Korea-China Power Grid Interconnection

2019. 10. 24

KEPCO
1. Cross-border Interconnection
2. K-C Project Progress
3. Project Effectiveness and Issues
Cross-border Interconnection

Electricity Demand

North America

Europe

Asia
Cross-border Interconnection

Interconnection in Europe

36 countries
43 power utilities

EU and ENTSO-e drive cross-border interconnections

Now 2018,
423 interconnectors (’18.12)
467 TWh Exchanged (’18.12)

Until 2040,
100 more interconnectors

source: ENTSO-e
Cross-border Interconnection

Interconnection in North America

First interconnector in the world (1901)

Now 37 interconnectors between U.S. and Canada

74.5GWh Exchanged in 2018

Further 6 interconnectors (5GW) until 2025

"Enhanced flexibility and reliability of North America power grid"

* USA, Canada, Mexico summit (’16)

source: Canadian electricity association
Cross-border Interconnection

Northeast Asia

No Interconnection
Major Progress (2016~2017)

- **‘16.03** MOU on Joint Promotion of Power Grid Interconnection between SGCC(China) - KEPCO - SoftBank(Japan) - Rosseti(Russia)
- **‘16.06 ~ ‘17.03** Joint Pre-F/S on China-Korea-Japan Power Interconnection between SGCC – KEPCO - SoftBank
- **‘17.12** MOA on Joint development of China-Korea Power Interconnection between SGCC-KEPCO-GEIDCO  ※ MOU between Korea-China
2 C-K project Progress

Review Study (2018)

Preparing JDA (2019)

MOU/MOA (Memorandum of Understanding)

Joint Study

JDA (Joint Development Agreement)

SHA (Shareholder’s Agreement)

Construction

KEPCO – A Smart Energy Creator
## Example of Project Development

### The Ancient History (9 years)

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<td>BE converter station relocation</td>
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<td>FID and EPC contract signing</td>
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### Delivery phase (4 years)

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<td>Cable Manufacturing</td>
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<td>Converter Construction: Civil works</td>
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<td>Converter Construction: Electrical installation</td>
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### Key Details

- **HVDC 400kV – 1,000MW**
- **140km (130km submarine cable)**
- **JV Incorporated**
- **Permitting**: 6 years
- **Feasibility Study**: 3 years
- **Procurement**: 6 years
- **Engineering**: 2 years
- **Manufacturing**: 2 years
- **Installation**: 2 years

Source: Nemo Link
3. Project Effectiveness

Stability of Power Supply

- Reduced power flow toward northern area with 2.4GW direct access to northern (metropolitan) area
- The larger the total grid, the larger the renewable energy accommodation
- Increased grid reliability through overcoming of “Grid Island”

China 2.4GW
3 Project Effectiveness

Social Benefit

- Elevated Cooperative Tie among Northeast Asia (Effectiveness of Energy Swap)
- Price reduction effect with low-cost generation (EU saves annual generation costs €2bn to 5bn in 2030)
- Technical development and Creation of jobs
Co-developing Renewable Energy

- **Renewable Energy Development of Gobi Desert**
- **Interconnection between China and Mongolia**

**Wind in Gobi**

- **Wind**: more than 8m/s

**Solar in Gobi**

- **Solar**: 270-300 sunny days in a year, 4.3-4.7 kWh/meter or higher per day

*Source: Mongolia government*
Thank you