Energy Policy & Regulation: GB and China

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nationalgrid
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Why China?

Oct 2015: UK & China sign the Clean Energy Partnership – agreeing to work together to transition to the low carbon economy

From UN Environment Emissions gap report
Dec 2018

From “Mapping China’s climate & energy policies” British Embassy Beijing, Dec 2018
Why National Grid?

- A long-term member of the EPRG’s Energy Policy Forum
- Committed to sustainable development and own GHG emission reductions
- A particular perspective from participating in and observing UK energy policy and GB market developments

Why Me?

- Visit to Beijing with Prof David Newbery Nov 2016
- Met visitors from China:
  - North China Electric Power University 24th Nov 2016
  - Energy Research Institute, National Development and Reform Commission 17th Jan 2017
  - State Grid’s Energy Research Institute 14th March 2017
- Visit to Guangzhou, Fuzhou, Beijing & Nanjing with Prof Michael Pollitt 17th-23rd March 2019
Previous learnings

China made significant industry restructuring steps:

- Separation of generation from network
- Formation >5 generating companies
- Created regulatory structures

There is significant technical, economic and policy expertise

Recent focus on meeting high demand growth securely

Has delayed structural improvements:

- Relatively high energy prices for industry
- Acute air pollution and significant CO2 emission challenges
- Potential dispatch biases (for coal with high curtailment of renewables)
Market pilots

8 spot market pilots announced 2017
Guangdong, Inner Mongolia, Zhejiang, Shanxi, Shandong, Fujian, Sichuan and Gansu

Guangdong Power Exchange:
2016: 13 wholesale companies approved
2017: New electricity trading, tx & dx regulation frameworks established
2017: Rules for inter-province electricity trading in CSG areas

What did we discuss? 1 - China focused

- Pricing role: efficiency, fairness or funding?
- Market performance - measuring success
- Pricing hydropower (market power issue?)
- Effects on coal-based long-term plans
- Market start: big-bang or phased?
- Reducing renewable curtailment
- Integrating dispatch layers
- Organising inter-province trading
- Effects of state ownership
- Effects on coal-based long-term plans

In 2017 Gansu curtailed:
- 12% wind = 41.9TWh
- 6% solar = 7.3TWh

“Energy enough for Singapore”
What did we discuss? 2 – more universal issues

Market monitoring
How and Who?

Integrating RES

Accommodating new retailers

Market design:
US LMPs or EU zones

Who decides tariff structures?

Market or rule-makers to determine spatial resolution?

Who decides network charge structures?

Benefits of smart/spot metering

Network charges for storage

Ancillary services

Accommodating new retailers

Market design: Ancillary services
Observations

China’s policy makers are focused on measures that will make the most of China’s enormous renewable investments. Seeking:

1. Dispatch improvements to give low marginal cost renewables priority (with pollution and CO2 emission benefits) while maintaining security

2. Short-run signals to inform consumers of low cost opportunities and drive best use of key transmission links & stores

Spot markets will also drive discovery of information for better development decisions

The task of figuring out how markets will work with the current coal-based central plans is complex. But parties are well informed:

• Actively discussing design and market issues
• Keen to learn from choices others have made
UK benefits?

Application of learnings from UK experiences can have big impacts on Chinese and hence global CO2 emissions

• Informs what is possible and shows more than one way of achieving it
• Highlights the trade-offs and critical issues for success and not so successful outcomes

A Einstein: “You do not really understand something unless you can explain it …”

• Reminds us that there may have been other issues and alternatives
Thanks to

Michael and David for inviting me (and putting up with me) on these visits

National Grid for letting me go

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