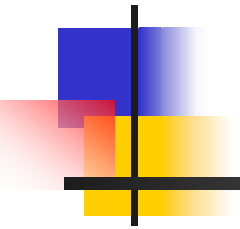


Japan's New National Energy Strategy



August 30, 2006 Tokyo, Japan

Ken Koyama, PhD

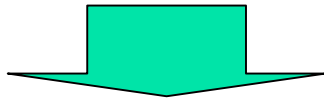
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Introduction :

An overview of Japan' New National Energy Strategy

- Energy policy/strategy re-examined with the emphasis put on enhancement of energy security
- A report on National Energy Strategy published on May 2006



- **Promotion of energy source diversification**
 - Oil dependence in primary energy mix to be lowered at 40% in 2030
 - Oil dependence in transportation fuel to be lowered at 80% in 2030
- **Promotion of nuclear power development**
 - Its share in power mix to be 30-40% in 2030
- **Promotion of energy conservation**
 - Energy intensity to be improved by 30% by 2030
- **Promotion of upstream investment**
 - Overseas upstream equity oil imports to be increased to account for 40% of total oil imports



Presentation Topic

1. **Background of New National Energy Strategy**
 - Energy security, an important agenda for Japan
 - Japan's energy policy after the 1970s
 - Growing concern for energy security
2. **Content of New National Energy Strategy**
 - Goal of the Strategy
 - Approach of the Strategy
 - Issues to be considered

Energy security is critical for Japan



- **Definition of “Energy Security”:**
 - **To secure sufficient energy supply at reasonable prices for the achievement, pursuit and maintenance of maximizing economic/social welfares and sustainable development of national economy and citizens**

- **Japan (and every country) requires to achieve energy security as an essential/critical policy goal**

Perceived Risks for Energy Security



■ Contingent risks

- Political and military risks in main energy supply area
- Accidents in energy supply chain
- Consumers' panic behavior

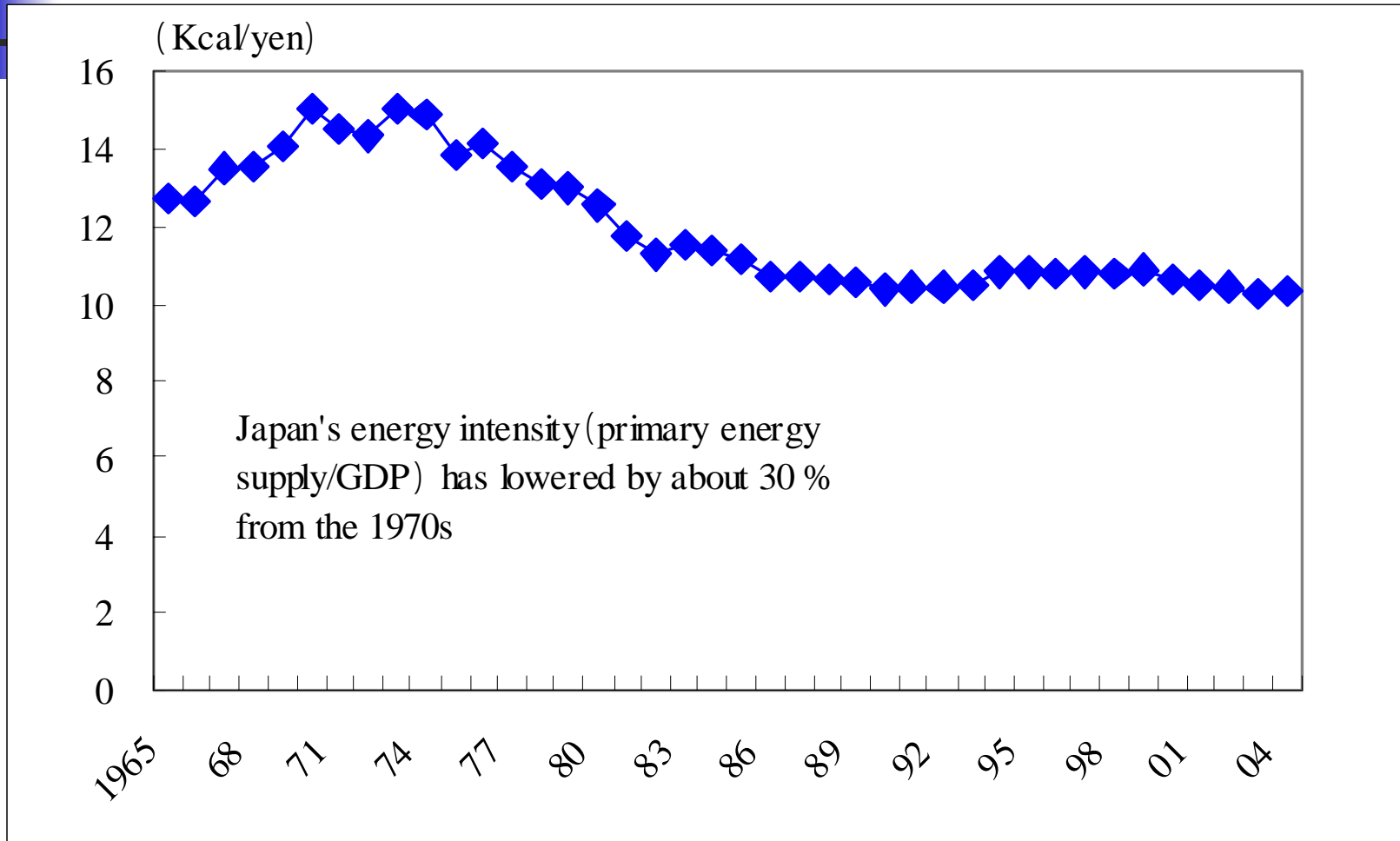
■ Structural risks

- Supplier's embargo with political objectives
- Market power of major suppliers
- Supply/demand squeeze due to insufficient investment, rapid growth of demand, etc.
- Resource constraints and chronic energy shortage
- Side effects of market liberalization and environmental restrictions

■ Japan has developed energy policy to enhance energy security in the past 30 years

Trend of Japan's energy intensity

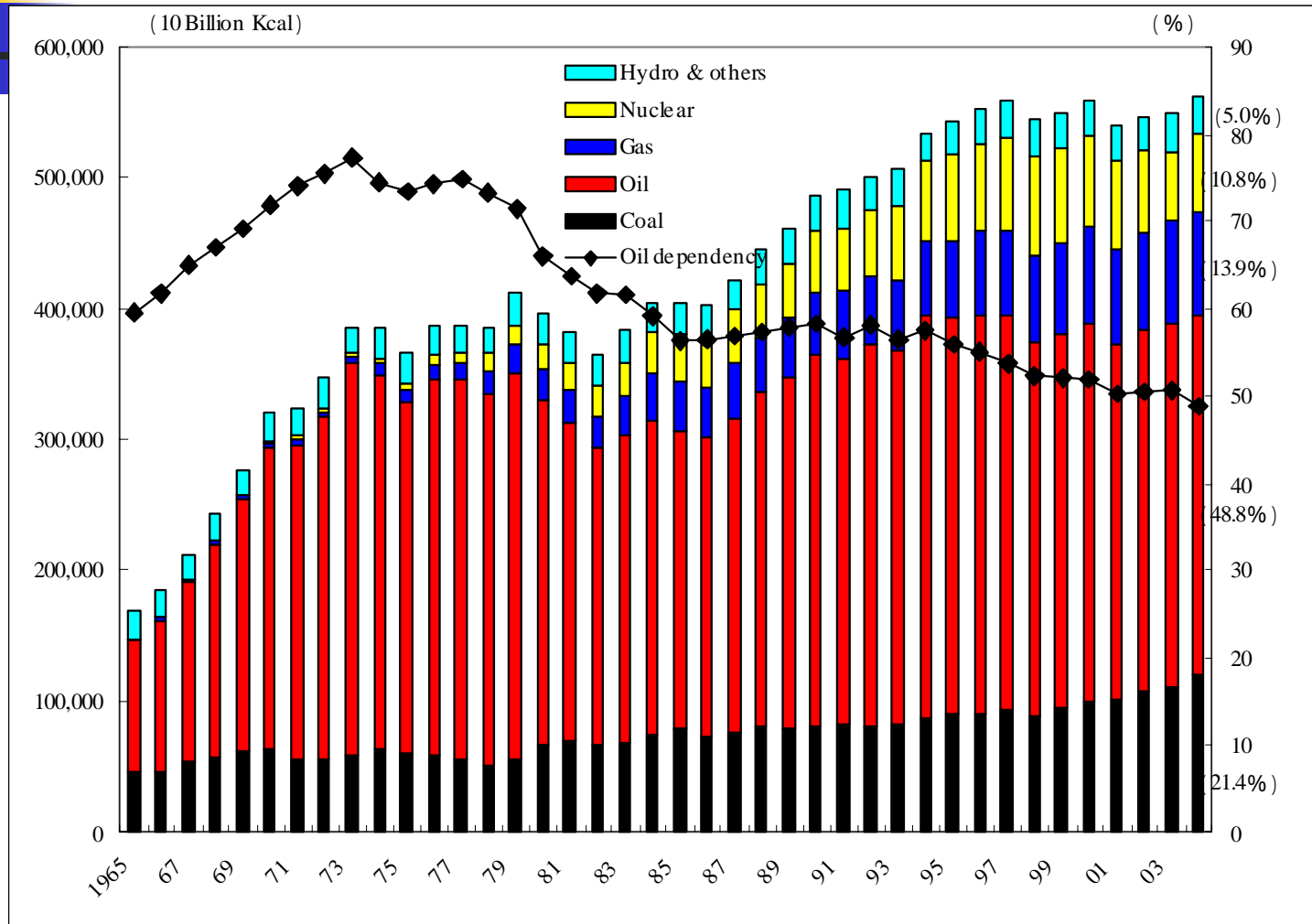
Energy conservation and changes in economic structure resulted in lowered energy intensity



(Source) EDMC/IEEJ Statistics

Trend of Japan's primary energy supply

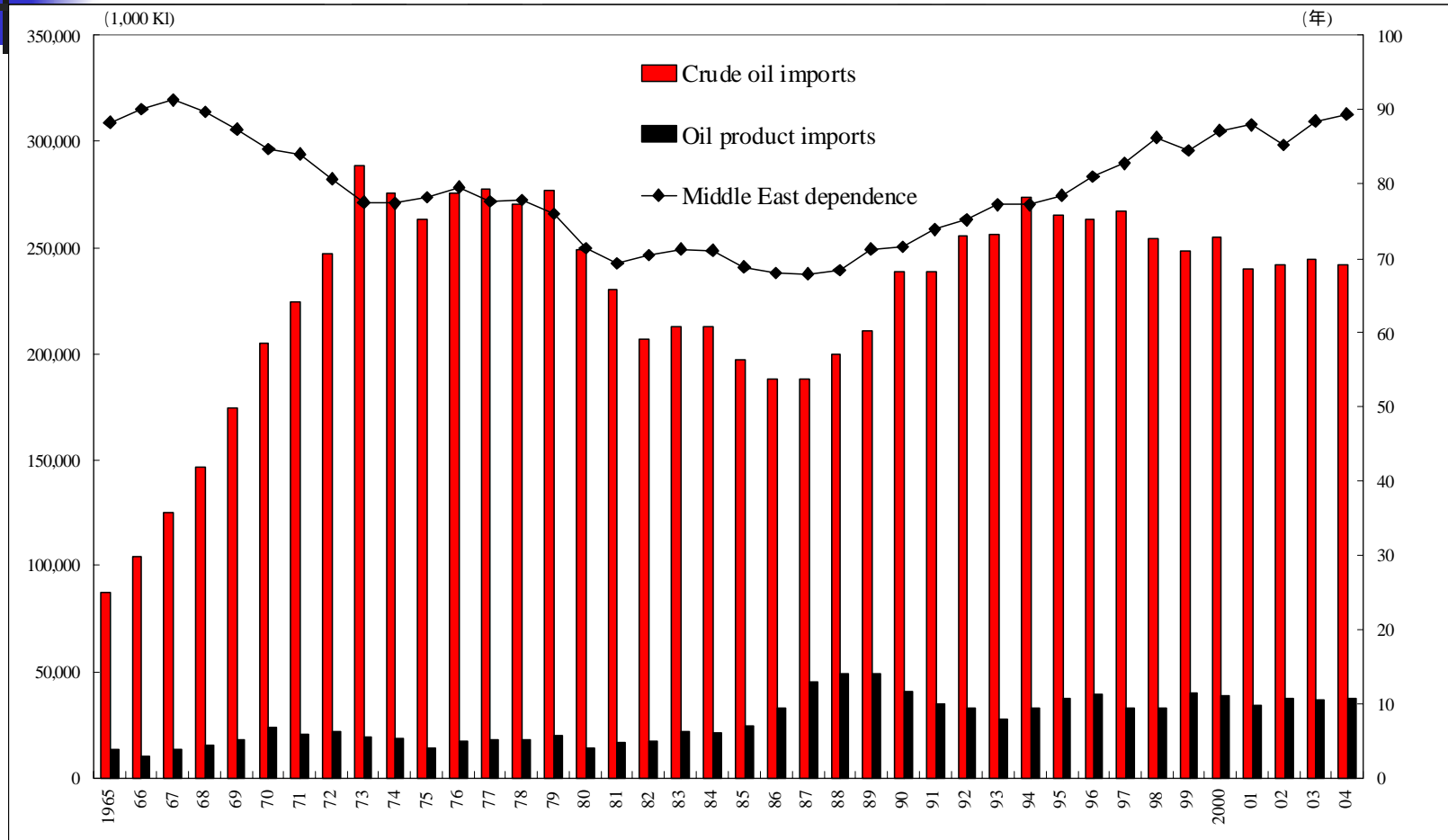
Oil's share declining, but still dominating energy mix



(Source) EDMC/IEEJ Statistics

Trend of Japan's oil imports

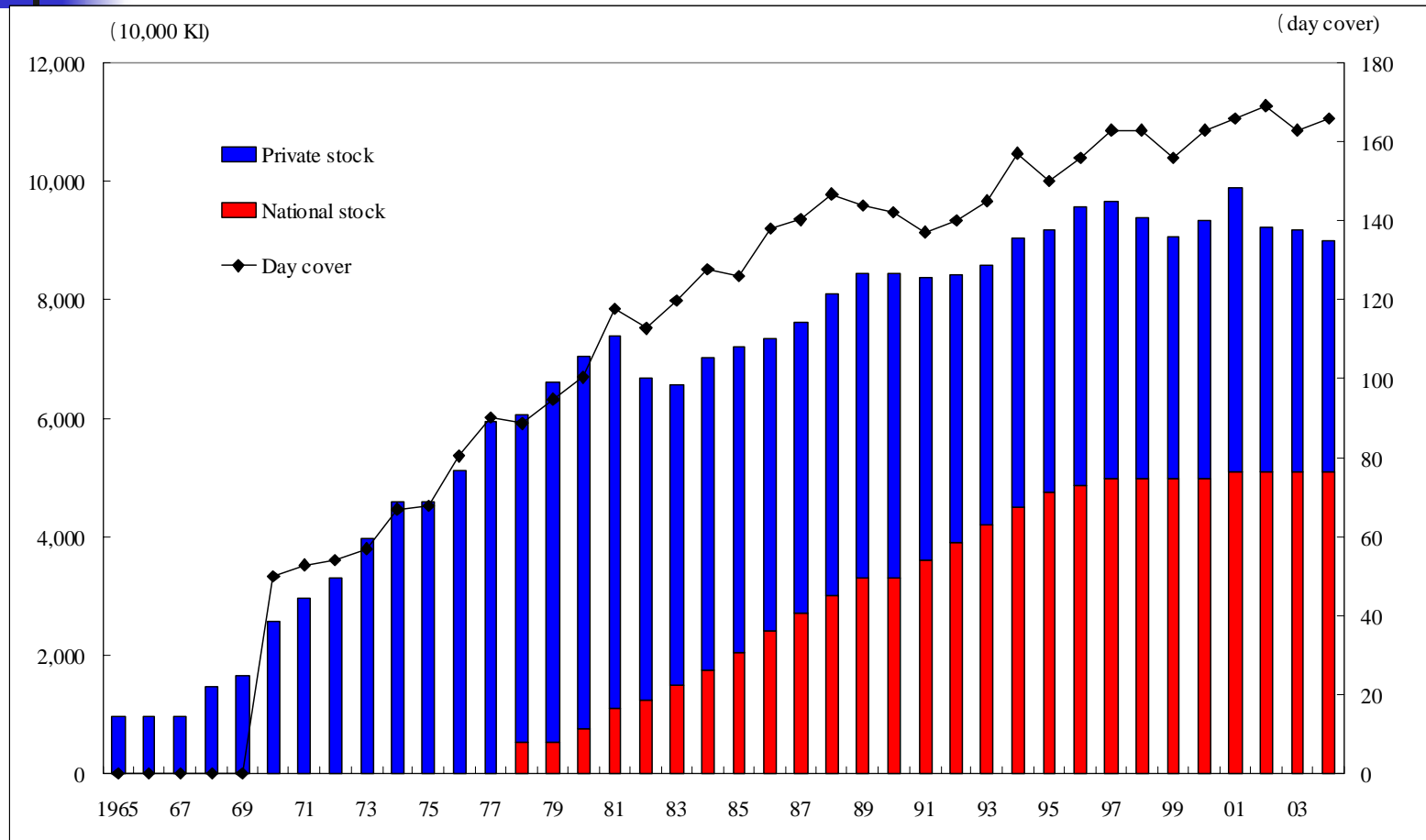
Share of Middle East crude oil rising (89.5% in FY 2004)



(Source) EDMC/IEEJ Statistics

Trend of Japan's oil stockpile

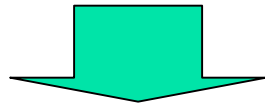
Japan's stockpile (National & private) covers about 170 days' consumption



(Source) EDMC/IEEJ Statistics

New situation for global energy security

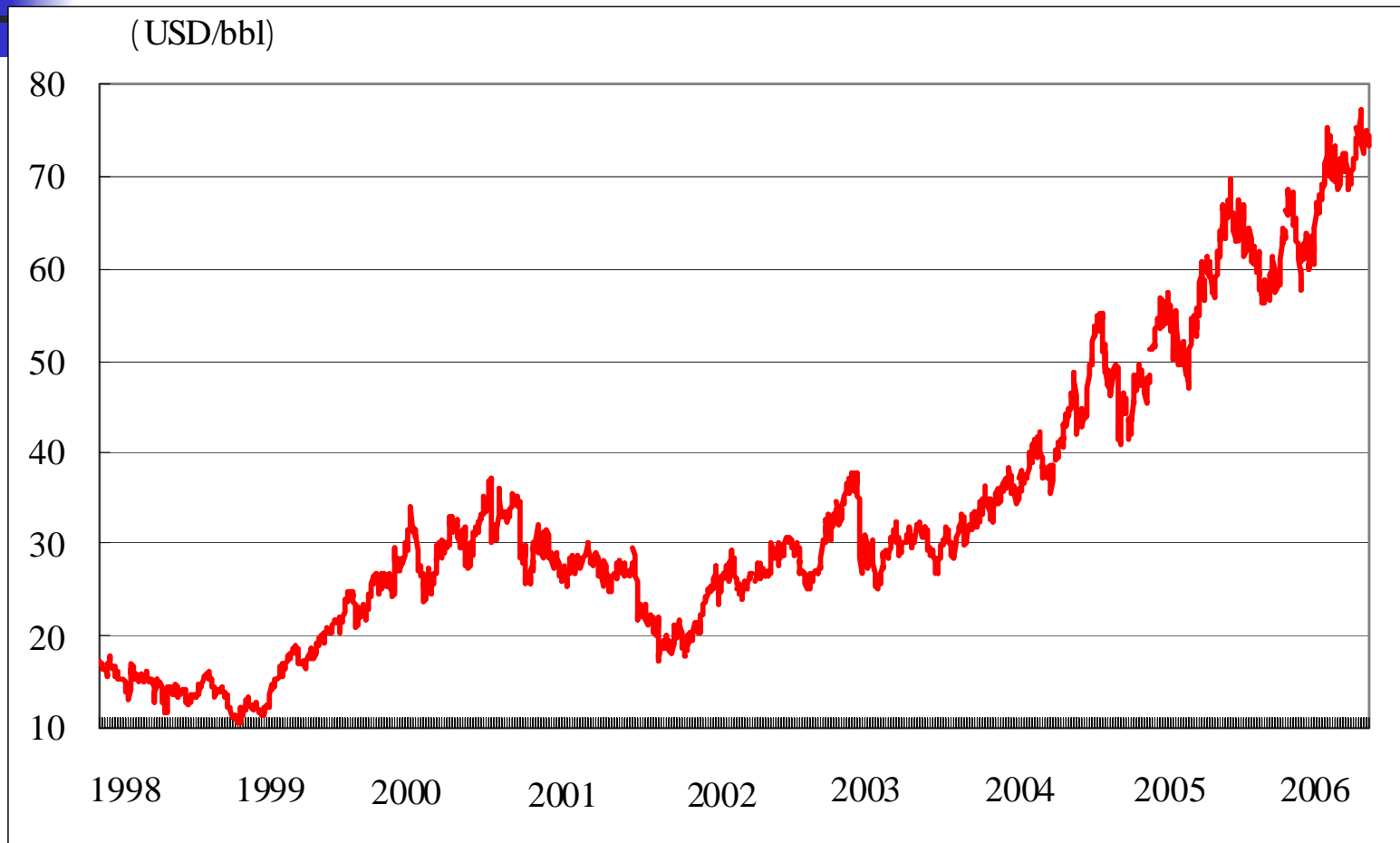
- Recent oil price run-up
- Emerging large-scale importers (China, India, followed by Indonesia, etc.)
- Impact of September 11
- Instability in the Middle East
- Growing attention to “Geopolitical aspects” of energy



- Active discussion with regard to strategy to enhance energy security in Japan

Rising WTI futures price

WTI futures reached 77\$ mark in July 2006



(Source) NYMEX data

Recent supply interruption/instability



- **Instability in major oil producers**
 - **Iraq: war, terrorism, security problems**
 - **Iran: nuclear issues**
 - **Nigeria: domestic conflicts**
 - **Venezuela: general strikes, political issues**
 - **Russia, Saudi Arabia, etc.:**
- **Natural disasters and accidents**
 - **Hurricanes**
 - **Accidents in up/downstream supply chain**

Emerging risks/threats to global energy security

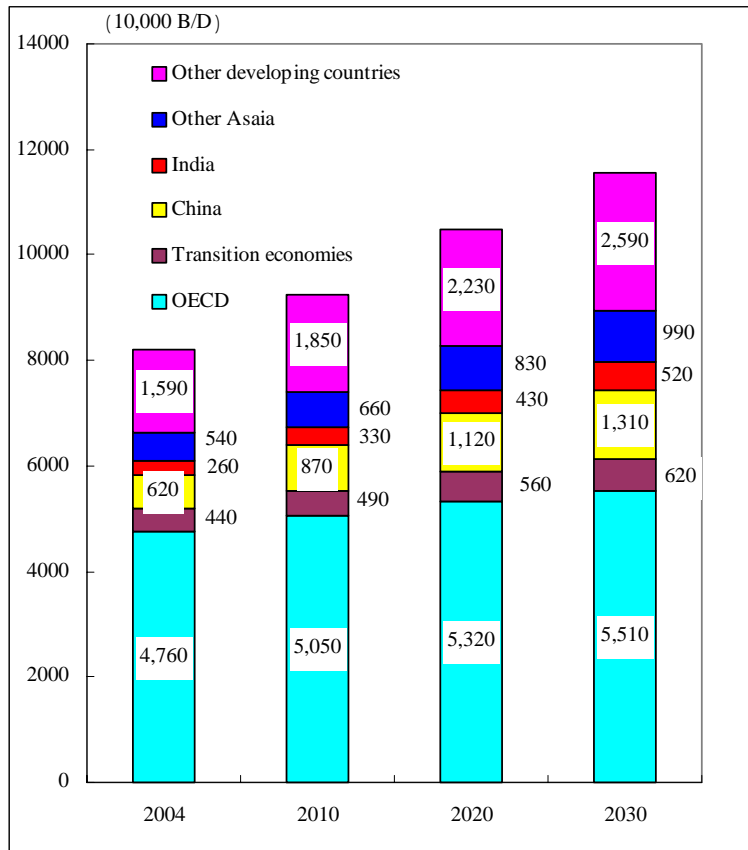


- **Rapidly growing oil demand/imports in developing countries and concerns for structural tightening of global supply-demand**
- **Competition for access to energy resources**
- **Growing geopolitical risks**
- **Emerging concerns for energy supply constraints**
 - **Investment risks in resource development**
 - **Importance of stability of energy transportation and sea lane security**
 - **Impacts of market liberalization and environmental constraints**

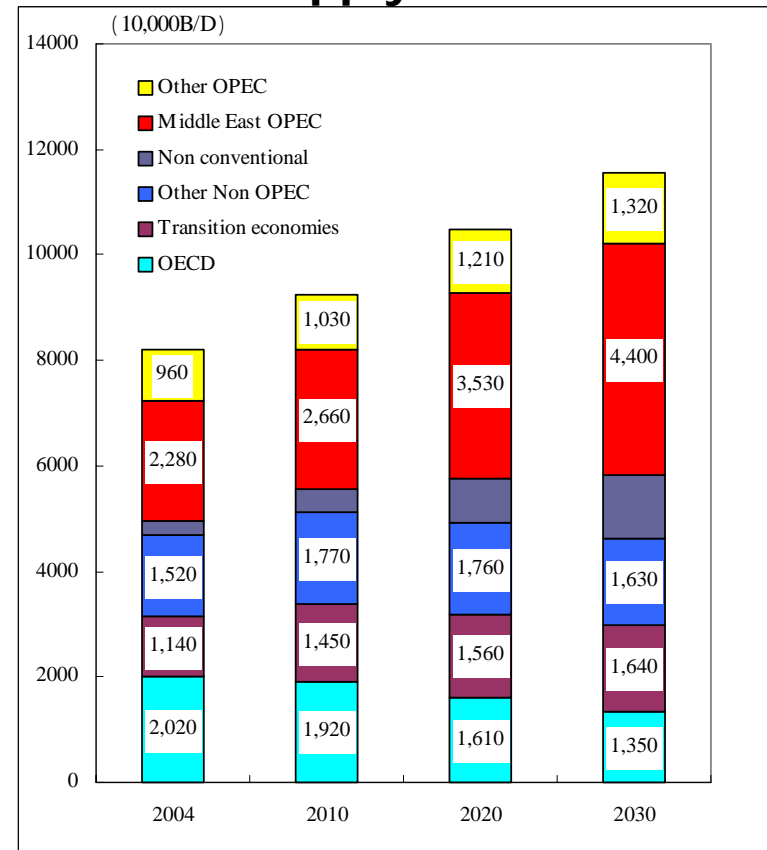
World oil supply-demand outlook (IEA)

Oil demand expected to grow due to strong growth in Asia. Supply growth in Middle East OPEC is required to meet growing demand

Oil demand outlook



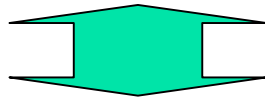
Oil supply outlook



(Source) IEA 'World Energy Outlook 2005'

Energy security “re-visited” in Japan

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- **Japan’s policy initiatives after 1970s resulted in substantial achievement in diversification, stockpile, etc.**



- **But high oil dependence, import dependence, Middle East dependence remain unchanged**
- **Emerging risks/threats to global energy security**



- **Energy security policy is still a very important agenda for Japan**



Objective of the Strategy

**Establishment of energy security measures that our people
can trust and rely on**

**Establishment of the foundation for sustainable development
through a comprehensive solution of approach for energy
issues and environmental issues all together**

**Commitment to assist Asian and world nations in addressing
energy problems**

(Source) METI “New National Energy Strategy”

Important points in implementing the Strategy



- **Medium- or long-term visions toward the specific direction, with specific numerical targets as a milestone**
- **Breakthrough by the world's most advanced technologies**
- **Strategic collaboration between the government and private organizations and government-wide efforts to strengthen the scheme of carrying out the Strategy**

(Source) METI “New National Energy Strategy”

Establishment of numerical target



- **Target of energy conservation**

At least another 30% improvement of efficiency will be attained by 2030.

- **Target of reducing oil dependence**

The ratio will be reduced to be lower than 40% by 2030.

- **Target of reducing oil dependence in the transport sector**

The percentage will be reduced to around 80% by 2030.

- **Target on nuclear power generation**

The ratio of nuclear power to all power production will be maintained or increased at the level of 30 to 40% or more up to 2030 or later.

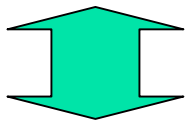
- **Target of overseas natural resources development**

The ratio of Japanese developed oil in total oil import will be increased to around 40% by 2030.

(Source) METI “New National Energy Strategy”

Specific programs for the strategy

- **Realizing the state-of-the art energy supply-demand structure**
 - **Energy conservation Frontrunner Plan**
 - **Transport Energy for the Next Generation Plan**
 - **New Energy Innovation Plan**
 - **Nuclear Power Nation Plan**
- **Comprehensive Strengthening of Resource Diplomacy and, Energy and Environment Cooperation**
 - **Comprehensive Strategy for Securing Resources**
 - **Asia Energy and Environment Cooperation Strategy**
- **Enhancement of emergency response measures**

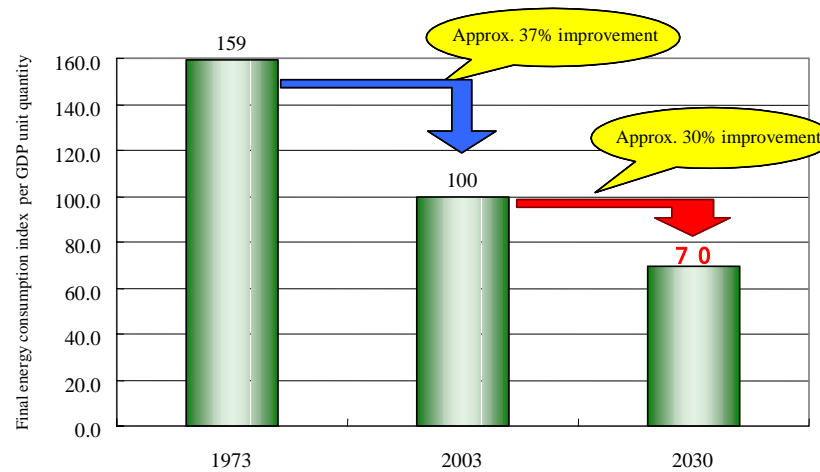


Common Challenges

- **Energy Technology Strategy**

(Source) METI “New National Energy Strategy”

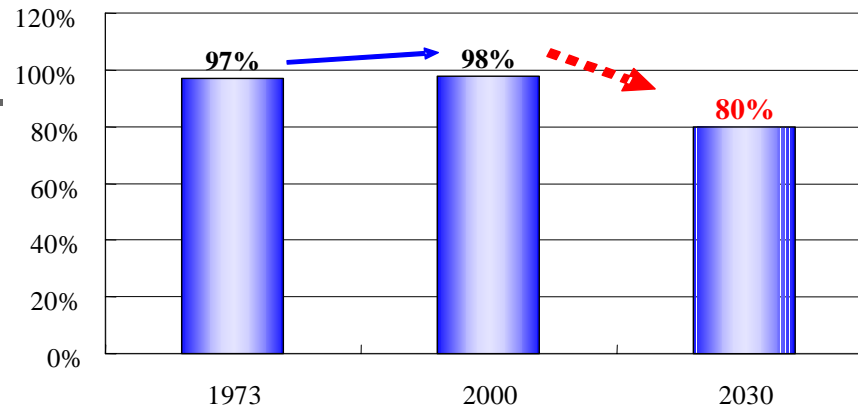
Energy conservation frontrunner plan



- **Build-up strategy for energy conservation technology**
- **Prepare top-runner type standard (benchmarking approach) for various sectors**
- **Establishment of market evaluation mechanism for energy conservation investment (energy conservation IR)**
- **Create an “energy conservation park/city” as a model case**

(Source) METI “New National Energy Strategy”


Transport energy for the next generation plan



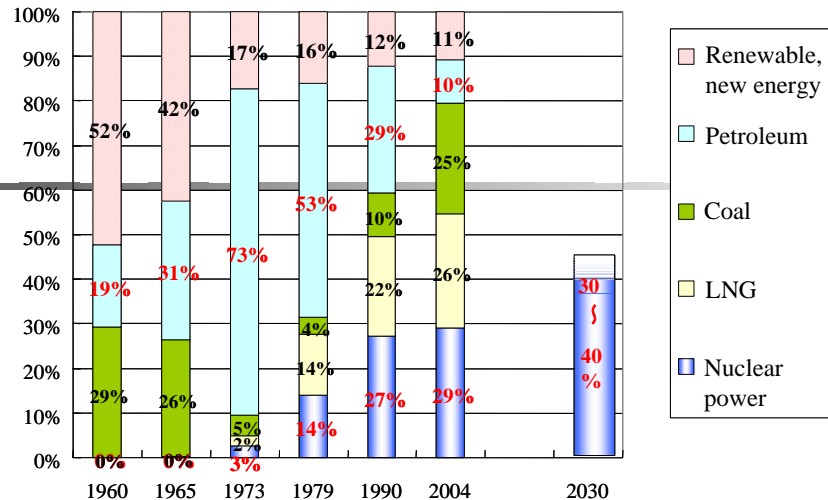
- **Improvement of fuel efficiency**
 - Fuel efficiency standard
 - Octane improvement
- **Fuel diversification**
 - Infrastructure for biomass fuel and others
 - “Diesel shift”
- **Promotion of “new transportation fuel”**
 - Technology R&D to improve economics of new fuel
- **Promotion of electric vehicles and fuel cell vehicles**
 - R&D for development and diffusion of electric/fuel cell vehicles

(Source) METI “New National Energy Strategy”

New energy innovation plan

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- **Cost reduction of solar power generation to the same level as thermal power generation.**
 - **Promote the efforts of local-production for local-consumption through biomass energy and wind-powered electricity to improve the self-sufficiency ratio of the energy supply in the region.**
 - **Promotion of hybrid vehicles and introduction of electric vehicles and fuel cell vehicles**

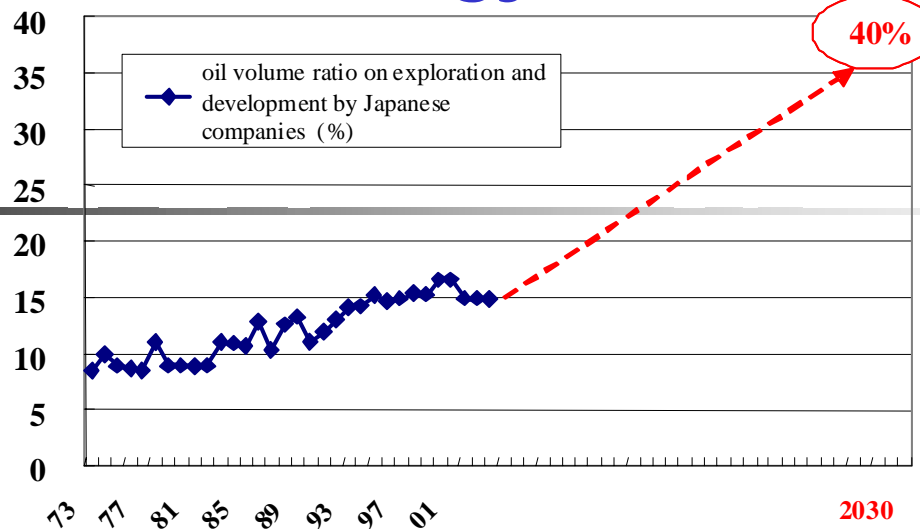
Nuclear power nation plan



- **Construct new nuclear power plant under liberalized market**
- **Establishment of fuel cycle based on existing light water reactors**
- **Early introduction of Fast Breeder Reactor cycle**
- **Contribution to global efforts for NPT**
- **Technology R&D and human resource development**
- **Promotion of international business development of Japan's nuclear power industry**
- **Promotion of efforts for radioactive waste management**
- **Strengthen measures for safety management**
- **Improve/strengthen relation between government and local authority/citizens (Trust buildup)**

(Source) METI "New National Energy Strategy"

Comprehensive strategy for securing resources



- **Strengthen strategic and comprehensive approach**
 - Strengthen comprehensive tie-up with resource rich countries
 - Strengthen financial assistance to overseas upstream activities
 - Promote diversification
 - Buildup a basic plan for securing resources and combined efforts by government/related entities
 - Promote transparency and stability of the market
 - Strengthen assistance to development of Uranium resources and bio-ethanol
- **Promotion of strategic resource development technology**
- **Strengthen natural gas procurement strategy**
- **Development of clean utilization of fossil fuels**
- **Strengthen strategy for mineral resource development**

(Source) METI “New National Energy Strategy”

Asia energy and environment cooperation strategy



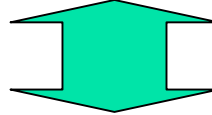
- **Promotion of Energy Conservation based on the Asia Energy Conservation Program**
- **New Energy Cooperation in Asia**
- **Dissemination of clean use, production and safety technologies of coal in Asia**
- **Building the stockpiling system in Asia**
- **Promotion of regional cooperation on nuclear power in Asia**

Enhancement of emergency response measures



- **Strengthen/upgrading oil stockpile system (including examination of oil product stockpiling)**
- **Emergency response measures for natural gas**
- **Strengthen crisis management system/capability**

Establishment of energy technology strategy

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- **Establish an energy technology strategy as a roadmap for long-term vision**
 - **Strengthen R&D for energy technology**
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- **In order to promote cooperation between the public and private sectors, technical challenges to be solved by 2030 will be summarized in the energy technology strategy, and this approach should take into account the technologies needed from a strategic viewpoint by envisaging the situation in 2100 or 2050. And looking back from then.**

Toward realization of the “New National Energy Strategy”



- **Promoting the creation of powerful enterprises**
 - **Efficient and effective use of policy tool such as budget and taxes**
 - **Implementing public hearings and public relations on energy and energy education**
- (Source) METI “New National Energy Strategy”
- **Detailed and concrete action plans and their implementation will be required to realize the goal of the strategy**