Climate-Change Policy: Getting the Process Right

No.147 May 2019
National Economic and Social Council
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2. The Council may consider such matters either on its own initiative or at the request of the Government.

3. Any reports which the Council may produce shall be submitted to the Government, and shall be laid before each House of the Oireachtas and published.

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Climate-Change Policy: Getting the Process Right

No.147 May 2019
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<th>Description</th>
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<tbody>
<tr>
<td>APJ</td>
<td>Action Plan for Jobs</td>
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<tr>
<td>ASI</td>
<td>Avoid, Shift, Improve</td>
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<td>CAROs</td>
<td>Climate Action Regional Offices</td>
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<td>CoG</td>
<td>Centre of Government</td>
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<td>DCCAE</td>
<td>Department of Communications, Climate Action and Environment</td>
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<td>DTTAS</td>
<td>Department of Transport Tourism and Sport</td>
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<td>FTAI</td>
<td>Freight Transport Association of Ireland</td>
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<td>INDCs</td>
<td>Intended Nationally Determined Contributions</td>
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<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>MACCs</td>
<td>Marginal Abatement Cost Curves</td>
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<td>PPNs</td>
<td>Public Participation Networks</td>
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<td>SDAS</td>
<td>Sustainable Dairy Assurance Scheme</td>
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<td>SEAI</td>
<td>Sustainable Energy Authority of Ireland</td>
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<td>TAC</td>
<td>Technical Advisory Committee</td>
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<td>UNFCCC</td>
<td>United Nations Framework Convention on Climate Change</td>
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Executive Summary
There is now a strong societal, Oireachtas and Government consensus on the need to take more ambitious action on climate change in order to safeguard Ireland’s future and honour our international obligations. In preparing Ireland’s new climate plan, the Government has indicated its intention to apply a policy approach created for the Action Plan for Jobs (APJ) in 2011. That process provides a mechanism for intensive reporting and monitoring of policy implementation and action.

Both national and international experience show that there are profound uncertainties in how to tackle climate change. These concern which technologies and solutions to adopt, their costs, and willingness to bear these uncertain costs. As a consequence, there is uncertainty about how to achieve such a profound systemic transition. This has implications for the core aspects of climate-change policy: the approach taken to policy analysis and its use in the policy process; how targets, regulation and economic instruments are designed, and, of course, achieving agreement on the transition. In this context, the key question is: what process of knowledge generation, data use, learning, policy-making, engagement and ratcheting is necessary to generate, trial, tailor and generalise solutions?

The Council argues that it is necessary, and possible, to combine a high-level mission and the guiding strategy, on the one hand, with the creation and application of mitigation actions by government, business and civil society, on the other. To achieve this, an APJ-type approach needs to be widened. First, as well as checking the implementation of a list of known and defined actions, it needs to create a process that empowers front-line agencies and actors to explore, find, trial and cost new solutions tailored to specific contexts. Second, in doing so, the agencies will have to engage and collaborate with each other and with non-government actors in their respective networks. Third, the role of the central APJ-type entity would then include pooling the learning from action in various sectors, as well as prompting cooperation between departments and sectors in order to find and exploit co-benefits for health, well-being and the environment. Such a practical process, creating new knowledge on what is possible, would greatly enhance the existing analytical and policy approach, based on prior modelling of putative mitigation measures, in order to cost, rank and choose least-cost policy actions.
The Council’s argument bears close affinity to the recent proposal of the Joint Committee on Climate Action on establishing a Climate Action Implementation Board. The committee proposes that this be established in the Department of the Taoiseach and be co-chaired by the Secretary General of that department and the Department of Communications, Climate Action and Environment (DCCAE). Through it, Government can infuse Ireland’s climate-change goals and targets with ever-increasing precision and ambition.
1.1 Introduction

Ambitious and meaningful action is urgently needed to address climate change. The Intergovernmental Panel on Climate Change (IPCC) has shown that the risks of global warming are both enormous and imminent (IPCC, 2018). A complex, dynamic process of unprecedented environmental change has reached severe levels, inaugurating a new age of environmental breakdown. Historical inaction means there is a closing window of opportunity to avoid catastrophic outcomes (Laybourn-Langton et al., 2019: 31).

Progress in pushing down emissions is immediately required in Ireland and globally, particularly emissions associated with transport, food, energy, agriculture and housing. Action to reduce emissions is needed so that Ireland can become a carbon-neutral economy and society, and improve the quality of life of citizens (European Commission, 2018).

This report is focused on how the climate-change policy process can search for, identify and implement solutions that work to decarbonise Ireland’s economy and society, but also bring many positive impacts on health, well-being, air quality, enhanced biodiversity and environment through a just transition.

This is a critical time for Irish climate policy, with significant work under way across Government and in the Oireachtas. With the recent publication of the Joint Oireachtas report and the formulation of a new Government climate plan, Ireland is now taking major steps towards a more ambitious, clearly articulated and socially supported climate-change policy. This includes movement towards a new policy approach within Government, modelled on the Action Plan for Jobs (APJ).

This report highlights the importance of getting the climate-change policy process right if effective mitigation actions are to be found and delivered. It takes transport as an entry point to a consideration of wider climate policy. Transport is a good entry point because all sectoral actors recognise that creating a low-carbon mobility system is a complex and difficult challenge, in which there is great uncertainty about the nature, cost, acceptability and sequence of actions. But transport is not unique in this regard. Both national and international experience shows that there are profound uncertainties about how to tackle climate change. Noting this, the Council outlines its view on the nature of the climate-change policy challenge and suggests ways in which the Government’s emerging approach could be made most effective.
The Council sees the adoption of an APJ-type process in climate-change policy as an excellent idea. Such a process can provide a mechanism for more intensive reporting and monitoring of policy implementation and action. However, given the high degree of complexity and uncertainty, we believe that an APJ-type approach needs to be tailored to the particular nature of the climate-change policy challenge.

The report is structured as follows. Section 1.2 examines the climate-change challenge in transport and highlights the difficulty and complexity of bringing emissions down, in any meaningful way, in that sector. It considers the origins of this complexity and its implications for transport climate-change policy. Section 1.3 argues that complexity and uncertainty about how to decarbonise is a challenge that is not unique to transport: it exists in all areas of climate-change policy. Section 1.4 outlines an APJ-plus policy process focused on goals and targets; action and agencies; reporting, reviewing and learning, and setting more challenging targets. Such an approach is capable of driving emissions downward in the face of uncertainty. This section provides some specific examples of how this process could be applied in the transport sector. Section 1.5 concludes by outlining the type of policy required to drive Ireland’s ambition on climate change.
1.2 Transport Climate Policy: Scale, Complexity and Uncertainty

Transport emissions are a challenging international problem. The sector represents almost a quarter of the EU’s greenhouse-gas (GHG) emissions and is the main cause of air pollution in cities (European Commission, 2019). Global transport emissions have more than doubled since 1970 to reach 7.0 Gt CO2eq by 2010. About 80 per cent of this increase comes from road vehicles (Sims et al., 2014). In Ireland, the sector is the third largest contributor to national GHG emissions, at 20 per cent, after agriculture (32.3 per cent) and energy (20.4 per cent) (DTTAS, 2018). Despite a small decrease in emissions in 2017, the trend for the sector in recent years has been rising emissions, in line with economic growth, with most emissions coming from road transport (EPA, 2018b).

Building on the climate work undertaken by its Secretariat in 2012, NESC convened a forum in 2015: ‘Opportunities & Challenges for Climate Mitigation in the Irish Transport Sector’ (NESC Secretariat, 2012a, 2012b). At that forum, sectoral actors explored the institutional and policy arrangements necessary to move towards a low-carbon transport system. A paper prepared for the forum stressed the need for public governance and institutions that recognise the synergies with other policy areas and potential co-benefits in areas of health, economic strategies, land-use and housing (Browne, 2015). The forum highlighted the distinctive features of the transport sector. These include its overlap with several other sectors and activities, and the degree to which it involves local and national democratic processes. The forum also identified the need for an ‘overarching climate narrative for which there is broad societal buy-in and which would be capable of animating coherent political and institutional action’ (NESC, 2016).

That work suggested that there may be institutional problems that inhibit progress on the transition to a low-carbon (that is, carbon-neutral) and more sustainable transport system. Such a shift requires transformative change and is profoundly challenging. It encompasses technological and scientific developments as well as social practices and behaviour at individual, societal and public governance levels (Moore, 2012: 69).

In 2018, the Council decided to further explore the institutional and policy process in the Irish transport sector and commissioned researchers in Dublin City University (DCU) to report on this.¹ Their study is published in parallel with this Council report (Devaney & Torney, 2019). Box 1 provides a summary of the research. This work should be seen in the context of NESC’s series of reports on housing and urban

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¹ The Department of Communications, Climate Action and Environment provides NESC with resources to assist it in integrating a sustainable development perspective in its work.
development and, most recently, a report on the advantages and challenges of transport-orientated development (NESC, 2018, 2019 forthcoming).

**Box 1: Devaney and Torney Research: Advancing the Low-Carbon Transition in Transport**

This work by Devaney and Torney focuses on the institutional arrangements and public governance system in transport in the transition to a low-carbon economy and society. The report highlights that the task of decarbonisation, in transport as in other areas, is complex and multi-faceted, and that limited progress has been made. Effective decarbonisation of transport urgently requires action by public and private sectors. Interlocking path dependencies, carbon lock-in and a range of socio-cultural practices limit opportunities for behavioural change. The report argues that governments can try to ‘steer’ the economy and society, but points out that this is in no way easy as politics, various practices and incumbent interests can act to block change.

The report argues that, in the wake of the 2015 Paris Agreement, bottom-up problem-solving and learning is receiving more attention. It sets out, following Ostrom and others, that a key issue is ‘the ability of the governance system to capture and scale up social, political, and technological innovations to make them truly transformational’ (Ostrom, 2010, 2012; Dorsch & Flachsland, 2017). The report suggests that this depends on information- and lesson-sharing; challenging powerful incumbents, and an innovation system that supports new ideas, methods, policies and technologies.

The report highlights that, for transformational change, something beyond ‘incremental business-as-usual approaches’ is required. The authors argue, following Coenen, that there is a need to address ‘transformational systems failures’ and that this includes policy coordination, directionality, demand articulation and reflexivity failures (Coenen et al., 2015: 486). The authors propose that purposeful steering of transitions through top-down public governance arrangements remains a critical ingredient of effective climate governance—citing research on the impact of the UK Climate Change Act (Averchenkova & Fankhauser, 2018; Fankhauser et al., 2018)—in shaping investment decisions in the power sector; though they also note that it has been less successful in driving more granular change at the level of individual policies within sectors, such as transport. The report focuses on the institutional and governance dimensions of sustainable transport in Ireland and identifies three key themes:

- First, it highlights the complexities inherent in the sector: tensions between public and private, rural and urban, and the role of special interests as well as complex external interactions with broader policy objectives and systems, including planning, health and education.
Second, it highlights how contestation between institutional priorities has shaped the development of a carbon-intensive transport system to date. In particular it highlights that low carbon is not yet embedded in the priorities of public bodies in the transport sector and in fact that there remains some disagreement over what low-carbon transition might entail.

Third, it argues that the institutional landscape is fragmented, which creates uncertainty about how stakeholders within the system relate to each other and about who shapes transport outcomes.

The report makes recommendations in three broad areas: the approach to policy; the influence of leadership from the centre, and in relation to institutional remedies.

First, it argues that the challenge for policy-making is the need to take into account the complexities inherent in transport. To do so, it suggests that the approach to policy-making needs to be more collaborative, adaptive and reflexive. This will require input from a diverse range of public, private and civil society actors, to enhance transparency and democracy in decision-making processes and ultimately to generate better outcomes. The approach to policy-making must be more bottom-up, which is described as having a better ability to take account of geographical variations, differing technical possibilities and the rural-urban divide in Ireland, and allowing transport solutions to be tailored to local contexts. It also means that policy-making and research should focus on the social practice of travel as the primary unit of intervention, rather than the individual, if it is to promote appropriate changes in behaviour. The social practice approach considers the socio-cultural, technical and governance forces that shape practices of travel. Mobility is first and foremost a social practice, shaped by materials and social and cultural influences (Rau, 2015).

Second, in terms of top-down influence, the report recommends that policy making should seek to more explicitly challenge institutional priorities, by aligning with international sustainability thinking, specifically the ‘Avoid, Shift, Improve’ (ASI) framework, and by revising the mandates of all public bodies in the transport sector to include a statutory commitment to prioritising low-carbon transport. It also recommends more explicit high-level direction from central government, in particular DTTAS but also from whole-of-government, to steer investors, consumers and citizens towards a low-carbon future. In addition, it recommends that the public sector lead by example, in relation to issues such as electric car fleets and revisions to car mileage payments.

Third, the report argues that there is a need to look closely at the profile and relationship of transport institutions. The authors paint a picture of a fragmented governance landscape and suggest a number of institutional mechanisms that could be pursued in order to overcome or improve this fragmentation. These include taskforces; in particular, the Low Emissions Vehicle Taskforce which brings actors together to unblock policy action for EV incentivisation; multi-modal transport hubs that connect public, private and active transport modes; forums of peer learning, and deliberative fora for stakeholder and citizen participation, building on the model of the Citizens’ Assembly. The report also argues that there is a need for more evidence-based policymaking to advance the low-carbon transition in Irish transport.
The Council welcomes the research summarised above and its insights into Irish transport, institutions and climate action. It provides a timely opportunity to explore two specific aspects of the transport challenge and then to look beyond transport to the wider and evolving context in Irish climate-change policy.

First, the report demonstrates the complexity of the climate-change challenge in transport, including an emphasis on institutions, policy and practices. It recognises that progressing the transition to a low-carbon transport system will require a combination of action on infrastructure, improved public policy, new social norms and enhanced knowledge and skills. It is recognised that transport systems need to change in way that yields broad benefits—lower emissions and less air pollution, accidents and congestion—a long-standing policy goal of the European Union (Gössling et al., 2019). The research recognises that, worldwide, there is a shift in transport policy and planning towards sustainable mobility. Future mobility systems will enable people to get around in a way that is user-centred, flexible, low-carbon and intermodal. Internationally, change in mobility systems is happening quickly, through digital and technological innovation, with trials of demand-responsive transport, concepts of ‘mobility as a service’, and testing of autonomous vehicles (Deloitte, 2018: 5). Consequently, policies and programmes will have to target several policy objectives simultaneously: to reduce emissions, lower travel costs, improve mobility, support better community health through reduced local air pollution and physical activities from modal shift, and ensure greater energy security, improved safety and timing savings through reducing traffic congestion (IPCC 2014).

It is useful to identify the precise reasons for the complexity of the transition to a low-carbon transport system. Below we suggest that it arises not only from the somewhat fragmented institutional landscape in Irish transport but, more fundamentally, from uncertainty about the steps to a low-carbon transport system. This, we suggest, has implications for all aspects of climate-change policy in transport. Indeed, once we recognise that transport is not unique in this regard, we come to see the full complexity of the climate-change policy challenge.

Second, the report advocates both stronger top-down direction in climate change policy and creation of more bottom-up processes for innovation and engagement. While these recommendations may seem contradictory—and understandably the report does not go into detail on how they can be combined—the Council has no doubt that there is a valid and important point involved. To explain this, we point to institutional arrangements that can combine some of the impetus of top-down government with the engagement and experimentation of the bottom-up governance processes. We believe that such arrangements are increasingly in

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2 The Council notes that its research and focus at this time do not consider the significance and challenge of reducing emissions in aviation and shipping. Direct emissions from aviation accounts for about three per cent of the EU’s total GHG emissions. [https://ec.europa.eu/clima/policies/transport/aviation_en](https://ec.europa.eu/clima/policies/transport/aviation_en)
evidence, both nationally and internationally. But what does such a policy approach look like? This question is addressed in Section 1.3. However, before that, it is necessary to consider the origins and implications of complexity and uncertainty in transport.

1.2.1 The Origins and Implications of Complexity and Uncertainty in Transport

A common theme in many policy documents on climate change, including those from some international organisations and high-profile international analysts, is that addressing climate change is easy and cheap—the failure to date being adequately explained by lack of political will to apply known solutions. But the report by Devaney and Torney suggests that the climate-change challenge in transport is complex and difficult.

This was also evident at the recent High-Level Consultative Forum on the ‘All of Government Plan on Climate Disruption’, held in Croke Park on 18th January 2019. In the breakout sessions on transport, among a group of knowledgeable transport-sector actors and experts, nobody believed that achieving a low-carbon transport system is easy or cheap. The shared acknowledgement of the complexity of the challenge in transport has a number of implications that were evident in the discussion.

First, the barriers to and costs of adopting low-carbon transport are highly diverse across many dimensions: including urban/rural/suburban, age, family composition, passenger versus freight, and private versus commercial. Consequently, it is necessary to move beyond the search for simple solutions, so common in this and other policy areas.

Second, the barriers and costs are not only uncertain, but contested. In the discussion at the High-Level Consultative Forum, there were divergent views on costs and possibilities, voiced by people equally deeply involved in the transport sector. This raises doubts about one influential approach to climate-change policy: the idea of designing policy by identifying, costing, ranking and choosing mitigation measures in an ex ante analysis (such as a national or sectoral marginal abatement cost curve or MACC). As we discuss below, because of the complexity and uncertainty of mitigation actions, it is necessary to get much closer to the front line in order to identify the possibilities, costs and trade-offs. Having done so, it is

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3 Marginal Abatement Cost Curves (MACCs) are usually presented as bar graphs, in which the width of each bar represents the estimated effectiveness of a given mitigation measure, and the height of the bar represents its estimated cost (negative if there are net savings, positive if the abatement measures do not pay for themselves). Ordering the policies by the height of the bar, from those that save the most to those that cost the most, is an effective way of highlighting the estimated cost-effectiveness of alternative mitigation actions.
necessary to tailor and target policy actions to a variety of different contexts. This, in turn, requires the engagement of many more actors than expert analysts.

Third, these features have further implications for one of the most central elements of international and national climate-change policy: targets and timetables. The transition to a low-carbon economy undoubtedly needs strong policy, institutional and legal drivers; but, in a context of complexity and uncertainty, how should we go about setting targets? What commitments can sectors make with confidence? Indeed, in the transport discussion in the High-Level Consultative Forum, actors in the sector argued that targets are often set at the wrong level. Below, we discuss the idea that targets need to be more actionable and within the sphere of control of the various actors. Indeed, we show that this is the approach in areas where targets of various kinds are effective in driving improvement—such as in Origin Green and energy efficiency.

Fourth, these facts—about costs, complexity, uncertainty, contextualisation and engagement—imply that the order or sequence of policy actions matters. As new technical mitigation possibilities become known and available, it becomes more feasible to introduce other measures, such as taxes or congestion charges that incentivise low-carbon patterns. Two clear examples in transport are investment in infrastructure and provision of effective public transport, which can open the way to tightening of economic incentives.

Finally, taken together, these features of the challenge raise the following central question for climate-change policy: what process of knowledge generation, data use, learning, policy-making, engagement and ratcheting is necessary to generate, trial, tailor and generalise solutions?

Governments are increasingly recognising this uncertainty. In the case of transport, this is evident in their efforts to design flexible and responsive institutions and processes to drive future developments in mobility. A recent UK strategy emphasises the importance of flexible, supporting and research-informed decisions. It highlights the value of a flexible regulatory framework (including for emerging areas like micro-mobility); supporting industry and local leaders (including fostering experimentation and trialling), and ensuring that government decision-making is robust (with an evidence-based approach) (Department of Transport, 2019:9).

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4 The Council wishes to acknowledge Laura Devaney’s helpful suggestions.
1.3 Is Transport Unique? Uncertainty in Climate-Change Policy and its Governance Implications

Actors and experts on transport readily and unanimously state that neither they, nor any external expert, know how to fully achieve the transition to a carbon-neutral mobility system. They openly differ on the actions that are feasible and the costs that would arise. Is transport unique in these respects?

As noted above, these facts—concerning costs, complexity, uncertainty and contextualisation—so evident in transport, have implications for many core aspects of climate-change policy: policy analysis, targets, regulation, economic instruments and, of course, achieving agreement on the transition.

The discussion of transport resonates with wider debates on climate-change policy. The two influential background claims are that the actions necessary to achieve a low-carbon economy and society are largely known, and that they can be implemented relatively cheaply. These claims have an undoubted function in helping to galvanise discussion of the climate-change challenge. Indeed, keeping and increasing the momentum for action is critical. However, both national and international experience strongly suggests that there are profound uncertainties involved in climate change, on at least four fronts:

i. uncertainty concerning which technologies and solutions can create a low-carbon economy and society;

ii. uncertainty regarding their costs, and, it seems, disbelief in the claim that the transition to a low-carbon economy can be achieved at a small percentage of current income;

iii. uncertainty about the willingness to bear these uncertain costs, at both international level (between states), and at national level (between policymakers, society and social groups), and, in consequence:

iv. uncertainty about how to achieve such a profound systemic transition, which has technical, social and cognitive dimensions (NESC Secretariat, 2012a; Sabel et al., 2019 forthcoming; Sabel & Victor, 2017).

Indeed, this uncertainty is increasingly recognised in the switch, at the heart of the Paris Agreement, from the long-pursued goal of top-down mandatory targets and timetables to a more bottom-up approach based on states’ Intended Nationally Determined Contributions (INDCs) (Oberthür, 2016; UNFCCC, 2015).

Consequently, not only in transport but in climate-change policy more widely, we return to the central question posed above: what kind of process is necessary to generate, tailor and generalise solutions?
When the climate-change policy challenge is carefully characterised, it becomes clear that it requires a combination of at least three different forms of public governance—traditionally seen as more-or-less incompatible with one another:

- It involves substantial costs and distributional effects and is, therefore, unavoidably political.

- It is a long-term structural challenge and therefore requires strategic action and major investments by governments and others.

- It faces huge and pervasive uncertainty and complexity—challenges that tend to require complex processes of networking, experimentation, participation, innovation and learning.

This combination of high-level commitment and strategy, on the one hand, with bottom-up innovation, on the other, makes climate change a profound governance and collective challenge that has yet to be resolved at international, European or national level.

It seems to require new thinking and approaches on at least three fronts:

- new approaches to the policy and innovation process;

- new understanding of how knowledge generation and policy analysis can contribute to addressing the climate-change policy challenge, and

- new kinds of engagement and participation to generate solutions, build legitimacy and buy-in, and engage the relevant actors in applying them.

The Council recognises the important current work of the Oireachtas and Government in mapping and making progress on these fronts. It has a number of complementary suggestions on how to achieve the required combination of high-level top-down drive and bottom-up innovation and execution.
1.4 Driving Emissions Downwards in a Context of Uncertainty: Linking Top-Down and Bottom-Up Processes

Given the urgency and seriousness of climate change, there is no chance of success without a strong governmental vision and commitment, supported by wide societal engagement. The Council underlines the importance of the UN Sustainable Development Goals and their implementation. They provide a vision, framework and potential for policy coherence for decarbonisation.\(^5\)

The Council suggests that one way to formulate the indispensable high-level element is through a mission-oriented approach to the climate-change challenge. Mazzacuto defines mission-oriented policies as ‘public policies that draw on frontier knowledge to attain specific goals’ (Mazzacuto, 2018a: 804). Missions, like going to the moon, require diverse actors, both public and private, and diverse sectors to innovate (e.g. going to the moon required innovation in aeronautics, robotics, textiles and nutrition). At the same time, to be successful they must enable bottom-up experimentation and learning so that the innovation process itself is nurtured through dynamic feedback loops and serendipity (Rodrik, 2004; Mazzacuto, 2018a: 803). She argues that such capabilities have to be deliberately nurtured in the public sector (Mazzacuto, 2018b: 19). In the context of dealing with complex problems like climate change, it has been argued that large, real-life laboratories will have a critical role in overcoming social, political and cultural barriers (Bergamaschi et al., 2019: 7).

The mission statement is critical: it tells actors and wider society about the intended destination, it creates some certainty. However, given the degree of complexity and uncertainty, it provides little insight into how to get there, and arguably it cannot do so; much of the knowledge needed to fully decarbonise transport or other sectors does not yet exist, or is not yet easily accessed. Consequently, along with vision there is a need to create both a guiding strategy and a policy process that can force the pace of learning about success and failure.

Given that the transition to a low-carbon society will require change in almost all aspects of our economy and society, the guiding strategy has to focus not only on achieving necessary decarbonisation, but also on the remaking of many of the core economic and social systems: production, consumption, mobility, health and well-being, and protection of the natural environment, including biodiversity and habitats.\(^6\) Therefore, to be inclusive, just and genuinely societal, the overall guiding

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\(^5\) Ireland has prepared the Sustainable Development Goals National Implementation Plan 2018–2020 as a whole-of-government approach to implement the SDGs.

\(^6\) The UK Future of Mobility Urban Strategy is an interesting example of an overarching effort to establish a stronger link between decarbonisation and well-being. The strategy argues that ‘the best transport
strategy must go beyond decarbonisation (Bruyninckx, 2018). Put another way, decarbonisation must be compatible with the achievement of prosperity, well-being and inclusion. This means that it must be achieved in a way that is consistent with a vibrant and sustainable economy, well-funded public services and social infrastructure, a high level of employment and meaningful work, incomes that allow people to live life with dignity, relevant education, and affordable housing and quality neighbourhoods (Social Justice Ireland, 2019).

Is it possible to connect the high-level mission and the guiding strategy, on the one hand, with the creation and application of tailored mitigation actions by government, business and civil society, on the other? We believe that it is. Indeed, as argued in earlier NESC work on Ireland in the EU, in a range of policy areas at European level, in Ireland and elsewhere, there is evidence of the emergence of a policy and regulatory approach that precisely combines elements of top-down drive with bottom-up innovation (NESC, 2010).

This approach has four elements. First, framework goals are established (such as full employment, ‘good water status’ or social inclusion) and initial measures for gauging their achievement are agreed. Second, entities closer to the problem (such as executive or regulatory agencies or, in the case of EU directives, member states) are given the freedom to pursue these goals as they see fit. Third, in return for this autonomy, they must regularly report on their performance, as measured by agreed indicators, and participate in a peer review in which their results are compared with those pursuing the same general ends. Fourth, learning from this, the framework goals, metrics and procedures are themselves periodically revised by the actors who initially established them, often augmented by new participants whose knowledge and cooperation are seen as indispensable (NESC, 2010: 36-8; Sabel and Zeitlin, 2008: 273-4). To ensure engagement and genuine effort to achieve the agreed goal, such policies require an element of sanction; this can take a number of forms, including legal norms, market pressure and conditional access to large markets.

To apply this approach in Irish climate-change policy, Government needs to create and direct a new process to monitor progress on the main carbon-neutrality building blocks and project areas, organise disciplined joint exploration of successes and failures, and drive agencies and their networks to push the boundaries of knowledge and practice on how to achieve decarbonisation.

This approach is necessary because of the complexity and uncertainty at the heart of the climate-change policy challenge. This means that only agencies and other organisations close to the front line are capable of turning high-level climate policy
goals and strategies into operational programmes focused on both ‘how much’ and ‘how to’ achieve decarbonisation. We see the creation of a widened APJ-type process as a necessary step in creating a governance system that animates, learns from and pushes networks of public and private actors to ever-greater decarbonisation. This requirement and process is illustrated in Figure 1.

Figure 1: Key Elements of a New Process

In a dynamic process driving continuous improvement of this kind, innovation, precise and challenging targets, fine-grained measurement, monitoring and review play a critical role. The aim of the process is to animate and drive action in the

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7 This design reflects the way in which the highly successful Montreal Protocol is institutionalised (Greene, 1998); (de Búrca et al., 2013). This kind of institutional arrangement, which links front-line problem solving with high-level review and revision, is often seen as a reflection of, and only appropriate to, international cooperation. But it is increasingly recognised that the nature of the climate-change policy problem and the degree of experimentation and learning necessary to address it mean it also has relevance at national level.
departments, agencies and the networks where expert knowledge and capability reside.

Figure 2 illustrates how this process of continuous improvement and review should drive emissions downwards over time.

**Figure 2: Driving Emissions Downwards Using Continuous Process of Review**

In this approach, the role of the centre of government (CoG), or a specific government department with responsibility for sectoral activity, is to ensure and organise the *joint exploration* of successes and failures and to push departments, agencies and networks to continuously advance the boundaries of knowledge and practice on ‘how to’ decarbonise within a broader sustainable development framework. Its main authority is government or departmental power to convene the relevant actors and should sanction organisations that refuse to engage in good faith. Critically, in delivering on actions, there needs to be accountability and responsibility within departments and agencies, and feedback given to stakeholders on progress.
This national exercise of government authority and sanction would work under Ireland’s legal obligations within the EU, including the National Energy and Climate Plan and its commitment to the Paris Agreement on climate change.\(^8\)

The Council suggests that a process that drives and pushes continuous improvement of this type is necessary and possible in Ireland’s enhanced approach to climate change, given the added momentum from an ambitious mission-oriented approach. The Government intention to apply an APJ-type approach to climate-change policy is a major step in this direction. Our argument also bears close similarity to the proposal of the Joint Committee on Climate Action to establish a Climate Action Implementation Board (Joint Oireachtas Committee on Climate Action, 2019). The committee proposes that this be established in the Department of the Taoiseach and be co-chaired by the secretary general of that department and the Department of Communications, Climate Action and Environment (DCCAE). It argues that it should be given the resources needed to provide a secretariat to support its work of monitoring and coordinating action on climate change. This board, leading and building on the work of all the public agencies relevant to climate change, could bring both a high level of accountability and monitoring of progress.

In the case of climate change, the high degree of complexity and uncertainty suggests that an APJ-type approach needs to be widened. Indeed, there are several elements of the necessary widening. First, as well as checking the \textit{implementation} of a list of \textit{defined actions}, it also needs to create processes that empower front-line agencies to explore, find, trial and cost \textit{new solutions} tailored to specific contexts. Second, in doing so, the agencies will have to engage and collaborate with both each other and with the non-government actors in their respective networks. Third, the role of the central APJ-type entity would include pooling the learning from action at the front line in various sectors. The centre of government will have a key role in prompting cooperation between departments and sectors in order to find and exploit co-benefits for health, well-being and the environment.

\subsection{1.4.1 Processes for Future Climate Action in Transport}

What might these processes look like in the transport sector? To illustrate, the Council highlights three key activities and processes that would support future climate action in the sector:

\begin{itemize}
\item This Governance of the Energy Union is the framework designed to achieve the 2030 and long-term objectives and targets of the European Energy Union, in line with the 2015 Paris Agreement on climate change. The EU’s 2030 energy and climate targets are: reducing GHG emissions by 40 per cent (compared to 1990); achieving 32 per cent use of renewable energy sources, and meeting a 32 per cent target in energy efficiency. See \url{https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/governance-energy-union/national-energy-climate-plans}.\(^8\)
\end{itemize}
i. taskforces that search for appropriate solutions;

ii. processes that support and scale up promising solutions and innovation, and

iii. an enhanced national research and knowledge-generation process.

**Taskforces that search for appropriate solutions**

The paper by Devaney and Torney highlights the work of the LEV Taskforce, which seems to have the capacity to grapple with the complexity and uncertainty that characterises the transport sector. The LEV Taskforce succeeded in bringing together the diverse range of state actors as well as providing a forum for interaction with a wider array of stakeholders (Box 2). This approach illustrates one promising approach to the exploration of barriers and the search for solutions.

The Council recommends that Government consider the establishment of further problem-solving taskforces in transport. Running such taskforces, and learning from their work, should form a core part of the climate policy process, and not be tangential to it. Appropriate skills, expertise and capacity will be required in departments and agencies to identify issues suitable for taskforces of this kind, to engage and animate them, and draw and build on any learning so that they inform and enrich future policy.
Box 2: LEV Taskforce

The objective of the LEV Taskforce is to ‘[p]resent a range of measures and options that will assist in accelerating the deployment of LEVs in Ireland’ (Government of Ireland, 2018). It is chaired jointly by the Department of Transport, Tourism and Sport (DTTAS) and Department of Communications, Climate Action and Environment (DCCAE), and includes representatives across the public sector.

It consists of three working groups, dealing respectively with: (i) market growth stimuli, visibility and public leadership, (ii) infrastructure, regulation, pricing, and (iii) legislation and building regulations. It has conducted consultations with a wide range of industry, stakeholder and representative groups during the course of its work.

Supporting and scaling up promising solutions and innovation

To drive emissions down at sufficient pace will require a new co-ordinating force from the top, such as in the APJ-type approach. Breakthroughs, innovations and effective ways of moving towards low-carbon transport and mobility must be supported by the policy system, recognising that the State is equipped with a variety of tools and approaches. These include regulation, acting as facilitator and convenor, and the traditional instruments that shape incentives, such as taxes, charges and subsidies. Solutions and innovation should be supported collaboratively and mindfully, watching and learning for ways to improve and scale up, with due regard to public expenditure rules and standards.  

Regulation and standard-setting will have an important role in the transport sector. Devaney and Torney suggest that freight transport is an area in which the central policy system could be more pro-active in building on momentum in the private sector. The development of better regulatory standards for road hauliers is a practical means of moving towards more sustainable transport. The TruckSafe accreditation scheme is promoted by the Freight Transport Association of Ireland (FTAI). Such industry standards can help to address competing priorities while working towards decarbonisation, but only if they are adopted by all freight categories and supported by the wider institutional architecture.

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9 In the area of transport and mobility, similar processes and supporting capabilities have been identified in international work. For example, a report from the Deloitte Centre for Government Insights outlines key attributes and capabilities that government needs, highlighting its role as strategist, convenor and catalyst, regulator and operator (Deloitte, 2018).
The next step in the evolution of this standard would be to consider how such an industry standard could be rolled out across the sector and how it would be monitored, reviewed and upgraded over time. There are insights to be gained from how standards are being developed and diffused in agriculture and food (Box 3). To ensure full compliance with any standard or set of regulations will require a potential sanction or penalty for those who might not be willing to comply.

**Box 3: Sustainability Standards in Agriculture and Food**

In 2012, Bord Bia launched Origin Green, a quality and sustainability certification programme for the food and drink industry. The development of the standard began with a review of the requirements of key customers, such as Unilever, and establishment of a Technical Advisory Committee (TAC) with members from Teagasc, the Food Safety Authority of Ireland, DAFM, and organisations of farmers and food processors. In 2013 the TAC produced the Sustainable Dairy Assurance Scheme (SDAS), to be reviewed every 3–5 years.

Under the SDAS, farms are audited every 18 months. Audits check for compliance with 170 criteria (seven critical and 163 general) and all auditees must be in full compliance with the standard before certification can be awarded. The seven critical criteria refer to issues of food safety and traceability while the 163 general ones have a broader scope and include issues such as dairy hygiene and animal welfare. There are 30 sustainability criteria, such as soil testing of acidity and phosphate levels at least every five years and recovery of heat generated by refrigeration for other use.\(^{10}\)

Non-compliances are notified to the farmer’s primary buyer, generally a coop, which may provide technical assistance to help respond to the problem. There is a focus on ensuring maximum compliance with the standard. The national compliance rate in 2017 was 84 per cent, and in some co-operatives was virtually 100 per cent. In 2018 some coops began applying penalties to suppliers without certification (Bord Bia, 2013; Sabel et al., 2019 forthcoming).

The challenge in transport is to begin to explore those practices and standards that can result in lower emissions or more sustainable transport. These might range from technological standards on the levels of bio-fuels, to the rules and restrictions

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\(^{10}\) Information collected under these criteria is used to calculate a sustainability performance for the farm but is not used in the calculation of the audit score.
on driving or parking. Once workable ideas are developed, the focus should switch to how to ensure that these are generalisable and enforceable.\textsuperscript{11}

Another approach to supporting and scaling up solutions is through demonstration or pilot projects. International practice can inform the processes and engagement necessary to deliver such projects beyond the pilot stage. One interesting example is Oslo’s approach to parking restrictions in the city centre. This involved removal of parking spots, a more gradual policy approach than restricting car access into the city centre, and demonstrating that, in doing so, pedestrianised areas increased footfall (Peters, 2019).

Other initiatives may require facilitating structured dialogue among interest groups and would represent an example of purposive governance; i.e. governance that seeks to resolve societal problems, reconciling diverging interests, managing conflicts and protecting the society’s long-term interests (CEPAL, 2016). Many examples exist of business and civil society initiatives that already recognise the co-benefits from climate action and the energy transition. One example is the Large Industry Energy Network, run by the Sustainable Energy Authority of Ireland (SEAI); another is the Leaders’ Group on Sustainability, a Business in the Community initiative, in which companies pledge to reduce carbon emissions and set sustainability standards.\textsuperscript{12} In moving towards a new combination of top-down and bottom-up action and deliberation, the Public Participation Networks (PPNs) could have a role. They have 15,000 local community and voluntary and environmental organisations signed up across all 31 local authorities. The PPNs are currently working on well-being statements, and transport issues figure in many parts of the country. Other potentially significant networks are the Climate Action Regional Offices (CAROs) and the regional and local groups convened by the National Dialogue on Climate Action.

\textbf{An enhanced national mobility research and knowledge-generation process}

It is notable that transport, unlike agriculture (Teagasc) and energy (SEAI), is not supported by a dedicated national research resource capable of exploring and understanding the specific challenges and opportunities for climate change and sustainable development. While the EPA research programme has included transport-related projects, these have not been of the scale, breadth or type of the work by Teagasc on food and agriculture or SEAI on energy.

\textsuperscript{11} One study analysing 148 behavioural scenarios in 10 countries found that living car free and avoiding air travel were the most impactful actions that an individual could take (aside from having one less child). Changing such behaviours also has the potential to contribute to systemic change (e.g. living car-free reduces the need to build more roads) as well as offering various co-benefits (see Section 5) (McLoughlin et al., 2019).

\textsuperscript{12} [https://www.seai.ie/energy-in-business/lien/; https://www.bitc.ie/the-leaders-group/the-low-carbon-pledge/]
Progress towards a sustainable mobility system needs to be supported by an enhanced research and knowledge-generating capacity and capability. A conventional view of ‘evidence-based policy’ would suggest that this could be provided by more external research, supported by increased research funding. However, reference to the agriculture and energy sectors suggests something different. What is required is research that is close to practice, helps in finding new solutions and identifies obstacles and challenges to progress (see Box 4). This could include experimental research and trials (on issues such as parking policy, cycling and safety, prioritising pedestrians, and congestion charges); engaging people in finding and seeing the co-benefits of a sustainable mobility system; developing best-practice guidelines and standards, and advisory support (for example, in creating safe walking routes in rural areas). Such a knowledge-generating and research process would support the development of generalisable solutions that would make transport more sustainable. The implementation of solutions that emerge from such a practice-based approach would be more achievable, but still require social and behavioural change supports to ensure widespread adoption. A further point is that key insights from practical action in one sector can inform the approach in other sectors, creating the potential for cross-fertilisation and the delivery of co-benefits.

Box 4:  Research and Experimental Capacity to Understand Solutions and Innovation in Agriculture

Teagasc is the national body providing integrated research, advisory and training services to the agriculture/food industry and rural communities. One example of its practice is the Agricultural Catchments Programme, which examines six catchment areas that differ in soil types, geology and types of farming. This allows Teagasc to monitor and model the relations among farm management practices, the transfer of nutrients from their source to various water receptors, and changes in water quality. It provides an analytical base upon which to devise farm management practices that help reduce the impact of agriculture on water quality. It also helps ensure that the Nitrates Action Programme continuously improves, and therefore that the derogation (allowing greater nutrient application than originally specified in the Nitrates Directive) continues to be available to Irish farmers.

To make tangible progress on improving water quality, the EPA created in 2013 a catchment science and management unit. This now provides an evidence base that the EPA, in consultation with a wide range of experts and stakeholders, uses to identify the priority areas in which action is needed. A new cadre of advisors has been created, jointly funded by government and industry, which will now work with farmers to help reduce the impact of their activity on water quality.

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13 https://www.teagasc.ie/about/our-organisation/
14 https://www.teagasc.ie/environment/water-quality/agricultural-catchments/
However, as noted above, potential solutions will have little impact unless there is willingness among decision-makers to identify the consequence or sanction that will apply to those failing to adopt best practice or to comply with regulations. It is important to recognise that an improved evidence base increases the confidence that decision-makers can have in setting appropriate incentives and penalties.

In relation to modal shift and behavioural change initiatives, it is not always known what might work more widely and how to deliver this. It may require tailored, focused interventions that carefully align infrastructure, such as cycling paths, with behavioural programmes (Box 5). Further research on experimental initiatives that work with local communities to develop modal shift solutions could be a key to developing social and behavioural as well as technological and infrastructural solutions.

Box 5: Smarter Travel Areas Evaluation

An evaluation of the Smarter Travel Areas initiative was conducted by AECOM for the modal-shift initiatives in Dungarvan, Westport and Limerick. These included cycle paths and some behavioural programmes. Interim results pointed to limited modal-shift results overall at the interim stage. This included detailed analysis of the local and broader barriers, including cultural and social, that may have lessened the shift away from car travel such as poor perception of safety, dominant car culture, parental concerns, and low levels of cycling confidence, among others. They recommended that ‘a combined approach to both infrastructure and behavioural change measures is needed to facilitate and encourage travel behaviour change’ (Cantwell & Brick, 2015).

Climate action requires a much deeper engagement with complex social processes that can reveal the limits of existing societal patterns and open up new thinking (Fazey et al., 2018). As Devaney and Torney argue, there is a need for more diverse, interdisciplinary research, including from the social and behavioural sciences. This would complement any economic and technical modelling. An enhanced knowledge-generation and research system, of the kind outlined above, would augment—indeed, transform—the existing approach to policy analysis for climate-change policy. That approach focuses largely on prior modelling of possible mitigation measures and the use of a MAC curve to cost, rank and choose least-cost policy actions. However, the understanding of MAC curves is evolving, reflecting the increased recognition of the complexity and uncertainty in climate-change policy.
Indeed, Irish work has figured prominently in this evolution. Researchers in Teagasc took the lead in convening six teams from EU member states to review the state of the art in the construction and conception of agricultural MACCs (Eory et al., 2018). The central theme in exchanges among the teams was the need to move from high levels of aggregation to recognising heterogeneity in climate, soil and hydrological conditions, and to differentiate mitigation strategies accordingly. They agreed on the need ‘to reduce the uncertainty related to heterogeneity’ by using ‘a disaggregated approach’, using data from multiple sources and on a wide range of variables (Eory et al., 2018: 708). A summary of the group’s findings qualifies the conventional view of MACCs and the policy and scientific understandings informing them:

As authors and users of agricultural MACCs, we have learnt to appreciate the main purpose of engineering MACCS, which is not necessarily the accurate prediction of the total abatement potential and associated costs. Instead, their main purpose is to provide a coherent forum for the extremely complex discussions surrounding agricultural GHG mitigation, and to visualise opportunities and low hanging fruit in a single graphic and manuscript (Eory et al., 2018: 714).

This has profound implications for policy analysis and participation in climate policy. Because ‘the journey of developing a MACC is at least as important as the final product’, evaluations of policy alternatives are most effective ‘when all actors are involved in the development of MACCs from the start, including both disciplinary and generalist researchers, policy makers, measurement, reporting and verification experts and practitioners’ (ibid.). MACCs are to become an instrument for highly contextualised exploration, implementation and assessment of mitigation possibilities rather than a tool for illustrating established results (Sabel et al., 2019 forthcoming).

Likewise, recent research on options for ‘climate smart land management’ for Atlantic economies suggested that the cost-effectiveness of land-use and land-management options may be improved if management strategies are customised for contrasting soil types (Schulte et al., 2016). This creates the prospect of ‘functional land management’, in which enhanced data about soils might have implications for the overall approach to agricultural and social policy in marginal rural areas.
1.5 Conclusion: A Policy Process that Drives Ireland’s Ambition on Climate Change

There is now a strong societal, Oireachtas and governmental consensus on the need to take more ambitious action on climate change. This NESC report seeks to contribute to the national desire and effort to do more. It argues for an approach to the climate-change policy process that will help turn the new ambition into practical actions and ever-increasing decarbonisation.

The report highlights that, contrary to views often stated, there are few fully known, easy or cheap options that effectively address climate change. We have shown, using transport as an entry point, that the challenges we face are extremely complex and difficult. The necessary response to this uncertainty cannot be inaction and speculative deliberation about the correct, ideal or even most cost-effective course of action. Instead, it must be practical action on many fronts, intensive monitoring and review, learning and ratcheting emissions reduction. Delivering action will require Government leadership, both to set policy direction and to achieve societal support and action in implementing the policy measures required if Ireland is to decarbonise its economy and society. Some actions, such as providing designated cycling paths and retrofitting housing, will have many substantial and early co-benefits such as improvements to air quality, health and well-being, while the positive impacts of other decisions will necessarily evolve over time.

The approach outlined in this report centres on the emerging Government commitment to an ambitious mission-orientated goal and a guiding strategy. It sets out a policy process of continuous learning and review. The Council argues that this process would begin with specific tasks linked to goals and targets that are meaningful within each sector. Agencies and other frontline actors, having played a role in formulating the initial plans, must take responsibility for making progress, including discovery of the precise costs and benefits associated with particular actions.

Recognising the uncertainty and complexity facing those taking charge of actions, the Council argues that there needs to be a commitment to explore alternative options, to review successes and failures, and to revise and ratchet up goals and targets in the light of ongoing experiences. Central government has a key role in animating such exploration, building the capacity for review and monitoring and supporting analysis and comparison of outcomes. This is the logic of the Climate Action Implementation Board, proposed by the Joint Committee on Climate Action. Through it, Government should reset and infuse Ireland’s climate-change goals and targets with ever-increasing precision and ambition, using the knowledge generated in the process and that coming from research. It is this process of ratcheting up ambition, based on examination of what is possible, that will move Ireland towards a low-carbon economy and society.
Bibliography


<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Date</th>
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<tbody>
<tr>
<td>2.</td>
<td>Comments on Capital Taxation Proposals</td>
<td>1974</td>
</tr>
<tr>
<td>4.</td>
<td>Regional Policy in Ireland: A Review</td>
<td>1975</td>
</tr>
<tr>
<td>7.</td>
<td>Jobs and Living Standards: Projects and Implications</td>
<td>1975</td>
</tr>
<tr>
<td>10.</td>
<td>Causes and Effects of Inflation in Ireland</td>
<td>1975</td>
</tr>
<tr>
<td>12.</td>
<td>Education Expenditure in Ireland</td>
<td>1976</td>
</tr>
<tr>
<td>15.</td>
<td>The Taxation of Farming Profits</td>
<td>1976</td>
</tr>
<tr>
<td>16.</td>
<td>Some Aspects of Finance for Owner-Occupied Housing</td>
<td>1976</td>
</tr>
<tr>
<td>20.</td>
<td>The Future of Public Expenditure</td>
<td>1976</td>
</tr>
<tr>
<td>22.</td>
<td>Institutional Arrangements for Regional Economic Development</td>
<td>1976</td>
</tr>
<tr>
<td>23.</td>
<td>Report on Housing Subsidies</td>
<td>1976</td>
</tr>
<tr>
<td>26.</td>
<td>Prelude to Planning</td>
<td>1976</td>
</tr>
<tr>
<td>No.</td>
<td>Title</td>
<td>Year(s)</td>
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<tr>
<td>28.</td>
<td>Service-type Employment and Regional Development</td>
<td>1977</td>
</tr>
<tr>
<td>29.</td>
<td>Some Major Issues in Health Policy</td>
<td>1977</td>
</tr>
<tr>
<td>30.</td>
<td>Personal Incomes by County in 1973</td>
<td>1977</td>
</tr>
<tr>
<td>31.</td>
<td>The Potential for Growth in Irish Tax Revenues</td>
<td>1977</td>
</tr>
<tr>
<td>33.</td>
<td>Comments on Economic and Social Development; 1976-1980</td>
<td>1977</td>
</tr>
<tr>
<td>34.</td>
<td>Alternative Growth Rates in Irish Agriculture</td>
<td>1977</td>
</tr>
<tr>
<td>37.</td>
<td>Integrated Approaches to Personal Income Taxes and Transfers</td>
<td>1978</td>
</tr>
<tr>
<td>38.</td>
<td>University and Selectivity: Social Services in Ireland</td>
<td>1978</td>
</tr>
<tr>
<td>40.</td>
<td>Policies to Accelerate Agricultural Development</td>
<td>1978</td>
</tr>
<tr>
<td>41.</td>
<td>Rural Areas: Change and Development</td>
<td>1978</td>
</tr>
<tr>
<td>42.</td>
<td>Report on Policies for Agricultural and Rural Development</td>
<td>1978</td>
</tr>
<tr>
<td>43.</td>
<td>Productivity and Management</td>
<td>1978</td>
</tr>
<tr>
<td>44.</td>
<td>Comments on Development: Full Employment</td>
<td>1978</td>
</tr>
<tr>
<td>45.</td>
<td>Urbanisation and Regional Development in Ireland</td>
<td>1979</td>
</tr>
<tr>
<td>46.</td>
<td>Irish Forestry Policy</td>
<td>1979</td>
</tr>
<tr>
<td>48.</td>
<td>Transport Policy</td>
<td>1980</td>
</tr>
<tr>
<td>49.</td>
<td>Enterprises in the Public Sector</td>
<td>1980</td>
</tr>
<tr>
<td>50.</td>
<td>Major Issues in Planning Services for Mentally and Physically Handicapped Persons</td>
<td>1980</td>
</tr>
<tr>
<td>51.</td>
<td>Personal Incomes by Regions:</td>
<td>1980</td>
</tr>
<tr>
<td>52.</td>
<td>Tourism Policy</td>
<td>1980</td>
</tr>
<tr>
<td>54.</td>
<td>The Future of the National Economic and Social Council</td>
<td>1981</td>
</tr>
<tr>
<td>55.</td>
<td>Urbanisation: Problems of Growth and Decay in Dublin</td>
<td>1981</td>
</tr>
<tr>
<td>58.</td>
<td>The Socio-Economic Position of Ireland within the</td>
<td></td>
</tr>
</tbody>
</table>
86. The Nature and Functioning of Labour Markets 1988
87. A Review of Housing Policy 1989
88. Ireland in the European Community: Performance, Prospects and Strategy 1989
90. The Economic and Social Implications of Emigration 1991
91. Women’s Participation in the Irish Labour Market 1992
92. The Impact of reform of the Common Agricultural Policy 1992
93. The Irish Economy in a Comparative Institutional Perspective 1993
94. The Association between Economic Growth and Employment 1993
95. Education and Training Policies for Economic and Social Development 1993
96. A Strategy for Competitiveness, Growth and Employment 1993
97. New Approaches to Rural Development 1995
99. Strategy into the Century 1996
100. Networking for Competitive Advantage 1996
103. Private Sector Investment in Ireland 1998
104. Opportunities, Challenges and Capacities for Choice, Overview, Conclusions and Recommendations 1999
105. Opportunities, Challenges and Capacities for Choice 1999
106. Review of the Poverty Proofing Process 2001
107. Benchmarking the Programme for Prosperity and Fairness 2002
108. National Progress Indicators 2002
110. An Investment in Quality: Services, Inclusion and Enterprise, Overview, Conclusions and Recommendations 2002
111. An Investment of Quality: Services, Inclusion and Enterprise 2003
112. Housing in Ireland: Performance and Policy 2004
<table>
<thead>
<tr>
<th>ID</th>
<th>Title</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>113</td>
<td>The Developmental Welfare State</td>
<td>2005</td>
</tr>
<tr>
<td>114</td>
<td>NESC Strategy 2006: People, Productivity and Purpose</td>
<td>2005</td>
</tr>
<tr>
<td>115</td>
<td>Migration Policy</td>
<td>2006</td>
</tr>
<tr>
<td>117</td>
<td>The Irish Economy in the Early 21st Century</td>
<td>2008</td>
</tr>
<tr>
<td>118</td>
<td>Ireland’s Five-Part Crisis: An Integrated National Response</td>
<td>2009</td>
</tr>
<tr>
<td>119</td>
<td>Well-being Matters: A Social Report for Ireland</td>
<td>2009</td>
</tr>
<tr>
<td>120</td>
<td>Next Steps in Addressing Ireland’s Five-Part Crisis: Combining Retrenchment with Reform</td>
<td>2009</td>
</tr>
<tr>
<td>121</td>
<td>The Euro: An Irish Perspective</td>
<td>2010</td>
</tr>
<tr>
<td>122</td>
<td>Re-finding Success in Europe: the Challenge for Irish Institutions and Policy</td>
<td>2010</td>
</tr>
<tr>
<td>123</td>
<td>Supports and Services for Unemployed Jobseekers: Challenges and Opportunities in a Time of Recession</td>
<td>2011</td>
</tr>
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