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Session 1: Future Ready Power Grids-Practical Solutions for Grid Modernisation UK Case Studies

Presented By

Cathy Chen, Associate Director, KPMG

INTRODUCTION

- UK Grid Challenges & Policies
- Technological Advancements & Grid Management
- Case Study: Interconnectors
- Key Takeaways & Opportunities

UK Grid Challenges & Policies

- **Delays in Grid Connection**
  - Backlogs due to a 'first come, first served' policy
  - Implementation of a 'first ready, first connected' framework
  - Accelerate connections for projects that are ready
- **Recent Policy Developments**
  - Plan for Change initiative
  - Planning and Infrastructure Bill aims to unlock £200bn
  - NESO Beyond 2030 Report recommendations

Technological Advancements & Grid Management

1. **Smart Grid Technologies**
   - Use of AI and machine learning for real-time grid monitoring and predictive maintenance
   - **Example:** The National Electricity System Operator's Virtual Power Plant (VPP) project; Vidrona

2. **Battery Storage & Grid-Scale Solutions**
   - Deployment of large-scale battery storage
   - Expansion of pumped hydro storage for long-duration energy balancing
   - **Example:** The Pillswood Battery Energy Storage System in Yorkshire; Statera Energy’s 680MW BESS

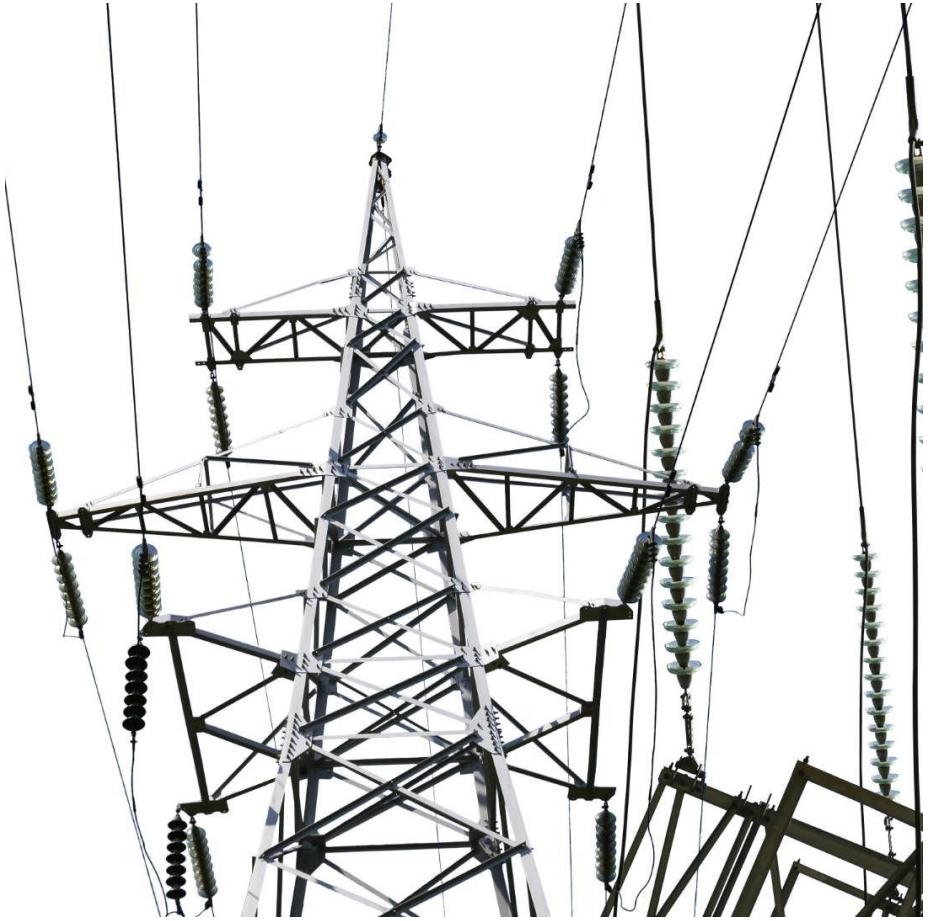
Technological Advancements & Grid Management

3. Dynamic Grid Balancing & Demand-Side Management

- Time-of-use tariffs and smart meters
- Digital twins/ active network management
- **Example:** The Demand Flexibility Service; Flock Energy

4. Multi-purpose interconnectors (MPIs)

- Support the creation of integrated electricity markets where power can be traded across borders, enhancing competition and improving energy pricing efficiency
- **Example:** North Sea Wind Power Hub (NSWPH); Iberian interconnector



INTERCONNECTORS CASE STUDY

- The UK currently has 5 operational DC interconnectors and is planning to add 2 more by 2030.
- Key interconnectors include:
  - **IFA1 & IFA2 (France)** – 2000MW & 1000MW
    Nemo Link (Belgium) – 1000MW
  - **BritNed (Netherlands)** – 1000MW
  - **Viking Link (Denmark, upcoming)** – 1400MW
  - **NSL (Norway)** – 1400MW
- Best practices:
  - Policy measures
  - Business and commercial model considerations
  - Procurement and supply chain
  - Manufacturing
  - Marine and environmental protection
  - Operations and maintenance

KEY TAKEAWAYS

- **Greater affordability of energy**
  - Role of interconnectors
  - Competitive auctions

- **Public-Private Partnerships for Grid Modernisation**
  - Demand-side response
  - Market-based services
  - Interconnectors third party management

- **R&D and Innovation**
  - Government funded programmes include Flexibility Innovation Programme

- **Risk sharing and financing mechanisms**
  - Green bonds
  - Loan guarantees

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THANK YOU

For discussions/suggestions/queries email: ***isuw@isuw.in***

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Links/References (If any)