



**Beijing High-Level Conference on Climate Change:
Technology Development and Technology Transfer**



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For the acceleration of Technology Transfer

Kazuhiko Hombu

Ministry of Economy, Trade and Industry

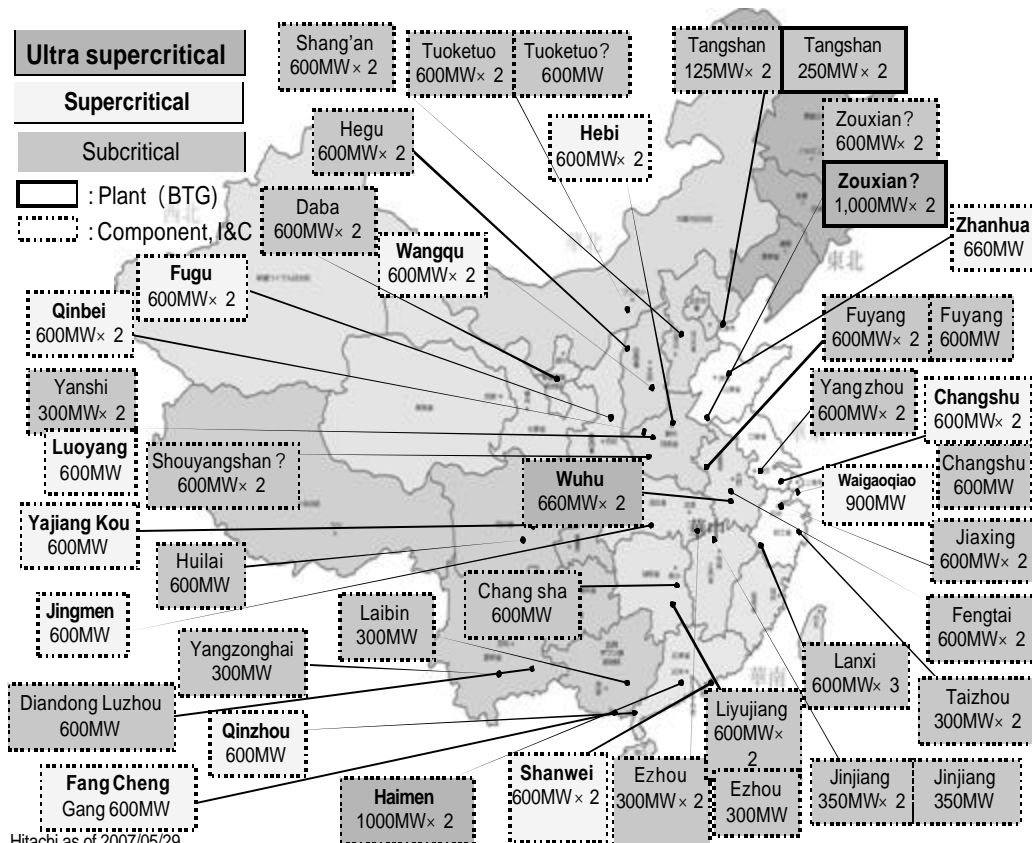
JAPAN

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.



1970's Chinese market approach by Hitachi itself

1980's First technical license – subcritical steam turbine and generator for 600MW class

1996 Joint venture in boiler business - second technical license for Benson boilers for supercritical pressure

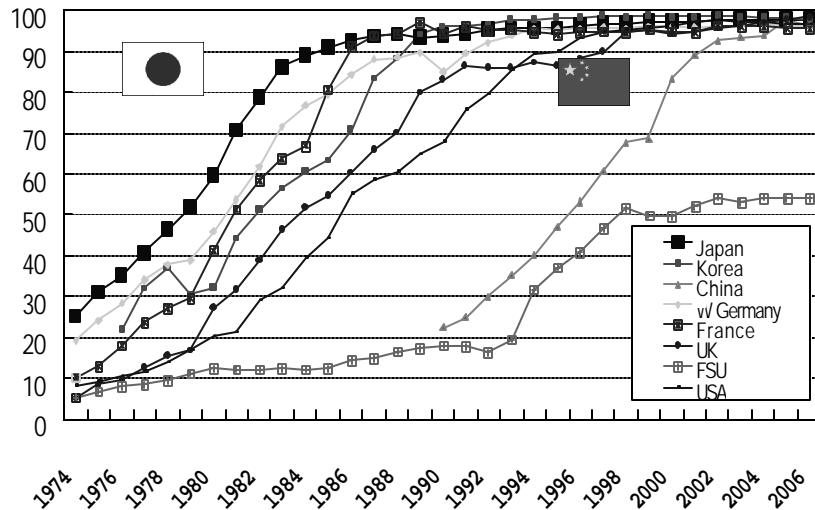
2003 Third technical license - supercritical steam turbine for 600MW class

2004 Fourth technical license - ultra supercritical boiler (to JV), steam turbine and generators for 1BW class

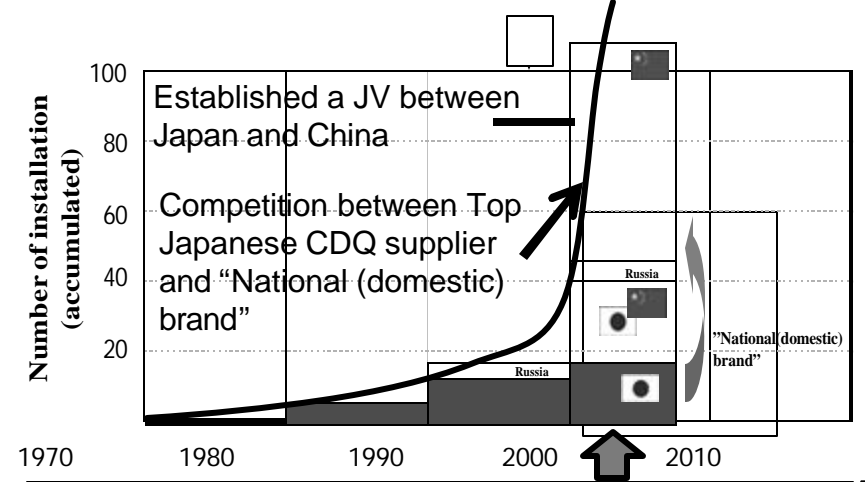
TT in iron and steel sector

- 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.

Installation ratio of continuous casting technology



Accumulated number of installation of CDQ in China



China government promote CDQ as 'the 10th Five-Year Plan of China', 'the 11th Five-Year Plan of China' etc

TT in cement sector

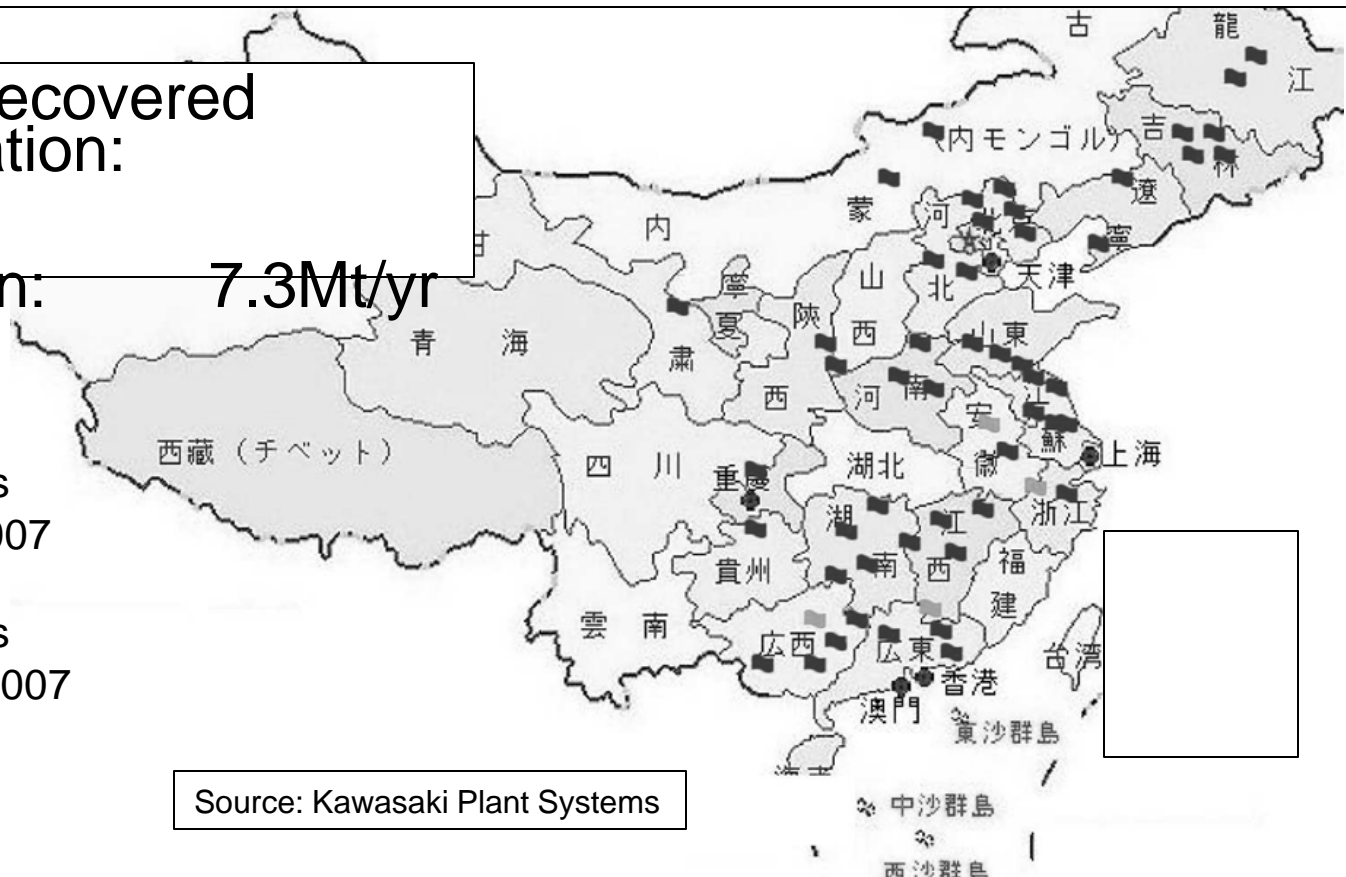
- Japanese plant companies promote TT of heat recovery power generation systems in the cement sector mainly as joint ventures.
- Joint ventures contribute to an increase in local procurement and improvement of manufacturing and operating techniques of local companies.
- The technology will be introduced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

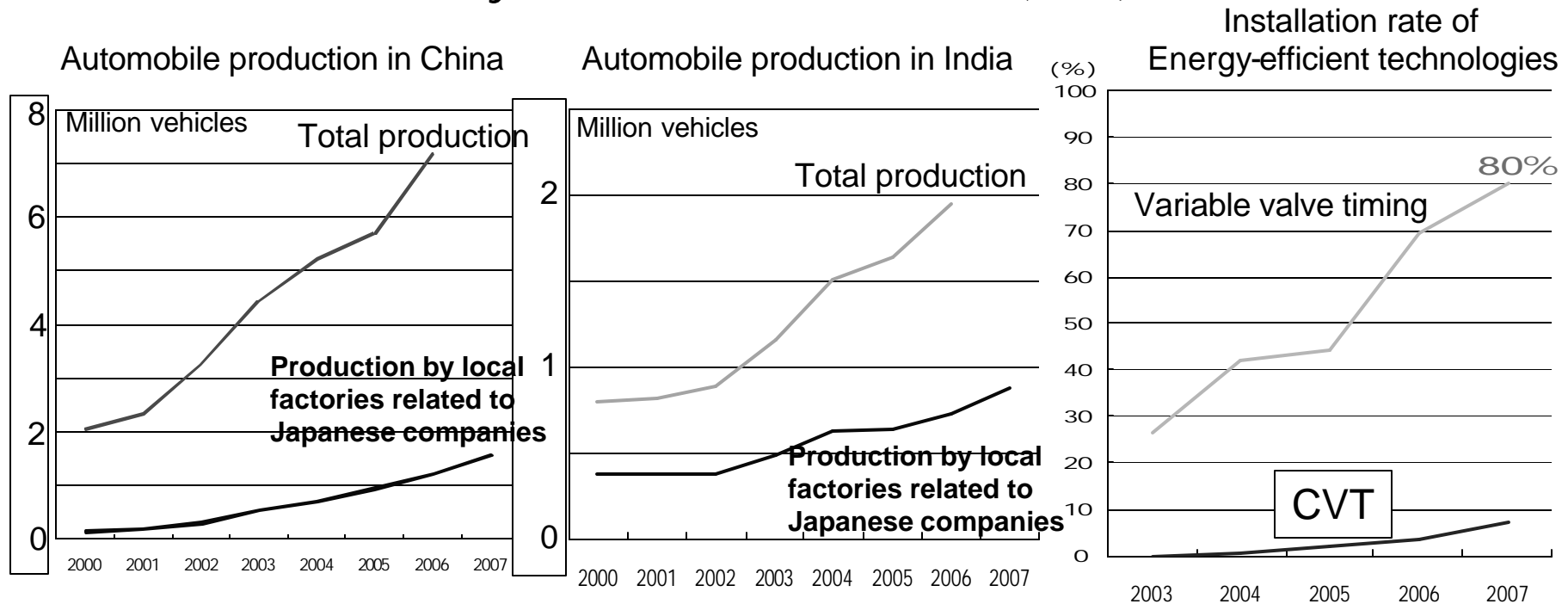
 13 plants
Before 2007



Source: Kawasaki Plant Systems

TT in transport sector

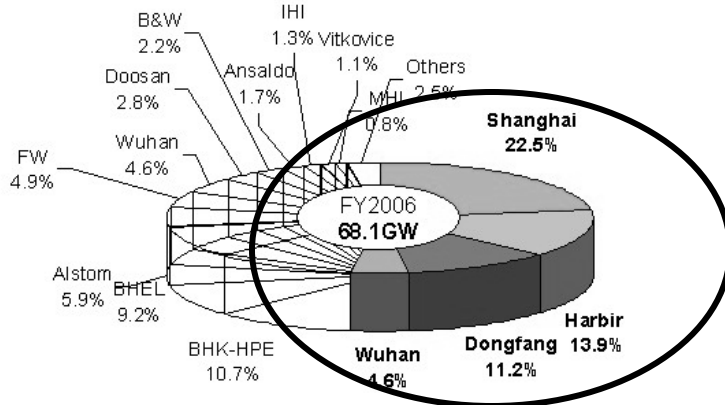
- Japanese automobile companies promote TT of energy-efficient technologies for automobiles mainly as joint ventures.
- 42 local factories related to Japanese automobile companies are being operated in China, 10 factories are in India, and 76 factories are in Southeast Asia.
- Local procurement rate 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%.



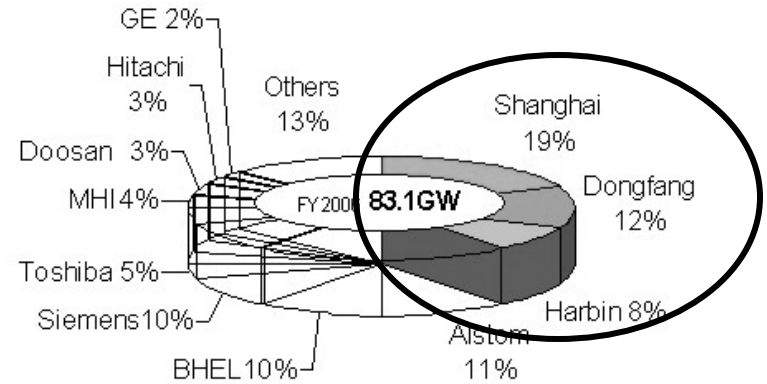
Source: Japan Automobile Manufacturers' Associations, Inc

TT enabled Chinese companies to lead the world

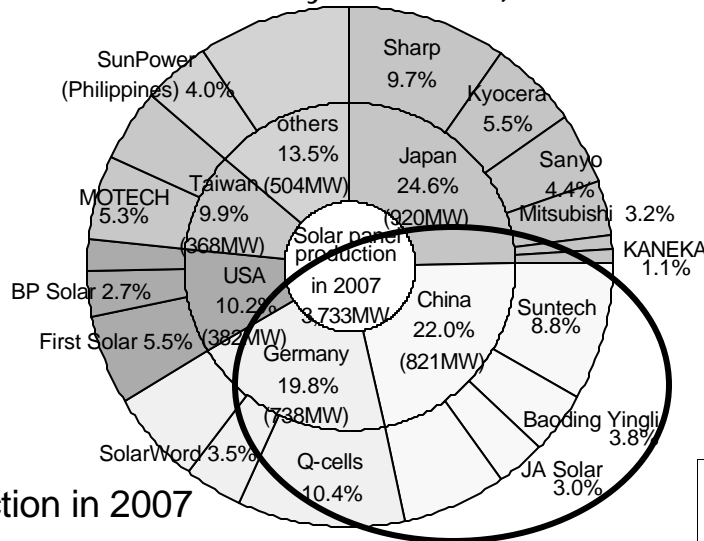
- Through TT, many Chinese companies become global market leaders.
- TT will be an important business for Chinese companies. Therefore, enhancement of the business environment including IPR protection is important for themselves.



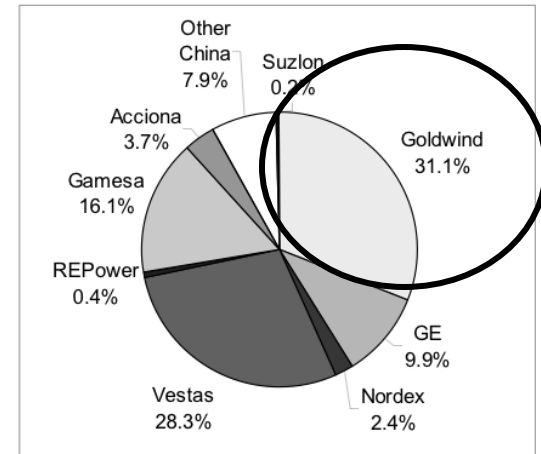
Conventional boiler orders in FY 2006
(Source: Mitsubishi Heavy Industries)



Steam turbine orders in FY 2006
(Source: Mitsubishi Heavy Industries)



Solar panel production in 2007
(Source: PV News 2008.3)



Wind power turbine production in China in 2007
(Source: BTM, 2007; WPM, March 2007)

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.

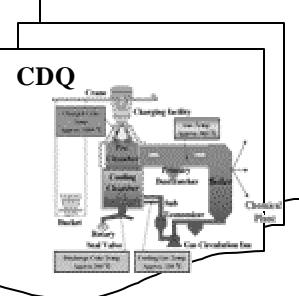
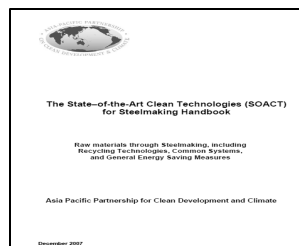
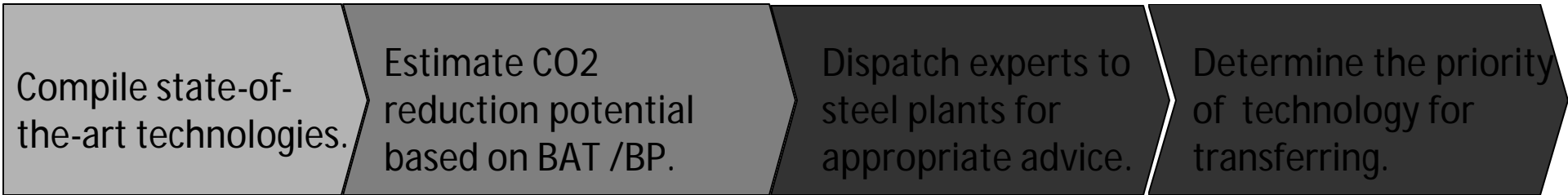
Funding only for acquiring IPRs will not impact the acceleration of TT.

Measures required to accelerate TT

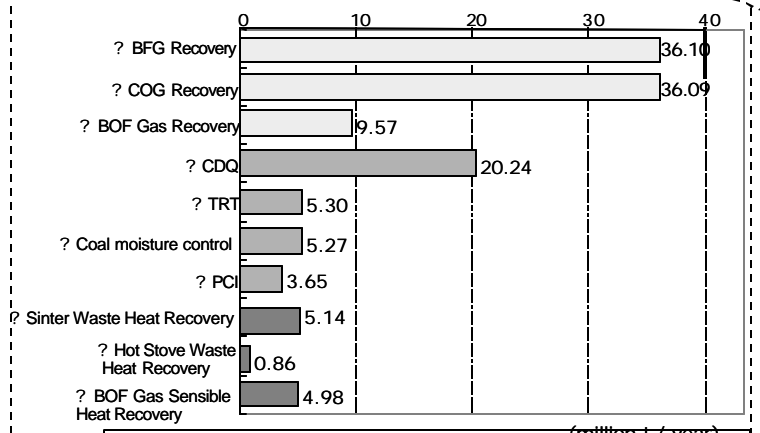
- The barriers to TT depend on the sector and the country.
 - Major developing countries: many candidate licensees
 - LDCs and AOSIS: Scarce licensees, necessity of financial support
- For accelerating TT, detailed verification and identification of the barriers in each sector and country is necessary.
- 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



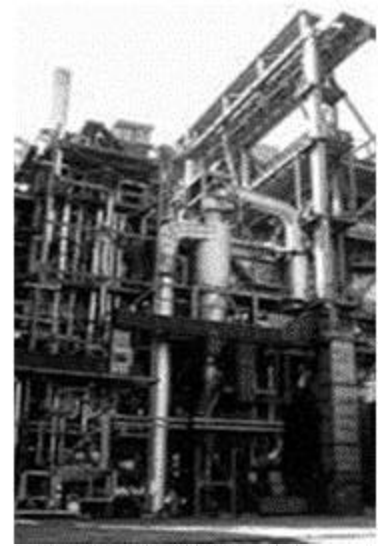
64 technologies



CO2: 127 M ton/year
By 10 key technologies

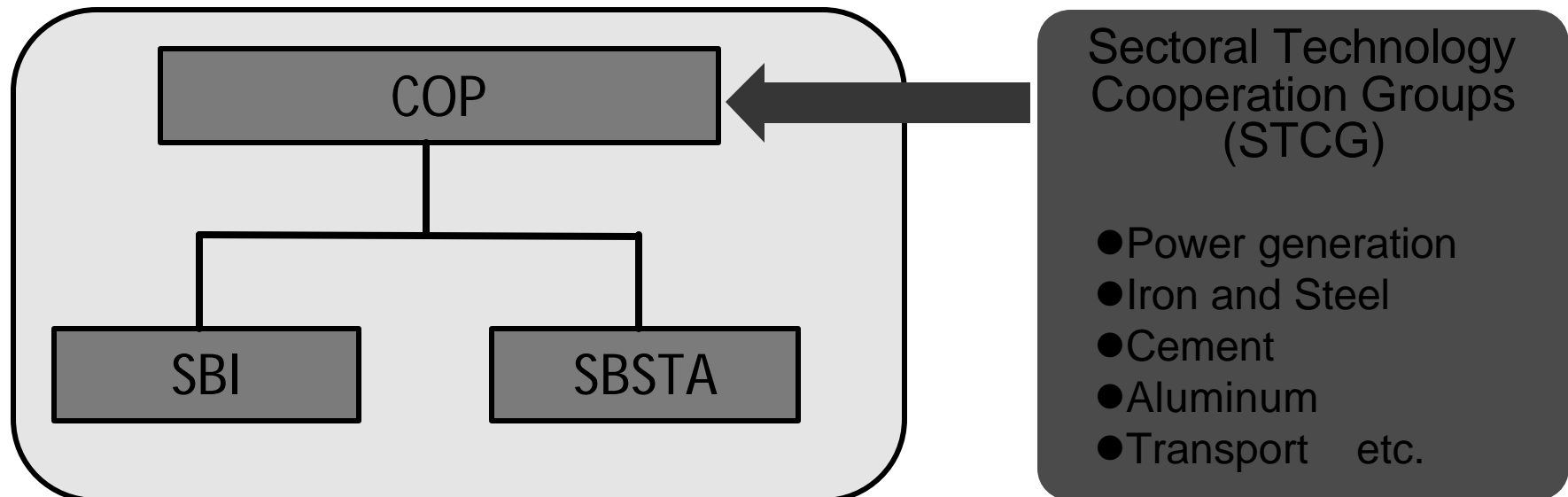


Performance diagnosis for 3 steel plants in China and 3 plants in India in FY2007 & 2008



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