



# Reconciling Ireland's climate ambitions with climate policy and practice: challenges, contradictions and barriers

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## Abstract

Often perceived as a green nation, Ireland's climate action reputation ranges from being regarded as a climate 'laggard' to being applauded as one of the first states to introduce supply-side 'keep it in the ground' (KIIG) legislation. In line with UNFCCC and IPCC advice, Ireland has committed to reducing greenhouse gas (GHG) emissions by 51% by 2030 and reaching net zero by 2050. However such ambitions have not yet translated into sufficient transformations required to achieve the goals of a Paris Agreement compliant pathway. Major challenges surround Ireland's transition to net zero, for example, the country's fossil fuel dependency means oil and gas (mostly imported) account for around 80% of primary energy while emissions from agriculture, transport and electricity generation are increasing, rather than decreasing. Ireland is failing to meet national and EU GHG reduction targets, has had to buy emissions quotas to comply with legal requirements, and its interim 2030 target is below the EU's Climate Law ambition. Contradictory policies, especially those influenced by ROI's neoliberal orientation, undermine climate action and mean Ireland struggles to achieve GHG reductions, despite the state's climate change legislation and policies. Concentrating on supply-side climate policy, this article examines key issues hampering Ireland's ability to reconcile its climate ambitious with policy and practice. Adopting a critical political economy analysis, we explore multi-level drivers of climate and energy policies, examining challenges like the war in Ukraine, which prompted the Irish state to re-consider where and how it sources gas and oil, in turn threatening existing KIIG measures. In critically analysing challenges and contradictions, we identify multiple ideological, political and economic factors, in particular, the neoliberal, globalised economic model influencing the State's current unsustainable, risky and contradictory policy direction. We conclude by articulating specific barriers hampering Ireland's climate ambitions that must be addressed to enable a just transition to a sustainable future.

**Keywords** Climate action · Climate breakdown · Climate change · Climate emergency · Climate policy · Corrib gas · Energy policy · Fossil fuels · Gas and oil · Hydrocarbon extractivism · Ireland · Irish political economy · 'Keep it in the ground' · Supply-side policy

## Abbreviations

1992 Terms	<i>Licensing Terms for Offshore Oil and Gas Exploration and Development</i> (1992)
CAP2023	<i>Climate Action Plan 2023</i> (ROI)
CO <sub>2</sub>	Carbon dioxide
CEM	<i>Petroleum and Other Minerals Development (Climate Emergency Measures) Bill 2018</i>
CPI	Centre for Public Inquiry
DECC	Department of the Environment, Climate and Communications
DMNR	Department of Marine and Natural Resources
EPA	Environmental Protection Agency
EU	European Union
FDI	Foreign direct investment
FF	Fianna Fáil, Irish political party
FG	Fine Gael, Irish political party
GHG	Greenhouse gases
GP	Green Party, political party in ROI
IND	Independent members of parliament
IPCC	Intergovernmental Panel on Climate Change
JCCNRA	Joint Committee on Communications, Nature Resources and Agriculture
KIIG	Keep it in the Ground
LAB	Labour party, political party in ROI
LNG	Liquefied natural gas
LULUCF	Land use, Land use Change and Forestry sector
Mt CO <sub>2</sub> eq	Million tonnes of carbon dioxide equivalent
OLRS	Oireachtas Library and Research Service
PAD	Petroleum Affairs Division
Pb4P	People Before Profit, Irish political party
PDs	Progressive Democrats, Irish political party
PER	Primary energy requirement
ROI	Republic of Ireland
SAC	Special Area of Conservation
SPA	Special Protection Areas
TD	Teachtaí Dála (deputy), member of Dáil Éireann (Irish parliament)
UN	United Nations
UNFCCC	United Nations' Framework Convention on Climate Change

## 1 Introduction

Prevailing perceptions of Ireland's 'Green' standing obscures its actual environmental performance and the country's climate reputation oscillates between 'laggard' and 'leader'. In this article, we examine the Republic of Ireland's<sup>1</sup> conflicting climate status, underpinned

<sup>1</sup> Our article focuses on policies and practices within Ireland, known as the Republic of Ireland (ROI), which is an independent state established in 1922. We use the terms 'Ireland' and 'ROI' to refer to 26 of 32 counties that exist on the island of Ireland; the other six counties comprise Northern Ireland, which is part of the United Kingdom, and subject to different legislation and policies.

by a critical political economy approach that recognises the interconnectedness of politics, economies and societies and the influence of such socio-economic and political structures upon policy design, implementation, governance, and practice (Kirby, 2002; Sovacool et al, 2023). We draw attention to the Irish state and its interrelationship with global capital to raise questions of production, consumption and exchange as a basis for understanding policy dynamics and why policy can be 'more responsive to some interests than others' (Newell, 2021, p.38). Our case study of Ireland's climate challenges explores processes surrounding climate and energy policy, enabling us to develop knowledge in order to provide detailed insights (Sovacool, et al., 2023). This case study is informed by a review of existing policies, debates in Dáil Éireann (the Irish Parliament), and broader documentary research on climate and energy that includes analysis of data from official sources such as the Department of the Environment, Climate and Communications (DECC), Environmental Protection Agency (EPA), and the Oireachtas Library and Research Service (OLRS).

Our article builds upon on extensive, multi-method research on hydrocarbon extractivism and Irish political economy (Slevin, 2016, 2019), and problematises the state's climate actions, primarily across supply-side measures. Our theoretical framework is aligned with 'Green' or 'ecological' political economy (Newell, 2021), a necessary approach, because, as the Intergovernmental Panel on Climate Change explains, 'climate governance is constrained and enabled by domestic structural factors' that include domestic political systems, fossil fuels and land-based resources, and 'prevalent ideas, values and belief systems' (IPCC, 2022, p. 1358). Therefore, to understand conflicts and tensions inherent to the Irish state's approach to climate action, it is necessary to examine structural socio-economic, political and ideological forces that influence its policies and practices. In doing so, we consider inherent challenges and contradictions that are barriers to Ireland fulfilling its climate ambitions and must be tackled to enable the country's transition to a more sustainable, green, healthier and fairer society.

## 2 Climate laggard or leader? Background to climate policy in Ireland

The 'Emerald Isle', an enduring moniker for Ireland and its lush nature, illuminates the significance of green within Irish cultural identity. General representations include the colour's prominence within the national flag, musical attributes like 'Forty Shades of Green', and 'Origin Green', a contemporary industry strategy aimed at ramping up global consumption of Irish food and drink. Yet, beyond this polished, constructed veneer of 'Greenness', the Republic of Ireland's weak environmental record means the country is far from being green, ecologically speaking. Despite commitment to climate and ecological action, greenhouse gas (GHG) emissions in Ireland increased by 4.7% in 2021, 'driven by increased use of coal and oil for electricity generation and increases in both the agriculture and transport sectors' (McLoughlin, 2023). In 2022, the largest sources of emissions were agriculture (38.4%), transport (19.1%) and energy industries (16.6%) (EPA, 2023); meanwhile, biodiversity is in decline, 26% of surface waters and groundwater are deemed in moderate condition, 16% in poor condition and 1% are 'bad' status (McLoughlin, 2023).

Although Ireland is a 'laggard on reducing GHG emissions' (OLRS, 2021, p. 16), at times, Ireland's 'Green' reputation has aligned with global socio-ecological trends. For example, the state signed the 1992 United Nations' Framework Convention on Climate Change (UNFCCC), the primary catalyst for global, national and local level climate collaborations, and the UN's 2030 Agenda for Sustainable Development with its 17 Sustainable

Development Goals (SDGs) (2015). The UNFCCC seeks to stabilise GHG ‘concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system’ and was ratified by Ireland in 1994. Ireland also ratified the legally binding *Paris Agreement* (2015), which strives to keep global average temperature increases to ‘well below 2°C above pre-industrial levels’, while pursuing efforts ‘to limit the temperature increase to 1.5°C’. According to the UNFCCC (2023), limiting global warming to 1.5°C means global ‘emissions must peak before 2025 at the latest and decline 43% by 2030’ and most UNFCCC parties have committed themselves to net zero GHG emission targets.<sup>2</sup>

As a country with a legal net zero target, Ireland was initially proactive in drafting national climate policy. In 2000, the state published its first National Climate Change Strategy, which sought to limit emissions growth in Ireland as part of the EU Burden Sharing Agreement (Torney & O’Gorman, 2019, p. 582). The *Climate Change Targets Bill* (2005), introduced by Green Party (GP) TDs<sup>3</sup> (ahead of the UK’s 2008 *Climate Change Act*, often applauded as the first Climate Act globally), was complimentary to UNFCCC’s goals. The Bill sought to reduce GHG emissions ‘to the extent that they in turn limit any increase in global average temperatures caused by the greenhouse effect to a rise of less than two degrees centigrade’ (Government of Ireland, 2005, p. 3). Following Dáil debates in which allegations of efforts to destroy industry were levelled at the Green Party, the Bill was defeated at second stage (65 votes to 51) when TDs from the two main Government parties Fianna Fáil (FF) and Progressive Democrats (PDs) voted against the Bill (Dáil Éireann, 30 November 2005). Political and socio-economic tensions manifested within this early legislative battle continually resurfaced in subsequent years and, despite the Greens being a Coalition Government member in the 30th Dáil (2007–2011, with FF and PDs), ten years passed before ROI enacted the *Climate Action and Low Carbon Development Act* (2015).

Introduced by a Fine Gael-Labour (FG-LAB) coalition government, the 2015 Climate Act was a ‘lacklustre’ effort (Kirby, 2023, p. 48) and its lack of specific GHG emissions targets prompted Friends of the Irish Environment to take legal action against the state, specifically around the inadequate *National Mitigation Plan* (2017) (OLRS, 2021). Known as Climate Case Ireland, this social movement was successful and in July 2020, the Supreme Court ‘ruled that the national mitigation plan was unlawful’ (*ibid.*). In parallel, a national Citizens’ Assembly (2016–2018) examined issues of societal importance, including climate breakdown and associated action. Their third report ‘How the state can make Ireland a leader in tackling climate change’ (2018), began to galvanise government action on climate change (Kirby, 2023); among their 13 recommendations, 97% of Citizens’ Assembly members insisted that climate change become core to policy-making in Ireland and involve new measures to ‘urgently address climate change’ (Citizens’ Assembly, 2018, p. 5). By the time of the 2020 General Election, climate change had moved up political agendas, influenced by the youth climate strikes, Extinction Rebellion activism, and success for Green Parties across Europe. Climate Case Ireland’s achievements, Citizens’ Assembly recommendations, a growing and more vocal climate justice movement nationally and internationally, and a new government (the Green Party re-entered Government, in coalition with centre-right parties

<sup>2</sup> Net zero emissions can be understood as total GHG emissions minus total removals of GHGs, for example, through a ‘sink’, which is ‘any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere’ (UNFCCC, 1992).

<sup>3</sup> TDs are Teachtaí Dála (deputies), members of the Irish parliament Dáil Éireann.

Fianna Fáil and Fine Gael) were factors that led to the state amending its climate act in 2021. Enacted on 23 July 2021, the resultant *Climate Action and Low Carbon Development (Amendment) Act* seeks to 'provide for the approval of plans by the Government in relation to climate change for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy'. With an aim of promoting climate justice and just transition, the Act established, *inter alia*, a net zero 2050 target, carbon budgets, a national long-term climate action strategy (including climate action plans at national and local authority level), a national adaptation framework, sectoral emissions ceiling.

A member of the European Union (EU), Ireland, is bound to EU climate ambitions that include climate neutrality by 2050. In the amended climate act (2021), ROI committed to reducing GHG emissions by 51% by 2030 and reaching net zero emissions by 2050 (Government of Ireland, 2022, p. 4). However, Ireland's interim target of 51% reductions—relative to 2018 levels—by 2030 (Government of Ireland, 2023) is below its commitment, as an EU member, to the European Climate Law (that came into force on 29 July 2021) which seeks to reduce GHG emissions by 55%, compared to 1990 levels, by 2030. ROI's less ambitious 2030 target occurs against a backdrop of the state consistently failing to meet previous EU targets and being obliged to buy emission quotas to comply with their legal obligations (European Environment Agency, 2021). For such reasons, the Climate Change Performance Index (2023) describes the Irish government's implementation of climate policy as 'weak with necessary actions and measures delayed or ignored in many areas', notwithstanding some progress in 2022. Indeed, the Irish EPA emphasises that in order to comply with 'more onerous 2030 targets, Ireland will need to implement effective policies and measures as quickly as possible' (2022, p. 21).

## 2.1 Flaws in overarching climate policy

To set the scene for our critique of Ireland's approach to supply-side climate policy, we have identified some crucial flaws in Ireland's overarching climate policy, which include: the baseline year for emission reduction targets; lack of success in reducing overall emissions; conflictual policy directions.

### 2.1.1 Baseline for GHG emission reductions

Firstly, the choice of 2018 as a baseline for GHG emission reductions, instead of 1990 (the preferred base year within the *Paris Agreement* and EU's Climate Law), is problematic as it suggests the state has contrived to make proportionately lower reductions than other countries. Comparative research by the EPA (2020, 2022, 2023) confirms overall increases in emissions, despite the country's national, EU and international climate change commitments. In 1990, the country emitted 61.65 million tonnes of carbon dioxide equivalent (Mt CO<sub>2</sub> eq, total includes the land use, land use change and forestry (LULUCF) sector) and by 2018, overall emissions rose to 69.93 Mt CO<sub>2</sub> eq. Therefore, a starting point of 2018 (69.93Mt) as a baseline from which to track emissions, instead of 1990 (61.65Mt CO<sub>2</sub> eq), enables an unwarranted perception of success in reducing overall emissions. For example, total GHGs in 2022 were 68.07 Mt (incl. LULUCF), which suggests a reduction in nearly two Mt upon 2018 levels. Yet, using a 1990 baseline, as standard in UN and EU

reporting, illustrates how overall GHG emissions in Ireland in 2022 remain higher than 1990 (by around 6.4 million tonnes of CO<sub>2</sub> equivalent), indicating a failure not a success in the state's present approach to climate policy.

### 2.1.2 Lack of success in reducing overall emissions

Secondly, it is useful to examine the state's profile of emission peaks and troughs to illustrate limited GHG reductions overall. Ireland's highest post-1990 emissions occurred in 2005 (the 'Celtic Tiger' era, the highpoint of neoliberalism in many respects) and fell to a new low in 2011 because of the 2009 economic crash (EPA, 2020). By 2018, GHG emissions had grown to their highest level since 2010 and the largest emitters were agriculture (33.9% of total emissions), transport (20.1%) and energy industries (20.1%) (*ibid.*). The global coronavirus pandemic and associated lockdowns reduced GHG emissions; however, by 2021, Ireland's emissions started to rise again, particularly in transport after COVID travel restrictions were lifted (EPA, 2023). Since 1990, Ireland's 'top three' emitters are consistently agriculture (38.4% of emissions in 2022), transport (19.1%) and energy (16.6%) (*ibid.*). Another related issue is the failure of the LULUCF sector to sequester carbon at adequate levels to offset increasing emissions. LULUCF includes different types of land, including wetlands and forestry, and was responsible for 10.7% of national total emissions in 2022, due to ecologically damaging practices such as the 'exploitation of wetlands for peat extraction' and deforestation; the sector produced more GHGs (7.30 Mt) than the entire residential sector (6.1 Mt) (EPA, 2023, pp. 24–25).

Nonetheless, Ireland's climate policy has produced some positive outcomes, specifically, the country's embrace of renewable energies, which brought 11.1% reduction in energy-related emissions between 1990 and 2022. This decline stands in stark contrast to the 14% increase in agriculture (from 20.48Mt in 1990 to 23.33 Mt in 2022) and transport which saw a 126.2% jump between 1990–2022 (from 5.14 Mt in 1990 to 11.63Mt in 2022) (EPA, 2023). Yet limited successes in demand-side instruments like energy efficiency and renewable energies are not sufficient to compensate for unbridled growth in other sectors, pointing to a third key issue that impacts overall climate policy—conflictual policy directions.

### 2.1.3 Conflictual policy directions

The Irish agricultural sector is the state's single largest GHG emitting sector, mainly emitting methane from grass-fed beef and dairy livestock, and nitrous oxide from the large-scale use of nitrogen fertiliser combined with ineffective and poorly regulated manure management. While methane is a shorter-lived GHG than CO<sub>2</sub> (typically staying in the atmosphere for 12 years), it is much more powerful as a climate disrupting gas. In line with the Irish state's neoliberal, globalised and growth-oriented economic model, the state has, since its foundation, committed to supporting the expansion of the beef and dairy sector (McCabe, 2011). Moreover, the Irish state's policy has been to benefit large beef and dairy farmers and large, often multinational agri-food corporations (both domestic and foreign owned), that make up the majority of supply and processing supply chains in Ireland.

ROI's *Climate Action Plan 2023* (CAP2023) blames the 19% jump in agricultural emissions from 1998 on the 2015 abolition of the milk quota (pp. 214–5) but fails to take account of deliberate policy agendas focused on increasing meat and dairy production,

mainly for export that supports large farms and agri-food corporations, despite their contribution to climate breakdown. Through *Food Wise 2025*, a ten-year plan to strengthen the agri-food industry, the state committed to expanding milk production, and in the past ten years, milk production increased by 68.6%, while dairy cow numbers grew by 42.5% (EPA, 2023). 2022 marked the twelfth consecutive year of increased dairy cow numbers (up 0.9% on the previous year); other cattle numbers increased by 0.3%, milk production grew by 0.7% and sheep numbers increased by 4.2% (*ibid.*). Indeed, the abandonment of protectionism, as a state policy from the foundation of the state in 1921 until the late 1950s, was largely driven by beef and dairy exporters' interests (Breen & Dorgan, 2013). Torney and O'Gorman (2019, p. 576) argue that the agricultural lobby, through 'the two major farming organisations in the country,' the Irish Farmers Association and the Irish Creamery and Milk Suppliers Association, has effectively slowed down the adoption of strong climate legislation, while enjoying increased profits due to expanded dairy production. Continually growing emissions from agriculture are problematic for reasons, which range from the agri-food sector's resistance to, and failure to take, impactful climate action to a macro level of state policy and specific farming interest groups who have long benefitted from policy influence.

Clearly, existing measures within overarching climate policy are proving unsuccessful in reducing overall GHG emissions and we now turn our attention to the oft-neglected topic of supply-side climate measures.

### 3 Corrib versus climate: A challenging context for supply-side climate policy

One might imagine that Ireland's signing of the UNFCCC (1992), hand in hand with dedicated legislation and policies, signals a commitment to ambitious climate action through supply-side and demand-side instruments. Lazarus et al. (2015) define supply-side climate measures as policies and actions concerned with limiting fossil fuel supply, for example, restrictions on development of fossil resources [like KIIG legislation], 'retiring assets', compensation for leaving fuels 'unburned', removal of producer subsidies, taxing production. In contrast, demand-side climate policy seeks to tackle and reduce demand for fossil fuel resources, including 'cap-and-trade systems, carbon taxes, renewable energy incentives, emissions performance standards, and energy efficiency programmes' (Lazarus et al., 2015, p. 4). Ireland's climate policy primarily emphasises demand-side measures, while other related legislation, policies and practices focus on supply-side instruments concerned with fossil fuel production and consumption.

#### 3.1 Evolution of hydrocarbon exploitation in Ireland

Mirroring burgeoning oil industry attention to Europe, as a new frontier for gas and oil exploitation, interest in Ireland's territory began to build in the late 1950s, culminating in the 1959 *Oil Agreement* with the American Ambassador Oil Company (Collins, 1977). Analysing the state's approach towards gas and oil extractivism, the Centre for Public Inquiry (CPI, 2005) and Slevin (2016, 2019) highlight the noteworthiness of 1992 for reasons that had little to do with climate action. Rather than tighten financial obligations or introduce KIIG regulations to suppress hydrocarbon extraction, aligning with UNFCCC

aspirations, in 1992, the Irish state introduced new fiscal terms and authorisations to promote indigenous gas and oil exploitation. The 1992 *Licensing Terms for Offshore Oil and Gas Exploration and Development* (known as the ‘1992 Terms’, issued by the Department of Marine and Natural Resources) were viewed as an attempt to ‘kick-start the floundering industry’ (O’Connor & Bruining, 2001) that had started commercially producing gas offshore Ireland in 1978 from the Kinsale field.

Reflecting the state’s neoliberal policy disposition, the foreword to the 1992 Terms made clear the government believed ‘direct state involvement’ in extractivism was not appropriate; therefore, private companies should ‘be encouraged to invest’ through ‘major initiatives to enhance the comparative attraction of Ireland as a location for investment’ (DMNR, 1992). In exchange for the transfer of ownership and control of any hydrocarbons produced,<sup>4</sup> companies granted licences under the new regime would only be liable to pay 25% tax (courtesy of the 1992 *Finance Act*), against which all costs (exploration, development and production) could be offset. Furthermore, companies were not required to sell hydrocarbons back to the state and, if the companies chose to do so, any gas and oil sold to Ireland would be at full market prices. This ‘free market’ bias stands in stark contrast to earlier licensing arrangements, for example, Marathon was obliged to sell Kinsale gas back to the Irish state at a discounted rate for 20 years (JCCNRA, 2012, p.32). Subsequently, to ‘attract’ companies to extract hydrocarbons, Ireland’s ‘government take’ from production of indigenous resources was limited to a maximum of a 25% tax on the net value of the resource; about one third the rate of average government take found globally (Johnston, 2008). Other research points to Ireland’s ‘very low government take at 25%’ (Kheilil, 1995), that ‘yields among the lowest government take in the world’ (Indecon, 2007); indeed OLRs, the government’s own research body said ‘Ireland has the most generous tax and royalty regime’ (2011). Slevin (2016) documents the neoliberal political economy forces shaping the state’s approach to resource management and provides departmental data to illustrate how, between 1992 and 2012, the state enabled international oil companies to drill 60 wells (2 onshore, 58 offshore Ireland) in efforts to accelerate hydrocarbon exploitation; in contrast, 133 wells were drilled between 1962 and 1991. Although those drilling rates are low compared to other countries, permissions for post-1992 wells were granted at the same time the Irish state outwardly expressed commitment to climate action.

These occurrences are salient as they display the ‘market fundamentalism’ inherent to neoliberal ideology that translates into free market operations, such as resource privatisation being prioritised, above state ownership, control or maximisation of public benefit from common resources (Stiglitz, 2002, p. 74). Allen (2007), and others (Fearon & Barry, 2022; McCabe, 2011; Slevin, 2019), have demonstrated the extent to which Ireland has embraced fossil-fuelled neoliberalism and actively facilitates an ‘extractive imperative’ (Arsel et al., 2016). Such ideological and empirical political economy concerns repeatedly arise in relation to the Irish state’s approach to energy policy and climate action and are most apparent through the Corrib gas conflict.

<sup>4</sup> Despite Article Ten of Ireland’s Constitution (Bunreacht Na hÉireann) (1997) establishing the state’s ownership of all natural resources, including the air and all forms of potential energy’, the *Petroleum and Other Minerals Development Act* (1960) enables the privatisation of resources, once produced (Slevin, 2016).



### 3.2 Corrib gas controversy

Corrib gas<sup>5</sup> was discovered in 1996 over 80km from the North West coast of Ireland by a multinational consortium that originally comprised Enterprise Oil, Marathon, and Norwegian companies Statoil and Saga (O'Sullivan, 1999). In this article, it is not possible to expand upon, or do justice to, events that provoked the twenty-year controversy that engulfed communities, social movements, politicians, and corporate interests. To briefly summarise, local people held wide-ranging environmental, health and safety concerns around the gas consortium's plans to build an onshore gas refinery in close proximity to Special Areas of Conservation (SACs), Special Protected Areas (SPAs) and the water supply for over 10,000 people (Garavan et al., 2006). The consortium sought to transport odourless gas from the offshore wellhead, over 90 kms to the onshore gas terminal, through a high-pressure gas pipeline in a route close to houses (70 m in places). Associated concerns surrounded pipeline risks, such as its location in 'unstable peat bog with a history of landslides'; toxic waste issues; risk of accident in a rural area without emergency services; human rights abuses like compulsory acquisitions orders taken against residents; the low 1992 tax terms; and Shell's poor track record in Nigeria and other countries (Salter & Sullivan, 2008). General resistance to the Corrib gas project did not concentrate on leaving the gas untouched due to climate breakdown, although as we examine in later sections, calls to keep indigenous hydrocarbons in the ground as a form of climate action have emerged in recent years.

From the first planning permission application (2001) through to December 2015, when Corrib gas was brought into production, Mayo's Erris region has become synonymous with an acrimonious dispute, which arguably could have been avoided if government departments and oil companies had respected community demands for Corrib to be processed offshore (hence the associated social movement being called 'Shell to Sea'). Instead, the consortium, backed by the Irish state, pushed through plans for onshore processing that were strongly met with formal opposition (including planning objections, community participation in oral hearings, and judicial reviews) in tandem with local and national protests, acts of civil disobedience, and non-violent direct action. Socio-ecological consequences of the long-running conflict include the deployment of state and private actor coercive force against peaceful protestors (several of whom were incarcerated); ecological devastation during project construction and operation<sup>6</sup>; wide-ranging psychological, social, financial and physical damage inflicted on people (Barrington, 2010; Garavan, 2007; Garavan et al., 2006; Siggins, 2010; Slevin, 2016; Storey, 2009).

Tensions also surround the Green Party's (GP) failure to halt the Corrib gas project when they were a member of the 2007–2011 coalition government (and held the relevant Ministry), on the grounds of supply-side climate policy or any of the socio-ecological issues outlined above. In addition, as Corrib was licensed under the 1992 Terms, this meant the state effectively 'gave away' Corrib gas to private companies with very limited benefits to the Irish people. As ROI's remaining gas producing project, Corrib remains problematic for people and place for a multitude of reasons that span local and regional impacts, through government policy and practice, to the necessity of urgent, transformative action in response to the entwined climate and ecological crises.

<sup>5</sup> Corrib is one of four gas fields offshore Ireland declared commercial: Kinsale (discovered in 1971), Ballycotton (1989), Seven Heads (1973) and Corrib (1996) (Lawlor and Semple, 2018).

<sup>6</sup> For example, contamination of the regional water supply, imposition of a large industrial development in a rural area, damage to Special Protected Areas and Special Areas of Conservation (Siggins, 2010), and a 'technical' error which resulted in €400,000 worth of gas being flared (Siggins, 2017).

## 4 Evolving supply-side policy

In section one, we outlined core flaws within Ireland's overall approach to climate action and illustrated interconnections between escalating emissions and the state's economic growth strategy, which prioritises the latter over climate action. Within energy transitions, there is a 'much neglected need to address both supply-side policy, which sets production limits, and demand-side policy, which has an explicit aim of reducing energy consumption' (Newell, 2021, p. 19). It is telling that demand-side approaches like energy efficiency in homes and small businesses have helped reduce emissions in the residential sector, indicating the state's policy preference for micro and meso-level change. In contrast, emissions from sectors like agriculture and transport continue to grow, due to conflictual policy directions and state failures to initiate and lead structural interventions that could produce multi-level transformations. These challenges and conflicts are most apparent in the state's approach to hydrocarbon extractivism and supply-side climate policy.

### 4.1 KIIG as a response to resistance around hydrocarbon extractivism

To set the socio-economic scene, the 2009 financial crash and the Government's decision to bail out privately owned banks while imposing austerity measures on citizens, drove mass discontent that manifested in large-scale protests against the FF-PD-GP government and resulted in the Greens losing all their Parliamentary seats in 2011. Against this backdrop, and the deepening Corrib gas conflict, citizens began to question how indigenous hydrocarbons were managed and who benefitted in terms of resultant revenues. These were among key factors that led to the 2011 General Election (Feb. 2011), a new FG-LAB coalition government, and increased debate on hydrocarbon extractivism in Dáil Éireann.

A week before the new government convened, while the preceding FF-PD-GP government was not in office, the Petroleum Affairs Division (departmental section responsible for licensing extraction) granted three licensing options for onshore exploration in North West Ireland to several companies (PAD, 2011). The decision to open this region to onshore exploration was rooted in Dowra, Co. Cavan being home to Ireland's first hydrocarbon find in 1962 (Collins, 1977). During initial drilling, the gas flow was not sustained so the well was abandoned but interest in the area re-emerged with the potential for hydraulic fracturing ('fracking') technologies to produce gas from difficult to extract areas (Slevin, 2016). The possibility of fracking and associated socio-ecological devastation in rural areas amid potential for another Corrib-style conflict, led to local communities forming 'Love Leitrim' as a vehicle to oppose onshore extraction in counties Cavan, Clare, Donegal, Roscommon, Leitrim, and Sligo (Gogan, 2023). Due to these mounting pressures, Pat Rabbitte (LAB), then Minister for Communications, Energy and Natural Resources, introduced a moratorium on fracking—the first stage in Ireland's KIIG policies. More broadly, the new Joint Committee on Communications, Nature Resources and Agriculture (JCCNRA) opened a review of offshore oil and gas exploration (2011–2012) that involved a wide range of stakeholders, pro- and anti-extractivism, including the lead author (Slevin) of this article. The resultant JCCNRA report (2012) offered a series of recommendations to maximise benefits to Irish society from indigenous extraction. Tellingly, prohibition of extraction on the grounds of climate breakdown was not included, nor did the Committee consider a ban on infrastructure or imports of liquefied natural gas (LNG), often derived from gas produced by fracking in other countries, despite emergent controversy over a potential LNG plant in

the Shannon Estuary. Minister Rabbitte later introduced new fiscal terms for future extraction but did not consider KIIG supply-side measures in response to the climate crisis.

A General Election in February 2016 brought a new minority government, of FG and Independents (IND), and fresh attention to hydrocarbon extraction. The *Petroleum and Other Minerals Development (Prohibition of Onshore Hydraulic Fracturing) Act 2017*, introduced in June 2016 by Tony McLoughlin (FG TD for Sligo-Leitrim, where onshore licensing options were granted), banned fracking and thus formalised an aspect of Ireland's KIIG legislation. Interestingly, the state banned onshore gas production via fracking in Ireland but not the import of fracked gas from other countries (OLRS, 2021), calling into question the motives behind the Act (e.g. responses to local pressures rather than ambitious action in response to the climate crisis). Left-leaning TD Thomas Pringle (IND, Donegal) introduced the *Fossil Fuel Divestment Bill* in November 2016 and its enactment in December 2018 obliged the state, via the National Treasury Management Agency to divest from fossil fuel undertakings, within five years to 'precipitate a timely decarbonisation process in line with Ireland's climate change commitments under Article 2 of the Paris Agreement'. Pringle's Act was one of the first to explicitly link fossil fuels and climate action and was soon joined by the *Petroleum and Other Minerals Development (Climate Emergency Measures) Bill 2018* (CEM) introduced by People Before Profit (Pb4P) TDs, led by Deputy Brid Smith. The CEM Bill was an explicit supply-side approach to climate and energy policy that sought to prohibit future exploration, development and production activities when the monthly mean level of atmospheric carbon dioxide (CO<sub>2</sub>), as measured at the Mauna Loa Observatory, exceeds 350 parts per million (ppm).

Regrettably, Smith's Bill lapsed after the 2020 General Election, thus limiting ambitious efforts for potentially transformative supply-side policy. Although, after the Election, the new Minister for the Environment, Climate and Communications (DECC) and GP leader Eamon Ryan, introduced his own ban on extraction of hydrocarbons licenced after 2019 (as opposed to all existing and future authorisations as proposed in Smith's Bill) hence, comprising another strand of Ireland supply-side KIIG policies.

## 4.2 Weaknesses in Ireland's approach to supply-side climate policy

McKenzie and Carter (2021) reviewed 'Keep it in the Ground' (KIIG) measures in Ireland, describing these as contributing to state-led efforts to improve upon its 'lacklustre climate policy reputation'. Nevertheless, significant weaknesses exist within the Irish state that undermine the potential of supply-side climate policy, namely: possibilities for future hydrocarbon production and carbon lock-in; reliance on fossil fuels to transition to net zero future; tensions between Ireland's neoliberal economic orientation and supply-side climate action.

### 4.2.1 Possible future hydrocarbon production and carbon lock-in

While Minister Ryan introduced a ban on hydrocarbon exploitation, it only applies to authorisations granted after 2019 so, the last exploration licence granted (1 August 2019), extends to 2034 (DECC, 2023), and can be converted into another authorisation such as a petroleum lease to enable commercial hydrocarbon production. Thus, Ryan's prohibition only relates to any new licences and not necessarily the '18 significant discoveries' of hydrocarbons identified in JCCNRA (2012) which remain licenced by international oil companies. For example, in 2012, the Barryroe oil field, off the Cork Coast, was reported to

have flowed oil at nearly twice the rate deemed necessary for the field to be commercially viable (it produced 3,500 barrels of oil per day versus 1,800 barrels min. rate) and was estimated to hold in excess of 1 billion barrels (JCCNRA, 2012; Keane, 2012). This field was discovered in 1973 (JCCNRA, 2012) and the oil companies were effectively allowed to sit on the find until the price of oil increased (Slevin, 2016). Although Minister Ryan recently declined a petroleum lease to allow the consortium to extract oil from the Barryroe field, the licence-holders have indicated plans to take legal action to enable them to produce the resources (*The Irish Times*, 23 May 2023). In addition, the Minister's choice to withhold a petroleum lease was at his discretion and thus a new Minister could permit extraction.

After Russia's invasion of Ukraine and associated oil and gas price hikes, the Government launched a review of Ireland's security of energy supply, hiring an external company to provide technical analysis to underpin policy options. CEPA (2022) acknowledged that indigenous gas production will decline over the next decade and that there 'is only a small chance of natural gas extraction at sites that do not already have licences', however, 'delivery of gas from existing exploration licences is possible' (p. 23). Indeed, hydrocarbon production from existing licences (granted before 2019) seems increasingly likely, despite statements around keeping hydrocarbons in the ground.

In accordance with the *Petroleum and Other Minerals Development Act* (1960), the Minister for the Environment, Climate and Communications (as the department responsible for hydrocarbon extractivism is currently known), is obliged to prepare six-monthly reports on petroleum exploration and development in Ireland. The June 2023 report divulges the existence of ten offshore petroleum exploration licences, in addition to other authorisations such as lease undertakings, which indicate possibilities for future hydrocarbon exploration and production. Among these authorisations is Frontier Exploration Licence 4/19 (DECC, 2023), held by Europa Oil and Gas, who are authorised to explore for hydrocarbons in areas close to the Corrib gas field. The company, led by a former manager of the Corrib gas project, have expressed interest in using Corrib infrastructure for production and processing and in September 2023 made a presentation to Mayo County Council about their plans (*Connaught Tribune*, 2023). Citing the Ukraine-Russian war as a reason to focus on indigenous gas, Mayo County Council agreed to support continued exploration and potential extraction, despite opposition from local Shell to Sea activists and Friends of the Earth Ireland who made clear the contribution of further extraction to climate breakdown (*ibid.*). Among various socio-ecological causes for concern is the duration of Europa's exploratory licence, which continues until July 2034, meaning the company hold rights to territory offshore Ireland's west coast and any associated finds. If, after the exploratory period, the company apply for a petroleum lease to produce the gas, production could commence after 2034, thereby tying Ireland into continued fossil fuel dependency, despite legal commitments for a net zero transition by 2050.

Without access to commercially sensitive data on volumes of prospective hydrocarbon fields, it is impossible to forecast how long production from any successful finds authorised under FEL 4/19, or other existing licences, might last but a tentative comparison with Ireland's first gas project is instructive. A Petroleum Lease for Kinsale/ Ballycotton commenced on 7 May 1970, and as of June 2023, remained in place (DECC, 2023). Discovered in 1971, gas from Kinsale Head was brought into production in 1978 with gas from other fields produced together in later years (Slevin, 2016). According to the Malaysian corporation Petronas who acquired Marathon in 2009, gas production from the Kinsale Head and Sevenheads gas fields concluded in July 2020 and the final decommissioning of facilities occurred in 2023 (Kinsale Energy, 2023). Therefore, Ireland's first commercial gas find, and later gas field tie-ins, culminated in 42 years of gas production within a project lifespan

of over 50 years. If Europa's licence, or frontier exploration licences 1/19 and 2/19 which also extend to 2034, result in commercially viable finds, Ireland could, hypothetically, experience gas production from 2034 up to or beyond 2084. Given current licensing terms, companies are not obliged to sell produced hydrocarbons back to the state, if they choose to do so, sales occur at full market prices, and in return, companies pay limited tax to the state, against which all exploration and production costs can be offset (Slevin, 2016). Even a superficial critique of such fiscal and policy instruments establishes the fallacy of 'energy security' arguments that lie behind sustained hydrocarbon exploitation and expose prevailing consequences of neoliberalisation on energy and climate policies and practices.

Setting aside the issue of possible hydrocarbon exploitation continuing beyond ROI's net zero by 2050 goal, to stay within a global carbon budget conducive to limit global temperature increases to 1.5°C, Trout et al. (2022) argue that governments and companies need to 'cease licensing and development of new fields ... and prematurely decommission a significant portion of those already developed'. From a planetary perspective, development of new and existing fields is ecocidal, as recognised in the International Energy Agency's 'Net Zero by 2050' report (2021) which called for an immediate ban on new oil, coal and gas development. Furthermore, continued dependency on fossil fuels and associated 'carbon-intensive technological systems' contributes to carbon lock-in by reinforcing political, market and social factors dependent on carbon resources, while locking out lower carbon alternatives (Erickson et al., 2015). Continued dependency on fossil gas resources contributes to carbon lock-in, hampers transition to renewable energy sources, and illustrates another major weakness in ROI's approach to climate action.

#### 4.2.2 Reliance on fossil fuels to transition to net zero future

The forecasted end of Corrib gas might appear as a natural supply-side measure to reduce consumption of GHG emitting resources, yet numerous issues abound, not least those identified in the preceding section. A fundamental problem is Ireland's increasing reliance on gas, seen (and actively promoted) as a 'bridging fuel' in the transition to net zero future. The use of gas in electricity generation increased by 13% in 2022 to the highest level since 2010, and in 2022, gas accounted for nearly half of electricity generated (48.8%), compared with 38.6% of electricity coming from renewable sources; coal, oil, and peat generation accounted for 10.9% of electricity generated (EPA, 2023). Gas remains the dominant fuel for electricity generation (McLoughlin, 2023) and looks set to retain its position because the *Climate Action Plan 2023* commits to a further two GW of gas-fired power generation on the grounds of 'flexibility' to 'support renewables' and security of electricity supply (Government of Ireland, 2023, pp. 135–9). In addition, 'despite previous announcements made to phase out coal, its future use is somewhat uncertain. Fuel prices and the need for coal due to unavailability of enough gas-fired generation and lower renewables must be considered' (EPA, June 2023).

Furthermore, the OLRs (2021) identified 'notable omissions' from ROI's 2021 Climate Act, such as the lack of 'a ban on the importation of fracked gas and on liquefied natural gas (LNG) terminals'. The absence of a ban on imported LNG, commitments to increase gas-fired electricity (CAP2023), possibilities for increased gas and future oil production, amidst several applications for planning permission for LNG plants, suggest the country may become more firmly embedded in global carbon energy supply chains. Considering CAP2023 set a target of 80% renewable energy by 2030, on one hand, the state seems to struggle with meeting its own targets to enable a transition to a climate

neutral future, while on the other hand, Ireland looks set to continue and possibly deepen its fossil fuel dependency, not least due to its neoliberal economic orientation.

#### 4.2.3 Tensions between neoliberal economic orientation and supply-side climate action

Shifts in global political economy, notably the widespread embrace of neoliberalism and its core concerns of individualisation, liberalisation, privatisation, and minimal state intervention, are well documented (for example, Harman, 2009; Harvey, 2005, 2010; Klein, 2007; Newell, 2021; Stiglitz, 2002). Since its formation in 1922, ROI, as a small island state recovering from the impacts of colonialism and partition, has experimented with differing forms of state-capital interactions and distinct macro-economic strategies. These range from ‘self-sufficiency’ and protectionism in the post-Independence period through to export-led, multinational-dependent industrialisation from the late 1950s that contributed to the state’s integration into the global capitalist system (Allen, 1997, 2007; Collins & Cradden, 2001; Mjøset, 1992; O’Hearn, 2001; O’Toole, 1999; Slevin, 2016). Kirby (2023) refers to the ‘thorough neoliberalisation of Irish society in the 1990s and 2000s’ (known as the ‘Celtic Tiger’ era) and the enduring influence of neoliberal ideology is reflected in the state’s approach to climate and energy. ROI’s open economy remains dependent on foreign direct investment, a factor that contributes to the state’s prioritisation of corporate interests above climate.

Ireland’s weak approach to supply-side climate action is indicative of its neoliberal economic orientation and the state’s FDI dependent growth strategy implies limited concern with reducing industrial emissions, as further illustrated through the example of international data centres located in Ireland. In 2021, data centres consumed more metered electricity (at 14%, up from 5% in 2015) than all of Ireland’s rural homes put together (at 12%) (Central Statistics Office, 2022). Eirgrid, Ireland’s electricity grid operator, has said this could rise to 30% by 2030; however, Meskill (2021) disputes this estimate and suggests the figure could be as high as 70% by 2030, if all proposed data centres projects were completed. These electricity (and water) hungry data centres are part of the Irish state’s FDI attracting neoliberal economic strategy. While such centres do bring jobs, they are largely capital, not labour intensive, but much of the state’s tax revenue comes from the corporate sector which owns and controls data centres (such as Google, Microsoft, Amazon, and Facebook). The active state support for the growth of data centres demonstrates the conflict between climate action in general and the state’s economic policies, but also how supply-side reduction policies are undermined or simply not considered as part of climate action. The promotion of data centres effectively means any renewable electricity brought onto the national grid is not displacing and replacing fossil energy, but simply adding to growing energy consumption. Evidence of this clash between neoliberal political economy and ideology by the current Irish coalition government is that a Private Members Bill brought forward in 2021 by the Pb4P TD Brid Smith, to ban all future data centres, was blocked by government parties (Finn, 2021).

The above examples demonstrate Ireland’s problematic approach to supply-side and demand-side climate policy and point to the necessity of alternative ideologies and practice to enable Ireland to achieve climate ambitions and move towards an actually sustainable future.

## 5 Ideological and political economy barriers to ambitious climate action

The Corrib gas controversy, in tandem with legal challenges to climate policy, have fuelled debates about how indigenous hydrocarbons should be managed in the midst of the climate and ecological emergency (which the Irish Parliament declared in May 2019). In addition, the gas conflict and broader climate justice activism unveiled broader struggles surrounding state-industry relations and 'the dominance of the fossil fuel sector' (McKenzie & Carter, 2021). Not only has the oil industry long influenced state policy around extractivism (Collins, 1977; Eipper, 1986; CPI, 2015; McCabe, 2011; Slevin, 2016), the state is subject to the vagaries of the industry, global oil trading patterns and prices, largely because of its dependency on imported fossil fuels. Ireland imports over 70% of energy used in the country, compared with an EU average of less than 60% (DECC, 2022, pp. 6–7.).

At the same time, and reflecting Ireland's (both the Republic and Northern Ireland's) unique GHG emissions profile with agriculture emitting the largest share, unlike any other EU member, the industrialised, chemicalised grass based beef and dairy agricultural model is itself a large user of direct and indirect carbon energy. GHG emitting hydrocarbons account for 80% of Ireland's primary energy requirement (PER)—all oil (45% of PER) is imported while three quarters of gas (34% of total PER) is imported from the UK. About a quarter of Ireland's gas comes from the Corrib gas field, from which production is expected to decline over the next decade and stop in 2030 (CEPA, 2022; DECC, 2023). However, as outlined in sections three and four the granting of various exploratory licences and lease undertakings by the Department of the Environment, Climate and Communications (DECC) to numerous oil companies point to the potential for continued gas, and possibly oil extraction, beyond ROI's net zero targets.

Unsurprisingly, given the contribution of fossil fuels to climate breakdown, Ireland's ongoing fossil dependency has a heavy toll. As the EU's 'chief climate laggard', Ireland was just one of four EU countries to experience annual emissions increases in 2022 (*The Irish Times*, 22 May 2023). Eurostat's data on quarterly GHG emissions shows that overall, the EU achieved a 4% decrease in the fourth quarter of 2022, however, Irish emissions jumped by 12.3%, the highest increase of any EU country. Carbon dioxide (CO<sub>2</sub>) emissions from burning fossil fuels were responsible for 57% of all GHG emissions in the country during 2021 (*ibid.*) and by 2022, CO<sub>2</sub> in total GHG emissions had increased to 60.4%, compared to 59.2% in 1990 (EPA, 2023). Such data suggests that current demand-side and supply-side climate policy is insufficient to reduce emissions, despite the aims of the 2021 Climate Act. Indeed projections by the Environmental Protection Agency (EPA) suggest Ireland may only achieve 29% GHG reductions by 2030, not 51% mandated in national legislation (O'Sullivan, 2023) or the 55% GHG reduction targets established in the EU Climate Law.

The structure of the Irish economy, its political economy and neoliberal ideology, underpins the state's reliance on foreign direct investment (FDI) (Allen, 2007; McCabe, 2011; O'Hearn, 2001), revealed in the state's approach to hydrocarbon extractivism and weaknesses in supply-side climate policy. This dependency is also evident in growing numbers of electricity and water intensive foreign owned data centres and continuing support for a large beef and dairy herd, primarily for the export market. The globalised character of the Irish economy, and the state's policy and ideological commitment to globalisation as part of its growth strategy, which from a critical green political economy perspective, is best analysed as a 'core state imperative' (Barry, 2021). Climate action policy in Ireland

is largely characterised by weak and individualised demand-side approaches, and cannot, under the present neoliberal growth model (pursued by the state for at least three decades), include radical supply-side measures to reduce fossil fuel production. This is because supply-side measures would disrupt Ireland's globalised, growth model and the interests of powerful producer interests such as the fossil fuel industry, farming lobby and global multinational corporations (like Microsoft and Google) involved in data centre expansion. Whereas demand-side measures, aimed at consumers not producers, does not disturb this growth and political economy structure.

In tandem with such ideological and political economy barriers are empirical issues that affect policy and practice. Kirby (2023) refers to limitations in state capacity that hamper climate action and his argument echoes earlier research on Irish political economy and hydrocarbon extractivism that identified state institutions and decision-making processes (hand in hand with other factors like class and ideological struggles, global industry trends, and state-capital relations) as strongly influencing the direction of energy policy (Slevin, 2016). Ideological and political economy barriers to ambitious climate action are compounded by practical barriers, which hamper critical reflection and transformative action necessary to embark upon the most ecologically sound transition pathways for Ireland. Take, for example, the DECC's conflicted roles. Tasked with leading climate policy and action, DECC is also responsible for licensing hydrocarbon exploitation, which as we have illustrated, could see it torn between climate action and facilitating gas (and potentially oil) extraction beyond Ireland's net zero target of 2050, thus contributing to carbon lock-in and hampering Ireland's energy transition. These unfathomable schisms are un conducive to coherent, comprehensive climate policy and practice.

## 6 Concluding thoughts: Beyond carbon and growth-led dependency

Encompassing supply-side and demand-side measures, Ireland's climate track record is characterised by huge gaps between climate aspirations/policy and actual GHG emissions reduction. Torney and O'Gorman (2019) argue Ireland's climate policy is immune to the influence of EU membership and characterise the country as a 'laggard'. In contrast, external pressures, movement strategies and electorate processes, including the election of left wing parties and independents, are among factors McKenzie and Carter (2021) associate with Ireland becoming a global first-mover for 'Keep it in the Ground' legislation, hence being regarded by some as a 'climate leader'. Nevertheless, as we have illustrated, the state's stance on KIIG, as a component of supply-side climate action, is contradictory and Ireland's professed climate ambitions are not reflected in existing policies or results.

The state's climate policy and outcomes establish how poorly Ireland performs in relation to other states, thus remaining a climate 'laggard'. The state appears inclined towards demand-side approaches, which can depoliticise climate and energy transition policies, while supply-side measures are more systemic and structural, and (a) raise issues of justice/injustice and distribution (Newell, 2021), and therefore, (b) are much more political and disruptive of the energy regime and interconnections with Irish neoliberal political economy. These tensions are highly evident in the Irish state's approach to hydrocarbon extractivism and supply-side climate policy. Irish political economy remains fossil-fuelled, rather than Green (or at best a neoliberal 'weak green'), a status which shows little sign of abating, without a combination of demand-side and supply-side policies enmeshed within



new approaches to climate action and sustainability, not least from diverse communities, social movements, and other actors such as trades unions and faith groups.

In outlining key challenges and contradictions, this article illuminates the importance of identifying, and understanding, ideological and political economy factors that act as barriers to Ireland fulfilling its climate obligations. Particularly problematic dynamics include fossil fuel dependency and Ireland's neoliberal, globalised economic growth model which maintains the structure of the Irish economy that is 'unfit for purpose' for politically achieving effective climate action. The reality is that climate action at the scale and pace needed for Ireland to achieve its national and international climate obligations would require a complete overhaul of the neoliberal, globalised economic model promoted by the Irish state and thus necessitate radical socio-economic transformations. It is not simply the energy system that needs to change—climate action and genuine sustainability requires transitions across all levels of Ireland's economy and society, going beyond carbon and growth-led dependency towards innovative forms of socio-ecological interrelationships within planetary boundaries.

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