Introducing Energy-Efficient Technologies: Challenges & Opportunities

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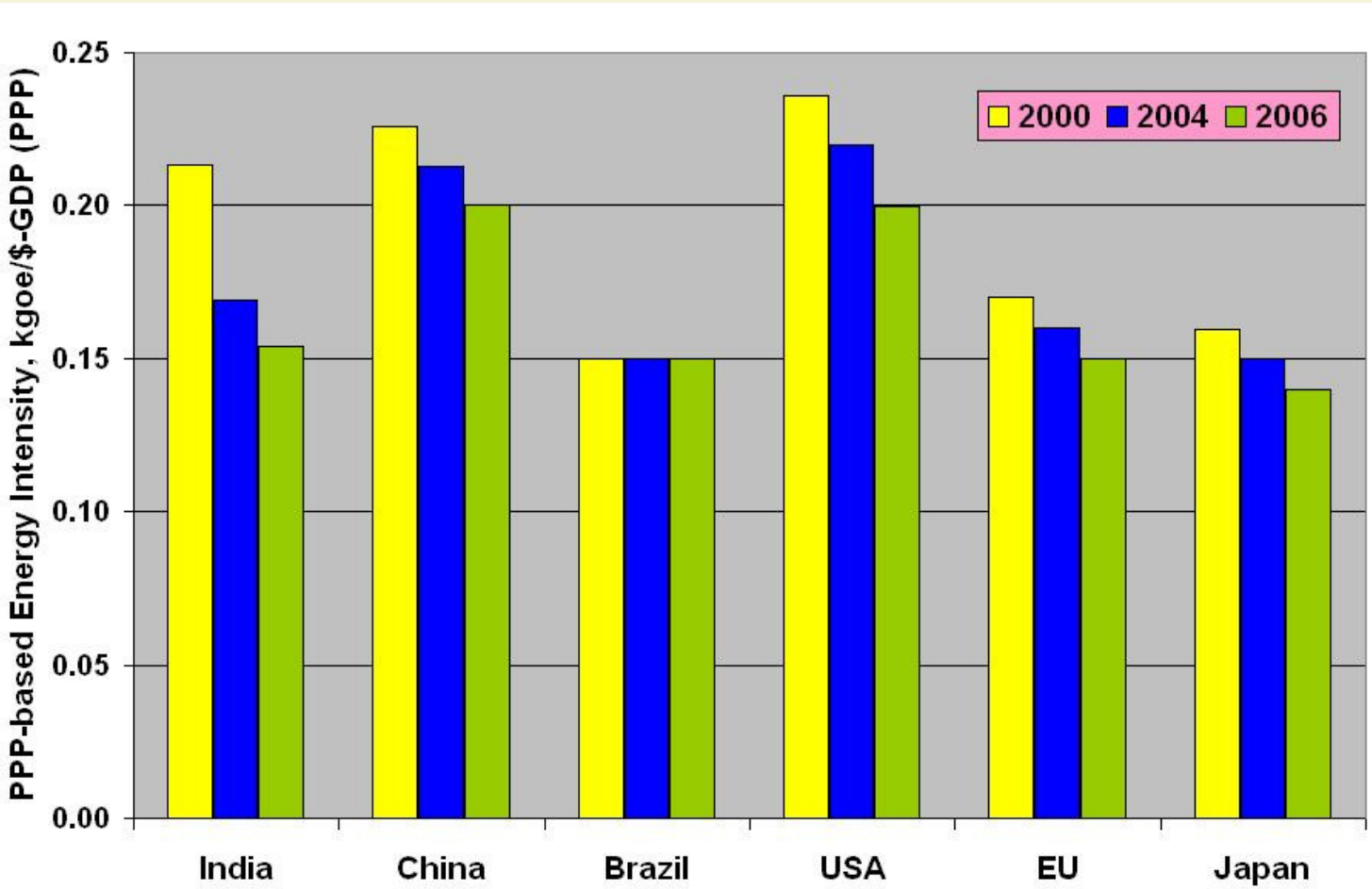
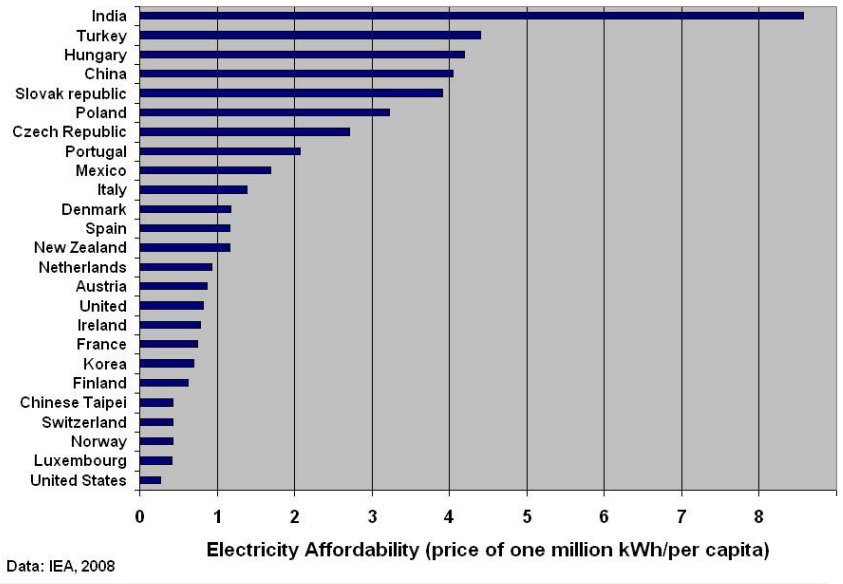
Energy Intensity continues to decline

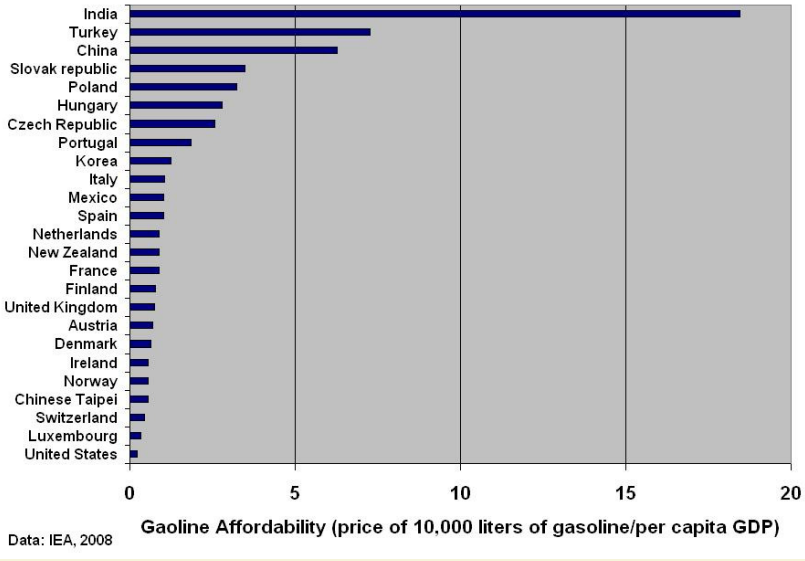


Data: IEA, various publications

Largely because energy is costly



Data: IEA, 2008



Data: IEA, 2008

Future Energy Use in India

- Energy demand is increasing due to rising incomes, accelerated industrialization, urbanization and population growth
  - 2003-04 : 572 Mtoe
  - 2016-17 : 842-916 Mtoe
  - 2026-27 : 1406-1561 Mtoe
- Fossil energy supply is expected to peak at about three times the current consumption
- Vast fraction of infrastructure is yet to be built

Technology is the key

- Installation of energy-efficient infrastructure, equipment and appliances is essential for
  - Meeting energy demand
  - Managing energy security, and
  - Meeting climate goals
- Technological transitions are important in
  - Coal-based power generation
  - Buildings, especially commercial buildings
  - Equipment and appliances
  - Mobility

Regulatory Framework

- Energy Conservation Act passed by Indian Parliament in 2001; created Bureau of Energy Efficiency
  - Appliance standards and labeling
  - Energy consumption norms for energy-intensive industrial units
  - Energy Conservation Building Code for commercial buildings
  - Reporting of energy use by high energy-consumption units
  - Certification and accreditation of energy managers and energy auditors
- National Mission on Enhanced Energy Efficiency provides mandate for market-based mechanisms to promote energy efficiency

Building Energy Efficiency

- New buildings, especially commercial buildings, offer large scope for savings
  - Enabling policy and regulatory environment (ECBC)
  - Information for building users (Building Energy Label)
  - Pilot innovative technologies
- Existing building stock can also become more efficient
  - Requirements for retrofits – especially government buildings
  - Performance contracting - ESCO
- Creation and sustenance of business models
  - Financial engineering to help direct investment (risk financing, standard contracts, M&V protocols)
  - Capacity building (architects, banks, municipalities)

Markets are an important element to drive cost-effective technologies




- Based on both supply "push" and demand "pull"
- Coal-based generation
  - Minimum efficiency requirements for new plant
  - Tariff-based bidding to sell electricity
- Commercial buildings
  - Energy conservation building code
  - Retrofits by ESCO-driven performance contracting
  - Energy performance labeling
- Industry
  - Sectoral energy consumption norms in industry
  - Market mechanisms to promote energy efficiency in industry
- Equipment and appliances
  - Minimum energy performance standards
  - Energy performance labeling

Next Steps

- Market-based industrial energy efficiency enhancement
  - Specific energy consumption targets to the most energy-intensive industrial units
  - trading of energy savings in excess of the target
- RD&D
  - Network of Climate Innovation Centres

Lifestyle Choices Matter !

Buying Your Next Refrigerator, Electric Motor, Compressor, Air Conditioner, Fan or...?

The question whether a glass of water is half full or half empty, has a third answer

There is too much glass for the job to be done.

Practice energy modesty
don't oversize

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