

Technology and Climate Change
**International Flows, Barriers and
Frameworks**

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Outline of Comments

1. Paradigms
2. Flows
3. Barriers
4. Frameworks
5. Implications

1. Paradigms

Currently-dominant Paradigm I:

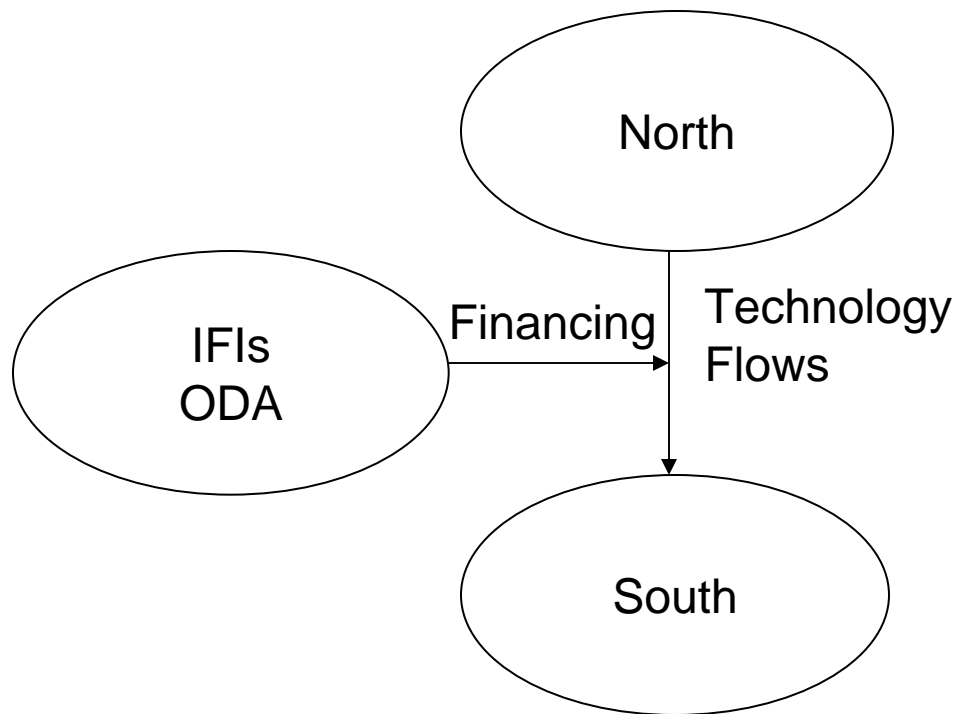
North-South technology & financial flows

Complementary Paradigm II:

Global trade-investment-technology flows

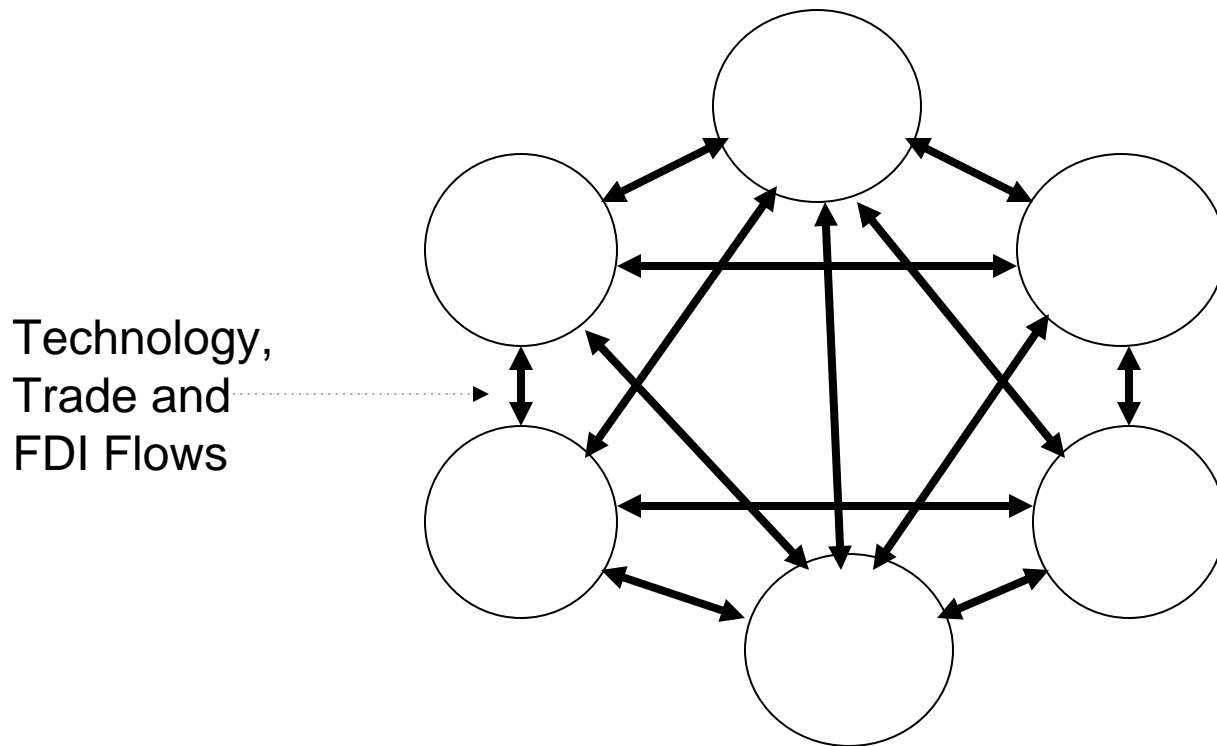
International Technology Flows: Paradigm I

North-South Flows & Financing



International Technology Flows: Paradigm II

Technology flows are embedded in global trade & FDI flows



2. Flows: FDI

FDI and ODA as Percent of Gross Fixed Capital Formation (2000)

	World		Non-Annex I Countries	
	FDI	ODA	FDI	ODA
All Sectors	17.9	0.2	10.2	1.1
Electricity, gas, water	12.2	2.6	12.6	3.9
Transport, storage, communications	16.7	0.9	8.9	3.1

Flows: Trade

US: *net importer* of 43 climate friendly goods

	<u>2006</u>
Imports	\$ 18 billion
Exports	15 billion

Industries/ Products	Developing Countries that are World Leaders
Biofuel (ethanol)	Brazil (sugar-cane feedstock & refining)
Biofuel (biodiesel)	India (jatropha, 2nd generation feedstock)
Coal gasification	China
Coal-to-synfuels	South Africa
Coal to hydrogen	China
Compact fluorescent lamps	China, Indonesia
Heat pumps	China
Solar photovoltaic cells	China (3 rd after Germany and Japan)
Solar hot water heaters	Mexico
Wind energy	China, India

Multi-national Corporations and FDI: Climate-Related R&D and Firms *in Non-Annex I Countries*

Suzlon of India – 5th largest wind turbine producer – FDI in China ... and US and 5 European countries

Tata of India – diverse energy, transport and other technologies – FDI in numerous countries

Suntech of China - 3rd largest solar cell producer

GE - energy technologies in India and China

Siemens – energy technology - in India and China (with 2000 and 7000 employees)

Examples of South-South Transfers

- Ceramic Cookstoves - Thailand, Kenya and other countries in Africa
- Bamboo Fibre Reinforced Cement Board for Carbon Sequestration - Colombia, Indonesia (and Japan)
- Biogas Digester - China and Asia-Pacific Region Biogas Research and Training Centre

More South-South Transfers

Jatropha Projects

- Ghana and Other West African Countries with aid from the Indian Government
- Indonesia with FDI from South Korea
- Mozambique with FDI from China
- Philippines with FDI from South Korea

3. Barriers

“North” Examples

EU: 57 % tariff on imported *CFLs from China* and four other developing countries

US: 2.5% + 43 *cents/gallon* tariff on sugar cane based *ethanol imports from Brazil*

US: firm-specific [i.e. Toyota and Honda] limits on tax credits for buyers of hybrid fuel autos

More Barriers: South-South Examples for Photovoltaic Products

Top ten producers include:
South Korea, Malaysia, China, Taiwan

	Brazil	China	India	Mexico	South Africa
Applied Tariffs (percent)	18	10	15	13	12
Non-Tariff Equivalents (percent)	53	NA	41	62	NA

4. Frameworks

Two underdeveloped, fragmented, multi-level “systems” are intersecting in a new joint agenda, which is doubly fragmented

Trade-Investment-Technology Transfer Regime

WTO

- Limited FDI coverage of goods (cf. services)
- No competition policy coverage
- International aviation and maritime shipping are excluded (in ICAO and IMO instead)
- Proliferation of regional and bi-lateral trade and investment agreements

5. Implications for International Negotiations

Parallel negotiations:

FCCC: North-South technology and financial flows

WTO: trade & investment barriers to technology flows

Coordinating mechanism for joint agenda:

FCCC, WTO, UNEP, World Bank; GEO [?]