KEPCO's Progress & Future of NEA Supergrid

2017. 10. 30.
1. Background & Purpose

2. Current Status & Progress

3. Challenges for the Future
1 Background & Purpose
### Paradox: Renewable Energy Resources

#### Renewable Energy Resources vs Demand

- Unevenly distributed renewable energy resources
  - The area rich in renewable energy resources is remote from demand areas

  "More renewable energy resources, less demand"
Paradigm Shift on Supergrid

New paradigm

Past
- To overcome power shortage
- To enhance the stability of power system securing power reserve

Present
- To integrate diverse energy sources
- To make effective use of electric power through power trading
Mutual Benefit in Northeast Asia

- Rich Resources (Mongolia, China, Russia)
- High Demand (China, Korea, Japan)
- Different power peak demand
- Air Pollution Issue due to Coal-fired Power Plants

<table>
<thead>
<tr>
<th>Economy</th>
<th>Effective use of electric power</th>
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<tbody>
<tr>
<td>Environment</td>
<td>Utilization of eco-friendly resources</td>
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<tr>
<td>Reliability</td>
<td>Mutual power management</td>
</tr>
<tr>
<td>International Cooperation</td>
<td>Expanding economic exchanges</td>
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</tbody>
</table>
Status of Northeast Asia

- European Supergrid
- USA-Canada
- SIEPAC Project
- Brazil-Paraguay
- ASEAN Power Grid
- Turkey-Saudi
- Israel-Jordan
- European-Africa connection
- South African Power Pool
- NO Interconnection

**Status of NEA**

- **Population**
  - 80%
  - 20%

- **GDP**
  - 77%
  - 23%

- **Trade**
  - 81%
  - 19%

Source: CIA the World Fact Book, IMF
2-1 KEPCO’s Vision of NEA Supergrid

Vision

- Joint development and utilization of renewable energy in NEA
  ⇒ Joint strategy for global climate change & environmental pollution

KEPCO’s NEA Supergrid Concept
2-2 KEPCO’s Progress

Major Progress / China-Korea-Japan

- **MOU on Joint Promotion of Power Grid Interconnection**
  - ‘16.03
  - between SGCC (China)-KEPCO-SoftBank (Japan)-Rosseti (Russia)

- **Joint Pre-F/S on Mongolia-China-Korea-Japan Power Grid Interconnection**
  - ‘16.06 ~ ‘17.03
  - between SGCC-KEPCO-SoftBank

Smart Energy Creator, KEPCO
KEPCO’s Progress

Major Progress / Russia-Korea

- Feasibility Study for Korea-Russia Power Grid Interconnection
  - KEPCO, KEEI, Korea University, Yulchon LLC
  - 12.10 ~ 14.09

- President of Korea proposed NEA Supergrid Establishment
  - Eastern Economic Forum in Vladivostok, Russia
  - 17.09
3 Challenges for the Future
### 3-1 Potential Risks in Supergrid Project

#### Risk Factors

<table>
<thead>
<tr>
<th>Factors</th>
<th>Rank</th>
<th>Risk Index(%)</th>
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<tbody>
<tr>
<td>Policy</td>
<td>1</td>
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<tr>
<td>Financial</td>
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<td>Planning &amp; Consenting</td>
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<td>Operational</td>
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<td>Technical</td>
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<td>50.0</td>
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Source: Dr. McKinstray, the European Supergrid – Messiah or Pariah, 2013

Policy, Financial, Planning & Consenting, Political Risks are much bigger than Technical and Operational Issues.
3-2 Governance Establishment

Public: Inter-Governmental Agreement (IGA)
- Joint declaration of NEA Supergrid Promotion
  - Mitigate Policy/Political Risks
  - Less uncertainty & More comfort to the shareholders
- Principles & Foundation for mutual cooperation

Private: Joint Development Agreement (JDA)
- How to develop and implement NEA Supergrid
  - Mitigate Financial/Planning & Consenting Risks
- Define: Business model, Roles of each Party,
  Project development schedule, Financing plan, etc.
Challenges in the Future

Cooperation Field

- Business Model
- Regulatory Framework
- Cooperation & Consensus
- Taxation
- Power Trading Mechanism

Feasible & Bankable
Towards One Asia
Thank you