Addressing Sustainable Development in Developing Countries Through Environmental Technology Dissemination and Transfer

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Importance to developing countries of obtaining access to and endogenous development of environmental technologies as part of achieving sustainable development

Environmental technology access and transfer (for know-how, procedures, goods and services, and equipment as well as organizational and managerial procedures) is one of the key means of implementation for sustainable development

- 1992 Rio Principle 9
- 1992 Agenda 21, chapter 34

Climate change-constrained development context requires greater focus on use of, access to, and development of environmental technologies, especially in developing countries to help them avoid mistakes of historically environmentally-damaging development pathways of developed countries
Existing multilateral norms on environmental technology dissemination, access, and transfer: some examples

- 1985 Vienna Convention for the Protection of the Ozone Layer, Art. 4.2
- 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, Art. 5.2, 5.3
- 1992 Agenda 21, Chapter 34, para. 34.14
- 1992 UNFCCC, Art. 4.5 and 4.7
- 1992 UNCBD, Art. 16
- 1994 UNCCD, Art. 6(e)
- 1994 TRIPS, Art. 7, 8.1, 40.1, 66.2
- 2002 WSSD Johannesburg Plan of Implementation, paras. 105-106
- 2012 Rio+20 Outcome Document, paras. 72-74

Effective implementation of these norms continue to be a major problem
Absorptive capacity constraints to effective environmental technology dissemination and transfer

• Poor infrastructure
• Inadequate policy regime
• Shortage of skilled personnel
• Lack of financing
• Technology appropriateness
• High cost of technology
• Access or purchase restrictions from suppliers
• IPRs
IPRs as a barrier to environmental technology dissemination and transfer depends on:

- Whether the technology is patented
- Existence of viable and cost-effective substitutes or alternatives
- The degree of competition in relation to the technology
- The price of the technology
- Terms and conditions of technology licensing
Patent ownership of environmental technologies: some examples

• **Renewable energy-related patent ownership in 2005** – 36.7% EU; 20.2% US; 19.8% Japan; 2.9% China; 2.3% ROK (OECD, 2008)

• **Wind, solar, PV, concentrated solar, biomass-electricity, cleaner coal, CCS technology** – US, Japan, Germany lead in innovation and patent ownership. Developing countries have no companies in top 10 in these sectors. OECD countries will determine speed of diffusion of most advanced energy technologies in next decade (Chatham House, 2009)

• **Automobile pollution control technology patent ownership in 2005** – 49% EU, 31% Japan, 14% US. Only 0.7% Brazil, Russia, India, Indonesia, China, South Africa combined

• **Wind technology patents 1998-2007** - Germany, US and Japan combined - around 60%; Denmark, Spain, UK, France and the Netherlands combined - 23%; China - 1.5% (even then, top 10 holders of wind tech patents registered in China are firms from US, Germany, Japan, Denmark, and Spain)
Ways in which strong IPR regime can hinder access of developing countries to environmental technologies:

• **high royalty fees** – ex. $2.3B in net royalties and license fees paid in 2010 by India; IMF BOP 2009 data indicates that developing countries as a whole paid $50.6B in net royalties and license fees - for countries facing balance-of-payments constraints, this may be an acute problem; US and UK are largest recipients of such fees

• **refusal to license by the patent holder** – ex. Cancellation of China Yantai cleaner coal gasification pilot power plant due to high cost and reluctance to transfer needed technologies
• **unreasonable patent holder conditions**
  o Prospective licensee requirements were such that only US, UK, AUS enterprises were eligible to license production of HFC-227ea fire protection chemical → Indian firms unable to get license
  o High concession prices or fees, condition for developing country firms to agree to minority-shares in joint ventures, export restrictions → India, Brazil, China, ROK, Mexico firms unable to gain access to ozone-friendly technology on affordable terms to enable local firms to produce these
  o Tied technology-purchase requirements → Malaysian firm Solartif accessed advanced solar PV tech only on condition of buying solely from patent holder
• “**ever-greening of patents**” – patenting of incremental improvements in existing patented or off-patent environmental technologies can lead to “ever greening” of patents, extending monopoly rights beyond initial patent period
• **increasing patent litigation** – ex. Kenetech (US) vs. Enercon (EU) wind turbines; Paice v. Toyota; GE patent litigation in US to bar entry of foreign competitors in US market; GE patent litigation in China to prevent local firm exploitation

• **impediments to innovation**
  o Broad patents could place innovation off limits
  o Registration of technology patents in developing countries by developed country firms – ex. Top 10 holders of wind tech patents registered in China are firms from US, Germany, Japan, Denmark, and Spain
  o Insufficient information in patent application to allow post-patent exploitation and reproduction
  o Lack of technical experience or expertise in developing countries to work the disclosed patent specifications
  o Monopoly rights over the patented technology
Ensuring environmental technology dissemination and transfer to developing countries

• Regulation of voluntary licenses
• Compulsory licenses, including national legislation to facilitate compulsory licensing
• Use of other TRIPS flexibilities
• WTO Declaration on Patents and Climate Technology
• Exemptions from patentability
• Technology pooling through a collective global approach
• Global system to share know-how and trade secrets
• Understanding or initiatives on publicly funded technologies
Thank you

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