For the acceleration of Technology Transfer

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Technology transfer (TT) & IPR in business

• The private sector owns technologies and TT takes place in various ways. TT depend on the sector and the country.
  – Product exports (e.g. many initial plants)
  – On-site production through FDI
  – JV (e.g. CDQ(Coke Dry Quenching) and waste heat recovery system)
  – Licensing (e.g. coal power plants)
• Possession of IPR and its profit are a basic tool to recoup R&D investment, a strong incentive for further TT and a main source of business competitiveness and profit.
• Improving the business environment will make TT easier and sustainable as well as attract more investment into the developing countries.
TT in power generation sector

- A Japanese manufacturing company started TT of steam turbines as a licensing business in the 1980’s.
- The business contributed to the energy-efficient growth of the local economy and an expansion of the market in the 1990’s.
- This positive growth cycle accelerated further TT including cutting-edge technologies such as the ultra supercritical steam turbine in the 2000’s and deployed 44 steam turbines in China by 2007.
TT in iron and steel sector

- The installation ratio of continuous casting technology is almost 100% in major steel making countries including China.
- Japanese iron and steel companies promoted TT of CDQ technology mainly as joint ventures. Japanese and Chinese companies share the growth opportunities and the profits through TT.
- The penetration of CDQ in China is greatly accelerated by Chinese government initiative (i.e. National Policy) and market competition among Japanese, Japanese-Chinese joint venture’s and Chinese CDQ suppliers.
- Accumulated number of installation of CDQ was drastically increased in 2000s, because TT enabled Chinese local companies to build their own national brands of CDQ technology.

![Graph showing installation ratio and accumulated number of CDQ installation in China](image-url)
TT in cement sector

- Japanese plant companies promote TT of heat recovery power generation systems in the cement sector mainly as joint ventures.
- Joint ventures contribute to an increase in local procurement and improvement of manufacturing and operating techniques of local companies.
- The technology will be introduced in more than 74 plants in China by 2008.

Capacity of Recovered Power Generation: 1,065MW

CO2 Reduction: 7.3Mt/yr

- 61 plants Since 2007
- 13 plants Before 2007

Source: Kawasaki Plant Systems
• Japanese automobile companies promote TT of energy-efficient technologies for automobiles mainly as joint ventures.
• 42 local factories related to Japanese automobile companies are being operated in China, 10 factories are in India, and 76 factories are in Southeast Asia.
• Local procurement rate successfully increased to 56% in China and 81% in India.
• The installation rate of energy-efficient technologies steadily increased. The rate of variable valve timing increased to 80% and the rate of continuously variable transmission (CVT) increased to 8%.
TT enabled Chinese companies to lead the world

- Through TT, many Chinese companies become global market leaders.
- TT will be an important business for Chinese companies. Therefore, enhancement of the business environment including IPR protection is important for themselves.
IPR in environmental & energy-saving technologies

- **Not a decisive factor in the total cost**
  - No technology dominant (unlike Microsoft in OS or Pfizer in HIV/AIDS drugs) (R&D expense / Sales in 2007: Microsoft=12%, Pfizer=18%, SIEMENS=5%, ALSTOM=3%)
  - Competition in market is the decisive factor in the total cost.
  - IPR is the key source to stimulate competition.

- **Not simply identified**
  - Patents are totally different from consumer products like drugs. In addition to patents, the role of the design manual and know-how for construction and operation are important.
  - A plant consists of thousands of components. Key components have their own IPR.
  - Cross-licensing is quite normal. No third party can identify the IPR.

- **Not objectively evaluated**
  - The price of IPR depends on many factors including R&D expense, sales estimates, expected profit, market competition, contract clauses, risks, etc.
  - No third party can verify the price of IPR or the form of TT.
  - The total value can be evaluated only between licensor and licensee.

Funding only for acquiring IPRs will not impact the acceleration of TT.
Measures required to accelerate TT

• The barriers to TT depend on the sector and the country.
  – Major developing countries: many candidate licensees
  – LDCs and AOSIS: Scarce licensees, necessity of financial support
• For accelerating TT, detailed verification and identification of the barriers in each sector and country is necessary.
• Developed and developing countries should take comprehensive actions to enhance the business environment for TT.
  – Proper regulations for energy conservation and environmental protection
  – Develop human resource and improve awareness
  – Proper IPR protection
  – Foreign investment protections
  – Matching opportunities between licensee and licensor
  – Removal of tariff barriers
  – Removal of energy subsidies, etc.
• Public and private partnership by sectors will contribute to such comprehensive actions.
Successful sectoral cooperation by APP

- Asia-Pacific Partnership promotes sector-specific cooperation among 7 countries.
- APP identifies and solves barriers for deployment and transfer of technologies in each sector.

Compile state-of-the-art technologies.
Estimate CO2 reduction potential based on BAT/BP.
Dispatch experts to steel plants for appropriate advice.
Determine the priority of technology for transferring.

CO2: 127 M ton/year
By 10 key technologies

Ideas of Sectoral Technology Cooperation Groups (STCG)

- Setting Sectoral Technology Cooperation Groups (STCG) under the UNFCCC is useful to enhance public-private partnership for TT.

- The STCG will consist of governments, industry (international industry association, etc) and experts (IEA, academia, etc) by each sector.

- The STCG analyze current situation of TT, specify barriers for TT, identify best available technologies/practices, formulate measures for promoting TT, and review the results of those measures by each sector.

- The STCG will report their analysis and make recommendations periodically.
Conclusion

• The barriers to TT depend on the sector and the country.
• IPR is not a major barrier in environmental & energy-saving technologies.
• Funding only for acquiring IPRs will not impact the acceleration of TT.
• Developed and developing countries should take comprehensive actions to enhance the business environment for TT.
• Win-win situation of private sector of both developed and developing countries should be created.
• Public and private partnership by sectors will contribute to the above comprehensive actions.
• Setting Sectoral Technology Cooperation Groups (STCG) under the UNFCCC is useful to enhance the business environment for TT.

‘KURUMAZA’: Sit in a circle without round table