Global deal for Renewable Energy

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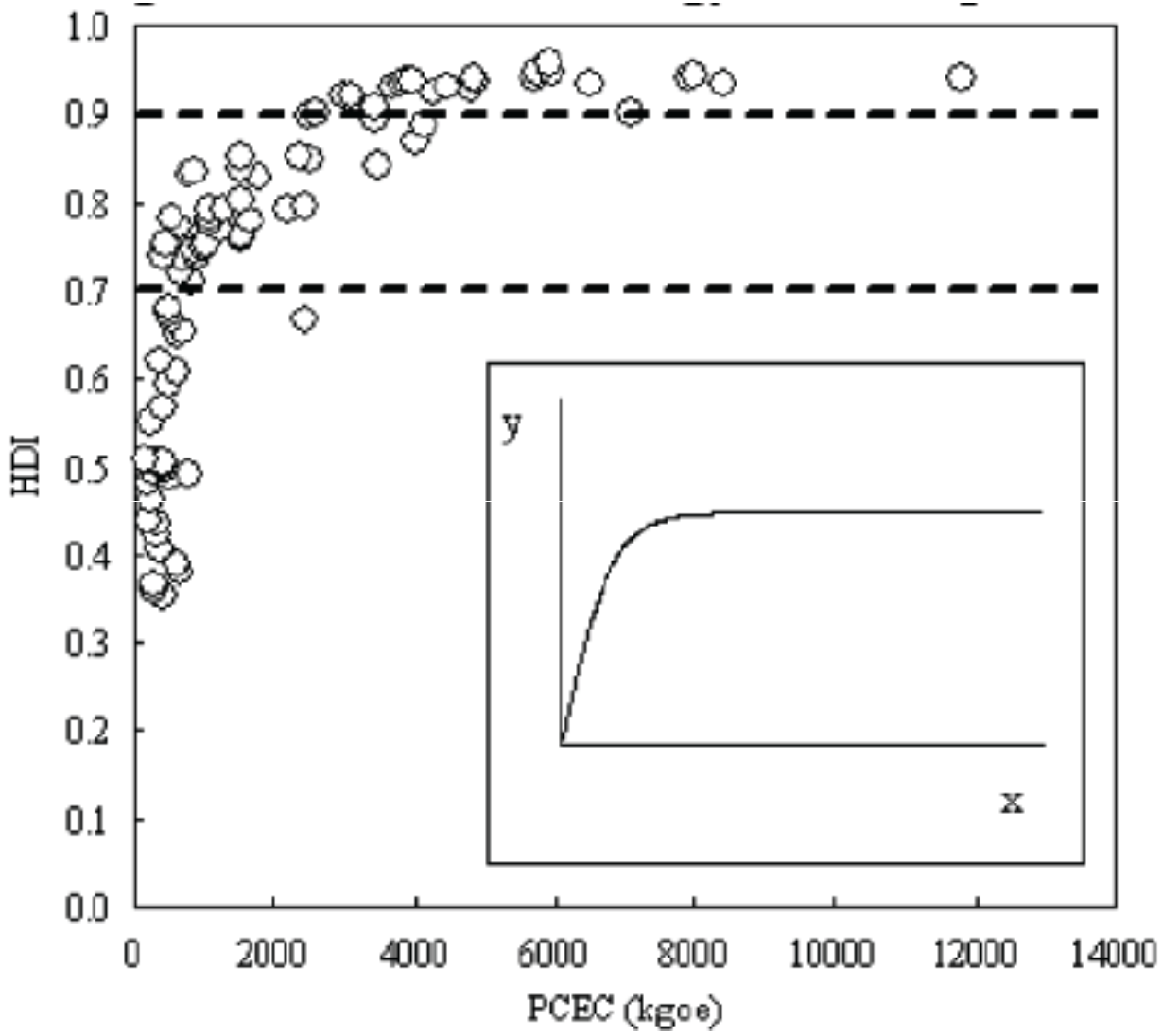
HDI vs. PCEC



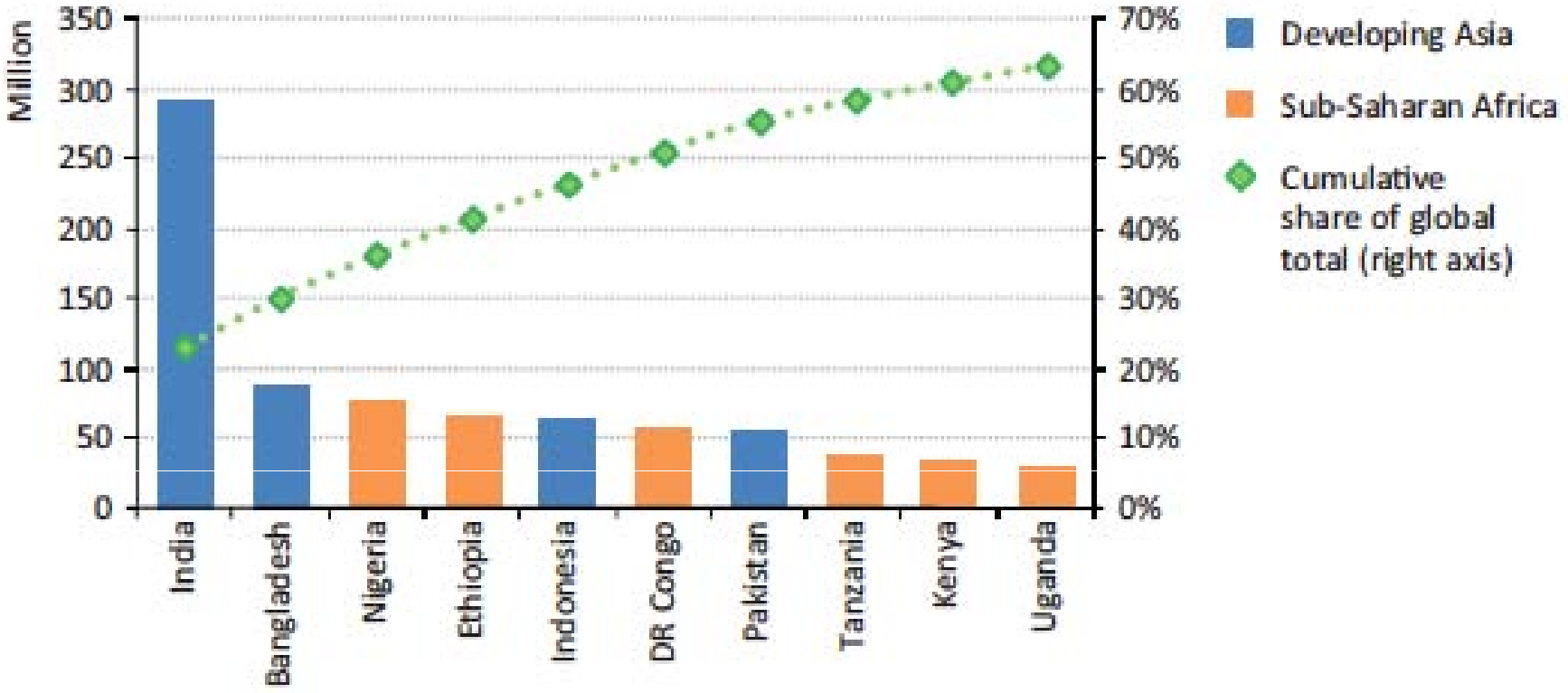
PCEC (in kgoe)

- World average: 1800
- OECD: 4280
- China: 1700
- Africa: 670
- India: 580 with 0.55 HDI

Countries with HDI of 0.7 or above have PCEC above 800 kgoe

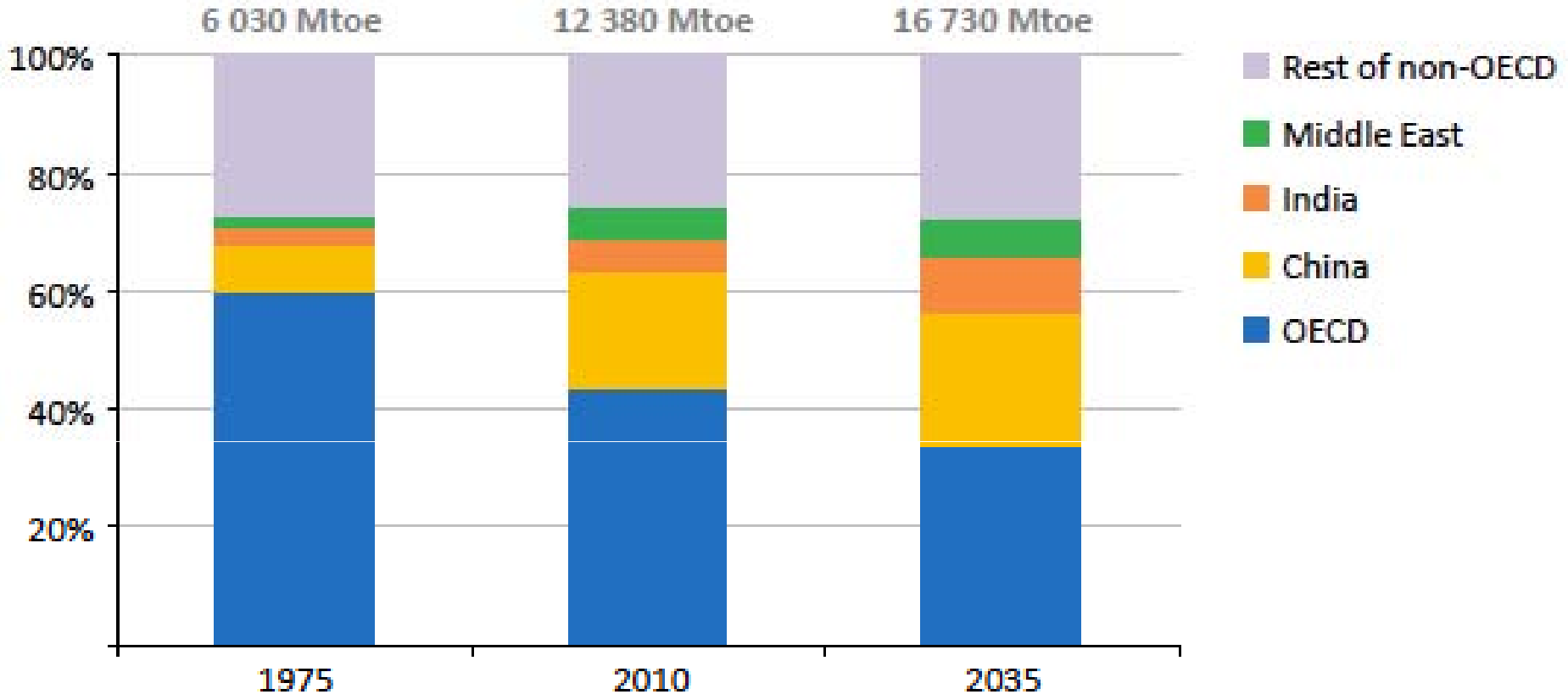
No major advantage of using more than 2500 kgoe

Access to electricity



- In 2010, nearly 1.3 billion people did not have access to electricity; two-thirds of which are in 10 countries.

Global energy demand

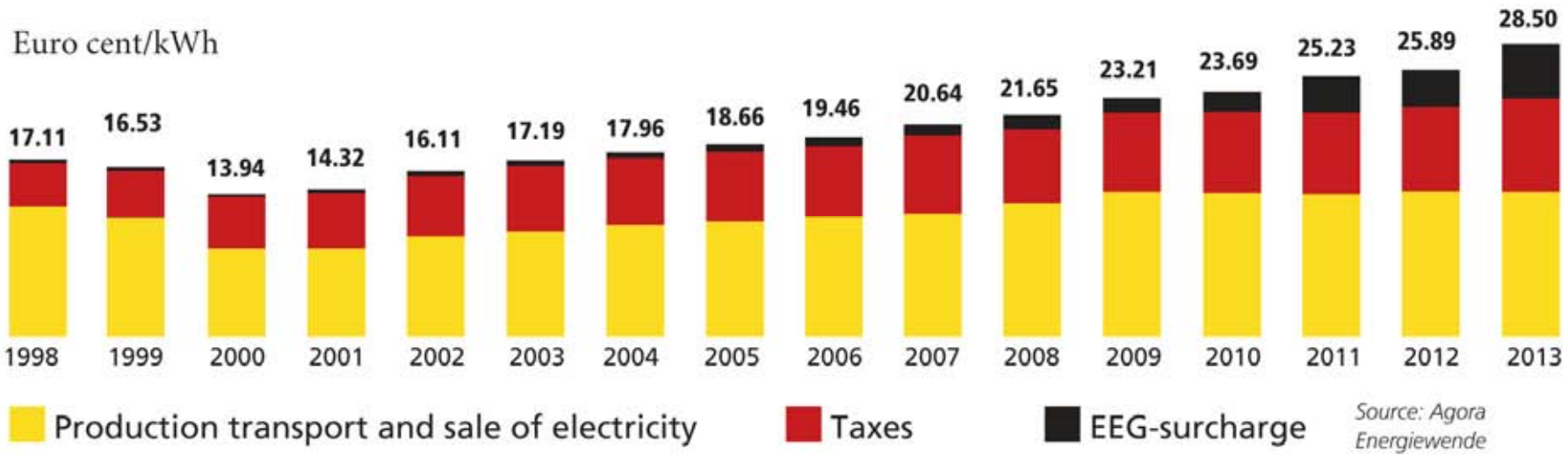


- Global energy demand grows by more than one-third by 2035 @ 1% pa. China (2% pa), India (3% pa) and the Middle East (2% pa) accounting for 60% of the increase.
- But demand increase in high consuming OECD countries as well at 0.1-0.2% pa.

Affordability

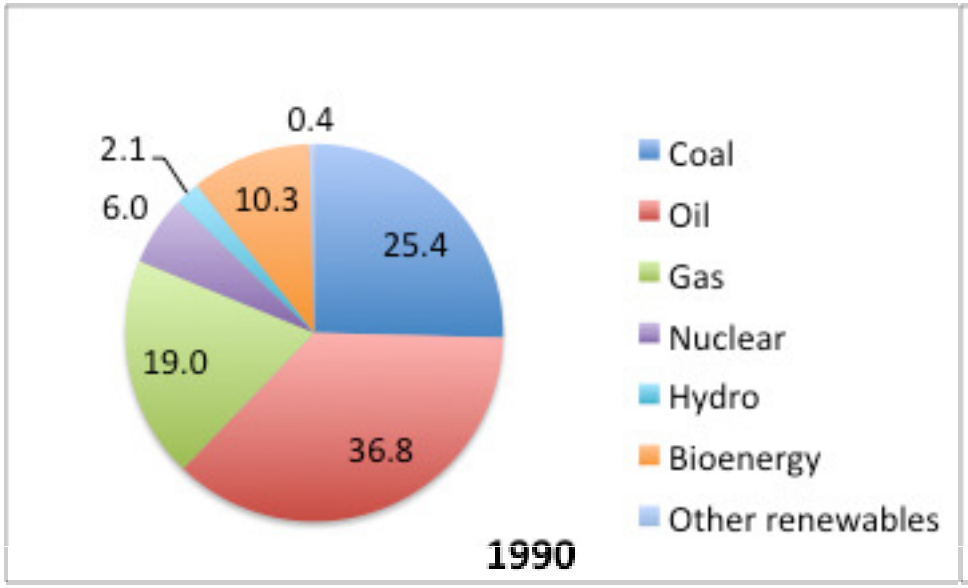
- Which kind of energy the poor countries will go for? **Affordable energy**
- Energy affordability:
  - US$ 0.10-0.50/ kWh: Developed countries
  - US$ 0.05-0.10/kWh: Emerging economies
  - US$ 0.02-0.05/kWh: Least developing countries
- For most developing countries, **indigenous hydropower, coal and gas** can only provide electricity at US$ 0.05-0.10/kWh

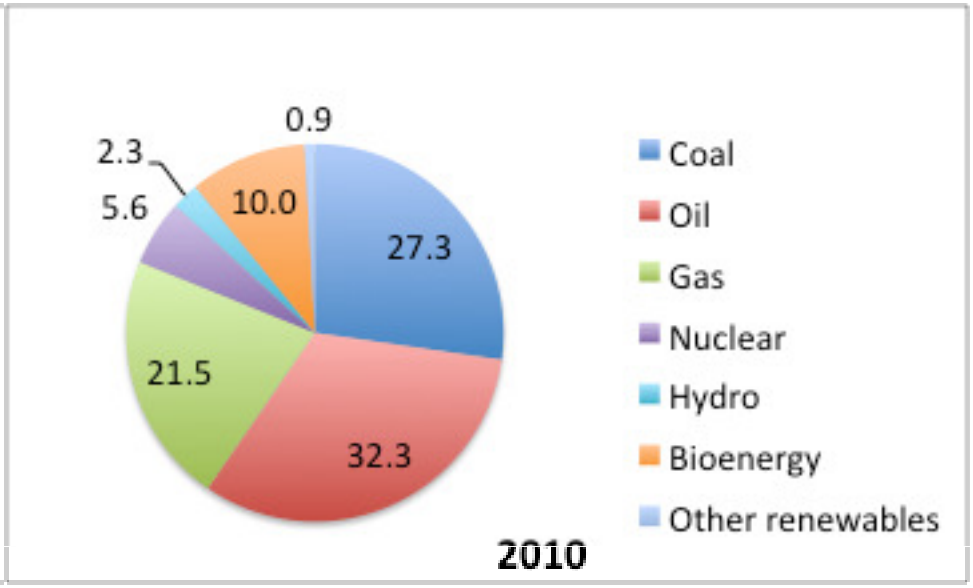
What an average Indian can afford at Germany's electricity prices?

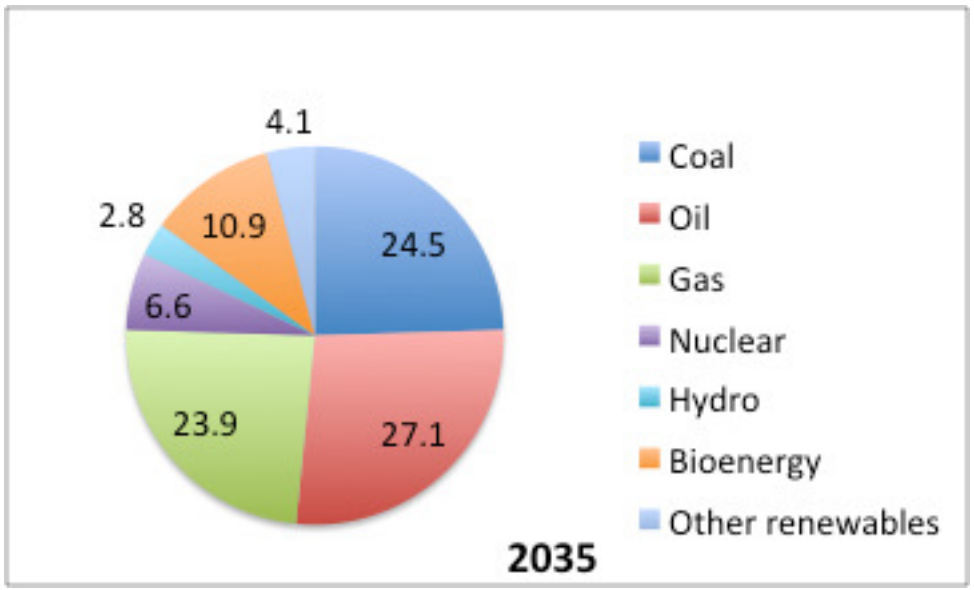


- At US$ 1000 per capita income, if an average Indian spends 10% income on electricity, he can afford less than 0.5 kWh/ day at Germany's prices.
- Most developing countries cannot afford large-scale renewable energy at current prices.
- Shifting to high cost alternatives would mean excluding large population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

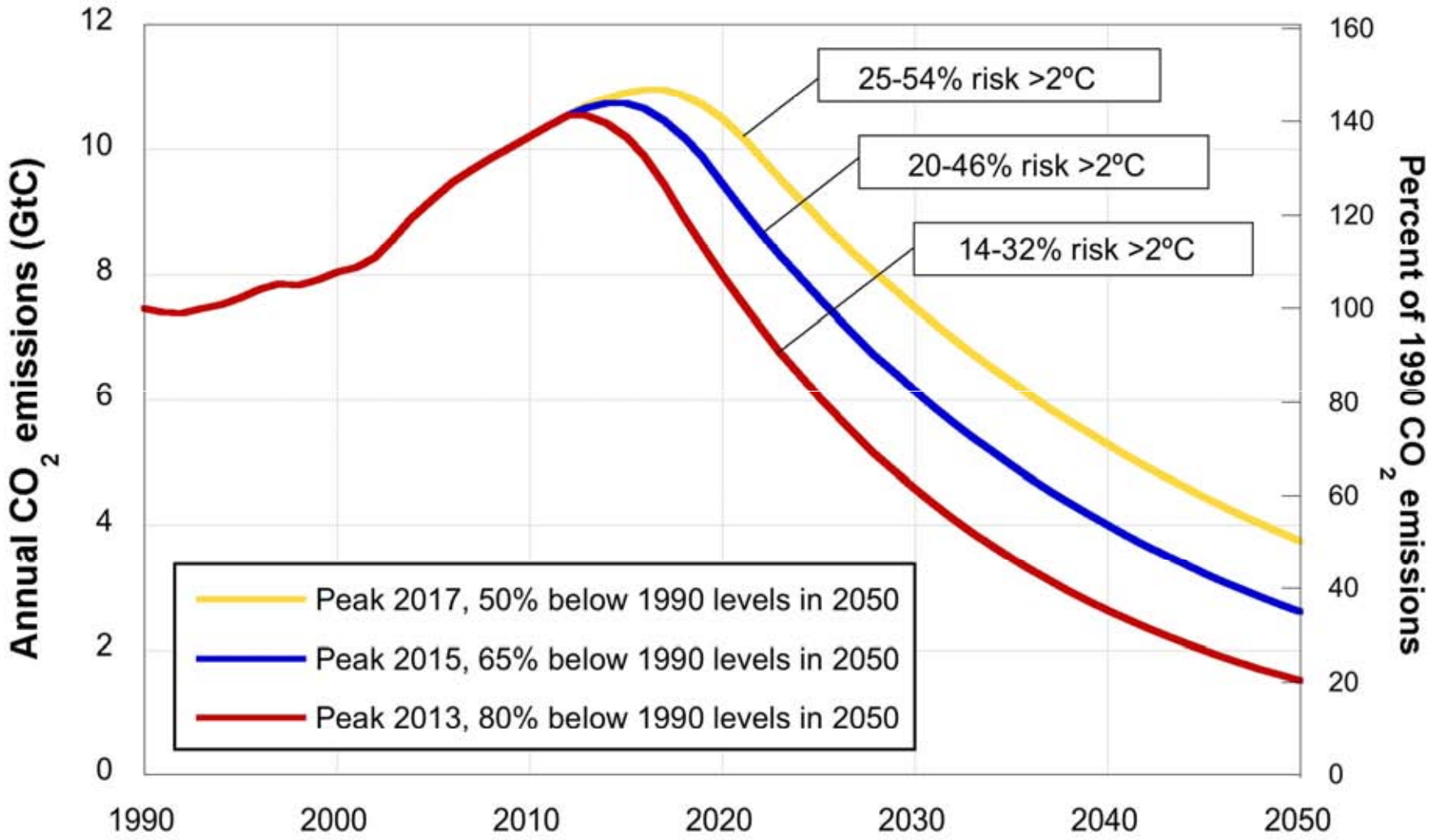
Global Energy Mix







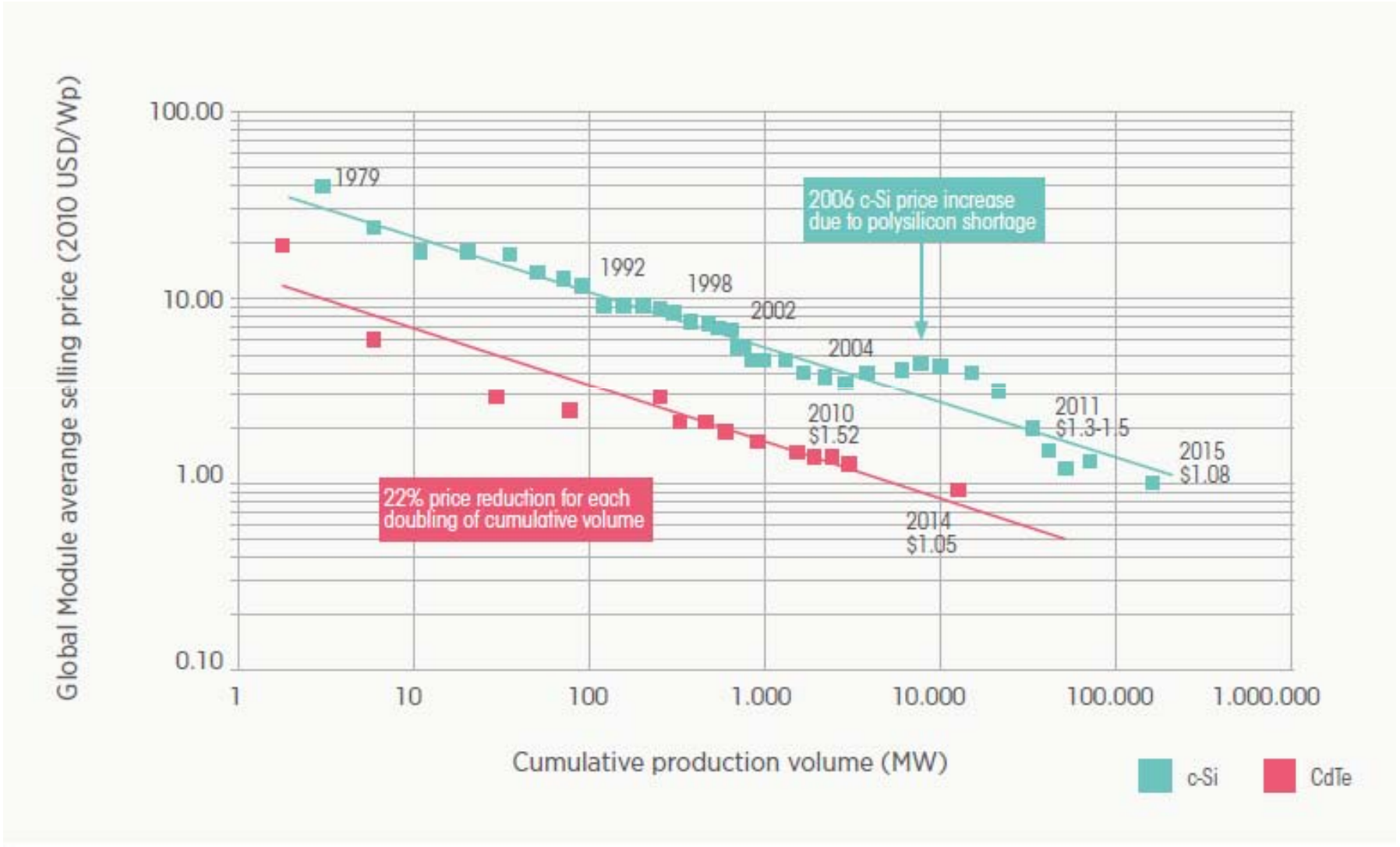
Global 2^0C emissions pathways



Climate-Energy Challenge

- Can't continue with fossil fuel – must move to renewable energy to meet large part of energy requirement
- But how can developing countries move with their huge energy access challenge and low affordability?
- The only way the world, especially developing countries, will move to renewables if it is affordable to all and provides similar level of energy services as fossil fuel

Global PV price learning curve



Public investment as driver

- Research show that the **pooled price of 24x7 renewable energy** must be brought down to **US$ 0.10/ kWh** to make it affordable to all.
- An additional installation of 1,000 GW of renewable energy and massive funding in storage and grid technology.
- No individual country can do this. **We need a global deal**

Global deal

- Climate negotiations not moving ahead because of “Zero-sum game”.
- We need to convert “zero-sum” to “positive sum”
- “Positive sum” is if we expand energy budget but reduce carbon space – **cheap renewable energy**
- **Global pot of money under UNFCCC (largely contributed by developed countries) to invest in expanding renewable capacity, storage and grid technology.**

Global feed-in-tariff

- **Global feed-in-tariff to install 1,000 GW renewable energy in developing countries in next 15 years**
- **Global community will pay incremental cost (difference between renewable price and the pooled grid price) – reduce year after year as conventional power price increases.**
- **Countries will get installation share based on number of people without access to energy**
- **Estimated cost: US$ 1.5 trillion – US$ 100 billion/ year**

Global feed-in-tariff: Can the world afford?

- US$ 100 bilion/ year = 0.8% of the tax base of developed countries = 0.2% of their GDP
- Developing countries will also contribute based on “responsibility-capability index”
- It will provide energy to 2 billion energy poor people
- Will bring down the cost of renewables for the developed countries as well and make emissions reduction cheaper
- Will go a long way in climate change