

Challenges to Cope with Energy & Climate Security Issues in Asia

Dr. Tsutomu TOICHI

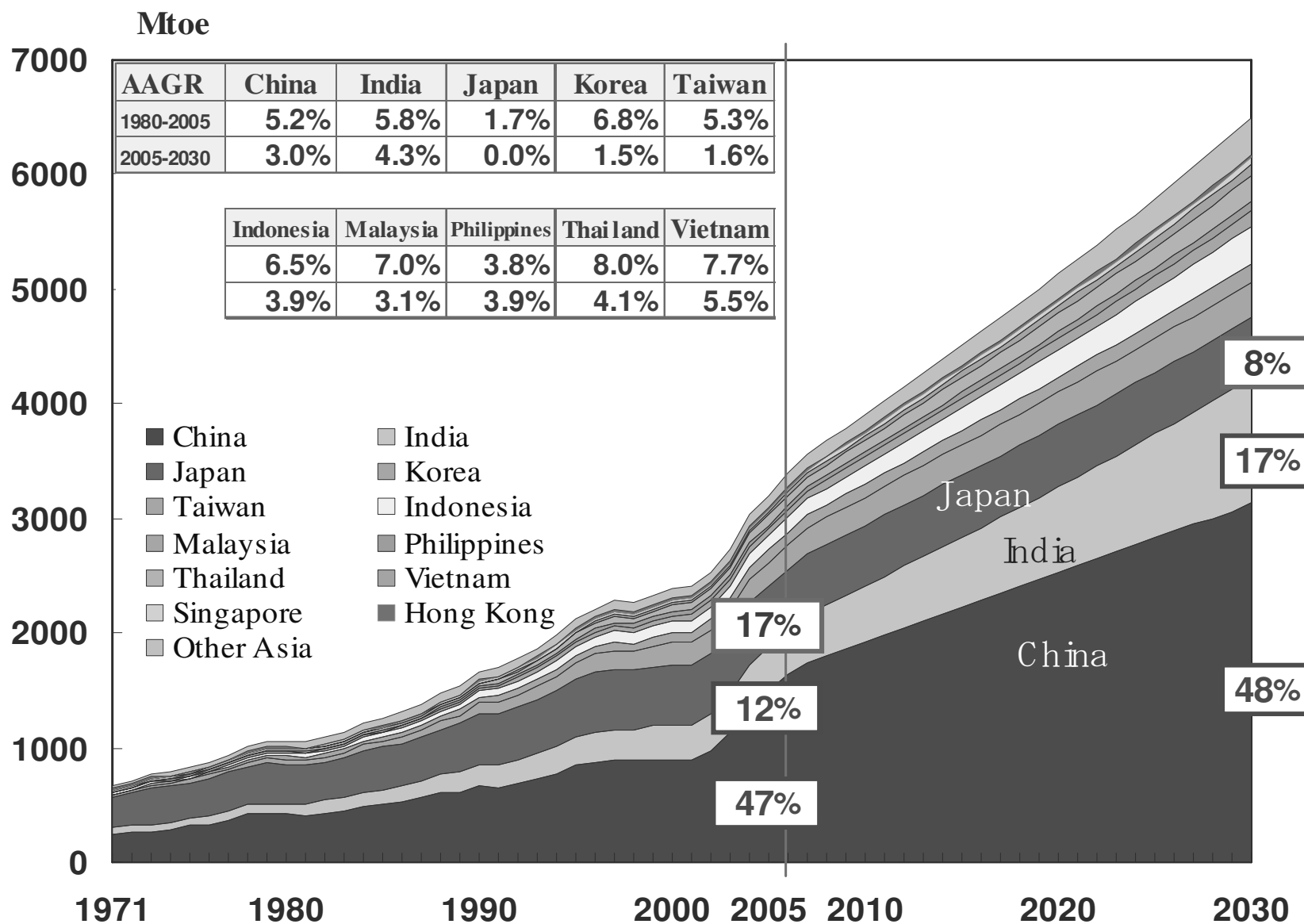
Senior Managing Director & CKO

The Institute of Energy Economics, JAPAN (IEEJ)

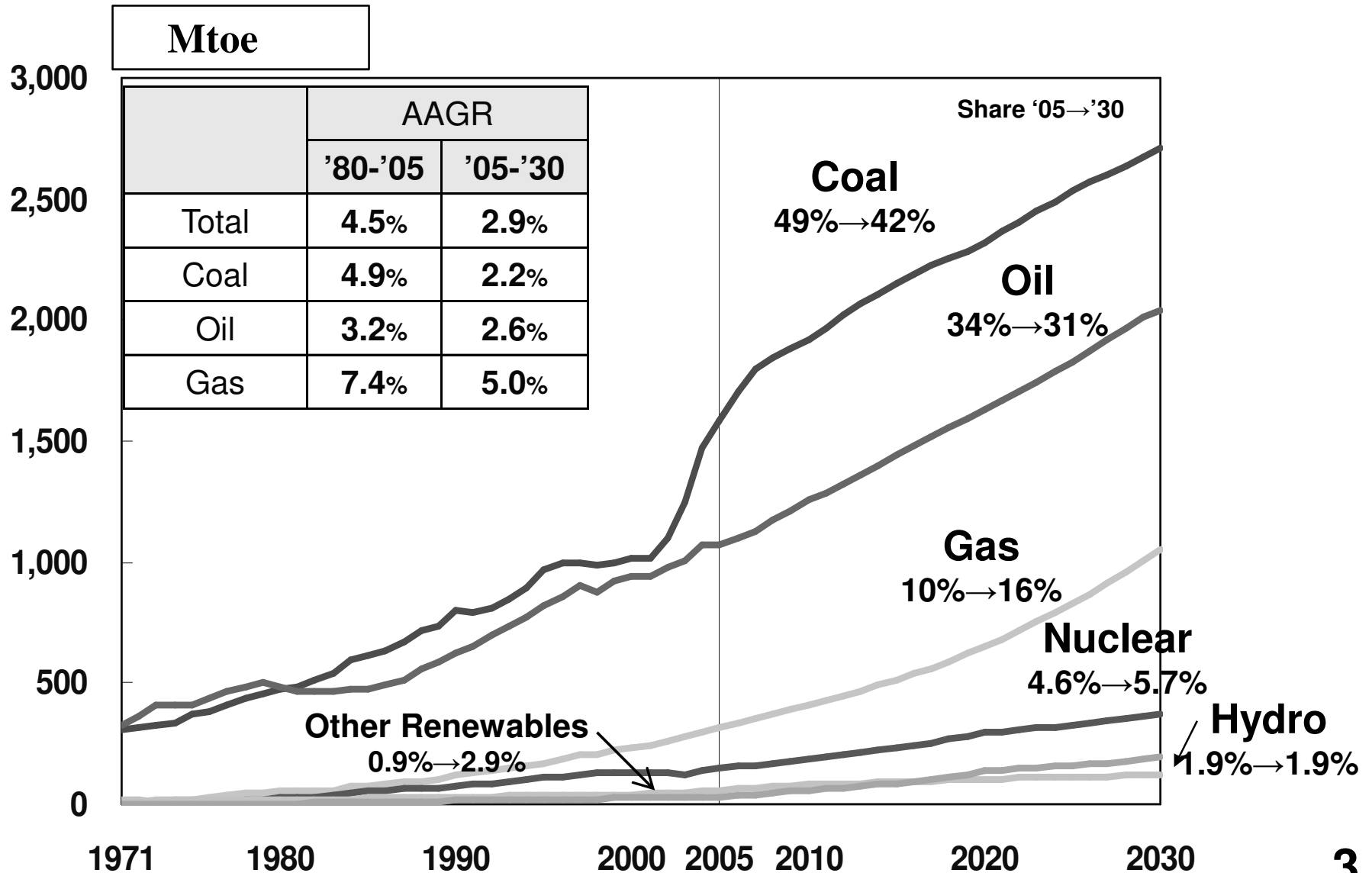
International Conference by the Club of Rome

Winterthur, 6th and 7th November 2008

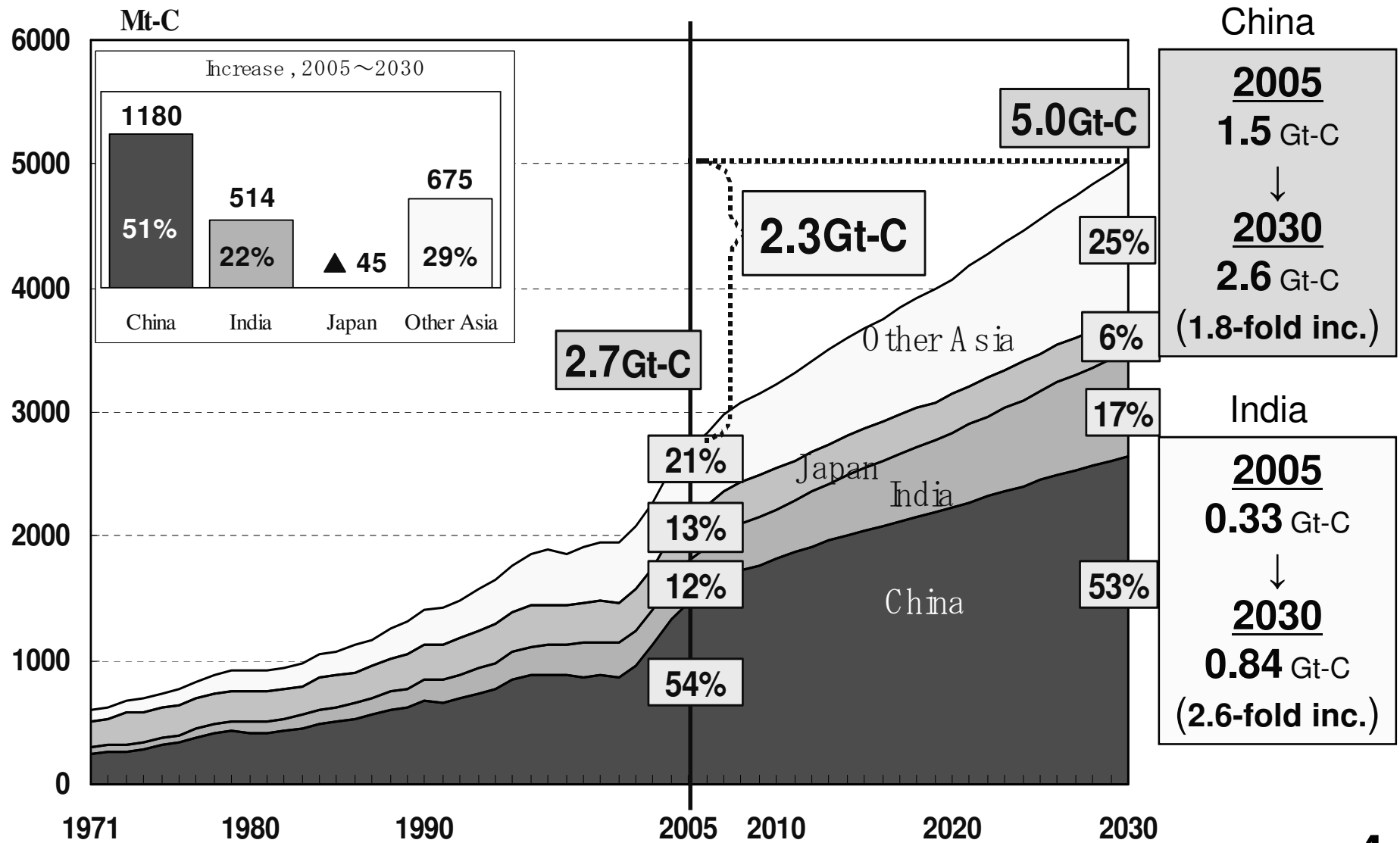
Primary Energy Demand by Country (Reference Case)



Primary Energy Demand by Fuel in Asia (Reference Case)

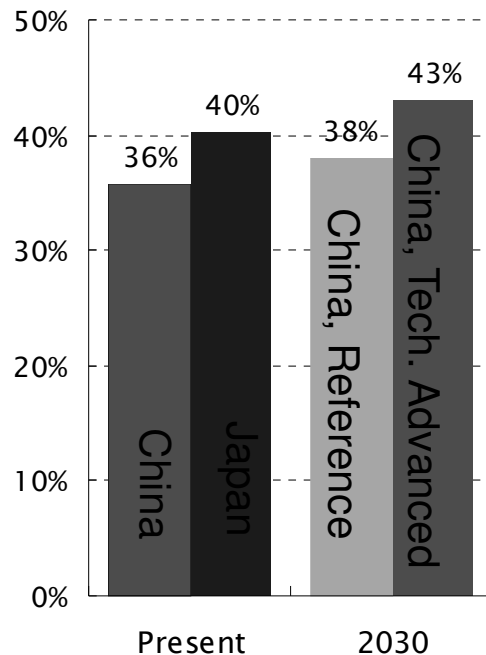


CO₂ Emission by Country (Reference Case)



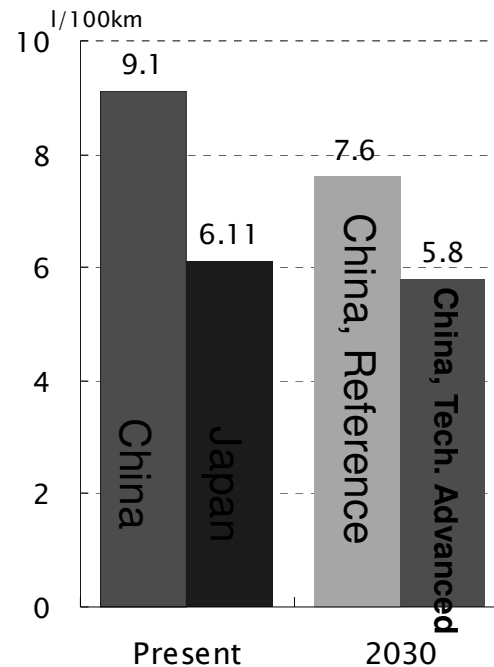
Comparison of Energy Efficiency between Japan and China

Thermal Efficiency of Coal-fired Power Plant



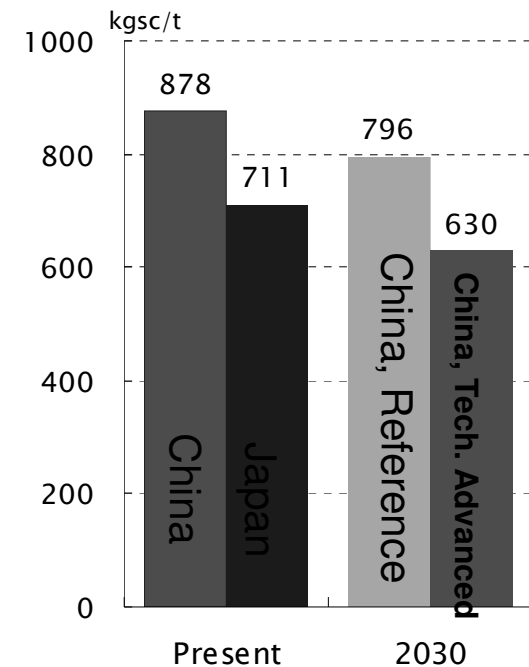
- *Enlargement of Equipment Scale*
- *Higher temperature and Pressure*
- *Improvement of Daily Maintenance*

Fuel Economy of Vehicle



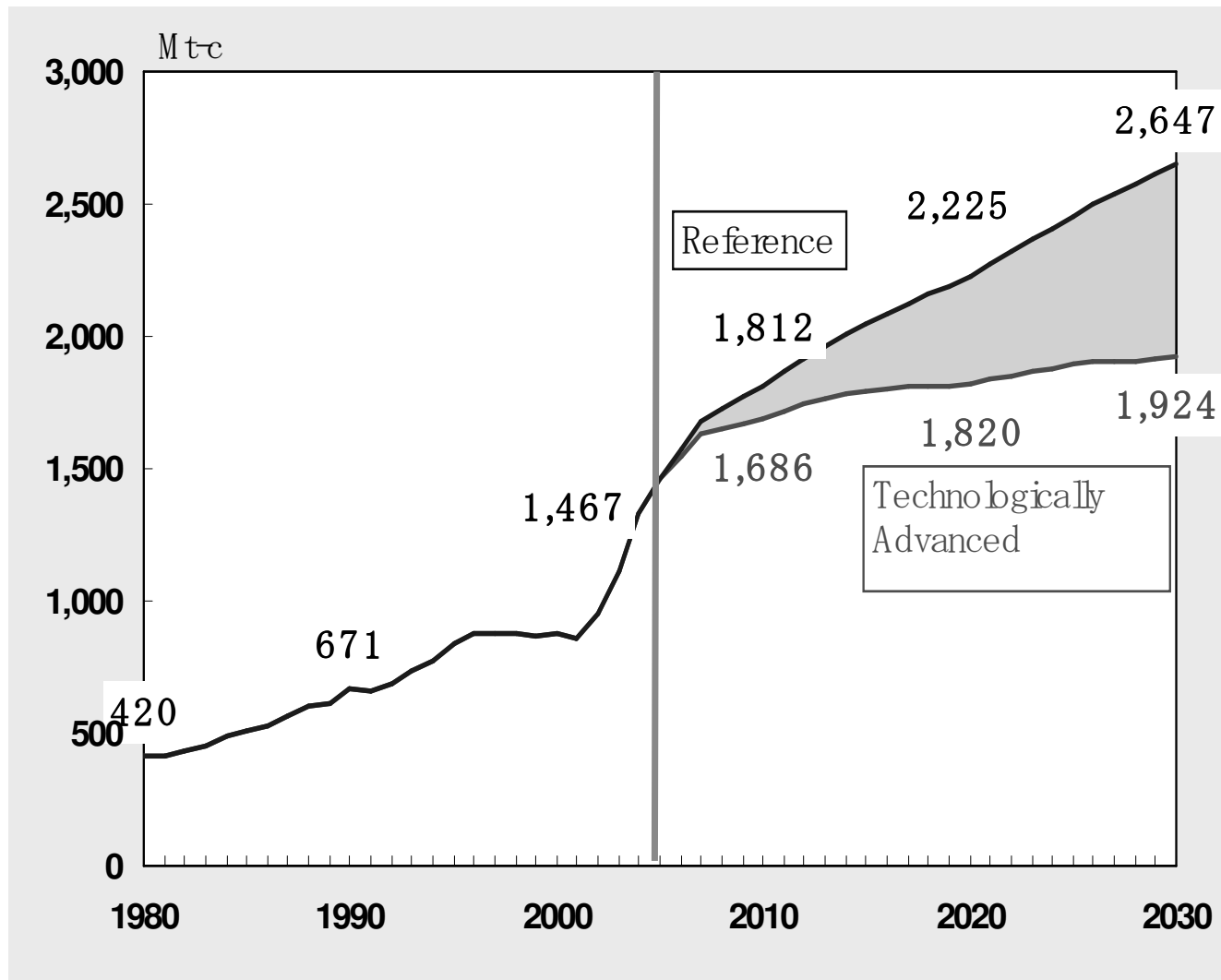
- *More Usage of Technology*
- *Strengthen Fuel Economy Standards*
- *Improvement of Oil Product Quality*

Energy Efficiency of Steel Production



- *Enlargement of Blast Furnace*
- *CDQ, TRT*
- *Reuse of Waste Gas*

CO2 Emissions in China: Tech. Advanced Scenario



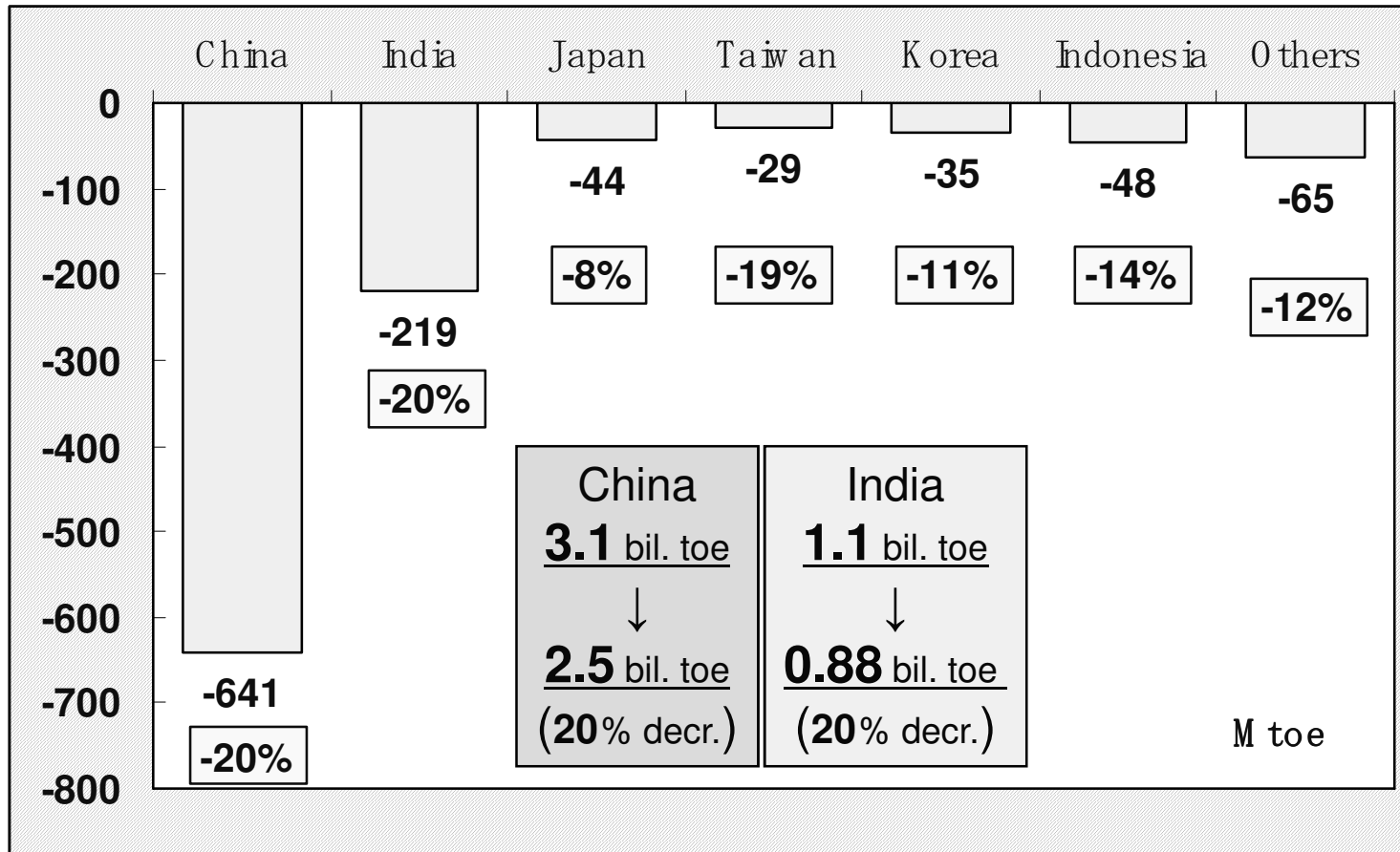
【CO2 Emissions】

↓

2030
27%
Down

Change in Energy Demand by Country

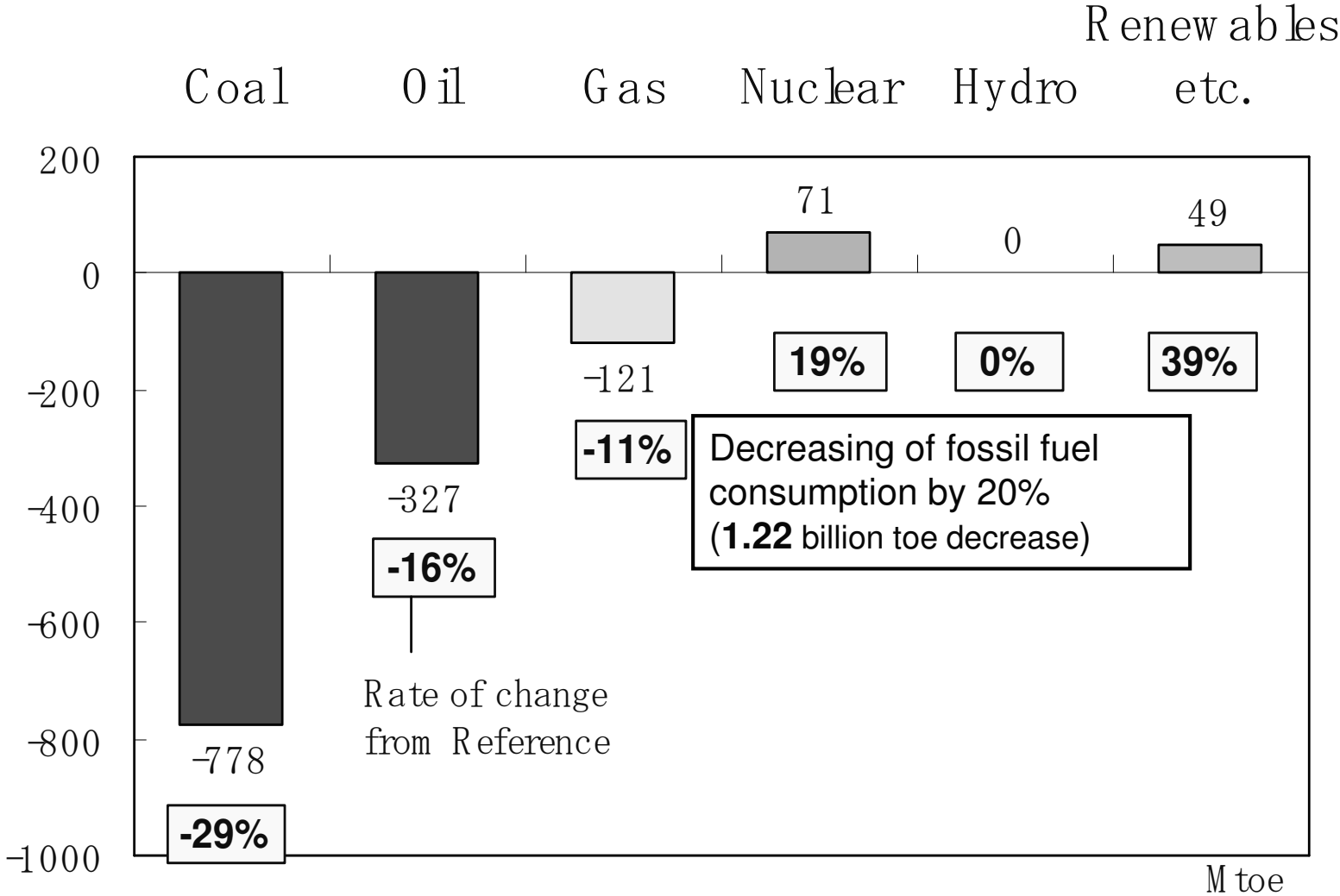
(Difference between Reference and Tech. Adv. scenario , 2030)



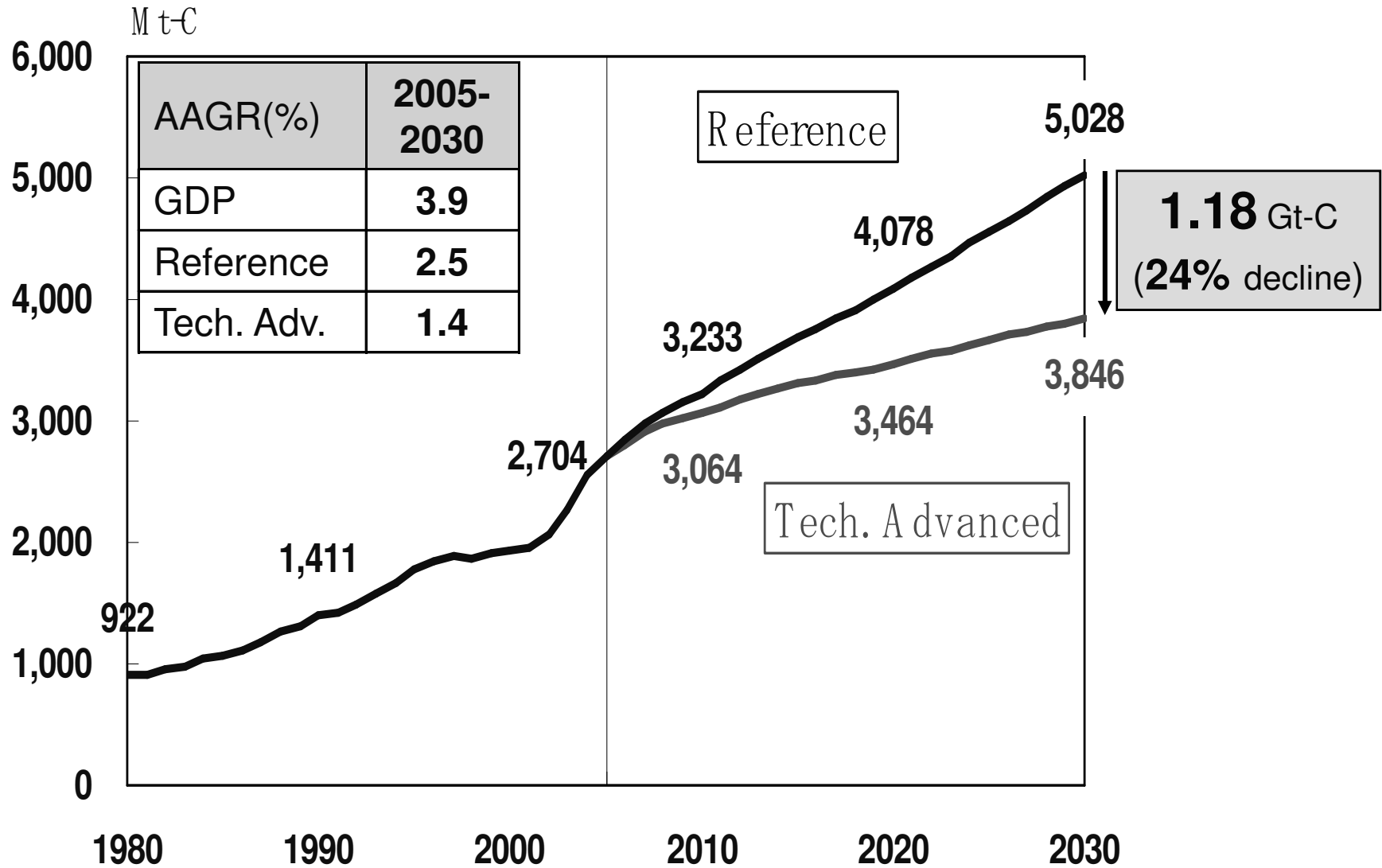
Potential of energy conservation is large in both China and India through enhancing energy consumption efficiency

Change in Energy Demand by Source (Asia)

(Difference between Reference and Tech. Adv. scenario , 2030)



CO₂ Emission in Asia



Japan's Role to Promote Energy Conservation in Asia

- **Transfer of energy conservation measures**
- **Assistance in capacity building towards development of statistical data**
- **Transfer of experiences and know-how for development of legal and other institutional system**
- **Acceptance of trainees mainly in energy management**

Cooperative Technology and Sectoral Approach

Concept :Support for developing countries by sectoral approach is **effective** in facilitating technology transfer, which leads to global emission reduction.

Methodology:

Identify sectors for cooperation

ex. Power generation, energy-intensive industry, Transportation etc.



Identify best available technologies to share



Analyze present technologies in developing countries



Evaluate reduction potential for each sector



Set effective targets or action plans and **Review**

Cooperative Technology and Sectoral Approach

Cooperative Sectoral Approach should be linked with **technology transfer** and **financial mechanisms** which **help countries with ambition to reduce emission drastically**, by setting their own energy intensity goals, for example.

Efforts by Japan:

Receive trainees /Dispatch experts



Model projects



Coke Dry Quenching (CDQ)

New financial mechanism
“Cool Earth Partnership”

- (1) Adaptation (\$ 2 billion)
- (2) Mitigation (\$ 8 billion)

① “Climate Change Japanese ODA Loan”
(JP\ 500 billion)

- ② Supports for projects as follows;
- capital contribution and guarantee
 - trade and investment insurance
 - government support
 - private funds
- (JP\ 500 billion)

APEC Peer Review on Energy Efficiency



Background

- **APEC EMM8's Darwin Declaration**
 - Ministers agreed to implement “Peer Review on Energy Efficiency” to help support the formulation of energy efficiency policy.
- **APEC Leader's Sydney Declaration (Sep. 2007)**
 - Leaders agreed to adopt an aspiration goal of 25% energy intensity improvement target by 2030, 2005 as the base year.

Objective

- **To compile information on energy efficiency policies within the APEC economies.**
- **To review energy policy of an economy to prepare for it to meet voluntarily set energy efficiency improvement target.**

Activities of APP

- **Jul. 2005** Release of the Partnership's Vision Statement
- **Jan. 2006** 1st Ministerial and 1st PIC in Sydney, Australia



- Participation of the foreign affairs, industry and energy, and environmental ministers as well as CEOs
- Japan's participation : Min. of Environment, Vice-Min. of METI, etc.
- There were constructive exchanges of opinions about a sector-based approach, and the political will for the promotion of this partnership was confirmed.

- **Apr. 2006** 2nd PIC and Task Force Meetings in Berkley, U.S.
- **Oct. 2006** 3rd PIC in Jeju, Korea
- **Jul. 2007** 4th PIC in Tokyo, Japan
- **Oct. 2007** 2nd Ministerial Meeting in Delhi, India

- Agreed on Canada as a new member.
- Selected 18 flagship projects among 110 projects.
- Continuously focused on activities, such as sectoral assessments, capacity building, identifying best practices, technology transfer and R&D.
- Strengthened the relationship with concerned International Organizations.
- Hold the next ministerial meeting in 2009.

1. Participation of major Asia-Pacific countries

- **Multilateral partnership for regional cooperation: Australia, Canada, China, India, Japan, South Korea, and the U.S.**
- **To complement the Kyoto Protocol**
- **CO2 emissions from 7 APP countries account for about 55% of the total worldwide basis emissions.**

2. Sector based energy technology-oriented cooperation

- **To cope with increasing energy needs, energy security, and climate change in the Asia-Pacific region by 8 sectors; Aluminum, Buildings and Appliances, Cement, Cleaner Fossil Energy, Coal Mining, Power Generation and Transmission, Renewable Energy and Distributed Generation, and Steel**
- **To promote regional cooperation for the development, deployment and transfer of cleaner and more efficient technologies**
- **The share of CO2 emissions by 8 sectors in 7 countries represents about 60%**

3. Build of a genuine Public-Private Partnership



APP Steel Task Force Flagship Project 2 Establishment of Common Methodology

to Identify Reduction Potential and Performance Benchmarking

Step-1: Status Review

Diffusion rate of technologies

Selection of technologies for survey

Intensity benchmarking

A common Methodology setting for benchmarking

Formula

Boundary

Conversion Factors

Diffusion Survey

Barriers Survey

Intensity Survey

Step-2: Reduction potential in APP 7 countries

CO₂ 127 M ton/year SO_x: 0.65 M ton/year NO_x: 0.29 M ton/year

Step-3: Target setting

4th TF in Australia in Oct. 2007

Next Programs

5th TF in S. Korea in 2008



APP Steel Task Force Flagship Project 3 Mechanism of Technology Deployment

for Eligible Technology Adaptation
based on *Expert Diagnoses Methodology and Procedures*

Step-1: Site Visit

Fact findings

On-site evaluation of candidate technologies for improvement

Recommendations

Appropriate and suitable implementations from SOACT

CO2 thru
Energy saving,
SOx, NOx etc.

Step-2: Prioritization of Technology Solutions

Evaluation and
Prioritization of technology
implementation plans

-Barriers for realization (financial, technological etc.)
-Cost-effectiveness etc.

Next Programs

Step-3: Proposal to the Steel TF projects

Challenges towards Best Energy Mix in Asia



Coal :

CCT and CCS are key technologies to expand coal use for electricity generation.

Nuclear Power :

Civil use of nuclear energy is indispensable to cope with energy & climate security in Asia.

Safety, safeguard and security are essential.

Renewable Energies :

Bio-fuels are expected to help reduce carbon dioxide emissions in the transportation sector. Government policy and regional cooperation could expand further use of renewable energies.