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Trade-Offs and Transition: *Lessons for Accelerated Infrastructure Delivery*

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Background

- About NESC
 - Research, dialogue, and advice for the Taoiseach
 - Representative body with consensus view
 - Strategic, medium-term issues
 - Fuse the economic, social, and environmental
- NESC Energy Work Programme 2024/25
- Examine Ireland's energy transition through four 'lenses'
 - Household resilience;
 - Trade exposures;
 - Systems analysis techniques; and
 - Economic resilience

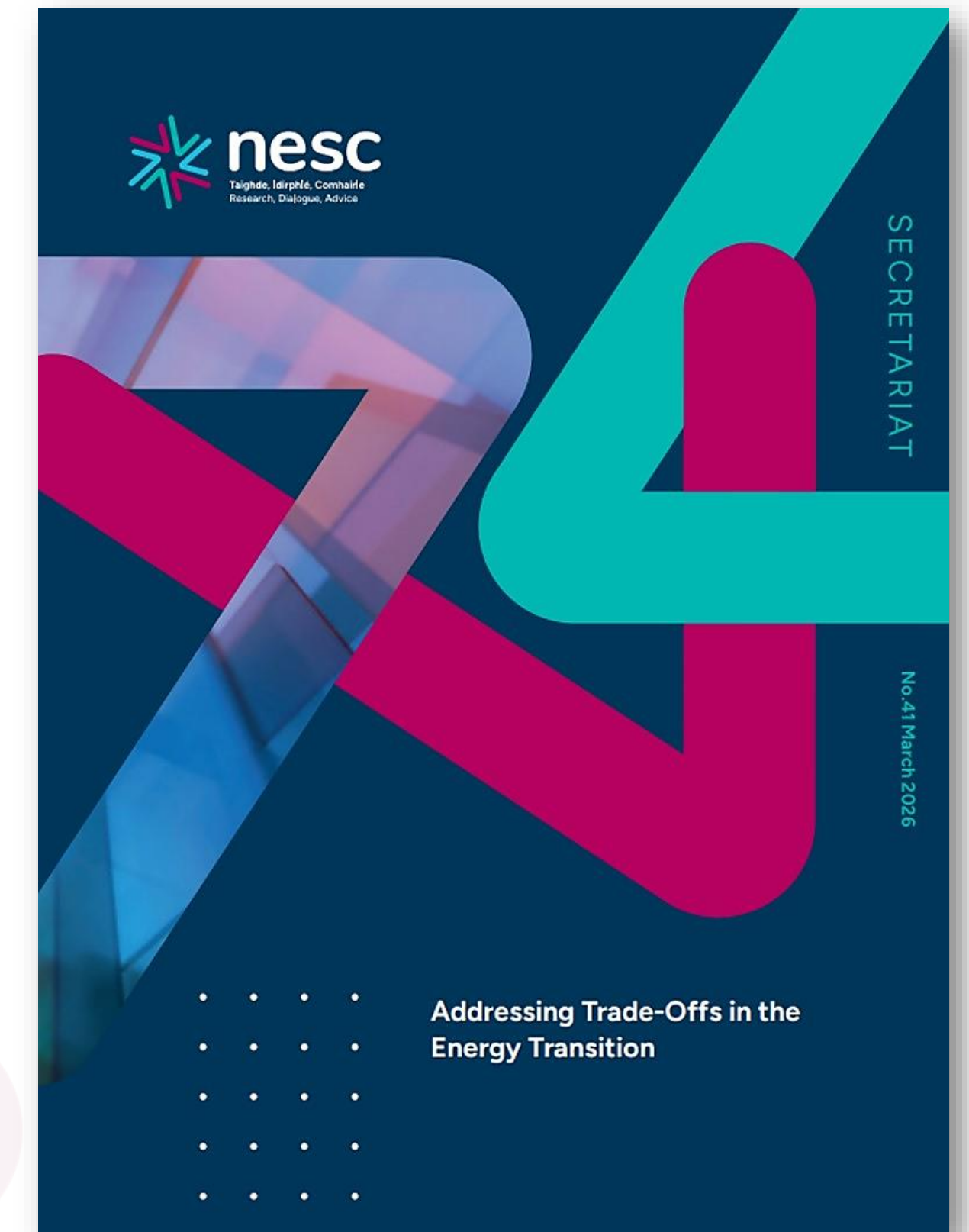
- Policy headed into fog
- Actors not on same page
- Absence of agreed answers to fundamental questions
- No evidence-based pathway to decarbonisation
- Actions needed now, next, and later to clear the fog
- **Latest example of persistent problem across sectors**

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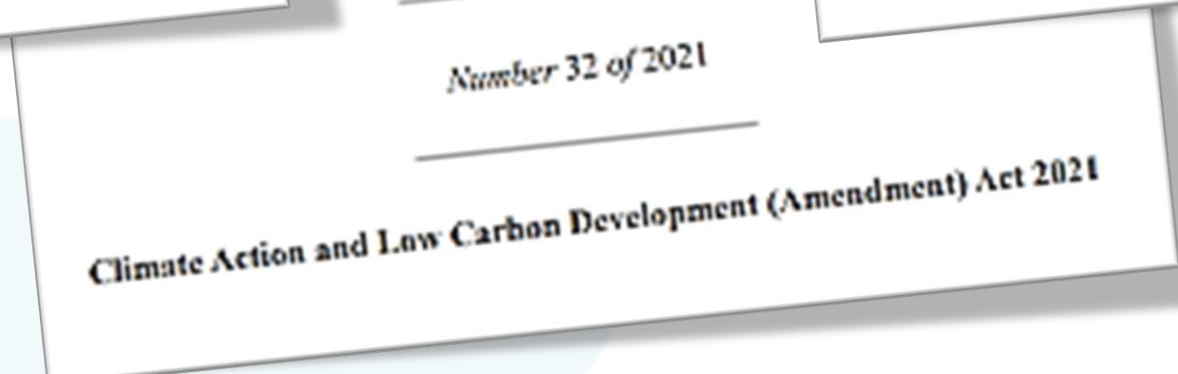
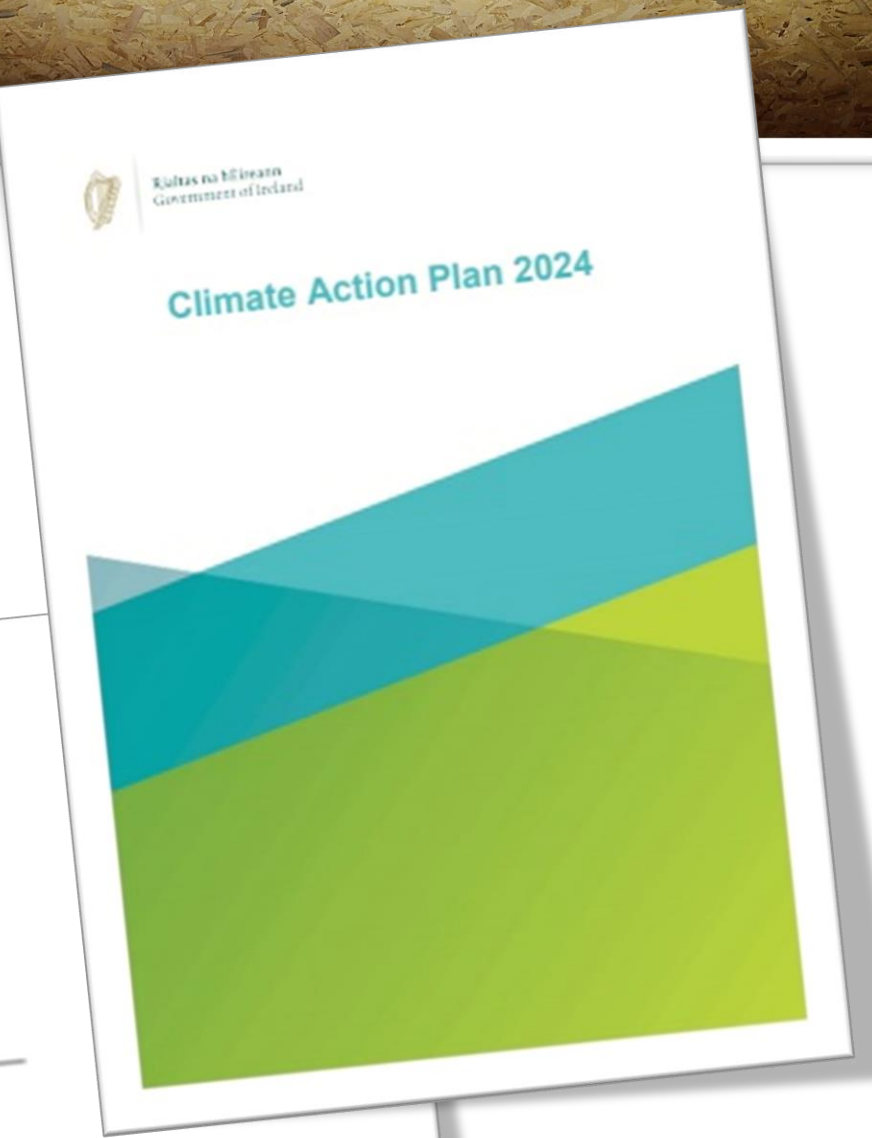
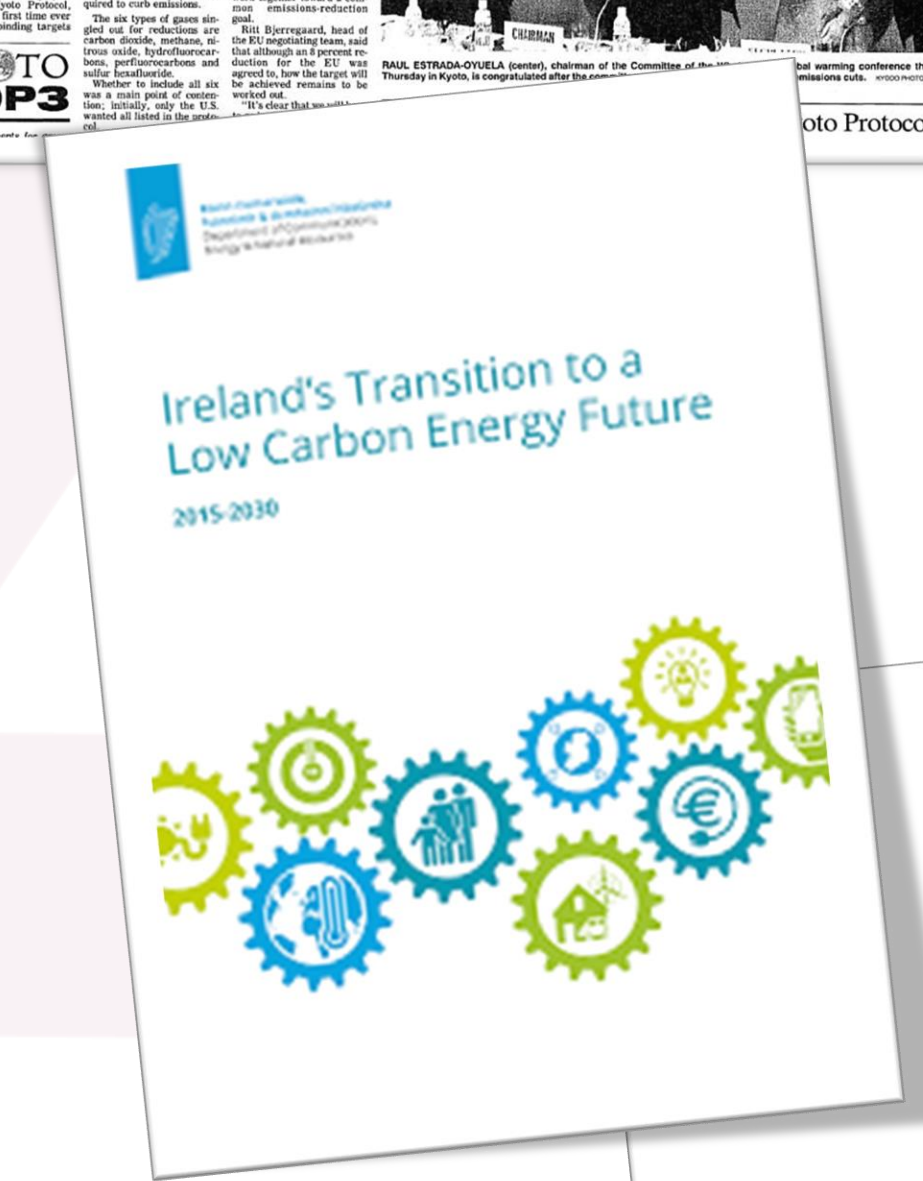
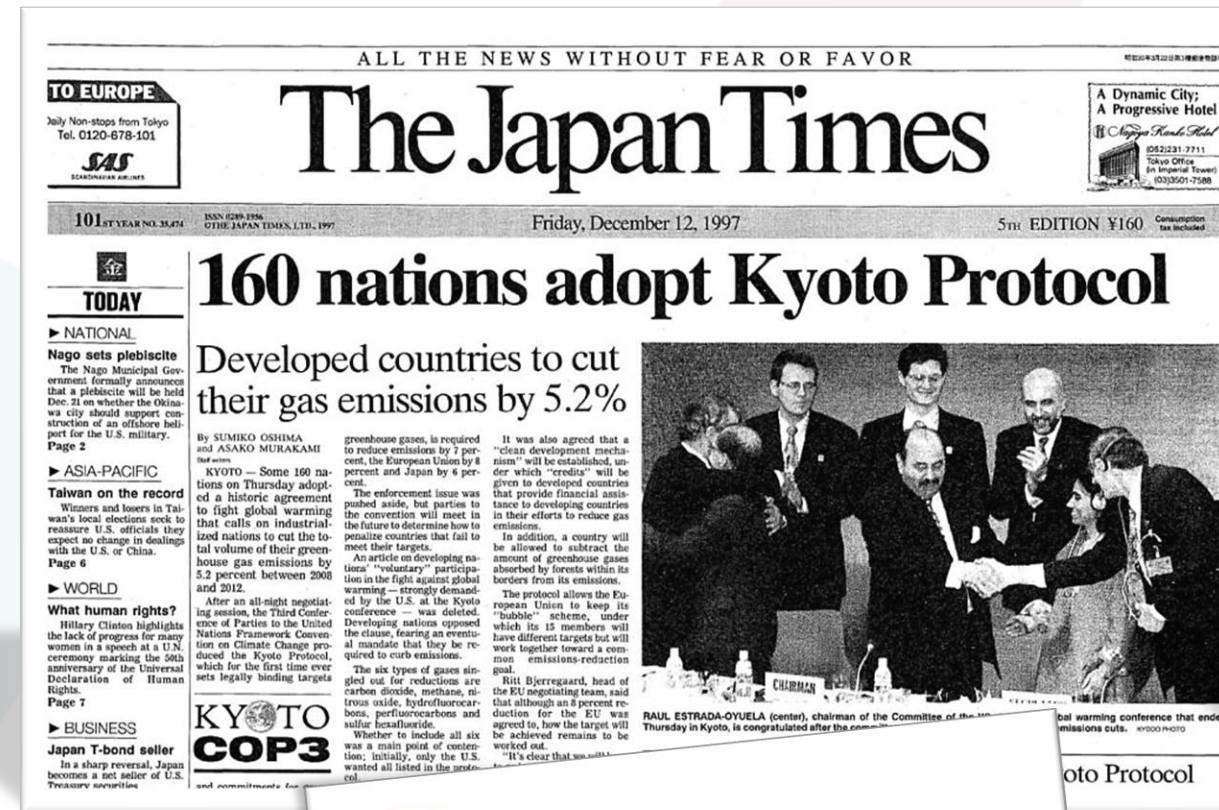
A Focus on Trade-Offs

- The energy transition must be delivered and must be successful
- Trade-offs in all policy areas- ‘to govern is to choose’
- Pursuit of one policy objective can negatively impact another
- Trade-off at the heart of energy transition
- Energy system must be environmentally sustainable...
- ...and secure, affordable/competitive, and socio-politically acceptable
- To what extent have these trade-offs been confronted and resolved?
- Well-developed policy and institutions in place for the transition
- Ambitious, legally binding targets adopted



Milestones

- Kyoto Protocol, 1997
- Government White Paper 1, 2007
- EU Renewable Energy Directive, 2009
- Doha Amendment, 2012
- Paris Agreement, 2015
- Climate Action and Low Carbon Development Act, 2015
- **Government White Paper 2, 2015**
- Citizen's Assembly on Climate Change, 2017
- Joint Oireachtas Committee on Climate Change, 2019 
- Programme for Government, 2020
- Climate Action and Low Carbon Development (Amendment) Act, 2021
- CAP targets, Carbon Budgets, and Sectoral Ceilings...



Missed Opportunities

- Kyoto Protocol, 1997
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What energy system configuration has a cumulative emissions trajectory towards this target, is secure, is reliable, is viable, is affordable, is competitive, and is socio-politically acceptable?

What/where is the evidence-based pathway to achieving this target, which reconciles national environmental, social, and economic objectives?

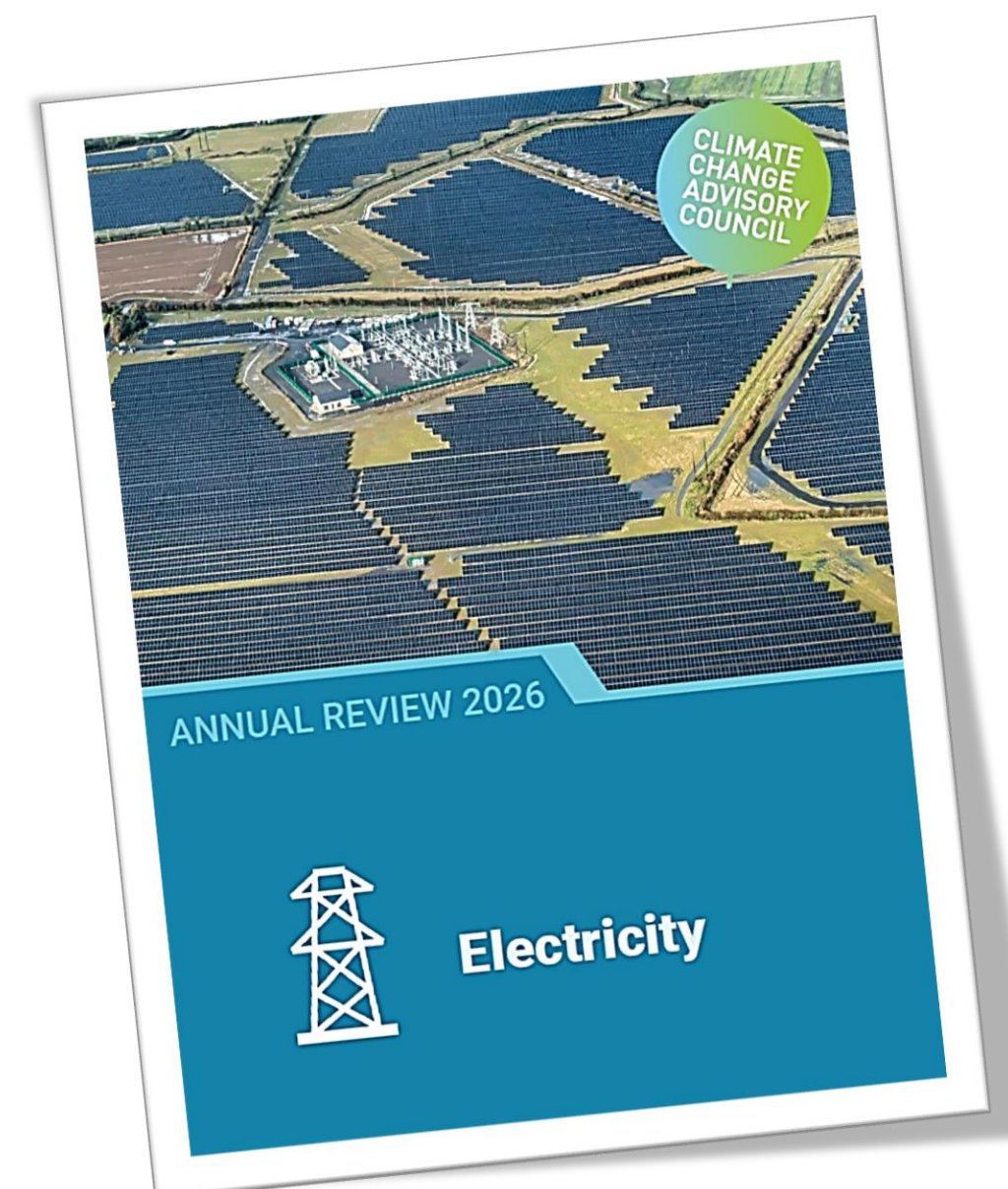
What are the non-negotiables?
Is the social license in place?
Where is the foundation for action?

Impact of Unresolved Trade-Offs: General

- Poor policy and progress due to increased ambiguity, incoherence, uncertainty, and risk
- Results in short term, more (politically) palatable decisions, and even ‘placebo policies’ (Mazey and Richardson, 2022)
- Hinders strategic vision, and can lead to ‘successful failure’
- Problems can be ‘stored up for the future’, making subsequent policy decisions even harder
- Generate disillusionment and cynicism, reduce faith in the system, and polarise debate...
- ... responded to with increased political ambition and ‘stretch’ targets
- Shift in focus to ‘what is needed’ as opposed to ‘what can actually be delivered’
- Contributes to cognitive dissonance: targets adopted/maintained/repeated despite evidence
- Targets are stretched without also stretching the policies, capabilities, and measures
- Cognitive dissonance also mitigates against necessary adjustments to policy
- Reduces the ability to achieve what needs to be achieved

Impact of Unresolved Trade-Offs: Transition (1 of 2)

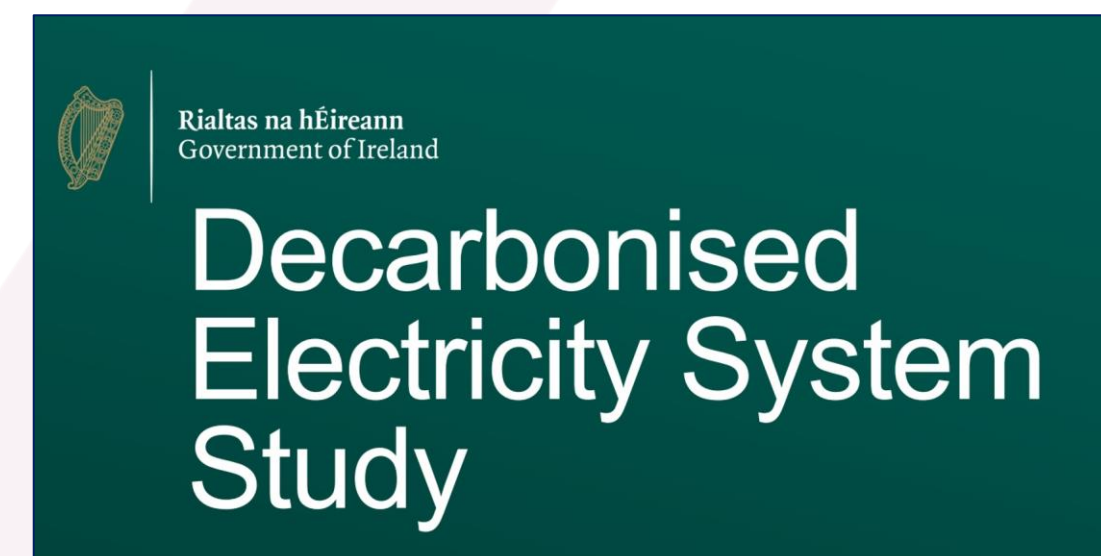
- Frustrating pace of progress
- Only 0.6 GW of new solar and 0.2 GW of new wind capacity added in 2025
- Failed to achieve multiple targets, including for:
 - The generation capacity of both onshore wind and solar;
 - The system SNSP limit and dispatch-down; and
 - The renewable electricity share of demand.



“The National Economic and Social Council (**NESC**) has previously **recommended developing a long-term national plan** for strategic clean energy reserves based on zero-carbon fuels and has more recently recommended that this ambition be expanded **to address the whole energy transition and the roles of different parts and layers of the Government in its delivery**” (CCAC, 2026: 25)

Impact of Unresolved Trade-Offs: Transition (2 of 2)

- Gaps in our knowledge and strategy in key areas:
 - Power sector decarbonisation;
 - Offshore renewable energy;
 - Energy security; and
 - Digitalisation.
- Harmful absence of clarity and certainty; missing the point? A quasi-‘Junker Curse’
- Know what to do, but not in a way which simultaneously achieves valid national objectives
- Legislative contortions in relation to security of supply (LNG) and connectivity (airport cap)
- Raised public expectations (cheap, reliable, renewable electricity; exporter of energy)
- Tendency to look to the longer-term, where trade-offs have been resolved
- Cognitive dissonance in policy and target setting; parallel (policy) universe and discourse



Why are trade-offs left unresolved?

- Not ignorance or negligence: successfully reconciling trade-offs is exceptionally difficult
- Requires the capacity, structures, time for effective engagement on specific policies/ projects
- Vast quantities of data may be required to begin to understand the inherent trade-offs
- Requires strong politics and politicians, and legitimacy from the public to act
- Cultural, behavioural, and political reasons

A Focus on Costs

- “Renewable electricity... will ultimately provide cheaper, green electricity to the consumer” (DECC, 2024)
- 69 per cent of citizens believe transition policies will reduce energy bills (European Commission, 2024)
- “The transition may result in higher, not lower, electricity prices, challenging national competitiveness and the transition narrative” (NESC, 2024)
- Ireland yet to choose: Scaling VRE, meeting rising demand, and ensuring energy is affordable and secure? (IEA, 2025)
- Average estimated household electricity bill: 2021 ~ €1,250; 2025 ~ €1,900
- Mind the capability-expectation gap e.g. NEAT work and outputs. What are the causes of higher costs and levers?
- Mind the costs ‘from turbine to toaster’, ‘from solar PV to smart TV’
- Mind specific power costs on a bill: making (35%), managing (25%), moving (20%), policy (10%), retailing (10%)
- Mind the emphasis on the retail - wholesale link; “The Price Is Wrong” (Christophers, 2024)
- Mind the spark gap: e.g. electricity to gas price ratio in Ireland: >3x; Sweden: 1.3x, Netherlands: 1.5x, Portugal: 1.7x
- Mind the narrative: don’t gaslight consumers; reset if needed – too much at stake.

Time to act

- Beware ‘the obstructionist wolf in pragmatist sheep’s clothing’
- Beware the ‘culture war’
- Insert impetus to help defeat obstruction and delay
- Five initial steps are proposed:

1. Work harder to better address transition trade-offs;

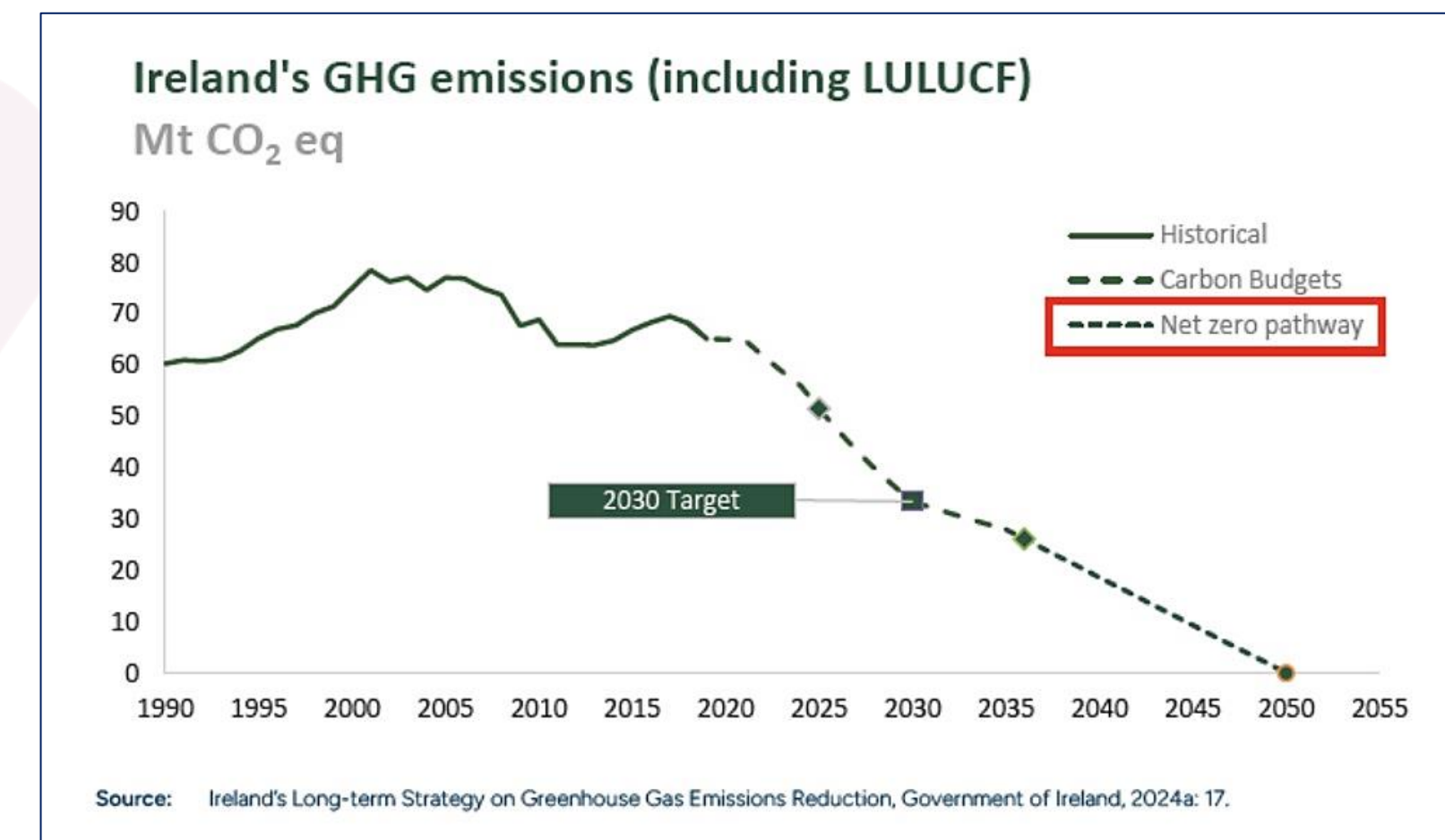
2. Place a new emphasis on feasibility;

3. Enhance energy transition modelling;

4. Tell a story of transition that isn’t only looking to the horizon; and

5. Supplement the Accelerating Infrastructure Action Plan.

- Steps expanded upon in NESC Secretariat Paper No. 41
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Addressing Trade-Offs in the Energy Transition

Specific, initial recommendations include:

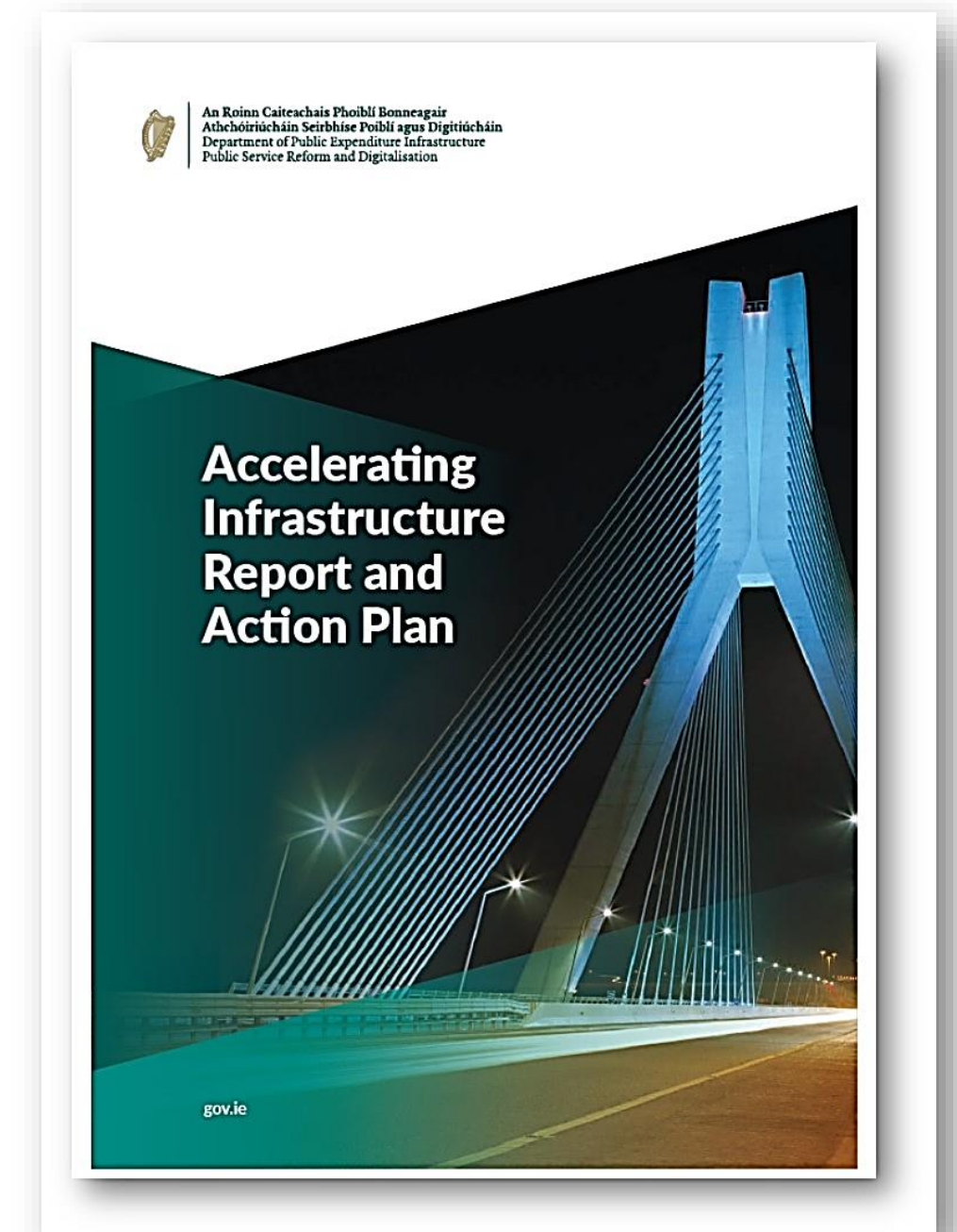
- Complete the Decarbonised Electricity System Study and respond to its findings.
- In the absence of an agreed power sector decarbonisation pathway out to 2030, seek to exploit the analytical methods and resources being created and applied under the Decarbonised Electricity System Study (DESS). This could include:
 - o Executing further simulations of the DESS Energy System Model to provide refined insights on the priority decarbonisation pathways;
 - o Embedding multi-criteria analysis and expert elicitation within all policy pathway exercises to provide data that techno-economic modelling cannot;
 - o Fostering the development of a research community that utilises and contributes to the development of modelling;
 - o Undertaking analysis in the near-term to evaluate the GHG and environmental impacts of proposed transitional technologies, to support trade-off decision-making; and
 - o Examining carefully the temporal trade-off involved in making near-term large-scale capital investments which might close off medium-term options for decarbonisation.
- Undertake a comprehensive study to provide the policy system with the data to resolve the environmental, social, and economic trade-offs inherent in digitalisation and Large Energy User (LEU) data centre policy. For example, the study should provide agreed evidence on likely LEU development scenarios and the associated employment, economic contribution, and emissions associated with each, and some agreed multiplier for sectoral dependence, and other data needed to understand and reconcile the trade-offs.
- Consider completing both a decarbonised heat system study and a decarbonised transport system study to provide the policy system with an agreed, credible, evidence-based pathway to remove greenhouse gas emissions from both sectors in Ireland from 2027.
- Undertake a new analysis of, and agree, the understanding and application of the concept of feasibility in energy transition policy, modelling, and target setting, recognising the fundamental importance of social, technology, economic, environmental, and political factors, and competing national objectives.
- Enhance energy transition modelling, for example, by encapsulating a wider set of social, economic, and environmental considerations such as just transition, biodiversity impacts, and consequences for investment, the macroeconomy, energy bills, and energy security, as well as data on considerations which Ireland has deemed important e.g. with reference to the National Well-Being Framework.
- Include socio-economic modelling as part of the key work of the Climate Change Advisory Council.
- Ensure assessment, modelling, and communication exercises maintain a focus on Total Systems Cost/Consumer bills.
- Implement NESC's call for a Cross Government Energy Framework which provides an agreed, evidence-based energy decarbonisation pathway which has resolved key trade-offs and is aligned with national social, economic, and environmental objectives.
- Examine where the distribution of the burden of costs of energy infrastructure should fall across, for example, consumer bills, taxation/Vechequer funding, and fossil fuel bills.

Trade-Offs in Infrastructure Delivery

- Between sectors (e.g. finite resources for housing, enterprise, transport, water, energy, education, and childcare)
- Within sectors (e.g. social, affordable, market housing targets with finite resources)
- Between valid objectives:
 - **Private rights**, the public good, environmental protection, and **urgency**
 - Appropriate **regulation**, administrative burden, adequate standards, and **urgency**
 - Delivering infrastructure **plans**, targets, and projects, and capacity constraints / **inflationary impact**
 - Addressing **urgent issues** and **EU/national commitments** (e.g. traffic congestion/airport capacity/energy security, and GHGs)
 - Legislative, regulatory, and policy **reform** and maintaining **certainty**
 - Consumer **protections**, rate of returns, and the **attractiveness of**
- Direct charges / **user pays**, and social and **political stability**
- Attracting international delivery **skills**, and ensuring **adequate housing** and services
- Supporting the **digital economy**, and delivering **energy infrastructure** capacity
- Ensuring **energy security** back-up, and progressing **decarbonisation**
- Commitment to **cheaper** and cleaner services, and **funding** the associated infrastructure (e.g. electricity)
- **Short-term** investment and **long-term** implications (i.e. temporal trade-off)

Accelerating Infrastructure Action Plan

- Many welcome and urgently needed actions set out in the Plan
- Can address legal, planning, regulatory, social, and operational barriers
- What about cultural, behavioural, and political considerations?
- Absent from the Plan... 'trade-offs' not mentioned at all
- Not a criticism: not its intention; may be a function of the evidence-base
- Some actions will help:
 - National Planning Statements (Action 8);
 - Risk Appetite Statements (Action 20);
 - Utilities and Local Government Clearing House (Action 21);
 - Leadership Support (Action 28);
 - Government Communication (Action 29); and
 - Benefits Realisation Framework (Action 30).



Looking Ahead – A New Accelerating Infrastructure Strategy

- Implement Accel. Inf. Plan to address legal, planning, regulatory, social, and operational barriers
- Undertake work to confirm and address cultural, behavioural, and political considerations, for example:

1. Failure to fully understand, confront, and resolve trade-offs;
2. Poor policy dialogue;
3. Inconsistent policy positions;
4. Low alignment capacity, particularly at the centre of Government;
5. The impact of the electoral cycle and political competition;
6. Cognitive dissonance; and
7. Risk aversion, policy sclerosis, and systemic cynicism.

- Such barriers, including ‘trade-offs’, cannot be legislated away!
- Opportunity for IGEES work? See ‘Ten Key Knowledge Gaps’ in NESC Council Report No. 167

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