

# Securing Energy Security and Preventing Global Warming

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

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# Introduction

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- **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

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## 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 ?

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- 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

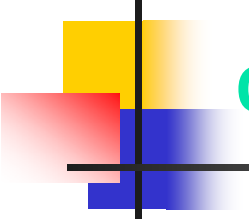


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- Introduction of Reactor Tech. from **US**
- Development of Indigenous Technology
- **55** units, **50Gw**, ~**1/3** of power supply
- Replacement start ~2030

# Nuclear Policy of Japan

• • • Steady advancement of fuel cycle

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- 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

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## ■ 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

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- Basic concept of Japan :  
Simultaneous Pursuit of **Economy** and **Environment**
- CO2 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

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- 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 1<sup>st</sup> project** is most important
  - on time & within budget
- How to minimize the “**risk**” ?
  - Technical, Financial and Social Risk
  - reliable “**project management**”
  - sound “**supply chain**”