

Policy Brief

Visioning and Evaluating Long Term Transition

Our 2050

This is one of a series of policy briefs to summarize ongoing findings related to the research project, 'Our 2050 – Opportunities for Ireland in a Low Carbon Economy', which is on the economic and societal opportunities arising from the transition to a low carbon economy and the policies needed to achieve this transition



The Our 2050 project is addressing four key questions:

1. What will Ireland's future energy use look like? In particular, how will we generate electricity? How will we heat our buildings? What modes of transport will we use?
2. What technologies are most likely to play leading roles in Ireland's transition to a low carbon economy?
3. What strengths can Ireland play to, and what opportunities can Irish-based firms avail of?
4. What policies are needed? What do government, firms, universities and individuals need to do, individually and collectively, to achieve the transition?

This policy brief addresses the critical challenge faced when answering the fourth question.

Transitions to Sustainability

Governments around the world face a range of urgent challenges including climate change, resource depletion, environmental pollution, and rising inequality. A series of policy initiatives are underway in Ireland which aim to address these so called grand challenges. Such initiatives include the National Mitigation Plan for Climate Change, the National Policy Statement on the Bioeconomy, and the National Implementation Plan for the Sustainable Development Goals, among others.

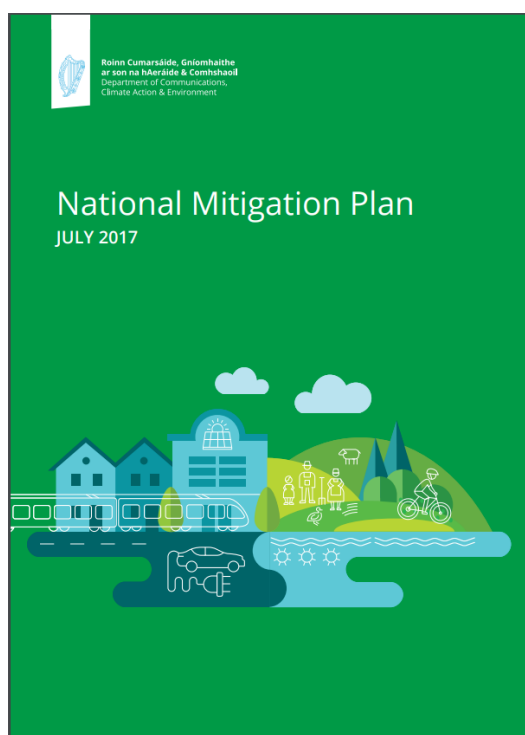
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Recent work by the OECD has shown that addressing grand challenges often involves fostering the transition of existing unsustainable sociotechnical systems (which provide the basics required for societies to function, such as food, energy, heating and transport), to more sustainable configurations. A policy framework, known as the system innovation framework, has been developed by the OECD to help guide policy makers in facilitating such transitions. The challenges involved include the need to develop a vision of what future sustainable systems will look like, what technologies are likely to play important roles in the future system, what infrastructures will be needed, and how business models and individual patterns of behaviour may need to change. System innovation also involves multiple, diverse stakeholders and requires numerous policy interventions, from funding for R&D, to infrastructure investments, to changes in macroeconomic policy.

This Policy Brief describes two ongoing policy initiatives aimed at fostering system change in Ireland – the climate transition and the transition to a bioeconomy - and compares the systems put in place for vision setting and for monitoring and evaluating these transitions. This comparison shows that common principles are guiding policymakers in these very different policy domains.

Ireland's Climate Transition

Developing the Vision – Ireland's first National Mitigation Plan is a statement of the different elements that constitute the Government's vision for Ireland's transition to a low carbon economy and society to mitigate against the danger of climate change. The Mitigation Plan has been developed in the context of international agreements, most importantly the 2015 Paris Agreement. The Paris Agreement puts in place a framework for all countries to take ambitious mitigation action to limit global warming to well below 2 degrees centigrade above pre-industrial levels, and to pursue efforts to limit the temperature increase to 1.5 degrees.



Under the Paris Agreement, the EU has made a commitment on emissions reduction targets for the EU as a whole. The contributions by each EU Member State are then subject to agreement among member states. Two parallel systems currently govern EU emissions reduction targets for all member states including Ireland. The Emissions Trading Scheme (ETS) is a cap and trade system for carbon dioxide associated with large industry and electricity generation installations. In parallel, an Effort Sharing agreement sets individual member state targets for non-ETS greenhouse gas emissions, which are comprised primarily of emissions associated with heating in buildings, transport, and agriculture. Ireland is currently not on track to meet the 2020 non-ETS target for emissions reduction and can purchase credits from other Member States to cover the shortfall.

Although more will need to be done, the National Mitigation Plan outlines Ireland's initial steps towards achieving the level of decarbonisation required under the Paris Agreement and reach the associated targets agreed with the EU. The Plan contains over 100 individual actions to address the challenge to 2020 and begins the process of developing medium to long term options to ensure the transition to a low carbon economy by 2050.

Implementation – System transitions require a whole-of-government approach. The National Mitigation Plan is therefore a whole-of-Government plan setting out the actions needed across key sectors, namely

Electricity Generation, the Built Environment, Transport, and Agriculture. The complexity of the climate transition means that it is not possible to specify in detail the policy measures that will be needed out to 2050. An iterative, adaptive approach is therefore being adopted, with the current National Mitigation Plan being the first of a series of National Mitigation Plans that will be prepared at least every five years. Each Mitigation Plan will also be updated during its lifetime through an Annual Transition Statement to the Oireachtas.

The first National Mitigation Plan and the Annual Transition Statement are part of an extensive governance framework that has been put in place to monitor and evaluate progress. This framework also includes the National Policy Position on Climate Action and Low Carbon Development 2014, the Climate Action and Low Carbon Development Act 2015, the National Adaptation Framework, an independent Climate Change Advisory Council, a High-Level Climate Action Steering Group, a Cabinet Committee on Infrastructure, Environment & Climate Action, a Technical Research and Modelling Group (TRAM), and Ireland's EU and UNFCCC reporting obligations.

Modelling of possible transition pathways to 2050 plays a key role in implementation by informing ongoing strategic choices and policy development. In addition, the National Mitigation Plan recognises that Ireland's climate transition is a whole of society challenge and not simply an exercise in top-down policy

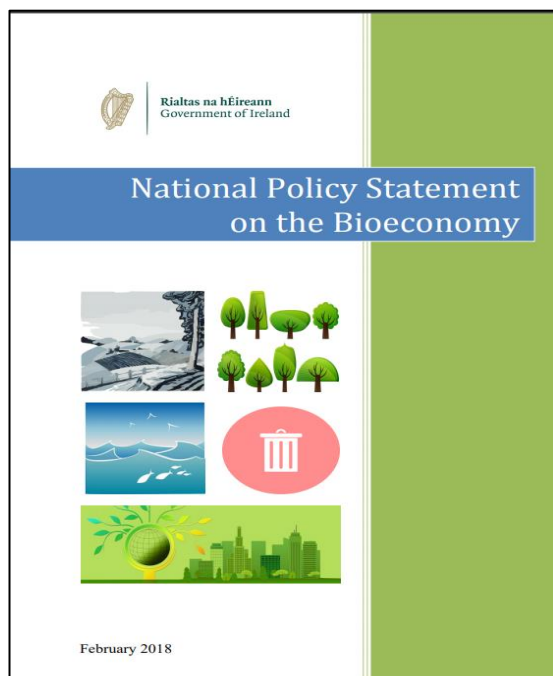
implementation. A National Dialogue on Climate Action has been established to provide an inclusive process of consensus-building across society on the transition.

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Metrics for Monitoring Transition – As outlined above, Ireland's targets for reductions in GHG emissions are negotiated within the context of the Paris Agreement, actioned via agreement at EU level. Three separate monitoring systems are now in place. Targets for greenhouse gas emissions associated with large industry and electricity generation installations in Ireland are governed by the EU Emissions Trading Scheme. Emissions associated with heating in buildings, transport, and agriculture are governed by the EU Effort Sharing agreement which sets binding targets for individual member states. These emission targets are accompanied by energy efficiency and renewable energy targets for 2020 and 2030. In parallel, Ireland has adopted a long-term goal of an aggregate reduction in carbon dioxide emissions of at least 80% (compared to 1990 levels) by 2050 across the electricity generation, built environment and transport sectors; and an approach to carbon neutrality in the agriculture and land-use sector, including forestry, which does not compromise capacity for sustainable food production.

Ireland's Transition to the Bioeconomy

Developing the Vision – The European Commission describe a bioeconomy as involving “the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy.” The transition to a bioeconomy will involve innovation in agri-food, the development of large scale biorefining technologies to replace fossil-based inputs in the production of chemicals and materials, the growth of bioenergy, and the use of circular economy principles to reduce waste and conserve natural resources. Potential actors in the bioeconomy include farmers and agri-food businesses, marine and maritime industries, forestry, the



water and waste management sector, and energy suppliers, among others.

Experience in other countries has shown that the exact definition of the bioeconomy, and the associated vision created to guide investment, can differ significantly depending on each country's natural resource strengths. In addition, the Ministry tasked with leading the development of the bioeconomy can have an impact on the relative emphasis given to different sectors within the overall vision.

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In Ireland, an interdepartmental Group, chaired by the Department of the Taoiseach, was established in 2016 to draft a high-level national policy statement on the bioeconomy, including the development of a vision for the bioeconomy here. The vision arrived at is captured in the National Policy Statement on the Bioeconomy. It emerged from a discursive process, in line with the principles of good governance in the bioeconomy, involving all relevant government Departments, including a consultative process involving written submissions and stakeholder fora.¹ It is a broad vision which purposely allows room for all the major sectors – agri-food, farming, marine, forestry, waste, energy and pharma – to participate. The vision is

¹ Devaney, L., Henchion, M. and A. Regan (2017) Good Governance in the Bioeconomy, *Eurochoices*, 16: 41–46. doi:10.1111/1746-692X.12141

cognisant of the so called cascading principle which gives priority to the use of biological resources first as food, then as inputs in the production of higher value products (e.g. bio-based materials and chemicals), and finally for use in energy and fuel generation. This cascading principle, which has been adopted at EU level, is designed to derive the maximum value from available bio-resources and to avoid harmful consequences of competition for biomass resources.

“Ireland’s vision of the bioeconomy aims to strike a balance between economic growth and sustainability”

Implementation - The National Policy Statement on the Bioeconomy acknowledges many of the challenges identified by the OECD in system transitions, including generating greater policy coherence across the diverse range of actors involved, developing an appropriate regulatory regime that will overcome regulatory obstacles and encourage private investment, and stimulating market demand for bioeconomy products. A cross-government Bioeconomy Implementation Group (BIG) has been established to begin implementation and further develop this broad vision. Ireland’s vision of the bioeconomy aims to strike a balance between economic growth and sustainability (whereas other national visions may have more of an emphasis on one or the other); evidence of this is that BIG is being co-chaired by DAFM & DCCAE.

The National Policy Statement acknowledges that the transition to the bioeconomy will involve radical innovation demanding not just new technologies but changes in behaviours and practices, and the development of new networks and policies. Implementation is being informed by international developments including the European Union’s updated 2018 bioeconomy strategy. Two EU research and innovation funding programmes, namely Horizon 2020 Societal Challenge 2 (SC-2) and the Bio-based Industries Joint Undertaking (BBI JU), are seen as being pivotal instruments for furthering the Irish bioeconomy transition.

Metrics for Monitoring Transition – The development of metrics to monitor Ireland’s transition to a bioeconomy are still at an early stage of development. Metrics for innovation typically focus on short term indicators of academic and economic activity, such as academic publications, patents, R&D spending in firms and innovative entrepreneurial activity. In system transitions, such metrics will need to be complemented by metrics which monitor long term systemic change, including indicators of how effectively actors in the transition are collaborating, and where key learnings are taking place and how such learning is being diffused.

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Discussion

This Policy Brief brings together two ongoing policy initiatives aimed at fostering system change in Ireland – the climate transition and the transition to a bioeconomy. In each case, the complexity of the changes needed, and the diversity of actors involved, point to the necessity for a clear vision to guide policy makers and investors. The comparison of the two transitions shows the very different processes through which these guiding visions have been arrived at. In the case of the climate transition, Ireland’s vision, as set out in the first National Mitigation Plan, has been developed within an international and European framework that places primary emphasis on numerical targets for greenhouse gas emissions. A governance system is in place to progress the transition at both national and European levels. In the case of the bioeconomy, the guiding vision, as set out in the National Policy Statement on the Bioeconomy, has been arrived at through a national process of cross-government deliberation and stakeholder consultation with due regard for activities at EU and global level. Implementation is being progressed via stakeholder engagement and the step-wise implantation of actions aimed at progressively building the bioeconomy.

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In both cases, many of the principles set out by the OECD for system innovation are being followed by policymakers. These principles include coordinating across government Departments, lengthening planning and investment timescales, creating spaces for building system level awareness, leveraging international cooperation, focusing on both technological and non-technological innovations, and establishing long term networks and partnerships to guide the transitions. Despite the obvious differences in the climate transition and the transition to the bioeconomy, these shared principles highlight the potential learnings that policymakers in each of these domains can gain from each other as the transitions proceed.

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OECD Principles for System Transition

Getting Started	<i>Developing a vision</i>
	<i>Building collective leadership capacity</i>
	<i>Coordinating across government</i>
	<i>Lengthening planning and investment horizons</i>
Building transformative coalitions	<i>Establishing collaborative partnerships for co-investment</i>
	<i>Engaging private and state-owned companies</i>
Steering the process	<i>Encouraging technological and non-technological innovation</i>
	<i>Overcoming resistance of incumbent industries and reluctant citizens</i>
	<i>Focus on international collaboration</i>
	<i>Evaluation to gauge progress and steer system change</i>

Further Reading

Hughes I., Rogan F. & Ó Gallachóir B. (2018) *Innovation For System Transition* **MaREI Policy Brief**

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