuel poverty if it needs to spend more than 10% of its income on fuel to maintain an adequate level of warmth.

–France: ‘energy precariousness’ based on a household spending more than 10 per cent of its income to meet energy needs.



# Sufficiency: Definition

**Quantitative definition: 50-100 kWh/day primary energy**





# Sufficiency: Definition

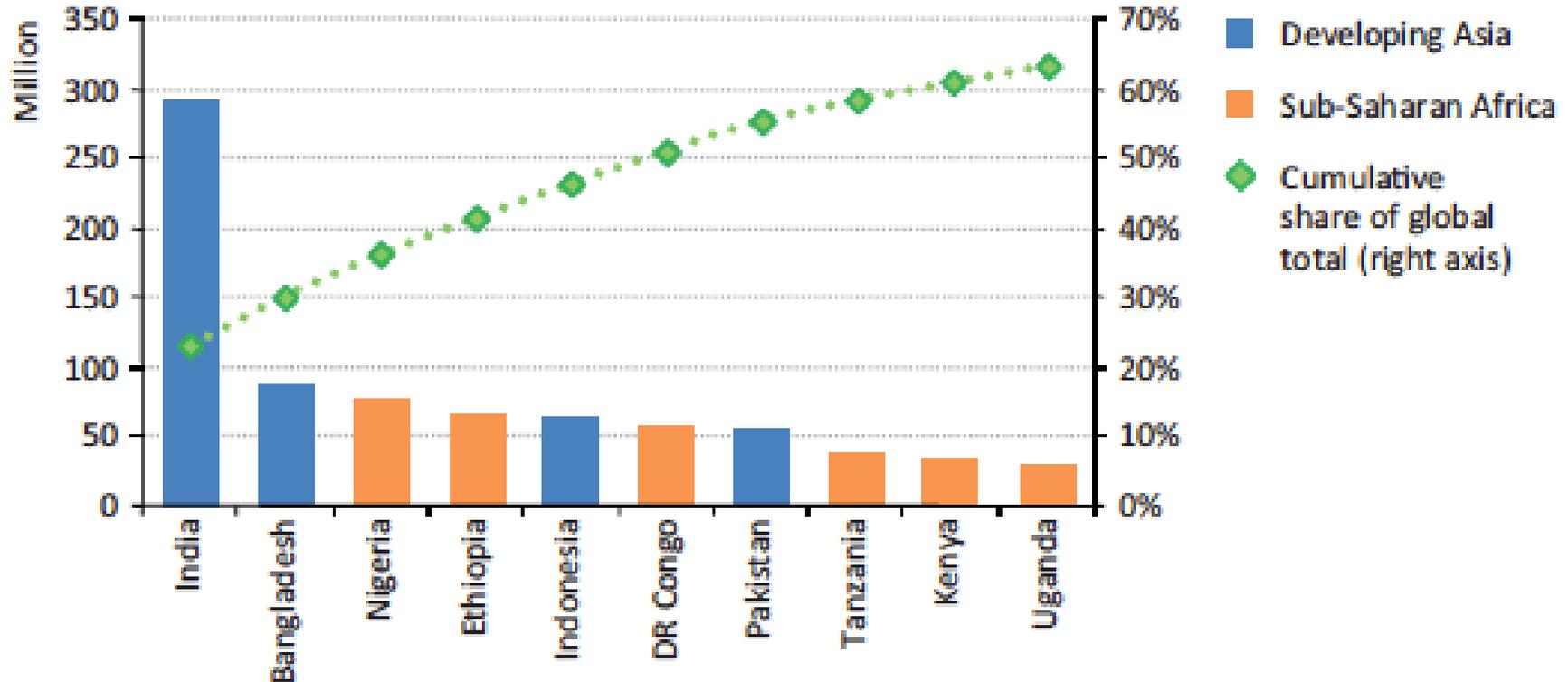
**Qualitative definition: a certain minimum level of services**

- Minimum lighting (6 hrs)
- Adequate level of comfort (26 °C)
- Clean drinking water
- Clean & adequate cooking energy
- Entertainment on demand

**Basic minimum energy as human right plus energy on demand -- with most efficient energy system and appliances**



# Access to electricity: The numbers

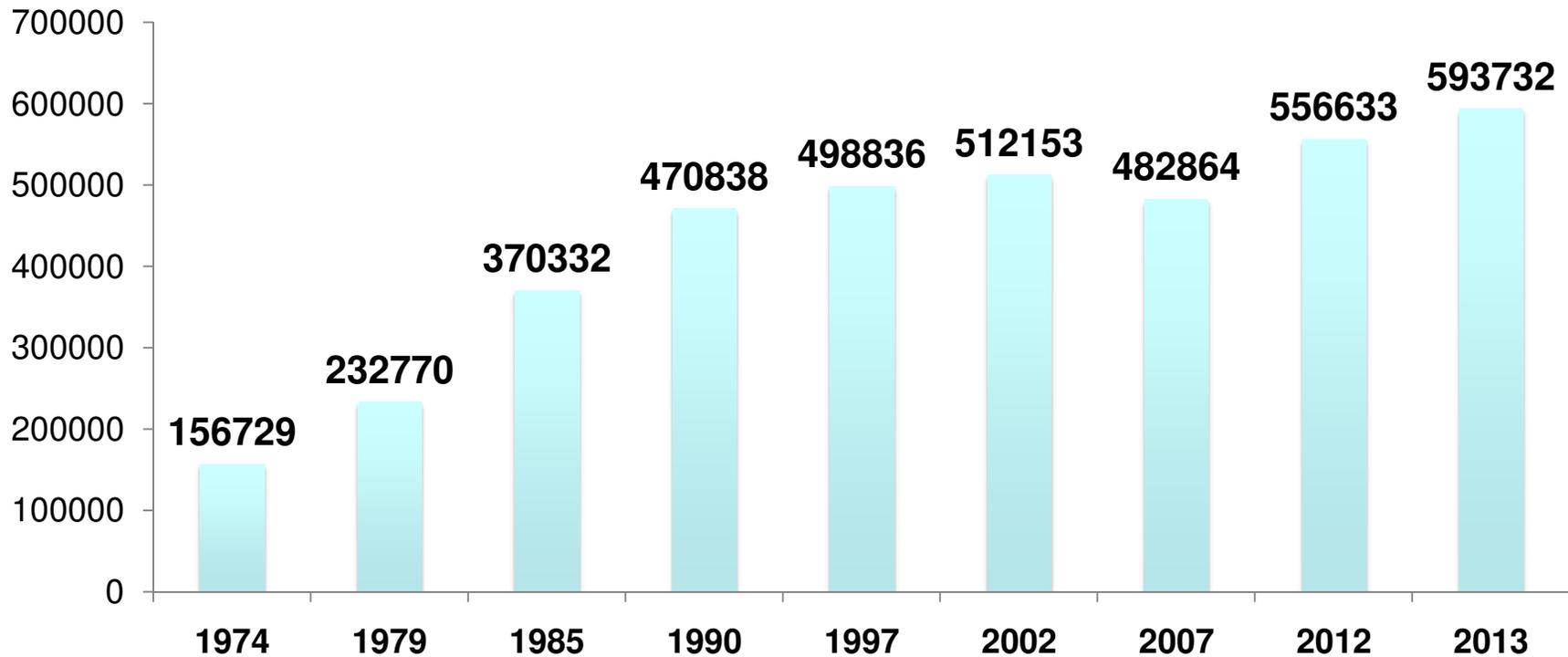


- In 2012, nearly 1.3 billion people did not have access to electricity; two-thirds of which are in 10 countries.



# Access to electricity - India

## Number of villages electrified



- A village is declared electrified if 10% of households have electricity connection; no benchmarks for hours of supply
- More than 90% villages connected to the grid



# Census 2011: Energy poor in India

- 55.3% households connected to the grid
  - But, electricity supply continues to remain poor; 75% connected households ( about 90 million) get less than 6 hours supply.
  - Per capita consumption is about 10 kWh per month
  - **170 million households with no electricity or less than 6 hrs supply – 700 million people**

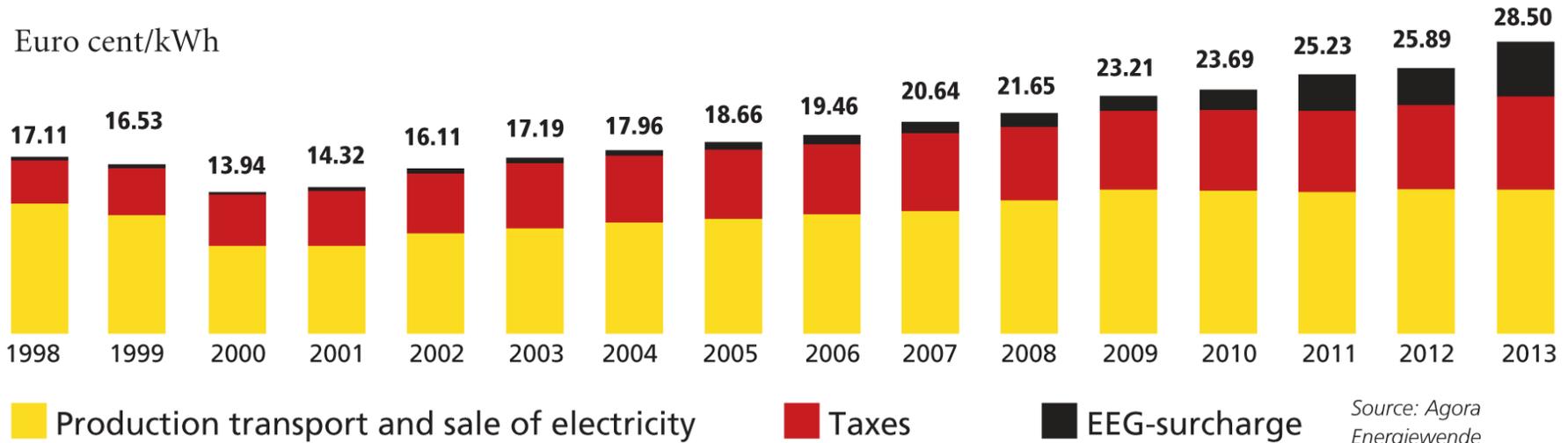


# Affordability

- **What is affordable energy**
- Energy affordability:
  - US\$ 0.10-0.50/ kWh: Developed countries
  - US\$ 0.05-0.10/kWh: Emerging economies
  - US\$ 0.02-0.05/kWh: Least developing countries



# What an average Indian can afford at Germany's electricity prices?



- At US\$ 1000 per capita income, if an average Indian spends 10% income on electricity, he can afford less than 0.5 kWh/ day at Germany's prices.
- Most developing countries cannot afford large-scale renewable energy at current prices.
- Shifting to high cost alternatives would mean excluding large population from energy access or huge subsidy – **both unaffordable**



# Key questions

- **How do we define energy access? (principles & country driven or quantitative)**
- **What should be funded under global mechanism (all renewables, what ever a country wants, only basic energy access)?**
- **Different mechanism (priority, support types) for different types of energy (basic access vs. industry; mini grids vs. solar rooftops).**