



An Chomhairle Náisiúnta Eacnamaíoch agus Shóisialta  
National Economic & Social Council

# **Governance for Low Carbon Transition: Approaches to Policy Innovation and Experimentation**

## **Proposed Terms of Reference**

**May, 2017**

## 1.1 Introduction

The National Economic and Social Council (NESC) advises the Taoiseach on strategic policy issues relating to sustainable economic, social and environmental development in Ireland. As part of its focus on sustainability issues, NESC is seeking a full-time experienced researcher(s) to work alongside NESC analysts for 12-18 months.

### 1.1.1 Background to Research Project

The Department of Communications, Climate Action and Environment provides NESC with resources to assist it in integrating a sustainable development perspective into its work. This research forms part of the next phase of NESC's sustainability work.

In keeping with its particular policy and institutional focus, a significant part of NESC's work on sustainable development explores innovation in sustainable policy and practice. The focus on governance and institutional arrangement for policy analysis, engagement, decision making and implementation has been a recurring theme throughout its work on climate change and most recently on circular economy practices in Ireland.

Internationally, there is a body of conceptual and empirical work on the energy or low-carbon 'transition' and transition management (Geels, 2005<sup>1</sup>; Rotmans et al, 2001). Other international focus has been placed on aligning policies for a low carbon economy (OECD et al, 2015).<sup>2</sup> Increasingly, Irish research is exploring the multi-level, multi-phase and multi-actor challenge in making the transition to a low-carbon economy and society.<sup>3</sup> As Barry et al (2016) argue, there are considerable public governance challenges in such a transition, particularly with the complexity and uncertainty of climate change combined with the scale and speed of the changes required at multiple levels of the economy and society.<sup>4</sup> NESC work on the challenge of community engagement and social support for wind energy concluded that a

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<sup>1</sup> Geels, F. (2005), *Technological Transitions and System innovations: A Co-evolutionary and Socio-Technical Analysis*, Cheltenham: Edward Elgar. Rotmans, J., Kemp, R. & van Asselt, M. (2001), 'More Evolution than Revolution, Transition Management in Public Policy', *Foresight*, 3(1): 1-17.

<sup>2</sup> OECD/IEA/NEA/ITF (2015) *Aligning Policies for a Low Carbon Economy*. Paris: OECD Publishing.

<sup>3</sup> Much of this work has been funded by the Environmental Protection Agency.

<sup>4</sup> The social, technological and economic challenges of the energy transition are significant and have been the focus of a large body of work internationally and increasingly in Ireland (c.f. Barry, J. et al, 2016). Barry, J., Hume, T., Ellis, G. and Curry, R. (2016) *Society Wide Transitions. Working Paper 1*. CC Transitions Project. Queen's University Belfast.

critical element is having a clear long-term intentional, participative and problem solving transition framework (NESC, 2014).<sup>5</sup> Implementing this requires wide involvement of different actors as well as flexibility, innovation, openness and diversity in governance (Cherp et al, 2011).<sup>6</sup> Public agencies such as the EPA, the SEAI and Teagasc have been actively engaged in research and practice to support renewable energy and climate mitigation as well as across civil society, including universities and business leaders.

The Paris Agreement on Climate Change was finalised In December 2015, at the 21st Conference of the Parties (COP 21) to the United Nations Framework Convention on Climate Change (UNFCCC). This agreement sets out a long-term goal of keeping the increase in average global temperatures well below 2°C above the pre-industrial level. The Paris Agreement requires all Parties to put forward their best efforts through “nationally determined contributions” (NDCs) and to strengthen these efforts in the years ahead. This includes requirements that all Parties report regularly on their emissions and on their implementation efforts.<sup>7</sup>

The EU 2020 Climate and Energy Package contains binding legislation to ensure the EU meets its climate and energy targets for the year 2020. The package sets three key targets:

- 20% cut in greenhouse gas emissions (from 1990 levels)
- 20% of EU energy from renewables
- 20% improvement in energy efficiency.

The EPA’s projections for 2020 estimates that Irish non-ETS sector emissions will be 4% - 6% below 2005 levels by 2020. Ireland is projected to cumulatively exceed its obligations in 2019.<sup>8</sup>

The EU 2030 Climate and Energy Framework sets three key targets for the year 2030:

- At least 40% cuts in greenhouse gas emissions (from 1990 levels)
- At least 27% share for renewable energy
- At least 27% improvement in energy efficiency (European Commission).<sup>9</sup>

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<sup>5</sup> NESC (2014) *Wind Energy in Ireland: Building Community Engagement and Social Support*. Dublin: The National Economic and Social Council.

<sup>6</sup> Cherp, A., Jewell, J. and Goldthau, A. (2011), *Governing Global Energy: Systems, Transitions, Complexity*. *Global Policy*, 2: 75–88. doi:10.1111/j.1758-5899.2010.00059.

<sup>7</sup> [http://unfccc.int/paris\\_agreement/items/9485.php](http://unfccc.int/paris_agreement/items/9485.php)

<sup>8</sup> EPA (2017) Ireland’s Greenhouse Gas Emission Projections. Environmental Protection Agency.

<sup>9</sup> European Commission [https://ec.europa.eu/clima/policies/strategies/2030\\_en](https://ec.europa.eu/clima/policies/strategies/2030_en)

The EPA estimates that, based on current emission projections, Ireland's non-ETS emissions will be 1%-3% below 2005 levels by 2030.

Ireland is in a critical phase of national policy development on climate change and the transition to a low-carbon economy and society. Key elements of this include:

- The National Policy Position (2014) sets out the direction of a low-carbon transition to 2050 with at least 80% reduction in CO<sub>2</sub> emissions from electricity generation, the built environment and transport and carbon neutrality in agriculture and land-use sectors.
- The Energy White Paper (2015) outlines key elements for a 'radical transformation of Ireland's energy system' that is required to meet climate policy objectives. It places the citizen at the centre of Ireland's energy transition.
- The Climate Action and Low Carbon Development Act (2015) provides a framework for climate change policy that includes commitments to produce a National Climate Mitigation Plan and a National Adaptation Framework every five years. The first National Climate Mitigation Plan is expected to be completed by June. The Climate Change Advisory Council was established under the Act to provide advice to Government in relation to national climate policy.
- In Spring 2017, the National Dialogue on Climate Change has been established, defining a range of processes to widen input into policy formation on climate action.
- A new draft Renewable Electricity Support Scheme is forthcoming.

Despite these developments, as recent EPA reporting shows, Ireland is likely to miss its 2020 EU climate emissions obligations and is not on course for decarbonisation by 2050. The challenges are considerable and complex and will require innovative and responsive approaches to public governance.

In its earlier work on climate change, the NESC Secretariat outlined three key ideas that should inform the national and international approach to climate change:

- Climate-change policy is a loop not a line—in which there is a dynamic relation between 'how much' emissions reduction and policy action governments commit to and their understanding of 'how to' achieve decarbonisation;
- It is necessary to balance the policy emphasis on 'how much' emissions reduction to target with more focus on 'how to' achieve decarbonisation of the economy and society; and

- The transition to a carbon-neutral economy and society must engage actors at all levels and in all sectors, through a governance system that animates, learns from and pushes networks of firms, public organisations and communities to ever-greater decarbonisation.

These core ideas reflect the complexity of the climate change policy challenge and the high levels of uncertainty about the effects of individual measures and future technology. The report suggested a Three Track Approach to the low carbon transition to 2050:

- **Track 1: Strategic and Institutional**—including Ireland’s engagement with the UN and EU climate policy processes, new institutional structures and five strategic building blocks;
- **Track 2: Exploration and Experimentation**—to consciously build policy and organisational networks in specific areas and push these to ever-greater decarbonisation; and
- **Track 3: Design and Implementation**—focuses on where early action makes sense and is feasible, and measures to meet Ireland’s 2020 targets (NESC, 2012).<sup>10</sup>

The proposed research will address key challenges facing Irish policy, drawing on this framework and other conceptual and empirical work, where appropriate.

## 1.2 The Next Phase of NESC Work

This research on governance for the transition to a low-carbon economy and society has four elements:

- i. Methods of appraisal, identification of least-cost options and cost benefit analysis;
- ii. Multi-stakeholder agreements on energy and low-carbon transition;
- iii. Advancing the transition process in Irish transport; and
- iv. Experimentalist elements in the approach to climate change in Irish agriculture (work already underway within the Secretariat and with international research collaborators. This is not outlined further here).

These lines of inquiry are chosen to address key challenges in the formulation of Irish policy for the low-carbon transition. The researcher will work particularly on the first

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<sup>10</sup> NESC (2012) *Ireland and the Climate Change Challenge: From How Much to How To*. Dublin: The National Economic and Social Council.

three areas, in collaboration with analysts in the NESC Secretariat. These three are described in more detail below.

## **1.3 Outline of the Three Areas of Proposed Research**

### **1.3.1 Methods of Appraisal, Identification of Least Cost Options and Cost Benefit Analysis**

The first element of the research will examine the place of appraisal and other technical work within the overall process of policy development, deliberation, decision making and implementation.

This element will outline current practice in Ireland and other relevant countries and examine their strengths and limitations. It will provide an analysis of the methods of appraisal, identification of least-cost options and cost benefit analysis in climate change policy. It will also focus on innovative approaches to appraisal and cost benefit analysis across a range of sectors, including infrastructure and transport.

A recent EPA-funded research project on the methodologies for risk assessment and the costs and benefits associated with climate adaptation options concluded that cost benefit analysis (CBA) was not sufficient as it is poorly equipped to account for uncertainty (Bullock et al, 2015:viii).<sup>11</sup> This view also featured in a NESC Forum on the Opportunities and Challenges for Climate Mitigation in the Transport Sector in 2015.<sup>12</sup> At the Forum it was argued that there are weaknesses/deficiencies of standard cost-benefit analysis as a tool in sustainable transport policy. Issues highlighted related to the benefits—some are intrinsic, whereas others are more systemic and harder to identify and monetise—and the need for a sophisticated analysis of the carbon savings and economic savings associated with different mitigation actions).<sup>13</sup> In relation to transport policy, the OECD also point to the importance of factoring in information on long-term impacts, risk and uncertainty into Cost Benefit Analysis (OECD, 2015).<sup>14</sup>

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<sup>11</sup>Bullock, C., Fealy,Clinch, P and O’Shea, R. (2015) ADAPT: Quantifying the Costs and Benefits Associated with Climate Change Risks and Adaptation EPA Research Report 140 <http://www.epa.ie/pubs/reports/research/climate/Research%20Report%20140%20web%20WI TH%20COVERS.pdf>

<sup>12</sup> NESC (2015) NESC Forum: Opportunities and Challenges for Climate Mitigation in the Irish Transport Sector, Dublin: The National Economic and Social Council [http://www.nesc.ie/assets/files/downloads/Events/Transport-Forum-2015/Transport15\\_Highlights.pdf](http://www.nesc.ie/assets/files/downloads/Events/Transport-Forum-2015/Transport15_Highlights.pdf)

<sup>13</sup> OECD (2015) OECD/IEA/NEA/ITF (2015) Aligning Policies for a Low Carbon Economy. Paris: OECD Publishing.

<sup>14</sup> OECD/ITF (2015) Adapting Transport Policy to Climate Change: Carbon Valuation, Risk and Uncertainty, OECD Publishing, Paris.

Other OECD work points to limitations of CBA. It argues that a systematic multidimensional methodology is required. However it points to the usefulness of a CBA process when it can help identify potential winners and losers from a proposed policy (OECD, 2015: 39). Others go further and argue that cost benefit analysis should not be treated as the ultimate arbiter of climate policy choices (Ackerman, et al, 2010).<sup>15</sup>

In terms of mitigation, one of the key challenges is that evaluating the efficiency effects of a mitigation action requires accounting for its full social impacts: not just the private financial costs and benefits of the action (Green, 2015).<sup>16</sup> The OECD argues that the acceptability of low-carbon policies depends on the set of economic, environmental and social co-benefits brought associated with various policy instruments (OECD, 2015). However, these co-impacts are difficult to capture. When the co-impacts of decarbonising energy systems and other urban infrastructure are taken into account as part of the cost-benefit analysis, they are likely to substantially increase the scale of net benefits (Global Commission on the Economy and Climate (GCEC), 2014).<sup>17</sup> This element of the research is interested in efforts to do so. This would include recent work by the IEA in relation to energy efficiency and the OECD in relation to climate change and air pollution (IEA 2015; OECD, 2014),<sup>18</sup> and the New Climate Institute work on the co-benefits associated with Intended Nationally Determined Contributions (INDCs) under the Paris Agreement (Day et al, 2015).<sup>19</sup>

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<sup>15</sup>Ackerman, F., DeCanio, S., Howarth, R. and Sheeran, K. (2010) The Need for a Fresh Approach to Climate Change Economics, Pew Centre on Global Climate Change. <https://www.c2es.org/docUploads/ackerman-decanio-howarth-sheeran-climate-change-economics.pdf>

<sup>16</sup> Green, F. (2015) Nationally self-interested climate change mitigation: a unified conceptual framework, Centre for Climate Change Economics and Policy Working Paper No. 224 [http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/07/F\\_Green\\_Nationally\\_Self\\_Interested\\_Climate\\_Change\\_Mitigation.pdf](http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/07/F_Green_Nationally_Self_Interested_Climate_Change_Mitigation.pdf), p.7.

<sup>17</sup> GCEC (2014) Better Growth Better Climate: The New Climate Economy Report (The Global Report). Washington, DC.: New Climate Economy (c/o World Resources Institute) (p. 43-45).. Cited in Green (2015) *ibid*

<sup>18</sup> IEA (2015) Capturing the Multiple Benefits of Energy Efficiency. Paris: International Energy Agency. (OECD, 2015 and 2016) OECD 2016 Economic Consequences of Outdoor Air Pollution, Paris: OECD. <https://www.oecd.org/environment/indicators-modelling-outlooks/Policy-Highlights-Economic-consequences-of-outdoor-air-pollution-web.pdf>; OECD (2015) Economic Consequences of Climate Change, Paris, OECD. <http://www.oecd.org/env/the-economic-consequences-of-climate-change-9789264235410-en.htm>

<sup>19</sup> Day, T., Höhne, N., Gonzales, S. (2015) Assessing the missed benefits of countries' national contributions: Quantifying potential co-benefits, New Climate Institute. <https://newclimateinstitute.files.wordpress.com/2015/10/cobenefits-of-indcs-october-2015.pdf>

In addition, recent work on infrastructure policy can throw light on the issue of appraisal. There is increasing recognition of the need to adopt a systemic approach to assessment, and to identify and estimate costs and benefits that are non-monetary, dynamic and non-marginal. Approaches to uncertainty, developed in the field of infrastructure, may be pertinent to climate change policy. NESC has documented developments in the UK's approach to infrastructure policy<sup>20</sup>. Among other things, this suggests that the systemic nature of infrastructure weakens the power of conventional, project-focused, cost-benefit analysis (Helm, 2013).<sup>21</sup> Policy analysts and decision makers have provided critical reflections on the use of economic modelling and cost-benefit analysis in the overall decision making process (Rosewell, 2010).<sup>22</sup> Reflecting this, new analytical approaches are emerging that go some way to taking account of the wider economic, social and environmental costs and benefits of infrastructure investment.

### **1.3.2 Multi-Stakeholder Agreements on Energy and Low Carbon Transition**

The second area of research will examine national multi-stakeholder agreements on energy policy and the transition to a low-carbon economy and society. The transition thinking, noted above, underlines the degree to which multiple actors and stakeholders will need to be engaged. Yet, the development of Irish energy and climate change policy would seem to be constrained by uncertainty among key actors, about the ability and willingness of other actors and interest to support ambitious action. The experience on wind energy and water may have heightened this uncertainty and resultant policy caution. International research on the relationship between knowledge, expertise and policy indicates that as the degree of complexity, uncertainty and ambiguity in a policy domain increases it becomes less feasible to formulate expert advice in isolation from stakeholders, practitioners and political actors (Bijker *et al.*, 2009).

Voluntary agreements on energy and energy efficiency policy have been undertaken in other European countries including the Netherlands and Denmark. A review of early agreements, funded by the SEAI in 2000, concluded that voluntary agreements

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<sup>20</sup> *Reflections on Infrastructure Policy and Institutional Developments in the UK*, Report of the NESC Secretariat, February 2017 (forthcoming)

<sup>21</sup> Helm, D. (2013) 'British infrastructure policy and the gradual return of the state', *Oxford Review of Economic Policy*, 29(2): 287–306.

<sup>22</sup> Rosewell, B. (2010) *Planning Curses: How to Deliver Long-Term Investment in Infrastructure*. London: Planning Exchange.



can have an impact on industrial energy consumption and CO<sub>2</sub> -emissions if they are embedded in a broader policy mix (Krarup and Ramesohl, 2000).<sup>23</sup>

In 2013, the Dutch Energy Agreement for Sustainable Growth (Energieakkoord) was signed by the government with employers, trade unions, environmental organisations and others. It contains provisions on energy conservation, boosting energy from renewable sources and job creation. It sets out energy ambitions and targets up until 2023. This pact was brokered by the Social and Economic Council of the Netherlands (SER). It engaged dozens of scientists, business people, politicians and other Dutch stakeholders in a complex process of analysis and dialogue<sup>24</sup>. The International Energy Agency has commended the agreement, but warns that the real challenge will be its implementation.<sup>25</sup>

Through contacts within SER, NESC will document the development of this agreement, interview key stakeholders by skype and in person; and identify the key factors which contributed to its development and current implementation.

A comparative case may also be documented, such as the Danish DK Energy Agreement.<sup>26</sup> The energy policy agreement of 2012 (covering goals and policies to 2020) was adopted by parties that represent almost all of the seats in parliament. In addition to national agreements, several local and regional examples of public participation and dialogue may be explored, particularly those focusing on a problem-solving approach to finding innovative solutions to climate and energy policy challenges.

### **1.3.3 Advancing the Transition Process in Irish Transport**

The third area of research will address issues in formulating and advancing the transition process in Irish transport. Transport accounts for a very significant share

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<sup>23</sup> Krarup, S. and Ramesohl, S. (2000) Voluntary Agreements in Energy Policy, Final Report from the project Voluntary Agreements-Implementation and Efficiency (VAIE) [http://www.seai.ie/Publications/Your\\_Business\\_Publications/Large\\_Energy\\_Users/Voluntary\\_Agreements\\_in\\_Energy\\_Policy\\_-\\_Implementation\\_and\\_Efficiency\\_.pdf](http://www.seai.ie/Publications/Your_Business_Publications/Large_Energy_Users/Voluntary_Agreements_in_Energy_Policy_-_Implementation_and_Efficiency_.pdf)

<sup>24</sup> SER (2013) Energy Agreement for Sustainable Growth <https://www.ser.nl/en/publications/publications/2013/energy-agreement-sustainable-growth.aspx>

<sup>25</sup> IEA (2014) Energy Policies in IEA Countries: The Netherlands 2014 Review. <https://www.iea.org/publications/freepublications/publication/Netherlands2014.pdf>  
<http://energypost.eu/iea-review-dutch-energy-policy-real-work-still-lies-ahead/>

<sup>26</sup> <https://stateofgreen.com/files/energyagreement>

of Irish emissions and is a key area in which improvement is needed to support economic and social goals.<sup>27</sup>

There is a concentrated focus at European level on transport. The European Commission's Strategy for Low-Emission Mobility, adopted in July 2016, identifies three priority areas for action:

- Increasing the efficiency of the transport system by making the most of digital technologies, smart pricing and further encouraging the shift to lower emission transport modes;
- Speeding up the deployment of low-emission alternative energy for transport, such as advanced biofuels, electricity, hydrogen and renewable synthetic fuels and removing obstacles to the electrification of transport; and
- Moving towards zero-emission vehicles.<sup>28</sup>

The recent draft National Climate Mitigation Plan refers to these objectives and outlines both potential measures for future action as well as measures already underway. These include sustained investment in the public transport network; the introduction of a Biofuel Obligation Scheme; regulations limiting tail pipe emissions in cars; incentives to encourage the purchase of electric vehicles; and redesigning the Vehicle Registration Tax (VRT) and motor tax regimes to promote low carbon emitting vehicles.<sup>29</sup> Looking to the future, it concludes that 'profound changes will be required to the transport system if it is to contribute meaningfully to achieving the Government's national policy vision of Ireland becoming a low carbon economy.'<sup>30</sup>

The proposed research on sustainable transport will build on discussions from the NESC Forum on the Opportunities and Challenges for Climate Mitigation in the Transport Sector, referred to earlier (NESC, 2015). This group of informed actors explored the key technical, organisational and socio-political challenges in decarbonising the transport sector in Ireland.

There was recognition within the Forum that the transport sector has many distinctive features: it crosses over more areas and sectors than any other, such as household and organisational behaviour, and intersects more with democratic governance. This contributes to a complex governance and institutional challenge.

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<sup>27</sup> The Draft National Climate Mitigation Plan outlines that emissions are projected to increase by 10-16% to 2020. DCCAE (2017) Draft National Mitigation Plan, p. 58 <http://www.dccae.gov.ie/documents/National%20Mitigation%20Plan%20April%202017.pdf>

<sup>28</sup> EC (2016) A European Strategy for Low-Emission Mobility <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52016DC0501&from=en>

<sup>29</sup> DCCAE (2017) Draft National Mitigation Plan, p. 58 <http://www.dccae.gov.ie/documents/National%20Mitigation%20Plan%20April%202017.pdf>

<sup>30</sup> DCCAE (2017) *ibid*, p. 72.

Many of the participants considered that the low carbon transition had the potential to cause the greatest disruption to the transport system in 100 years.

The importance of managing mobility, accessibility and social inclusion was recognised. A key theme was the need to deepen the focus on social and behavioural change. Attention was drawn to the need to better understand co-benefits arising from synergies across health, land use and sustainable communities.

Positive developments in recent years were noted, such as a policy evolution towards smarter travel, more people-centred design, investment in the Luas and in some cycling infrastructure. However, the participants pointed to hesitancy about making the right public investments. There were concerns that even when needs were identified and recognised—such as the potential for greater modal shift in Dublin—policy responses were constrained by limited resources. Alongside this challenge, there was discussion about other barriers such as legislative, institutional and informational, including a lack of research on what works for effective behaviour change.

Thus while there are examples of interesting work on sustainable transport underway in Dublin and in the regions—for example, through the Smarter Travel Initiative; innovative financial measures such as the Green Public Transport Fund and a increased policy momentum from the Draft National Mitigation Plan—there is a sense that there may be a higher order problem blocking progress on transport contributing to a halting transition process. Working through this problem could touch on some combination of the following:

- Conceptual: how we think about transport and mobility, the various modes and technological innovations as well as an appreciation of the value of co-benefits of sustainable travel;
- Institutional governance: how institutions and agencies can play a key role in driving a transition process and whether these are sufficiently oriented with sustainable transport as a key objective;
- Behavioural: how to achieve effective social and behavioural change in modal shift; and
- Political and economic: how to secure the scale of investment required for sustainable public transport solutions and to develop alternatives to the car in rural areas.

This research will explore some of these potential barriers to progress in sustainable transport. In doing so it will focus on a number of specific areas, such as the challenges of delivering changes in mobility behaviour and travel-demand management in urban and rural Ireland, and particular challenges for the freight

sector. It will seek to highlight effective practices and draw on national and international experience.

## **1.4 Methodology**

The research methods will be varied and will include literature reviews, policy analysis and qualitative interviews with key stakeholders from public and private sectors. A small number of case studies will be selected, in consultation with the Project Team, which will explore key aspects of public governance drawn from national and local examples, in Ireland and in several other EU jurisdictions. Careful consideration will be given to the selection of case studies which would add value, rather than duplicate, existing research activity in these areas. Several working papers and reports will be produced in the period, including a final report by the end of 2018.

A small Advisory Group will be established to support the work.

### **1.4.1 Role of the Researcher(s)**

The researcher(s) will work under the direction of the NESC Secretariat's Project Manager for a minimum of 12 months, with the possibility of extending this to 18 months. Key tasks will be agreed with the Project Manager as part of the Project Team and will include some but not all of the research as outlined here. The appropriate research methods will include desk research, telephone interviews and face-to-face interviews with key stakeholders. The researcher(s) will contribute to the project in the following ways:

#### *Key Elements of the Post/Duties and Responsibilities:*

- Conduct targeted literature review/desk research on case study areas (with a reference to Irish, other EU Member States experience), identifying critical issues to be examined;
- Conduct face-to-face interviews with a range of key participants/stakeholders in each case study area;
- Analyse and distil key themes from the qualitative interview material with a view to gaining an understanding of public governance and research questions as identified with the project team;
- Identify and summarise key challenges and strengths from both case study areas in terms of public governance;
- Identify and probe cross-cutting issues in relation to public governance from each case study; and

- Prepare a report, working with the NESC Project Manager, drawing on the analysis of the case study material to identify insights, practices and considerations for public governance for low carbon transition.

### *Skills and Experience Criteria*

The following essential criteria outline the skills and experience which will be required to conduct this work:

- Postgraduate qualification in public policy, environmental science or social sciences;
- Demonstrated knowledge of Irish and EU policy in policy studies, environmental, climate change or energy areas;
- Minimum of three years research experience on Irish and/or European social, public policy or environmental issues;
- Demonstrated research skills in qualitative methodology;
- Demonstrated expertise in bringing rigorous critical analysis and creative approaches to complex social, economic or environmental contexts;
- Demonstrated excellent writing and editing skills;
- A proven track record in undertaking this kind of assignment to the required standards and within required deadlines.

Desirable skills and experience will include:

- Doctorate qualification in public policy, environmental science or social sciences would be desirable;
- Demonstrated knowledge of governance theories and approaches would be desirable; and
- Research experience in relation to climate change, transport or energy would be desirable.