

# Intellectual property rights and low carbon technology transfer: conflicting discourses of diffusion and development

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1. Background:
  - Low carbon technology transfer (TT): the issue
  - SPRU's work in the area
2. The intellectual property right (IPR) debate
3. UNFCCC: conflicting north/south motivations
4. Conflicting political discourses of diffusion and development
5. Conflicting policy recommendations
6. Post 2012: A way forward

# Low carbon technology transfer: The issue

- Future emissions from rapid economic development
  - Emissions increases 1990-2001:
    - » India 61%
    - » China 111%
  - China to overtake US by 2010
  - India to equal China by 2030

*(IEA 2004)*

# Low carbon technology transfer: The issue

- Low carbon development
- UNFCCC Article 4.5
  - Annex I countries obliged to ensure availability of affordable clean technologies to non-Annex I countries

# Radical vs. incremental improvements

E.g. increase average efficiency of coal fired power stations from 33% to 45% between now and 2030

= annual reductions of:

China: 872 million tonnes of CO<sub>2</sub> per year

India: 238 million tonnes of CO<sub>2</sub> per year

UK economy wide emissions in 2006: 561 million t CO<sub>2</sub>

*Estimates based on IEA (2006) forecasts*

[www.sussex.ac.uk/sussexenergygroup/barriers](http://www.sussex.ac.uk/sussexenergygroup/barriers)

# UK–India Collaboration to Identify the Barriers to the Transfer of Low Carbon Energy Technology



**US**

University of Sussex  
Sussex Energy Group SPRL  
– Science and Technology  
Policy Research



The Energy and  
Resources Institute



# UK-India Collaborative Study

## Background:

- G8 Gleneagles 2005: Developing countries pressed for new approach to international cooperation on clean energy technologies
- UK Government and the Government of India decide to collaborate on study to assess barriers to transfer of low carbon energy technology between developed and developing countries

# UK-India Collaborative Study

Aim:

Phase I (complete)

4. Identify barriers to successful technology transfer
5. Identify key policy considerations for overcoming barriers

# UK-India Collaborative Study

Aim:

Phase II (underway, due for completion Feb 08)

4. Develop a taxonomy of barriers to low carbon technology transfer
5. More detailed analysis of intellectual property rights (IPRs) & relevant policy approaches for addressing this issue
6. Recommend mechanisms and technologies to foster joint research, development, demonstration and deployment (R,D,D&D) between developed and developing countries

# Study approach

1. Case study based approach
2. Phase I technology case studies:
  - i. Coal gasification including IGCC
  - ii. LED lighting
  - iii. Biomass
  - iv. Hybrid vehicles
  - v. Improving combustion efficiency
- Conceptual framework drawing on literature on technological change *as well as* technology transfer

# Stage of technology development

	Stage of technology development		
Sectors	Pre-commercial	Supported commercial	Commercial but slow diffusion
Low-carbon power generation technologies	Coal gasification including IGCC	Biomass including fuel supply chain issues	Improving combustion efficiency
Network / infrastructure technologies			
Low carbon end use technologies	LED lighting	Hybrid vehicles	

# Study approach

1. Phase II technology case studies:
  - i. Wind energy
  - ii. Solar PV
  - iii. Hybrid vehicles
  - iv. IGCC: air blown
  - v. Energy efficient technology adoption in Indian SMEs
2. Additional case studies of collaborative RDD&D initiatives
3. IPR issues in other industries e.g. biotech and pharmaceuticals

# Two sides of the IPR debate

- Strong IPR regimes are basis for TT
- Strong IPR regimes are barrier to TT
- Conflicting policy measures:
  - Strengthen IPR regimes *a la* TRIPS (Trade Related Aspects on Intellectual Property Rights)
  - International fund for buying up IPRs

# Conflicting political discourses of diffusion vs. development

Historically different motivations for being party to the UNFCCC

- Developed country: solution of environmental problem
- Developing country: technology access and economic growth

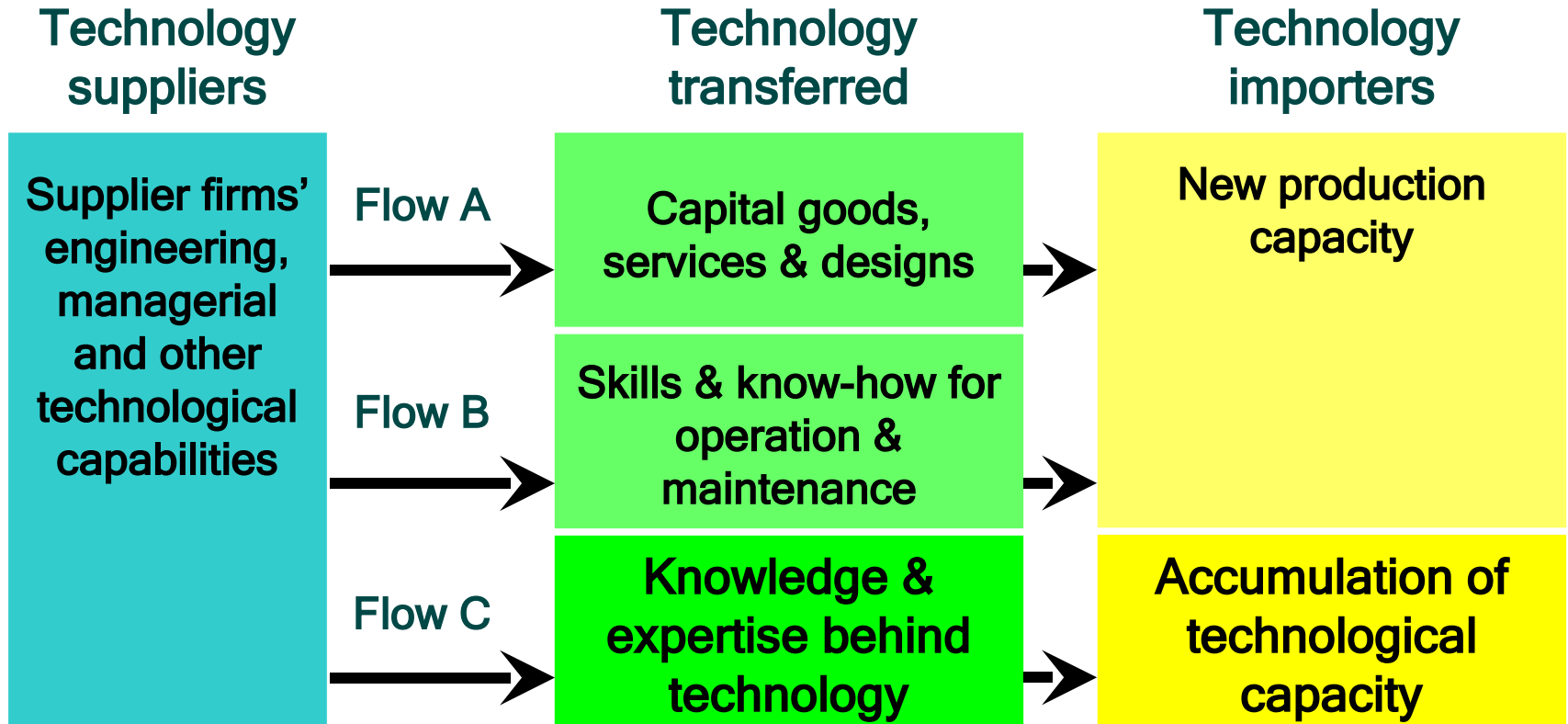
Different political discourses on TT

- Developed country: aiming at rapid diffusion of low carbon technology
- Developing country: aiming at building technological capacities

# Technological capacity building



University of Sussex



Sussex Energy Group  
SPRU - Science and Technology Policy Research

Tyndall<sup>o</sup> Centre  
Based on Bell (1990)  
SUSSEX

# IPR and low carbon technologies: Evidence to date

- Empirical analysis is limited
- Six studies considered
- 2 covering wind, solar PV and biofuels in depth
- 1 which briefly considered other technologies (biofuels, hybrid cars, IGCC, LED)
- 3 covering more generic issues re. IPRs and trade
- Focus on India and China

# IPR and low carbon technologies: Evidence to date

- Developing countries generally had access to all technologies examined
- Generally didn't have access to the cutting edge
- Overall uncertain picture re. role of IPRs in TT

- Diffusion perspective:
  - IPRs no barrier to technology access
  - No IPR-specific policy action required to promote increased access
- Development perspective:
  - Companies do not produce at the cutting edge
  - IPRs might prevent access
  - Action necessary to increase access to IPRs
  - Interventions like TRIPS cause for concern

# Shortcomings of political discourses: A way forward post-2012?

- View mainly based on study of wind and solar PV. Remains to be seen how successful other technologies will be e.g. IGCC, hybrid vehicles
- Transmission & end use technologies might encounter different issues

# Shortcomings of political discourses: A way forward post-2012?

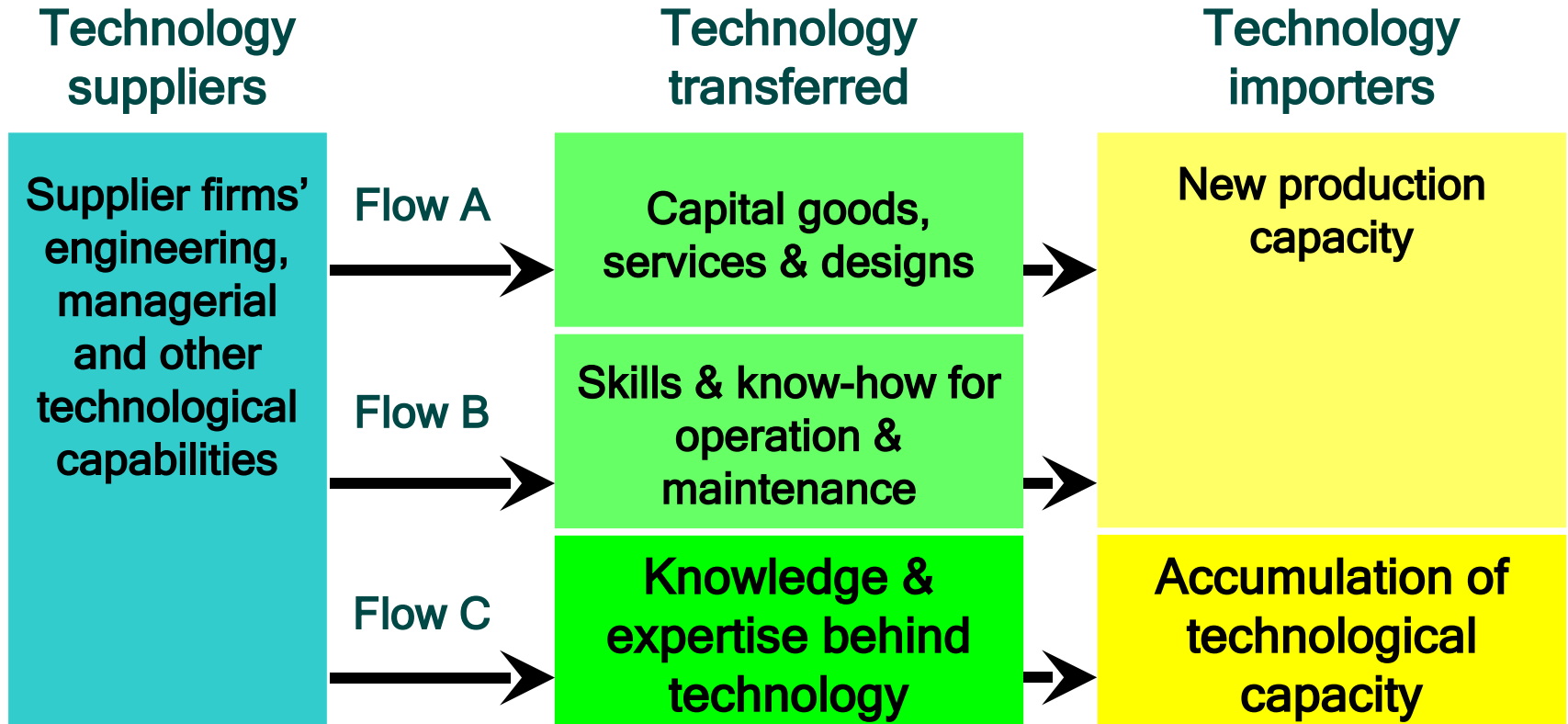
Both political discourses based on incomplete understanding of TT process

- Development:
  - Neglects importance of other factors affecting technological capacity e.g. tacit knowledge, cost of new technologies
- Diffusion:
  - Fails to account for role technological capacity plays in the diffusion of new technology

# Technological capacity building



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# Political economy: The fly in the ointment

- Naïve to think climate change negotiations are altruistic
- Sustained or improved competitive advantage always an issue
- Interests of national firms and industries = main consideration
- Technology central to these concerns

- Different political discourses, informed by differing motivations for joining UNFCCC, result in conflicting policy positions
- Both sides must move away from their polar positions
- Better understanding of technological capacity & tacit knowledge might facilitate agreement
- But negotiating positions heavily influenced by political economy considerations rather than factual role of IPR

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