Securing Energy Security and Preventing Global Warming

・・・ Role of Nuclear Energy and Japan-US Cooperation ・・・

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Introduction

- **IPCC 4 th Assessment Report : WG-III**

  - N-Power is “key mitigation technology”

- **2008**

  - Kyoto Protocol First Commitment Period

  - G8 Summit : Hokkaido-Toyako, Japan

- **Nuclear Renaissance**

Main Points

Japan-US Cooperation

- To secure energy security and prevent global warming

- Sharing Recognition on Importance of Nuclear Power
- Work Together for Steady Development of Nuclear Power

Energy Situation of Japan

・・・ Diversification is basic strategy

- **Pursue "Best Energy Mix"**

・・・・ Share of Power Source

	1973	2005	(US)
Oil	73	10	(3)
Gas	2	24	(18)
Coal	5	25	(50)
Nuclear	3	32	(20)
Hydro	16	8	(9)

Energy Policy of Japan

・・・ How to challenge trilemma ?

- **Basic Law on Energy Policy (June,2002)**

- **Balance of 3E**
  - **Energy Security**
  - **Environment Protection**
  - **Economic Growth**

- **Harmonization of Basic Policy**
  - **Energy, Environment and S&T**

Nuclear Power Program in Japan

・・・ Japan steadily develop N-Power

- Introduction of Reactor Tech. from US
- Development of Indigenous Technology
- 55 units, 50Gw, ~1/3 of power supply
- Replacement start ~2030

Nuclear Policy of Japan

・・・ Steady advancement of fuel cycle

- **Framework of Nuclear Energy Policy**
  - **30~40% Electricity Supply by Nuclear**
  - **Pursue Nuclear Fuel Cycle**
  - **Commercial FBR development by 2050**
- **Pu recycle as MOX Fuel in LWR**

- **Final Geological Repository of HLW ?**

GHG emissions

・・・ Involvement of US, China, India is crucial

- **Total CO2 emissions ;25 Bt/yr (2003)**

  US ・・・・・・ 24%

  China ・・・ 14%

  *** EU ・・・・・ 16%**

  *** Russia ・・・ 6%**

  *** Japan ・・・ 5%**

  India ・・・・・ 4%

*** Kyoto Protocol mandated countries**

Energy Conservation

・・・ Japan utilize energy efficiently

- **GHG emission per GDP (C t-eq / M$)**
  - **Japan 58**
  - **US 174**
  - **Canada 197**
  - **UK 120**
  - **Russia 1126**
  - **China 777**
  - **India 565**

Reduction of GHG emissions

・・・ NPP has a great advantages

- **Basic concept of Japan :**

Simultaneous Pursuit of Economy and Environment

- **C02 emissions intensity (KgCO2/Kwh)**

Japan/US : 0.38/0.57

- **NPP reduce ~10% of world GHG emissions by 430 units / 390Gw / 2700Twh**

Nuclear Renaissance

・・・ 200Gw of fleet join by 2030

- US ・・・・・・・・ 36 Gw (32 units)
- Russia ・・・・ ~40 Gw by 2030
- China ・・・・・ ~30 Gw by 2020
- India ・・・・・・・ ~40 Gw by 2030
- Japan ・・・・・ 17 Gw (13 units)

Japan-US Cooperation

・・・ How to manage the 1st project ?

- US~30 yrs blank
- Japan~40 yrs continuous development
- US 1st project is most important
  - on time & within budget
- How to minimize the "risk" ?

  Technical, Financial and Social Risk
  - reliable "project management"
  - sound "supply chain"