Energy governance for the Northern Ireland energy transition

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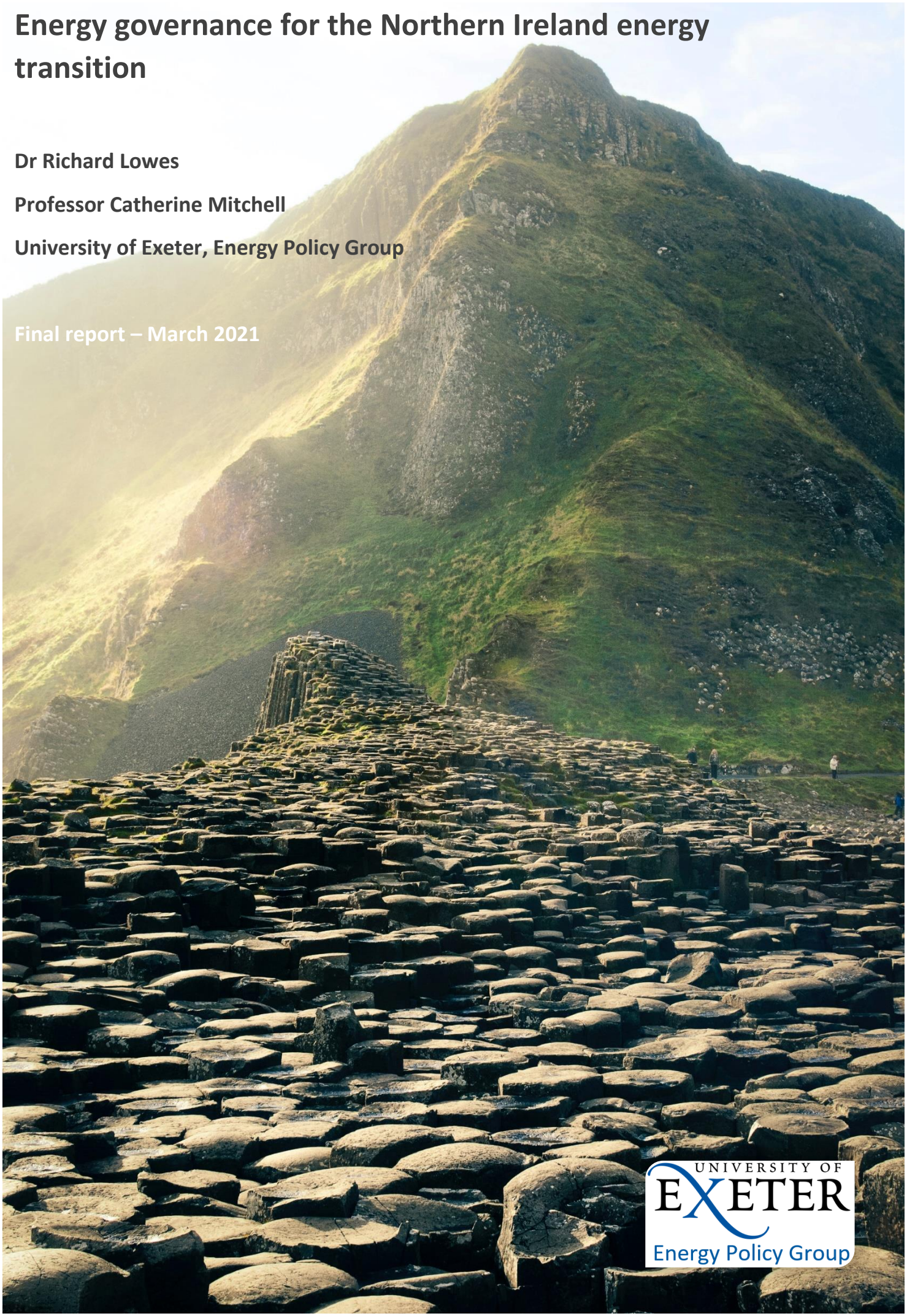


This report has been researched by and written by the authors named on the front cover. While this research was grant funded by the NI Executive and we engaged closely with the NI Executive throughout the study, the words contained within it are the responsibility and views of the authors only and do not represent the views of the NI Executive.

Executive summary

Introduction

As part of the development of the Northern Ireland government's future energy strategy, the University of Exeter Energy Policy Group was grant funded to produce a think-piece on current energy governance in Northern Ireland (NI) and how this governance connects to wider UK and Republic of Ireland energy governance. We were also asked to investigate how the current governance structure should change in order to support the energy transition and to ensure NI contributes to the UK wide net-zero target.

To develop this paper, we combined our insights around UK energy policy and governance with original research. We used desk based research to produce a detailed map of current energy governance in NI and then used interviews carried out during early summer 2020 with civil servants and staff at relevant public sector bodies to uncover perceived issues with existing energy governance and to consider ways forward.

Current governance

A map showing the shape of existing energy governance in Northern Ireland is included at the end of this summary. Overall the map shows an extremely complex structure of energy governance with greenhouse gas emission and energy policy functions split across a number of departments.

While the Department for the Economy (DfE) is the nominal owner of energy policy issues, much energy governance currently sits outside the policy authority of DfE. Perhaps most notably, the use of petroleum based fuels (much of which is used for road transport and heating), which makes up 58% of NI energy consumption, sits outside the current remit of DfE. Like in GB, oil used for heating (including 68% of homes which is much more prevalent that elsewhere in the UK) is not covered by any current NI energy governance.

Transport policy is currently the responsibility of the Department for Infrastructure (DfI) but is impacted by wider UK policy and legislation (eg. Road to Zero Strategy, vehicle registration and standards, vehicle excise duty, grants for electric vehicles and charge point infrastructure) and energy policies (such as grants for electric cars). Many heat and building issues which include energy efficiency also sit outside of DfE and these issues are particularly complex from a governance perspective. The Department for Communities and The Department of Finance, as well as DfE have some role in heat and buildings policy.

Taking an international perspective, various sectors have been impacted by historic EU regulations (often via UK wide legislation) including perhaps most importantly appliance standards and the EU emissions trading scheme. The existence of the whole island single electricity market naturally also means that the relationship between NI and the RoI is important in terms of electricity.

The final important extra-NI energy governance element is the wider relationship with the UK, particularly around tax and finance issues. The NI Government only has tax raising power over domestic and non-domestic 'rates' and so many tax incentives are applied at a UK wide level. This

means that the NI Government has limited tax raising powers to support the energy transition. Much income is set in Westminster and although finance could be raised through levies on bills though this may be socially regressive.

Pressures for governance change

The need for dramatic greenhouse gas emission reductions alongside rapid cost falls in the price of renewable electricity mean that energy systems around the world are currently undergoing rapid change. With policy, regulation and governance playing such a large part in energy systems, it makes sense for governments to consider whether existing energy governance arrangements are fit for purpose.

Our analysis shows that in general, NI is perceived to be a place which can benefit from and be at the forefront of the energy transition. This is due to the physical geography of NI which means that it has significant potential for renewable energy. With so many homes using oil for heating and cars used for mostly short distance journeys, the scope for the rapid electrification of buildings and transport also appears substantial. Finally, the scale of NI compared to GB means that the NI Government can act coherently and deliver area based policies in a way that may not be possible for the UK Government in England. There is of course however still likely to be room for strong cooperation between GB and NI around policy, research and strategic energy issues.

However, our research, based on the perceptions of policy makers working in NI, highlighted a number of concerns with the structure of energy governance in Northern Ireland meaning that the full benefits of NI's energy resource may not be being realised and goals for decarbonisation may be at risk.

Most significantly, the **coherence and associated complexity** with current energy governance was seen to be a key concern to the people we spoke to. While this issue had been highlighted by our mapping, the interviews provided further detail, highlighting specific concerns around the current energy governance associated with buildings and transport, vital elements of the energy transition which sit outside of DfE.

Linked to these issues of coherence was also a belief that **leadership** for energy would benefit from being strengthened. While DAERA currently leads on carbon and climate issues, it does not have the authority to mandate other departments with authority over energy or climate issues to take action. Similarly, DfE cannot mandate other departments to take action on energy issues outside of its remit. This is a general point which reflects the structure of the NI government with each department having its own authority. We do recognise that the Northern Ireland policy and political context in recent years has been difficult. The Northern Ireland Executive had been suspended for over three years up to the 11th January 2020; the Northern Ireland protocol was being negotiated as part of EU Exit and the impact of Covid 19 on working adaptations and energy recruitment will have limited energy resources in early 2020. These elements may have led to a reduced scope for leadership around energy.

It was suggested that at the time of interviews, the NI Government may not have had the **capacity for effective energy and policy** in part due to limited knowledge and expertise and that the government didn't currently make the most of **external expertise around energy issues**. These are both issues which may in part be resolved by the current energy strategy development programme. This includes the development of a DfE led cross-departmental 'Energy Strategy Government Stakeholders Group' and an external facing stakeholder engagement programme alongside

recruitment of additional civil service resource but efforts must be made to ensure that any ongoing capacity issues are resolved over the longer term.

There was a belief that **whole systems thinking, i.e. thinking about energy across different sectors was not embedded in energy governance** and that **responsibilities, accountabilities and goals for energy were not clear**. While the current development of the new NI energy strategy and associated cross-government working and stakeholder groups appear positive, it has not be possible to track progress made through this process and the strategy is not yet complete.

The other key issue raised was **how the energy transition in NI could be financed within the existing governance structures** whereby the overall level of NI government spending is set in Westminster meaning approaches to finance may be limited to re-distributing existing Government income or raising funds from consumer bills.

Potential solutions and recommendations

Our research also considered views on how governance should change. These areas were highlighted:

- Decision making should be simplified;
- Energy leadership should be encouraged;
- Regulation should be reformed to drive sustainability and strategic approaches, the Utility Regulator's statutory duties should be updated to reflect the need for decarbonisation;
- People should be made central to decision making to support an equitable transition;
- A potentially increased role for local authorities and the Northern Ireland Housing Executive with regards to the energy transition and policy delivery should be considered.

We make four overarching recommendations:

1. NI draws all energy and climate issues into one department, potentially 'The Department for Climate and Energy Transition'. This change would simplify the currently complex energy decision making and encourage leadership around energy issues through providing a Minister with specific responsibility for climate mitigation and energy issues. While more simplistic changes could be made around the shifting of departmental responsibilities and these are considered in detail within the report, the required speed and scale of the energy transition may require a more wholesale governance reform programme. We also note that Governments elsewhere have carried out similar restructurings although it is not yet possible to determine their value and the context of existing governance settings will vary between countries.
2. NI develops a new independent energy body which scrutinises the energy transition on an ongoing basis, advises the Assembly and the Executive, is a centre of expertise and potentially works with other organisations as a delivery body. This new body could work closely with the proposed independent environmental regulator.
3. Specific NI carbon budgets are adopted and the requirement for these and for annual Committee on Climate Change progress reporting and advice is put into the NI statute during the current political cycle.
4. A duty is placed on all NI Government departments to consider climate and energy transition as part of policy development.

Following the map of existing energy governance, a map of our proposed governance structure is shown at the end of this summary. We believe that making these four governance changes together

would create a suitable governance framework that could drive the energy transition at the speed and direction required. Following only one or two of these recommendations, or more limited governance reform could have some beneficial impacts. However, limiting the proposed changes appears to be unlikely to be enough to drive the changes required but our combined approach provides a strong 'quadruple lock'.

To ensure that energy and climate decision making is given the priority it needs, we recommend that the new independent energy body which scrutinises and supports the new Department for Climate and Energy Transition comes under the responsibility of and reports to The Executive Office. This would raise the profile of energy and provide cross-party leadership.

Conclusions

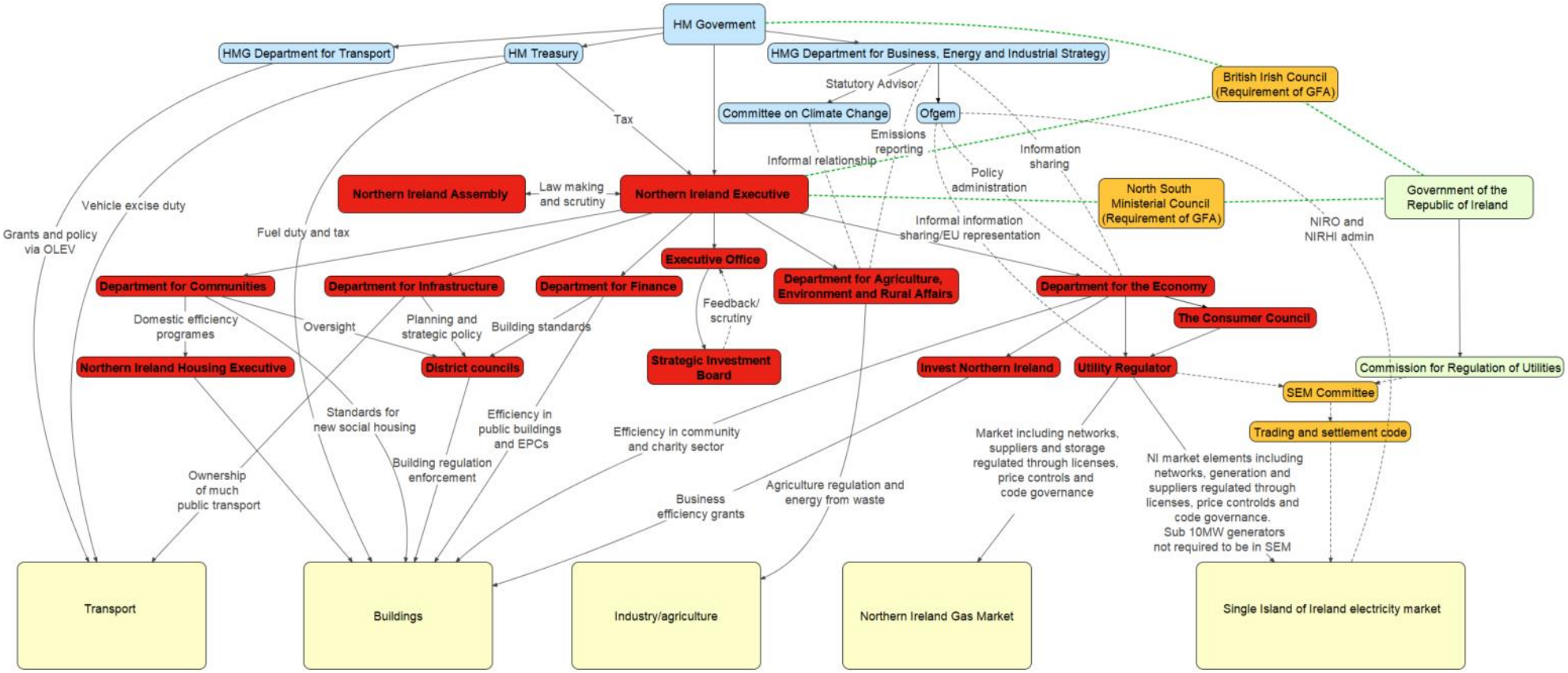
Northern Ireland is geographically well placed to benefit from the energy transition and could see significant economic benefits if energy imports are reduced and inward investment is maximised. However, the current structure of energy governance is not suitable to drive the energy transition at the speed required for NI and wider UK targets. This research has highlighted particular issues associated with coherence, policy capacity and perceived limited leadership around energy governance.

While the recent 'Energy Strategy' work led by DfE appears to be a positive development, the issues we have identified are fundamentally organisational issues which could be resolved through restructuring energy functions within government. Specifically, energy and decarbonisation governance should be rationalised by bringing these issues together into one government department. While we considered the option of maintaining the existing structure of departments and making more limited changes, we did not believe this would go far enough to increase the coherence and reduce the complexity of energy policy making. We do of course recognise the investment needed to manage machinery of government changes.

A new energy body should also be developed which is independent of government but can provide expert and critical support to the decision making process. This body would be a centre of energy expertise, could manage data issues and provide policy delivery and could lead citizen engagement issues. Reporting to The Executive Office, the highest level of government authority, would give this body the influence to drive the transition effectively.

While the changes we have proposed may seem daunting, the requirements of the energy transition mean that a thorough governance overhaul would have significant early value and eliminate the need for responsive policy and governance modifications into the future. Further still, as rapid investment based economic growth is targeted in response to the Covid crisis, reforming energy governance now could be seen as an economic priority for NI.

Current energy governance in Northern Ireland



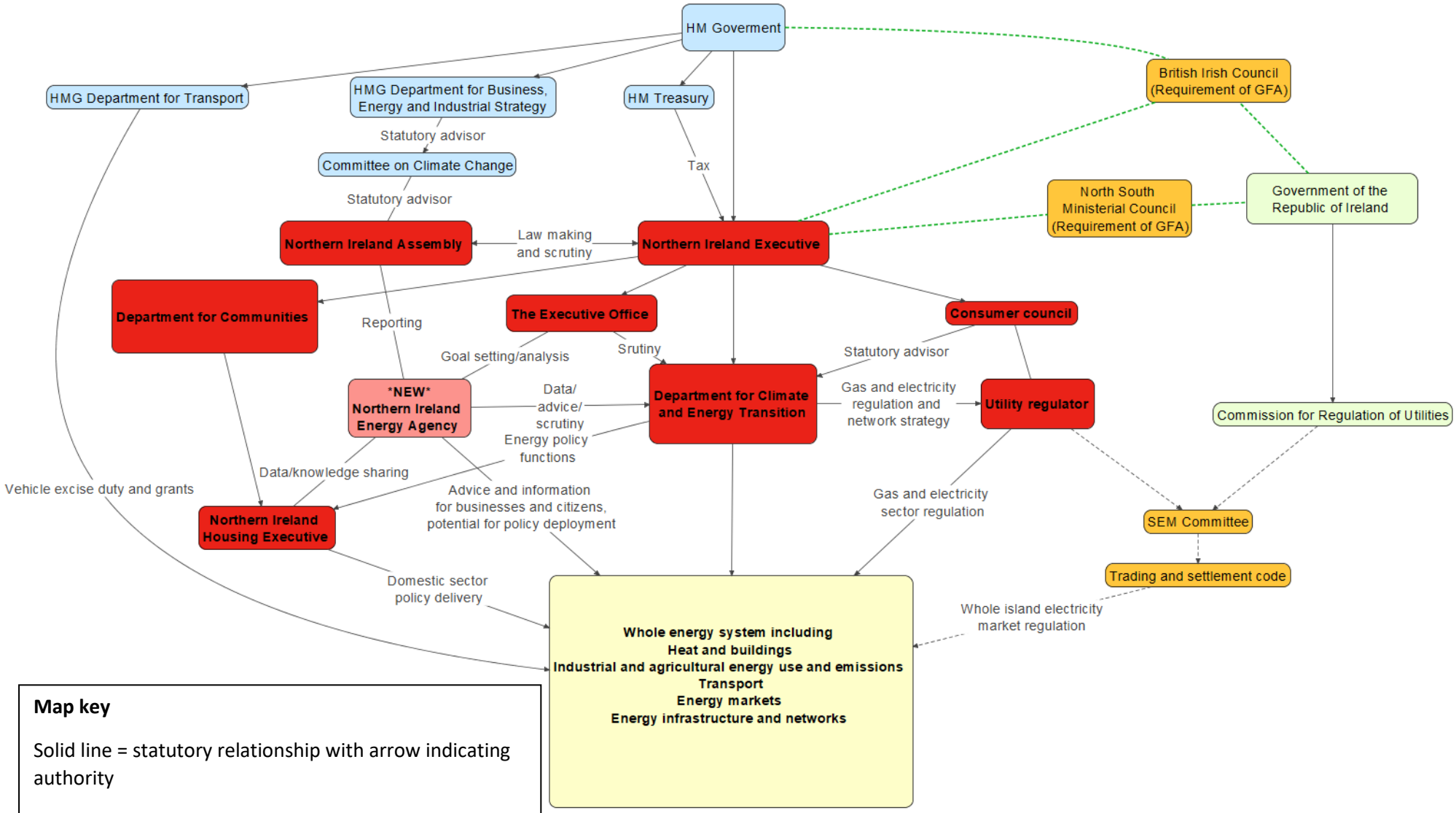
Map key

Solid line = statutory relationship with arrow indicating authority

Dotted line = non-statutory relationship

Green dotted line = Good Friday Agreement relationship

Proposed new energy governance structure in Northern Ireland



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Acronyms

BEIS – HM Department of Business, Energy and Industrial Strategy

CCC – Committee on Climate Change

CFD – Contract for Difference

DAERA - Department for Agriculture, Environment and Rural Affairs

DfE – Department for the Economy

DfI – Department for Infrastructure

DoF – Department of Finance

ESB – Electricity supply board

EU ETS – EU Emissions Trading Scheme

GHG - Greenhouse Gas

MLA – Member of the Legislative Assembly

NI – Northern Ireland

NIEN – Northern Ireland Electricity Networks

NIRO – Northern Ireland Renewables Obligation

RoI – Republic of Ireland

SEM – Single Electricity Market

SEMC – Single Electricity Market Committee

SEMO – Single Electricity Market Operator

SONI – System Operator Northern Ireland

Acknowledgements

We would lie to thank the Northern Ireland Department for the Economy for funding this work and giving us the opportunity to investigate this topic in such an open fashion. We would also like to thank our four independent peer reviewers. The eleven interviewees provided great challenge and advice for our thinking and we are extremely grateful to them, we apologise for not being able to include all views completely. Finally, this report wouldn't have been possible without the hard work which went into the 2012 to 2019 IGov[1] project.

The contents of this paper are the responsibility of the authors only.

About the authors

Dr Richard Lowes is a lecturer and UKERC research fellow based in the University of Exeter Energy Policy Group. He has been working on energy policy and governance for over 10 years initially working for a UK gas transporter before moving into academia. His teaching and research focuses on the energy transition and he has particular experience in heat, buildings and associated policies.

Professor Catherine Mitchell is Professor of Energy Policy at the University of Exeter. She was PI on the EPSRC 7 year Innovation and Governance (IGov) project[1] is currently a coordinating lead author of the policy and institutions chapter of the IPCC's 6th WG3 Assessment Report. Catherine's research interest is how to accelerate the transition from the current 'dirty' energy system to a sustainable energy system.

1 INTRODUCTION AND THE NORTHERN IRELAND ENERGY CONTEXT

As part of the NI Government's development of a new energy strategy, the University of Exeter Energy Policy Group was grant-funded by the Northern Ireland Department for the Economy to develop a think-piece considering energy governance in Northern Ireland.

Specifically we were asked to consider:

1. What is the current shape of energy and climate governance in Northern Ireland?
2. How does this current governance connect to wider UK and The Republic of Ireland governance?
3. How should the current governance structure change in order to support the clean and low carbon energy transition, particularly in response to the UK wide goal for net-zero greenhouse gas emissions by 2050?

The paper is structured as follows:

- This section (1) introduces the work and sets the NI energy context.
- Section 2 describes our research methods.
- Section 3 describes current energy and climate governance in Northern Ireland. This section introduces a detailed map of current energy decision making authority in NI.
- Section 4 introduces some of the key issues associated with energy governance in NI and reports results from interviews with a number of civil servants.
- Section 5 makes some recommendations for future energy governance in NI.
- Section 6 concludes the report.

1.1 WHAT IS GOVERNANCE?

The recently completed IGov project[1] which focussed on UK energy governance suggested '*governance is taken to mean policies, institutions, rules and incentives*' and the underlying politics in setting those rules and incentives (i.e. the rules of the game) (Mitchell *et al.*, 2016, p3). An even broader definition suggested '*Governing can be considered as the totality of interactions, in which public as well as private actors participate, aimed at solving societal problems or creating societal opportunities*' (Kooiman, 2003, p3).

Governance is a wide subject covering a multitude of institutions, actors and processes fundamentally tied together by ideas of authority, power and decision making. In this paper, we primarily focus on the role of government in governance. While government is our focus, we recognise that wider social elements of governance are hugely important elements of system change. How citizens interact with, and are affected by, energy system change will have government implications.

A focus on governmental elements of governance in NI means that we focus on two key levels of governance:

- The policies and regulations which impact on the NI energy system.
- The rules and the system which governs the development of energy polices and regulation which affect the NI energy system.

1.2 Energy in Northern Ireland

Overall, in energy terms, Northern Ireland can be characterised as having a defined heating season with weather having a significant impact on energy demand and supply. NI has a well-developed electricity system; a more recent gas distribution system; and a transport system which, like in many countries, is based on liquid petroleum fuels i.e. petrol and diesel.

1.2.1 Overall energy consumption

The total energy consumption of NI in 2017 (47,039 GWh) was the equivalent of 3.3% of Great Britain energy use[4]. As shown below in Figure 1, petroleum makes up the largest share of energy consumption in NI reflecting its use in transport and the high proportion of homes using oil based heating (around 68% of homes in 2016)[4]. After oil, the next largest segment of demand is for electricity (most of which is produced from gas and wind), followed by gas, with 55% of gas used by industrial and commercial customers and 45% used by domestics and smaller commercial customers[4]. Some coal is used, mostly in industry.

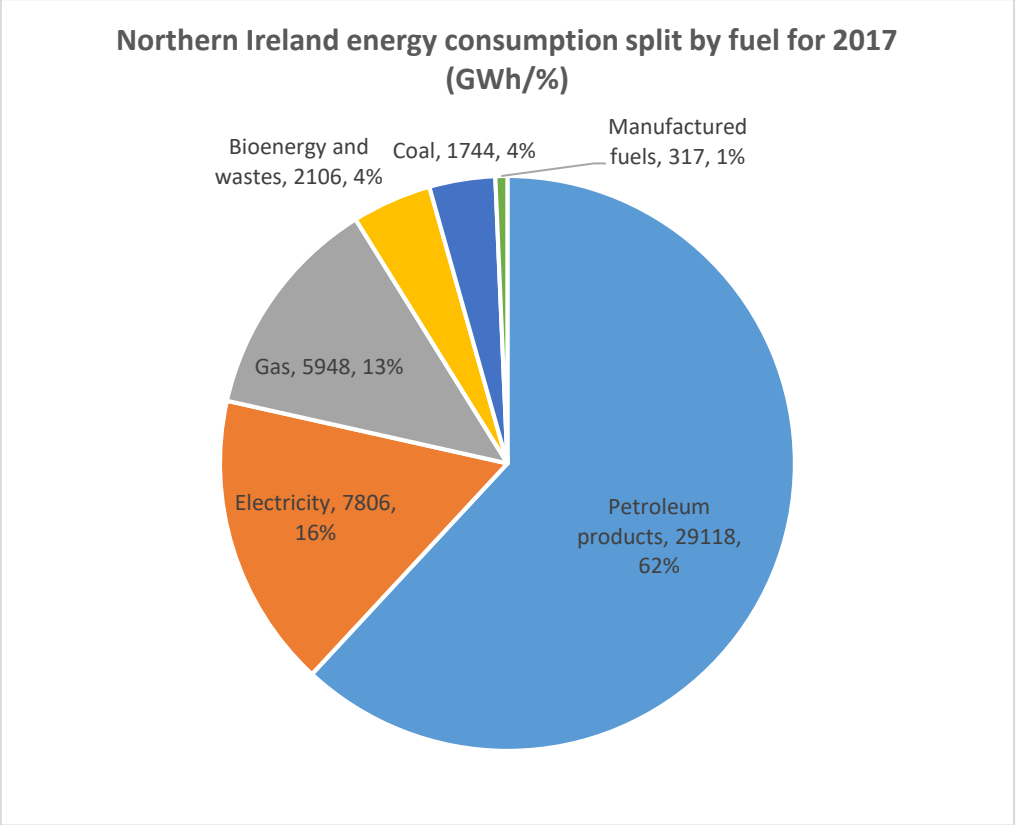


Figure 1. Northern Ireland final energy consumption split by fuel for 2017 (GWh/%). Based on Energy in Northern Ireland 2020[4].

With no active petroleum extraction sites[5], NI imports nearly all of its oil and gas demand from global markets. Petroleum fuels are tankered via ship and landed at terminals or driven across the border from the Republic of Ireland (RoI). Fossil gas is imported via pipeline from Scotland with no liquefied natural gas import terminals across the island of Ireland. The NI and RoI gas markets are connected by the all-island gas transmission system with the 'South-North' pipeline connecting to RoI network in Gormanston, County Meath[6]. The island of Ireland gas transmission system is shown below in Figure 2.

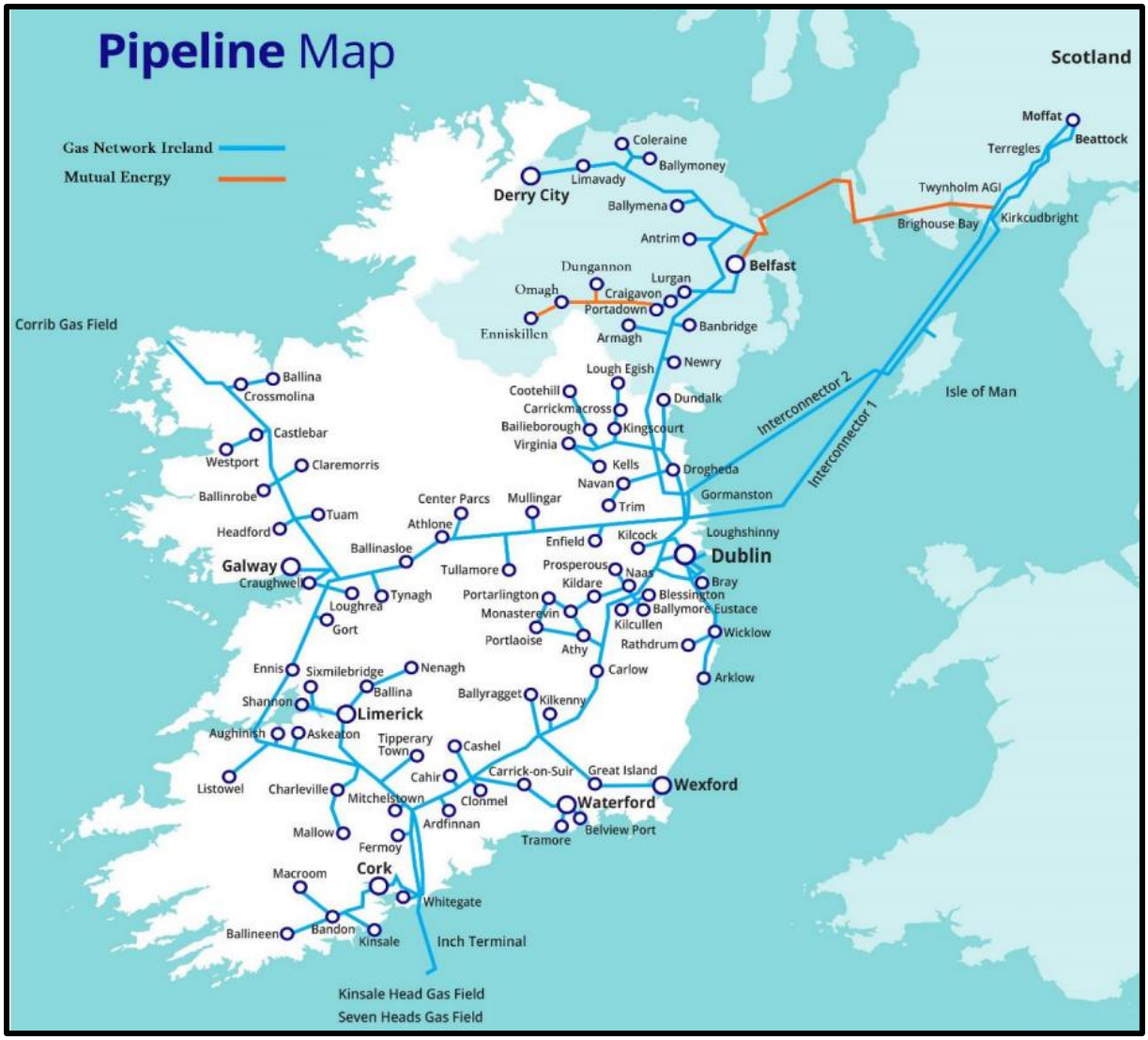


Figure 2. Island of Ireland gas transmission system and its interconnection[7]

1.2.2 Electricity in Northern Ireland

The Northern Ireland electricity system also has connectivity to GB and the RoI. The Moyle interconnector connects Scotland and Northern Ireland and a number of 'tie-lines' connect the NI and RoI systems. Figure 3 shows a map of the transmission system and includes transmission connected fossil fuel generation which includes three significant fossil fuel power generating stations.

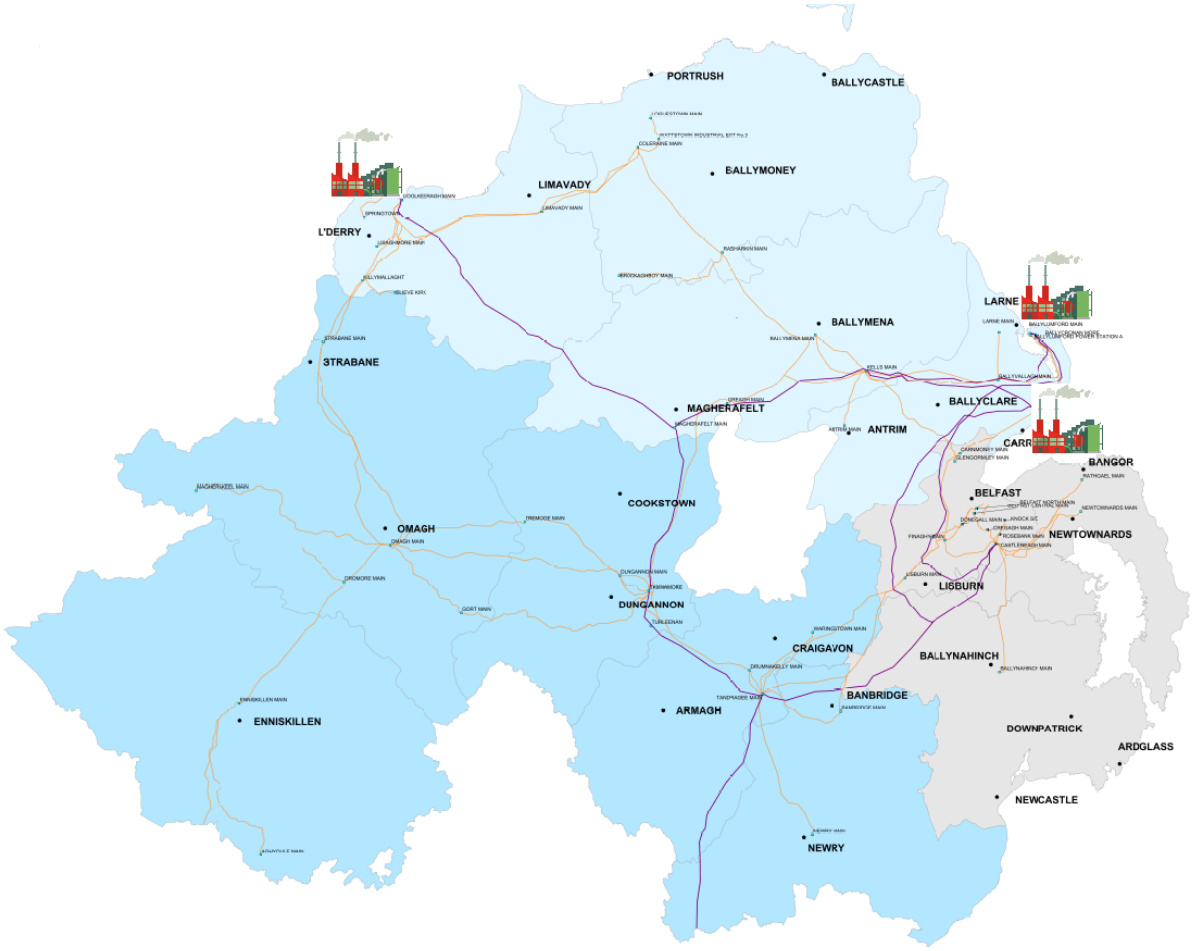


Figure 3. Electricity map of Northern Ireland showing position of major fossil fuel generating stations

While three fossil fuel generating stations (two gas and one coal/oil) have historically produced much of Northern Ireland's electricity supply, the growth of renewable capacity in the past two decades[8] means that renewables provided 47.7% of electricity consumption in the twelve months up to 31 June 2020[9] up from 9.7% in 2009[4]. Media reports also suggest that the current coal/oil power station at Kilroot (which also contains a 10MW battery), will be replaced with a gas generation unit[10]. Figure 4 shows all generating sites in Northern Ireland with a capacity above 50kW.

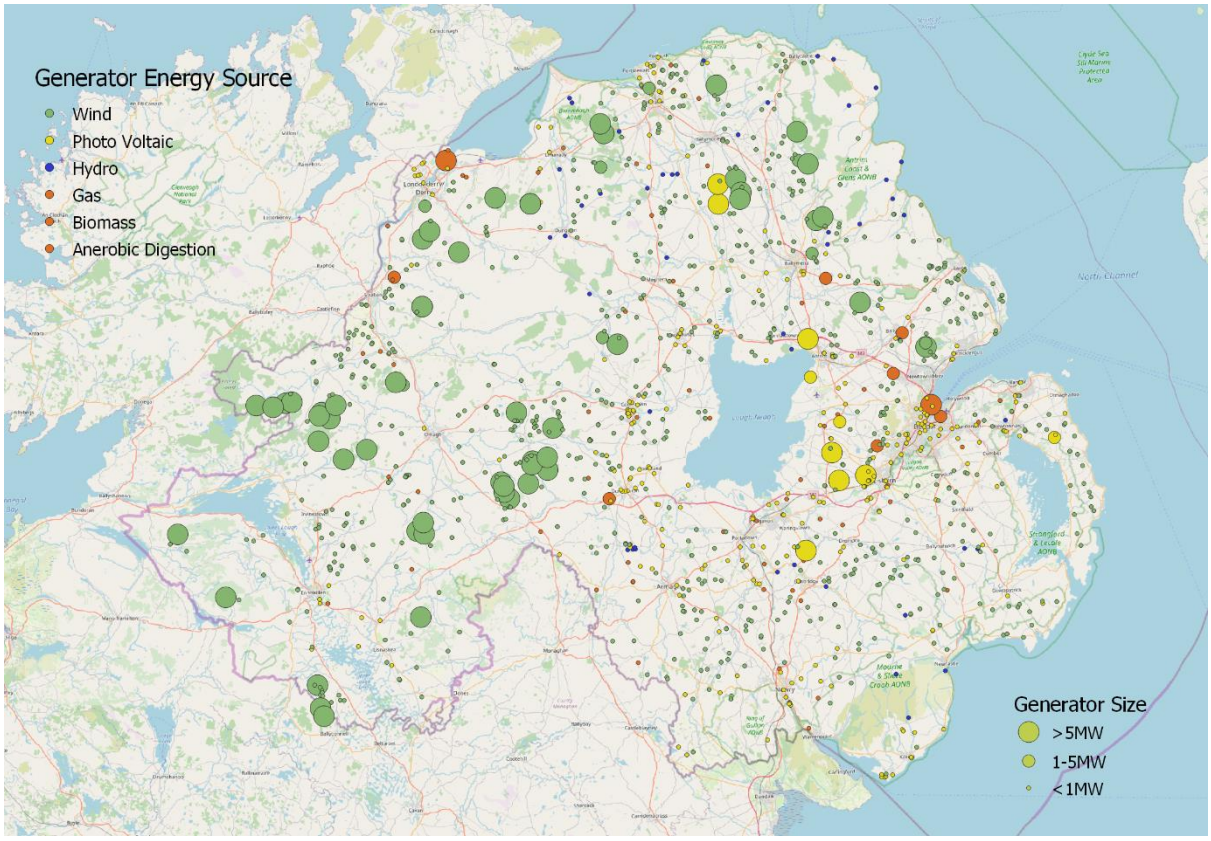


Figure 4. All generating stations in Northern Ireland except micro-PV – Image provided by DfE. Please note, a map of micro-PV sites (below 50kW capacity) is included in annex 1.

As shown in Figure 5, which shows the annual electricity generation grid mix, apart from renewables, the majority of the remainder of the 2019 electricity generation came from gas with coal providing a smaller element. While the growth of renewables shows significant progress, in 2019 10.7% of wind energy generated was 'dispatched down' (i.e. turned off due to constraints)[11] suggesting further integration of renewable electricity may be required.

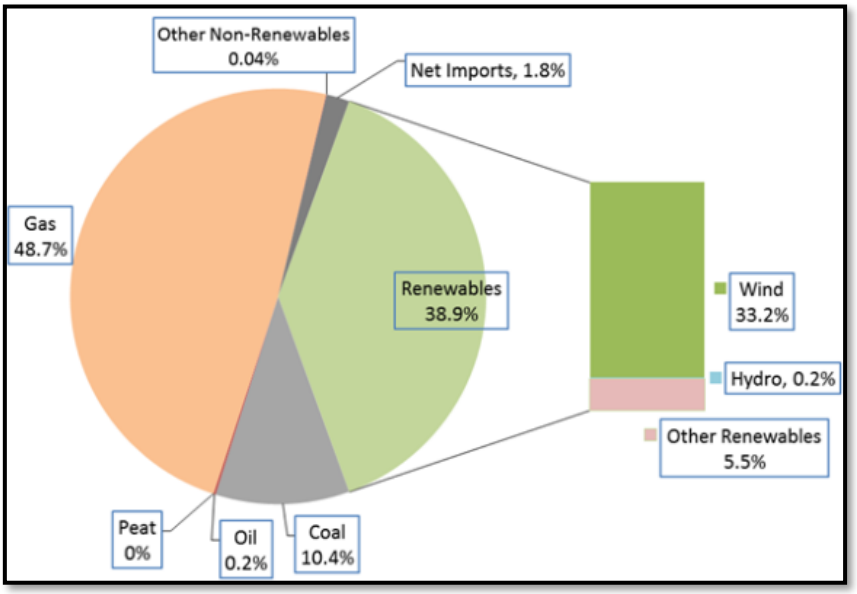


Figure 5. Northern Ireland Electricity Mix for 2019[12]

1.2.3 End use sectors

Based on 'Energy in Northern Ireland in 2020'[10], in 2017, of the energy not used for electricity generation:

- 43% of gas was used in in homes with the remainder used in industrial and commercial settings.
- 74% of coal was used in industrial and commercial activities with the remainder in homes.
- 47% of all petroleum products were used in road transport, 25% in homes, 21% industrial/commercial settings and 0.5% in rail transport.
- Smaller proportions of manufactured and bio-fuels were also used.

1.3 PRESSURES FOR CHANGE

Two significant and inter-related drivers are exerting significant pressure on energy systems around the world.

Firstly, climate change is increasingly being recognised as a problem which requires rapid intervention in energy systems. This is because the use of fossil fuels for energy and industrial processes is responsible for the majority of global greenhouse gas emissions (GHGs)[13]. The UK Government is a signatory to the Paris Agreement which requires global temperatures rises to be limited to less than 2 degrees Celsius, and this covers Northern Ireland. In light of the Paris Agreement goal, the UK Government has accepted the advice of the Committee on Climate Change that UK GHG emissions should reach (net) zero levels by 2050, and has put this target into law[14]. The UK as a whole has a legally binding net zero target, and this target includes emissions from NI. NI, unlike Scotland and Wales, does not have a specific decarbonisation target and net zero date[15].

The 'New Decade, New Approach' power sharing deal which led to the 2020 re-opening of the NI Assembly explains that the NI Government will introduce legislation and targets in line with the Paris Climate Change agreement and these targets will form part of a new energy strategy[16]. There is however no set date on putting these requirements into law.

Secondly, and in part as a result of supportive policy, the cost of energy supply or storage technologies (including renewable energy generation) has fallen rapidly and significantly[17]. Wind and solar generation can now be cheaper than oil and a similar price to gas with the expectation of further cost reductions[18]. Similarly, the cost of 'smart' system control technologies has also fallen significantly, and their operational reach expanded, including with time of use tariffs based on wholesale electricity costs available (i.e. Octopus Agile Tariff in GB) and widespread deployment of internet connected appliances. Means of operation (such as ensuring a steady baseload and centralised generation) which were taken as a basic requirement of energy systems are no longer necessary and as a result energy generation and control can take place at a much more local level with significant potential for energy democratisation.

These are not the only pressures on energy systems, there are concerns over internal and external air pollution[19] and societal change in some countries has created popular support for movements against fossil fuels[20].

Together, these drivers have fundamentally altered the economics of energy systems in just a few years. Increasingly, stakeholders question energy policy decisions, particularly if they feel they are being forced to pay for something which is undermining environmental targets, equity, health and so on.

The timescales associated with decarbonisation and the requirement for transformative change alongside falling renewable energy costs suggest that nimble and innovative government policy and regulation will be needed[17]. There is of course a risk that if action on governance is not taken, consumers are impacted negatively because the benefits of new, cost effective and sustainable technologies and products are not supported. Good governance can ensure that targets for energy and climate change are met and that the benefits of decarbonisation are fully realised.

1.4 ROUTES TOWARDS DECARBONISATION IN NI

Specific modelling or visioning of a future low carbon energy system in Northern Ireland is limited. Modelling was carried out in 2013 for the then 'DETI' (now the Department for the Economy) which considered significant carbon reduction from energy[21]. At a high level, the suggested important options were:

- A switch to renewable electricity as the main form of electricity generation;
- A move to renewable heat;
- The improved efficiency of buildings, industry processes, light and appliances;
- The uptake of electric vehicles, plug in hybrid vehicles and fuel cell vehicles.

Following a request from the NI Department for Agriculture, Environment and Rural Affairs (DAERA), the UK Committee on Climate Change (CCC) provided advice on what progress towards a 2030 reduction target may look like for NI[22]. This analysis highlighted the potential important role for heat electrification using heat pumps which could be cost effective compared to oil and the report also highlighted significant potential for transport electrification. The importance of heat electrification has also been highlighted elsewhere[23]. Specifically the CCC report suggested policy makers should focus on:

- Support for low cost renewable electricity generation where support is lacking;
- A focus on emissions associated with agriculture;
- Increasing the rate of tree planting;
- Providing support for low carbon domestic heating;
- Increasing support for buildings energy efficiency;
- Rapid progress in transport including vehicle electrification.

To achieve significant decarbonisation, the CCC explained that close co-ordination would be required '*between the UK government and multiple government departments in Northern Ireland*' (p13).

The Committee on Climate Change's 2019 analysis around net-zero contains some of the most up to date modelling and analysis around emission reductions and while not NI specific, is highly relevant, covering the UK as a whole[1524]. We note that academic expertise around energy system modelling also exists in Northern Ireland and the Department is currently working with the University of Ulster and this could lead to more up to date NI specific modelling.

2 RESEARCH METHODOLOGY

This section briefly outlines the process of the development of this paper.

Firstly, a desk based review of the structure of energy governance in Northern Ireland was undertaken. This review used both live online information and published reports to evaluate the shape of energy governance in Northern Ireland. Data on the main energy uses in Northern Ireland was also used to ensure that the review simply didn't focus on the traditional energy issues (electricity and gas) but also considered 'off-grid' energy use such and heating and transport.

This review fed into a governance 'map' which was iteratively updated over the course of the project to reflect emergent findings. The 'VUE' (Visual Understanding Environment) software package was used for its ability to show flows and processes and because it can be easily modified without affecting existing map elements.

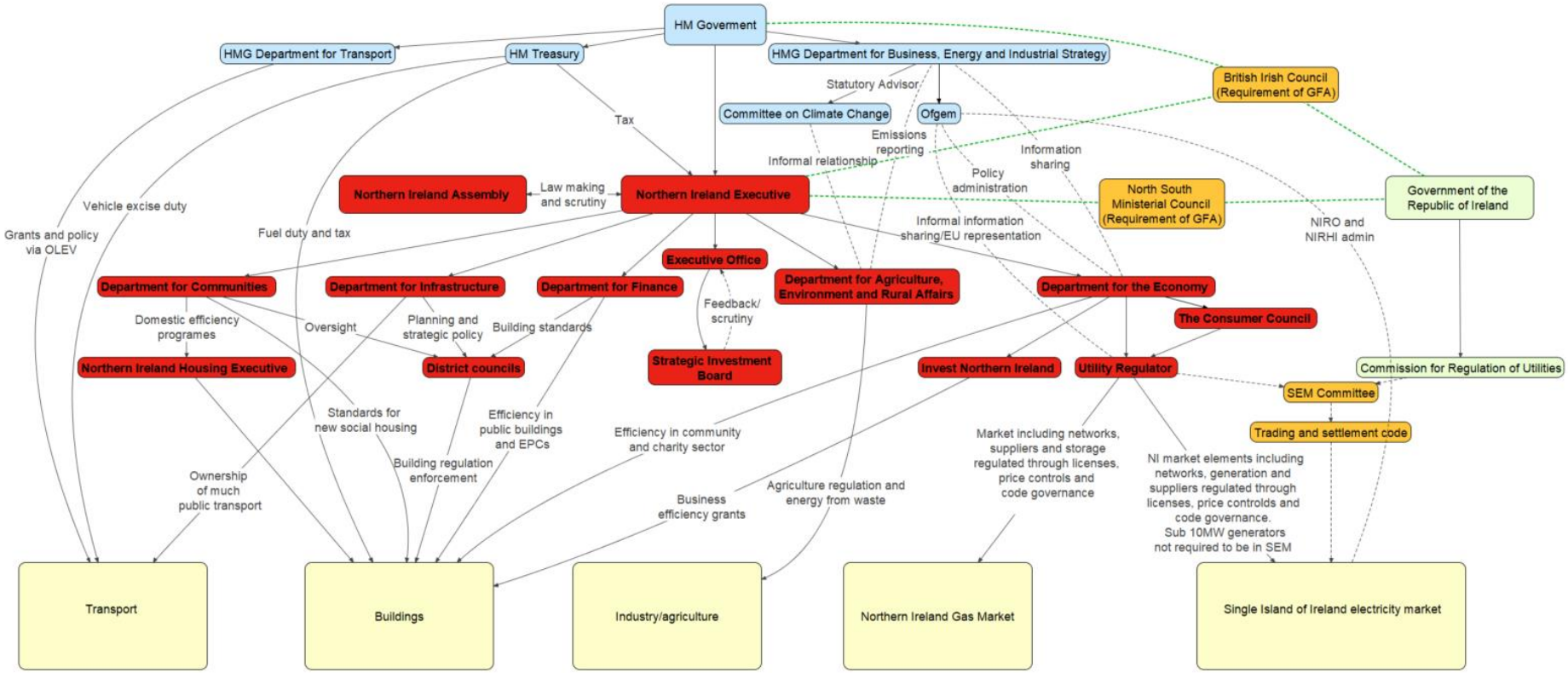
Once an early map had been developed, semi-structured interviews were carried out in May and June 2020 with a number of officials from the Northern Ireland Government departments and associated public sector bodies. These interviews focused on two issues:

1. Whether the current governance map was accurate;
2. How governance may need to change in order to support an energy transition in Northern Ireland.

The governance map was updated on an ongoing basis during the course of the interviews and following the completion of interviews, a new governance structure was created. This paper was then subject to peer review.

Section 3 of this paper describes existing energy governance in Northern Ireland. Section 4 briefly describes key findings from the interviews, section 5 describes our proposed new approach to governance in Northern Ireland and section 6 concludes the paper.

3 CURRENT ENERGY GOVERNANCE IN NORTHERN IRELAND



Map key

Solid line = statutory relationship with arrow indicating authority

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Figure 6. Map of current energy governance in Northern Ireland

Figure 6 on the previous page shows the existing structure of energy governance in Northern Ireland. The following sections expand on this structure in some more detail. The approach taken starts by considering the highest levels of legal authority and then drills down in more detail, eventually considering the different elements of the energy system.

3.1 EXTRA-NI CONSIDERATIONS

While the governance of energy in NI is an almost entirely devolved policy matter (with the exception of nuclear energy)[25], the UK Government technically has legal authority over Northern Ireland. This relationship is of course subject to existing agreements and legislation.

There are also a number of energy specific issues where UK government policy affects the Northern Ireland Energy system. The idea that energy is fully devolved '*substantially overlooks the contingent nature of the Devolved Administration's responsibilities and the complex way in which the scope to act, or not act, is underpinned by a broader range of conditions and qualifications*'[26] (p1184).

Specific extra-NI governance issues which impact the NI energy system highlighted by our review included that:

- In the transport sector, the HM Department for Transport provides incentives for low emission vehicles across the UK[27] as well as a number of other grants and HM Treasury manages the system of road tax (vehicle excise duty).
- In the electricity market NI renewable electricity generators receive support from the Northern Ireland Renewables Obligation (NIRO) which operates in parallel with the ROs in GB. DfE is responsible for NIRO policy and the scheme is administered by Ofgem on behalf of the NI Utility Regulator. Ofgem also administers the ROs in GB. This scheme is now closed to new applicants.
- The UK Committee on Climate Change (CCC) has historically provided ad hoc advice to the NI DAERA yet there is no requirement for annual advice from the CCC in NI law. The UK Climate Change Act makes provision for devolved administrations to issues directions to the CCC[28].
- Tax, which is not a devolved issue, affects the energy system. Plans had been prepared to devolve corporation tax to the NI Executive and these discussions had been ongoing for a number of years with legislation prepared to allow this[29] however media reports suggest progressing this issue may not currently be a political priority[30].

The requirements of the Belfast/Good Friday Agreement for a 'British-Irish Council' and a 'North-South Ministerial Council'[31], while not energy focussed, means that some cross-jurisdictional collaboration on transport, energy and climate issues takes place. The key area of collaboration is the all island single electricity market which is based around a memorandum of understanding between the UK Government and the Government of Ireland[32].

Finally, NI is physically connected to the RoI, and together they constitute a single bidding zone for the electricity market. ROI remains a member of the EU and, although the Northern Ireland Protocol ensures that the SEM can continue to operate after the end of the interim period, this has introduced some uncertainty to future all island energy arrangements[33]. Since the UK has now left the European Union, the UK has its own emissions trading scheme. 2018 data suggests the ETS scheme covered 14 sites in Northern Ireland, 3 of which are power generating stations[34]. The NI

energy system has also been impacted by EU policies around energy efficiency standards for appliances and products. It is unclear what, if any, future EU regulations will be followed.

3.2 LAW MAKING AND POLICY SCRUTINY IN N.I.

The NI Assembly is able to make any laws on issues which are not reserved by the UK parliament as outlined in the Northern Ireland Act 1998[35]. This includes most energy policy issues apart from around nuclear energy. Following the passage of a bill through the NI assembly, the Secretary of State for Northern Ireland is asked for bills to be given royal assent; once assent is granted the bill becomes an act[36].

As well as having the law making powers of NI, the Assembly also scrutinises the work of the NI Executive and the Departments through committees formed of Members of the Legislative Assembly and through the use of 'Assembly Questions' (posed by members and responded to by the relevant department/minister), debates and votes on legislation etc.

3.3 THE NORTHERN IRELAND EXECUTIVE

The Government of Northern Ireland is referred to as the Northern Ireland Executive and is led by the First Minister and the Deputy First Minister, as required by the Northern Ireland Act 2008[35]. The Executive currently has eight departmental ministers in addition to the First Minister and the Deputy First Minister who lead 'The Executive Office'. The First Minister and Deputy First Minister are able to increase or decrease the number of ministers, and therefore the number of departments subject to an act from the Assembly (which makes provision to dissolve or create a new department). NI therefore has the legal authority to make machinery of government changes as set out in the 1998 Northern Ireland Act[37]. It should be noted that this process is more complex than in the UK where machinery of government changes can simply be decided by the Prime Minister[38]

Members of the Legislative Assembly (MLAs) are elected on the basis of the 'single transferable vote' proportional representation electoral method[39]. Subsequently, ministers who lead the NI Government departments are then chosen from Assembly members in relation to the number of MLAs each party has with the larger parties getting more ministers using the D'Hondt system[40]. Ministers in charge of the various departments are therefore not necessarily from the same political party and this could introduce an element of 'party politics' into the Government.

3.4 'ENERGY' IN THE NI EXECUTIVE – THE GOVERNANCE OF THE GAS AND ELECTRICITY SECTORS

The key government department which has official responsibility for energy issues is the Department for the Economy. The responsibilities of the department and the independent regulatory authority (the Utility Regulator) around energy issues are primarily laid out in the Energy (Northern Ireland) Order 2003[41] and while both institutions have different functions, their duties are the same.

On electricity: 'The principal objective of the Department and the Authority in carrying out their respective electricity functions is to protect the interests of consumers of electricity supplied by authorised suppliers, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the generation, transmission [F56 , distribution] or supply of electricity' (Part III, 12).

On gas: 'The principal objective of the Department and the Authority in carrying out their respective gas functions is to promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland….' (Part III, 14).

The 2003 order also outlines the requirement for an independent regulatory authority to regulate the gas and electricity systems as well as requirements for a consumer body to consider consumer issues associated with energy. These functions are currently filled by the 'Utility Regulator', a 'non-ministerial government department' which is accountable to the NI Assembly[42] and the 'Consumer Council', a non-departmental public body established through the General Consumer Council Order 1984[43].

It is also worth noting that the Department for the Economy is also responsible for Oil and Gas extraction licensing in Northern Ireland. However, there are currently no active petroleum licences[5]. The Department for the Economy is effectively responsible for the legislation which governs the Utility Regulator and the electricity and gas markets. While the UR is independent in its day to day business, the Department for the Economy is responsible for the legislation which governs it. The 'strategic objectives' of the department do not currently include decarbonisation or climate change[44].

3.4.1 Gas and electricity system structure

As is typical of highly regulated infrastructure systems, the gas and electricity systems in Northern Ireland have a relatively rigid and clear structure. The responsibility for regulation sits with the Utility Regulator, a non-ministerial Government department which reports to the assembly but which sits under the legislative authority of DfE. The Regulator issues licences to companies and bodies who want to partake in system activities.

3.4.1.1 The electricity governance structure

The electricity system is more complex than the gas system. The system structure is described in table 1. The electricity system is governed by the Utility Regulator. The Utility Regulator issues licenses for:

- Supply;
- Generation;
- Distribution;
- Transmission;
- System Operation;
- Interconnection.

The Regulator also controls prices charged by distribution and transmission companies for the use of their networks and system operation. Certain domestic electricity supply prices are also regulated by the Utility Regulator and this is reflected in license conditions[45].

The electricity wholesale market, i.e. where units of electricity are traded, functions on a whole island basis and is governed on a trans-national basis by the Single Electricity Market (SEM) Committee. Electricity can also be traded between the whole island market to and from the UK via the NI to GB Moyle interconnector and the ROI to GB EWIC interconnector.

This SEM committee is made up of representatives from the NI and RoI regulators and independent participants. Its functioning is based on a memorandum of understanding from 2014[46] and the Single Electricity Market (Northern Ireland) Order 2007[47]; with the wider agreement on market integration based on a memorandum of understanding between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of Ireland in 2006[32].

The actual codes to which market participants must sign up to are managed and modified by the Single Electricity Market Operator (SEMO). SEMO is a contractual joint venture between EirGrid (the

Transmission System Operator (TSO) for Ireland), and System Operator Northern Ireland (SONI) (which is the TSO for Northern Ireland) both of which are regulated by their respective national regulators. The *trading and settlement code* i.e. how suppliers and generators balance supply and demand, and the second key part of the electricity market, *the capacity market code*, both sit under the authority of the Single Electricity Market (SEM) committee.

For Northern Ireland, as well as the island wide Trading and Settlement Code, market participants may also need to meet the requirements of the Grid Code (transmission related) which is run by System Operator NI (SONI) and the distribution code (run by NI electricity networks). While these codes are industry led and effectively self-regulating, in that the code modifications panels are owned and run by industry, the Utility Regulator has a deciding power on all modifications[4849]. Smaller generators, below 10 MW capacity are not required to trade in the SEM but enter power purchase agreements with suppliers[50].

As mentioned previously is section 1, large fossil power generators are covered by the UK Emissions Trading Scheme (previously EU ETS) which effectively puts a price on carbon emissions associated with these generating stations. These generators are not currently covered by the Great Britain 'carbon price floor' which effectively raises the carbon tax on power generation in GB[51]. Had NI been subject to this carbon price scheme, this would have created a carbon cost imbalance between NI and RoI electricity generators with potentially significant market impacts.

Of the renewable electricity generation now operating in NI, the vast majority of this was supported by the Northern Ireland Renewables Obligation which has been closed to new applications since 2016[51]. Costs for this scheme are spread across UK-wide bills with NI paying a relatively smaller share of costs in order to protect NI consumers from what were perceived as already high electricity bills[52]. Northern Ireland is not a member of the Contracts for Difference Scheme which covers the rest of the UK meaning that only 'merchant' plant which operates based on market prices alone can now be planned and built.

Ownership of the Northern Ireland electricity system is almost entirely private and there is no state ownership. However, Mutual Energy which operates as a mutual company, i.e. it is not run for profit but for the benefit of energy consumers, owns the Ireland-GB electricity interconnector.

Table 1. Northern Ireland Electricity system make-up

	Market structure	**Physical make up**	**Governance**
Generation	Competitive and privatised	• Three fossil fuel generating stations, 2 gas, 1 mostly coal and oil (total 2420MW)[8]. • 1.3 GW of installed wind capacity[12] and some other smaller renewables (approx. 385MW in June 2020[53])	• Large generators licensed by the Utility Regulator and operate in the market managed by SEMO • Renewable generators supported by NIRO/micro-NIRO managed by Ofgem on behalf of the Utility Regulator
Data. Interconnection	Competitive and privatised	• One interconnector connects Northern Ireland and Scotland	Licensed by regulator and operates in UK electricity markets

Transmission	Regulated monopoly	Transmission infrastructure	Licensed and regulated by the Utility Regulator using price controls.
Distribution	Regulated monopoly	Distribution infrastructure	Licensed and regulated by the Utility Regulator using price controls.
System operator	Regulated monopoly	System operations	Licensed and regulated jointly by the Regulatory Authorities of NI and ROI, using price controls
Supply	Competitive and privatised	8 active non-domestic suppliers with 6 active domestic suppliers[54]	Licensed by the Utility Regulator. Power NI as legacy supplier is also subject to some price controls.

3.4.1.2 The gas system

The NI gas system is simpler than the electricity system and this in part reflects the lack of need for instantaneous balancing, something which gas infrastructure can provide through its inherent storage (often referred to as line-pack). Like the electricity system, the gas system is governed by the Utility Regulator who issues licenses for:

- Conveyance;
- Supply;
- Storage.

The Regulator also runs price controls for gas distribution and transmission and some elements of supply and is also required to agree to 'gas transmission code' modifications (which is also self-regulated as electricity Codes).

The gas wholesale market (i.e. where gas supply and demand is balanced) is operated by Gas Market Operator Northern Ireland, which is a body which manages the commercial rules and trading and settlement issues for the gas system. According to Gas Market Operator Northern Ireland '*The Transmission System Operators in Northern Ireland (PTL, BGTL, WTL and GNI (UK)) have specific conditions in their Gas Conveyance licences requiring them to put in place arrangements to implement GMO NI*'[55]. These license requirements also require the management of the NI network gas transmission code, a code which structures the functioning of the NI gas market. There were four codes but in 2017 this structure was simplified by the Utility Regulator down to one code[56]. As with the electricity codes, the Utility Regulator is required to agree to all modifications, agreed by the Code Panel membership[57].

However, while electricity network infrastructure shares one owner across NI, the gas network infrastructure has geographical diversity around ownership. The gas transmission system, the network which transports gas across large distances at high pressure is owned by two different parties. Mutual Energy owns and operates the Scotland to Northern Ireland Pipeline (SNIP) which connects the NI market to the GB gas market. Mutual energy also owns the relatively short Belfast Gas Transmission Pipeline (BGTP) which connects to the SNIP and supplies gas to Belfast. Gas Networks Ireland (part of the Ervia group) owns the remaining transmission infrastructure which consists of the North West Pipeline (NWP) which runs from Carrickfergus to Coolkeeragh Power

station near Derry/Londonderry and the South North Pipeline (SNP) which runs from County Antrim southwards to join the RoI gas transmission system at Gormanstown near Dublin.

The gas distribution system is also split geographically with certain areas licensed for distribution byPhoenix Natural Gas, Firmus Energy and SGN Natural Gas. The rough geographical structure is shown below in Figure 7 although actual access to gas is limited to the towns shown.

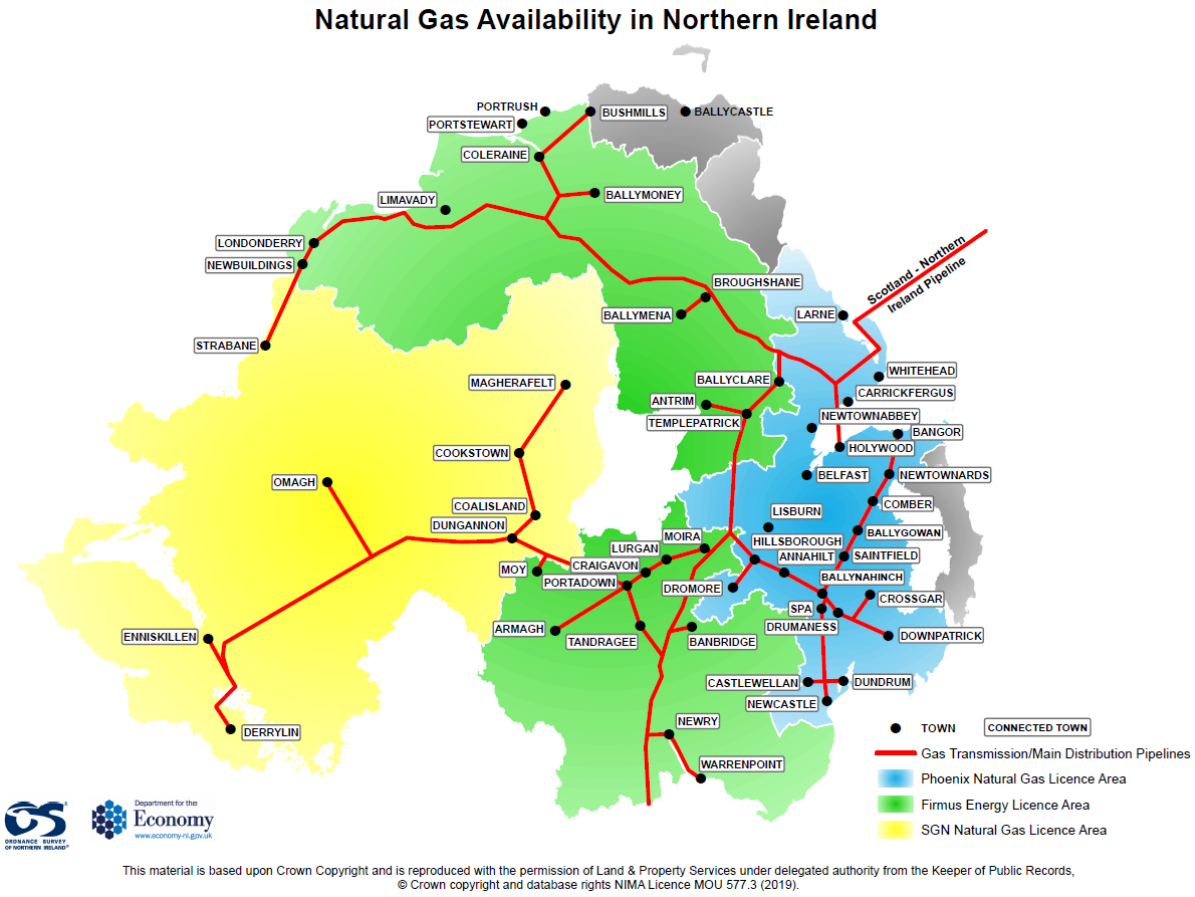


Figure 7. Gas access by town and distribution network areas in Northern Ireland – Provided by DfE

The gas supply market in Northern Ireland is competitive and privatised although for domestic customers, offerings are limited. According to the Consumer Council, the Greater Belfast and Larne licence area has the option of only two domestic gas suppliers whereas the '10 towns' licence area (which includes: Antrim, Armagh, Ballymena, Ballymoney, Banbridge, Coleraine, Craigavon, Derry/Londonderry, Limavady and Portstewart) has the option of just one domestic gas supplier[58].

Former monopoly gas suppliers are regulated by the Utility Regulator on profits in order to protect domestic consumers[59]. With twenty gas licenses listed on the Utility Regulator's website, it can be assumed that the non-domestic market is more competitive than the domestic market[60]. The key elements of the gas market structure, ownership and governance are shown below in Table 2.

Table 2. Northern Ireland gas market structure.

	Market structure	Physical make up	Governance
Transmission/interconnection	Regulated monopolies	Four transmission pipelines including one which connects to Scotland and one to the Republic of Ireland	All licensed by the Utility Regulator who also regulates them with price control.
Distribution	Regulated geographic monopolies	Three licensed companies	All licensed by the Utility Regulator who also regulates them with price control.
System/market operations	Regulated body	Single 'gas market operator'	Regulated by Utility Regulator
Supply	Competitive and privatised	Number of licensees limited market offerings	Licensed and regulated by the Utility Regulator

3.5 A WHOLE SYSTEM PERSPECTIVE

The previous section focused on the governance of the gas and electricity elements of energy in Northern Ireland. It explained that the authority over these two sectors sits primarily with the Department for the Economy and the independent energy regulator.

There are of course large elements of the NI energy system which are not fully covered or even covered at all by the Department for the Economy or The Regulator. In fact, as shown earlier in Figure 1, 72% of NI's final energy consumption is non-electricity and non-gas with the largest element of demand being petroleum.

The increasing technological complexity associated with energy systems, the move towards smaller and more distributed electricity generation, the potential for individuals to become more engaged in energy and the increasing connectivity between energy and sustainability issues means that whole system approaches to energy are increasingly being considered. In taking a whole system approach, which considers heat, transport and electricity together, we now explore the governance of these other sectors.

3.5.1 Transport

In 2017, 29% of Northern Ireland's energy consumption was for transport[4] In Northern Ireland, domestic (within N.I.) transport of people is dominated by road transport. The most recent data for 2016-18 suggests cars made up 82% of all passenger miles travelled[61]. A further 7% of miles travelled were in other private vehicles (such as vans or taxis) and 7% of passenger miles were made by rail or bus[61].[61]. 3% of miles were travelled by foot. Data for freight travel at the NI level is limited and specific freight statistics appears to have not been updated since 2014. UK wide data shows that 25% of UK greenhouse gas emissions associated with transport are associated with heavy goods vehicles and vans and so freight transport is likely to be a significant element of NI transport energy use and emissions[62].

The governance of transport in NI sits primarily with the Department for Infrastructure which has responsibility for (among other things):

- Road Transport;
- Active travel;
- Transport initiatives;

- Public transport.

The majority of the public transport system (bus and rail) in NI is owned by The Northern Ireland Transport Holding Company, a government arms-length body which sits under the Department for Infrastructure[63]. This business is collectively known as Translink.

Together, these elements discussed previously cover the majority of all NI Government involvement in transport however UK Government policy also has direct involvement in transport in NI. Firstly, this is via the vehicle excise duty regime, a UK wide tax matter that is therefore 'excepted' from devolution (i.e. full authority sits with the UK Government)[25]. For cars registered between March 2001 and 2017 annual tax rates were based around CO_2 emissions with higher emitting cars paying more tax. In 2017 this system was modified so that higher emitting new cars payed a larger upfront charge and then annual rates were simply determined based on whether the vehicle used petroleum based fuel or electricity[64]. It is worth noting that this change was introduced in the context of the EU's ever tightening emission reduction standards based on vehicle manufacturers fleet averages[65]. Nonetheless, the UK Government's tax system is likely to have some impact on vehicle purchasing behaviours in NI. Similarly, tax levels on liquid fuels are set by HM Treasury.

The UK Government also provides incentives for individuals to purchase electric vehicles, offering both a grant for vehicles and charging units[66] and grants are available in Northern Ireland[27]. Some elements of international travel including aviation and navigation are reserved to the UK Government[67].

3.5.2 Heat and buildings

As highlighted in section 1.3, large amounts of oil are used for heating buildings. Focusing specifically on housing, the Northern Ireland Housing Condition survey, for which the most recent data available is 2016, suggests that 68% of houses had oil heating with around 8% on electricity or solid fuels. A small number also use liquid petroleum gas. The breakdown and recent changes in the domestic heat mix are shown below in Figure 8.

While gas and electricity are regulated through the electricity markets under the authority of the Department for the Economy, over 68% of homes use heat which is not covered by the Department for the Economy, or any other department. Oil heating is also not regulated in terms of consumer protection anywhere else in the UK.

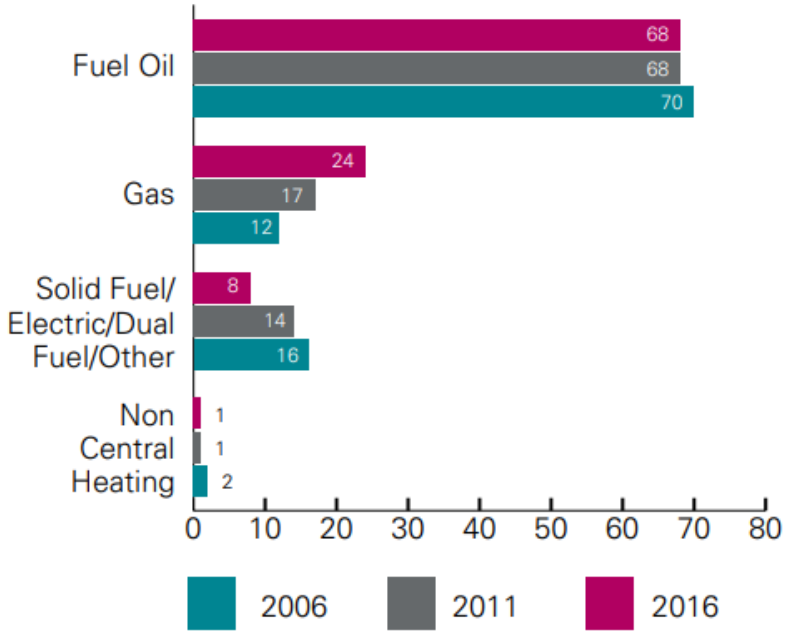


Figure 8. The Changing Profile of Central Heating Fuel, 2006-2016 (% of dwellings)[68](p75)

The use of heating oil is un-regulated across the UK although it should be noted that in its previous study, the Office of Fair Trade did not have general concerns about competition in the market[69]. The level of tax on heating oil is set by the UK Government and is currently 10.7p/litre of heating oil plus 5% VAT[70].

Energy is also used for heating outside of the domestic sector in public and commercial buildings. We have been unable to source data that breaks heat use in these sectors down in detail but for reference for the UK as a whole in 2018, 64% of energy used in the service sector was for space or hot water heating and 13% of the heat used in industry was for space heating [71]. NI government data suggests that 66% of Government energy costs are spent on electricity, 24% on gas and 9% on oil[72].

While much of the ongoing costs associated with heating in NI are unregulated, building standards which include the energy efficiency of buildings and the types of heating systems that can be used, are set by the Department for Finance, and enforced by District Councils. As explained in the recent energy strategy call for evidence, responsibility for energy efficiency in NI is split across NI departments and bodies:

- DfE is responsible for energy efficiency policy with particular vires for promotion of energy efficiency in the community and voluntary sector and businesses (via Invest NI's Energy and Resource Efficiency Schemes). The Northern Ireland Sustainable Energy Programme (NISEP) which is administered by the Utility Regulator is the key energy savings programme for NI[73]
- DfC has legislative authority for domestic energy efficiency programmes and grants, as well as fuel poverty and wider housing policy;
- DoF is responsible for promotion of energy efficiency in the public sector and the development and implementation of policy and legislation relating to building regulations and energy performance certification of buildings;
- DfI is responsible for regional and strategic planning, and infrastructure policy;
- Northern Ireland Housing Executive is the Home Energy Conservation Authority for NI and has a statutory energy efficiency role in terms of reporting and identifying where energy

efficiency progress can be made[74]; it delivers a number of schemes including the Affordable Warmth Scheme (AWS) and Boiler Replacement Scheme on behalf of DfC

Fuel poverty is a significant issue in Northern Ireland which is associated with heat use in buildings but also affected by wider issues including income and wholesale energy costs. Recent estimates for 2018 suggest 18% of households in Northern Ireland are in fuel poverty, spending more than 10% of their household income to keep their home at an appropriate temperature[75] (this is a different metric to the fuel poverty metrics used elsewhere in the UK which are also linked to income).It has been specifically suggested that NI's devolved powers oblige the NI Government to engage with and attempt to resolve this issue[76]. Because of the large number of homes using oil for heating, changes to the oil price can have a major impact on fuel poverty.

3.5.3 Commercial and industrial energy use

The final key element of end used energy demand in NI is in the commercial and industrial sectors of the economy. As noted in the previous section, some of this will be used for heating. These sectors make up around 63% of NI electricity demand and 25% of NI's non electricity or gas energy consumption[8]. Data for gas demand does not completely delineate between domestic and commercial/industrial and there will be some gas used by the non-domestic sector. We estimate non-domestic demand to be at least 50% of gas demand based on available data[8].

Industrial electricity and gas use is governed by the Department for the Economy and the Utility Regulator via the two energy systems (electricity and gas). Some large industrial sites with greater the 20MW thermal energy input will be covered by the UK emissions trading scheme. The Department for the Economy is also generally responsible for economic and industrial issues.

While agriculture is not a major element of energy demand, it is an important part of the NI economy making up around 25% of registered businesses[8] and is responsible for around 26% of NI greenhouse gas emissions[77]. Agriculture in Northern Ireland is governed by both the Department for Agriculture, the Environment and Rural Affairs (DAERA) from a farming perspective and the Department for the Economy from a business perspective.

3.6 CLIMATE GOVERNANCE

The responsibility for climate change issues in Northern Ireland including mitigation (emission reduction) and adaptation sits with DAERA who track NI greenhouse gas emissions [78]. Despite the lack of a functioning Assembly for a number of years, work on climate mitigation and adaptation has continued and DAERA continues to work across departments. However according to the DAERA website, the cross departmental working group on climate change has not reported since 2016 as it has not been possible to publish without a working assembly.

3.7 BROAD POLICY GOALS

Energy strategy in Northern Ireland is currently based around four key goals set out in the 2010 'Energy: A strategic framework for Northern Ireland' [79]document published by the then Department of Enterprise, Trade and Investment, now the Department for the Economy. These goals are:

- Building competitive markets;
- Ensuring security of supply;
- Enhancing sustainability;
- Developing infrastructure.

A number of detailed objectives are also listed for each of the four goals. Specific energy targets included:

- 40% of electricity from renewables by 2020;
- 1% annual energy savings target
- 10% of heat from renewable sources by 2020.

The 2010 Sustainable Energy Framework action 24 was to 'Consult and, if necessary, legislate on the Department's and the Northern Ireland Authority for Utility Regulation's statutory duties so that sustainability is given a higher priority in relation to other duties' as part of the 2012/2013 legislative programme[79]. The 2012 Sustainable Energy Action Plan also talked about bringing energy issues together.

The 2016 programme for government consultation for the 2016 to 2021 period explained '*We will make our energy use more sustainable, reducing greenhouse gas emissions.*' It added more detail saying the Government would: '*Address the future of energy policy and strategy, including the increased use of renewable and sustainable sources, through the Strategic Energy Framework. Continue to support businesses to improve energy efficiency. Expand the natural gas network to the west and south-east of NI. Deliver affordable warmth and boiler replacement schemes*'. Because of the suspension of the assembly, there was however no official government response to the consultation.

There has been no reform of energy governance since before 2010 and while NI is working towards a new energy strategy for 2020 onwards[80] there are currently no live strategies or targets despite considerable change in wider UK policy over that time, including legislating for a net zero target at the end of 2019[14].

Clearly the authority to introduce new policy in Northern Ireland was limited by the lack of a functioning Executive and Assembly[81]. There has also been a recent and highly political investigation into the NI Renewable Heat Incentive (RHI) [82]. While civil servants may have had some authority to make certain decisions even without a functioning Assembly, both the RHI issues and the lack of an assembly may have impacted on the willingness of civil servants to make major decisions.

As mentioned in section 1.3, the New Power Sharing Agreement which was agreed in January 2020 contained requirements for decarbonisation and climate change[16]. This included reviewing existing strategies, bringing forward a Climate Change Act and establishing an independent 'Environmental Protection Agency' to oversee the work and ensure targets are met.

While yet to be put into law, the new measures on climate change and energy could further strengthen the pressures for change already highlighted in section 1.3.

The NI Department for the Economy recently had a call for evidence on a new energy strategy and has recently published a summary of responses [80]. The call for evidence noted that the new strategic direction for energy '*will only be achieved through collaboration and joined-up delivery across government departments, the energy sector, and other key stakeholders such as local government, consumer representation bodies and academics*' (p4).

4 INTERVIEW RESULTS AND RATIONALE FOR CHANGE

Based on our review of energy governance in NI and a round of research interviews with eleven civil servants and individuals from associated public sector bodies, we now present some of the perceived issues highlighted through our research as well as some potential solutions. While perceptions may not always be fully representative of reality, perceptions can be an important element of the policy and governance process[83]. Relevant quotes are included in italics to enhance results.

4.1 CURRENT ISSUES

We first consider the current issues for NI energy governance highlighted from our research.

4.1.1 Complexity and coherence

Complexity and coherence were raised repeatedly by interviewees as the most significant energy governance issues for Northern Ireland. Energy governance was suggested to lack '*coherence*' and to be '*disjointed*' and as a result, decision-making is slow and complex. One person explained that progressing large projects was like '*banging your head against a wall*' with consenting for certain projects sometimes required from three separate government departments (DfE, DAERA and DfI). People we spoke to explained:

> *'There's a very tangled web with a whole lot of very different actors involved in energy governance'*
>
> *'I'm sure you noticed the extra complications, circles, lines and diagrams - for a little place like Northern Ireland - and that makes it difficult'*
>
> *'I think it's just become so complex and so hard, it resides with too many people and places and people don't want to relinquish power, or they've got tied up in whatever the structures are'*
>
> *'What strikes you is the complexity of the relationships'*
>
> *'It's a fiendishly complicated set of governance relationships to try and do anything quick and easy…it becomes really difficult to do anything in a joined up way without having to involve multiple parties.*
>
> *'There are just so many bodies that have a role'*
>
> *'It's very disjointed, lots of people with lots of different roles, and how that is all coordinated, I don't think to date there's been really much evidence of departments working well together'*
>
> *'…energy related areas are spread across such a wide diversity of departments and the departments generally don't work together'*

The issue of heat and buildings was specifically raised as an issue where greater coherence over governance was needed. This reflects the complexity we highlighted on our governance map:

> *'All the stuff on buildings has to come together, there's no doubt in my mind, it's an unholy mess in Northern Ireland'*

'The biggest sort of policy challenges and the biggest one in terms of governance arrangements that provide the most challenges is heat'

It was suggested that the cross-government energy 'stakeholder group' which is currently working to support the development of the energy strategy and associated structures was making some progress. This body apparently meets regularly to discuss policy-making that can impact across government departments. Four of the most relevant departments and local Councils are also represented on each of the thematic working groups (heat, power, transport, consumers, energy efficiency). Interviewees suggested the group was encouraging '*cross-cutting cross-governmental input'*. '*The transport working group for example is being led by someone from the department for infrastructure, that wouldn't have happened in the past*'. This group and new function was also expected to exist beyond the development of the upcoming energy strategy document.

While this stakeholder group is playing an important developmental role, it is not formally constituted within NI governance structures and may not currently have the authority, scope and potentially the longevity to support the transition.

4.1.2 A lack of leadership and concerns over influence

Linked to the issue of complex governance, a number of the people we spoke to highlighted issues to do with a lack of leadership on energy issues. Concerns were also raised that party politics could affect energy and climate policy issues negatively with ministers who may be from different parties having their own agendas rather than working towards a central government goal.

One interviewee explained simply that '*the main problem here with energy is that energy is just not seen as a priority*'. Another added that the Department for the Economy was still suffering from the RHI policy and the associated inquiry suggesting that there was a concern that the Department for the Economy was not '*seen as a competent authority on energy matters*'. Frankly, one person explained '*when you see things like the RHI debacle you can see how bad policy can really have far reaching consequences*'. The development of the new Energy Strategy, the use of an expert panel and a new 'Energy Intelligence Branch' could mitigate some of these issues into the future.

The wider political context in Northern Ireland could also have led to issues associated with limited leadership around energy. After a three year suspension in 2017, the Assembly only resumed activities in January 2020, just as the Covid-19 pandemic was appearing in Europe and as the Northern Ireland protocol was being developed as part of the UK's departure from the EU.

While DAERA was seen to be the department which coordinates action around climate change and ensures that '*NI meets the requirements under the climate change act*', questions were raised around the actual authority of DAERA to lead on the climate issue because the department could not mandate other departments to act.

Concerns were also raised that because of the perceived lack of leadership, it may be easy for companies to slow or influence the introduction of policies which could affect them with '*building*' companies and '*agri-food*' mentioned specifically. One interviewee suggested that this issue may become particularly acute if the energy transition requires policy '*that the industry might not like so much*'. The relatively small nature of the NI energy policy community was also suggested to mean that '*vested interests have a more direct line into government and can make things more difficult if they are against something*'.

4.1.3 Responsibility, accountability and goals

Some people we spoke to believed that the lack of clear responsibility, accountability and goals were key issues for NI energy governance.

One suggested: '*the roles within energy policy need to be more clearly defined*'. Another said '*there's no accountability*' and '*no effective independent scrutiny of energy*'.

One interviewee explained that civil servants in other departments may say that issues which are being raised as important are '*not our responsibility or that's not what our terms of reference say we have to do and the question then is: who is actually pulling this all together*?'. Another said: '*if a department doesn't want to do something they just say: that's yours, that's yours*'.

The fact that NI doesn't have energy targets beyond 2020 and didn't have a specific climate change target were also highlighted as issues. We note that the DfE Minister has stated that as part of the energy strategy work, she expects there will be a target for at least 70% of NI's electricity to come from renewables by 2030[84].

4.1.4 Limited policy capacity

People we spoke to suggested that the capacity for effective energy policy in the Northern Ireland Government was limited. This was in part due to the size of the challenge and the perceived limited expertise within Government. We note that recent developments associated with the energy strategy mentioned previously, such as the new expert panel and an external energy recruitment competition, may increase energy policy capacity in NI to some extent.

It was accepted that because of NI devolution, NI did need a full energy governance system and while this could be seen by some as 'inefficient' for such a small place, this was necessary. Partly, perceptions of limited capacity were ascribed to the fact that the prominence of energy and climate policy needed *'to be raised in all policy areas'.*

Linking to issues of leadership and capability, specific concerns were mentioned around the ability of companies to use this limited capacity to their advantage and provide solutions to policy makers which may not receive effective scrutiny.

One interviewee described the issue of capacity and influence in detail:

> *'The people who are Ministers and in Government don't have the expertise. They listen to experts and the experts they are listening to are people who are currently employed in industry'*

The capacity issues was suggested to be a vital issue to solve, even if energy governance was re-structured:

> *'it doesn't matter what the governance structures are if you don't have the right people with the right skills and expertise to take forward the policy development'*

While it was suggested that energy policy capacity in DfE had increased, at the time of interviews, it was highlighted that there were 46 vacancies out of an expected 150 jobs in the 'energy group'. This figure has since reduced to 23 vacancies, and the department expects that energy should be fully resourced by May 2021. While more resource may help, this may still leave a gap in terms of skills and knowledge that will either take time to be learnt or will need to be brought in from outside Government.

Concerns over energy policy capacity are not unique to NI and our previous GB focussed research has highlighted concerns over the capacity of policy makers to make policy effectively and in the face of external interests[85,86]. The issues of the perceived limited capacity of the NI civil service may mean that expertise around energy should be grown internally with more resource targeted to energy, something highlighted by the RHI inquiry[82].

4.1.5 Independent expertise, knowledge and research funding

Linked to the idea of policy capacity, a number of people we spoke to suggested a lack of external energy expertise was limiting energy policy making across the NI Government. '*Energy policy was missing out on a lot of knowledge and expertise*'. Another person elaborated:

> *'A problem is that energy governance is very internal to the civil service and there aren't enough outside individuals and organisations - especially those who have knowledge and expertise are not allowed the opportunity to be involved'*

There was a concern that this lack of internal technical expertise could negatively affect the development of policy because it '*means they're* [civil servants working on energy] *very open to being lobbied by people in the industry who have the technical stuff*'

The importance of the transparency of policy development processes was highlighted as extremely important particularly in light of the development of the current energy strategy which is using a number of working groups which include the private sector.

> *'There's been a lot of interest to get on to a group that they feel will benefit their company if they come out with the right answer'*

Recent developments around the development of the energy strategy appear to be encouraging greater levels of expert engagement through working groups and consultation. We would encourage strong governance to limit the potential for capture of these groups by industrial interests. We also note that these new groups and structures may be temporary.

4.1.6 The need for whole systems thinking

Various people we spoke to highlighted the need for whole systems approaches to energy combining issues of energy, climate and environment and also considering industry including the agri-food sector. One interviewee suggested that whole systems thinking simply now reflects '*the way of the world'.* Another explained:

> *'The increasingly integrated nature of energy will be a problem to achieve in an optimal way without an increasingly integrated policy environment'*

4.1.7 Issues with data

Data issues were highlighted as something which required serious consideration with an interviewee suggesting '*information is power control…The information is where the money is, that's where people are going to be going. That's where the creativity will be*.' Data issues were also seen to be a potential positive driver:

> *'combining energy with big data and artificial intelligence kind of developments, energy now is starting to be a cool place to be involved in'*

4.1.8 Questions over financing the transition

The governance mapping shown in Figure 7 highlights issues around the complexity of the funding and financing of the NI energy system. Another issue put forward was that the energy transition will

require significant and rapid growth and therefore investment in certain technologies. Policy will be needed to support this investment.

> *'The bottom line here is it's about making the right policy decisions and being able to fund those and so therefore there needs to be consideration about how that funding will be taken forward.'*

NI has no current tax raising powers and the NI Government's income is set by the UK Government under the non-statutory 'Barnett Formula'[87]. The NI energy system is also affected by the UK wide tax regime which includes VAT, fuel duty and corporation tax.

As mentioned previously, the NI Government did not join the Contracts for Difference (CFD) scheme.

Under existing powers, the NI Government could raise levies on energy bills to pay for the energy transition or could use Government income to pay for energy projects and infrastructure. There may also be regulatory approaches such as the use of local CFDs, the use of other financial models such as price guarantees or regulated asset base models and even perhaps local taxes (subject to relevant laws). It will also be possible for the Utility Regulator to provide and promote greater levels of innovation through its licensing and price controls.

This appears to be a particularly complex area for Northern Ireland worthy of significant further consideration. Interviews also highlighted the issue that the lack of an active Assembly has meant in the past that investment projects have been impacted by short budget timescales. It was also mentioned that spending could be unnecessarily siloed within government departments and this approach would not support the whole energy system requirements of the energy transition.

4.1.9 Small is positive

People we spoke to repeatedly recognised the small size of Northern Ireland and the relatively large size of central Government. It was mostly recognised that the size of NI was a positive in terms of energy governance, with the ability to simplify electricity and gas regulation.

The small size of NI means that it should be easy for people to work on issues collaboratively with a suggestion that:

> *'Our weakness could actually be a real opportunity and strength - so I think we're small and it's parochial and that makes it a bit harder to do because politicians are closer to the voters so therefore it's harder to do - but actually our smallness and our geographical location should make it easier and an opportunity to have a more holistic joined up strategy and governance structure that really accelerates change and is able to incorporate the bigger picture, far easier than somewhere like England which is just a massive population and country with so much more complexity.'*

4.2 SOLUTIONS

We now consider some potential solutions to the governance challenges previously discussed. These build on our NI research and our existing governance expertise, particularly the key findings of the IGov project[1].

4.2.1 Simplify decision making

In order to resolve the issue of complexity and coherence, governance structures need to be simplified. This would reduce the number of parties required to make decisions and would have particular value for complex cross system issues such as buildings and transport.

There was a real concern that existing energy governance was both unhelpful for the energy transition and inefficient: '*there are areas where I think things can fall between two stools because we have so many remits and slightly different goals across those organisations...there's a structural almost administrative burden that needs unpicked*'. Another person added: '*maybe we haven't been thinking out the box because our structure hasn't allowed us*'. Previous research has also highlighted that the complexity of the power-sharing structure in NI has hampered effective energy policy making (Cowel*l et al*, 2017).

A number of the people we spoke to thought that all energy governance should be brought into one department:

> *'It does need to be centralised in some way and bought under the control of one department'*
>
> *'It is fragmented, very fragmented, and I agree, it* [energy] *needs to go somewhere'*
>
> *'Ideally you would have a department for energy and climate change'*
>
> *'I would pull the functionality together in terms of the energy transition, I would definitely pull all of the buildings stuff into the same place but I would put that together with energy and I would probably bring transport in as well'*
>
> *'At one time it was mooted that there would be a department for energy. Personally I think it would be a good idea'*

While the DfE is responsible for 'energy policy' as we highlighted earlier, much energy governance including much of that associated with transport and buildings currently sits outside of that department. If energy were moved into a single department, interviewees suggested that as well as DfE, DfI, DAERA and DfC may also be a suitable home. The successful delivery of infrastructure projects by DfI was also highlighted as a potential reason for DfI to take responsibility for energy issues.

There was a concern from one person we spoke to that moving climate change and energy into one department could reduce the focus of other departments on climate issues with the example of DAERA and there being a concern that '*if you take climate out of DAERA, you lose an important lever over agriculture'.* There was also a concern that even if climate and energy in government was pulled together, this may still not lead to better policy deployment and monitoring. Such Government restructurings have taken place elsewhere around the world including in GB and The Republic of Ireland. The value of these restructurings has not been evaluated in any detail and as such we are unable to generalise. We also note that in general there are significant variations in the politics and policy making structures between nations and because something works or fails in one country does not mean that a similar change would have a similar affect in a different country.

Overall however, with the scale of the energy governance challenge it may be that a new standalone department which takes responsibilities away from other departments may be the simplest approach for Northern Ireland. Some concerns were also raised over the previous policy delivery of existing departments suggesting a 'fresh start' may be valuable. Putting a duty of some sort on other departments, potentially through a climate change act, could also help to ensure that non-energy policies also consider decarbonisation.

4.2.2 Encourage leadership and effective scrutiny

The energy transition is complicated, being linked to global technological innovation and local and international politics. Clearly no one person or organisation will have the correct answers to everything, and there is a possibility of risk or failure. It should however be remembered that maintaining the status quo may also be a high risk strategy.

A number of the people we spoke to mentioned the potential value of an independent expert energy body which could perform various functions on behalf of, but independent from the government, to support and smooth an effective energy transition.

> *'I think there is room for, and this goes against my normal operating systems, but I think there is room for another independent body and it would take some of what are currently different threads running across the whole system in Northern Ireland'.*

> *'If we're looking at a blank sheet there's definitely a role for a new body to take up some of the governance roles, take up some of the advisory roles to government. Ministers would still have to hold the policy reigns but some sort of independent advisory body that might also be able to do some of the practical things as well'.*

> *'It's too small a place, there's a need for a real independent, legislated for body that can provide that challenge function that can ask questions'.*

> *'The one thing that we don't have is a strategic energy authority, something that sits outside'.*

> *'having a centre of technical expertise, delivery expertise for government, at arms length to government is probably a very good thing.'*

A number of interviewees mentioned the Sustainable Energy Authority of Ireland as a good example of what a potential new body could look like. In terms of the functions that the new body would provide the following were suggested:

- A centre for energy knowledge and expertise;
- The provision of advice and scrutiny on energy transition policy decisions;
- Delivery of policies to support independent and integrated delivery;
- Management and ownership of energy data.

There was broad support for a new body but people we spoke believed that this body required independence and should be able to challenge the Government, not necessarily legally but potentially through the power of 'shaming'. '*There's a need for a real independent, legislated for body that can provide that challenge function that can ask questions*'. The need for independence was highlighted elsewhere with a suggestion the new body would need' '*full independence*' and guarantees '*it's not interfered with*'. One interviewee also thought the new body could pull together public and private sector bodies rather than being a purely public body.

One idea was that this new body could sit under 'The Executive Office'. This could raise the profile of energy and could ensure that any concerns over party politics associated with specific ministerial interests was minimised and remove the issue of one party dominating energy. This body could also report to the Assembly.

> *'I think sometimes you need to have an initiative which sits with the executive office which applies to all departments and Northern Ireland corporate business...*

something like responding to climate change probably involves just about every single department'

If energy governance wasn't restructured, it was also suggested that this new body could be an 'interim' option, overseeing energy policy progress across departments and highlighting specific cross-departmental issues with '*a whipper in role with the individual departments*'.

The 'Future Generations Commissioner' for Wales and the associated 'Wellbeing of Future Generations (Wales) Act 2015 was also proposed as a model which may have some value for energy governance in Northern Ireland. This approach puts a duty on various government departments to always consider long-term social and environmental issues, requires annual reporting and sets the requirement for a commissioner to oversee and advise on progress[89].

The IGov project put forward the idea of an Energy Transformation Commission (ETC) in GB to be responsible for the coordination of delivering net zero on time[90]. Coordination across scales, sectors and departments is a complex two pronged process. One part is ensuring clear legal responsibilities (such as Duties for GHG reduction to be placed on Departments). The other are the legal powers to deliver the rate of change required. In this way, an ETC (or whatever body is agreed to be the main executive of the policy) could be the coordinator with the highest power to agree / overrule other decisions.

4.2.3 Reform regulation

A number of people we spoke to mentioned the requirement to reform regulation, in particular the functioning of the Regulator. This was suggested to be in part because of the need for rapid change. The Regulator was believed by some to not be equipped to respond to in a timely manner and it was also suggested that the Regulator struggles to make strategic decisions.

One area mentioned was around the need for the electricity grid to expand to accommodate electric vehicles and the growth of heat pumps. Another issue mentioned was the potential conversion of gas grid to hydrogen, if this proves to be a viable and cost effective route for heat decarbonisation. If not, the strategic development of heat networks in areas may have value and be a strategic function the Regulator may need to manage. Remarkably, one person we spoke to explained:

'That's never really been considered, the strategic future and strategic use of the grid'.

A number of people we spoke to mentioned reform of the existing statutory duties:

'[The Regulators] *duties are 20 years old now and whatever happens they need refreshing and updated, that's fundamental.'*

[The Utility Regulator needs) a' really good thought through revision to its statutory duties… [the current] statutory duties are exactly the same as the department's, the Department of the Economy, I'm not sure whether that should be the case, that issue needs tackling in the next year'

'I would probably change some statutory frameworks to reflect that [decarbonisation] going forward.'

The issue that the existing statute requires the Regulator and the DfE to promote the gas industry was also raised and suggested to be unsuitable:

'[the Utility Regulators} duty to promote the gas industry is 25 years old… it is no longer consistent with how we need to regulate gas going forward which now needs to be customer protection and decarbonisation'.

There is clearly a risk that the promotion of gas creates a risk of asset stranding.

IGov also saw reforming regulation as an essential part of meeting the challenge of climate change. For example, in GB, there is no direct duty on Ofgem with respect to reducing carbon. Although the 2013 Energy Act had a section for a Strategic Policy Statement, intended to set out the relationship between Government policy and regulation by Ofgem, it has yet to be promulgated (even though water and transport now have Strategic Policy Statements).

Codes and licenses, key responsibilities of the Regulator in NI, are effectively the rules which keep the energy system running the same way. These codes will need to change significantly if NI alters its energy system. Our GB research highlighted the importance of codes as well as the risk that they can be captured by incumbents[9192]. Any reformation would need to put in place a more active role for the Regulator to set as well as to approve modifications and industry self-regulation would need to be removed. This issue could be particularly important for NI with such a limited number of network companies. The NI Regulator will need some updating both to its Duties but also to give it clarity in its relationships with other sectors – for example, heat.

4.2.4 Make people central

Mention of the NI population was almost absent in the interview discussions. NI people were mentioned in the context of 'deserving more cost effective' energy policy or in the context of fuel poverty.

IGov came to the conclusion that if GB is to meet net zero on time then people will have to be central to the transformation[93]. Because of that, people have to be more involved with decisions. They are going to be the people who pay for the transformation. They are the people whose homes will have to be made more energy efficient. The vast majority of people who currently heat their homes with fossil fuels are going to need new forms of energy.

The distributional consequences of moving away from fossil fuels – whether in terms of cost or employment – have to be recognised. Stimulus packages for Covid 19 can be made to be win-win with the environment, as the CCC has just clarified[94]. In this sense, the absence of people from the discussion is troubling and it seems to us that efforts need to be made to connect energy governance with citizens and communities. The use of a 'consumer working group' as part of the NI Governments energy strategy work appears to be a sensible step but with the required speed and scale of the energy transition, ongoing and thorough citizen engagement around the energy transition is likely to be required.

4.2.5 Consider the role for District Councils and the housing executive

The energy transition is likely to include an increasing level of energy decentralisation and potentially a greater role for local authorities. Energy efficiency, electric vehicles, wider transport policy and heat policy are local issues which may have to be dealt with at the local level.

Existing bodies such as the Northern Ireland Housing Executive and local councils can be expected to have important local policy and delivery functions, which can support (or work with) central Government policy around the energy transformation. In addition the development of City-Region growth deals has the potential to significantly shape decarbonisation trajectories in local areas and there should be a clear relationship between climate and energy governance and requirements on

City Region Deals. We note that a Belfast region deal has already been approved and more may be coming [95].

There is currently significant research and experimentation taking place on city and regional approaches to rapid energy system change, including Belfast being identified as one of the three city-based Climate Commissions within the Place-Based Climate Action Network[96]. Learning from these projects should be incorporated into the changing shape of energy governance in NI.

We do however note that the smaller scale of NI compared to England for example means that more energy governance and policy delivery could take place centrally in NI, and the optimal role of the eleven NI District Councils in the energy transition is currently unclear. We note that the range of functions carried out by District Councils tends to be more limited than equivalent institutions in other part of the UK. One possibility which emerged from interviews is that the NIHE, which already has an energy efficiency role, sees its role expanded and becomes responsible for policy delivery that in England would be expected to be taken by local authorities.

5 RECOMMENDATIONS

These recommendations are based on this research as well as our wider expertise around energy policy and governance. Our key recommendations (in no particular order) are that:

1. NI draws all energy and climate mitigation issues into one department, potentially 'The Department for Climate and Energy Transition'. This change would simplify the currently complex energy decision making and encourage leadership around energy issues through providing a Minister with specific responsibility for climate and energy issues. While this is fundamentally simply moving people within the civil service, we do recognise that this change would require political support and that some governance simplification could be achieved without a new department.
2. NI develops a new independent energy body which scrutinises the energy transition on an ongoing basis, advises the Assembly and the Executive, is a centre of expertise and potentially works with other organisations as a delivery body. This new body could work closely with the proposed independent environmental regulator.
3. Specific NI carbon budgets are adopted and the requirement for these and for annual Committee on Climate Change progress reporting and advice is put into the NI statute during the current political cycle.
4. A duty is placed on all NI Government departments to consider climate and energy transition as part of policy development.

Overall, we do not expect that one or two of these measures alone will be adequate for driving the NI energy transition as rapidly and as equitably as is required. Together however, these changes would provide a 'quadruple lock' in terms of simplifying procedures and authority over policy change, encouraging external capability and challenge and delivering local leadership, expertise and value. There may be value in developing the new energy body first, and that can then advise on the development and structure of the new department. The following sections explain the new governance structure and new body in more detail.

5.1.1 A transformed energy governance structure

A map of the potential new governance structure with a new department responsible for energy and climate issues is shown in Figure 9. This model was created from a full re-drawing of energy governance starting from the whole energy system and working up.

This model simplifies energy policy making increasing coherence, creating clear responsibility for energy. It would draw all energy and climate policy functions into one government department which we have called 'The Department for Climate and Energy Transition'. This approach would allow the department to take a truly whole systems approach and draw together issues including buildings, transport, energy markets and emissions. The new department would work closely with DfE and DAERA on industry, agriculture and climate adaptation issues but would be the authority on energy and climate policy. The climate adaptation and agricultural decarbonisation challenges are likely to be connected and because of the importance of agriculture to the NI economy, we feel that keeping these fundamentally non-energy issues outside of the new department would be a sensible approach.

While the changes we propose may seem extreme, we do not believe this is the case and it is effectively a movement of people and functions. All existing bodies such as the Regulator, the Consumer Council and the Housing Executive would have very similar governance and functions as they do now. This model does include a new energy agency, a body which is described below in

more detail. One uncertainty in this model is how the functions of the Energy Agency and the Housing Executive cross over.

We don't make a recommendation on whether The Department for Climate and Energy Transition should be a fully new department or should be formed from an existing department.

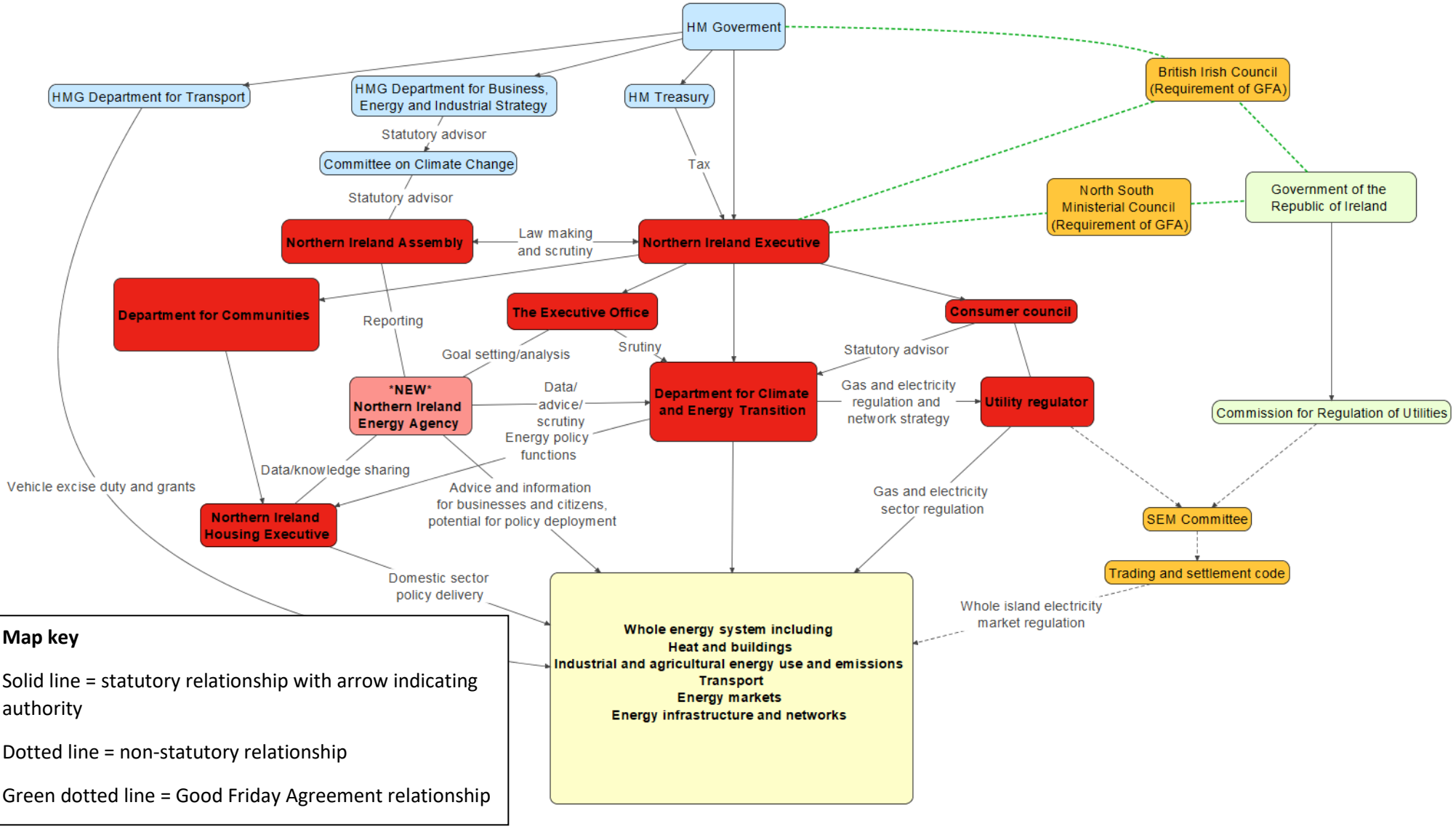


Figure 9. Proposed energy and climate governance with a new energy agency and energy and climate issues in one department

5.1.2 A new independent energy body

The timescales of net-zero mean that much more significant government interventions in energy systems are required. IGov proposed that for GB, a new body, an 'Energy Transformation Commission', would be required to implement the transition process. This body would work across government and build consensus but would also have the authority, delegated by ministers, to develop policy and direct the GB regulator to act on strategic issues[97].

While we believe a new body is required in NI, and it should perform much of the same functions as the GB Transformation Commission which IGov proposed, we believe that the nature of NI government and politics calls for a slightly different structure.

The new body would provide a number of functions:

1. It would be a centre of independent energy expertise, possibly linked to an academic institution, on which policy could be based. The Energy Research Centre of the Netherlands[98] (ECN) would be a good example of this function.
2. It would advise the NI government and Assembly on policy and progress against energy and climate goals working with the Committee on Climate Change. This would include making specific energy policy, governance and regulatory recommendations to which the Executive Office must respond, publicly explaining how and when it is taking action or giving a reason for why it is not.
3. The new body could have a policy delivery function, working with the NIHE and local authorities where necessary. This deployment expertise could support its first function, increasing it energy expertise.
4. It could provide a home for energy data and associated issues.
5. The new body could also take a role in national citizen engagement and could consider distributional and equality issues associated with the energy transition.

For reasons of coherence and leadership, we recommend that this body scrutinises and supports the new climate and energy transition department but is owned by, and reports to The Executive Office in order to raise the profile of energy and provide cross-party leadership.

There is the potential for this body to be associated with the new Environmental Protection Agency however without knowing the details of the new body, we cannot make a specific recommendation here. We would also expect this body to work closely with the Housing Executive around heat and building issues. The functions that we suggest should be associated with the new body could be split across two bodies in order to reduce potential conflict. One new body could provide advice and scrutiny to the 'Executive Office' and another could support policy delivery. However, for reasons of simplicity and expertise sharing, subject to good governance, a single body may be more appropriate.

5.1.3 The potential for more limited machinery of Government changes and associated issues

The previous sections outlined our key recommendations. However, we recognise that appetite for machinery of government changes may be limited. We believe some machinery of government changes are unavoidable and are a requirement of the energy transition. We also believe that in any situation, a new energy body and adoption of the CCC advice and targets are required. The relatively large size of the NI public sector also means that the public sector could take a leadership role in terms of renewable energy and decarbonisation.

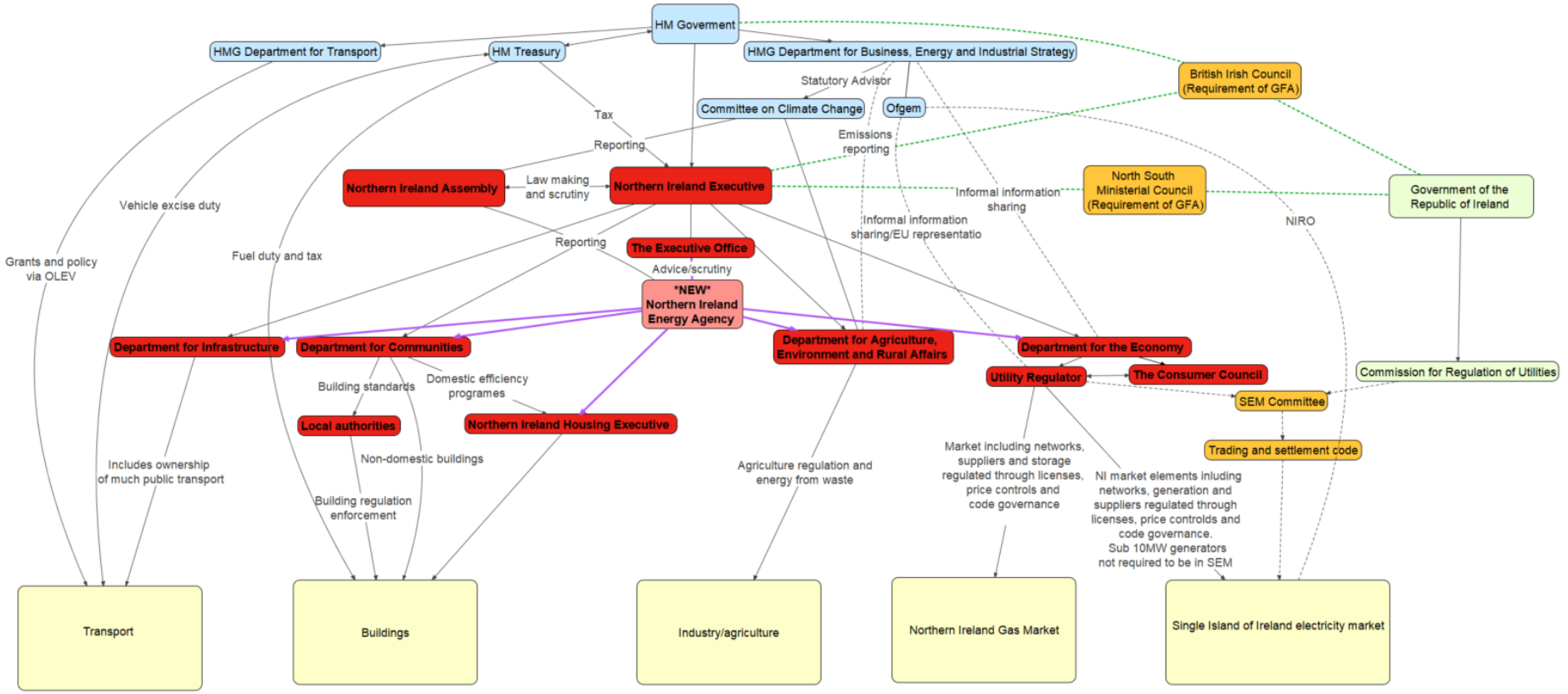
We created another governance map (Figure 10) which shows how, based on our research, existing governance structures could be simplified. This model was created based on the existing map of governance that we introduced previously. Many of the relationships and bodies remain the same but this existing model has been optimised as far as we think is possible without creating a new energy and climate change department. This model also includes a new independent energy body.

Key changes include:

- DfC becomes the department responsible for 'buildings' but would need to work extremely closely with DfE to deliver heat decarbonisation and deep building retrofits. DfC was chosen because of its current legislative responsibility over the NIHE which has a significant interest in domestic buildings and because of DfC's experience around the 'Affordable Warmth' programme.
    - The authority for building regulations moves from DoF to DfC.
    - All current buildings responsibilities within DfE move to DfC.
- DAERA retains responsibility for emissions reporting and cross government engagement but DAERA engages more formally with the UK Committee on Climate Change as a result of requirements in the new NI Climate Change Act.
- The new Independent Energy Agency which comes under the statutory responsibility of the Executive Office reports to assembly and advises and scrutinises the various government departments involved in energy. This new body would provide some element of ongoing cross-government network/coordination on energy policy matters.
- The Executive Office have overall responsibility for performance against energy and climate goals.

While this new model would streamline some decision making compared to how it is currently, this new model maintains much of the governance complexity. In particular, complexity remains over how the transition is governed for transport and heat. Because transport and heat make up such a large share of energy demand, we are not convinced that the more modest changes under this option would ensure whole systems thinking in energy and drive the energy transition in a timely and coordinated manner. We are also concerned that within this model, the role of the new energy agency, in having to work across so many departments, could actually increase the complexity of governance hence our overall support for option 1.

As such, a new government department specifically focused on energy and climate is our recommendation.



Map key

Solid line = statutory relationship with arrow indicating authority

Dotted line = non-statutory relationship

Green dotted line = Good Friday Agreement relationship

Purple line = statutory relationships with new energy body

Figure 10. Proposed (but not preferred) governance map where existing government departmental structure is maintained but a new body is introduced.

6 CONCLUSIONS

Through a detailed desk based review, augmented with in depth interviews with civil servants, we have for the first time, mapped the current system of energy governance in Northern Ireland. We have also investigated current perceived issues with the existing system of governance and considered solutions to these issues.

Overall, Northern Ireland is well placed to benefit from the energy transition with an excellent renewable energy resource which can underpin systemic energy system change. This could bring benefits in terms of air pollution, reduced reliance on imports, global leadership in carbon reduction and significant economic growth. However, the current system of energy governance is complex and may not drive the energy transition rapidly, consistently or efficiently for consumers. Not changing governance structures may be a high risk option.

The most significant issue for energy governance in Northern Ireland is the complexity and coherence associated with energy policy functions in Government. This is because while 'energy policy' officially sits with the DfE, this primarily covers only gas and electricity markets. All petroleum use including for transport or for heating either sits elsewhere (e.g. transport with DfI) or is unregulated (heating oil). The case of heat and building governance is particularly complex.

Among other issues, our review also highlighted that (often linked to the coherence issue) there appeared to be a lack of clear strategic leadership and there were perceived issues with policy making capacity on energy issues. Both of these issue may have in part resulted from the lack of a functioning NI Executive and Assembly up to January 2020. Introducing external energy expertise was also seen to be needed to support policy makers who need to embrace whole systems thinking. Some initial steps on these issues have been made but more structural reforms may be required.

These issues can be resolved. Energy governance could be rationalised by bringing connected energy and decarbonisation policy functions together into one department. Overall, we believe the most efficient solution would be to develop a new Department for Climate and Energy Transition.

The importance of leadership for energy appears important and there may be value in placing some responsibility for delivery of the energy transition with The Executive Office. This could limit the potential for party political issues. We support the development of an independent body which can advise, scrutinise and perform energy deployment functions may also have value in terms of leadership and joining energy issues together. Setting up the new agency so that it reports to and sits within the statutory responsibility of The Executive Office could provide a powerful combination of both political leadership and expert scrutiny.

It is also apparent that regulatory reform may be needed in order to support the Utility Regulator to be more nimble and more strategic in how it functions; this would likely require legislative change. Specifically, we would highlight the governance of gas and electricity codes and energy data as an area where the Regulator may need to be more able to lead. We would suggest that 'self-regulation' of codes and data should be brought fully in house to the Regulator in order to respond to potentially rapid and unexpected developments for example around electric vehicles and heat.

The increasingly decentralised nature of energy and a need for more local deployment may mean that district councils may have an important future role; this could be associated with the development of heat networks or the deployment of energy efficiency, electric vehicle infrastructure and heat pumps for example. However, the relatively small size of Northern Ireland may mean that

much energy policy can be set and delivered at NI scale by the central NI Government rather than at more local levels. We would encourage further thinking in this area.

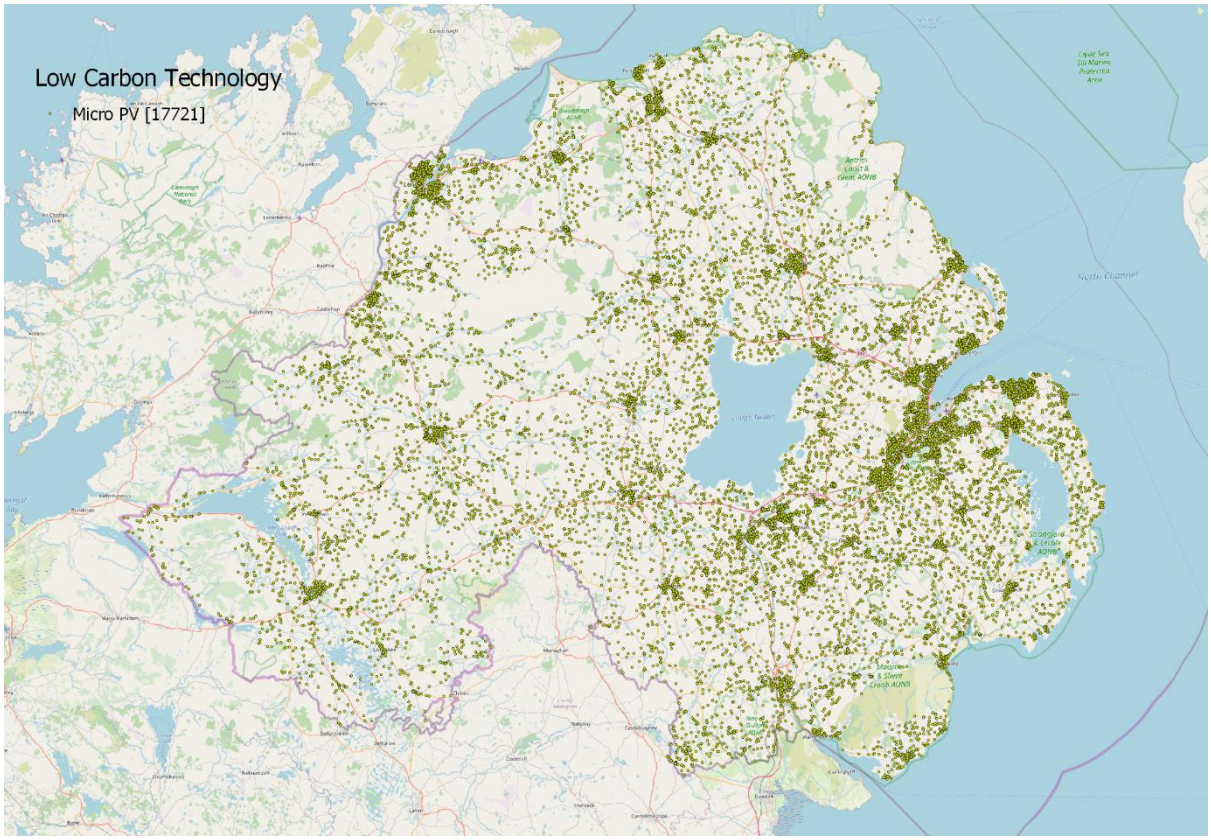
While we have attempted to answer the research questions set for us, there are some questions which our research has highlighted that were out of scope. The biggest concerns how the NI executive will fund the transition in light of set Government budgets and limited tax raising powers. This question goes beyond the governance of energy in Northern Ireland. We are also unclear of how the not yet developed 'Environmental Protection Agency' would or should interact with energy governance, it may simply be that environmental issues are separated from climate and energy issues. Another question remains over what the ongoing impact of UK EU exit will be on NI energy governance. With negotiations about a future relationship still underway, this area is particularly unclear and we note that changes to UK environmental and agricultural laws may be particularly important live issues. We have also included, as an annex, some specific policy issues which have been highlighted by our research.

As the global economy recovers from Covid-19, countries are looking for potential for a green transition to support economic growth and deliver health and wellbeing impacts. Overall, we believe Northern Ireland is well placed to benefit from the green energy transition. However, the complexity associated with existing energy and climate governance in Northern Ireland has the potential to slow the transition, limit benefits, increase costs and lead to fossil fuel lock in and potentially stranded assets.

If followed, the proposals that we made in the previous section could transform both the governance of energy in Northern Ireland and support the energy transformation itself. This is an extremely important and exciting time for energy and nimble and high quality governance will allow governments to ensure the transition is as orderly as possible and provides maximum value for Northern Ireland. Governance is often fluid and we also recognise that the NI Audit Office is currently reviewing the capacity and capability of the NI civil service[99]. The outcomes of the Audit Office work and the RHI inquiry should also be considered in any potential energy governance reform.

We do recognise that the proposed reforms could require significant upfront investment from the NI government in terms of civil service capacity. However we expect that this upfront investment in governance reform would easily be paid back by the benefits it could provide in terms of inward investment, health and reduced environmental impacts.

ANNEX 1 MAP SHOWING MICRO PV (SUB 50KW CAPACITY) GENERATING SITES IN NORTHERN IRELAND



ANNEX 2 SPECIFIC POLICY ISSUES HIGHLIGHTED THROUGHOUT THE RESEARCH ON WHICH RAPID ACTION IS REQUIRED

1. There is no duty on DfE or the Regulator for sustainability or decarbonisation something which received support from people we spoke to.
2. Section 14 of the The Energy (Northern Ireland) Order 2003 which supports the active promotion of the gas industry should be amended to ensure the activities of the gas industry support the energy transition. Our interviews highlighted wide support for this change.
3. The recommendation from the CCC for the development of a whole island charging network/routes for electric vehicle should be progressed[22].
4. The future tax regime for heating oil is uncertain and needs resolving.
5. No polices currently exist to promote new renewable and low carbon energy capacity in Northern Ireland.
6. On the demand side, energy efficiency policies are only aimed at fuel poor/vulnerable customers when wider deployment is needed.
7. Data in certain areas is poor. Particular issues were highlighted around the lack of data on heating in particular oil heating use and the split of gas demand between domestic and non-domestic.
8. Competition is certain areas of supply appears extremely limited and new entrants should be encouraged.

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