

# Challenges for Global Energy Security



**International Energy Agency**

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**Ken Koyama, PhD**

**Director**

**The Institute of Energy Economics, Japan**

# Emerging landscape with regard to global energy security/sustainability



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- **Rising energy prices**
- **Rapidly growing energy demand in developing countries and concerns for structural tightening of global supply-demand**
- **Excessive competition for access to energy resources**
- **Growing geopolitical risks, emerging resource nationalism, issues of market power**
- **Emerging concerns for energy supply constraints**
  - **Investment risks in resource development**
  - **Importance of stability of energy transportation and sea lane security**
- **Linkage between energy market and financial market**
- **Environmental challenges for sustainability**
  - **Climate change and global environmental problems**
  - **Local and regional environmental problems**

# Competition for Access to Energy Resources



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- **Growing import dependence is perceived as “vulnerability”**
- **Strategy being taken as a counter measure:**
  - **Domestic energy initiatives**
    - **Domestic energy resource development**
    - **Energy source diversification**
    - **Energy conservation/efficiency improvement**
  - **Energy diplomacy**
    - **Overseas resource development (promotion of NOC)**
    - **Exclusive bi-lateral deals**
- **Excessive pursuit of the above strategies may lead to politicize and destabilize world energy markets**
- **Behavior of emerging giants attracts attentions in global energy community**

# Emerging concerns for Energy Supply Constraints

## ( ) Constraints on resource development

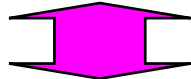
- **Resource constraints (Peak oil): A real threat?**
- **Production in matured areas continue to decline**
- **Accelerating natural decline in existing fields**
- **Rising costs and difficulties for access to equipments & skilled manpower**
- **State & NOC dominance in access to energy resources**
- **Rising “resource nationalism”**
- **Huge investment requirement and uncertainties over realization of sufficient and timely investment**
- **Etc.**

# Linkage between energy market and financial markets

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- **Strong growth in fund flows in global market**
  - **Energy viewed as an attractive market to invest (by speculators, institutional investors, etc.)**
  - **“Sub-prime mortgage”, weak dollar and issues in financial markets**



- **Give supports and push-up for futures prices?**
- **Cause high volatility?**
- **Upward shifts in futures price curves?**
- **Affect shape of futures curve (backwardation or contango)?**



- **Interaction between Physical energy markets and financial markets**
- **Linkage of instability between energy market and financial markets (and world economy)**
- **Energy price volatility, a hindrance of energy sector investment (of long lead-time nature)?**

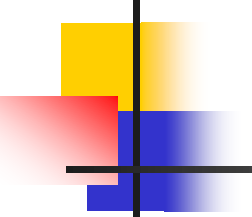
# Environmental problems as an emerging challenge



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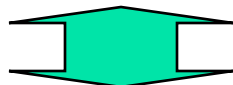
- Energy and environment, two sides of a same coin
- Global warming, a new challenge of risk management for human being
- Global warming should be addressed globally and in a long-term perspective
- Kyoto target is short-term up to 2012 with limited impact on capping global GHG emission
- Importance of effective Post Kyoto framework
- Friction of national interests in international negotiation on global warming
- Coordination for global interest and national interest
- Local environment problems (pollution, etc) emerged as a more serious and real problems in LDC

# Measures/options taken in Post Kyoto framework

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- Fair burden sharing based on globally shared long-term vision and scientific and objective data
  - Best utilization of effective policy options to combat global warming as an externality
    - CO2 pricing (Taxation/Cap & Trade)
    - Sectoral approach with enforcement policies through trade including efficiency standards, etc.
    - Pursuit of an optimal policy/option mix to achieve reduction target in economically effective way
  - Parallel tracks approach to enable countries in different development stages to participate and then swiftly move to the next step as they develop.
  - Importance of technology as a long-term solution
    - Promotion of advanced technology diffusion and international cooperation
    - Innovative technology should be developed
  - Importance of Adaptation while effect of global warming expected to emerge

# Challenges for Energy Conservation and Renewable Energy

- **Priority given to energy conservation and renewable energy**
- **Multiple advantage expected: Improve energy security and global warming, strengthen economic competitiveness, promote domestic industries and economy**
  - **Important domestic policy option**
  - **Centerpiece for international cooperation**

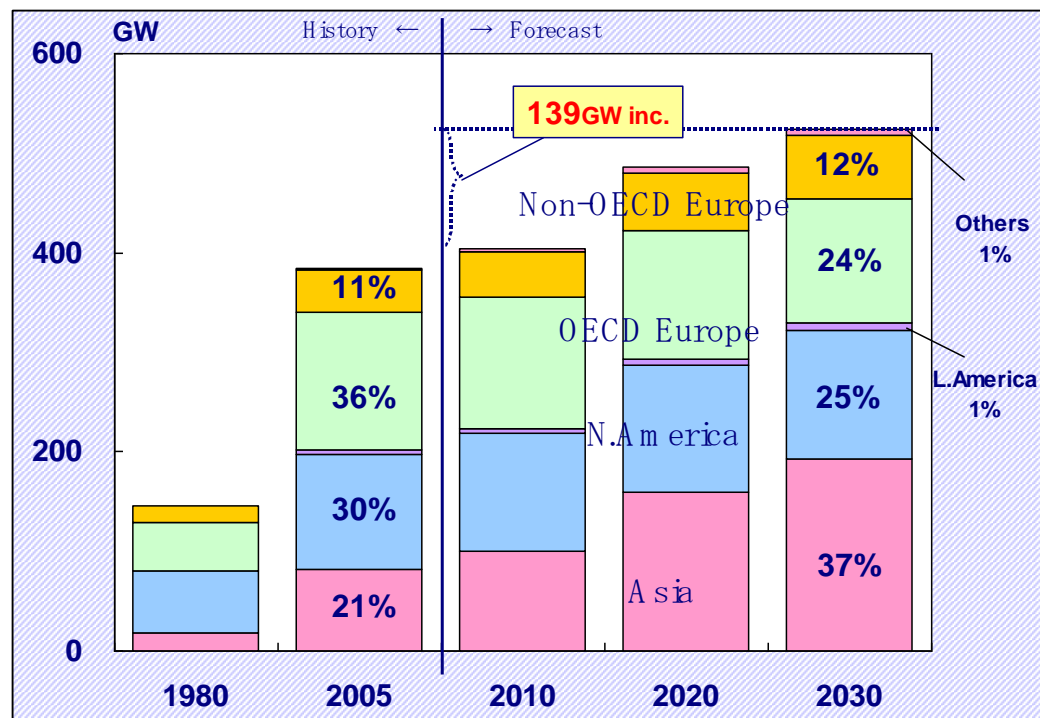


- **Problems related to technology transfer/cooperation (IPR, etc.)**
- **Need for harmonization with food security and environmental protection (deforestation, etc,)**
- **Importance of further R&D&D**

# Challenges for Nuclear Power

- Emerging “Nuclear Renaissance”
- Still many challenges remain for further nuclear power promotion
  - Safety issue
  - Competitiveness in power market
  - Spent fuel disposal
  - Public acceptance, etc
- Terrorism, an emerging threat
- Growing international attentions and discussion on non-proliferation issue and control on nuclear fuel cycle

Outlook for Nuclear power capacity



Source: IEEJ (Asia/World Energy Outlook 2007)



# Summary

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- **Energy is essential to human existence, social and economic development and civil life**
- **Emerging multiple and serious risks/threats to global energy security/sustainability**
- **Importance to find and implement a comprehensive approach to address the global energy challenges consistently.**
- **Major actors (policy planners, industry, citizens and experts/academics) need to play their role and work together**
- **Important role of experts/academics to provide correct, non-biased and timely information/data to help appropriate decision making**