

# **Are patents a barrier to the transfer of climate change technology?**

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# The background

- Technological progress can drive a wedge between growth and emissions > climate = global public good
- Technologies relevant to emission reduction are increasingly being patented > private goods
- Developing countries claim that the patent regime constitutes a mismatch > monopolistic pricing
- Are there any arguments in favour of extending TRIPs compulsory licensing to climate change technology ?

# Literature review

- Lot of debate, little empirical evidence
- Barton (2007): IP relevant but competition prevents overcharging
- ICTSD (2008): IP as obstacle and incentive; difficult to get the balance right
- Khor (2008): many climate change technologies are in the public domain, no IP protection

# Empirical approach: patent counts

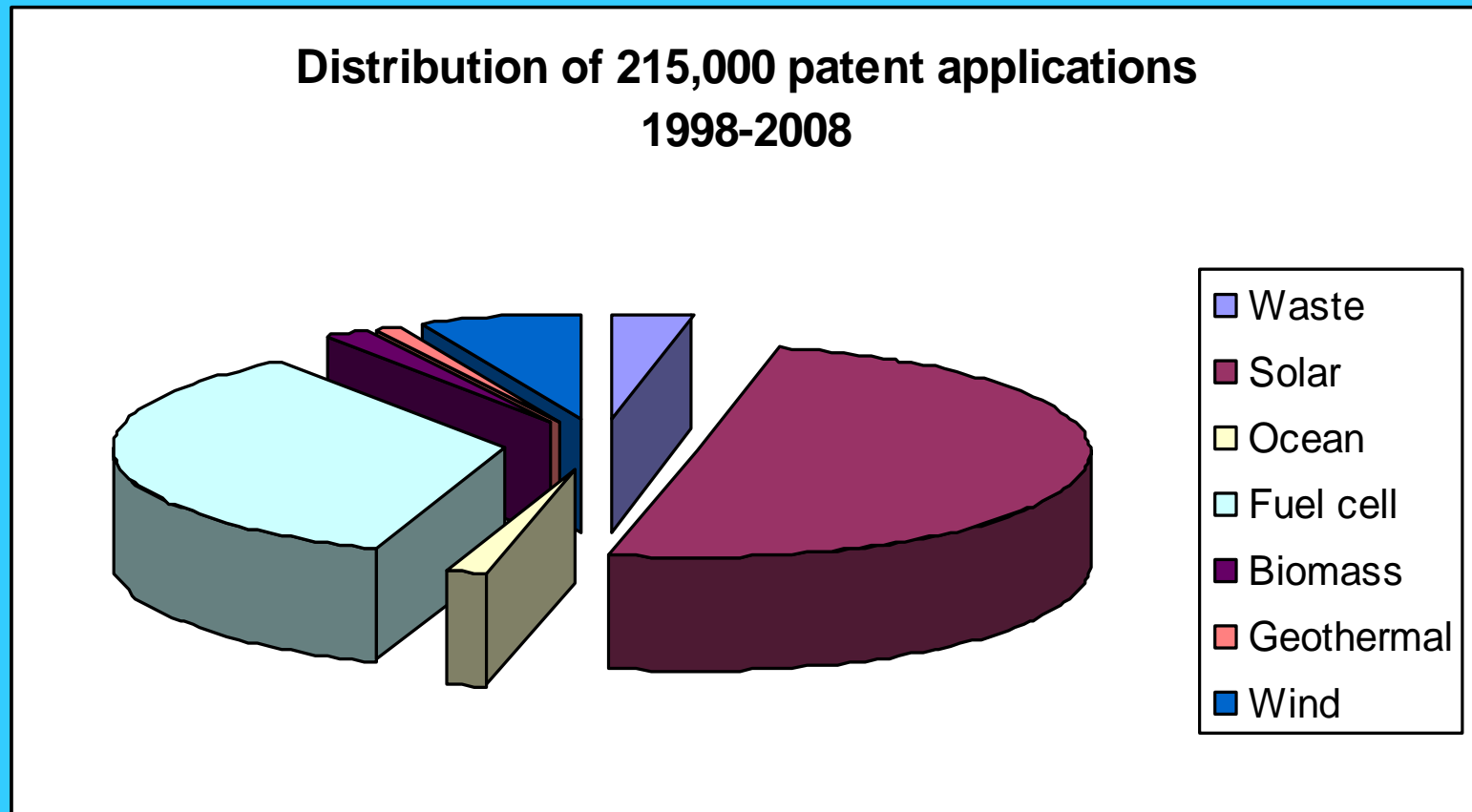
Study by Copenhagen Economics & Danish IPR Company, for the European Commission / DG Trade

Count of patent applications 1998-2008 for 7 relevant technologies: waste, solar, ocean, fuel cell, biomass, geothermal, wind

Representative sample of low-income (32 countries in SSA) and emerging markets economies (BRICs + Ukraine, Argentina)

Total: 215,000 worldwide applications, 22,000 sampled in developing countries

# The research is in Solar & Fuel cell = 80 %



# The Gap

## Number of patent applications, annual

Year	Total worldwide	Emerging markets	Low-Income countries
1998	9.118	342	3
2002	19.982	992	10
2007	27.505	3.439	10
2008	19.701	4.037	6

# Implications of the Gap

## Hardly any patents registered in low-income countries

- Patents are not an obstacle; there are no applications
- Relaxing the patent regime would not have any impact
- There are other reasons: technological capacity, market size, purchasing power
  
- Look for economic solutions, not legal:
- Cheaper alternative technologies, foreign aid (but risk of distorting the market)

# Closing the Gap

## Fast growth in Emerging Markets: catching-up

- In 1998: 1 in 25 / in 2008: 1 in 5 in EM
- 1/3 EM patents owned by EM residents (7k out of 22k)
- Of which more than 6k by China residents
- Spectacular growth in patenting in China
- Not weaker but stronger IP enforcement would benefit EM, especially China

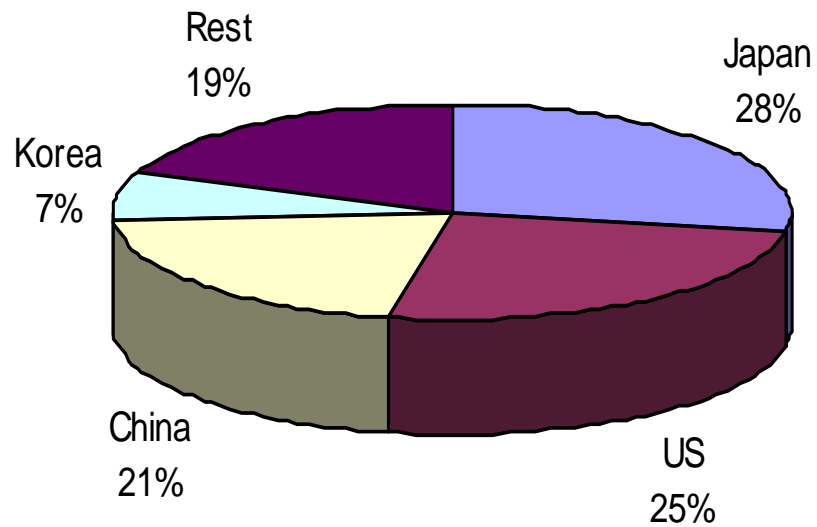
# Monopolistic market structure?

- Unlikely: sufficient competition between countries

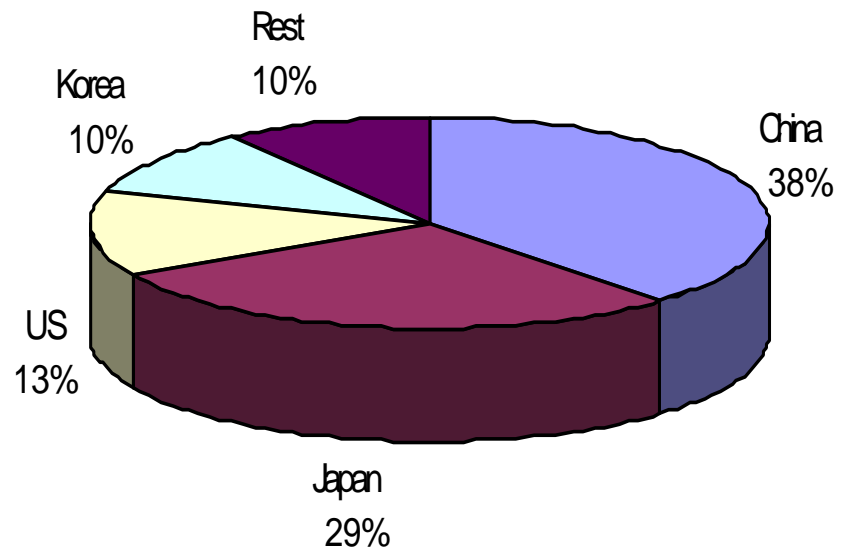
We even underestimate competition in this study:

- Country versus company level competition
- Different technologies are substitutes

### Ownership of fuel cell technology patent applications in developing countries



**Ownership of solar technology patent applications  
in developing countries**



# Conclusions

- Patents are hardly used in low-income countries
  - Economic factors explain low technology transfer
  - Use economic instruments to address this
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- Patents growing fast in emerging markets, esp. China
  - Local ownership growing fast too
  - Strengthening patent enforcement would benefit them