FLORENCE SCHOOL OF REGULATION

ROBERT SCHUMAN CENTRE

Common Challenges and best international practices in electricity sector reform

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Prof dr Leigh Hancher, Tilburg/FSR/Bergen

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The common challenge – a changing energy landscape

The energy system is critical to almost all aspects of our daily lives and fundamental to decarbonising the economy.

The way we use, store and source energy is significantly changing.

The energy landscape becomes increasingly complex as we rely more on domestic energy sources and less on imported fossil fuels.

Energy will be sourced from a wide range of low-carbon sources - often intermittent sources - such as wind, solar.

The demand side becomes as important as the supply side.

As a result, energy systems and their regulation and governance will need to be

smarter and more flexible

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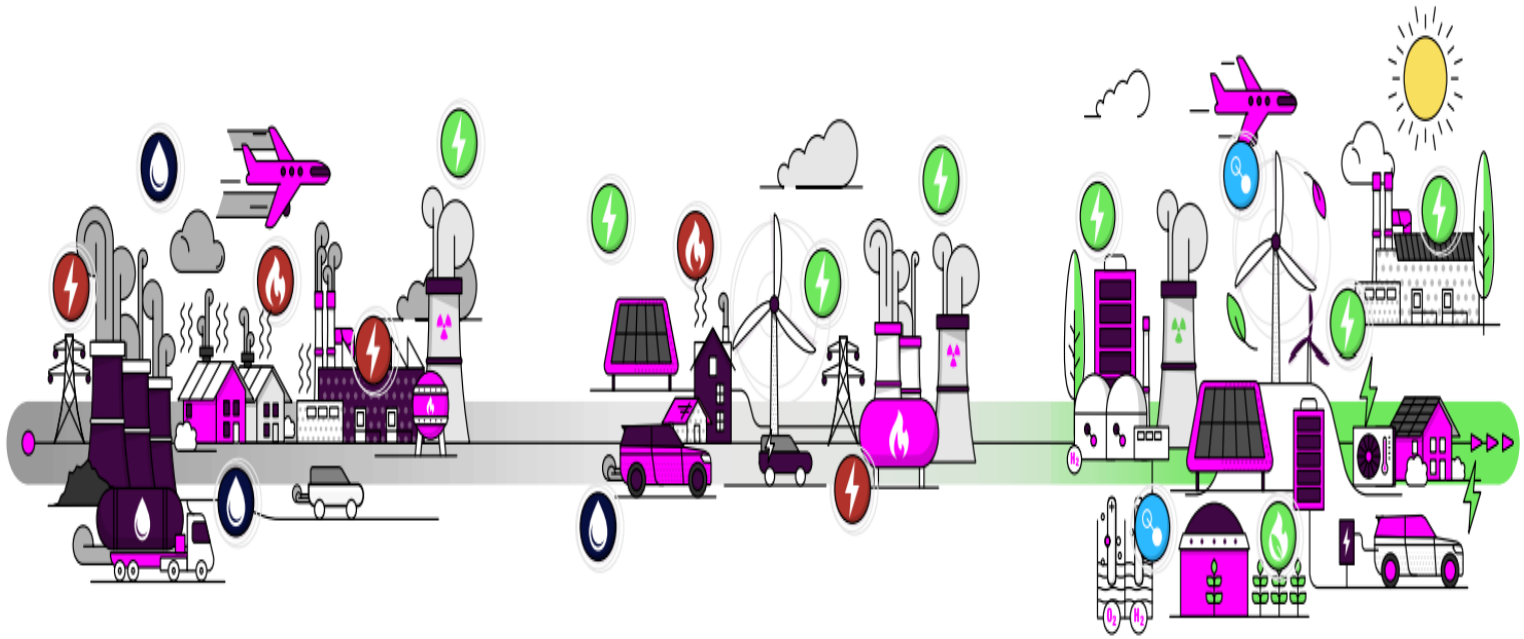

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A whole system challenge?

Achieving an energy transition in Sri Lanka - 70% RE by 2030 [and net zero by 2050] that boosts the economy, encourages competition as well as economic and social inclusiveness – is a hugely complex but urgent challenge.

It requires **whole system thinking** - collaboration across the energy sector, from homeowners and local businesses in their communities through to regional, national and international stakeholders.

How does this impact on current approaches to market design and regulation?

Are past best practices across the EU and elsewhere– for building markets - also relevant for the 'whole system' future?

Important to monitor market performance and outcomes (Mexico).

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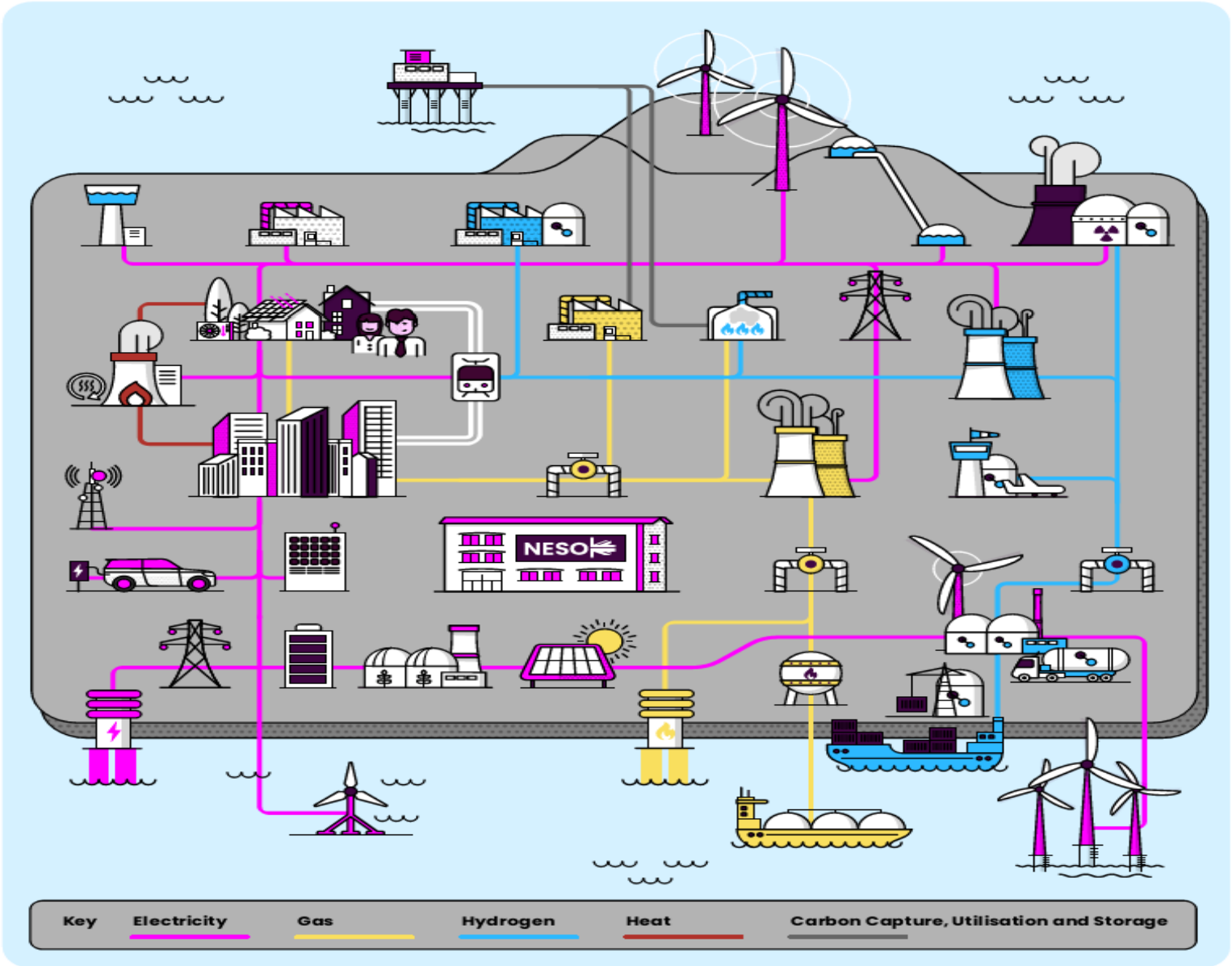

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Past approaches to past challenges

Creating markets but guaranteeing affordability and security or reliability of supply

See for early market reforms - first in the UK and Norway and then at EU-wide level; also in Latin America

Now – what is the future role of energy markets - instrumental in steering the energy transition?

But should markets also be complemented by a stable – predictable- but adaptive - regulatory framework that maintains technology neutrality and fosters innovation and resilience?

Key concepts

- 'OU' model of unbundling of generation/transmission (cf functional model – e.g. India)
- Open access to grids
- Promoting new market entrants
- Creating supply competition
- Independent regulation
- Promoting consumer protection but encouraging retail price competition
- Results? – mixed? **Short term focus**

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Promoting penetration of renewable energy(RE)

Can this be left to the market alone?

Best practices? EU is on track to meet its 2030 climate goals but ambitious net zero targets for 2050 require a faster-paced and deeper transition.

This increases the risk of imbalances in four crucial areas:

total available generation capacity,

the capacity mix,

system flexibility,

and network infrastructure.

NB – no scope for use of diesel for electricity production in modern economies ->phase out

Key concepts

- Binding v non-binding targets
- Subsidies, Single Buyer schemes, preferential connection/grid access

Results

RE consumption exceeds fossil fuel in EU by 2024

But

- Impact on energy intensive industry
- Impact on consumers
- Impact on grid design/topography

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Some emerging weaknesses in Europe's market design

In general - lack of investment in new generation and insufficient incentives to maintain some existing generation (too much focus on short term)

Initial reactions – UK introduces capacity market mechanisms (alongside energy only market) in late 2012 and most EU member states follow. Similar pattern internationally

[Norway is an exception – heavy reliance on hydropower]

REACTIONS

Supply side reforms

New types of subsidies – 'capacity mechanisms' (UK and all of EU except NL)

- To guarantee new investment -> as backup for intermittent RE generation
- To guarantee existing (fossil) capacity stays in the market

Demand side reforms

- New instruments to promote demand flexibility/demand side management (EU- wide)
- New players – aggregators (EU wide)

Results so far

- Many EU countries retain mostly fossil fuel generation as back up (gas/oil/coal) [but not diesel]
- Mixed reliance on demand side management measures – more success with industrial users – see eg NL, DK

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Current Market Design Reforms in the EU and UK

Maintain short term markets to signal price and merit order dispatch

Maintain wholesale market liquidity

But

Encourage longer term arrangements

To boost investor confidence

To reduce price volatility for users

Key concepts

- PPAs for RE (private)
- CfDs (public) for new generation

- CFDs replace feed in tariffs: offer more flexibility and better risk allocation – help avoid 'produce and forget' approach (Spain, Italy)
- Competitive tendering to allocate contracts/support

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Grid design

Interconnection - connecting markets

Upgrading transmission and distribution grids

Growing importance of (two way) distribution grids

Connection issues

Investment in networks and other infrastructure takes account of information about market prices but must also reflect other needs and priorities.

Decisions on infrastructure capacities may be used to steer the development of the energy sector and markets in the desired direction.

Key issues

- Massive investments versus flexibilization of demand (EU wide, Germany)
- Impact on user tariffs?
- Connection issues – establishing priorities? NL? Tender procedures?

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Governance and Regulation

The role of the independent regulator

The role of politics/policy - what about accountability?

[Different national approaches: constitutional issues – e.g. Norway, Germany versus UK, Netherlands]

Adequate implementation is key - eg Spain- regulatory decisions not complemented with the administrative capacity to handle those initiatives that arise from key regulatory decisions

- **Key concepts**
- Current EU approach - Regulatory Authority must have independence from government and from industry
- Must be adequately resourced (Belgium)

Results

- Limited (economic/market oriented) tasks
- Who sets wider policy goals – government or regulator? German debate-> political intervention?

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New types of regulation?

Energy regulators first established with a core duty of economic regulation, i.e. to control monopoly power and promote competition.

As rule-setters as well as market referees, they bring stability, predictability and confidence to regulated sectors.

Roles included ensuring

that markets run efficiently,

that consumers have access to good quality and affordable services,

that competition is upheld and

that a level playing field exists

New challenges

- The new 'Regulatory Energy Transition Accelerator' [RETA/The Accelerator] – offers a platform for collaboration between regulators to increase the pace of the clean energy transition and reach common climate goals.
- " While recognising the work of regulators is closely linked to market-specific factors, we believe they would benefit from expanded opportunities to learn best practices from experiences in different settings".
- RETA aims 'to enhance the capacity of energy regulators to contribute to decarbonisation of energy systems effectively, swiftly, and fairly".

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3 attributes of regulation that could make the net zero transition processes more effective?

dynamic,

adaptive,

and responsive

- Dynamism captures the need to move beyond static cost-based efficiency toward innovation-inducing long-term incentives.
- Responsive regulation moves back and forth, as needed for each regulatory challenge, between two ends of a spectrum: pure reward and punishment on one end, and self-regulation on the other.
- Adaptive regulation embraces uncertainty by preparing scenarios and setting up change drivers and thresholds (e.g., a certain percentage of EV penetration) to ensure faster response to evolutions that may be somewhat predictable.

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Conclusions

Important to anticipate a 'whole systems approach' to achieving the energy transition – to achieve 'net zero'

Energy markets – necessary first step -> instrumental in steering the energy transition

But must be complemented by

- a stable, predictable but adaptive regulatory framework based on consultation:

- that maintains technology neutrality and fosters innovation and resilience.
- that guarantees independence

Key concepts

- Stronger focus on the longer term
- Stronger focus on innovation/digitalisation
- Stonger focus on decentralised initiatives
- Stronger focus on inclusiveness
  - New ways of interaction/collaboration
  - Energy prosumers/energy communities and energy sharing

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Revisiting (OU) Unbundling of the TSO - a new approach? A new best practice??

Fundamental to the new UK system operator - 'NESO' - is

'The ability to bring an independent, impartial voice to energy system planning and operations that takes a whole system view'.

AND

'To consider all the interrelated challenges and trade-offs and ultimately work towards optimal outcomes for energy consumers'.

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Our Primary Duties

NESO will promote the following three objectives:

Net Zero
Enabling the government to deliver on its legally binding emissions targets

Efficiency & Economy
Promoting efficient, coordinated and economical systems for electricity and gas

Security of Supply
Ensuring security of supply for current and future consumers of electricity and gases

Our Secondary Duties

NESO will also have regard to:

Facilitating Competition
Creating and maintaining competitive energy markets and networks

Consumer Impacts
Understanding what changes mean for consumers

Whole System Impacts
Understanding linkages across systems

Facilitating Innovation
Creating an environment that enables others to help solve energy challenges

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