Japan's Energy Policy & Japan-India Energy Cooperation

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1. Circumstance on Energy ~Comparison between Japan and India~

	Japan	India
Total Demand	World's #5	World's #4
Growth	Steady increase	Rapid increase
Demand per Capita	4.17toe	0.52toe
Self-sufficiency	6.9%	82.3%
Oil dependence	50%	22%
Dependence on Middle East	88%	43%
Energy related R&D by gov't	¥1.67 trillion In 2004FY	~

2. Japan's Energy Policy
~Experience & Lessons~

(1) Energy conservation as domestic energy supply

(2) Policy balance among energy, environment and economy

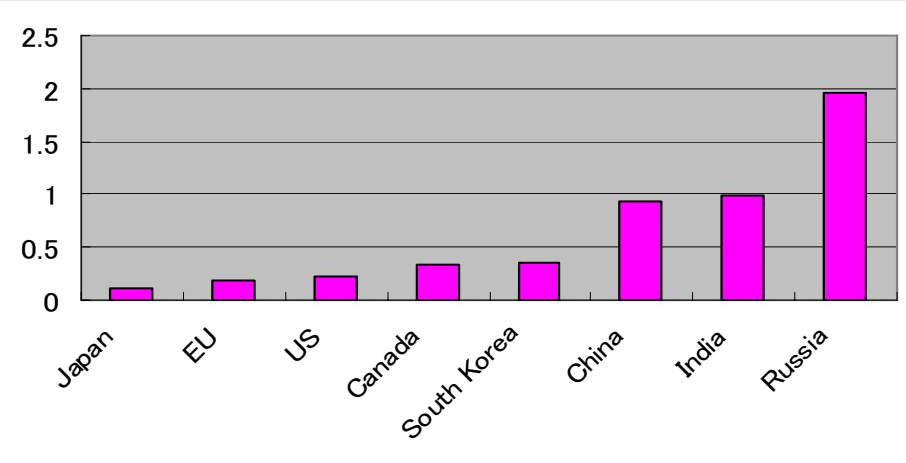
(3) Diplomatic efforts & emergency preparedness

(4) Role on technology

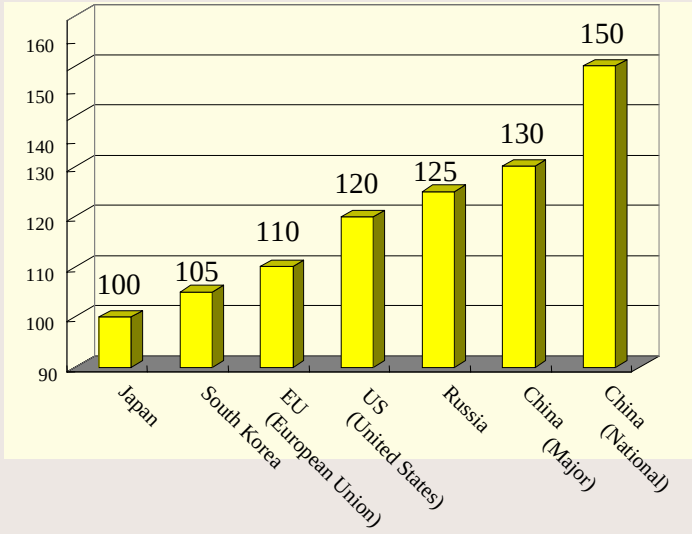
(1) Energy conservation as domestic energy supply

- ✓ **Realized the world's best energy efficiency through the two oil shocks**
- ✓ **Decreased the energy consumption per GDP 100 (1973) → 62.8 (2003)**

International comparison of energy use efficiency-per-GDP (toe/ thousand US$)

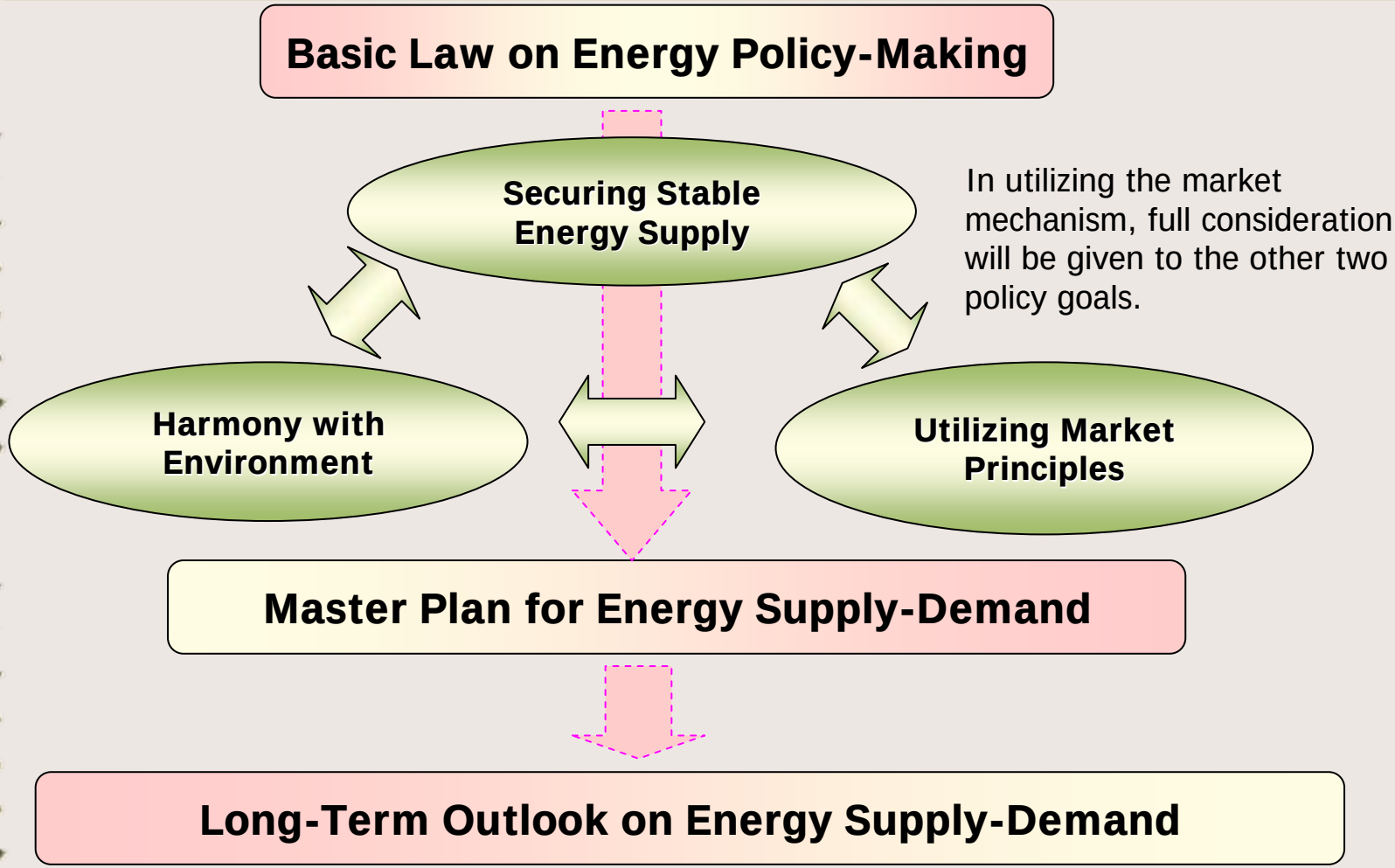


Energy intensity in steel production



Source: IEA Energy Balance 2004

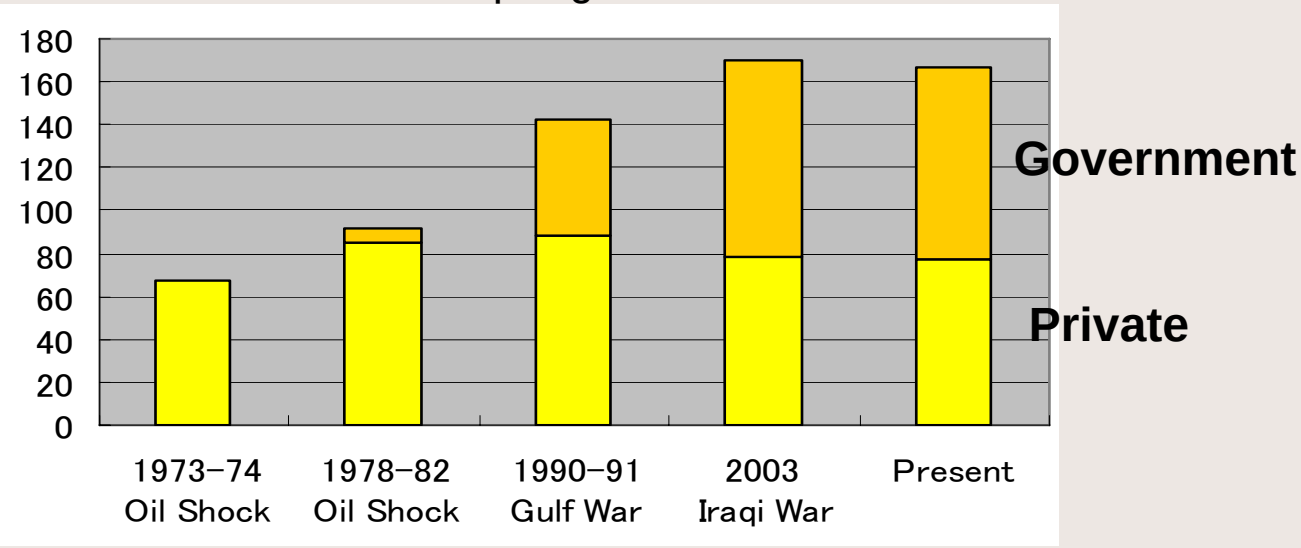
(2) Policy balance among energy, environment and economy (3Es)



(3) Diplomatic efforts & emergency preparedness

- ✓ **Developed the following energy foreign policy**
  - –International cooperation through IEA
  - –Dialogue between the oil producing countries and consuming countries
  - –Bilateral cooperation
- ✓ **Secure the oil stockpiling corresponding to 167 days**

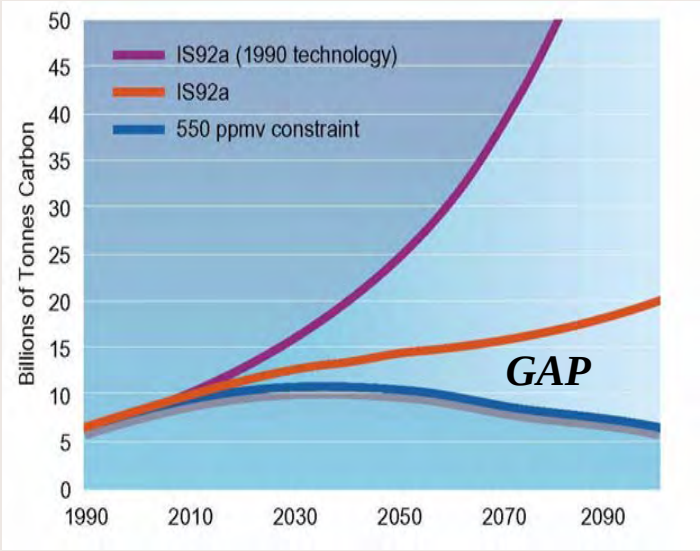
【Oil Stockpiling Reserves】



(4) Role on technology

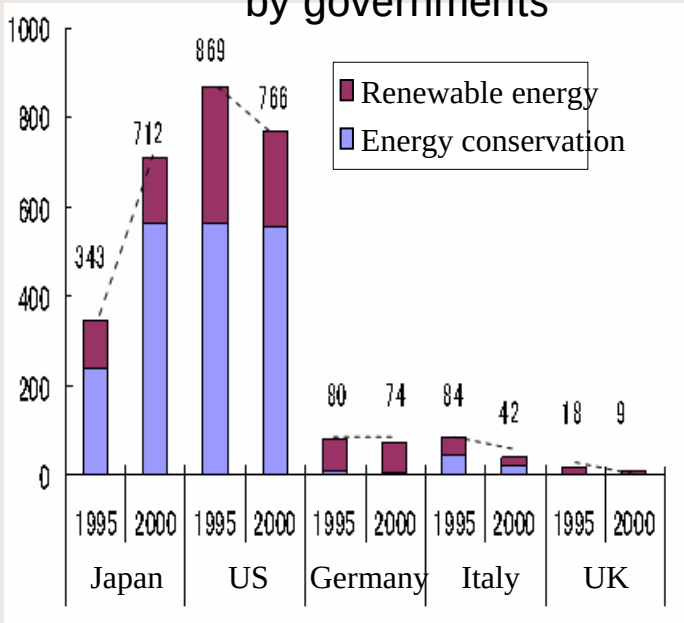
- ✓ **Recognized Importance of technology development for realizing 3Es**
- ✓ **Conducted the energy-related R&D actively**
- ✓ **The world 2nd largest governmental energy-related R&D expenditure**

Importance of innovative technologies in CO_2 emission reduction



Source: Battelle (2000)

Energy-related R&D investment by governments



Source: IEA (2002)

3. Japan's Present Energy Policy ~The New National Strategy~

(1) 3 objectives

- ✓ Establishment of reliable energy security measures
- ✓ Establishment of the foundation for sustainable development
- ✓ Commitment to assist Asian and world energy problems

(2) 4 basic perspectives

- ✓ Establishment of a state-of-the-art energy supply and demand structure
- ✓ Strengthening of resource diplomacy and, energy and environment cooperation
- ✓ Enhancement of emergency response measures
- ✓ Enhancement of technology R&D

(1) Establishing a state-of-the-art energy supply and demand structure

1. **Energy Conservation Frontrunner Plan**
   Improve the energy consumption efficiency by at least 30% by 2030
2. **Transport Energy for the Next Generation Plan**
   Bring the oil dependency of transport sector to about 80% by 2030
3. **New Energy Innovation Plan**
   - Bring the cost for solar energy to the same level of thermal power
   - Improve the regional self-sufficiency ratio by biomass and wind power
   - Turn many of the new vehicles to hybrid vehicles
4. **Nuclear Power Nation Plan**
   Aim the ratio of nuclear power generation to above 30 to 40% after 2030

(2) Strengthening of resource diplomacy and, energy and environment cooperation

- **Aim the ratio on oil exploration and development by the Japanese companies to 40％ by 2030**
  - Strengthen the relationship with the source countries
  - Strengthen the natural gas procurement capability
  - Strengthen the measures for mineral resources

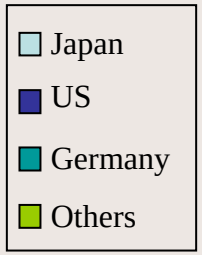
(3) Enhancement of emergency response measures

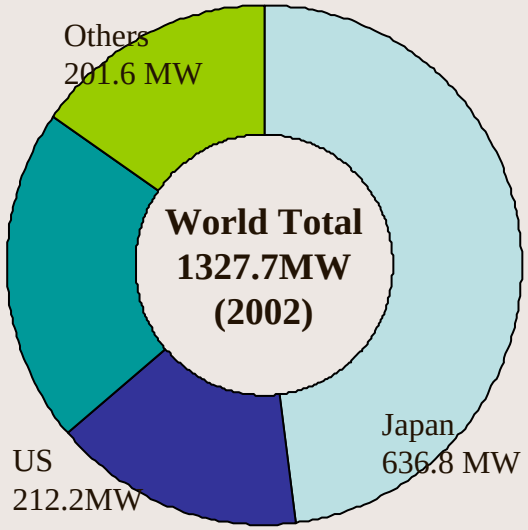
- Strengthen the oil stockpiling system by introducing of product stockpiling and flexible release
- Promote the LPG stockpiling steadily
- Implement FS for preparing the emergency response system for Natural gas

(4) Formulation of the “Energy Technology Strategy”

- **Establish, publish and revise the technology R&D strategy in the form of roadmap**
- **Become the world’s top runner in many of the energy technology sectors**
- **Foster private companies who can powerfully lead the technological innovation**

Total worldwide installations of photovoltaic power system





Source: IEA

4. Commitment to assist Asian energy problems

~Future perspective of Japan-India energy cooperation~

(1) Commitment to assist Asian energy problems

1. **Promotion of energy conservation based on the Asia Energy Conservation Program**
   - Support the establishment and implementation of the energy conservation system
   - Expand the energy conservation cooperation through business activities through inter-industry dialogue and the utilization of CDM
2. **New energy cooperation in Asia**
   - Support for establishing systems for introducing new energies
   - Support the building of the system trough trainee acceptance and the dispatch of experts
   - Support business activities of the Japanese enterprises through FS survey and the utilization of CDM
3. **Dissemination of clean use, production and safety technologies of coal**
4. **Building the stockpiling system in Asia**

(2) Progress on the energy talks between Japan and India

1. (Jan. 2005, Delhi) Meeting between Minister Nakagawa of METI and Minister Aiyar of MPNG

India suggested cooperation in exploration development, oil stockpiling, hydrogen development, joint research on oil market, etc.

2. (April 2005, Delhi) Japan-India summit meeting

The joint statement announced included promotion of bilateral energy cooperation including the establishment of dialogues concerning oil and natural gas cooperatives.

3. (Sept. 2005, Tokyo) Meeting between Minister Nakagawa and Minister Aiyar

A joint statement on comprehensive energy cooperation covering oil and natural gas sectors and energy conservation was issued.

4. (Nov. 2005, Delhi) Meeting between Vice Minister Nishino and Minister Aiyar

Opinions were exchanged on the theme of how to advance cooperation in the oil and natural gas sectors.

5. (Dec. 2006, Delhi) India-Japan Energy Forum

(3) Recent progress on the Japan-India energy cooperation

○ **Japan-India dialogue on oil and natural gas**

<Energy conservation> The Petroleum Conservation Research Association (PCRA) of India and the Energy Conservation Center of Japan signed an MOU.

<Stockpiling> Japan Oil, Gas and Metals National Corp. (JOGMEC) provided information to the Oil Industry Development Board (OIDB) of India.

<Joint exploration> Oil and Natural Gas Corp. (ONGC) of India and JOGMEC signed an MOU.

<Research on Asian oil market> PPAC (Petroleum Planning & Analysis Cell) of India and the Institute of Energy Economics, Japan conducted joint research.

<Energy conservation> The Energy Conservation Center dispatched experts on a long-term basis to the Bureau of Energy Efficiency (BEE) of India's Ministry of Power.

<Energy conservation>New Energy and Industrial Technology Development Organization (NEDO) provided technical training courses concerning energy conservation for Indian cement engineers.

<Energy conservation> NEDO started a demonstration project for coke dry quenching (CDQ) facilities.

<Coal> The Government of Japan conducted training concerning clean coal technology.

<Electricity> The Government of Japan provided yen loans for the construction of the Anpara B Thermal Power Plant, etc.