

Asian Perspective on Smart Grids

SMART GRIDS CONFERENCE 2011
Linz, Austria

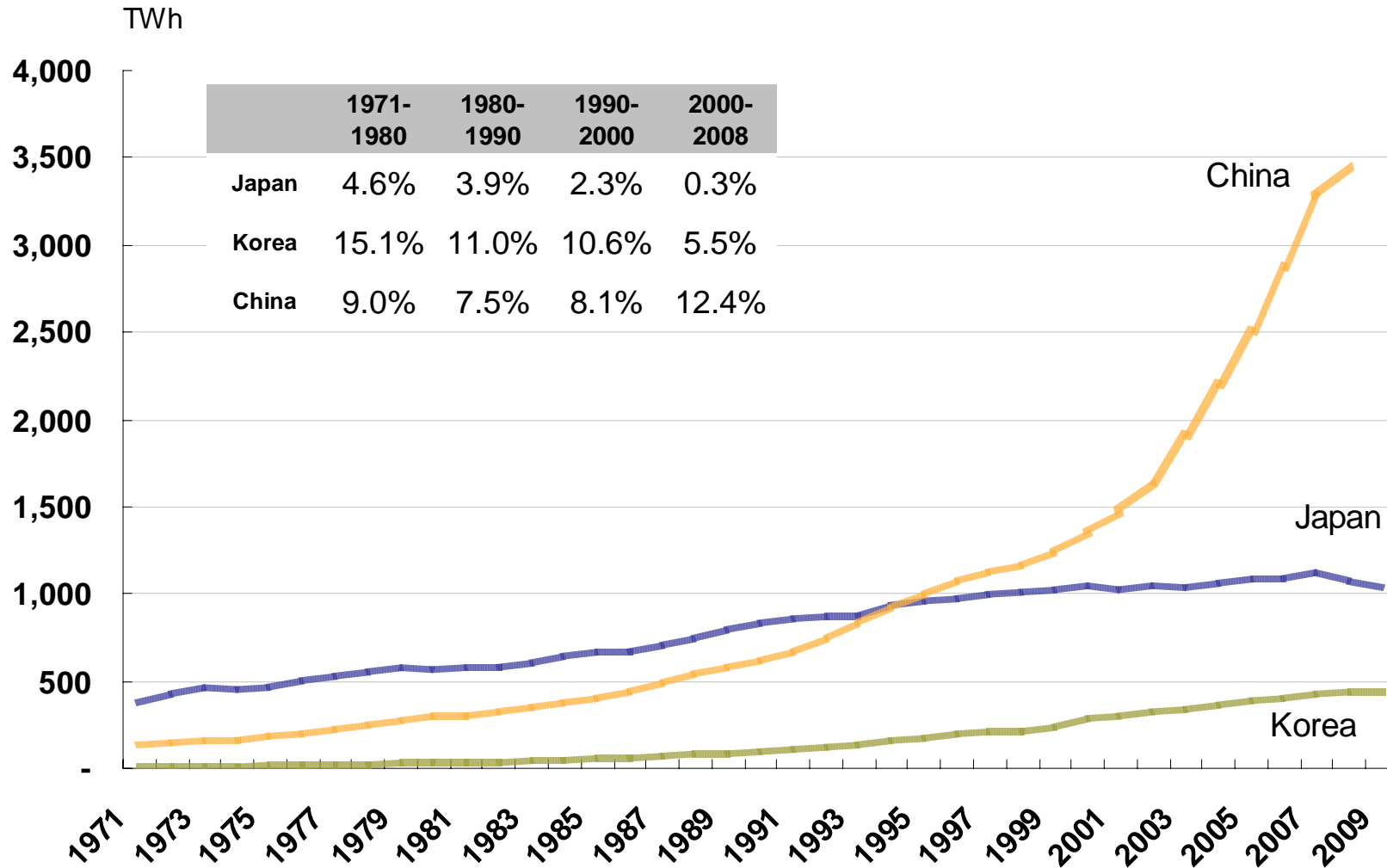
May, 2011

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Electricity Generation



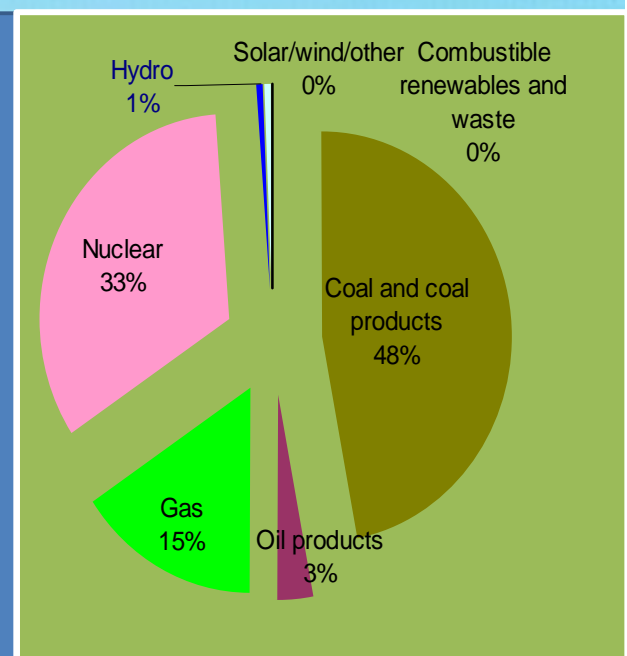
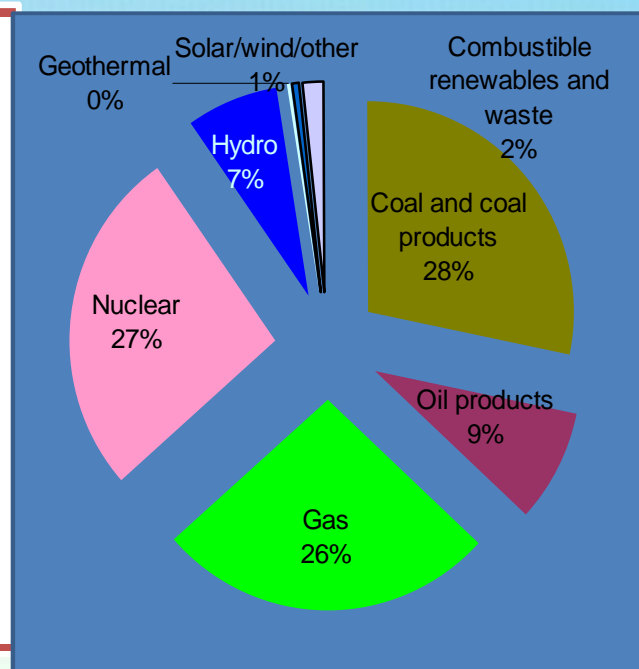
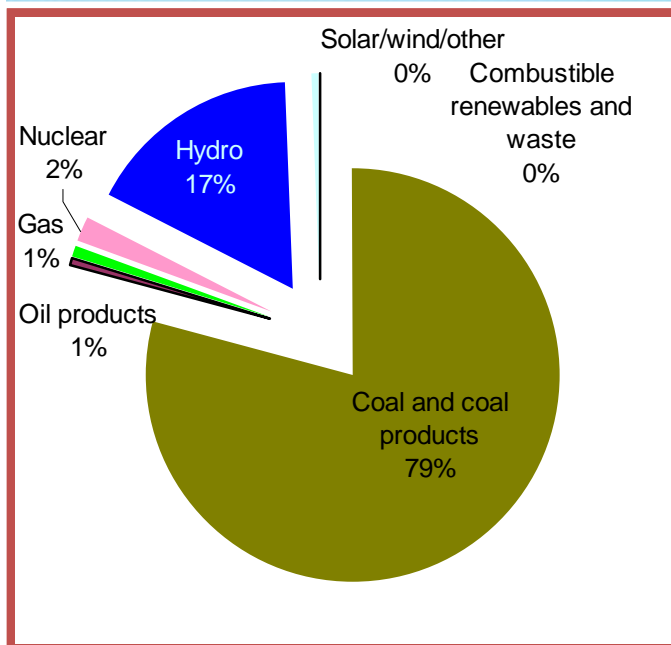
Source: IEA (2010), Energy Balances of OECD and Non-OECD Countries. Note: Japan and Korea data are available upto 2009, and China data is available upto 2008.

Electricity Generation Mix

China (2008)

Japan (2009)

Korea (2009)

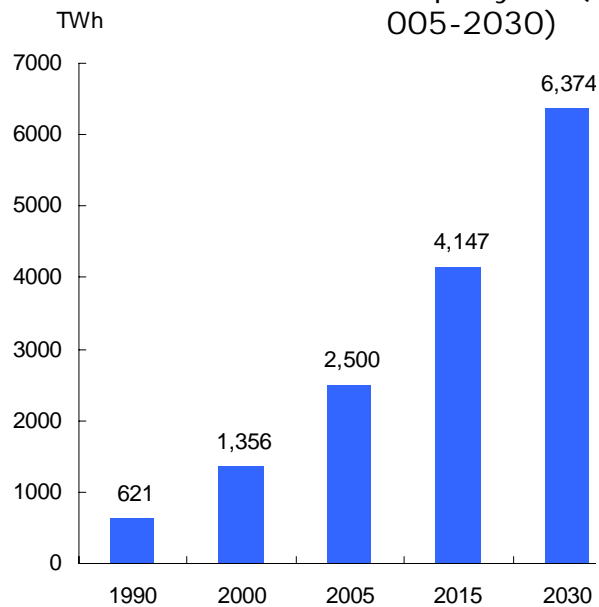


Source: IEA (2010), Energy Balances of OECD and Non-OECD Countries. Note: Japan and Korea data are available upto 2009, and China data is available upto 2008.

Electricity Generation Outlook

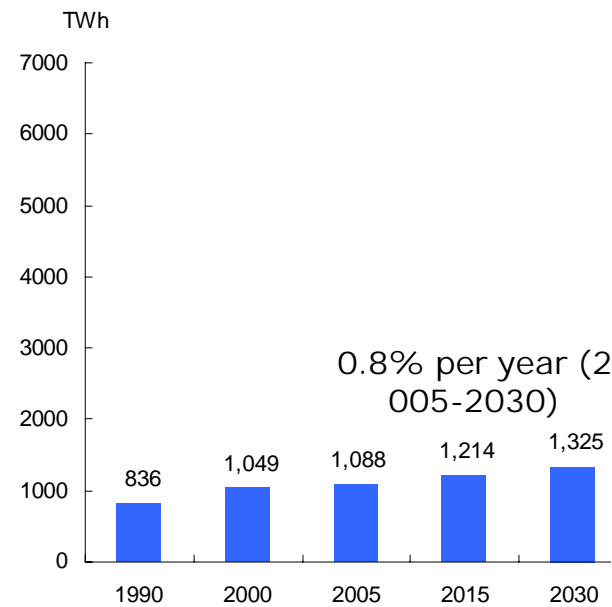
China

3.8% per year (2005-2030)



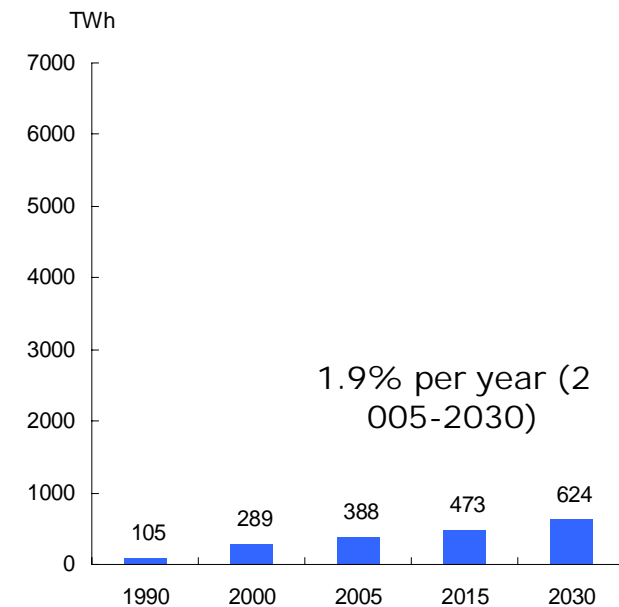
Japan

0.8% per year (2005-2030)



Korea

1.9% per year (2005-2030)



Source: Asian Development Bank (2009), Energy Outlook for Asia and the Pacific.

1990



Courtesy of Mother Earth Investment AG

2006



Courtesy of Mother Earth Investment AG

Beijing - June 29, 2007



Map of China Power Grid



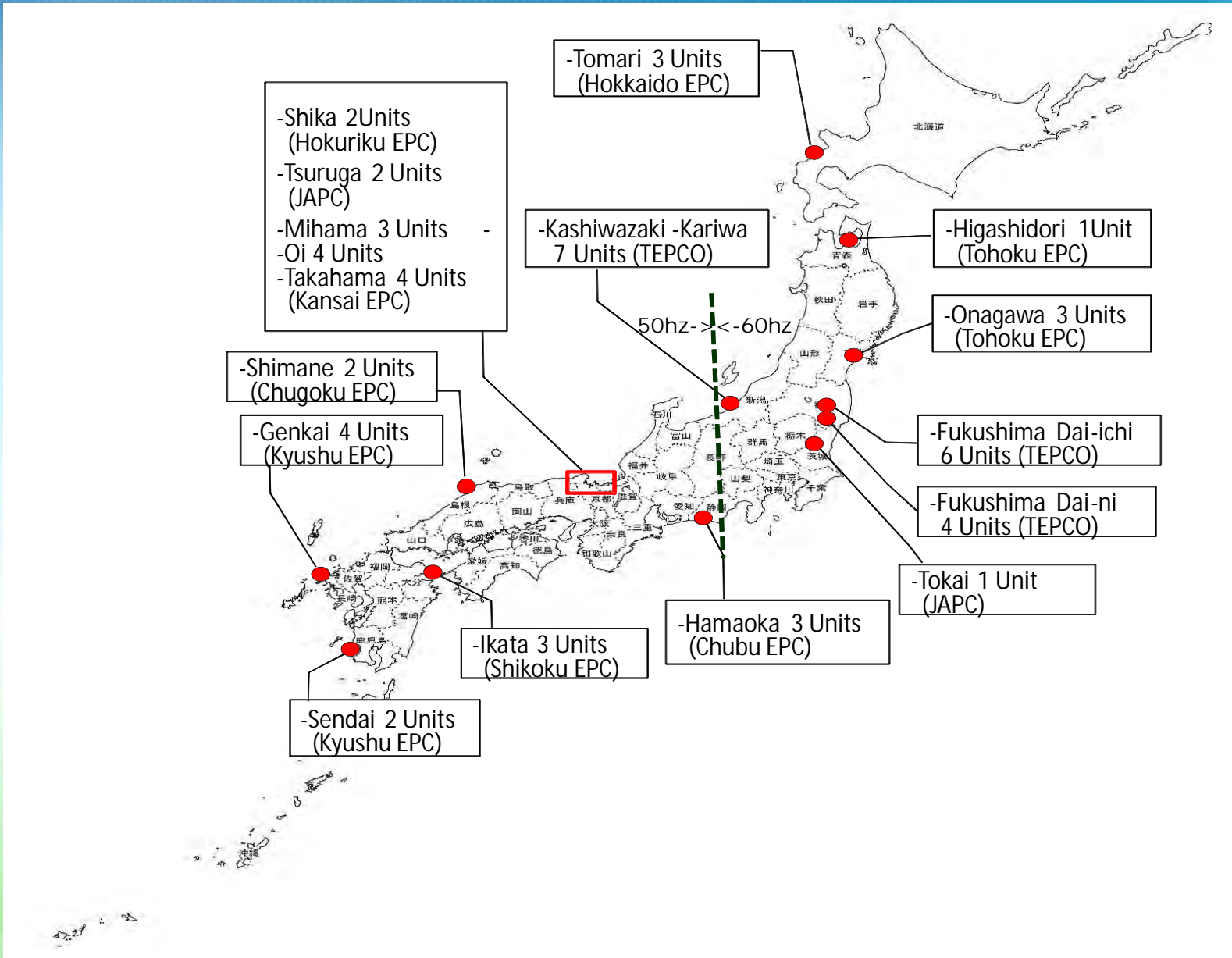
North Power grid Co.: Beijing, Tianjin, Hebei, eastern Shanxi, Inner Mongolia(part), Shandong

Smart Grids – Implementation in China

- During the 12th five-year period, the State Grid plans to invest 500 billion yuan (\$ 77 billion) to develop “strong smart grids” that can supply electricity without interruptions through enhancing transmission systems and introducing smart grids.
 - The Ultra-High Voltage (UHV) alternating current (AC) power grids, and 11 UHV direct current (DC) transmission projects -> UHV grid network to represent 40,000 km.
 - UHV grid will serve as backbone and subordinate grids will be coordinated at all levels.
- The company intends to construct 11 types of smart grid pilot projects.
 - 67 smart substations
 - Automatic distribution system in 19 municipal
 - 50 million smart meters
 - 25 intelligent communities/buildings
 - FTTH for 62,000 households
 - Integrated Demonstration Project of Smart Grid in Sino-Singapore Tianjin Eco-city
 - 20 GW wind power
 - 88 standards on smart grid

Nuclear Power Plants in Japan

54 units (30 units of BWR and 24 units of PWR, total 49GW) in 17 sites.



Smart Grids – Implementation in Japan

- “Council on next generation energy and society system” was formed in 2009 to integrate various study groups related to smart community under the Agency for Natural Resources and Energy (ANRE).
- ANRE conducts feasibility studies in four areas (Yokohama, Toyota, Kyoto, and Kitakyushu).
- Private companies (Japan Wind Development Corporation, Toyota Motors, Panasonic, and Hitachi) jointly conducts a feasibility study on smart grid at Rokkasho village in Aomori Prefecture

Smart Grids – Implementation in Korea

Low Carbon Green Growth

Challenges

Energy Climate Era

Economic Growth

Solution

Low Carbon Green Growth
(including Smart Grid)



Korea National Roadmap

Pave the way for low carbon, green growth through a Smart Grid

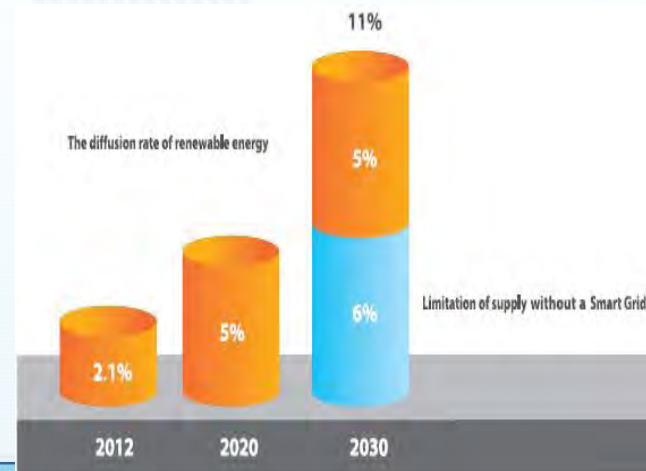


	Build a nationwide Smart Grid	
	Build a Smart Grid across metropolitan areas	2030
	Build a Smart Grid Test-bed	2020
2012		
Smart Power Grid	<ul style="list-style-type: none"> Build a monitoring & control system of the power grid Build a failure prediction & automatic recovery system of the power grid 	
Smart Place	<ul style="list-style-type: none"> Distribute nationwide smart meters Build an automated energy management system 	
Smart Transportation	<ul style="list-style-type: none"> Build a nationwide charging infrastructure Build an ICT-based electric vehicle operating system 	
Smart Renewable	<ul style="list-style-type: none"> Create a large-scale renewable energy generation complex Develop large capacity energy storage devices 	
Smart Electricity Service	<ul style="list-style-type: none"> Develop a various pricing system Develop consumers' electricity trading system 	

National Goal

CO₂
Korea's CO₂ Emission Reduction Goal
30%

30% Reduction from the 2020 Forecasted Amount (BAU)

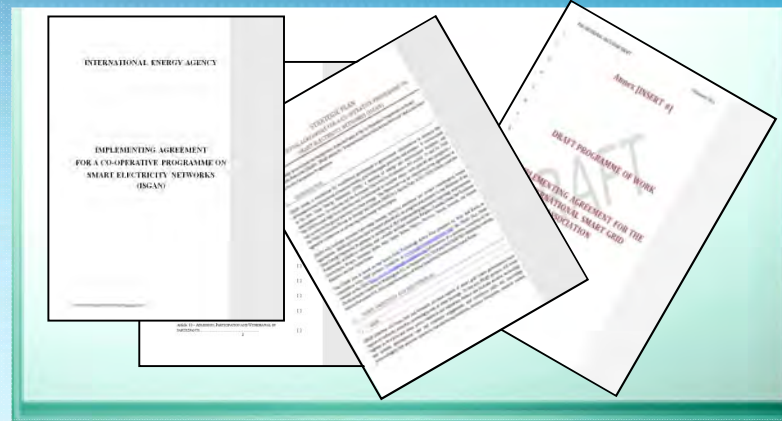


Major Challenges for NE Asia

- Nuclear Accident in Japan and uncertain future of Nuclear power
 - As of 2008 Nuclear shares 13.5% of the world TPES
 - China 13 units in operation, 25 units under construction
 - Japan 54 units present, 9 units planned
 - Korea 21 units in operation, 7 units under construction and 10 under planning
- High energy prices incl. oil price
- Absence or lack of energy resources to meet domestic demand
- Export-oriented, manufacturing-based economy
- Inelastic demand with robust growth
- Limited NRE potential in Korea and Japan

Korea's ISGAN Secretariat Role

Strategic Plan/Program of Work



Cooperation



Information/DB Management





Thank You !

Vielen Dank !

