

Policy Interventions to Promote Transfer of Publicly-Funded Environmentally Sound Technologies in Asia and the Pacific

Hongpeng Liu

United Nations Economic and Social Commission for Asia and the Pacific

Beijing High-Level Conference on Climate Change:
Technology Development and Technology Transfer
7-8 November 2008, Beijing China



UNITED NATIONS
ESCAP

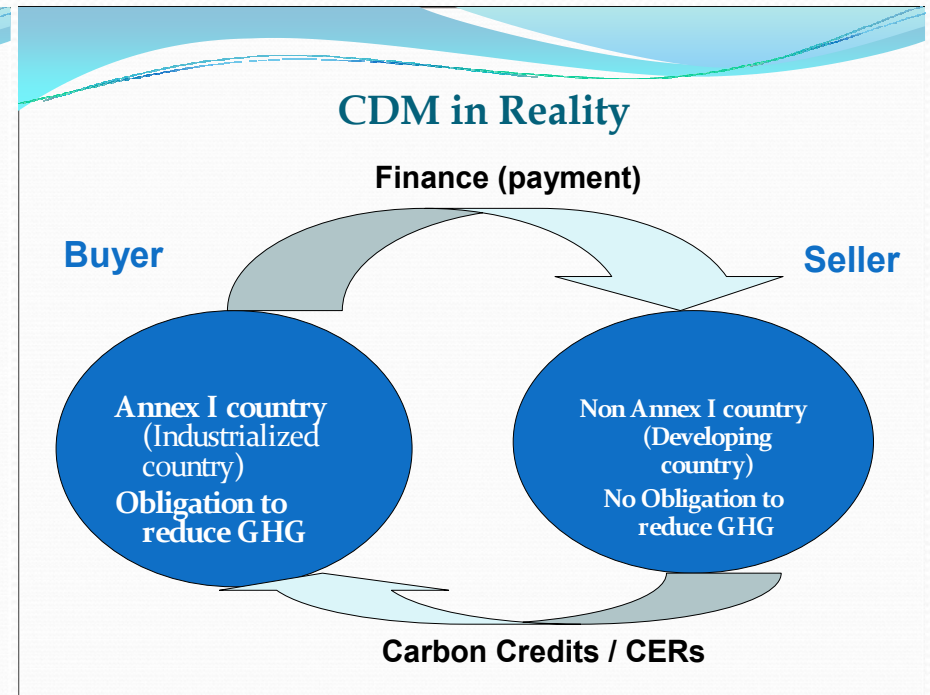
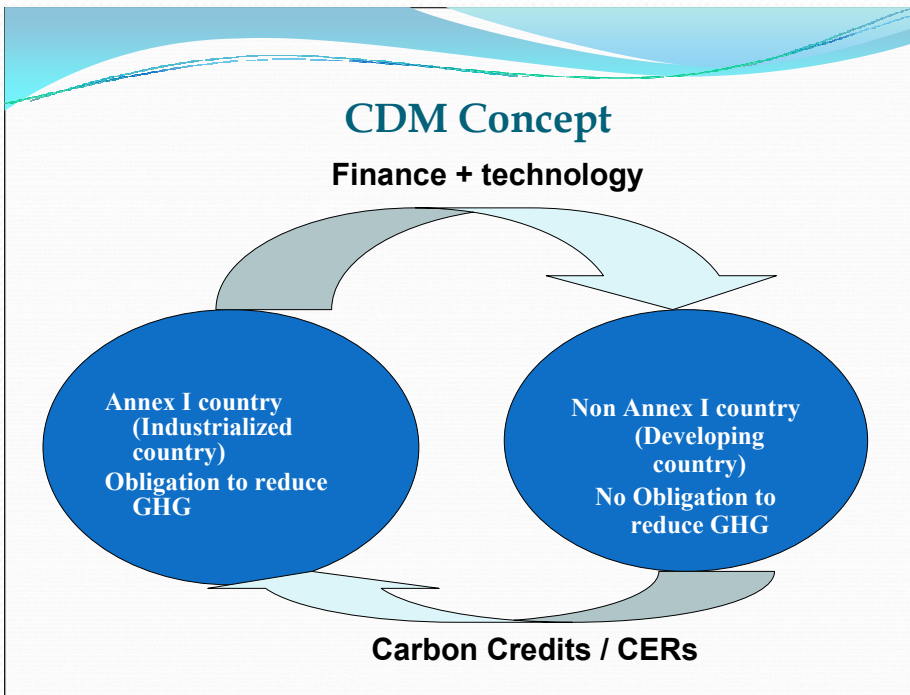
Economic and Social Commission for Asia and the Pacific

Environmentally Sound Technologies (ESTs)?

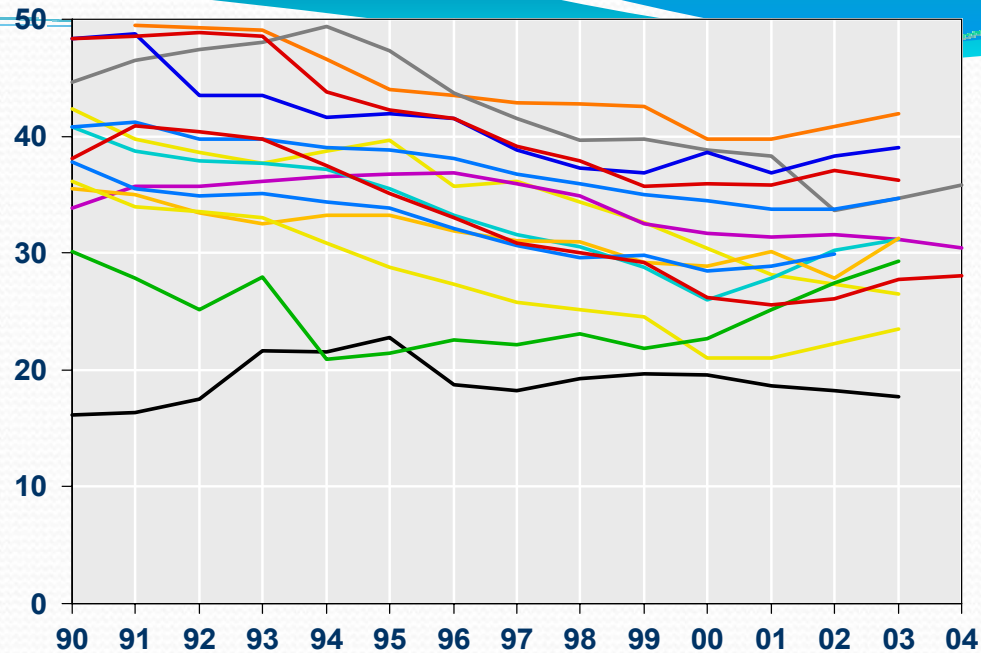
Agenda 21: Chapter 34

- ESTs protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes
- ESTs are not just individual technologies, but total systems which include know-how, procedures, goods and services, and equipments as well as organisational and managerial procedures.
 - Abatement Technologies (Treat waste/pollutant)
 - Substitution Technologies (Substitute renewable input)
 - Prevention Technologies (Prevent generation of waste/pollutant)
 - Conservation Technologies (Conserve ecosystems)
 - Restoration Technologies (Rehabilitate deterioration from human interference)
 - Adaptation Technologies (Adapt to unavoidable environmental change)

CDM=Finance + Technology?



Publicly funded ESTs

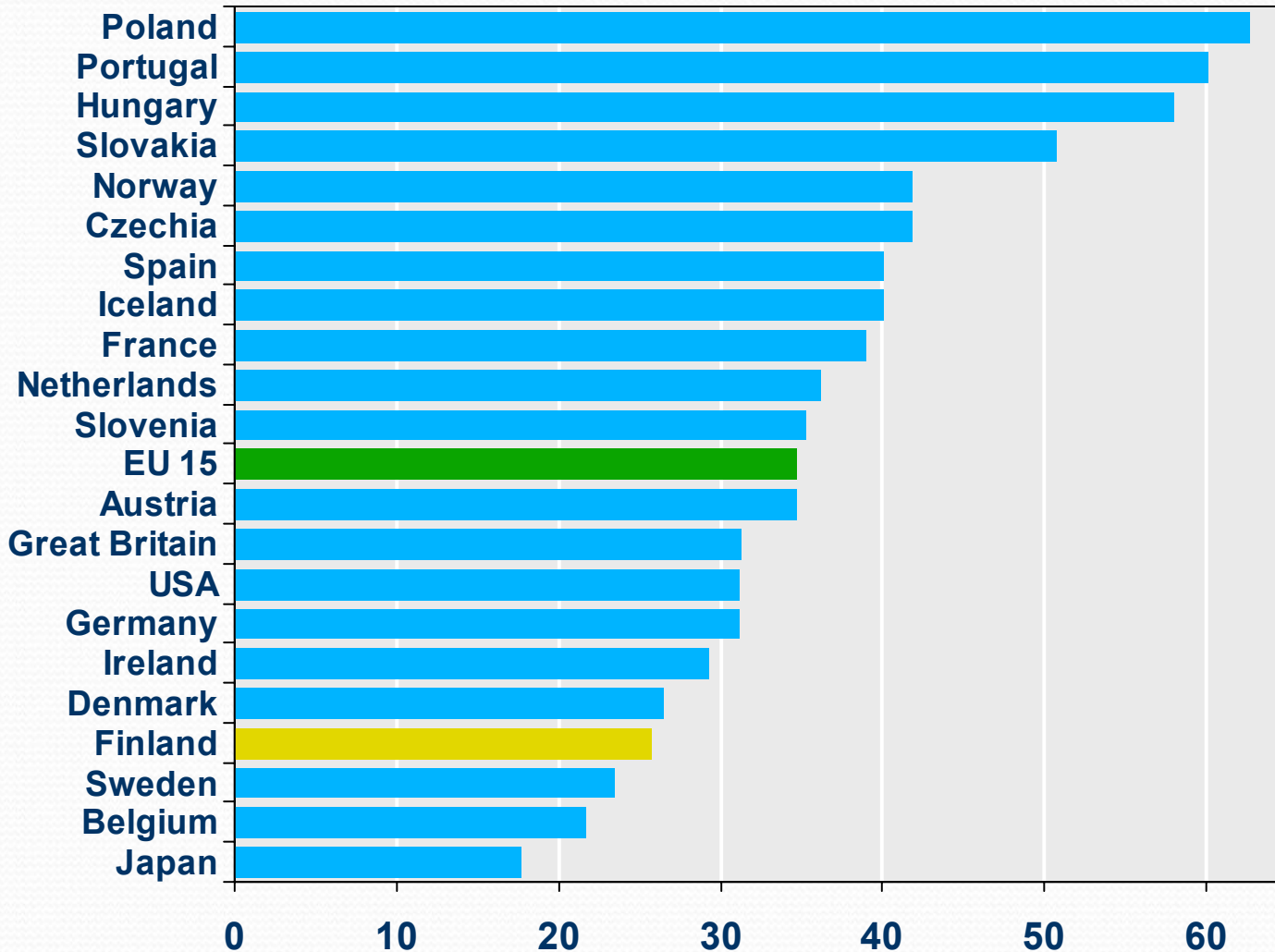


Norway
France
Netherlands
Austria
EU 15
Great Britain
USA
Germany
OECD
Ireland
FINLAND
Denmark
Sweden
Japan

ESTs that are either in full or in part based on the findings from publicly-funded (direct or indirect)

- 1) Mostly government contributes indirectly to all research, through tax system and research infrastructure investments
- 2) Through requirements for co-investment, public funding leads or follows private investment, leading to co-ownership
- 3) Governments forego IPR claims to encourage application and as returns will come from improved national competitiveness when research findings are applied

Public sector's share of total R&D funding



Source: Eurostat

The Role of Government

Enabler/Broker/Matchmaker

- Fulfill its commitments
- Foster the growth of “technology markets” (university/public research organizations enter patent markets, licensing to private sector)
- Inventor-investor brokering and proactive technology information matching (Technology Inventory)
- Provide accurate patent information
- Provide IP valuation and IP management strategies
- Brand Protection strategies

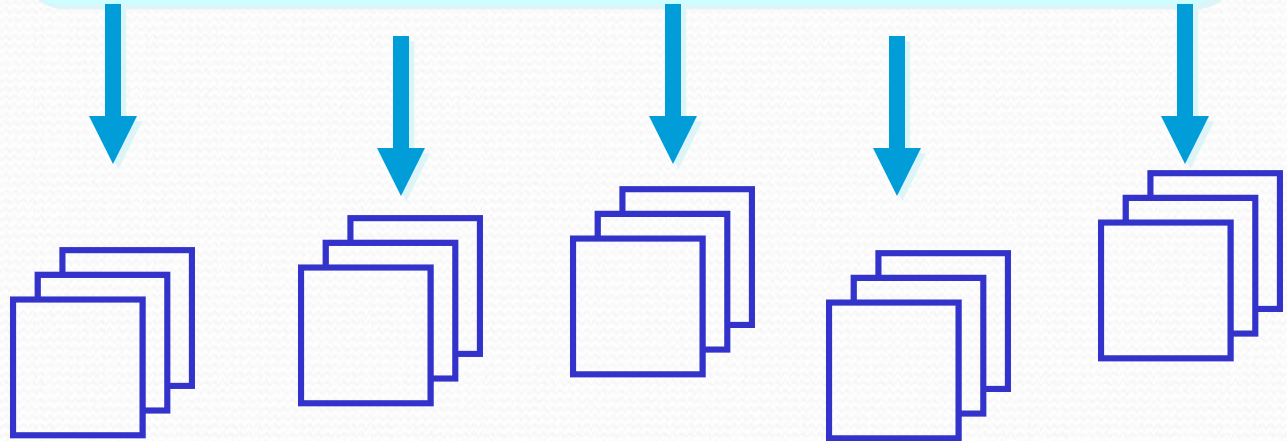
technology suppliers
inventors
patent holders

technology users
SMEs

OFFERS

REQUESTS

**TECHNOLOGY INFORMATION
BROKERING AND MATCHING**



TECHNNNOLOGY TRANSFER AGREEMENTS

Situation in Asia

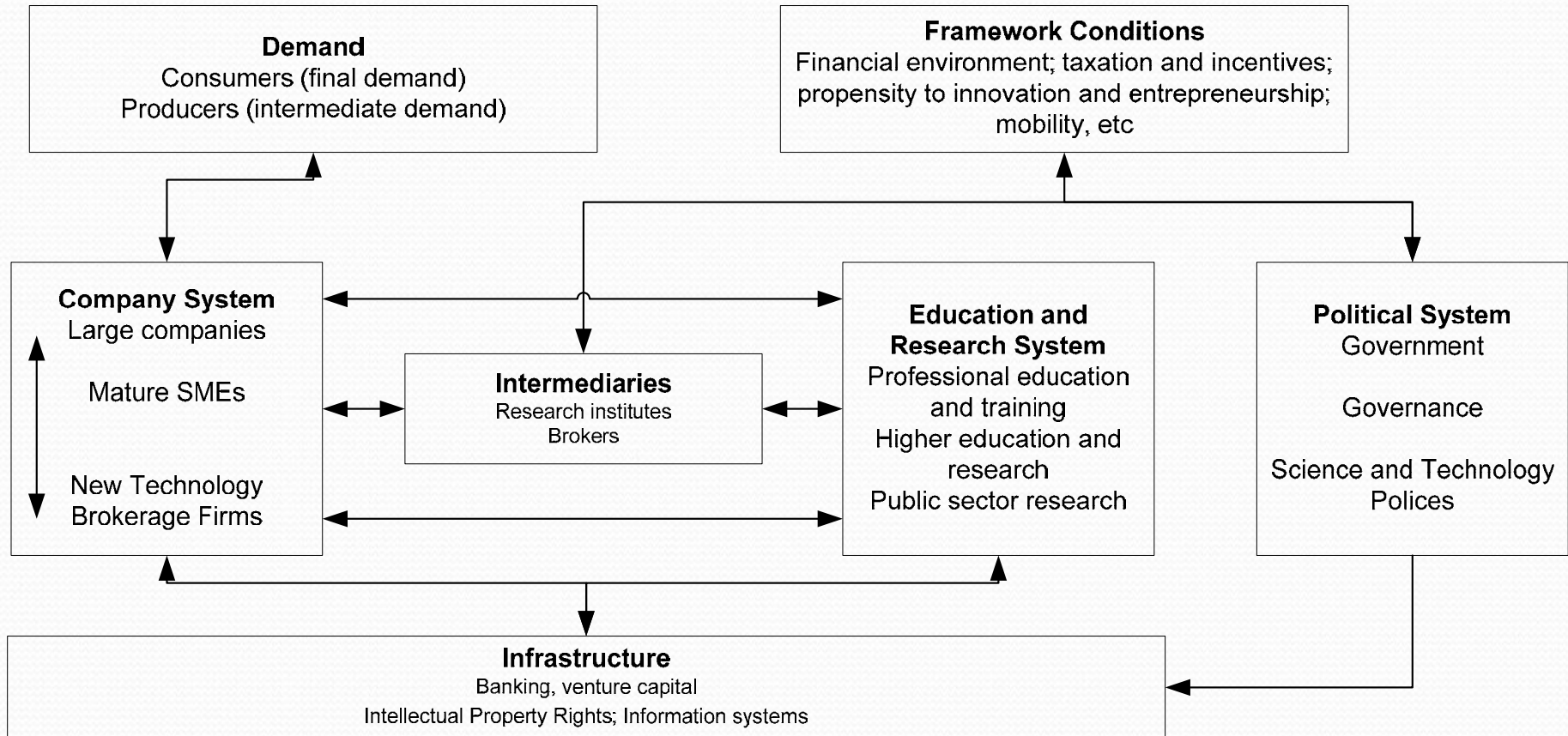
- **Recent Studies by ESCAP**
 - **Insufficiently analysis on publicly funded ESTs transfer**
 - **Issues involved in the potential transfer of publicly funded ESTs appear no much difference from others**
 - **policy mechanisms to foster the development, transfer, application and replication of ESTs from publicly funded R&TD need to be strengthened**
 - **Effective national systems of innovation should be improved**
- **Trends**
 - **Total R&TD investment on the rise, but as % share of GDP still relatively low**
 - **Government funding increasingly tied to co-investment from potential end users**
 - **Government tends to pledge IPR to researchers and end-users to speed up commercialization**
 - **Pressure for immediate solutions, even research time frames are extremely short (< ~ 2 -3 yrs)**
- **Philippines: Technology Transfer Act of 2008 House Bill 3270**
 - **An Act for Providing the Framework and Support System for the Ownership, Management, Use and Commercialization of Intellectual Property Rights Generated from R&D Funded by the Government**
- **India: Publicly-funded R&D Bill**
 - **Rewards the inventor by giving back 30% of revenue coming from commercialization**

Challenges

- **Managerial and organizational barriers (capacity building)**
 - Resistance to change
 - Lack of EST awareness
 - Priorities on production expansion
 - Scarcity of information
 - More concern on competitiveness
- **Financial and economic barriers**
 - Initial capital cost
 - Access to financing
 - Quantify EST project
 - Lack of means of EST project development
- **Technical and information barriers**
 - Information on the outcomes of successful R&TD projects which are publicly funded is very difficult to obtain
 - Limited in plant expertise
 - Lack of access to external support
 - Insufficient EST sources
 - Space and infrastructure requirements for introducing EST
- **Market and policy**
 - Lack of enforcement (political & environmental)
 - Disincentive caused by the existing economic policies
 - Lack of potent mechanisms to promote effective cooperation between the “innovation triangle” – Government R&D, industry, and universities/institutes
 - Weak public awareness and pressure

National Systems of Innovation

- Networks of institutions that initiate, modify, import and diffuse new technologies
- Mixture of institutions, public policies and business and social relationships



Outlook

- No ‘one policy fits all’. A range of national and international policy initiatives will be required
 - At the national level: to provide incentives for the use of ESTs and developing market to increase commercial viability (taxes, subsidies, emission trading, enforcement of emission limits etc.) Establishment of national systems of innovation; joint international R&D programme
 - At the international level: information sharing; financing and investment in developing countries linked with technology improvement; reform of CDM to reduce the cost of ESTs to be applied
- Long term success and environmental and socio-economic benefits of TT are critically dependent on informed choice by prospective end-users and their ability to adapt and replicate the transferred technology
 - Importance to develop in coordinated manner national technological capabilities
 - consider the cost of information dissemination as an integral component of EST R&DT projects and facilitate the creation of a network of web-based information portals for EST information dissemination
 - Research institutes have been created throughout Asia with mandates to assess, select and adapt ESTs
 - Through the restructuring of pricing frameworks, create a competitive edge for ESTs in the market over other technologies which are not environmentally friendly
 - To strengthen the “innovation triangle” the Government could enact policies, backed by attractive legal, fiscal, and financial incentives, to promote the lateral mobility of researchers between publicly-funded research institutions, the private sector, and academe
 - Capacity building for SMEs to develop the basic skills needed to plan and implement EST TT projects