An Chomhairle Náisiúnta Eacnamaíoch agus Shóisialta
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NESC

Energy Transition Pathways and the COVID-19 Pandemic: An analysis of the 'green recovery' responses in Denmark and Ireland

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National Economic and Social Council

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An Chomhairle Náisiúnta Eacnamaíoch agus Shóisialta
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Alex Miller

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NOTE: This research paper is produced by an early stage researcher on placement with NESC as part of the MISTRAL innovation and training network. The author is solely responsible for the content and any views expressed therein, and welcomes any comment on this paper (alex.miller@qub.ac.uk).

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Ursula von der Leyen, President of the EU Commission[1]

1. Introduction

Global economic and social patterns have been severely disrupted by the advent of the novel coronavirus (COVID-19) and the ensuing public health measures which have been deployed to manage its spread. Lockdowns, business closures, layoffs, and changes in working arrangements have all contributed to a significant shift in economic activity and altered the trajectory of the global economy in the matter of a few months. This drastic shift in economic activity was reflected in energy use and greenhouse gas emissions patterns; in April 2020, daily global CO2 emissions fell by 17% compared to 2019 levels (Kuzemko *et al.,* 2020a). Such emission reductions were temporary, and as economic activity resumes, emissions are already rebounding (Goldrick-Kelly, 2020). Due to the embeddedness of fossil fuels in energy, transport, agriculture, and other socio-technical systems, a recovery from the pandemic will inevitably mean a return to carbon-intensive activity, resulting in the same or higher levels of greenhouse gas emissions as before the beginning of the COVID-19 induced slowdown (Harvey, 2020).

Governments around the world are grappling with the challenge of economic recovery while continuing to manage the impact of the disease and seek to halt its transmission. In this time of profound disruption, some activists, policymakers, and academics have sought to take advantage of the moment to advance their vision of a 'green' or 'sustainable' recovery from COVID-19. Noting that the response to the crisis will require huge amounts of public investment in economic stimulus programs, those seeking to orient their economies along a more sustainable trajectory are calling for investment to be channeled into renewable energy, energy efficiency, low carbon transportation and infrastructure projects, and other outlets which will contribute to the development of the low carbon economy (Kujala, 2020; IEA 2020). At the same time, certain political forces are seeking to use the COVID-19 pandemic as an opportunity to abandon efforts to address climate change: in May 2020, the Czech Republic's prime minister, Andrej Babiš, said the European

[1] Carrington, D. (28 May 2020). EU green recovery package sets a marker for the world. The Guardian. Retrieved 6 August 2020 from https://www.theguardian.com/environment/2020/may/28/eu-green-recovery-package-sets-a-marker-for-the-world

Union should abandon its Green Deal and instead focus on addressing COVID-19 (Parnell, 2020).

The decisions made in the following months regarding how to direct stimulus funding will influence the energy and climate policy trajectories for decades to come. These decisions will not occur in a policy vacuum – COVID-19 has not eliminated the existing legacies of each country's energy systems – and so it is important to understand the context in which these recovery decisions are being made. In this paper, I examine the energy and climate policy priorities of two European states, Denmark and Ireland, as expressed before and after the beginning of the COVID-19 pandemic. European Union member states were required to submit National Energy and Climate Plans (NECPs) by the end of 2019 which set out each state's energy and climate goals for the period of 2021-2030. By comparing the stated goals in the NECPs with the public statements and commitments made as part of the COVID-19 recovery, we can understand whether these member states are continuing along well-established pathways or using the COVID-19 pandemic as an opportunity to change the trajectory of their energy and climate policy priorities.

This paper is structured as follows: the first section lays out a brief overview of the theoretical frameworks provided by the literature on socio-technical systems, sustainable energy transitions, and path dependency. Following this, I use a case study approach to examine the energy and climate policy priorities of Denmark and Ireland, before and after the onset of the COVID-19 pandemic. For the purpose of this research, I focus specifically on the deployment of renewable energy for electricity generation and the decarbonisation of the electricity system in each country. Finally, I discuss the ways in which green recoveries from COVID-19 are conditioned by their historical contexts and note that although COVID-19 represents a major disruption, it alone is not the primary driver of energy policy change in either country.

This research was carried out as part of a secondment with the National Economic and Social Council (NESC) of Ireland, in connection with my role as an Early Stage Researcher in the MISTRAL network, a Marie Skłodowska-Curie Action (MSCA) Innovative Training Network. This work draws upon my Doctoral research at Queen's University Belfast, which examines the role of path dependency on the social acceptance of renewable energy and the transition to low carbon energy systems.

2. Overview of key concepts and terms

To understand the context and impact of the disruption caused by the COVID-19 pandemic, we should begin with a framework to understand how changes occur in the energy system. For the purpose of this research, I focus specifically on the role of government decision making processes and how they influence the trajectory of energy system decarbonisation, particularly through the deployment of electricity generated by renewable sources (e.g. onshore and offshore wind, solar energy).[2]

2.1 Energy transitions

Energy systems are socio-technical systems comprised of technological, economic, social, and political factors (Kuzemko *et al.,* 2020a). Dominant regimes within energy systems are made up of relatively stable configurations of actors, institutions, and technologies, each integrated into the system as an embedded part interlinked with other parts (Davidescu *et al.*, 2018). A multitude of factors, including environmental sustainability, climate change, public health, political pressure from citizens, and energy security, have led some governments to seek to transition their energy systems to more sustainable modes of production (Araújo, 2017).

Transitions within energy systems are recognized as a particularly complex form of socio-technical transition (Barry *et al.,* 2015). Energy transitions which seek to achieve a more sustainable outcome can be described as sustainable energy transitions (Meadowcroft, 2009). Kuzemko *et al.*, define sustainable energy transitions as "complex socio-technical processes of decarbonisation within energy systems, and involve both bringing in low, or zero, carbon energy and phasing out old, high carbon energy" (2020: 4). The introduction of new technologies (e.g. renewable energy) and displacement of carbon-intensive technologies (i.e. coal, oil, peat-fired electricity) is central to the process of decarbonisation, but the challenge is not only technological. Economic, social, and political forces shape the trajectory of decarbonisation pathways.

Rooted in the socio-technical systems approach, understanding the centrality of social and political processes is essential to conceptualising sustainable energy transitions, (Aklin & Urpelainen, 2013; Meadowcroft, 2009). Low carbon transitions are not only about the market diffusion of technologies, but also about changes in user practices, cultural norms and discourses, and political struggles (Geels *et al.,* 2017). Transitions are therefore not tame, technocratic processes driven by incremental technological change but "disruptive, contested, and non-linear processes" (Geels *et al.,* 2017: 464). Understanding the political nature of energy system change, as represented through policy processes, helps us to understand how and why energy systems change over time, and which actors and institutions influence the pace and mode of change.

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[2] For the sake of simplicity, I focus on renewable energy for electricity generation. Renewable energy is also used in heating and transportation systems. Where possible, I differentiate between these different energy uses when referring to policies and targets.

2.2 Path dependency

Path dependency is defined as a phenomenon resulting from the historical co-evolution of systems, characterised by increasing returns to scale and the tendency to exclude innovative approaches in favour of incumbency (Lockwood *et al.,* 2017). Fundamentally, path dependency posits that history matters in contemporary contexts, as the decisions made in the past constrain the range of options available to decision-makers in the present day (Bassanini & Dosi, 2001). Path dependence was initially articulated by economists seeking to counter the neoclassical understanding of optimal choice theory by demonstrating how systems may operate inefficiently due to their historical legacies (Garud & Karnøe, 2001). The concept is prominent within the literature on socio-technical transitions, and has been used by various scholars to describe the ways in which historical legacies influence system change.

To apply a meaningful understanding of path dependence, it is important to understand the causal mechanisms and processes described by the concept. Following from Davidescu *et al.,* I understand path dependence as a set of mechanisms through which relationships between material (e.g. infrastructure, technology) and non-material elements (e.g. institutions, rules, ideas) influence policy change or continuity (Davidescu *et al.,* 2018). Path dependence reinforces the status quo and favours powerful incumbents (e.g. fossil fuel companies or electricity utilities within an energy sector) at the expense of novel and disruptive actors, ideas, and technologies.

Due to the tendency of path dependence to reinforce status quo arrangements, system change is slow and complex, and often occurs only through deliberate political intervention or through exogenous shocks (Davidescu *et al.,* 2018; Fouquet, 2016). The concept of 'critical junctures' is used to describe particular points in time in which, either through political action or exogenous shocks, paths of development have the potential to be altered. For example, decisions made in the 1970s in response to the oil crises of that period influenced the trajectory of energy policy in the decades that followed (Stein, 2017). The choices made during critical junctures have long-term impacts, due to the effects of path dependency: "Decision-makers may later realize that the choices made at critical junctures are in fact "suboptimal" but they remain "locked in" to that path because the cost of changing course is too great" (Stein, 2017: 565). For the purposes of this paper, path dependence is a useful lens to understand the contemporary change processes in energy systems as it allows for both continuity and stability within the energy system as well as disruption caused by exogenous shocks (i.e. the COVID-19 pandemic).

3. Case Studies

Member states of the European Union were required to submit draft National Energy and Climate Plans to the European Commission by the end of 2019. These plans summarize each member state's commitments to address climate and energy issues (including greenhouse gas emission reductions and renewable energy development) over the period from 2021-2030 (European Commission, 2020). These documents provide a useful summary of each member state's climate and energy priorities, and how they seek to attain the targets set out for decarbonisation. The majority of NECPs were drafted prior to the onset of the COVID-19 pandemic, and so they provide a snapshot of the state's priorities at the moment in time they were drafted.[3]

Denmark and Ireland were chosen as case studies as they represent differing levels of existing renewable energy deployment as well as different levels of ambition regarding the decarbonisation of the energy system. The NECP of each country was reviewed and scanned for key words relating to renewable energy and the decarbonisation of the electricity sector.[4] The case studies are detailed below and include summaries of the high-level targets and plans for the deployment of renewable energy. The case studies also consider the various sources of pressure on energy policy priorities, including the COVID-19 pandemic, and seek to explain how these pressures influence the planned actions of each state. It should not be assumed that pathways towards decarbonisation will be the natural outcome of the disruption caused by COVID-19; in fact, many political forces may push against this agenda and seek an economic recovery utilising fossil fuel resources. This push against the transition towards sustainable energy has been seen in the Czech Republic, Hungary, and Poland, which are still heavily dependent on coal (Parnell, 2020).

The case studies seek to clarify the ways in which the disruption of the COVID-19 pandemic is influencing the energy policy trajectories of the two states, and address the following questions:

1. How are Denmark and Ireland responding to the economic disruption caused by the COVID-19 pandemic, and what influence will these responses have on the energy and climate change priorities of each state?

2. Does the COVID-19 pandemic constitute a critical juncture for energy and climate policy in each state?

Beginning with the Danish case, I summarize the key goals of each state's NECPs and highlight their planned COVID-19 responses with respect to energy and climate policy.

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[3] Ireland did not submit its NECP by the EU's deadline. Ireland's NECP was drafted before the new Government committed to higher levels of ambition on energy and climate, and therefore does not reflect this higher commitment. (Department of Communications Climate Action and Environment, 2020).

[4] Keywords used to identify relevant sections of the NECPs included: "renewable energy", "renewable electricity", "electricity", "emissions", "wind", and "solar".

3.1 Case Study #1: Denmark

Background:

Denmark has long been recognized as a leader in the field of renewable energy, particularly wind energy. Since the 1970s, Denmark has been a leader in the design and production of wind turbines for energy generation and has developed a significant industry which satisfies both domestic and export-based markets (Karnøe and Buchhorn, 2008). The domestic renewable energy system of Denmark has grown from a largely decentralized, community-led system based upon feed-in tariffs to a more industrialized, market-driven system which uses competitive auctions to meet energy supply needs (Kirkegaard *et al.,* 2020).

A new Danish Government was formed in June 2019 through an agreement between the Social Democrats, the Red-Green Alliance, the Social Liberal Party, and the Socialist People's Party titled 'A Fair Direction for Denmark' (Danish Ministry of Climate, Energy and Utilities, 2019). In December of 2019 the Government reached an agreement on a new Climate Act, which builds upon earlier agreements on energy and climate including the 2018 Energy Agreement which sought to advance Denmark's position as a leader in the field of renewable energy (DMCEU, 2020).

Denmark has long been a leader in the deployment of renewable energy for domestic electricity supply; wind energy has moved from supplying 2% of Danish electricity in 1990 to 40% in 2018 (Kirkegaard *et al.,* 2020). In 2018, electricity from renewables accounted for 60.5% of Danish domestic electricity supply, which is among the highest in Europe (Danish Energy Agency, 2020).

National Energy and Climate Plan:

Denmark's National Energy and Climate Plan sets out its ambitions for the period of 2021-2030, which build upon recent political and legislative commitments. Denmark's new Climate Act includes a legally binding target to reduce greenhouse gases by 70% by 2030 (relative to 1990 levels) and reach net zero emissions by 2050 (DMCEU, 2019). With respect to renewables, Denmark has set a goal of 55% renewable energy in gross final energy consumption in 2030 (DMCEU, 2020). Through the 2018 Energy Agreement, Denmark's parliament allocated funding which will move the country towards its goal of 55% of overall energy coming from renewables.

With respect to the electricity sector, Denmark has planned to phase out the use of coal by 2030 and will produce electricity from renewables above 100% of electricity consumption. Ambitious plans for offshore wind farms (minimum of 2,400 MW planned) as well as transmission interconnections with other European states will enable Denmark to produce more electricity from renewable sources than its national consumption (DMCEU, 2020). Denmark will guide the transition from fossil fuels to renewables using a market-based approach, which continues the trend away from feed-in tariffs and subsidies towards a competitive tendering and auction system. Denmark seeks to take advantage of the falling cost of offshore wind farms and the improved efficiency of wind turbines by replacing existing onshore turbines with newer and more effective ones, and by displacing the energy production through the deployment of further offshore turbines. As such, the

number of onshore wind turbines is expected to drop from approximately 4,300 today to 1,850 in 2030 (DMCEU, 2020).

The energy system of Denmark is continuing along a trajectory which pursues market-based approaches for the deployment of renewable energy generation and moves away from fixed supports (feed-in tariffs, subsidies) in favour of a competitive model. This is in keeping with the trends observed by Kirkegaard *et al*., who noted that this change in the energy system of Denmark represents a 'paradigm shift', fundamentally distinct from the early days of community-owned and decentralized renewable energy models (2020).

The impact of COVID-19:

In May 2020, Denmark signed a declaration by the Nordic Council of Energy Ministers, which reiterated the Nordic countries' commitments to "the green transition and carbon neutrality" and noted the benefits of cooperation on energy decarbonisation and electrification (Nordic Co-operation, 2020). The declaration specifically states: "In the light of Covid 19, the Nordic energy ministers will focus the cooperation on the green transition even more on initiatives that support economic recovery" (Nordic Co-operation, 2020). This signals the intent of the Nordic countries to carry on with their existing energy and climate priorities.

Regarding the deployment of offshore wind energy, Denmark has announced ambitious new plans to build 'energy islands' populated by wind turbines that would add 4GW to its renewable energy capacity by 2030 (Lee, 2020). The proposal to develop energy islands is referenced in the NECP, but at the time the NECP was drafted, it was simply under investigation as a potential project. In a statement, Danish finance minister Nicolai Wammen said: "Denmark is again at the forefront with the green transition, and at the same time we are paving the way for a green recovery of the economy with some of the largest long-term infrastructure investment ever" (ReNews, 2020). By specifically referencing the green recovery, the Danish finance minister indicates that they are continuing their plans of ambitious renewable energy development, and that projects such as the energy islands are playing a key role in their economic recovery programme.

3.2 Case Study #2: Ireland

Background:

Ireland's energy system has long been dominated by fossil fuels, including carbon-intensive peat and coal. In 2018, 21% of electricity was generated by coal and peat, and 54% came from natural gas generation (Sustainable Energy Authority of Ireland, 2018). Despite making up a small amount of electricity generation (8% in 2016), peat-fired electricity contributes an outsized amount of carbon emissions – making up 20% of the electricity sector's emissions in 2016 (Toner, 2018).

Renewables make up a growing share of Ireland's electricity generation, providing 30.1% of electricity in 2018. Wind energy provides the majority of renewable energy in Ireland (84% of renewable electricity), and it is the second largest source of electricity generation after natural gas (SEAI, 2018).

Ireland's NECP contribution came during a period of change in the Irish political landscape. Following a general election in February 2020, negotiations to form a governing coalition resulted in a June 2020 agreement between three parties: Fianna Fáil, Fine Gael, and the Green Party (Leahy *et al*., 2020). The three parties agreed to a programme for government which includes, among many commitments, an increased ambition with regard to climate action and decarbonisation; the Government is committed to an average 7% per annum reduction in overall greenhouse gas emissions from 2021 to 2030 (a 51% reduction over the decade) and to achieving net zero emissions by 2050 (Moore, 2020). As the NECP was drafted before the programme for government was finalized, the NECP does not reflect this higher level of ambition (DCCAE, 2020).

National Energy and Climate Plan:

Ireland's NECP builds upon existing policy frameworks including the National Mitigation Plan (NMP) and Project Ireland 2040, and the Climate Action Plan of June 2019. This framework provides the basis and direction for decarbonisation and the accomplishment of net zero emissions by 2050 (DCCAE, 2020). Ireland has committed to phase out coal-fired electricity generation by 2025 and peat-fired electricity generation by 2028, and the electricity supply will be replaced by a combination of renewable energy, interconnection imports from other states, and by natural gas-fired electricity (DCCAE, 2020). Ireland has had success in the deployment of renewable energy for electricity generation over the past two decades: the share of electricity from renewable energy has increased almost fivefold between 2005 and 2018 – from 7.2% to 33.2% – an increase of 26 percentage points over 13 years (DCCAE, 2020).

Ireland's renewable energy deployment strategy has drawn upon a levy, the Public Service Obligation (PSO) since 2001. It compensates electricity suppliers for the additional costs they incur by purchasing electricity generated by renewable energy producers, and is a vital part of the existing energy system (DCCAE, 2020). The energy market is changing, however, through the introduction of the Renewable Electricity Support Scheme (RESS), which enables competitive auctions and allow for the deployment of renewable energy generation based on cost-effectiveness (DCCAE, 2020).

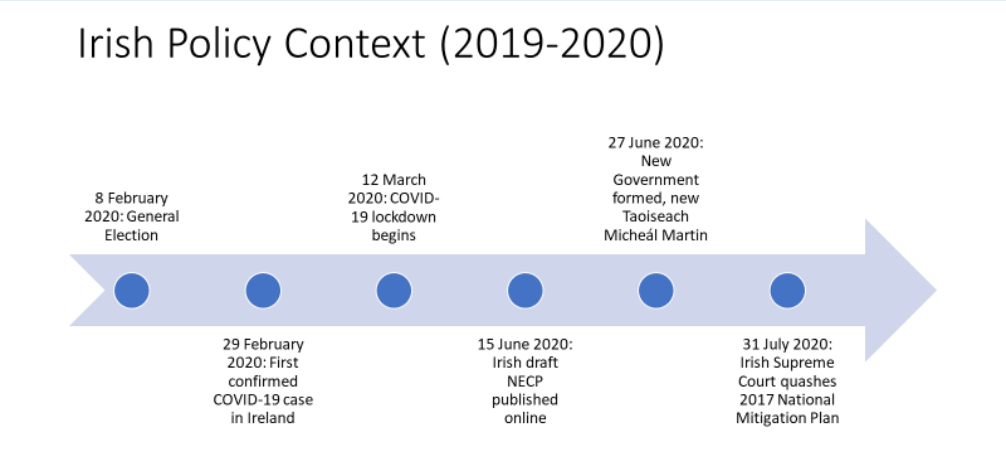
The Irish NECP notes that the target for renewable electricity generation is 70% by 2030, which will result in an electricity system driven primarily by renewables and natural gas-fired electricity. The Irish NECP foresees a large role for wind energy in its energy future, with up to 8.2 GW of onshore wind capacity and 3.5 GW of offshore renewable capacity. Solar will play a significant role as well, with 1.5 GW of solar forecast for the 2030 target (DCCAE, 2020).

The impact of COVID-19:

As noted, the submission of Ireland's NECP came alongside a period of political change as well as economic and public health crises in Ireland: the Irish general election took place just weeks before COVID-19 was detected in the country, leading to lock-downs and the cessation of regular political and economic activities (A summary of the relevant timeline is provided in figure 1.). The negotiation of a new programme for government and the establishment of a governing coalition of parties took roughly 5 months, hindered in part by the emergency response

necessitated by the COVID-19 pandemic. After a period of negotiations, and a vote by Green Party membership on their support for the programme for government, the new Government was formed with Fianna Fáil's Micheál Martin taking on the role of Taoiseach[5] (Leahy *et al.,* 2020).

Figure 1: Irish Policy Context Timeline



Due to this dynamic period where the pandemic figured alongside government formation processes, it is difficult to untangle the various sources of influence on Ireland's 'green recovery' path. The Programme for Government does use strong language to demonstrate that the Government views the COVID-19 pandemic as an opportunity for change:

> The world was approaching a climate crisis long before COVID-19 hit our shores. The pandemic has acted as a catalyst, enabling us to implement radical policies that were considered impossible before; it will not and must not be used as an excuse for failure to take immediate action to deliver on all that is needed to build a better society and a secure future for all living things. (Government of Ireland, 2020).

The Programme for Government commits to the rapid decarbonisation of the energy sector, and reiterates the goal of achieving 70% renewable electricity by 2030, through the deployment of the Renewable Electricity Support Scheme (RESS) and the production of a whole-of-government plan setting out how to deliver on the 70% renewable electricity goal and how the associated skills base, supply chains, and infrastructure will be managed (Irish Government, 2020).

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5 The Taoiseach is the head of government (or prime minister) of Ireland.

Another source of disruption to Ireland's energy and climate policy framework came through a July 2020 decision by the Supreme Court of Ireland, which found that the Government's National Mitigation Plan (2017-2022) was overly vague and did not provide sufficient detail regarding its plans to combat climate change (Carolan, 2020). As the Government revises its climate mitigation plans to align with the goal of net zero emissions by 2050, it will have to provide specific and concrete steps as to how it plans to achieve those emission reductions. The ruling means that the Government cannot make long-term commitments without showing how they will be achieved (Carolan, 2020).

Multiple factors are influencing the direction of energy and climate policy in Ireland, including the COVID-19 pandemic, the new Programme for Government, and the recent Supreme Court ruling. It may be too soon to say whether COVID-19 will end up being a major source of change, as it does not appear to be the dominant force at the moment. Given the uncertainty of the longevity of the pandemic, and its likely continued economic disruption, it is possible that this moment will have a lasting influence on Ireland's energy system.

Table 1: A summary of the commitments made by each state, as reflected in the NECPs

NECP Commitments	Denmark	Ireland
Greenhouse gas emission reductions	Reduce greenhouse gas emissions by 70% by 2030 (relative to 1990 level); Net zero emissions by 2050.	Reduce greenhouse gas emissions by 30% by 2030 (relative to 2005 levels); net zero emissions by 2050.
Coal phase out timeline	Coal phase out in electricity production by 2030.	Coal phase out by 2025; peat phase out by 2028.
Overall renewable energy targets	55% of total energy consumption by 2030.	34% of total energy consumption by 2030.
Renewable electricity targets	More than 100% by 2030.	70% by 2030.

4. Discussion

The preceding section has provided an overview of the energy and climate policy priorities in Denmark and Ireland, immediately prior to and after the initial disruption of the COVID-19 pandemic. Given that the COVID-19 pandemic is ongoing, and its full economic, social, and political impacts are yet to be determined, it is possible to draw only preliminary conclusions regarding the significance of the pandemic for energy and climate policy. Building on work by Moore (2020), Kuzemko *et al.,* (2020), and Steffen *et al.*, (2020), which have examined sustainability and energy transitions in the wake of COVID-19, I seek to provide some insight into the value of path dependency in the context of COVID-19 and energy transitions. As noted, I use two broad questions to guide this analysis:

1. How are Denmark and Ireland responding to the economic disruption caused by the COVID-19 pandemic, and what influence will these responses have on the energy and climate change priorities of each state?

2. Does the COVID-19 pandemic constitute a critical juncture for energy and climate policy in each state?

The case studies above have detailed the initial responses to the COVID-19 pandemic in each state, with respect to energy and climate priorities. As of the time of writing, it is notable that neither country has used the COVID-19 pandemic as an opportunity to shy away from its climate and energy commitments. This contrasts with historical experiences from the 2008/9 financial crisis, wherein governments sought economic recovery at the expense of climate action and resulted in massive increases in carbon emissions as stimulus funding went to support heavy-emitting industries (Hayes, 2020).

Denmark and Ireland's responses to the COVID-19 pandemic, as well as their responses to the crises posed by climate change, are fundamentally influenced by their membership in the European Union. The EU has recognized the opportunity provided by the disruption of the COVID-19 pandemic to align the recovery efforts with their pre-existing European Green Deal, a climate action-focused infrastructure and decarbonisation plan. In early September, the EU budget was agreed upon, which constitutes a landmark recovery package totalling €1.82 trillion from 2021 to 2027, with the largest pot of money ever dedicated to combatting climate change (Hiel, 2020). It remains to be seen exactly how the money in the Green Deal is allocated, though it seems likely that the stimulus will provide significant funding opportunities for programmes that contribute to decarbonisation efforts.

Most western and northern EU states (including Denmark and Ireland) have embraced the energy transition as a way to diversify their energy supply, and as an industrial strategy, whereas many eastern EU members are more reluctant to give up their industrial bases in coal and emission-intensive industries (Kuzemko *et al.,* 2020). Denmark and Ireland appear to be continuing along established trajectories towards decarbonising their electricity sectors.

Applying the conceptual framework set out by path dependency and sustainable energy transitions, we are reminded that energy systems are influenced not only by contemporary decision-making processes, but also by historically conditioned

institutions, infrastructures, and technologies (Davidescu *et al.,* 2018). This helps to explain why seemingly significant changes (exogenous shocks like COVID-19; political change such as the new Irish government) may not immediately produce fundamental changes to existing systems.

Following from the case studies, it appears that COVID-19, while consituting a significant shock to social and economic systems in the short term, is not yet a source of profound change in the energy sector in Denmark or Ireland. Rather, it appears that both countries are continuing along established trajectories of energy system decarbonisation through the phasing out of coal and the increased use of renewable energy and natural gas for electricity generation (DMCEU, 2020; DCCAE, 2020). Denmark's announcements in summer 2020 represent a continuation of a move towards offshore wind energy and continued interconnection with surrounding states; and Ireland's Programme for Government, while ambitious in overall carbon emission reductions, has not increased the ambition for the deployment of renewables or accelerated the plans to phase out coal and peat (Lee, 2020; Irish Government, 2020).

5. Conclusion

The COVID-19 pandemic has been one of the most significant crises of the contemporary era and has led to significant impacts on the public health systems and economies of countries around the world (Steffen *et al.,* 2020). This paper has sought to investigate the influence of the COVID-19 pandemic on the energy and climate priorities of two European states, Denmark and Ireland. As the COVID-19 pandemic is ongoing, it is too early to determine whether it will have a significant, long-term effect on the energy systems of the two states. For the time being, both Denmark and Ireland are continuing along established trajectories of market-driven, competitive processes through which they are decarbonising their electricity systems (DMCEU, 2020; DCCAE, 2020). The long-term impact of COVID-19 on each states' energy and climate priorities remains to be seen, though it is clear that the eventual impacts will be conditioned by the pre-existing contexts of each state's energy system, political landscape, as well as by influences from the EU and beyond.

Path dependency reminds us that broad systemic change, such as an energy transition, is a slow and contested process, as the sub-systems and their component parts of an incumbent regime provide sources of resistance to fundamental change. In the short and medium term, the governments of Denmark and Ireland appear to be continuing along well-established trajectories regarding the decarbonisation of their electricity sectors. However, the investments and decisions they make in the short-term, as they decide how to use stimulus funds and direct infrastructure projects, will have long-term effects due to the continued path dependent nature of their energy systems. While financing large scale infrastructure may potentially become more difficult in a climate of recession, current levels of investment as part of recovery plans remain high and provide new opportunities. As such, the decisions made today will have a significant influence on the future energy system and climate priorities of each state.

While Denmark and Ireland represent positive examples of jurisdictions continuing their efforts to decarbonise their economies and combat climate change, it should not be taken for granted that this is the path being pursued by all countries. Some states will use stimulus funds to prop up fossil fuel producers and carbon-intensive industries, which will have repercussions for decades to come. Path dependency serves as both a reminder and a warning that the decisions taken today will have long-reaching effects, and that quick fixes for economic stimulus may result in complex legacies for future generations to grapple with.

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