Towards a Northeast Asian Energy Partnership

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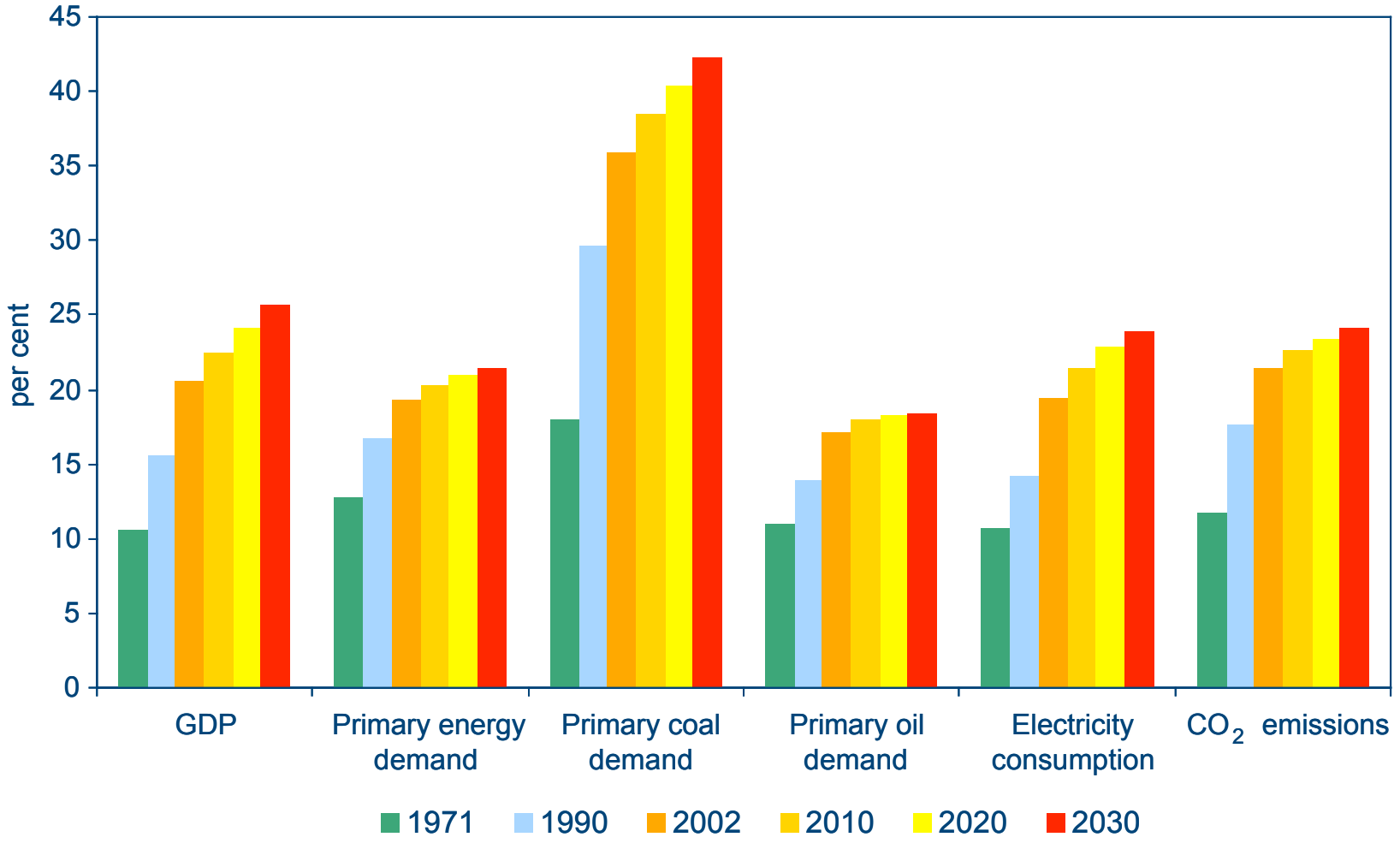
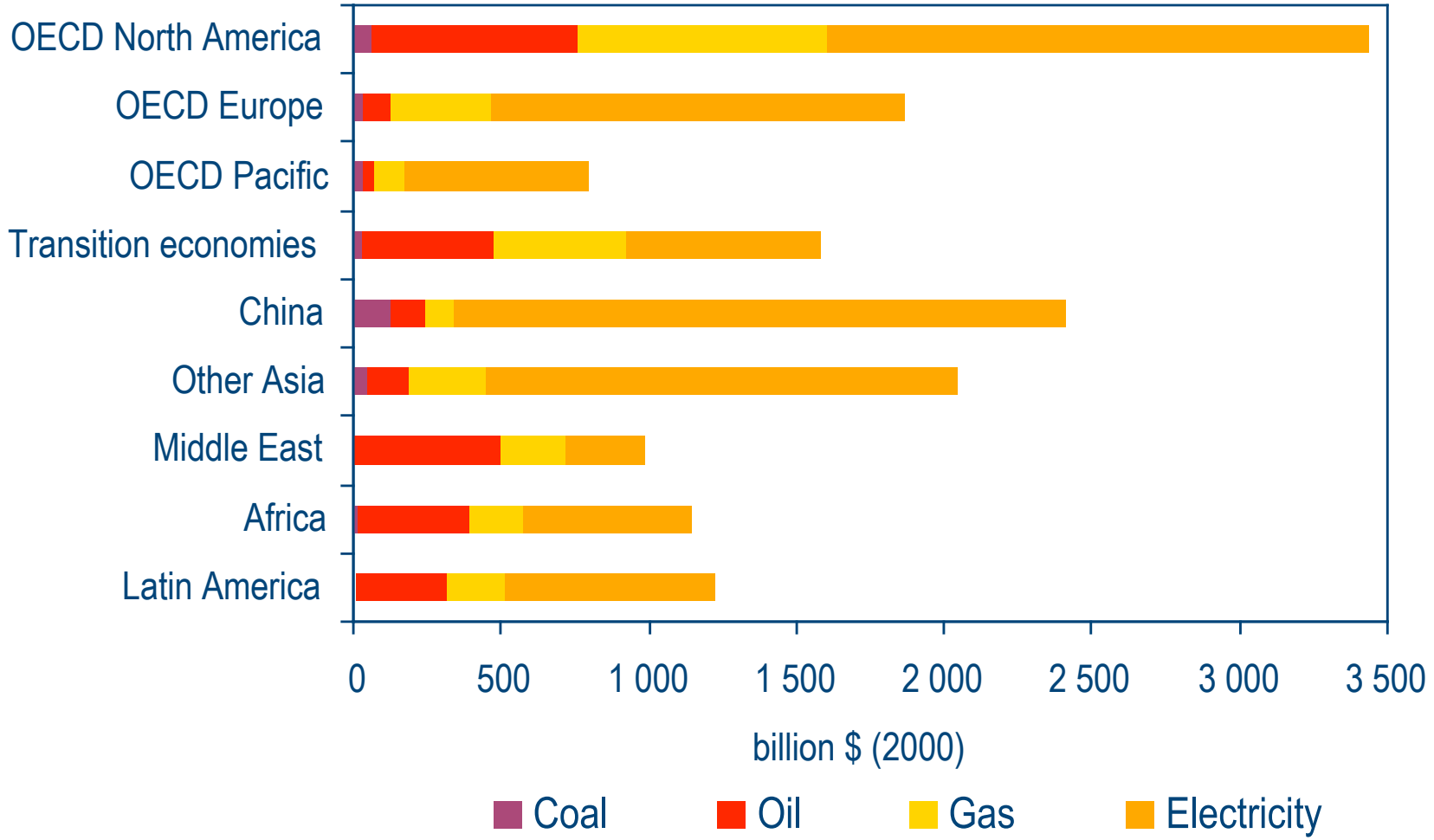
World Energy Situation & Its Implication

1. **Fossil fuel age continues and oil remains the leading fuel**
2. **Two-thirds of the increase in world energy demand upto 2030 comes from developing countries, especially in Asia**
3. **Increased vulnerability to supply disruptions**
4. **Rising CO2 Emissions**
5. **Huge investment in energy sector**
6. **International cooperation needed**

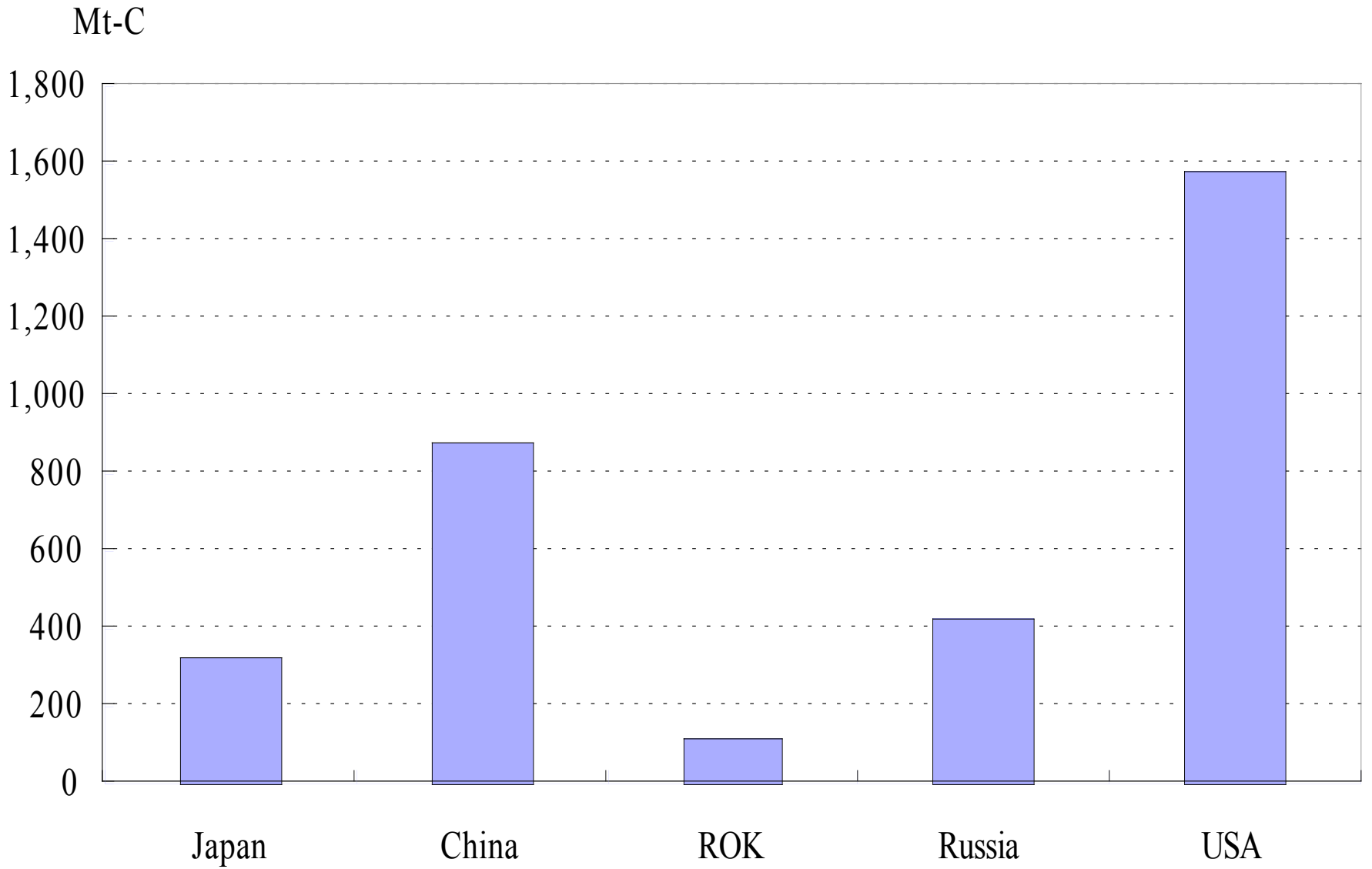
NEA's Share in the World:IEA



Cumulative Energy Investments: 2003-2030



CO_2 Emission 2000



Sources:IEEJ "Handbook of Energy & Economic Statistics in Japan"

Common Concerns about Energy in NEA (1)

1. Increasing Importance of Stable Energy Supply

→ reduced volatility in oil markets

→ long-term contracts of natural gas

→ nuclear safety and waste disposal

→ reliable energy trading partners

Common Concerns in NEA (2)

2. Reducing the environmental damage from energy usage:global & local environmental

   →regulation, gas & nuclear development, renewable energy, CO2 storage

3. Improvement of energy efficiency

→utilization of market mechanism

Energy Policy in 21st Century in NEA

- Assurance of Energy Security
- Improvement of Energy Efficiency
- Harmonization with Climate Change

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International Cooperation

& Market Mechanism

Role of Electricity:a New Path to secure and competitive energy in carbon-constrained world

- on the supply side, the question of meeting climate change obligations at lowest cost and potential advances in power generation technology
- on the demand side, advances in efficient electro-technologies such as heat pumps and the potential of electricity in transport.

Key Trends Surrounding Electricity :'91-'30

Economy:

(1) Low Oil Price⇒High Price ⇒Oil Price level and Volatility ?

(2) No CO2 Price ⇒Low CO2 Price ⇒Level of CO2 Price?

Technology:

(1) No Extension of Nuclear(Dash for Gas in EU) ⇒Nuclear Back ⇒Extension of Nuclear ?

(2) Growth of Hydro, Solar, Wind ⇒Government Subsidies of Renewables

Key Trends Surrounding Electricity :'91-'30 (2)

Regulation:

Government Regulation ⇒Deregulation⇒Post-Liberalization ?

Market:

Regionally monopolized ⇒ Competitive and internationally integrated

Business Model:

Vertically Integrated Companies⇒Multi Utility ⇒Pan-NEA Model in a Globalized World?

Three Pillars for the Integration of Power Market

(1) market structure and rules,

(2) standards of environmental protection and nuclear safety,

(3) technical infrastructure ensuring security of supply

Barriers to open market and cross-boarder trade

(1) Poor market design

(2) Inconsistent regulatory models

(3) Insufficient investment in networks and power generation

(4) Limited interconnection capacity

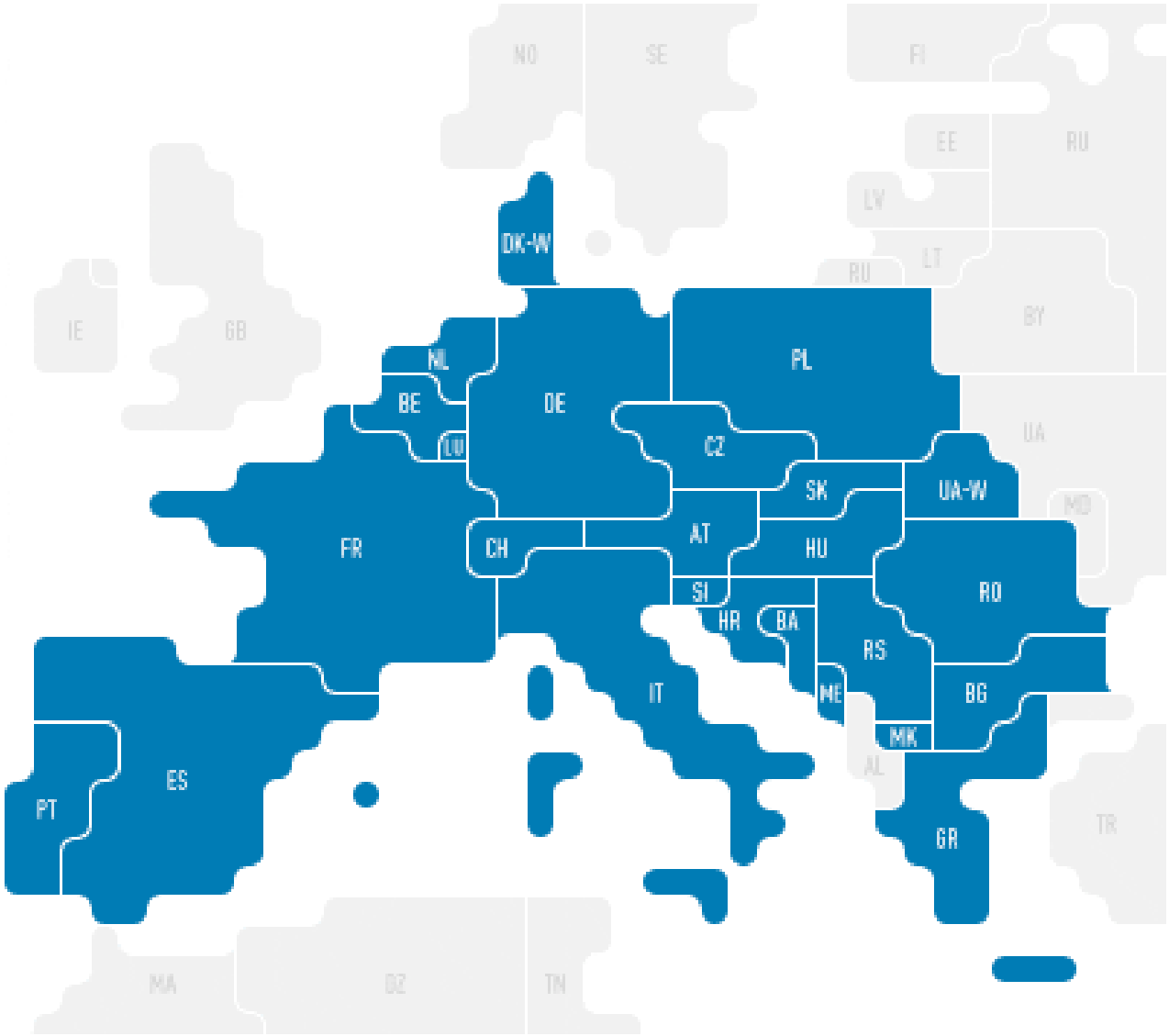
Developing International Trade

- **US and Canada**
- **EU: operated by UCTE and prospects for power market stretching across European continent⇒ “Lisbon to Vradivostok”**
- **ASEAN:Launching ASEAN Power Grid**
- **NEA?**

UCTE- The Union for the Co-ordination of Transmission of Electricity

- International association of transmission system operators in continental Europe, located in Brussels
- **Through the networks of the UCTE, about 450 million people are supplied with electric energy; annual consumption totals approx. 2300 TWh.**

UCTE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EU's European Neighbourhood Policy

- **Enlargement of European electricity and gas market**
- **The market is based on common standards governing market access, environmental protection and safety rules.**
- **Three key mechanisms established:**
- **EU-Russia Energy Dialogue,**
- **EURO-Mediterranean Energy Partnership**
- **The initiative for a South-east European regional energy market**

NEAEF proposes the creation of NEA version of EU

- **To start with the integration of infrastructure in energy (gas and electricity), transport and communications in NEA countries**
- **Their availability and efficiency encourage entrepreneurship and investments, leading to economic prosperity in the region.**

Integration of regional infrastructure is tough goal in NEA

- **The region is geographically diverse and its economies are at different level of**
- **development**
- **Funding for infrastructure investment might be also the biggest problem**
- **Despite the difficulties, NEA should make the development of infrastructure linkage one of its primary goals**

NEA's Energy Strategy

1. **Energy savings: supply side and demand side - the massive potential for China**

2. **Development of domestic energy: coal and nuclear**

3. **Diversification of energy import markets**

   - the use of Siberian and Central Asian gas

4. **Introduction of new market system for electricity and gas sector**

NEA Power Grid

- **Improvement in the reliability and quality of electricity**
- **Economic benefit through sharing reserve margins**
- **Full utilization of scale economies**
- **Commercial export and import of electricity**
- **More efficient output and lower generating costs**

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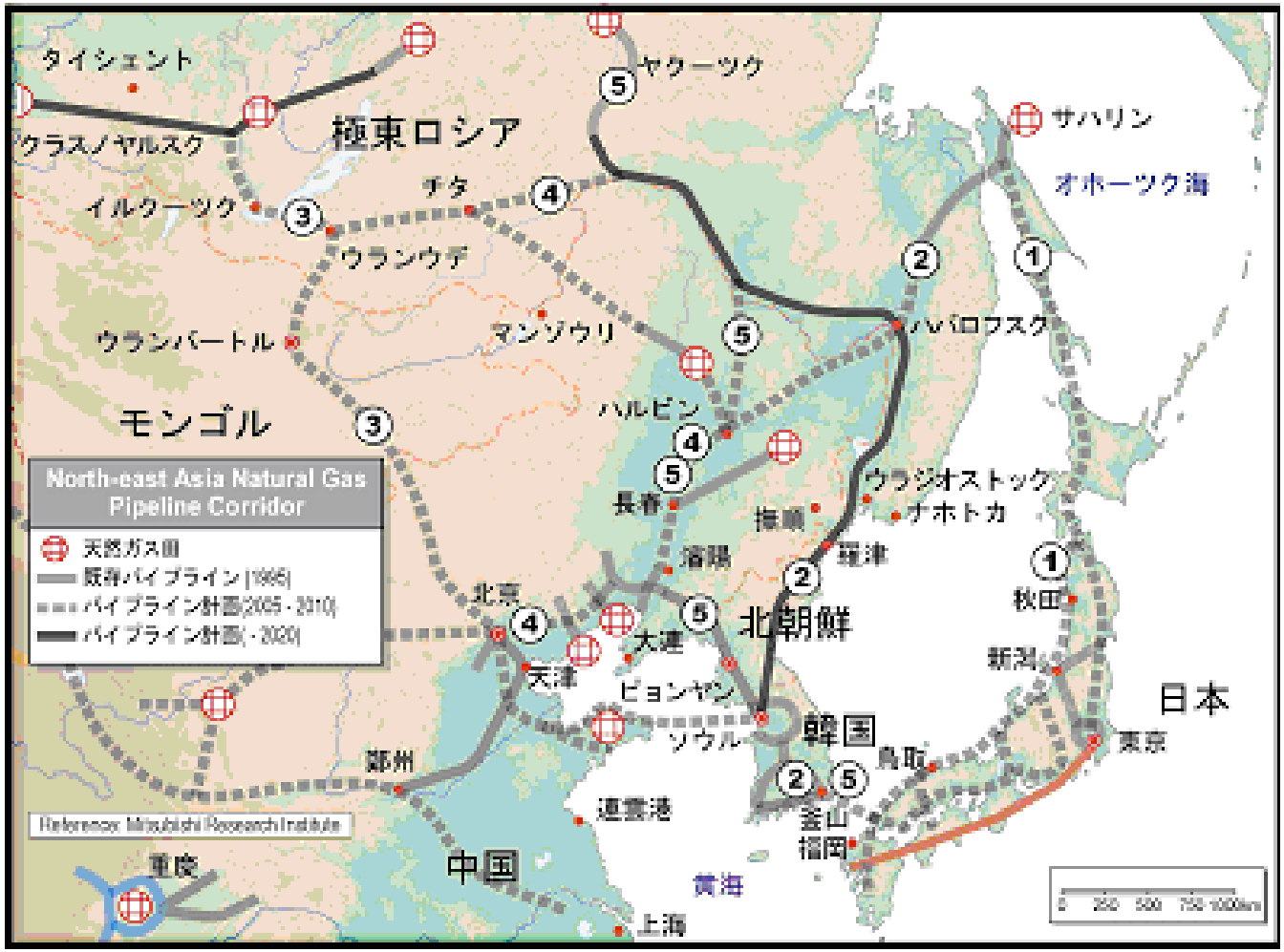
The grid should safeguard against the spread of a disturbance in one system to the other

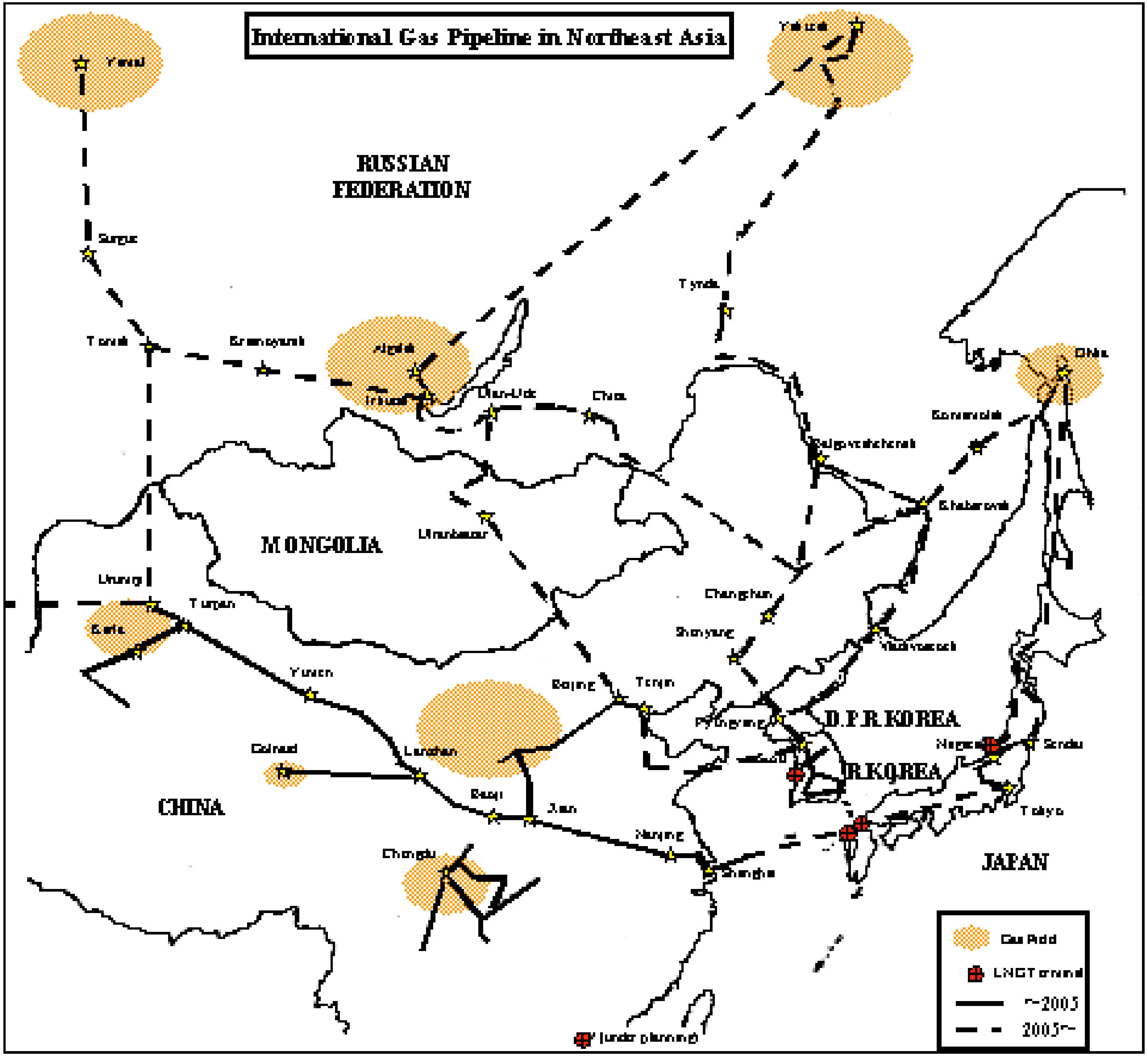
Transmission Lines

From NIRA

Natural Gas Pipelines



From NIRA


International Gas Pipeline in Northeast Asia
RUSSIAN FEDERATION
MONGOLIA
CHINA
D.P.R KOREA
R.KOREA
JAPAN
Tynda
Khabarovsk
Vladivostok
Changchun
Shenyang
Beijing
Tianjin
Pyongyang
Lanzhou
Nanjing
Shanghai
Chengdu
Tokyo
Sendai
Turpan
(under planning)
Gas Field
LNG Terminal
~2005
2005~

Why not start now with feasibility study of NEA power grid for the future prosperity and sustainable development of this region?