Energy policy in Ireland in the international context
Some implications for the electricity sector

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An outsider’s view

- Some key aspects of electricity regulation with strong links to the overall energy model
  - **SEM design & implementation:** evaluation & improvements
  - **Transmission grid:** the need for internal reinforcements & interconnectors
  - **Enabling demand response:** Advanced tariffs, smart meters & smart grids
  - **Wind generation:** integration at a large scale
  - **Innovation:** Bold visions of the future electricity sector

within the very specific Irish context (*small energy market, peripherality, strong fossil dependence, sustained economic growth*)
The SEM (1 of 3)

- Notable accomplishment
  - Time, harmonization level, institutions
- Orthodox design, reasonably “conservative” *(understandably)*
- Existing problems have been addressed with adequate regulatory instruments
- Time is required for the market to settle down & to identify shortcomings, while addressing any problems in need of a short-term solution

The SEM (2 of 3)

- **Interpretation of the Bidding Code of Practice**
  - Under complex market rules some guidelines for correct bidding behaviour are needed since just competition, even with scarce market power, is not sufficient to discipline the market agents
- **Capacity payment mechanism**
  - Current orthodox implementation, with minor on-going adjustments
  - The market is attracting sufficient generation capacity
  - Recent international experiences show how to improve the performance of this regulatory instrument
- **Determination of energy prices with complex bids**
  - This is an unresolved open issue elsewhere ➔ pending evaluation
- **Transmission network charges**
  - Locational charges become of essence when siting of new generation & load facilities is a major factor in the cost of transmission reinforcements
The SEM (3 of 3)

- **Dealing with structural market power**
  - Divestiture of assets & directed contracts are the right instruments, besides the constraints on bidding behaviour & monitoring the market

- **Compatibility with other EU markets**
  - Feasibility of an Ireland-UK-France “regional” market
  - Price determination (*the ex-ante vs. ex-post prices*) & gate closure

- **Demand response (to be commented later) & scarce development of the retail market**
  - Benefits of active retailing activity have been questioned elsewhere
  - However, demand response to market conditions (prices) is rightly attracting most attention

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Transmission grid

- Strong electricity & gas interconnections, as well as gas GNL terminals & large storage capacity, are the basis of security of energy supply in the absence of enough domestic energy resources

- Adequate investment in electricity transmission requires
  - Good information for prospective & present network users (*locational signals of different types*)
  - Low risk & sufficient remuneration of any well-justified network investments (adequate institutions & rules seem in place)
  - The NYMBY effect (*which sometimes has proved to be beneficial*) is a universal barrier to development of infrastructures

- Efficient utilization of interconnectors depends on sound market rules on both sides
Transmission grid
(Source: White Paper, 2007)

- “We will keep the electricity and gas network infrastructure as strategic assets within State ownership. These assets will never be privatised.”
- “We will, through EirGrid, publish a Grid Development Strategy in 2007 covering the period 2008-2025, which will set out the plans for the development of the transmission system over a 20 year horizon.” (GRID25, already published)
- “We will ensure through EirGrid’s Grid Development Strategy 2007-2025 and in light of the All-Island Grid Study the necessary action to ensure that electricity transmission and distribution networks can accommodate, in an optimally economic and technical way, our targets for renewable generation for the island to 2020 and beyond.”
- “CER has also been statutorily empowered to secure the construction of interconnectors and to regulate access to the interconnectors.”

Enabling demand response
(Eirgrid-GRID25)
Enabling demand response (1 of 2)

- “Growth in electricity demand in Ireland has been among the highest in OECD countries, fuelled by a rapid increase in population and economic growth.
- Final consumption in all sectors has steadily increased, with the residential sector providing the major impetus for growth over the period to 2020.
- Because of its small size, the isolated island nature of its generation, as well as high dependence on relatively high-cost fossil-fuelled generation, electricity prices in Ireland are among the highest in IEA European countries.”
- “It is laudable that the government has not attempted to interfere with prices, and has instead begun to focus on addressing the structural and domestic causes of high prices.” (IEA report on Ireland, 2007)
Enabling demand response (2 of 2)

“Electricity Demand Side Management (DSM) programmes have a key role to play in delivering energy efficiency by enabling suppliers, ESB Networks and EirGrid to plan better and to manage and modify customer demand. DSM also involves equipping consumers with the data and the means to monitor, manage and reduce their electricity demand...

The measures to be taken will include the progressive provision of real-time electricity displays linked to meters which will provide householders with real-time information on their electricity usage and its cost.” (Source: White paper, 2007)

Potential uses: consumer information, time-of-us-tariffs, security emergency actions, incorporation of on-site generation, metering, billing, energy audits

Wind generation (1 of 2)

Maintaining fuel diversity in electricity generation is a key challenge for Irish energy policy. Natural gas has significantly increased in the share of fuels for electricity generation.

The future estimated high level reliance on gas is generally seen as unsustainable from a security of supply perspective. The alternative scenario that the White Paper proposed (33% by 2020, now upgraded to 40%) will achieve greater diversity in the fuel mix, with gas contributing under 50% to electricity generation.

The White paper advocates for a “plan-led” approach to wind & other renewable projects
Wind generation (2 of 2)

- Critical open issue: Composition of a well-adapted future technology mix under strong penetration of intermittent generation sources (wind)
  - Implications on cost & reliability
  - This is a non-trivial modeling exercise
  - In principle no regulatory action on the future generation mix, if security of supply appears to be acceptable
- Analytical capabilities
  - "Energy policy is a highly complex area and needs a fully evidence based approach to policy making, drawing on scientific, economic, financial, environmental and other expertise and analysis. We need to enhance our analytical and forecasting capabilities in the field of energy policy in support of our strategic goals."
  
  (Source: White Paper, 2007)
**Innovation (1 of 3)**

- “Ireland already has a buoyant market in the supply of equipment and services to the energy sector, with both international and indigenous suppliers and service providers operating in the market place... There is therefore considerable potential for the Irish energy enterprise sector right across the energy areas, to grow significantly as a market-led knowledge based sector, characterised by innovation and driven by technological development. This sector can competitively serve Ireland’s energy needs and actively pursue overseas opportunities.” *(Source: White Paper, 2007)*

- Energy savings & efficiency via smart grids & smart meters is undoubtedly a field with much potential, here & elsewhere

**Innovation (2 of 3)**

- “Oil dependence in Ireland’s energy consumption stood at around 56% of TPES (total primary energy supply) in 2005 (47% in 1990)... It is currently expected to decrease only marginally... The government should consider urgent measures to effectively reduce this very high dependence... Strong action is needed to address oil demand growth in the transport sector, and the government should consider taking urgent action to reduce Ireland’s dependence on oil...”

- “…Regarding system integration, Ireland will be at the forefront in developing solutions for power grids in many other IEA member countries. It would be desirable for the Irish regulator and the TSO to widely share their experiences in developing solutions to this challenge.”

*Source: IEA Report on Ireland, 2007*
Innovation (3 of 3)

- Ireland seems like a particularly suitable place to introduce electricity as the primary energy vector for ground transportation
  - Use of private vehicles typically restricted to Ireland itself
  - Good technological platform in IT
  - Loading flexibility & distributed generation capability ➔ Complementarity with wind intermittency
  - Advanced concepts of PHEVs or “BetterPlace” could be introduced much earlier than almost anywhere else

Thank you for your attention