Evaluation of climate change mitigation policies in Ireland's electricity generation sector

1. Sectoral overview

In 2018, electricity generation accounted for 31% of primary energy use in Ireland. The share of electricity generation in total primary energy use is largely similar to the 2005 share, which was 32%. Since 1990, oil has declined significantly, while coal use has been relatively stable in absolute terms, though it has declined as a share of total electricity generation. Natural gas has increased significantly, both displacing oil and coal but also accounting for much of the increase in total electricity generation over this period. Final electricity demand reached a peak in 2008 at 2,294 ktoe, declined during the recession, and then began to grow from 2014 onwards. In 2018 primary electricity demand exceeded the 2008 peak for the first time, increasing 4.4% in one year. EirGrid projects significant growth in electricity demand over the coming decade, driven largely by data centres.

2. Policies and measures in place

Fossil fuel electricity generation is covered by the EU Emissions Trading Scheme with an EU-wide reduction target of 21% relative to 2005. For much of the past decade, the carbon price delivered by the EU ETS remained below €10 per tonne, but since 2018 the carbon price rose significantly, remaining between €20 and €30 for nearly the entire period since August 2018. Under the 2009 Renewable Energy Directive, Ireland has a binding renewable energy target of 16% by 2020, broken down into targets for electricity (40%), heat (12%), and transport (10%).

A number of support schemes for renewable electricity generation have been rolled out, including the Alternative Energy Requirement scheme, introduced in 1996; the REFIT 1 scheme, introduced in 2005; and the REFIT 2 and REFIT 3 schemes, both introduced in 2012. A Draft Bioenergy Plan was published in 2014 and an Offshore Renewable Energy Development Plan was published by the (then) DCENR in 2014.

Grid development and interconnection has been another focus of policy. EirGrid's Strategy 2020–25 committed to prepare the electricity system for a future based almost entirely on renewable energy. It commits to using innovative solutions as well as proven technologies and to increasing the level of renewables on the system while minimising the addition of new infrastructure.

The 2017 National Mitigation Plan committed to identifying a suitable replacement for coal use at Moneypoint. A decision is still awaited. The subsidisation of peat for electricity generation through the PSO has incentivised the degradation of an important carbon sink and the burning of a highly carbon-intensive fuel, and has had detrimental effects on biodiversity. Bord na Móna stated previously it would cease harvesting peat for electricity generation prior to 2030. In October 2018, it announced it was bringing forward this date to 2028. In November 2019, ESB announced it would close its peat-burning power stations in Shannonbridge and Lanesboro.

3. Evaluation of existing policies

Effectiveness and efficiency: While it has not been possible within the scope of this project to establish a robust counterfactual scenario, it is reasonable to suggest that policy supports have been instrumental in facilitating deployment of renewable electricity. Ireland's penetration rate for non-synchronous renewable electricity is held up as world-leading. Another metric against which effectiveness can be measured is the emissions intensity of electricity production. The changing fuel mix has had a significant impact on the CO2 emissions intensity of electricity over the period since 1990 with a decline of 49%, from 896 g CO2/kWh in 1990 to a low of 455 g CO2/kWh in 2014. It increased again in the period 2014–2016, but declined again in 2017.

An overly narrow focus on least cost decarbonisation, in pursuit of efficiency may unnecessarily constrain the range of available policy options. An unusual characteristic of the electricity sector is that the principal funding of the central policy instrument is paid through a levy on electricity customers rather than from Exchequer support. In 2016-17 support for peat generation accounted for €123.7, or 41% of total

PSO support, but PSO support for peat expired at the end of 2019. This raises different questions, including relating to distributional consequences.

Relevance: A principal focus of policy interventions over the past decade has been achievement of the 2020 40% RES-E target. The approach to date has been highly relevant to the narrow conception of the goal of achieving this target, but by focusing on onshore wind it has arguably been less relevant for achieving ancillary goals of public support and buy-in. Over the medium term, decarbonisation of Ireland's electricity system cannot feasibly rely on a single technology.

Coherence: Policies in place to incentivise renewable electricity generation are not obviously characterised by problems of internal incoherence. The electricity generation sector is connected to other sectors in important ways. Significant decarbonisation of the heat and transport sectors is envisaged over the medium term, principally through heat pumps for space heating and electric vehicles for passenger transport. The projected significant growth of data centres will make decarbonising electricity more challenging as the overall demand for electricity will increase. Another area of tension in policymaking is between policies to incentivise renewable electricity generation and the planning system.

Distributional Impacts: Support for renewable electricity is funded through the PSO, a flat charge applied to each customer's electricity bill regardless of consumption. As the PSO level increases in the future the effects of the shifting balance of electricity cost between the PSO and electricity cost components will have differential impacts on different segments of consumers, potentially exacerbating energy poverty. Another distributional dimension to the decarbonisation of electricity concerns the fate of workers employed in fossil fuel generation and upstream sectors such as peat harvesting.

Governance: The governance landscape that pertains to decarbonisation of electricity in Ireland is fragmented. Project developers, communities, and the public at large must engage with a complex system of institutions. Over recent years, the deployment of renewable energy and related infrastructure, particularly wind but also grid development, has faced increasing opposition from communities. There has been similar local opposition to proposed development of the high voltage electricity grid. EirGrid has developed its capacity for community engagement in recent years.

4. Recommendations

In many ways electricity generation has been among the more successful sectors in Ireland's response to climate change. The following recommendations will be key to delivering on this increased ambition:

Distributional consequences: The primary means of financing state support for renewables supports has been through the PSO. Careful consideration should be given to distributional consequences of such arrangements into the future, particularly where more affluent households are increasingly able to generate their own electricity.

Community engagement: Significant community resistance to renewable energy and grid infrastructure was generated as a result of inadequate and often tokenistic attempts at community engagement. As Ireland moves towards large scale deployment of off-shore wind, new approaches to community engagement will be needed.

A just transition: Lessons are being learned from the experience of Bord na Mona in the midlands. These will be beneficial to ensuring that Ireland's transition to a low carbon future is just and leaves no one behind. The transition will affect workers and communities across all sectors. In the near term, a decision is to be made on the future of the Moneypoint coal-fired power station. This presents an opportunity to enable a just transition in an anticipatory fashion.

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