Mapping a Just Energy Transition in Northern Ireland

Report for the Department of Economy Energy Division

Centre for Sustainability, Equality and Climate Action

Queen's University Belfast

August 2021[1]

https://www.qub.ac.uk/research-centres/SECA/

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As part of the development of the Northern Ireland Executive's new Energy Strategy, the Department for Economy accepted a research proposal from Queen's University Belfast to produce an independent, grant funded, think piece on *Mapping a Just Energy Transition in Northern Ireland*.

Rationale and Approach

The aim of this report is to map the potential for a just energy transition in Northern Ireland from socio-technical and political economy perspectives. It aims to map the Northern Ireland 'energy system', and how this system relates to other systems such as transport and food production, within the context of the need for a rapid decarbonisation to meet climate change and other targets.

A 'just transition' focuses on securing and creating decent work and quality jobs as we move to a low carbon economy. This is in line with the supporting principles on just transition outlined by the International Labor Organization, UN Framework Convention on Climate Change and the Organization for Economic Cooperation and Development, based on the preamble of the Paris Agreement which requires signatory countries to reduce their emissions while:

> "*Taking into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs* in accordance with nationally defined development priorities…" (UNFCCC 2015; emphasis added)

An essential element of mapping the energy system in NI is to identify the main actors, dynamics, governance, regulatory/policy, political economy and technological drivers and inhibitors of the decarbonised transformation of the energy (and related) systems. Crucial here is clarifying the most effective 'transition pathways' that ensure this decarbonised transition in a planned and organised manner in keeping with the key Just Transition principles of 'no community left behind' and ensuring the most vulnerable sections of our population do not bear a disproportional and negative burden.

Unique features of the NI economy and energy system need to be taken into account – such as its dependence on oil for home heating, high levels of fuel poverty, its large public sector and high levels of GHG emissions from agriculture. The lingering impacts of the RHI scandal need also to be factored in. There is also an interesting opportunity with the current Covid-19 pandemic, to see how and in what lessons for rapid and scaled up decarbonisation and climate action can be gained from the determined and rapid actions of both states and populations.

The report seeks to identify innovations and potentials across technological, policy, social/behavioural, labour market and economic areas which could offer cost-effective, socially supported and timely energy transition pathways in keeping with existing legal obligations and rising democratic demands for greater climate action.

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Executive Summary

Defining a Just Transition in Northern Ireland

- Just transition experiences worldwide have typically concerned sectoral transitions in large fossil fuel extraction and production industries of structural significance to their respective economies. These include coal-mining regions in Germany, Australia and Spain, peat extraction in the Irish midlands, and planning for transition in the oil and gas industries in Scotland. Therefore, there is limited practical policy application to be gleaned from these experiences for Northern Ireland.

- As a result, this research defines a just energy transition for Northern Ireland as a one which concerns both *production* of energy, in a number of critical fossil fuel power plants, and more significantly, the *consumption* of energy. This necessarily involves an economy-wide and rapid transition towards a net zero carbon society.

- Employing institutional definitions and learning from international experiences, a just transition in Northern Ireland must simultaneously transition economic activity and employment away from unsustainable fossil fuel and resource consumption, while also challenging the economic and social conditions which perpetuate and incentivise this unsustainability.

- Government policy signals and coordination are important in leading a just local carbon energy transition for Northern Ireland. This includes implementing policy options for incentivising energy market actors, businesses and households towards decarbonisation and a net zero carbon target.

- A common thread running through virtually all international experiences, with important lessons for the governance of the energy transition in Northern Ireland, is the need for (a) long-term planning for sectoral and economy-wide transition, (b) state-led and coordinated sectoral and civic engagement, and (c) meaningful, continuous, and bottom-up social dialogue.

- The structure of the NI economy and it energy profile means that a just transition will include addressing energy production, but will also impact domestic households and the agricultural sector, in moving to a low carbon and climate resilient economy.

Fossil Fuel Energy and Economy-wide Just Transitions

- There is a commonly held view amongst many interviewees (but predominately those in the energy industry) that the decarbonsiation journey in NI will see natural gas displace oil, and from natural gas we may see bio-methane and hydrogen displacing gas. Here the newness of the NI gas network is of considerable advantage in comparison to other parts of the UK and Ireland for the domestic sector uptake of hydrogen. Skills development (Mid and East Antrim), alongside industry leadership in areas such as hydrogen buses (Wright Bus) and significant research (Belfast Met, QUB and UU), all points to NI having a firm foundation for the scaling up of the hydrogen economy.

- The role for the Executive in coordinating a just transition would be considerably enhanced if NI had its own Climate Change Act and legislative force for NI GHG emission reduction targets. This would also have the benefit of sending clear signals to energy market operators, businesses, and citizens.

- Alongside policy measures to facilitate energy market actors towards decarbonisation, the Executive, following experience in other European case studies, could begin preparing a conditional 'Just Energy Transition Fund' to support this transition. A Gas Exit Commission to bring together all necessary stakeholders in planning and dialogue for the eventual end of gas-fired power in Northern Ireland would also be very effective. Evidence shows that ideally this ought to be facilitated well in advance by publicly announcing an 'end date' towards which all stakeholders can work.

- While a start has been made in identifying and resourcing the new skills needed for the low carbon economy (including reskilling existing carbon energy related jobs), more work is needed to ensure the specific skills and reskilling gaps are identified and appropriate strategies and resources put in place.

- Significant and important data gaps prevent a granular analysis of the carbon intensity of sectoral employment across the Northern Ireland economy. Regardless, with the available data and by employing helpful methodologies, a broad picture of carbon intensity of employment in Northern Ireland can be discerned.

- Approximately 28% of workers in Northern Ireland (excluding the self-employed) are employed in industries which are, as currently organised, actively damaging to the climate and responsible for a disproportionate share of emissions ('Laggards'). A further 19.6% work in carbon-intensive employment which can be 'greened' and immediately play an important role in decarbonisation through effective policy intervention and reskilling.

- To support the imperatives for long-term planning and social dialogue to drive an economy-wide just transition, the Executive should consider establishing a cross-sectoral Just Transition Commission, similar to the successful Scottish model, and arrange for Citizens' Assemblies to actively involve all section of society in, and build consensus for, rapid and just decarbonisation.

Framing a Just Transition for Energy Consumption

- Though minute policy detail concerning the just transition of energy consumption in Northern Ireland is beyond the scope of this think piece, it is nonetheless important to frame the parameters of the concept and highlight the main policy issues involved within it.

- A just energy transition should have a clear focus of the impact of the low carbon energy transition on households and consumers, especially the most vulnerable sections of the population, such as those experiencing fuel poverty.

- There are lessons for the low carbon transition in the transition from oil-to-natural gas in terms of government support and policy signals, energy providers engaging with households and householder education and awareness. For some pathways to decarbonisation, the oil-to-gas experience from the household point of view would be useful in terms of communication, marketing, and engagement of the population.

- There is a major policy discussion to be had on climate science evidence-based incompatibility between orthodox growth-led economic strategies, such as those currently pursued by the Executive (specifically in relation to limits to 'decoupling' GHG emissions and a growing economy), and decarbonisation of the economy to prevent climate breakdown. The broad acceptance of a green post-Covid recovery

represents an ideal opportunity for a more critical policy discussion around problematising a singular focus on GDP growth. Alternatives include integrating a Wellbeing framework[2], the OECD's 'Better Living Index'[3], or learning from New Zealand's Living Standards Index[4], into economic policy.

- Just transition principles suggest an opportunity for a shift by the Executive, as signaled in the Programme for Government, towards economic strategies based on a dashboard of outcomes (as per OECD research) including mental and physical wellbeing, social protection, full employment, and ecological sustainability, and not solely a focus on GDP economic growth.

- Energy conservation and efficiency measures are crucial to a just transition of energy consumption, partly for cost-effectiveness reasons, and must underwrite energy decarbonisation efforts to ensure these measures are successful.

- A just transition for the consumption and accessibility of transport in Northern Ireland must address rural isolation and regional imbalance, and embrace healthier, more efficient, and more equitable transport systems.

- Fuel poverty and heat energy efficiency are central to the challenge of achieving a just transition for the consumption of energy in Northern Ireland. Through state-coordinated and market-signaling programmes to incentivise and deliver home retrofitting at scale, fuel poverty can be addressed while at the same time stimulating green economic activity essential for a just recovery from COVID-19 disruption.

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[2] Ormston, H et al (2021), *Embedding a Wellbeing Framework in Northern Ireland: A contribution from Carnegie UK Trust to inform discussions around the Programme for Government consultation*, https://www.carnegieuktrust.org.uk/publications/embedding-a-wellbeing-framework-in-northern-ireland-a-contribution-from-carnegie-uk-trust-to-inform-discussions-around-the-programme-for-government-consultation/

[3] OECD Better Life Index, http://www.oecdbetterlifeindex.org/about/better-life-initiative/#:~:text=The%20Better%20Life%20Index%20(BLI,the%20centre%20of%20policy%2Dmaking.

[4] New Zealand Treasury - https://www.treasury.govt.nz/information-and-services/nz-economy/higher-living-standards/our-living-standards-framework

Chapter 1 – Defining a Just Transition in Northern Ireland

In this section we consider institutional and academic definitions of just transitional experiences to determine what policy considerations, principles, themes and ideas are most appropriate for a just transition in Northern Ireland.

Institutional definitions

The concept of a just transition can be traced to the American labour movement in the 1970s and 1980s (UNRISD, 2018). However, it has since proliferated among policy makers, political actors and international stakeholders due to its adoption and advancement of the concept by international institutions. Foremost among these groups is the United Nations (Sustainable Development Goals; Silesia Declaration, 2014; Paris Agreement, 2015), the International Labour Organization (ILO), and OECD. In the narrowest terms, these groups define a just transition as the requirement to shift economies and societies to a path of net zero carbon emissions within a timeframe dictated by climate science, in a way that advances social justice, eradicates poverty, nurtures sustainable economic activity, and protects workers and communities most affected by the phasing out of environmentally unsustainable sectors and employment (ILO, 2015; UN, 2014; OECD, 2019[5]).

The ILO's Just Transition 'Guidelines' are considered a highly influential institutional case for a just transition, while also outlining policy principles for governments, trade unions, and employers to follow when delivering transitional policy. Crucially, the ILO articulates an account of a just transition from unsustainable employment that encompassed the parallel requirement to tackle issues like low pay, poor quality work, and in-work poverty:

> "Given the scale and urgency of these environmental and employment challenges, it is clear that the world will have neither the resources nor the time to tackle them separately or consecutively. Tackling them jointly is not an option, but a necessity" (ILO, 2015, p.5).

[5] https://www.oecd.org/environment/cc/g20-climate/collapsecontents/Just-Transition-Centre-report-just-transition.pdf

In other words, the transition cannot lower the living standards and livelihoods of workers, or result in displaced workers being relocated to lower-quality and lower-paid employment. In the case of Northern Ireland, this tangibly means that any jobs displaced by a shift to net zero carbon must be replaced with decent and well-paid employment or other mitigating policies and compensations. There is obvious consequences for training, re-training and skills provision emerging from this necessity, discussed in Section 2.

Co-production and social dialogue

In the comparative literature of just transitions, a consensus exists that there is no 'off the shelf' or 'one size fits all' policy programme which can be uniformly applied to any attempt at transitioning to a zero carbon economy (Botta, 2018; NESC, 2020; NESC, 2020a; UNRISD, 2018; ILO, 2015). Therefore, a recurring and predominant theme in this literature, and in institutional definitions, is that there is a clear need for extensive ***social dialogue and long-term planning*** for transitional policies for workers, communities and regions concerned to ensure that just transition policies are relevant and effective (NESC, 2020; NESC, 2020a; Botta, 2018). In other words, a just transition for a sector, region or whole economy must be ***co-produced*** by government, workers and their representatives, and local communities, through a process of ***inclusive, continuous and meaningful dialogue***.

This is because, through dialogue and the co-production of transitional policy with workers, trade unions and affected communities, the interests and economic wellbeing of these groups are made paramount. In fact, it also results in greater social, and often political, support for just transitional policies among workers who directly affected and among the wider population (Botta, 2018; Campbell & Coenen, 2017; NESC, 2020; UNRISD, 2018). It also empowers the voices of those directly affected and most economically vulnerable from sectoral shifts to low carbon activity, over vested interests opposing structural change and just transitional policies (including hidden subsidies and support for fossil fuel use), and thus creating 'carbon-lock in' (Barry et al, 2015).

In other words, direct community dialogue can help circumvent a form of 'political lock-in' caused by politically and economically influential actors with the capacity to frustrate the co-development and implementation of effective just transition

policies: “Established business models and the interests of influential regional actors often hinder economic transformation and inhibit the evolution of alternative development pathways” (WGBU, 2018, p.11).

Notably for the Northern Ireland Executive, the ILO specifically charges governments to “actively promote and engage in social dialogue, at all stages from policy design to implementation and evaluation, and at all levels from national to enterprise level in line with applicable international labour standards most relevant to the just transition framework” (2015, p.9). As one of the industry interviewees put it in terms of both stressing the importance of social dialogue and the role of the government in coordinating and initiating this:

> “Our Department of the Economy is far too passive when it comes to energy. I think it’s because it is complex, the RHI scandal’s maybe burnt fingers, but they need to get over it, and they need to step up to the plate and engage with people meaningfully, and going forward if they really want to do what they want to do”

International experiences illustrate the centrality of involving workers, trade unions, and local communities as co-producers of the just transition with a stake in its policy outcomes. In Australia’s Latrobe Valley for example, authorities initially failed to close the Hazelwood coal plant due to local civic and political opposition, engendered by a lack of grassroots engagement and relevant economic support to the community concerned (Wiseman et al, 2017[6]; NESC, 2020). The Scottish Just Transition Commission, with its involvement of all major social and economic stakeholders on the Commission itself, its focus on grassroots and sectoral engagement, and interim recommendations to roll out just transition citizen assemblies, is a positive example of co-production and meaningful civic engagement in just transition planning (Scottish Just Transition Commission, 2019; Scottish Just Transition Commission, 2020).

In summary, Sharan Burrow in 2013, then General Secretary of the International Trade Union Confederation (ITUC), stated that:

> “Just transition plans are a first step to generate the confidence that people need for backing structural change. These plans need to be constructed through social dialogue with relevant stakeholders at the national level, at

[6] Wisemen et al (2017), ‘Prospects for a just transition away from coal fired power generation in Australia: learning from the closure of Hazelwood power station’

municipal level and with workers and their unions at the industry and enterprise level."[7]

Long-term planning for a just transition

Strong networks and systems of social dialogue are assisted by long-term planning for policy development and implementation. Regional or sectoral just transitions are most effective when the transition policies, the resources needed to implement them, and the communities and workers they affect, are involved in long-term and co-produced planning and review. Examples of this characteristic of transitions are discussed in detail in Annex 1, but prominent examples of such planning include the Spanish 'Plan del Carbon', and long-term transitional planning in the German Ruhr valley region. In economic terms, transitions can be more effective still when they form part of a broader approach to macroeconomic policy and industrial strategy (Botta, 2018), with some framing this as a 'new industrial revolution' (World Economic Forum, 2016). At an institutional level, the need for long term planning and coordination for transitions to low-carbon economies and societies is well acknowledged (Ellis et al, 2019), not least by the European Commission who note that just transitions 'cannot be managed *ex ante*' (WWF, 2019).

Sectoral transition or transformation?

The point included above by Burrow (ITUC) about advancing 'structural change' is an important one that gets to the heart of a broader debate within the extant policy and academic literature about the scale and breadth of economic and social change that constitutes a just transition: is it simply a movement of some workers from certain high-emitting sectors to greener and decarbonised employment; or does it signal a deeper structural transformation in our economy and society?

Given that just transitions by definition concern the production and consumption of energy, the impact of transition on society extends far beyond isolated groups of workers in certain sectors. Indeed, because of the foundational and unique status of energy in underpinning most human activities, any change in a society's energy system means changes in almost all parts of society and the economy (Smil, 2017). This not only means energy security is always a paramount consideration for any

[7] OECD, 2019, https://www.oecd.org/environment/cc/g20-climate/collapsecontents/Just-Transition-Centre-report-just-transition.pdf

energy transitions, but that energy transitions also produce changes in other social and economic systems.

Thus energy transitions affect production and the world of work, standards of living, electivity, domestic heating, cooling and cooking, food production and transport. This allows for an understanding of a just energy transition as one that encompasses the economy and our society as a whole, including its economic and social relations. A thorough comparative study by UNRISD (2018) engaged with differing perspectives and lived experiences of the policy and theoretical parameters of a just transition. The authors propose a 'continuum' of what defines just transition experiences, and includes four categories:

- *Status quo* – "a greening of capitalism through voluntary, bottom up, corporate and market-driven changes";

- *Managerial reform* – "greater equity and justice is sought within the existing economic system and without challenging existing hegemony. Certain rules and standards are modified and new ones can be created—on access to employment, occupational safety and health—but the economic model and balance of power do not change";

- *Structural reform* – "…both distributive justice and procedural justice are secured. Procedural justice entails an inclusive and equitable decision-making process guiding the transition, and collective ownership and management of the new, decarbonized energy system by the different stakeholders—rather than a single interest";

- *Transformation* – "an overhaul of the existing economic and political system that is seen as responsible for environmental and social crises…[and] alternative development pathways that undermine the dominant economic system built on continuous growth, and imply profoundly different human-environment relations."

Garrett-Peltier (2018) explores these distinctions further by offering two approaches to transition. The first is *'transitional'*, where a region or society moves from "a fossil-based energy system to one which is more energy efficient" while

compensating affected workers and communities with clean energy jobs and other policy initiatives. Crucially, 'the economic system is relatively unchanged, it just uses different energy sources' (p.10)[8]. The second is understanding is *'transformational'*, and 'promotes democratic worker participation, community or cooperative ownership of energy resources, community-based design, and the move toward thinking about and creating a circular economy rather than an extractive and waste-producing economy' (ibid, p10). ITUC helpfully define a Just Transition as "an economy-wide process that produces the plans, policies and investments that lead to a future where all jobs are green and decent, emissions are at net zero, poverty is eradicated, and communities are thriving and resilient" (ITUC, 2017).

While these are often framed as distinct, or perhaps competing, understandings of a just transition, Sweeney and Treat invoke a two-staged transition that frames modest sectoral transition as the first step in a broader shift towards a different type or economy and economic and social relations. This conceptualisation offers a model that "somehow addresses the concerns of the here-and-now (worker-focused transitions) in ways that also keep the need for a transition of the entire economy in the forefront (socioeconomic transformation)" (2018, p.2).

This is especially helpful in the case of Northern Ireland. As explored in the following section, Northern Ireland does not have any major fossil fuel extraction and production industries, in contrast to virtually all international just transition experiences. This means that a locally bespoke interpretation of what just transition means in the Northern Ireland context is required, outlined in subsequent chapters. In the vast majority of these examples, understandings of transition are limited to 'status quo' and 'managerial reform' models, where employment from primarily coal industries is phased out through a combination of compensatory, early retirement, and retraining packages (UNRISD, 2018), and decarbonised or low carbon alternative employment and economic opportunities developed to replace fossil fuel activities. The following Chapter will engage in detail with the employment and sectoral transitions that can take place in Northern Ireland in carbon-intensive industries. However, in recognition of the broader and structural understandings of just transitions above, this should be seen as merely one element of a broader shift towards a more sustainable, democratic, publicly-oriented and socially just society.

[8] https://climatestrategies.org/wp-content/uploads/2018/10/brochure-WEB.pdf

A just transition for production and consumption of energy

A contribution from the International Institute for Sustainable Development (IISD) also bolsters the case for a broader, systemic approach to just transition in Northern Ireland:

> "A just energy transition is a negotiated vision and process centred on dialogue, supported by a set of guiding principles, to shift practices in energy *production and consumption*. It aims to minimize negative impacts on workers and communities with stakes in high-carbon sectors that will wind down, and to maximize positive opportunities for new decent jobs in the low-carbon growth sectors of the future. It strives to ensure that the costs and benefits of the transition are equitably shared." (IISD, 2018, p.2; emphasis added)

This research will adopt this dichotomy of consumption and production as a core part of our definition of a just transition in Northern Ireland. In the following Chapter, the 'production' of energy in Northern Ireland does not mean the extraction and production of coal, for example, due to the conspicuous absence of such activity in the regional economy, and despite the obvious dominance of *producers* as the focus of just transition literature and experiences worldwide.

There are obvious overlaps between understandings of activities that 'produce' energy as opposed to activities that 'consume' it. Therefore, the concept of 'energy potential' is important here. For example, a domestic oil boiler creates heat energy to make homes warmer, but can only do so by consuming fossil fuels with energy potential. Fossil fuel power plants exploit the energy potential of fossil fuels to *produce* electricity that reaches its final points of *consumption* elsewhere in the economy. Renewable energy infrastructure *produces* electricity by harnessing the potential of the renewable sources for the same purpose. All other forms of energy use in society, including virtually all transport and heat generation, relies on the consumption of imported fossil fuels to create energy that is consumed instantly, and are therefore classed as 'consumption' for the purposes of this research (DfE, 2020).

As a result, on the *production* side of the economy and the labour market, Northern Ireland's three major fossil fuel power plants, in our view, employ workers most vulnerable to rapid decarbonisation and just transitional shifts to achieve this in

the short and medium term. Ballylumford, Kilroot and Coolkeeragh plants, and some 350 workers employed there, will require transition away from gas generation in a timeframe determined by climate science and an ambitious net zero carbon target (Interview 1, 2020). Chapter 2 will engage in detail with policy discussion and recommendations about how best to achieve this.

On the energy *consumption* side, where we believe the NI Executive should place its overarching just transition focus, a just energy transition relates to issues such as energy/fuel poverty reduction, and exploitation of new socio-technical innovations around renewable and distributed electricity at household and community level. At the same time, decarbonisation consistent with principles of social justice, expanding democracy and democratic legitimacy for energy and climate action, and at the same time addressing underlying structural causes of persistent socio-economic inequality, would require a more comprehensive just transition and economic shift among high-emitting energy *consuming* sectors. Policies aimed at achieving a just transition for energy consumption and an economy-wide shift towards citizen empowerment, public participation, and social justice, will also be explored in-depth in Chapter 2.

Changes in employment and skills for a transition for energy consumption involves huge sections of the economy, particularly energy intensive sections, high-emitting sectors (electricity production and agriculture for e.g.)[9], sectors involved with the construction or maintenance of internal combustion engine powered transportation[10].

The role of government in just transition

Acknowledging the need for an economy wide just transition to underwrite and facilitate a rapid transition to a net zero carbon society, we must then ask, what should this transformation look like?

It is no doubt beyond the scope of the Department's Energy Strategy itself, but the Northern Ireland Executive and other stakeholders involved in energy policy should

[9] An interview with the Ulster Farmers Union (UFU) was requested to discuss the pivotal role of agriculture in a just transition for Northern Ireland, but no response was received. However, some insights for farming and the just transition in NI are made in later sections, based in particular on the Committee on Climate Change's 6th Carbon Budget report for NI.
[10] See Ní Lochlainn, 2021, pp.19-38 for a more detailed breakdown of affected employment sectors and district council areas in NI.

consider the evidence that achieving a just transition will require us to "end our systemic dependence on the hydro-carbon industry and the capitalist driven need for endless growth on a planet with limited resources" (UNRISD, 2018, p.15). By extension, this may require a reduction or restructuring of private, profit-seeking economic activity to enable greater citizen and public sector economic participation that is more sustainable, democratic and citizen and community-oriented.

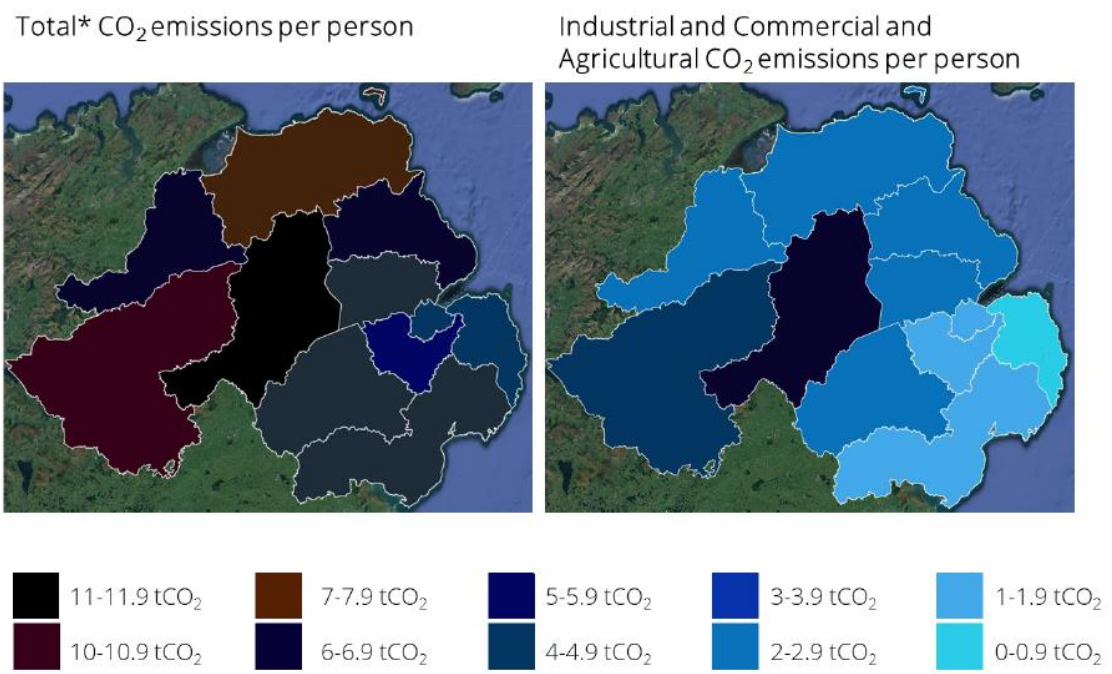
Early evidence of international just transition experiences point to the need for the state through elected governments to be intimately involved in planning, leading, facilitating and funding an effective transition, in Scotland, Germany and Spain, for example (detail discussed in Annex 1) (Stroud, 2014; McBride, 2018[11]; NESC, 2020). Indeed, the most successful policy efforts at reducing the carbon intensity of energy production throughout the 20th century where achieved by state-led planning and investment (McBride, 2018). In fact, research shows that

> "an effective, socially inclusive and 'high road' transition is more likely to emerge within co-ordinated market economy contexts [i.e. involving active state intervention, the public sector, labour activation, and retraining supports], for example, Germany, than within the liberal market economy contexts of, for example, the United States and United Kingdom" (Stroud, 2014, p.1).

Another role for government, and further research, is the geographically uneven impact of any energy transition. Ní Lochlainn's recent report for the Nevin Economic Research Institute (NERI) on *Supporting People and Place: Planning for a Just Transition in Northern Ireland*, outlines how carbon dioxide emissions differ across the 11 council districts (see figure below). While more detailed research is required, a coordinated NI wide plan for decarbonisation would need to pay attention to the uneven impact of policies by council district with particular attention needed for Mid-Ulster, Fermanagh and Omagh and Mid and East Antrim, and relatedly by sector, given the disproportionate CO2 impact of agriculture.

[11] https://thebreakthrough.org/issues/energy/the-green-new-deal-and-the-legacy-of-public-power

Figure 8: Northern Ireland CO_2 emissions per person by District Council



* Total includes Industrial and Commercial, Agriculture, Residential, Transport and LULUCF

Source: BEIS (2020) Local Authority territorial CO_2 emissions estimates 2005-2018

(Ní Lochlainn, 2021, p. 27).

This coordination role for government is facilitating social dialogue between affected stakeholders was underscored by one of our interviewees who noted that "Government led social dialogue is critical…as an 'honest broker'" (Industry interviewee).

Conclusion

In light of the above discussion of the academic literature and prevailing understandings of a just transition in Northern Ireland, we believe the following principles should define just transition policy and planning in Northern Ireland. A key consideration is the role of the state in shaping, coordinating and managing any just transition. As Ní Lochlainn points out, "Just transition does not happen by accident; it requires significant action by the state, from consulting with workers and communities, to directly supporting those displaced and ensuring that the skills system is fit for purpose" (2021, p.60). These just transition principles align with existing Outcomes laid out in the NI Executive's 2016-21 Programme for

Government and the *New Decade, New Approach* (NDNA) Agreement of January 2020:

- Extensive on-going and meaningful social dialogue between state, communities/citizens, trades unions, businesses, to co-produce local just transition policy plans and proposals (NDNA, 3.9, p.23);
- Engage in long-term planning to effectively and consensually roll out, a) sectoral specific and planned phase-outs of unsustainable employment, and b) broader economic and social shifts in line with a transforming the energy system based on principles of social justice (Outcome 2, Outcome 6);
- Create decent, well-paid and secure employment to replace jobs phased out through sectoral energy transitions (Outcome 2, Outcome 6);
- Adopt a locally relevant definition of just transition that incorporates sectoral transitions as one element of a broader structural social and economic shift (Outcome 3);
- Involve the state more extensively in managing the energy economy to achieve a just transition, including the extension of public ownership and greater distributed and democratic control of energy where feasible (Outcome 12);
- Rebalance economic priorities away from growth-led and intense resource consumption, towards jobs-rich sustainable development (Outcome 2, Outcome 6).

Chapter 2 – Fossil Fuel Energy and Economy-wide Just Transition

A Just Transition for fossil fuel energy production

As of 2020, Northern Ireland had some 1.88GW of installed fossil fuel power generation capacity. In total 53.2% of power in Northern Ireland is generated from fossil fuels. As outlined in Chapter 1, there are three major fossil fuel-based power plants in Northern Ireland, listed below by fuel-source, generation capacity, and estimated total full time employment in Table 1 below:

Table 1: Fossil fuel energy generation capacity in Northern Ireland, 2020

Power station	**Capacity (GW)**	**Estimated total full time employment**
Ballylumford (gas)	0.709	100
Kilroot (coal & currently being transitioned to gas, due to be completed by 2023)	0.618	120
Coolkeeragh (gas)	0.461	60-80
Aggregated generational units	0.076	Unknown
Contour Global	0.012	Unknown
Total	**1.876**	**Approx. 300**

Source: http://aims.niassembly.gov.uk/questions/printquestionsummary.aspx?docid=292891, Interview 1 with Shane Telford, Unite the Union Rep at Kilroot Power Station

Kilroot

Kilroot is currently the only coal plant left in Northern Ireland, and will remain so until 2023 when the current capacity auction contract for coal-fired power runs its course. By itself, Kilroot is accountable for a fairly significant portion of Northern

Ireland's total carbon emissions, about 2.1 $MtCO_2$ in 2016 and 1.5$MtCO_2$ in 2017 (CCC, 2019)[12]. When Kilroot was sold by previous owners AES as part of a £163m deal to subsidiary (EP UK) of Czech-headquartered energy firm *Energeticky a Prumyslovy* Holding (EPH), it was announced shortly afterwards that the plant would convert to gas power. In reality, the shift is more closely linked to a failure in 2018 to successfully secure supply for Kilroot's coal-produced power at auction for the Integrated Single Electricity Market (Barry, 2018a). Subsequent negotiations between AES, SONI and the Northern Ireland Utility Regulator eventually provided a short-term reprise for coal power but the regulatory signal was clear - coal was to be phased out, and energy market actors responded.

EP UK have begun work to convert the site, and this is due to be completed by 2023. In what is planned to be the largest investment initiative in Northern Ireland's history of power generation, EPUK have announced £600m plans to integrate the gas conversion in a broader vision for transforming the Kilroot site (Irish Times, 2020[13]; EPUK, 2020[14]). The company are 'considering' and 'looking at' plans to include a small solar farm, EV charging points, and a battery storage facility on the site, and as a result of the full site transformation the firm claim they will provide up to 200 temporary construction jobs, and 150 full time operational jobs (EPUK, 2020; Newsletter, 2020[15]). There is scepticism among workers, however, as to whether these greener energy projects will actually be undertaken - to date only work on the gas conversion of the plant has commenced (Trade union interviewee).

EPUK's plans are an example of a private transition from high-polluting coal power to a slightly cleaner technology in gas power. As such, it is an immediate and positive opportunity to deploy best practice policies for just transition planning through government intervention. Indeed, this intervention will be needed. Despite active involvement by Unite the Union in particular in making the views of workers known in securing a renewed contract for coal power out to 2023 to prevent a 'cliff edge' of job losses and plant closure, workers and trade unions were 'kept in the dark' about the auction process, and were not actively consulted by EPUK about its

[12] https://www.theccc.org.uk/wp-content/uploads/2019/02/Reducing-emissions-in-Northern-Ireland-CCC.pdf
[13] https://www.irishtimes.com/business/energy-and-resources/600m-energy-park-proposed-for-co-antrim-1.4300171
[14] https://kilrootenergypark.co.uk/
[15] https://www.newsletter.co.uk/business/investment-ps600m-kilroot-power-station-would-create-200-construction-jobs-green-energy-park-2908662

plans for transitioning the site to gas power (Trade union interviewee 1). Crucially, unions expect up to 100 job losses at Kilroot when this conversion is complete in 2023 (Trade union interviewee 2), though there are opportunities for early redundancies and retraining. The initial decision not to award a contract to Kilroot at capacity auction initially raised the prospect of closure of the plant entirely and large-scale job losses. In the words of Unite the Union representative interviewed for this research, "Kilroot is going to close…but it basically came a bit early, we didn't have time to plan, people won't get the opportunity to retrain for new jobs…it really was [a cliff edge]" (Trade union interviewee 1).

This experience at Kilroot in 2018 is very similar to the example of Bord Na Móna's (BNM) plans for the closure of peat extraction facilities in the Republic of Ireland in 2019, due An Bórd Pleanála's decision to close peat-fired plants fuelled by peat extracted from BNM sites[16]. The Irish government has been forced to retrospectively appoint a Just Transition Commissioner to deploy limited government funds (€11m) to finance "projects focusing on retraining workers and proposals to generate sustainable employment in green enterprise in the region, and supporting communities to transition to a low carbon economy" (DCCAE, 2020). For workers, there was "shock from the immediacy of the closure", and they have been rendered unable to plan for the families and livelihoods for the long-term: "what was expected to be a ten-year transition period is now reduced to twelve months, and possibly shorter" (Mulvey, 2020, p.6). This 'ex ante' approach has led to suspicion and negative reaction amongst the workforce, key stakeholders such as trades unions and local communities affected, and thus might be viewed as an example of how *not* to initiate a Just Transition process.

Proposed policy intervention – 'Kilroot 2023'

This situation must be avoided at Kilroot in 2023; where upwards of 100 jobs are expected to be lost upon the final conversion from coal to gas power (Interview 1, 2020). Unite the Union state that "there will definitely be massive job losses", but made clear that, by a rough estimate, some "50% of staff will be ready for it" (ibid, 2020). In other words, they are open to the prospect of early retirement or compensated redundancy. This also means that roughly half of those affected are not open to this prospect, and will require intervention to secure decent, well-payed employment. This also concerns staff with a wide range of skills, some with

[16] This example is explored in greater detail in Annex 1.

transferable skill sets (such as maintenance engineers), and others with highly-specialised skill sets specific to operations at Kilroot that will require retraining. The new Kilroot Energy Park should absorb some of these employ and retain those skills.

There are also some 80-100 agency staff on temporary or part time contracts at the Kilroot site, most of whom conduct tasks and possess skills that are relatively transferrable – security, cleaning, etc. (Interview 1, 2020). It is possible that this work will be replaced elsewhere, but unclear. The point is that just transition imperatives of building a society based on decent, secure and well-paid employment in sustainable jobs mean that Kilroot agency workers should also be afforded access to any retraining and compensatory opportunities.

Beyond employment, there are also other significant policy concerns. Unions are also unclear whether the green energy components of EPUK's Energy Park proposals will be completed by 2023, if at all (ibid, 2020). Furthermore, while unions have been described as strong and 'reactive' in cases where jobs are threatened (i.e. the near closure of the plant in 2018), they have no proactive plan themselves for just transitions away from unsustainable work at Kilroot (or elsewhere) (ibid, 2020). Therefore, no direct negotiations between Unite and EPUK have as yet taken place about what transitional policies, compensation, and retraining and reemployment packages at Kilroot for the 100 workers affected. Though this employment is relatively insignificant as a share of the overall labour market in Northern Ireland, unions believe the loss of approximately 100 jobs it will have a more significant impact on the local economy by way of depleted demand and lost incomes (ibid, 2020).

With this in mind, and adopting the principles of Chapter 1, the Northern Ireland Executive and the Department for the Economy have a responsibility to facilitate transition at Kilroot by 2023. A suggestion here would be to establish (sooner rather than later) a Just Transition 'Kilroot Taskforce' to engage in meaningful, two-way dialogue that involves full time and agency workers, trade unions, EPUK, and representatives of the regional economy and society[17]. Its role must be to encourage a co-produced plan to support workers to transition out of employment, retrain and secure replacement employment, and support the regional economy.

[17] This is loosely based on the Longannet Task Force model advanced in Scotland, explored in more detail in Annex 1.

In this way, it can learn from the Longannet Task Force (NESC, 2020; Interview 2, 2020; Scottish Just Transition Commission, 2019[18]). When Scottish Power announced it would close the Longannet coal plant after 4 years of operation, it established a Task Force to ensure a just transition for workers. The Task Force was ministerial-led and co-chaired by a representative of Fife Council (Interview 2, 2020). Its members included representatives of trade unions, the ownership company, the Scottish Partnership Action for Continuing Employment (PACE), to manage skills development and retraining, and members of other local Councils whose local economies relied heavily on supply chains linked to Longannet (some 236 jobs were lost due to closure, with a further 800 impacted indirectly by demand reduction) (ibid, 2020; Scottish Just Transition Commission, 2019). It was tasked with six work strands to manage the closure of Longannet (Scottish Just Transition Commission, 2019), namely:

- Strand 1: Workforce Support and Training
- Strand 2: Business Recovery and Growth
- Strand 3: Community Regeneration
- Strand 4: Business Infrastructure and Investment
- Strand 5: Future Use of the Site and Economic Recovery
- Strand 6: Environmental Mitigation

The Task Force was highly successful in many ways. 12 months on from the final closure of the plant, just five workers of a workforce in excess of 230 were economically inactive (Interview 2, 2020). A member of the Task Force believes that company was so proactively involved in facilitating a just transition for workers due the presence of a government-led Task Force (ibid, 2020).

The task of negotiating compensation was left to trade unions. Unions involved felt they were best placed to represent workers and secure terms which would be otherwise undermined by government offering a 'minimum floor' of compensation packages, which they feared would be adopted by the ownership company as a 'maximum ceiling' (Interview 2, 2020). The Task Force then determined the

18 https://www.gov.scot/binaries/content/documents/govscot/publications/minutes/2019/05/just-transition-commission-meeting-papers-april-2019/documents/just-transition-commission-meeting-2-longannet-taskforce-paper-2.2/just-transition-commission-meeting-2-longannet-taskforce-paper-2.2/govscot%3Adocument/Just%2BTransition%2BCommission%2B-%2BMeeting%2B2%2B-%2BLongannet%2BTask%2BForce%2Bpaper%2B-%2Bpaper%2B2_2.pdf

available skills of the workforce whose jobs were being lost, and matched them accordingly through PACE retraining initiatives and jobs fairs with relevant private sector employers in search of work.

In a Northern Ireland context, the Department for the Economy are aware of imminent and substantial job losses in 2023, and are therefore better placed than the Longannet model to plan for a just transition. This allows for a much more strategic and explicit focus on a greener/low carbon energy outcome than at Longannet. For example, Northern Ireland might engage public sector employers in need of additional staff (for example, the health and social care system in the wake of COVID-19) to recruit redundant workers, where trade union presence and average wages are higher than the private sector. In the absence of a model similar to the Scottish PACE, it also allows the Department for the Economy to proactively engage with local regional colleges and relevant third-level institutions to design bespoke retraining courses for workers affected in skills needed for the just transition, green construction and engineering, for example.

These modifications to the model might prevent some negative issues that arose in the aftermath of the Longannet model. The phase out of the Scottish coal plant also effectively led to a phase-out of unionisation at the site. A Spanish firm, Talgo, purchased the site (BBC, 2019) with the intention to transform the brownfield area into a train and rail manufacturing plant, but no trade unions were recognised by the new owners (Interview 2, 2020). In their February 2020 Interim Report, the Scottish Just Transition Commission also criticised the Task Force in their findings that "the voice of people from the surrounding area was not heard in the process of planning the response to the closure" (2020, p.22). A Northern Ireland model should more actively involve local civic and community groups in the greater Larne area (and here proactively engage and partner with the local council), for example, as well as paying consideration to the local businesses supplying the plant or dependent on workers' spending.

The funding model for a 'Kilroot Task Force' might, therefore, be two-pronged. Trade unions should be left to collectively bargain with EPUK for compensation for all workers and early retirement options for older workers, with the caveat that this is monitored by the Department to ensure no abuse of workers' rights. Retraining for younger and more specialised workers at Kilroot should fall to the Department for the Economy (but working with local councils and education/training providers) to ensure this in the public interest and strategic in nature to align with other just

transition objectives. Broader regional economic and administrative support can be provided by government. In interviews conducted to inform this research, trade unions at Kilroot voiced support for this policy approach (Interview 1, 2020; Interview 2, 2020).

Ballylumford, Kilroot and Coolkeeragh – longer term transition to the 'end of gas'

The projected job losses in Kilroot as part of gas transition plans by 2023 should be seen as a sort of testing ground for the much larger, structural shift away from gas power in the medium and longer term. Any ambitious net zero carbon target (such as Scotland's 2045 net zero target) means that Ballylumford, Kilroot and Coolkeeragh gas plants will all have to close permanently before this date, or be transformed towards low carbon energy production or storage. It is beyond the scope of this research to definitively set timelines for closure of these plants, but the Department and the Executive at large have an important responsibility to determine a date for closure in line with climate science. Here we explore policy options to achieve transition by any given date.

Both Kilroot and Ballylumford are owned by EPUK, and any assistance by the Department for the Economy in facilitating a just transition for workers in 2023 should be seen as the first stage in a planned closure of gas power in Northern Ireland. Coolkeeragh power station, on the other hand, is wholly owned by the Electricity and Supply Board (ESB), an Irish semi-state entity which is 95% owned by the Irish government as the primary electricity utility of the Republic of Ireland (the remaining 5% being owned by employees through a share scheme) (DfE, 2020)[19]. Citing a 'significant increase in cost of sales for gas and carbon', Coolkeeragh ESB Ltd. has fallen from a position of profitability in 2016 to a position of pre-tax loss of £13m in 2018 (Belfast Telegraph, 2019)[20].

This is only a recent public financial position of the Coolkeeragh plant as an enterprise, but it presents the Northern Ireland Executive and DfE with an opportunity to facilitate the planned closure of the site in a manner that is mutually beneficial to both ESB and to the Northern Ireland Executive. Similarly, the billionaire owner of EPUK has stated in an interview for the *Financial Times*

[19] https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Energy-In-Northern-Ireland-2020.pdf
[20] https://www.belfasttelegraph.co.uk/business/northern-ireland/esb-posts-13m-loss-for-gas-fired-power-plant-in-londonderry-38270084.html

stated that his strategy involved purchasing sites for 'mid-term' development for 'the next at least 10, probably 20 years' (2017)[21]. The horizon for the end gas power is in sight, and financial conditions can allow for an agreed date that protects workers, communities and re-purposeful energy infrastructure.

Beyond financial conditions, economic imperatives, and, of course, climate obligations, the need for state intervention to protect workers in the medium- and longer-term is intensified by the onset of automation, which trade unions feel are making the tasks of many workers redundant across all power plants (Interview 1, 2020, Interview 2, 2020). In fact, the twin threat of automation and climate breakdown to certain sections of the workforce was explored at length in the Irish National Economic and Social Council (NESC) landmark just transition paper in May 2020 (NESC, 2020). Digital innovation and ICT will be key drivers and components of the low carbon energy transition (NESC, 2020). Here it is important to consider that automation and digital technology have been a feature of the energy generation sector for some time. Although it is not as yet a dominant feature of that section of the labour market, a shift to gas power and technological change in gas generation have set conditions to facilitate automation in the short-to-medium term (Interview 2, 2020). Intervention on the part of the state, as explored in the following section, to support these workers through bespoke and ongoing retraining initiatives, is important.

Proposed policy intervention – planning for the 'end of gas power'

In light of this, therefore, the Executive might formally engage through a Northern Ireland Just Transition Taskforce with EPUK, ESB, relevant trade unions, and representatives of local communities, councils and affected economic sectors and supply chains, to begin planning and co-producing the strategies for the end of gas power in Northern Ireland. Though policy will be informed and developed through dialogue (including conflict resolution given there will be perceptions of 'winners and losers'), the government should set a clear legal, economic and regulatory signal towards which all actors must work, by announcing a deadline for the end of gas power as part of the local energy mix. Trade unions also support the principles of this policy approach across all major power plants in Northern Ireland (Interview 1, 2020; Interview 2, 2020).

[21] https://www.ft.com/content/09cb4c90-d5ee-11e7-8c9a-d9c0a5c8d5c9

Examples exist of policies that can assist in planning for the end of employment in gas power. The Scottish government announced a £62m 'Energy Transition Fund' in June 2020 to support the transition of the Scottish fossil fuel energy sector and the North West region generally over five years (Scottish Government, 2020). The fund will also try to diversify the sector at a time of considerable disruption and uncertainty, assisting the net zero carbon transition of Scottish oil and gas, and is intended attract additional private investment to the area[22]. These extractive industries are of structural significance to the Scottish economy and workforce, hence the view of the Scottish government to provide conditional financial support to the sector.

A concept of a government fund to aid just transition objectives could be developed to give the government in Northern Ireland the capacity to provide regional economic support, and direct support to workers where appropriate, to coordinate the planned closure of the gas power generation. A 'Just Energy Transition Fund' could also include the possibility of purchasing and repurposing sites at Kilroot or Ballylumford following, or as part of, their planned closure or transformation. Other interventions could include reframing and redirecting existing skills training, targeted support for low carbon research and development specific for the structure of the NI economy and tailored to its natural energy assets.

In policy terms, the benefits of repurposing these brownfield sites, some of which are partially fitted with infrastructure amenable to redevelopment, are obvious (Interview 1, 2020). They include preventing decay of sites through neglect, preserving economic activity and local employment and skills important to the surrounding communities, and providing the state with an income either as owners of enterprises on the site, or simply through ownership of the site itself. Here, in part extending the notion of social dialogue at the heart of just transition, engaging with the workforce on their ideas for repurposing sites and skills, would be a cost-effective way of co-creating solutions, building trust in the transition process, and create the conditions for innovation.

This fund, however, can only assist in a sector-wide transition that is managed and inclusive of all stakeholders in the sector. A 'Gas Exit' Commission for Northern Ireland should be established along the same lines (in terms of membership and

[22] https://www.gov.scot/news/gbp-62-million-fund-for-energy-sector/#:~:text=The%20%C2%A362%20million%20Energy,sector%20investment%20in%20the%20region.

objectives) as the Longannet Task Force, but with a structural and sector-wide remit. With a government-determined date for the 'end of gas', trade unions, local communities and local Councils, all ownership bodies at power plants, training and education bodies, and all other relevant stakeholders can be brought together to ensure some 300 workers currently in the fossil fuel energy generation sector in Northern Ireland are protected through a Just Transition.

Decarbonisation and employment in the Northern Ireland economy

Data gaps – emissions, energy, and the economy

A primary ambition of this research was to create a 'per worker' measure of GHG emissions in Northern Ireland to give a clear picture of the most carbon intensive sectors in the Northern Ireland economy. With the publicly available data, however, this has not been possible.

DAERA publish emissions data measured and recorded by the National Atmospheric Emissions Inventory (NAEI). Emissions data are organised under a framework of nine categories: Agriculture, Business, Public, Residential, Transport, Industrial Processes, Energy, Waste Management and Land Use. Unfortunately, this framework does not fit with other methods of measurement for comparative purposes, in this case the Standard Industrial Classification (SIC) categories for sectors of the economy (through the Northern Ireland Quarterly Employment Survey[23]), or energy consumption by sector[24]. At times, however, this appears to be a Northern Ireland specific problem.

The ONS does provide a comprehensive breakdown of emissions by SIC economic sector, broken down further by gas (ONS, 2020)[25]. This would be an extremely useful data resource if this was disaggregated by UK regions, however the ONS have confirmed in our research that they do not provide this data. As this is UK aggregate data, and given that the profile of emissions between Northern Ireland

[23] https://www.nisra.gov.uk/statistics/labour-market-and-social-welfare/quarterly-employment-survey

[24] The ONS and BEIS measure record and publish regional data of energy consumption, by fuel source and by economic sector. However this is disaggregated only into consumption in 'Domestic' or 'Industry' sectors, not allowing comparison to DAERA emissions framework or SIC employment data.

[25] https://www.ons.gov.uk/economy/environmentalaccounts/datasets/ukenvironmentalaccountsatmosphericemissionsgreenhousegasemissionsbyeconomicsectorandgasunitedkingdom

and other UK regions differ so dramatically, no disaggregation could be completed as part of this research. Expressing emissions data so that it may be compared more readily with economic sectors and economic activity more broadly (output, incomes, etc.), as the ONS has done, should be an important project for DfE and DAERA to inform research into relationship between emissions, energy, and the Northern Ireland economy.

Determining the most carbon intensive sectors of the economy

Therefore, we employ a methodology from McIvor et al. (2020), who have developed a four-part 'Eco-Transformation of Industries Matrix', using ONS SIC-emissions data, on which the 'environmental friendliness' of different sectors of the UK economy are assessed. Measuring each sector by the level of carbon emissions from that sector, and the level of environmental activity taking place in that sector, four categories are revealed that provide a clear picture of the most carbon intensive sectors of the economy. These categories are reproduced below:

> '**Leaders:** Industries in this category are the most eco-friendly, as they do not produce high levels of carbon emissions and are intensively involved in activities that directly protect the environment across the economy;
>
> **Neutrals:** Industries in this category produce low levels of carbon emissions but are not involved in activities that directly protect the environment. They are part of the green sector but are not influenced by new climate-crisis policies;
>
> **Followers:** Although they are producing high levels of emissions, followers are also involved in activities that are intended to protect the environment and could thus create green jobs;
>
> **Laggards:** Industries in this category produce high levels of carbon emissions and are not involved in activities aimed at protecting the environment'; (ibid, 2020).

In Figures 1 and 2 below from McIvor et al. (2020), SIC sectors on a UK-wide basis are inserted into this four-part framework, and then against overall employment and emissions. Figure 1 plots the sectors of the economy along the lines of the definitions outlined above. Figure 2 then collates the most carbon intensive sectors (Laggards and Neutrals) of the economy, showing a clear dominance of emissions

intensity among a number of core industries. For example, 93% of UK emissions derive from just 45% of employment (McIvor et al, 2020).

Figure 1: SIC employment categories organised by level of emissions and level of environmental activity

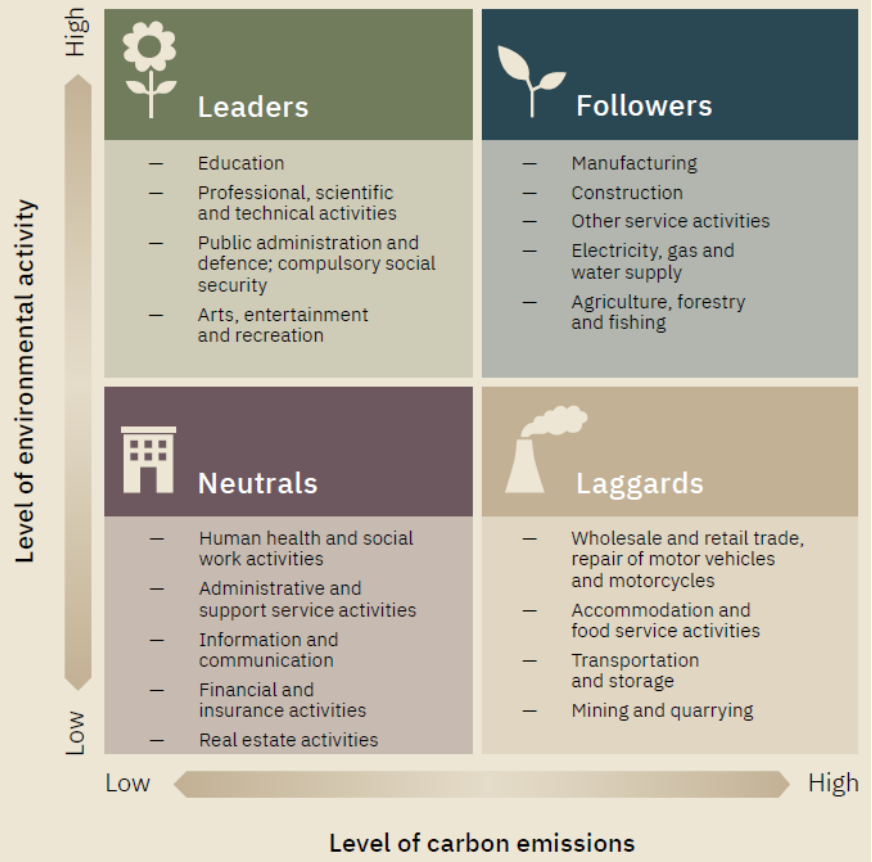
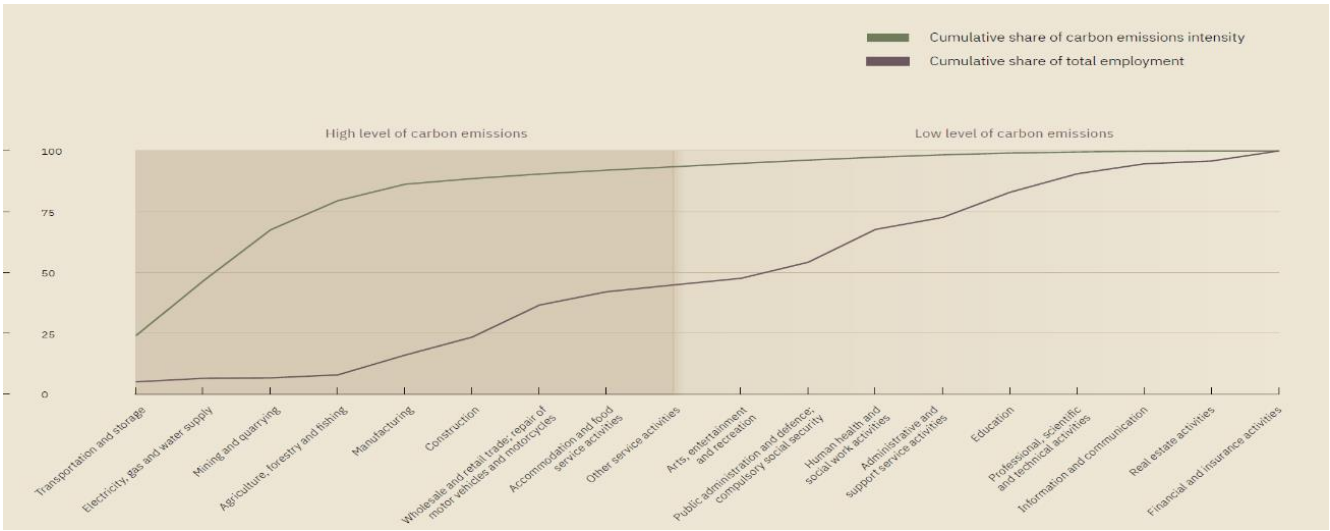


Figure 2: SIC categories organised by emissions & overall employment



While it is not possible to yield a 'per worker' measure or even Northern Ireland-specific sectoral emissions measure using this approach (given the absence of NI-

specific SIC emissions data), it is possible to determine the share of workers in the Northern Ireland economy engaged in broadly carbon intense and environmentally unsustainable jobs. This in turn provides us with a basis on which to build policies to transition away from carbon intensive and unsustainable work, and towards jobs based in the law carbon economy, including nature-based resilience and adaptation solutions. Table 3 below lays out the SIC breakdown of the Northern Ireland labour market

Table 3: QES total NI employees by SIC category, March 2020. Note: QES data does not included self-employed workers.

SIC Employment Category	**SIC**	**Total number of employees**
Agriculture, Forestry and Fishing	A	13,260
Mining and quarrying	B	2,070
Manufacturing	C	87,030
Electricity, gas, steam and air conditioning supply	D	1,920
Water supply, sewerage, waste management and remediation activities	E	7,200
Construction	F	35,090
Wholesale and retail trade; repair of motor vehicles and motorcycles	G	129,940
Transportation and storage	H	29,750
Accommodation and food service activities	I	51,420
Information and communication	J	22,920
Financial and insurance activities	K	18,360
Real estate activities	L	10,130
Professional, scientific and technical activities	M	35,670
Administrative and support service activities	N	54,370
Public administration and defence; compulsory social security	O	49,180
Education	P	72,270
Human health and social work activities	Q	130,350
Arts, entertainment and recreation	R	15,300
Other service activities	S	15,820

Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	T	0
Activities of extraterritorial organizations and bodies	U	0
TOTAL	**A-U**	**782,050**

Using this up-to-date NI employment data, we plot employment share into the Figure 1 framework then gives us an insight into the share of the NI labour market employed in 'Laggards' and 'Followers' sectors in Figure 3 below:

*Figure 3: NI employment shares in 'Eco-Transformation of Industries Matrix'**

Leaders – 22% P. Education – 9.2% M. Professional, scientific and technical activities – 4.6% O. Public administration and defence – 6.3% R. Arts, entertainment and recreation – 1.9%	**Followers – 19.6%** C. Manufacturing – 11.1% F. Construction – 4.5% S. Other service activities – 2% A. Agriculture, forestry, and fishing – 1.7% D. Electricity, gas, steam and air conditioning supply – 0.3%
Neutrals – 30.2% Q. Human health and social work activities – 16.7% N. Administrative and support service activities – 7% J. Information and communications – 2.9% K. Financial and insurance activities – 2.3% L. Real estate activities – 1.3%	**Laggards – 28%** G. Wholesale and retail trade, repair of motor vehicles, etc. – 16.6% I. Accommodation and food service activities – 7.3% H. Transportation and storage – 3.8% B. Mining and quarrying – 0.3%

*Shares may not equal a whole due to rounding.

Discussion and just transition policy options

In Northern Ireland, however, the share of employment categorised as 'brown' or environmentally unsustainable by current practices is marginally higher at 47.6% than the UK figure of 45%. Analysis here will focus on how we might decarbonise the economic activity of Laggard and Follower industries, as a means of reducing emissions and greening activity in a manner consistent with just transition principles. As this discussion takes place in the context of historic economic

contraction and unprecedented rates of joblessness in Northern Ireland, these just transition policy solutions will be framed in the context of economic recovery from COVID-19 (ONS, 2020[26]; DfE, 2020[27]; NISRA, 2020[28]; UUEPC, 2020a[29])

Laggards

When looking at Laggard industries, an important trend reveals itself that should inform economic and just transition policy. This most carbon-intensive category contains sections of the labour market that are most exposed to disruption by COVID-19, and indeed are the most impacted to date (UUEPC, 2020a[30]). Namely, these are 'wholesale and retail trade, repair of motor vehicles, etc.' and 'accommodation and food service activities', accounting for almost a quarter of all employment in Northern Ireland[31] (23.9%). Moreover, they are also the industries most characterised by low wages and poor working conditions (ILO, 2020[32]; ASHE, 2019)[33]. There is therefore a clear policy opportunity here to create more skilled, secure and better paid employment, while simultaneously building resilience amongst the Northern Ireland workforce from the negative economic impacts of COVID-19, and shifting employment to activity needed to tackle the climate crisis.

A critically important benefit of this energy transition would be increased energy security, helping address one of the main vulnerabilities of the regional economy (North South Inter-Parliamentary Association, 2013). While there has been policy attention given to electricity insecurity due to the non-completion of the North South interconnector, and concerns about the capacity of the Moyle interconnector (Northern Ireland Utility Regulator, 2013), less attention has been given to the huge economic cost of NI's energy insecurity and being so heavily dependent on imported fossil fuels. The recent data showing almost half of electricity produced from

[26] https://www.ons.gov.uk/economy/grossdomesticproductgdp/bulletins/gdpfirstquarterlyestimateuk/apriltojune2020
[27] https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Charting-a-course-for-the-economy-our-first-steps.PDF
[28] https://www.nisra.gov.uk/system/files/statistics/NI-Composite-Economic-Index-Q1-2020_0.pdf
[29] https://www.ulster.ac.uk/__data/assets/pdf_file/0017/614132/UUEPC-Pathways-to-Recovery-after-Covid19-Paper-3-_05082020.pdf
[30] https://www.ulster.ac.uk/__data/assets/pdf_file/0017/614132/UUEPC-Pathways-to-Recovery-after-Covid19-Paper-3-_05082020.pdf
[31] Excluding self-employed workers
[32] ILO, "COVID-19 and the World of Work. Third Edition" (29 April 2020)
[33] https://www.nisra.gov.uk/publications/industry-occupation-age-publicprivate-sector-and-skill-level - when broken down by 2007 SIC Code in 'ASHE 2019 (Provisional) by Industry'

renewable energy should therefore be viewed as a regional energy risk mitigating achievement, demonstrating the multiple benefits of a low carbon transition.

There are two main policy mechanisms that can help reallocate employment in the economy in the manner outlined above. The first is a short-term strategy to assist those who are unemployed, furloughed or made redundant in the economic fallout from COVID-19. The Employment Service and Careers Service (under DfC) in Northern Ireland is the primary body tasked with assisting unemployed people and those in search of new employment, in matching their skills to currently vacant posts in the economy, and acquiring the necessary skills to achieve this.

A more strategic and objectives-focused repurposing of this unit, along the lines of Nordic Job Security Councils, would more suitably address the needs of matching skills to jobs needed for an economy-wide just transition. As of September 2020, DfC was directing students in search of work to 'food retail', 'farming', and 'agri-food' as its primary recommendations, which are among the most carbon-intensive sectors of the economy (DfC, 2020[34]). This is symptomatic of 'carbon lock in' within NI as well as a lack of any broad strategic direction among Executive Departments, or major civic actors such as Universities, to put in place the education and training needed to cultivate the skills-base needed for just low carbon energy transition.

The Swedish Job Security Councils bring together trade unions and employers to reemploy those facing "involuntary job loss due to economic factors such as economic downturns or structural change" (OECD, 2013). As such, a Northern Ireland-specific 'Green Job Security Council' model might be well-equipped to deal with the challenge and opportunities provided by rapid decarbonisation. Employers pay 0.3% of payroll costs in to these Councils to reskill and replace those already in the labour market in the event of job losses (ibid, 2013; BBC, 2020). As a result, Sweden has a world-leading 12-month job replacement rate of 90% (OECD, 2013). In the Swedish model, however, the state plays no part. A modification for a Northern Ireland model would see the government set industrial strategy objectives for Councils to see employers pay into a central pot to relocate workers to jobs in green construction, green Research and Development, and the renewable energy sector, among others.

[34] https://www.communities-ni.gov.uk/topics/finding-employment/help-find-employment

The Swedish case relies on high trade unionisation rates among the national workforce which do not exist in Northern Ireland. Therefore, giving trade unions a structural role in the labour market might empower them within key sectors, with obvious benefits for workers' pay and conditions, as well as trade union participation in just transition planning and communication. Another option might be to replicate the National Training Levy (which as a levy would be currently within the competency of the NI Department of Finance) in the Republic of Ireland, where employers pay 0.7% of payroll costs to the state as a supplement to Pay Related Social Insurance (PRSI), which then funds job relocation schemes such as 'Springboard'.

The second policy mechanism should be focused on more long-term industrial strategy change, away from a heavy focus on Foreign Direct Investment (FDI) at a time when it is sharply declining across the world (Economy Minister, 2020[35]; OECD, 2020[36]) and a proliferation of low-paid work in COVID-vulnerable industries. State intervention, so vital in responding the pandemic, will, we suggest, be needed on a more permanent setting to restructure the labour market towards labour-rich and green Leaders sectors above, or towards increasingly greened Followers sectors (such as construction or parts of the ICT sector). As such, state-coordinated vehicles to implement and drive a green industrial strategy are essential.

In this vein, Invest NI, currently in receipt of over £100m of public funding annually, could be repurposed as Northern Ireland's main green industrial development body to nurture the growth of a strong green sector with high-skilled jobs in green research and development, manufacturing of green technologies, and expanding renewable energy (DfE, 2020)[37] It may also adopt similar functions as the Science Foundation Ireland (SFI) and it's 'Challenge Funding Model', whereby generous pre-determined grants and awards are offered to those who can provide a theoretical 'proof of concept' or prototype solutions to a socio-technological challenge, such as 'creating a carbon neutral resilient dairy farm' (SFI, 2020)[38]. This funding could be jointly-administered with our higher and further education

[35] https://www.economy-ni.gov.uk/news/dodds-welcomes-increase-foreign-direct-investment-projects-northern-ireland
[36] https://read.oecd-ilibrary.org/view/?ref=132_132646-g8as4msdp9&title=Foreign-direct-investment-flows-in-the-time-of-COVID-19
[37] Papers tabled at the NI Economy Committee, January 2020
[38] https://www.sfi.ie/challenges/zero-emissions/

institutions to harness the potential of the academic, research and innovation community within Northern Ireland.

Finally, the Northern Ireland Investment Fund (NIIF) is another state facility that could be repurposed along the lines of the Irish Strategic Investment Fund (ISIF) or the Welsh Development Bank (WDB). Both of these institutions use public investment capital to invest in promising, indigenous commercial entities, as either an equity stakeholder or as a debt financer. In the case of the WDB, its novel and effective use of Financial Transactions Capital (FTC) serves as a particularly relevant model given the NIIF is also capitalised with a potential £100m of FTC. In the financial year 2019-20 some £150m of FTC was handed back to the Treasury in London having lain dormant and underutilised (Irish News, 2020)[39], a sign of it's potential as an instrument of public investment.

With regard to 'Laggard' industries generally, the Confederation of British Industry (CBI) have said that, aside from the major fossil fuel extraction and production industries in Britain, the industries they see as the most vulnerable among their members are those who are intensive users of these fuels, including quarrying, cement and steel manufacturers, chemicals producers, and some related areas of construction (Interview 5[40]). There will not be an imminent transition amongst these industries, according to the Interviewee, however as firms seek to become more productive through new capital goods which are less energy intensive, they will require less workers. Therefore, a gradual employment loss can be expected in some of these areas for which planned and appropriate retraining and upskilling initiatives are required.

Followers

Though the emissions data framework in Northern Ireland differs significantly from any comparable labour market data, trends are nonetheless visible. Firstly, with less than 2% of total employment, the agricultural sector produces 27% of all GHG emissions in Northern Ireland, alongside a host of other environmental problems (DAERA, 2020[41]). Due to the absence of self-employed workers in QES employment

[39] https://www.irishnews.com/news/northernirelandnews/2020/02/25/news/conor-murphy-to-meet-treasury-officials-after-revealing-600m-spending-shortfall-1850974/
[40] Interview 5 was conducted with Tanisha Beebee, Senior CBI Policy Officer (London-based) in Energy, Climate & Net Zero
[41] https://www.daera-ni.gov.uk/sites/default/files/publications/daera/NI%20Greenhouse%20Gas%20Statistics%201990-2018%20-%20Report%20%28web%20version%29.pdf

data, however, this 2% figure is likely a significant underestimation. Indeed, the Northern Ireland Agricultural Census shows there are just shy of 50,000 total farm workers in Northern Ireland, including 'spouses' and 'other farm workers' (DAERA, 2020)[42]. In any case, agriculture is by some margin the most environmentally impactful and emissions intensive sector in Northern Ireland (Committee on Climate Change, 2020)[43].

Despite this fact, as 'stewards of the land' and as an industry with deep cultural roots in rural communities, farmers are best placed to advance 'nature based solutions' to build climate resilience and our capacity to mitigate excess emissions. These solutions include rewetting bog and peatland, ramping up afforestation, cultivating biodiversity through hedgerow management, and other conservation activities. These nature based solutions are in line with the Committee on Climate Change's Sixth Carbon Budget implications for NI, which does not envisage the feasibility of large scale engineering based Carbon Capture and Sequestration (CCS) (CCC, 2020). model to emulate in this regard might be the recent announcement of the New Zealand government to stymie COVID-19 economic decline and unemployment through a $1.1bn investment package to create 11,000 new 'Jobs for Nature' in environmental conservation, restoration and management (Department of Conservation, 2020)[44].

Administered as 'project funding' (The Guardian, 2020[45]) to groups or individuals committed to completed state determined tasks (rewetting a particular area of land, or turning their farmland into 'salvo grazing' land), DAERA, the NIEA and DfE could replenish Northern Ireland's depleted carbon sinks (through reforestation and peatland restoration for example) and create employment in the process. The NIEA already operate this target-based funding model with local environmental NGOs. Furthermore, a precedent exists for this state-led environmental conservation and replenishing in the case of the Garron Plateau bog land in Antrim, jointly operated by NI Water, NIEA and Climate NI (Climate NI, 2014;

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[42] https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Agricultural%20Census%202019%20FINAL%20-%20Revised%2027%2008%2020.pdf

[43] Climate Change Committee (2020), 'What the 6th Carbon Budget means for Northern Ireland', https://www.theccc.org.uk/wp-content/uploads/2020/12/What-the-Sixth-Carbon-Budget-means-for-Northern-Ireland.pdf

[44] https://www.doc.govt.nz/news/media-releases/2020-media-releases/investment-to-create-11000-environment-jobs-in-our-regions/

[45] https://www.theguardian.com/world/2020/may/14/new-zealand-budget-1bn-for-nature-jobs-but-dismay-at-lack-of-climate-action

RSPB, 2020)[46][47]. This type of employment in what is known as 'nature based solutions' to climate breakdown, is thus an example of an emerging and still to mature labour market sector aimed at restoring and managing ecosystem services which, according to the climate science, will need to increase in the years ahead[48].

The DAERA Minister's 'Forest for Future' scheme is also an important mechanism that can be repurposed to provide direct financial assistance to farmers who wish to transition from GHG-intense dairy farming to green land management activities. In the same vein, the agricultural industry in Northern is characterised by an aging workforce and its heavy reliance on public funding and subsidies (Irish Times, 2020)[49]. Following the UK's departure from the European Union, the British government replaced EU Common Agricultural Policy (CAP) subsidies to Northern Ireland farmers with a value in excess of £300m (DAERA, 2020). This sum of public money is an invaluable tool to drive a greening of the regional agricultural sector by making it conditional on achieving climate, ecosystem and energy/decarbonisation targets (particularly important given the high proportion of NI GHG emissions that come from agriculture and forestry).

Within the Followers category, the construction industry is also best placed to undergo significant greening. The industry in Northern Ireland has still not returned to its pre-2008 crisis peak in gross employment terms and as a share of overall employment (NISRA, 2020)[50]. It will, however, need to play a pivotal role in delivering urgent and sharp reductions in emissions through retrofitting and green infrastructural development, while stemming the tide of a COVID-19 jobs fallout (Robins et al., 2020). In this regard, the Economy Minister's £17.2m support package for growing and supporting apprenticeships is welcome, but should be

[46] "The re-activation of Northern Ireland's largest single area of blanket bog by blocking a large network of over 1,000 existing drains has re-activated almost 500 hectares of peatland to store carbon, prevented carbon loss and improved the natural filtration of water that is used by 12,000 local homes and businesses." – RPSB NI - https://www.rspb.org.uk/our-work/rspb-news/news/stories/northern-irelands-nature-rich-habitats-for-carbon-storage/

[47] https://www.climatenorthernireland.org.uk/cmsfiles/ClimateNI_RSPBFINAL.pdf

[48] https://www.ipcc.ch/site/assets/uploads/sites/3/2019/11/SROCC-SPM_FOD_FINAL.pdf

[49] https://www.irishtimes.com/business/agribusiness-and-food/northern-farmers-ask-johnson-for-300m-to-replace-cap-payments-1.4157937#:~:text=Farm%20businesses%20in%20the%20North,in%20Northern%20Ireland%20have%20warned.

[50] https://www.nisra.gov.uk/system/files/statistics/publication-document-march-2020.pdf

more ambitious and targeted towards the training, skills development and employment needs of the just transition (DfE, 2020)[51].

Research by Robins et al. (2019)[52], reproduced in Figure 4 below, points to the severe disruption looming over the construction industry as a result of decarbonisation plans. 60% of all construction workers (at UK level) will see their jobs impacted, with 30% offering skills for which there will be an increase in demand, and a further 30% seeing their skills fall into decline. As of March 2020, there were 35,100 people employed in construction in Northern Ireland, and a crude application of the methodology advanced by Robins et al. (2019) points to some 21,060 construction workers whose jobs will be impacted by the shift to net zero carbon (NISRA, 2020[53]; ibid, 2019).

Figure 4: UK emissions and skills alignment & challenges

Sector	Emissions targets	Employment levels	% of jobs affected by greening of the sector	% of jobs that will require new skills in the transition
Surface transport	98% reduction in emissions by 2050	1.6m employed in transport and storage; 4m in retail and repair of vehicles	46%[1]	26%[1]
Industry	90% reduction in emissions by 2050	3m employed in manufacturing	50%[2]	17%[2]
Buildings	All new heating systems low carbon from 2035	2.4m jobs in construction; 0.5m jobs in real estate	60%[3]	30%[3]
Power	99–100% low-carbon generation by 2050	90,000 employed in electricity production, transmission and distribution; 544,000 employed in UK energy industry	43%[4]	26%[4]
Agriculture	30–50,000ha afforested every year to 2050; 20% cut in consumption of beef, lamb and dairy	426,000 employed in agriculture; 4m jobs in agri-food sector overall	11%[5]	6%[5]

Notes: 1. Transport and storage. 2. Manufacturing sector only. 3. Construction sector only. 4. Mining, quarrying and utilities. 5. Agriculture, forestry and fishing.
Sources: Key sectors for decarbonisation and long-term emissions targets from CCC (2019b); Skills profile of sectors from Robins et al. (2019); Numbers employed in each sector from Rhodes (2018), Defra et al. (2019), ONS (2017) and Energy UK (2018).

[51] https://www.economy-ni.gov.uk/news/dodds-announces-apprenticeship-recovery-package-plan
[52] https://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2019/10/Banking-the-just-transition-in-the-UK-2.pdf
[53] https://www.nisra.gov.uk/system/files/statistics/publication-document-march-2020.pdf

With disruption on this scale looming it would be helpful for the Executive to intervene on both the demand and supply sides. This could be done by providing an ambitious retrofitting programme in public housing[54], creating incentives for the retrofitting of private homes and businesses, public infrastructural projects centered around climate mitigation (e.g. public transport and EV charging infrastructure), and climate adaptation and nature based climate solutions (e.g. coastal defences, biodiversity regeneration and afforestation), and by creating the skills required to meet the demand gap through investment in bespoke re/training schemes in further and higher education institutions. In all cases, it should focus on retraining to upskill and providing new green skills through apprenticeships, and ensuring that new jobs created in construction are well-paid and regionally balanced. The CBI (Interview 5) stated that across the UK, there is an emerging skills shortage for green construction and retrofitting workers that has been exposed by a surge in demand brought about the British government's green insulation grant scheme announced in 2020.

A just transition for energy consumption – employment challenges

Beyond the production of energy in Northern Ireland concerning the power generation sector, there are industries particularly vulnerable to a transition relating to the consumption of energy. In the previous section we have analysed some of the broad-strokes sectoral vulnerabilities needed to respond to, and facilitate, just transition policy such as widespread retrofitting, nature-based solutions for carbon sequestration and conservation, and so on. Due to the dominance of heat energy as a share of total energy consumption in Northern Ireland, industries particularly exposed to rapid decarbonisation are the oil and gas distribution and heating sectors.

The NI Oil Federation (NIOF), representatives of the heating oil distribution and installation industry, are among those most expected. Representing at least 10,000[55] workers in 'manufacturing, distribution, retail and associated industries' with supply chain links across aviation, transport, agriculture, among other, sectors, the NIOF are potentially a major contributor to just transition planning (NI

[54] Private sector data is more difficult to obtain, but for 85,000 Housing Executive owned homes, the average SAP score is 63 (equivalent to a 'D' EPC rating) (DfC, 2020). This will cost between £20,000-£30,000 per home to retrofit to EPC standard of B or A respectively.
[55] No detailed breakdown of this 10,000 figure was available from NIOF

Oil, 2020[56]). However, the NIOF representative interviewed for this paper stated a lack of belief in 'an electrified future' to facilitate rapid decarbonisation, and argues employment in the oil distribution and installation sector can be sustained by a shift to biofuels (Industry interviewee 3). Despite this, in a scenario where hard regulatory action was taken to phase out fossil fuel use and promote the widespread introduction of renewable technologies, it was accepted that there is major employment vulnerability throughout the sector (ibid).

The major employment categories among NIOF members include workers installing and repairing oil boilers, for which there is currently significant demand given the predominant use of home heating oil, and the distribution of heating oil itself. For engineers employed in installation, NIOF advocated for the provision of bespoke retraining courses for these workers to adapt their highly transferable skills to install air source heat pumps and other renewable heating options, for example. This would be a resource-efficient and effective means of protecting vulnerable but skilled workers in the energy transition, while meeting demand for skills to roll out new renewable heat systems in domestic and commercial settings. There is also a possible age dynamic among these workers: "anyone aged between 30-50 will retrain to renewable technologies, and anyone over 50 will service and repair oil boilers until they retire" (ibid). It should be stated, however, that NIOF believes this is dependent on strong government signaling and policy intervention to drive a shift away from fossil fuels (ibid), as part of a phased and managed process of removing 'carbon lock-in'.

Prospects for workers involved in the distribution of oil are, however, less positive, according to NIOF. If there is a serious reduction in demand for home heating oil as a result of regulatory intervention, it would leave between 1,500 and 2000 oil delivery drivers out of work. As these are not considered skills as transferable as other industry counterparts, retraining and job relocation would need to be much more significant and strategically planned (Interview 4). It is worth considering here that due shifting consumer habits as a result of the COVID-19 pandemic, there is indication of a sharp increase in demand for workers in home delivery and distribution, for goods and services across industries (The Guardian, 2020)[57]. This shift might involve greater use of transport energy with obvious emissions

[56] http://nioil.com/
[57] https://www.theguardian.com/world/2020/jul/31/how-covid-19-has-reshaped-the-jobs-landscape-in-the-uk

implications, but may provide some reprieve to any employment shock in local oil distribution.

As for power consumption, there are significant opportunities for developing an indigenous renewable energy industry with strong, extensive local supply chains which can create and sustain high-quality green jobs, something found across all those we interviewed. For cutting edge sectors like tidal power, green hydrogen, and offshore wind, where there is not yet advanced competition, it would be beneficial for the NI Executive to develop a green industrial strategy to develop either a public utility to develop these technologies, or nurture the growth of an indigenous green sector through green procurement with criteria explicitly favouring local manufacturers and developers. Interviewee 2 was highly in favour of such a strategy and suggested the Scottish government were developing plans to exploit these opportunities, whilst a business interviewee found fault with it on the grounds that it is tantamount to protectionism. On hydrogen as a future fuel one industry interviewee stated that there was an

> "opportunity for NI to be more self-sufficient in relation to hydrogen production and having a steam methane reforming plant in Ballylumford or Kilroot, making our own hydrogen to support our own hydrogen economy and providing for transport and heat and providing the opportunities for jobs in terms of construction of the plant and the running of the plant…we will never be the leaders because we're too small…but we're small enough to be active and flexible to be able to be up and running quickly once the technology has been proven, and that's what we need to be ready for."

Social dialogue in economy-wide transition

Citizens' Assembly on Green Economic Recovery and a Just Transition

The imperative for social dialogue for any economy-wide just transition in Northern Ireland demands organised, continuous, and meaningful input from the citizens of all backgrounds. Where smaller panels, task forces and commissions can yield and consider the views of key stakeholders involved in sectoral change, an economy-wide shift requires society-wide consultation and dialogue.

A model to emulate may be that of the Irish Citizens' Assembly which has been, despite limitations, 'lauded internationally' (Devaney et al., 2020, p21)[58]. Founded following the formation of the Irish government in 2016, the Assembly was mandated to consider climate change. Comprised of 99 citizens chosen to represent a broad and diverse cross-section of Irish society, the Assembly produced 13 recommendations which were then subject to scrutiny by an All Party Committee on Climate Action (Devaney et al., 2019; Citizens' Assembly, 2018)[59]. In 2019, the Committee published a report on the Assembly's recommendations, endorsed by a broad swathe of political parties (Committee on Climate Action, 2020)[60]. It is notable that, as a result of this process, many of the recommendations directly proposed by Irish citizens through the Assembly have gone on to garner political consensus and widespread mainstream attention. These include the case that the Irish government should adopt a capital spending ratio of 2:1 for investment in public transport infrastructure versus new roads, and an increase in the carbon tax.

UK Climate Assembly

In early 2020, and with the backing of 6 Westminster committees, Climate Assembly UK was convened. Its recommendations have influenced the CCC's 6th carbon budget but too early to tell its wider impact on UK government energy transition and climate strategies. The Climate Assembly's report contains some pertinent and useful insights for thinking about the just transition in NI.[61] For example one of its key recommendations is the centrality of the leadership role government: "It is imperative that there is strong and clear leadership from government – leadership to forge a cross-party consensus that allows for certainty, long-term planning and a phased transition" (UK Climate Assembly, 2020, p. 5), and the need for "Long-term planning and a phased transition" (ibid., p. 10). The Assembly also indicated strong support for "hydrogen (83%), heat pumps (80%), and heat networks (80%) should be part of how the UK gets to net zero" (ibid, p.15), which aligns with the importance and advantageous position of NI in relation to growing the hydrogen economy as part of the race to net zero. The Assembly

[58] https://www.tandfonline.com/doi/abs/10.1080/17524032.2019.1708429
[59] https://2016-2018.citizensassembly.ie/en/How-the-State-can-make-Ireland-a-leader-in-tackling-climate-change/How-the-State-can-make-Ireland-a-leader-in-tackling-climate-change.html
[60] https://www.oireachtas.ie/en/committees/32/climate-action/
[61] Climate Assembly UK (2020), *The Path to Net Zero*, https://www.climateassembly.uk/report/read/final-report-exec-summary.pdf

members voted by 94% that government needs to increase "Support for smaller organisations to offer energy services" (ibid., p.17) and endorsed the need for localised and context specific solutions and choice for regions and households (ibid., p.16), especially in relation to the decarbonising homes.

There is political precedent for such a Citizens' Assembly process in Northern Ireland. The Executive have agreed to develop a Citizens' Assembly in the *New Decade, New Approach* agreement (UK Government, 2020). This ambition might be expedited, and we recommend that a 'Citizens' Assembly on Green Economic Recovery and a Just Transition' could be established to involve citizens in co-designing and co-producing the just energy transition in NI, and in shaping a new, greener, and more inclusive economy following major disruption by COVID-19.

Figure 5 – The Citizens' Assembly model of social dialogue
Source: Devaney et al. (2020)

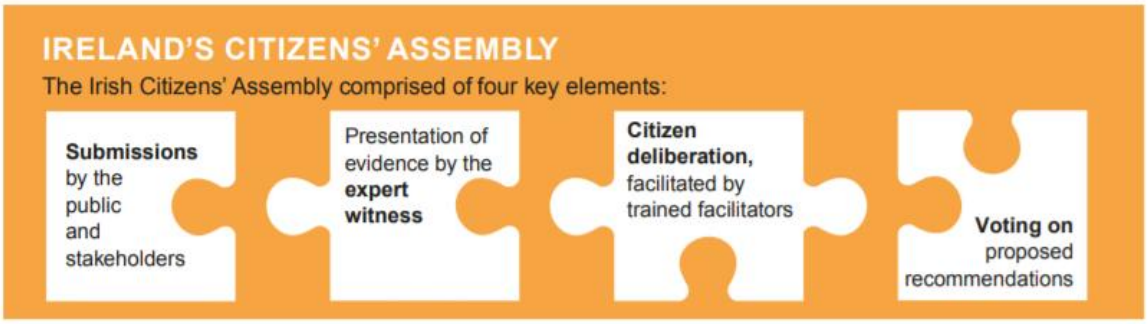

Figure 1.1. Working method of the Irish Citizens' Assembly 2016–2018.

Examples also exist beyond the Republic of Ireland. In their February 2020 Interim Report, the Scottish Just Transition Commission called for the establishment of a Scottish Citizens Assembly on Climate Change to begin an 'on-going, proactive, social dialogue with communities across the country to help define and address society's concerns' of the transition to a net zero carbon society' (p31). In fact, the call served to merely reinforce existing plans set in legislative stone by Section 8A of the Scottish 'net zero' Climate Change (Emissions Reduction) Act passed in 2019 (Scottish Parliament, 2019)[62]. Scottish government plans to launch the Citizens' Assembly in 2020 were disrupted by the COVID-19 pandemic.

[62]https://www.parliament.scot/S5_Bills/Climate%20Change%20(Emissions%20Reduction%20Targets)%20(Scotland)%20Bill/SPBill30BS052019.pdf

Northern Ireland Just Transition Commission

This research proposes that an economy-wide transition that deals with a just and rapid decarbonisation of production and consumption of energy in Northern Ireland may best be managed through the establishment of a Northern Ireland Just Transition Commission. In this, an important model for comparative and learning terms is the Scottish Just Transition, which is itself a model similar to Spanish coal exit experience[63], and the German 'Commission on Growth, Structural Change and Employment' (NESC, 2020).

The Scottish Just Transition Commission first sat in January 2019 (Just Transition Commission Scotland, 2019)[64]. It was established under the auspices of multiple Departments of the Scottish Government "for a two-year period to provide independent advice to Scottish Ministers on the long-term strategic opportunities and challenges relating to the transition to a net zero carbon economy" (Just Transition Commission Scotland, 2019a). Crucially, the Commission's ultimate responsibility is to provide the Scottish Government with a written report offering "practical, realistic, affordable recommendations" to support government economic and decarbonisation planning (ibid, 2019a).

The Commission is composed of representatives of all major stakeholders involved in the society-wide just transition process. These include the trade union movement, the Scottish oil and gas industries, academics and climate experts, the farming sector, students, environmental organisations, and a fuel poverty representative among others (Just Transition Commission Scotland, 2019a). In its February 2020 Interim Report, the Commission stressed that its main findings, which emerged following extensive engagement with grassroots communities and economic sectors most likely to be impacted by decarbonisation, focus on the importance of long-term planning that integrates the just transition policies in particular places with a broader government-led strategy for economic renewal (Just Transition Commission Scotland, 2020).

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[63] Spanish efforts to plan for a transition away from coal and fossil fuel sector employment are also at an advanced stage. In 2019 the newly formed Spanish Government created a 'Ministry for Ecological Transition' which published a 'Strategic Energy and Climate Framework'.

[64] https://www.gov.scot/binaries/content/documents/govscot/publications/minutes/2019/03/just-transition-commission-meeting-papers-january-2019/documents/just-transition-commission---meeting-1---agenda/just-transition-commission---meeting-1---agenda/govscot%3Adocument/Just%2BTransition%2BCommission%2B-%2Bmeeting%2B1%2B-%2Bagenda.pdf

It also stressed that continuous, proactive and meaningful engagement with all sections of society as just transition policies were being both developed and implemented was necessary to help understand and meet society's 'expectations' of a just transition, and to create buy-in for the scale and pace of economic change required by climate science (ibid, 2020). In April 2020, the Scottish Government altered the mandate of the Commission to include economic planning for a 'green recovery' from COVID-19 disruption. The Commission subsequently published their advice on a green recovery in July 2020 (Just Transition Commission Scotland, 2020)[65].

Given the creation of the Economic Advisory Group by the Economy Minister in June 2020 to respond to the economic challenges of COVID-19, a clear precedent exists for the NI Executive to establish a Just Transition Commission. Such a Commission, together with a Citizens' Assembly on Climate, could catalyse greater public awareness of and exposure to low carbon energy transformation and related climate action. It could also help inform policy to mitigate the worst impacts of transition on employment and on living standards, and also to inform how best to identify and seize the opportunities of such a transition. In turn, this detailed and more intense process can be supplemented by the views of the population through more localised and grassroots structures, such as a council based climate action groups, or Climate Commissions such as the Belfast Climate Commission[66].

All of this is important given the lack of preparedness, buy-in and awareness that currently exists in the private sector in Northern Ireland, particularly in those industries most vulnerable to a transitional shock (Interview 4, Interview 5). It was also made clear by NIOF, when asked about the awareness and understanding among members of the climate crisis and the urgent need for rapid decarbonisation, that there is a clear dichotomy among NIOF-represented firms. Large-scale, well-capitalised employers with knowledge and strategic awareness of biofuels and other possible longer-term revenue opportunities are plainly aware of, and are planning to endure, any impact on their business model. Meanwhile much more financially vulnerable, small employers with a poor understanding of the implications of the energy transition are not prepared. There is a need for the Department (ideally with other organisations such as Universities, the Belfast Climate Commission for example) to engage with this large and important business

[65] https://www.gov.scot/publications/transition-commission-advice-green-recovery/
[66] https://www.belfastclimate.org.uk/

sector. This is an important feature of the industry as it pertains to essential just transition principles of long-term planning, social-dialogue and co-production of policy (Interview 4).

The CBI (Interview 5) stated that members in Northern Ireland, which represent significant portions of the private sector, are often uninterested and detached from climate workshops, training and information sessions provided – "When CBI travel to Northern Ireland to talk about net zero, we are always met with 'glass half empty' responses" (Interview 5). In other words, there is a detachment among local CBI members from UK policy where they feel schemes from government and CBI initiatives don't apply to them. Proactive, representative, inclusive and meaningful engagement and policy coproduction with the local private sector and vulnerable industries can help to rectify this problem, and mechanisms such as citizen engagement forums and a Just Transition Commission presents an opportunity to do this.[67]

[67] One cost effective way a Commission could be established is to build on the existing Belfast Climate Commission, the staffing related implementation of NI's Climate Change Act and the new Climate Commissioner office in Belfast City Council.

Chapter 3 – Framing a Just Transition for Energy Consumption

It is beyond the scope of this piece to provide informed policy recommendations as solutions to the myriad social and economic issues tangled up in energy consumption. By definition, the consumption of energy has implications of virtually all economic process and activity, household activity, and all manner of government policy, social activities and culture.

In Chapter 1, however, we touched on the dominance of energy production, and in particular the impact on skills, employment and regional economic conditions of this production, in the just transition literature and international experiences. This 'think piece' is best placed to explore not just relatively minor sectoral transitions among fossil fuel power production, but also broader, more medium-term implications for the wider economy. To have social and economic relevance it must adopt the challenge of defining the just transition in the context of energy consumption across society. In light of this, this Chapter instead seeks to frame and explore the major energy consumption issues facing policymakers and the Northern Ireland economy through the lens of just transition principles.

Economic strategy and GDP economic growth

Few issues relating to the consumption of energy and resources across the economy are more relevant than the relationship between unsustainable energy and resource consumption, and the primary economic objective of virtually every government in the developed world to achieve annual increases in GDP-measured economic growth[68].

This paper proposes that addressing climate breakdown with urgent and unprecedented policy action will require thinking beyond the dominant political narrative and default policy position of the imperative to return to pre-pandemic economic growth. This is supported by an increasing body of evidence pointing towards the necessity for a low or post-carbon economy to also be 'post-growth' in nature (Barry, 2020; Hickel and Kallis, 2019; Hickel, 2020[69]).

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[68] Ayres, R and Warr, *The Economic Growth Engine: How Energy and Work Drive Material Prosperity* (2010), (Edward Elgar), and http://ist2020.at/wp-content/uploads/simple-file-list/IST2020_paper_449.pdf

[69] 'Less Is More: How Degrowth will change the world', Hickel, 2020

Economic growth, resource consumption and carbon emissions have been inextricably linked in modern history, with only fleeting and insignificant periods of absolute decoupling between resource consumption and GDP growth during parts of the 20th century (Hickel and Kallis, 2019).[70] Indeed, there is a clear relationship between rising greenhouse gas emissions, orthodox economic growth measured in GDP growth, and the growing demand for energy to act as an input for this growth (OECD, 2011). In January 2020, over 11,500 scientists from 153 countries across the world co-signed a 'Warning of a Climate Emergency' in which they explicitly called for a "shift from GDP growth and the pursuit of affluence toward sustaining ecosystems and improving human well-being by prioritizing basic needs and reducing inequality" (Barnard et al, 2020)[71]. Equally important is the landmark European Environment Bureau report in 2019 which demonstrated the impossibility of 'decoupling' a growing economy (as measured by orthodox GDP) from increased GHG emissions, resource use and other negative ecological impacts (European Environment Bureau, 2019)[72].

The nature of a globalised capitalist economy, whose dynamics have been sharpened and intensified by neoliberal policy, requires constant accumulation of capital in order to extract surplus value by achieving ever more outputs for inputs in the production process. Just to stay stable, a capitalist economy must grow annually by 3%, meaning the economy more than doubles every 25 years. This is incompatible with the planetary boundaries, climate science or addressing climate breakdown (Barry, 2020; Jackson, 2017; Anderson and Bows, 2009)[73].

In the 21st century, however, efficiency improvements and technological change have allowed for a relative decoupling between emissions and economic growth. In the UK emissions have fallen significantly since 1990 even as the economy has expanded in the same period, as GDP growth has been bound with expansion of financial sector income, for example (ONS, 2019)[74]. But in the context of climate

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[70] https://static1.squarespace.com/static/59bc0e610abd04bd1e067ccc/t/5cbdc638b208fc1c56f785a7/1555940922601/Hickel+and+Kallis+-+Is+Green+Growth+Possible.pdf

[71] https://academic.oup.com/bioscience/article/70/1/8/5610806

[72] European Environment Bureau (2019), *Decoupling Debunked: Evidence and arguments against green growth as a sole strategy for sustainability*, https://mk0eeborgicuypctuf7e.kinstacdn.com/wp-content/uploads/2019/07/Decoupling-Debunked.pdf

[73] Jackson, T. (2017), *Prosperity without Growth* 2nd edition, (London: Routledge), Anderson, K. and Bows, A. (2011), 'Beyond 'dangerous' climate change: emission scenarios for a new world', *Philosophical Transactions of the Royal Society*, 369: 1934, pp. 20–44.

[74] https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/compendium/economicreview/october2019/thedecouplingofeconomicgrowthfromcarbonemissionsukevidenc

breakdown, this is not the salient issue. The science based analysis offered by the IPCC is clear in its call for "rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems"[75], and on current trends our carbon budget to limit global heating to 1.5 degrees by 2050 will be used up by 2030 (Li, 2020)[76]. Therefore, the challenge is whether an economy whose primary objective is to endlessly grow, driven by innovation, global trade and capital accumulation, can reduce emissions *fast enough* to limit global heating to 1.5 degrees Celsius (Hickel, 2020). The available evidence suggests that this is not possible (ibid, 2020; Li, 2020).

Adopting methodology advanced by Anderson and Bows (2011)[77], and later revised with updated data and projections by Hickel and Kallis (2019)[78], it becomes apparent that Northern Ireland will find it extremely challenging, if not impossible, to pursue continued GDP growth while at the same time reducing emissions at its current pace (i.e., the rate of relative decoupling between growth and emissions). To have a 50% chance of limiting global heating to 2 degrees, a modest target with profound implications for the planet and human societies, advanced economies (categorised as UNFCCC Annex 1 nations) must reduce their emissions by at least 12% per annum (ibid, 2019). Based on historic emissions & GDP per capita, and as a member of the OECD, the UK is categorised as an Annex 1 country (UNFCCC, 2020)[79]. Therefore, Annex 1 nations seeking to continue to grow at, for example a five-year average of 1.86%[80] would need to decouple emissions by 15.8% per year (Hickel & Kallis, 2019). Northern Ireland's five-year GDP growth rate average (in real terms adjusted to 2016 prices) from 2014-2018 is 1.62% (ONS, 2020). Using the same methodology to calculate the rate of necessary decoupling between growth

e#:~:text=Decoupling%20occurs%20when%20the%20growth,be%20either%20absolute%20or%20relative.

[75] IPCC, Summary for Policy Makers, 2018

[76] This is also the finding of the recently released 'A Net Zero Carbon Roadmap for Belfast' produced by the Belfast Climate Commission - https://pcancities.org.uk/sites/default/files/Belfast%20Net-Zero%20Carbon%20Roadmap_0.pdf

[77] Anderson, K., and Bows, A., 2011. Beyond 'dangerous' climate change: emission scenarios for a new world. Philosophical transactions of the royal society of London a: mathematical, physical and engineering sciences, 369 (1934), 20–44.

[78] Jason Hickel & Giorgos Kallis (2019): Is Green Growth Possible?, New Political Economy, DOI: 10.1080/13563467.2019.1598964

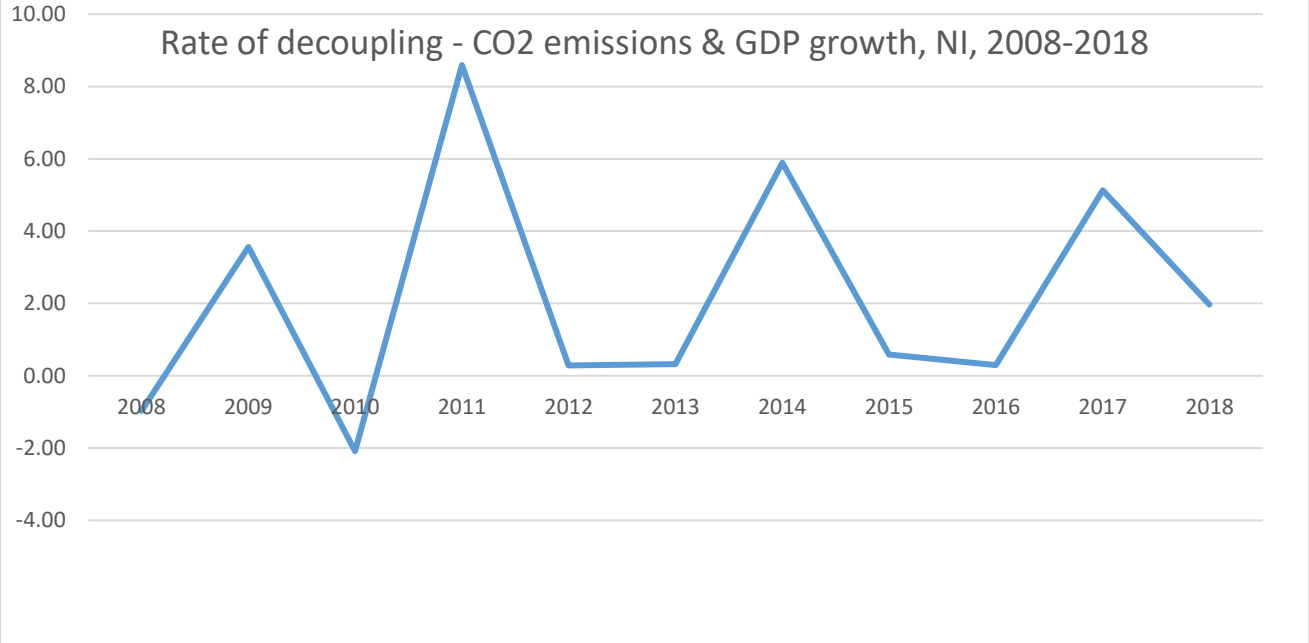
[79] https://unfccc.int/parties-observers#:~:text=Annex%20I%20Parties%20include%20the,Central%20and%20Eastern%20European%20States.

[80] GDP growth rate data for 2010-14

and emissions reduction to have a moderate chance of contributing to achieving 2 degrees of warming, Northern Ireland's comparable rate would be 14.7% per year[81].

So what has the rate of decoupling achieved in Northern Ireland over the last decade? Based historic emissions data from the National Atmospheric Emissions Database and real GDP growth rates gleaned from ONS data, we have recreated the rate of decoupling since 2008 to compare it to the necessary rate of decoupling required in every year in to the future[82].

Figure 6 – Northern Ireland rate of decoupling between rate of emissions decline and GDP growth, 2008-2018



At no point since 2008, the period for which relevant and comparable data is available, has the *necessary rate of decoupling of 14.7% been achieved*. In fact, in fully seven of the eleven years examined here, the divergence of the rates of growth and emissions reductions has been 2% or less, with some years showing no decoupling and even 'recoupling', i.e. rising emissions and economic growth in the same year. In other words, it is becoming increasingly apparent that the policy objective of continuing economic growth is becoming increasingly incompatible with our obligations to rapid decarbonisation, an obligation made more urgent with each

[81] Authors calculations using the following formulae - Rate of necessary decoupling = GDP growth rate/(1 - Rate of necessary emissions reduction) & Rate of decoupling = GDP growth rate/(1 - rate of emissions reduction).
[82] Formulae used: Rate of necessary decoupling = GDP growth rate/(1 - Rate of necessary emissions reduction)
Rate of decoupling = GDP growth rate/(1 - rate of emissions reduction).

passing year as the global carbon budget declines. The data presented here is indicative for future growth and the seemingly insurmountable scale of the 'green growth' challenge - for years past the rate of necessary emissions reduction would be based on a smaller global carbon budget, and is therefore closer to 10-12% per year and the original 2011 methodology (Anderson & Bows, 2011; Hickel & Kallis, 2019). Even with this more modest rate of emissions decline required from Annex 1 states, the rates of decoupling conveyed above remain insufficient.

There is also inconclusive evidence that economic growth in Northern Ireland has led to significantly improved living standards, social equality, or physical or mental wellbeing. Even as the economy has grown in Northern Ireland, inequality has remained pervasive and living standards stagnant. The bottom 10% of earners claim just 3% of income, while the top 10% earn a quarter of all income (NICVA, 2016)[83]. Northern Ireland's Gini-coefficient, the most widespread measure of income inequality, is 0.3%, higher than many comparable high-income EU and OECD states (ibid, 2016; OECD, 2020)[84]. At the same time we observe what might be viewed as the 'Northern Ireland paradox' in that despite the economic downturn in recent years and austerity, NI has consistently remained the devolved region highest in terms of reported levels of wellbeing. As its 2014 report on Personal Well-being in the UK, noted, "In 2013/14, people in Northern Ireland gave higher ratings for each aspect of their personal well-being on average than those in any other UK country. This has been the case in each year since ONS began collecting the data" (ONS, 2014). While of course requiring further detailed investigation, this 'paradox' does suggest that if population wellbeing is a priority for government, this does not necessarily depend on increasing GDP measured economic growth for its achievement.

Therefore, this paper recommends that across NI Executive economic strategies, future and current Programmes for Government, and post-COVID recovery strategies, the focus of economic outcomes should be shifted away from achieving one single measure (i.e. GDP growth). Instead it should include new and additional measures judging the performance of public policy against other important societal outcomes such as public health, social cohesion, equality and what the ILO terms

[83] https://www.nicva.org/sites/default/files/d7content/attachments-resources/economic_inequality_in_northern_ireland.pdf
[84] https://data.oecd.org/inequality/income-inequality.htm

'economic security' (ILO, 2014)[85]. This might be described as a 'dashboard' of socio-economic indicators that should guide government economic policy, as suggested by the OECD in its 'Better Life Initiative: Measuring Well-Being and Progress' (Barry, 2020)[86]. Furthermore, the Executive might also adopt 'Wellbeing' targets of skills development and full employment, physical and mental health, redistribution and social protection, and social equality as primary economic objectives over 'output growth' (OECD, 2019)[87].

While traditionally such explorations into economic policy would be seen as beyond the remit of energy policy, the causal relationship between the energy system and the rest of society, including the economy, means that energy transitions are (in part) economic transitions. Therefore, energy and economic policy should be more integrated in an explicit sense from a public policy point of view, since they are already inextricably linked from a metabolic and thermodynamic one.

Energy efficiency & conservation

Energy efficiency and conservation as just transition principles

Fundamental to our understanding of what constitutes a just transition to a net zero carbon society is, as discussed in Chapter 1, replacing systems of social and economic inequality which are antithetical to just and sustainable development. Logically this extends to systems and patterns of resource and energy consumption, which are evidently unsustainable across the world and in Northern Ireland, due in part to the inefficiency of these systems. Aside from the clear ecological benefits, from a just transition perspective energy conservation and efficiency are also both critical social justice concerns. From an energy poverty perspective, the cheapest energy is the energy you do not use (Rosenow, 2013). Real examples of this social justice element, particularly as it concerns heat and transport energy consumption, are explored below.

Small efficiency improvements have been achieved globally in recent years, but have been negated by a greater increase in energy demand to satisfy economic

[85] ILO (2014), *Economic Security for a Better World*, available at: https://www.ilo.org/public/english/protection/ses/info/publ/economic_security.htm
[86] Barry, J. (2020), 'A Genealogy of Economic Growth as Ideology and Cold War Core State Imperative', *New Political Economy*, 25: 1, 18-29. OECD, *Better Life Initiative: Measuring Well-Being and Progress* http://www.oecd.org/statistics/better-life-initiative.htm
[87] http://www.oecd.org/social/economy-of-well-being-brussels-july-2019.htm

growth. Energy demand is expected to rise by 1.3% every year to 2040 (even while 1 billion people have no access to electricity), and efficiency improvements were limited to just 1.2% in 2019 (IEA, 2019[88]; IEA, 2019a[89]). This is lower than each of the three preceding years, and well below the 3% annual target, according to the IEA 'Efficient World Strategy' (ibid, 2019). This is partially explained by the 'rebound effect', derived from the 'Jevons Paradox' (Bulus et al., 2011)[90].

This refers to a phenomenon whereby efficiency gains in resource consumption, in a car or gas-fired plant for example, leads to an increase in energy supply which also results in corresponding decrease in the effective price of this supply. This in turn can incentivise an increase in resource consumption, effectively negating the efficiency improvements, and therefore emission reductions (Greening et al., 2000)[91]. An example is the case of the use of private cars for transport. As fuel efficiency has improved dramatically with technological improvements, the relative price reduction for travelling has incentivised more driving and a general increase in the use of private cars. In this way, the 'rebound effect' underscores the need for well-designed demand side policies to reduce energy consumption in *real terms* in order to give energy efficiency improvements their desired effect.

It is clear, then, that efficiency improvements can be frustrated if gross demand for energy grows at a rate that exceeds that improvement. Therefore, the conservation of energy is an equally important principle underpinning a just transition to a net zero carbon society. Moriarty (2019) lays out a clear and evident interconnection between the concepts of energy efficiency and conservation, in that both are related and often interdependent means of achieving emissions reductions. For him, "cutting energy use can be achieved by either reducing the task through conservation measures or by reducing the energy consumed by the devices used to undertake a given task [energy efficiency]" (2019, p.2).

In promoting conservation and the overall reduction of energy usage across economic and social activity, Burke (2020) advances the concept of 'energy sufficiency' by posing the question 'at what stage does increased energy usage

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[88] https://www.iea.org/reports/world-energy-outlook-2019
[89] https://www.iea.org/reports/energy-efficiency-2019
[90] https://www.researchgate.net/publication/266441208_Energy_Efficiency_and_Rebound_Effect_Does_Energy_Efficiency_Save_Energy
[91] Greening, L, Greene, D and Difiglio, C. (2000), 'Energy efficiency and consumption — the rebound effect — a survey', https://www.sciencedirect.com/science/article/pii/S0301421500000215

decouple from an increase in human wellbeing'. By linking our fossil fuel dependency to our economic system that demands every-growing fuel inputs from finite resources, we are asked to consider if incessant increase in energy demand to feed this system has actually resulted in a parallel improvement in living standards. Therefore, Burke argues that we have a responsibility to reduce overall demand for energy where it does not contribute to human, social or environmental improvement. It is therefore an imperative of a just energy transition, and the conservation of energy, and promoting systems which advance conservation, go hand in hand with efficiency improvements to achieve genuine emissions reductions, as recently recommended by the International Energy Agency (IEA, 2020)[92].

Transport and energy efficiency

Changing systems of transport and unsustainable transport habits are an important example of the imperative to advance energy efficiency and conservation. As of March 2019, there were 1.2 million vehicles registered in Northern Ireland, of which just shy of 1 million are private cars (DfT, 2019)[93]. Just 2,800 vehicles, or 0.2% of the total stock, are ultra-low emissions electric (DfE, 2019)[94]. These figures illustrate society's dependence on private, fossil fuel-reliant modes of transport, but also of the energy inefficiency of such a model.

Existing strategies, based on Belfast-centric public transport enhancement and current levels cost and accessibility for the public for the whole population of Northern Ireland, appear not to be working to promote and expand the use of public transport. While gross increases in overall journeys on public transport are presented as improvement, a 2015 NI Audit Office reported that 'passenger journeys *per head of population* have remained virtually unchanged in 13 years' (NIAO, 2015, p37, emphasis added)[95].

Electrification likely play an important part in the rapid decarbonisation of heat and transport technologies. Nevertheless, the shift to new technologies presents us

[92] International Energy Agency (2020), 'Energy Efficiency 2020', https://www.iea.org/reports/energy-efficiency-2020
[93] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/812253/vehicle-licensing-statistics-january-to-march-2019.pdf
[94] https://www.economy-ni.gov.uk/sites/default/files/consultations/economy/energy-strategy-call-for-evidence.pdf
[95] https://www.niauditoffice.gov.uk/sites/niao/files/media-files/public_transport_report_210415.pdf

with an opportunity to reduce our gross consumption of energy, instead of simply consuming at the same unsustainable rate, only with different forms of energy. In other words, the principle of a just transition open up the opportunity for the widespread adoption of new forms of transport that are more efficient, conserve more energy, are inclusive, good for the economy and improve human health and wellbeing. In tangible terms, we simply cannot replace private diesel cars, for example, with the exact equal number of private EVs, thereby squandering opportunities for cleaner, healthier, and more pedestrianised cities that improve in their post-Covid recovery strategy for the '15 minute city'[96].

A just transition for transport also presents important economic opportunities. The planned mass production of hydrogen buses in Northern Ireland, based on the experience and expertise of Wrightbus in Ballymena and the new owners' commitment to produce '3,000 hydrogen buses in the UK by 2024' and it's all island vision for zero emission public transport. This is a positive development coupled with ongoing NI research and development on clean, green hydrogen technologies such as the Belfast Met based GenCOMM project, the QUB-Wrightbus W-Tech centre project on 'Roadmaps to Zero Net Emissions in Urban Public Transport', and 'Power to X' proposals.[97] [98]

Finally, a just transition for transport will be ineffectual and incomplete without addressing the systemic isolation of rural communities from modes of clean, affordable and accessible public transport. Indeed, it is this isolation that partly necessitates an unsustainable reliance on private cars. With the exception of a rail line from Belfast to Derry, there is no rail infrastructure in the west of Northern Ireland (McKibben, 2016)[99]. Green technologies such as low-emission hybrid

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[96] C40 Cities (2020), 'How to build back better with a 15-minute city', https://www.c40knowledgehub.org/s/article/How-to-build-back-better-with-a-15-minute-city?language=en_US

[97] https://www.sustainable-bus.com/news/jo-bamford-wrightbus-3000-hydrogen-buses/, https://www.belfasttelegraph.co.uk/business/northern-ireland/wrightbus-eyes-role-in-republic-of-irelands-green-transport-revolution-39361469.html; https://pure.qub.ac.uk/en/projects/epsrc-eps0366951-streetzero; https://www.nweurope.eu/projects/project-search/gencomm-generating-energy-secure-communities/; https://actionrenewables.co.uk/news-events/post.php?s=making-decarbonisation-a-guaranteed-outcome-an-interview-with-david-surplus-obe-12

[98] http://hydrogenireland.org/wp-content/uploads/2019/10/HMI_narrative_summary_final_Oct3rd2019.pdf and https://www.independent.ie/business/irish/wrightbus-boss-eyes-all-island-green-transport-plan-39162551.html

[99] https://www.assemblyresearchmatters.org/2016/05/20/is-northern-irelands-transport-infrastructure-sufficient-to-support-growth-and-competitiveness/

'Glider' buses and the hydrogen bus pilot have all been confined to the greater Belfast area.

A just transition for transport will require an expansion in pedestrianisation of clogged-up city and town centres, supplemented by active travel schemes and associated infrastructure, such as segregated cycle lands. It may be that more structural and large-scale investments must be made to expand meaningful low-carbon public transport options to rural areas. This should be supported with financial incentives for people to exchange private cars with EVs (such as those offered by the Sustainable Energy Authority of Ireland), particularly in rural areas in the present absence of such important infrastructure.

Energy efficiency, heat, and fuel poverty

Perhaps the most important just transition issue as it pertains to social justice, energy consumption, and the efficiency and conservation of this consumption, is fuel poverty in Northern Ireland. Rates of fuel poverty are persistently high in Northern Ireland, fluctuating between 20% and 40% depending on a range of factors, namely a 'low income, [an] energy inefficient house, and high energy prices' (NIHE, 2019; Interview 3, 2020.[100] [101] An important consideration here is how for some, a just energy transition, also includes competitive energy markets and lower electricity prices (Industry interviewee 2), which taken together with retrofitting homes, could be a component of an effective pathway from fuel poverty. A related issue here that was made by an industry interviewee was the need to also ensure high levels of consumer protection to enhancing public support and trust for renewable energy installation in their homes.

Another point raised by an industry interviewee was the issue of timing and sequencing of different phase of the decarbonising transition. This related to the problem of causing confusion for the customer of hanging off switching from oil to gas, if there is a lot of public discussion or incentives for domestic hydrogen boilers for example (Industry interviewee 3). The might delay people from making the switch away from oil (thus possibly continuing 'carbon lock in'), so planning, effective policy signals, communication and sequencing of the low carbon

[100] Interview 3, with Lucy Cochrane, Policy and Campaigns Officer with National Energy Action NI

[101] https://www.nihe.gov.uk/getmedia/1f9e55a1-66c2-46b7-bf92-9ee192ce355f/estimates-of-fuel-poverty-northern-ireland-2017-and-2018-revised.pdf.aspx?ext=.pdf

household transition needs to be managed by government together with the industry, the regulators, and other stakeholders. Timing is therefore central; otherwise confusion might develop within the minds of customers.

Tackling fuel poverty not only improves the quality of peoples' homes, but by tackling the source of respiratory and other illnesses associated with fuel poverty, it also relieves pressure from the National Health Service (NHS). In fact, the savings to society from wasted fossil fuels in Northern Ireland would be in the region of £265m if fuel poverty was mitigated, with £14.9m of these savings accruing to the National Health Service alone (2019)[102].

There are two main policy mechanisms in Northern Ireland designed to target fuel poverty, the Affordable Warmth Scheme (AWS) and the Northern Ireland Sustainable Energy Programme (NISEP). For both there are some readily available just transition policy improvements. The Affordable Warmth Scheme, launched in 2014, still provides grants of up to £7,500 to replace old and inefficient oil boilers with newer oil boilers. This approach simply perpetuated carbon lock-in, and there is no rationale from the perspective of states or landlords to re-invest in a short period of time to replace a new oil boiler with clean energy in the future (CCC, 2019; Unruh, 2000[103]). Given that the scheme is part-funded by landlords in the homes concerned (Interview 3, 2020), the financial burden on the state to simply replace inefficient oil boilers with renewable technologies, such as heat pumps, is minimised.

The NISEP is the only bespoke energy efficiency policy mechanism in Northern Ireland (DfE, 2020[104]). 80% of NISEP funding is targeted at those in energy vulnerability and on low incomes, with the rest going to homes and businesses that can satisfy the scheme's criteria (Utility Regulator, 2019[105]). It provides grants in homes and businesses for insulation and other energy efficiency improvements (ibid, 2020). The Fuel Poverty Coalition cite that fact that there is 'huge demand' for the NISEP that is currently unmet for those who are most at risk, or currently enduring, fuel poverty (Interview 3, 2020). Part of this is due to underfunding.

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[102] http://fuelpovertyni.org/wp-content/uploads/A-Manifesto-for-Warmth-V2.pdf
[103] Unruh, G. (2000), Understanding carbon lock-in', *Energy policy* 28 (12), pp.817-830.
[104] https://www.economy-ni.gov.uk/sites/default/files/consultations/economy/energy-strategy-call-for-evidence.pdf
[105] https://www.uregni.gov.uk/sites/uregni/files/media-files/19%2005%2001%20Updated%20NISEP%20List%20of%20Schemes%202019-20%20Final.pdf

Currently only £5 per year on average is levied on electricity consumers to fund NISEP and alleviate fuel poverty (ibid, 2020). Though not prescriptive of a new funding model, the Fuel Poverty Coalition have suggested that this should be increased on those who can afford to do so (ibid, 2020). The mechanism to achieve this, however, is not clear, without levying a 'flat rate' increase in electricity tariffs which would be regressive in nature. There is a concern that an approach of this nature would be contradictory to just transition principles in ensuring that the burden to funding a rapid decarbonisation across society is not shouldered by those least able to pay. In any case, the scheme is popular and supported by the fuel poverty sector, with the caveat that it should be scaled up.

In the context of this scarcity, the Fuel Poverty Coalition have also suggested that better alignment of resources and those most in need is achieved (Interview 3, 2020). This 'needs based' approach, to replace the current demand-led approach, could be facilitated through a 'triage'-style system administered through local Councils and the Department for Communities (ibid, 2020). This is supported by the fact that existing programmes are trusted despite their modest scale, and by the fact that local Councils and the Department of Communities have experience in effectively targeting support to those most in need (ibid, 2020). However, neither of these policy innovations address the structural issue behind the problem of persistently high rates of fuel poverty which current policy mechanisms have failed to address in a meaningful way.

One policy option is a much more ambitious government-led retrofit programme with three primary just transition policy objectives – eradicating fuel poverty, stimulating good quality green employment in the wake of COVID-19, and dramatically curbing emissions (Robins et al, 2020). Indeed, Brandoni et al (2020) write that though "Implementation of net-zero carbon standards for new buildings is one of the most desirable options towards heat decarbonisation", it should be remembered "that new builds will only account for 14% of houses by 2050 (based on 2016 housing stock)" (p3). In fact, Allan et al. (2020)[106] point to home retrofits as an effective post-COVID recovery policy with strong emissions reduction potential, jobs creation and moderate multiplier effects for broader economic activity. The Belfast Climate Commission's recent report on a net zero pathway for the city also found that the most cost effective and carbon effective policy would be retrofit of

[106] https://www.smithschool.ox.ac.uk/publications/wpapers/workingpaper20-01.pdf

domestic buildings, given the high proportion of the city's carbon dioxide emission profile from that source both now and out to 2050 (see figure below).

Currently, 39% of Belfast's emissions come from the domestic housing sector, with transport responsible for 20% of emissions, public and commercial buildings for 24% and industry 18%. Emissions related to land use contribute c.0.5% and are not considered technically in this report. By 2050, under BAU, we project emissions from transport will decrease very slightly (still producing c.19%) with a significant 11% increase in the proportion of emissions from housing. Small decreases are forecast in the proportion of emissions from public and commercial buildings and industry, largely as a result of expansion in the output of the domestic buildings sector over this period.

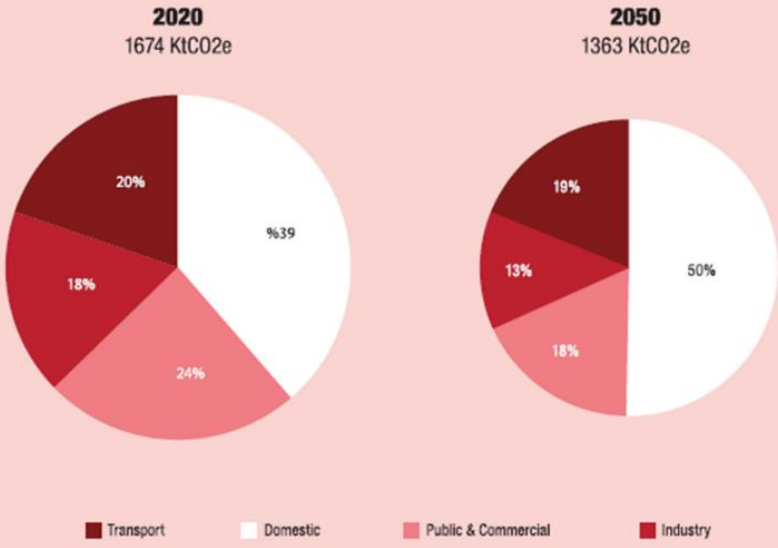

Figure 2: Belfast's Present and Projected Emissions by Sector

(Belfast Climate Commission, 'A Net Zero Carbon Roadmap for Belfast', p.19)

Private sector data is difficult to obtain, but for 85,000 Housing Executive-owned homes, the average SAP score is 63 (equivalent to a 'D' EPC rating) (DfC, 2020)[107]. The average cost to the Housing Executive is £22,000 to retrofit to a B EPC rating, and £25,000 to £30,000 to achieve an A rating (DfC, 2020)[108]. There is a time and quality issue here, however. A cautionary tale exists relating to recent tests by the Housing Executive to remove poor quality, and poorly installed cavity wall insulation in past years (Interview 3, 2020). This represents a drain on public

[107] http://aims.niassembly.gov.uk/questions/printquestionsummary.aspx?docid=294256
[108] Response to Written Question AQW 1901/17-22

resources, when limited resources and financial powers are available to the Executive in Northern Ireland to finance just transition policy.

For the private rented sector, a hard legislative barrier to market substandard and energy inefficient private homes should be introduced to prevent landlords profiting from homes that can cause health difficulties, contribute to fuel poverty and higher than necessary carbon emissions. HMOs and licensing for private sector landlords, and strengthening the energy efficiency criteria to gain access to HMO licenses, may be a mechanism for this and the Fuel Poverty Coalition expressed support for such a proposal (Interview 3, 2020). Ensuring new-builds are of the highest energy efficiency standards is also essential to order to future-proof just transition policies. This responsibility falls within Department of Finance, and there may be opportunity to borrow from the Scottish model (with a 2040 C EPC rating target) with the caveat that targets are made more ambitious (Scottish Government, 2020)[109].

Finally, in line with just transition principles to actively engage in social dialogue with the public and key civic groups across society, the Fuel Poverty Coalition strongly support a public awareness campaign about the issues of energy inefficiency, fuel poverty, and the many benefits of insulation and green retrofits (Interview 3, 2020). For higher-income households, this may go a long way in driving private retrofits for those not at risk of fuel poverty, but still living in energy inefficient homes.

[109] https://www.gov.scot/policies/energy-efficiency/energy-efficiency-in-homes/#:~:text=In%20response%2C%20we%20are%20proposing,least%20EPC%20C%20by%202040.&text=Not%20all%20buildings%20will%20be,outweigh%20the%20energy%20saving%20benefits.

Conclusion

This short think piece has sought to define what a just energy transition might look like in Northern Ireland, and what policy principles could be adopted to underpin this transition. It is clear, based on international experiences, that planning for a just transition in the same vein as vast coal and fossil fuel extraction economies in regions across the developed world, means any suitable definition based on lessons learned from these experiences would place Northern Ireland as an outlier of sorts.

Northern Ireland is not endowed with vast fossil fuel resources that have been exploited over decades to form huge industries with structural significance to our regional economy[110]. In the context of a just transition this presents challenges and opportunities. Primarily it means that, under the looming and immediate threat of climate breakdown, policymakers and the Northern Ireland Executive are not faced with economic disruption on a structural scale which threatens the livelihoods of huge amounts of workers and the stability of whole regional economies. However, it does not mean that significant just transition risks, obligations and opportunities do not exist.

Some 300 workers and additional agency staff rely on three major fossil fuel-based power plants across Northern Ireland for their incomes and livelihoods. Faced with the objective to rapidly decarbonise our economy (the net zero by 2050 target), their jobs and the livelihoods of those they support are in jeopardy in the medium-term. For one third of this workforce in the energy generation sector, they are facing unemployment within three years.

The wishes of representatives of these workers, respected international definitions of what constitute just transition policy principles, and lessons learned from international experiences, impose an obligation on the Executive to intervene immediately to manage and facilitate an organised transition for this workforce. The evidence is that there is a central role for government in managing and creating any just transition strategy (Ní Lochlainn, 2021), with potential for the public sector to be more entrepreneurial and interventionist (Mazzucato, 2013; Nugent and Goldrick-Kelly, 2020)[111]. Part of this means effective retraining and labour market activation policies. It also means considered, meaningful,

[110] See Appendix 1 for detailed examination of international just transitional experiences.
[111] Nugent, C. and Goldrick-Kelly, P. (2020), *Investing in a Just Transition. Realising the potential of a low carbon economy*, https://www.nerinstitute.net/research/investing-just-transition-realising-potential-low-carbon-economy

continuous, and two-way dialogue with workers, their representatives, affected communities, and private interests to secure support for these policies. This paper has recommended policies in this regard, learning from relevant and applicable examples elsewhere.

Getting 'Kilroot 2023' right is vital for two reasons. Firstly, to protect the wellbeing and material interests of workers and communities of those whose jobs will be made obsolete by our obligation to decarbonise our energy system. But secondly, and perhaps most importantly, to show the ability and capacity of government to manage the necessary process of decarbonising economic activity in a way that builds trust and credibility among wider society.

Kilroot is but one part of the energy generation sector and this sector is a very small part of an economy which faces the necessity for systemic and rapid change towards a new, sustainable, and fairer future. Unplanned, poorly managed, and non-consensual transitions can have lasting scars on communities, workers, and can serve to undermine essential climate action at a time when we cannot afford 'do overs'.

This economy-wide just transition is addressed throughout this paper in two ways - in the context of the carbon intensity (and therefore the vulnerability) of certain sections of the workforce, and through the conceptualisation of a just transition in Northern Ireland as one which concerns the consumption of energy and resources, and not simply their production. This understanding forms the backbone of how a just transition in Northern Ireland should be perceived, and puts persistent social justice and energy issues to the fore, such as fuel poverty, energy efficiency, regional imbalance, rural isolation, and so on.

Policy principles and avenues have been discussed in both of these cases, with specific recommendations and examples focused on industries critical for the decarbonisation of the economy. However, a detailed policy analysis for every sector affected are beyond the scope of a narrow research remit.

Instead, it should be adopted as a central focus for the Northern Ireland Executive, not as isolated climate policy tucked away in one 'silo' or another, but across all Departments with responsibility for energy and economic activity. This is especially true as the focus of the Executive, and large sections of the machinery of government, has understandably turned to suppressing and combatting the COVID-19 pandemic.

The economic impacts of undertaking this essential public health challenge have been profound. However, so are the implications of how we chart an economic recovery and remodelling in response to the pandemic. Much of the policy principles and economy-wide just transition discussion in this paper have been framed in the context of a green and just recovery from COVID-19 disruption. In short, the public resources deployed to stimulate economic activity must serve a dual purpose of decarbonising our economy, moving towards clean, COVID-resilient employment that also addresses longstanding social injustices and structural weakness of the regional economy.

Underwriting this economic approach, however, is a major feature of this paper, that orthodox growth-focused economic strategies pursued by the Executive to date have had an uneven impact in addressing poverty, deprivation, and ecological unsustainability. Moreover, on the basis of the available evidence, 'growth' as an outcome in and of itself, due to the limits of absolute energy, resource-use and pollution decoupling, will not allow for decarbonisation at a pace quick enough to meet our obligations to the planet and the international community. A just transition in Northern Ireland is not just a shift away from unsustainable energy consumption and production habits, but also away from a narrow focus on GDP measured growth. Here, alongside a more explicit integration of energy and wider economic policy, consideration should be given to new ideas such as a 'wellbeing' economy (currently being pursued by the Scottish government[112] and which has been researched for NI[113]), where full employment is promoted as the preferred pathway to rapid decarbonisation. This is turn should sit among a dashboard of desired economic outcomes such as good health, social protection and redistribution, sustainability,

The recommendations and discussions in this paper are in parts challenging, but they are based on an analysis and interpretation of the extant climate science, energy and wider policy context and possible political economic future trajectories. They contain possible courses of policy action ranging from 'business as usual' or iterative policy-making (where climate resilience and energy transitions are viewed as 'normal' policy challenges), to more paradigm-shifting opportunities for policy

[112] 'Towards a Robust, Resilient Wellbeing Economy for Scotland: Report of the Advisory Group on Economic Recovery', file:///C:/Users/2066416/Downloads/towards-robust-resilient-wellbeing-economy-scotland.pdf
[113] 'Embedding Wellbeing In Northern Ireland', https://www.carnegieuktrust.org.uk/project/embedding-wellbeing-in-northern-ireland/

rethinking in the climate-changed, carbon-constrained world of the coming crucial decades ahead. Paramount to any policy considerations is to hold that while, ceteris paribus, the transition to a low carbon energy future is inevitable and will quicken in the years ahead – the uncertainty arises as to whether this transition will be 'just' or serve to deepen existing social and economic inequalities. It is the role of government to achieve both objectives, since without demonstrable equity in the benefits and burdens of any low carbon transition, there is a real danger for social backlash and citizen resistance, and, therefore, irreversible climate breakdown.

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Appendix 1

An Examination of International Just Transition Experiences

Coal transitions

In regional coal economies across the world, there have been several high-profile examples of transition planning. For learning purposes there is perhaps limited applicability to Northern Ireland given the absence of any major extractive industries on which whole communities and sections of the economy rely. However, broad lessons about transition planning, social dialogue and policy delivery can be learned (NESC, 2020).

Germany

The German coal transition in the Ruhr Valley is perhaps the most notable and successful example of transition planning and delivery anywhere in the world. In 1950s, the coal sector employed almost 500,000 people which combined with the steel industry accounted for 70% of all employment in the Ruhr Valley (Botta, 2018). For reasons relating more to economic competition and a general pattern of decline than to climate justice, these industries contracted sharply in the 1960s and 1970s, prompting regional planning to transition to a diversified and typically service-based economy (ibid, 2018). In 2007, an agreement for transition in the Ruhr region was reached between trade unions and the German Coal Association, facilitated by state and federal government (NESC, 2020[114]). An end to hard coal mining was planned by 2018, built around the concept of 'socially acceptable staff reduction' (ibid, 2020). This provided thousands of workers with opportunities for in-company relocation, retraining and qualification assistance, and early retirement options for older workers.

However, Germany remains the world's biggest producer of lignite coal, based largely in the Lusatia region of eastern Germany. Indeed, Germany still relies on

[114] http://files.nesc.ie/nesc_research_series/Research_Series_Paper_15_TTCaseStudies.pdf

coal-fired plants for 40% of its electricity, responsible for 70% of all German electricity-based CO2 emissions (Pao-Yo et. al, 2020)[115].

Without a rapid transition away from this coal dependence, Germany will be unable to meet even its modest target of 80-95% greenhouse gas emissions reduction by 2050 (Agora Energiewende, 2018)[116]. There have been increasing calls, therefore, for just transition planning and delivery in the regions that continue to mine and burn the majority of German lignite. Though insignificant when compared to the employment picture of the wider economy (much less than 1% of the German workforce is employed in the lignite sector), they are profoundly important, well-paid, culturally significant, unionised jobs that are critical in the affected areas. The German *Climate Action Plan 2050* aims for a 50% CO2 emissions reduction by 2030, prompting the establishment of a commission for Growth, Structural Change and Employment, or the 'Coal Exit Commission'. In a landmark 2019 report, the Coal Exit Commission set a date for closure of all coal and lignite plants by 2038 at the latest and by 2035 if possible (Coal Exit Commission, 2019). Planning and policy development for this shift remains ongoing.

Spain

Spanish efforts to plan for a transition away from unsustainable employment in coal and fossil fuel sectors are also at an advanced stage. In 2019 the newly formed Spanish Government 'Ministry for Ecological Transition' published a 'Strategic Energy and Climate Framework'. This consisted of three primary components:

- A draft Climate Change Bill that would codify a 2050 target for carbon neutrality into law;
- A National Integrated Energy and Climate Plan to deliver the policies necessary to achieving this target;
- And recurring five-yearly Just Transition Strategies to "ensure that people and regions make the most of the opportunities afforded by this transition, so that nobody is left behind" (Ministry for Ecological Transition, 2019, p.3).

[115] https://reader.elsevier.com/reader/sd/pii/S0360544220301110?token=D618014D4F8753EF2E5A0A96835C9DA9366730007BDC24784105AF46B2CF960B202960349062A4D008DA471D6DC6DE11

[116] https://www.agora-energiewende.de/fileadmin2/Projekte/2017/Strukturwandel_Lausitz/Agora_Impulse_Structural_Change_Plan_Lusatia_EN_WEB.pdf

The disproportionate challenges faced by rural communities were also highlighted (particularly in coal mining districts), young people, and those on low incomes in any transition to a net zero carbon society. Though this Framework marked the development of a formal, government-wide approach to embedding the concept and delivery of just transition planning into Spanish government policy, efforts were previously underway to plan for the transition for the Spanish coal-mining sector.

In 2018, the government Institute for Restructuring the Coal Mining Industry and the Alternative Development of Mining Regions (IRMC) published a 'Framework Agreement for the Fair Transition of Coal Mining and Sustainable Development of Mining Communities' to cover the period 2019-2027 (IRMC, 2018)[117], also known as the 'Plan del Carbón'. Formed over years of social dialogue and coproduction with Spanish trade union as an alternative of simply slashing coal industry subsidies, the Plan committed to an annual budget commitment of €250m to fund just transition policies in agreement with the autonomous regions concerned (ibid, 2018; Industriall Global Union, 2018)[118]. This funding, coming in the form of direct grants, will be focused on replacement job creation, infrastructural investment, and employee compensation in the way of early retirement options (roughly 60% of coal workers qualify for this, including all over the age of 45 or with at least 25 years' job tenure) (Ministry for Ecological Transition, 2019; Industriall Global Union, 2018).

In summary, the Spanish experience stands as an important model of a cohesive and productive process, incorporating co-design and emphasising the importance of open and transparent social dialogue between government and affected communities and workers and their representatives such as trades unions, in forming joint transition policy supported by workers and government.

Other coal transitions have been completed, are being planned, or are currently in an implementation phase in countries like Australia, Canada, China and the United States (NERI, 2020; NESC, 2020; Fei, 2018; UNRISD, 2018).[119] These will be examined in much narrower terms where appropriate throughout the document.

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[117] http://www.industriall-union.org/sites/default/files/uploads/documents/2018/SPAIN/spanish_plan_for_coal_eng_oct_2018.pdf

[118] http://www.industriall-union.org/spanish-coal-unions-win-landmark-just-transition-deal

[119] Fei, T. (2018), *Coal transition in China Options to move from coal cap to managed decline under an early emissions peaking scenario*,

Broader transitions - Scotland

The most formalised and advanced example of just transition planning in the UK or Ireland is the Scottish Just Transition Commission, which first sat in January 2019 (Just Transition Commission Scotland, 2019)[120].

The Commission was established under the auspices of multiple Departments of the Scottish Government "for a two-year period to provide independent advice to Scottish Ministers on the long-term strategic opportunities and challenges relating to the transition to a net zero carbon economy" (Just Transition Commission Scotland, 2019a). Crucially, the Commission's ultimate responsibility is to provide the Scottish Government with a written report offering "practical, realistic, affordable recommendations" to support government economic and decarbonisation planning (ibid, 2019a).

The Commission is composed of representatives of significant stakeholders, including the trade union movement, the Scottish oil and gas industries, academics and climate experts, the farming sector, among others. In its February 2020 Interim Report, the Commission stressed that its main findings, which emerged following extensive engagement with grassroots communities and economic sectors most likely to be impacted by decarbonisation, focus on the importance of long-term planning that integrates the just transition policies in particular places with a broader government-led strategy for economic renewal (Just Transition Commission Scotland, 2020).

It also stressed that continuous, proactive and meaningful engagement with all sections of society as just transition policies were being both developed and implemented was necessary to help understand and meet society's 'expectations' of a just transition, and to create buy-in for the scale and pace of economic change required by climate science (ibid, 2020). In April 2020, the Scottish Government altered the mandate of the Commission to include economic planning for a 'green recovery' from COVID-19 disruption. The Commission subsequently published their

https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20Iddri/Rapport/20180609_ReportCOAL_China_0.pdf

[120]https://www.gov.scot/binaries/content/documents/govscot/publications/minutes/2019/03/just-transition-commission-meeting-papers-january-2019/documents/just-transition-commission---meeting-1---agenda/just-transition-commission---meeting-1---agenda/govscot%3Adocument/Just%2BTransition%2BCommission%2B-%2Bmeeting%2B1%2B-%2Bagenda.pdf

advice on a green recovery in July 2020 (Just Transition Commission Scotland, 2020)[121].

The structure of the Scottish Just Transition Commission was in some ways preceded by the Longannet Task Force (LTF), a group co-chaired by representatives of Fife Council and the Scottish Government. The LTF was initially formed in 2015 to manage the closure of Scotland's last coal plant in Longannet, when Scottish Power announced its intentions to close the plant in 2016, four years earlier than planned (Just Transition Commission Scotland, 2019b)[122]. The plant was an important local economic entity, directly employing 236 people, while supporting a further 800 jobs in 185 companies indirectly through supply-chain demand valued at around £48m (ibid, 2019b). When the Task Force concluded in May 2018, its Economic Recovery Action plan sought to mitigate the impact of the plant's closure by focusing on policy interventions looking at 'workforce support and training', 'community regeneration', 'business recovery and growth', and a strategy for the future use of the site (NESC, 2020; Just Transition Commission Scotland, 2019).

In December 2019, Fife Council agreed plans to convert the site into a train factory owned by Spanish firm Talgo, employing 1,000 people in 'work to make Scotland a net zero emissions economy' (BBC, 2019[123]). Transition planning for the workforce and the site itself appear to have been somewhat successful, at least in preventing unemployment and a plunge in living standards, given that a "high proportion of former workers at the site had ended up in positive destinations following the closure" (Just Transition Commission Scotland, 2020, p22)[124].

Having engaged with a Scottish government's labour market activation Partnership Action for Continuing Employment (NACE) scheme "99 per cent (not including those economically inactive or who chose not to access further support) secured positive destinations in either work or training" (NESC, 2020, p128). However,

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[121] https://www.gov.scot/publications/transition-commission-advice-green-recovery/
[122] https://www.gov.scot/binaries/content/documents/govscot/publications/minutes/2019/05/just-transition-commission-meeting-papers-april-2019/documents/just-transition-commission-meeting-2-longannet-taskforce-paper-2.2/just-transition-commission-meeting-2-longannet-taskforce-paper-2.2/govscot%3Adocument/Just%2BTransition%2BCommission%2B-%2BMeeting%2B2%2B-%2BLongannet%2BTask%2BForce%2Bpaper%2B-%2Bpaper%2B2_2.pdf
[123] https://www.bbc.co.uk/news/uk-scotland-scotland-business-50829294
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understanding that just transition planning concerns much more than employment supports or swapping one form of unsustainable employment for another, significant issues exist in the Longannet case.

Much of the transitional employment opportunities are also based in the primary fossil fuel industry or secondary industries reliant on fossil fuels , such as plastics refineries, which in employment terms marks much more of a 'just replacement' than a transition away from fossil fuel dependent work (ibid, 2020)[125]. Furthermore, Scottish Just Transition Commissioners found that the voices of the local community in nearby Kincardine had not been sufficiently included and represented in transition planning, and as such the Task Force "missed an opportunity to address wider questions of economic development and empowerment in the area" (ibid, 2020).

The Scottish experience is crucial in forming any just transition policy framework for Northern Ireland. As a devolved administration within the United Kingdom, the Scottish Government face many of the same political and financial challenges the Northern Ireland Executive is likely to encounter in any just transition planning. However, as a case study on which we might make policy comparisons, it is also very limited. Scotland has a large and historically significant oil and gas industry, and in that sense more directly aligns with transition planning in other resource-rich and extractive regions. Secondly, the Scottish policy and legislative framework for just transition planning and delivery is also significantly more advanced than anything in Northern Ireland, evidenced not least by the government's codified 2045 target for net carbon neutrality. Regardless, the political, demographic, geographic and economic similarities between Scotland and Northern Ireland make it an important comparator case study that will be borrowed from throughout this report.

A cautionary tale – the Irish Midlands

There have been significant developments regarding the concept of a just transition in government climate policy in the Republic of Ireland in recent years. Foremost among them was the establishment of a Just Transition Commissioner to assist in the managed and somewhat unexpected closure of major peat-fired power plants in the Irish midlands.

[125] http://files.nesc.ie/nesc_research_series/Research_Series_Paper_15_TTCaseStudies.pdf

In 2015, Bord Na Mona management announced it would cease the extraction of peat for energy production across 125,000 acres of bog land owned and managed by the company, aiming to end the practice entirely by 2030 in what the firm called the biggest single change in land use in Irish history (Bord Na Móna, 2020)[126]. However, in July 2019 An Bord Pleanála rejected a planning application from the Electricity and Supply Board (ESB) for the continuation of the Shannonbridge peat-fired power plant in west Offaly, and an ash disposal site in Derrylahan (Mulvey, 2020).

Perhaps recognising the precedent, ESB announced the closure of the plant, alongside the Lough Ree peat-fired plant. Both sites will close permanently by the end of 2020, prompting Bord Na Móna to bring forward its peat phase out target to 2025 (NESC, 2020a[127]; Midlands Regional Transition Team, 2020[128]). ESB conducted no prior consultation with trade unions about its decision to close the plants, leaving workers without a clear and prearranged retraining or job replacement strategy as has been the case in other jurisdictions (ICTU, 2019[129]).

This decision essentially created a 'cliff edge' in demand for Bord Na Móna produced peat, hastening the decline of peat production, and correspondingly the need for just transition policy intervention. In response, the Irish government announced an 'Accelerated Exit from Peat' that would be supported by the appointment of Ireland's first Just Transition Commissioner, Kieran Mulvey, to assist in the planned, but urgent, transition planning of peat workers and the regional economy of the Irish midlands (DCCAE, 2019)[130].

For some 70 years, Bord Na Móna, ESB and the local peat-extraction industry in the Midlands has been a cornerstone of the local economy, and is credited with preventing the depopulation and economic degeneration seen elsewhere in rural Ireland (Mulvey, 2020). Indeed, the impact of the closure threatens many aspects of the local economy more broadly, in that the income of peat workers sustained other employment indirectly, and local Councils now face reduced commercial rates

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126 https://www.bordnamona.ie/company/news/articles/bord-na-mona-announces-biggest-change-of-land-use-in-modern-irish-history/
127 http://files.nesc.ie/nesc_reports/en/149_Transition.pdf
128 https://data.oireachtas.ie/ie/oireachtas/committee/dail/32/joint_committee_on_climate_action/submissions/2019/2019-11-13_opening-statement-anna-marie-delaney-chief-executive-offaly-county-council_en.pdf
129 https://www.ictu.ie/download/pdf/building_a_just_transition_report_feb_2019.pdf
130 https://www.dccae.gov.ie/en-ie/news-and-media/press-releases/Pages/-Accelerated-Exit-from-Peat-will-be-accompanied-by-Just-Transition-for-Workers-and-the-Midlands-%E2%80%93-Minister-Bruton-Accelerat.aspx

collection on which local municipal services rely (ibid, 2020), as well as likely depopulation as particularly younger people move to Dublin and outside Ireland.

The case of planning a just transition from peat-extraction based economy in the Irish midlands is an important case study for Northern Ireland. Notwithstanding the absence of a major peat extraction industry, the events of the past two years, detailed above, is a cautionary tale in favour of proactive and advanced long-term planning to prevent an unforeseen and unplanned event threatening the viability of evidence-based, timely, and co-produced just transition policy. Commissioner Mulvey's April 2020 interim report states bluntly that Bord Na Móna employees are a 'combined workforce…in shock from the immediacy of the closure decision (December 2019) and the real and current impact upon their livelihoods' (ibid, 2020, p5). In other words, for workers 'what was expected to be a ten-year transition period is now reduced to twelve months, and possibly shorter' (ibid, 2020, p6).