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A Roadmap for Local Deliberative Engagements on Transitions to Net Zero Carbon and Climate Resilience

Authors: Gerard Mullally, Alexandra Revez, Clodagh Harris, Niall Dunphy, Fionn Rogan, Edmond Byrne, Connor McGookin, Brian Ó Gallachóir, Paul Bolger, Barry O'Dwyer, Stephen Flood, Evan Boyle, James Glynn, John Barry and Geraint Ellis

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Rialtas na hÉireann
Government of Ireland

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EPA RESEARCH PROGRAMME 2021–2030

A Roadmap for Local Deliberative Engagements on Transitions to Net Zero Carbon and Climate Resilience

(2017-CCRP-MS.49)

EPA Research Report

Prepared for the Environmental Protection Agency

University College Cork and Queen's University Belfast

Authors:

Gerard Mullally, Alexandra Revez, Clodagh Harris, Niall Dunphy, Fionn Rogan, Edmond Byrne, Connor McGookin, Brian Ó Gallachóir, Paul Bolger, Barry O'Dwyer, Stephen Flood, Evan Boyle, James Glynn, John Barry and Geraint Ellis

ENVIRONMENTAL PROTECTION AGENCY
An Ghníomhaireacht um Chaomhnú Comhshaoil
PO Box 3000, Johnstown Castle, Co. Wexford, Ireland

Telephone: +353 53 916 0600 Fax: +353 53 916 0699
Email: info@epa.ie Website: www.epa.ie

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The EPA Research Programme addresses the need for research in Ireland to inform policymakers and other stakeholders on a range of questions in relation to environmental protection. These reports are intended as contributions to the necessary debate on the protection of the environment.

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Project Partners

Dr Gerard Mullally
Department of Sociology and Criminology
and
Cleaner Production Promotion Unit
and MaREI Centre
Environmental Research Institute
and
Institute for Social Science in the 21st Century
(ISS21)
University College Cork
Cork
Ireland
Email: g.mullally@ucc.ie

Dr Alexandra Revez
Department of Sociology and Criminology
and
Cleaner Production Promotion Unit
Environmental Research Institute
University College Cork
Cork
Ireland
Email: alexandra.revez@ucc.ie

Dr Clodagh Harris
Department of Government and Politics
and
Environmental Research Institute
University College Cork
Cork
Ireland
Email: clodagh.harris@ucc.ie

Dr Niall Dunphy
Cleaner Production Promotion Unit
Environmental Research Institute
University College Cork
Cork
Ireland
Email: n.dunphy@ucc.ie

Dr Fionn Rogan
MaREI Centre
Environmental Research Institute
University College Cork
Cork
Ireland
Email: f.rogan@ucc.ie

Professor Edmond Byrne
Department of Process and Chemical
Engineering
and
MaREI Centre
Environmental Research Institute
University College Cork
Cork
Ireland
Email: e.byrne@ucc.ie

Dr Connor McGookin
MaREI Centre
Environmental Research Institute
and
School of Engineering and Architecture
University College Cork
Cork
Ireland
Email: connor.mcgookin@ucc.ie

Professor Brian Ó Gallachóir
MaREI Centre
Environmental Research Institute
and
School of Engineering and Architecture
University College Cork
Cork
Ireland
Email: b.ogallachoir@ucc.ie

Dr Paul Bolger
Environmental Research Institute
University College Cork
Cork
Ireland
Email: p.bolger@ucc.ie

Dr Barry O' Dwyer
MaREI Centre
Environmental Research Institute
University College Cork
Cork
Ireland
Email: b.odwyer@ucc.ie

Dr Stephen Flood
MaREI Centre
Environmental Research Institute
University College Cork
Cork
Ireland
Email: stephen.flood@ucc.ie

Dr Evan Boyle
MaREI Centre
Environmental Research Institute
and
Department of Sociology and Criminology
University College Cork
Cork
Ireland
Email: evan.boyle@ucc.ie

Dr James Glynn
MaREI Centre
Environmental Research Institute
University College Cork
Cork
Ireland
Email: james.glynn@ucc.ie

Professor John Barry
Centre for Sustainability, Equality and Climate Action
Queen's University Belfast
Belfast
UK
Email: j.barry@qub.ac.uk

Professor Geraint Ellis
School of Natural and Built Environment
Queen's University Belfast
Belfast
UK
Email: g.ellis@qub.ac.uk

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Executive Summary

Public engagement and participation are best understood as fluid and evolving categories that embrace the many ways in which citizens collaborate on, intervene in, oppose or deliberate over matters that concern them. In recent years the role that the public occupies in climate action debates has expanded and has given rise to new knowledge co-creation practices and deliberative decision-making processes. It is increasingly acknowledged that meaningful public engagement in climate action requires well-informed, equal and inclusive processes. There is a compelling body of work internationally in support of embedding deliberative democratic practices more deeply to strengthen public engagement.

In this report we explore some of these innovative practices and processes, and present the main findings from the project "Engaging, Envisioning, and Co-Producing Pathways for a Low Carbon, Climate Resilient Ireland (Imagining2050)", which was funded by the Environmental Protection Agency (EPA) and co-funded by the Sustainable Energy Authority of Ireland (SEAI). The aim of the project was to engage with civil society using innovative co-creation and deliberative approaches, and test these approaches, to explore and consolidate future visions of and pathways to a low-carbon and climate-resilient future in Ireland.

The work produced for this report offers a roadmap for local deliberative engagements on transitions to a low-carbon and climate-resilient economy. It explains the core ideas underlying the project and describes the steps taken to explore and evaluate current strategies and policies. These included a review of the relevant literature and the organisation of local deliberative community engagements, eight multi-stakeholder workshops, four thought leader workshops and a Delphi panel.

The development of a framework for local deliberative engagements based on a critical review of best practice and innovative communication tools formed the basis of the Imagining2050 project. A review of literature in this area revealed a growing concern to promote public engagement processes that are more connected and diverse. The work drew from transdisciplinary expertise and culminated in the introduction of a novel approach that we termed the deliberative futures workshop, which integrates deliberative dialogues into wider democratic and multi-stakeholder systems. This work includes use of a range of interactive tools that can be integrated into the deliberative process and that encourages deliberation through the use of visual future-oriented methodologies. Based on this work we offer insights into pathways for transition at the local level. We subsequently sought a multi-stakeholder appraisal of these pathways to ascertain areas of divergence and synergies between the visions established at the local level and those of other groups, such as policymakers and researchers.

In establishing tools for future thinking, based on deliberative processes, we tackle difficulties and uncertainties associated with the future as volatile, unstable and unpredictable by adopting a multi-stakeholder approach. Appreciating and handling complexity is an essential learning point for those engaged in forecasting or foresight practices, and the challenge of climate change mitigation and adaptation demands that we understand this at a societal level. Mismatched expectations in this context can often lead to lack of trust in decision-making processes.

Insights from engagements with local communities reveal a growing concern for building resilience from the bottom up by addressing core underlying issues, such as housing and health. The core message is that, in looking for agency, innovation and voice, we must pay due care to the societal building blocks that ensure the establishment of a thriving and resilient society.

1 Introduction

The “Engaging, Envisioning, and Co-Producing Pathways for a Low Carbon, Climate Resilient Ireland (Imagining2050)” project was developed and promoted as a transdisciplinary project seeking to explore new ways to engage with communities in co-creative, deliberative and future-oriented processes. From a research point of view this has been a highly reflexive process, using both desk-based and empirical insights. The process included an extensive review of literature related to deliberative democracy and imagination in climate change debates, which culminated in the development of the deliberative futures workshop approach. This innovative process uses novel visual tools and methodologies to foster deliberative dialogues at the local level. The methods and framework proposed seek to transcend siloed and disconnected approaches to climate dialogues, highlighting multi-stakeholder and future-thinking approaches as crucial components in the promotion of transformative public engagement processes. Thus, we argue that deliberation is not a one-off solution but should be integrated into wider cross-scale democratic systems, making use of and engaging with existing knowledge, and facilitating the development and mobilisation of society around climate-related issues in a salient, imaginative and inclusive manner.

1.1 The Issue

Climate change presents a significant threat to our society and environment. To date, Ireland has failed to address greenhouse gas (GHG) emissions in the key sectors of heating, transport and agriculture. The most recent review published by the independent Climate Change Advisory Council (CCAC, 2020) stresses that Ireland, on its current trajectory, is not on track to meet its ambitions to achieve net zero emissions by 2050. It is clear that new approaches are needed to accelerate the pace of change and to mobilise what needs to be a systemic and society-wide process of transformation towards a low-carbon and climate-resilient future. The climate challenge is multifaceted. It requires a technological, economic, political, policy and societal response. Looking beyond social engagement to social change requires imaginative responses, knowledge co-creation and deep dialogues with communities.

1.2 Overview of Imagining2050

This report presents the main findings from the Imagining2050 research project, which was funded by the Environmental Protection Agency (EPA) and co-funded by the Sustainable Energy Authority of Ireland (SEAI). The research project commenced in August 2018 and ended in May 2021. It was carried out by an interdisciplinary team of researchers from University College Cork and Queen’s University Belfast. The compelling drive behind the project was to inform the ongoing work of the National Dialogue on Climate Action (NDCA) in generating approaches and structures for engagement across society to promote public support for climate action over a range of scales and timeframes (from short to long term). Nowadays, climate action across different sectors of society is growing, which creates a greater demand for facilitating, integrating and managing this complexity of voices and initiatives.

The NDCA is a Government of Ireland initiative led by the Department of the Environment, Climate and Communications (DECC), with secretariat assistance being provided by the EPA. The main vision of the NDCA is to deliver an inclusive and systemic public engagement programme, looking to improve climate literacy, to fund and empower the adoption of sustainable behaviours and to capture emerging insights from a broad range of engagement activities. It is clear from the aims of the NDCA that it understands engagement to be a continuum working from creating a general sense of awareness of the topic and engagement right up to enabling and empowering citizens and communities to act.

The introduction of deliberative engagements in climate action debates offers innovative ways for citizens to participate along this continuum and, in particular, enables citizens to connect with decision-making processes. These opportunities for engagement are essential in generating new, and

more impactful, ways of catalysing change (Ellis *et al*., 2019). Deliberative processes can complement representative, participatory and associational approaches to democracy, as they have the potential to contribute to more informed, future-focused and inclusive decision-making (Revez *et al*., 2022). This is particularly useful in terms of disrupting more established and influential modes of political decision-making that tend to align with short-term electoral cycles with a diminished capacity for sustaining long-term strategies for change (Dryzek and Niemeyer, 2019; Smith, 2021).

The use of deliberative democratic processes such as citizens' assemblies to tackle the issue of climate change is growing. Ireland, France and the UK have all established such popular assemblies to directly engage citizens in deliberating with experts, stakeholders and their fellow citizens on the myriad challenges presented by the climate emergency. Ireland has led the charge in this regard. The growing prominence of deliberative democracy processes in the Irish policy landscape has fostered the development of promising policy and research innovations (Harris and Hughes, 2020; Harris *et al*., forthcoming). Its use of citizens' assemblies has prompted constitutional change on issues ranging from marriage equality and abortion laws to the offence of blasphemy (Harris *et al*., forthcoming). From a climate action policy perspective, the recommendations of the Citizens' Assembly (2016–2018) on how Ireland should become a leader in climate action have been influential, as evidenced in the 2019 report of the Joint Oireachtas (Parliament) Committee on Climate Action (a committee set up to consider and respond to the Citizens' Assembly report) (Houses of the Oireachtas, 2019), the Climate Action Plan (2019) and, more recently, the Climate Action and Low Carbon Development (Amendment) Bill 2021 (Government of Ireland, 2021). Moreover, the prominence of deliberative processes in the Irish landscape has prompted the development of more reflexive research and policy approaches that attend to issues of inequality, underrepresentation, scientific communication and dissemination of outcomes (Revez *et al*., 2022).

Deliberative processes can expand traditional top-down techniques, such as consultation, to promote the co-creation of knowledge and policy development based on shared learning, mutual understanding and reasoned argument. Opening up the process makes it possible to create new alliances and to reimagine change for different groups in society and seeks to reconnect citizens to structures of power in a manner that builds the momentum needed to pursue inclusive, legitimate and democratic transitions. Deliberative processes pay significant attention to inclusivity and ensure that marginalised voices are heard, and that dialogue on climate action is extended to public stakeholders who do not traditionally engage with the issue.

The report thus provides a roadmap for deliberative engagements at the local level, seeking to enable deeper and wider engagement with multiple stakeholders in relation to climate mitigation and adaptation by setting out the following high-level objectives:

- to review key literature on best practices and models for the development of deliberative public engagement;
- to develop and implement innovative approaches for climate dialogues using a deliberative action research approach;
- to undertake targeted stakeholder engagements with citizens, civil society agencies and state agencies;
- to facilitate a co-creative process leading to a series of scenarios and pathways for climate action towards a climate-resilient Ireland;
- to test and evaluate a number of novel communication methods to enhance engagement and stimulate dialogue on climate action.

Our contribution is twofold: (1) our review of the existing literature condenses and integrates what is a vast and fragmented research area on deliberative dialogues and imaginative responses to climate change; and (2) we also offer a range of reflexive methods and tools that provide good practice insights into introducing and deepening deliberative engagements with communities at the local level. We leverage imagination-focused insights and particularly future-oriented and visually based tools to explore alternative ways to envision and communicate inclusive climate change mitigation and adaptation strategies. This work is based on transdisciplinary thinking and practices that promote deeper collaboration between scientific and societal institutions and looks to overcome siloed

approaches to change. Critically, these approaches seek to reposition researchers and policymakers into more co-creative spaces, drawing from enhanced deliberation with other societal stakeholders, as detailed in the Organisation for Economic Co-operation and Development (OECD) policy paper *Addressing Societal Challenges Using Transdisciplinary Research* (OECD, 2020).

2 Background

In this chapter we offer a brief explanatory account of the relevance of the report and the circumstances that have led to its development. The chapter is divided into two parts. First, we consider the wider policy relevance of the report, including current challenges in promoting systemic low-carbon transitions. Second, we describe the research trajectory adopted by the Imagining2050 project, in particular our use of transdisciplinary exchange and dialogue. We briefly outline our multi-stakeholder approach, employed to promote reflexive learning and to consolidate climate mitigation and adaptation research.

2.1 Policy Background

Climate change is an escalating problem with wide-ranging consequences. For over 40 years climate scientists have alerted us to the fact that we are already living through and witnessing the impacts of global warming (Pachauri *et al*., 2014; Ripple *et al*., 2020). The recent report by the Intergovernmental Panel on Climate Change (IPCC) makes this reality more poignant by forewarning policymakers that climate change processes, if not addressed by limiting global warming, will have catastrophic consequences, with evidence showing a high-level confidence of increases in unprecedented extreme events, even in the best-case scenario in which global warming is limited to 1.5°C above preindustrial levels (IPCC, 2021).

The IPCC report finds that limiting global warming to 1.5°C will require “rapid and far-reaching” transitions in land, energy, industry, buildings, transport and cities (IPCC, 2021). Global net human-caused emissions of carbon dioxide (CO_2) would need to fall by about 45% from 2010 levels by 2030, reaching “net zero” around 2050. The report insists on the necessity of rapid and ambitious policy measures to steer society away from carbon-based energy sources and a business-as-usual approach towards the environment, society and economic development. The Paris Agreement – ratified by 197 countries across the world in December 2015, through the United Nations (UN) Framework Convention on Climate Change – seeks to keep global temperature increases below 1.5°C, in order to mitigate the worst impacts of climate change. In addition, the Paris Agreement aims to strengthen the global climate change response by increasing the ability of all to adapt to adverse impacts of climate change and foster climate resilience. It defines a global goal on adaptation. The goal is to enhance adaptive capacity and resilience; to reduce vulnerability, with a view to contributing to sustainable development; and to ensure an adequate adaptation response in the context of the goal of holding the average global warming increase well below 2°C and pursuing efforts to hold it below 1.5°C.

Furthermore, in 2015, the UN’s Agenda 2030 was adopted, setting out 17 Sustainable Development Goals (SDGs), including SDG 13 on climate action. At the centre of both the Paris Agreement and the UN’s Agenda 2030 is the concept of sustainable and equitable economic, social and environmental development (UNFCCC, 2017). The international research and policy community has called attention to the opportunity that these global agreements have created to build coherence between interrelated policy agendas that have the potential to help identify and reduce systematic risks, promote sustainable development and significantly affect the future of humanity (UNFCCC, 2017; Challinor *et al*., 2018).

Commitment to these and other international agreements that seek to secure transparency in climate action and sustainable development and penalise those who fail to reach targets through financial sanctions has proven challenging. The fact remains that many of these countries, including most countries in Europe, have failed to reach key targets. The UN report on the nationally determined contributions (NDCs) estimates that current trajectories to reduce GHG emissions suggest a decrease of just 0.5% by 2030 rather than the reduction of 45% by 2030 that the IPCC warns is essential to stay within the 1.5°C target (UNFCCC, 2021). Furthermore, at the global SDG Summit held in September 2019, member states recognised that global efforts to date have been insufficient to deliver the change we need to achieve the SDGs by 2030, jeopardising the Agenda 2030’s promise to current and future generations (UN, 2020).

The IPCC (2018) report is conclusive in stressing the need to take proactive action that ensures that we stay within acceptable carbon emission thresholds in order to mitigate catastrophic impacts of climate change; the report also stresses the need to strengthen our social, economic, technological and environmental systems to adapt to climate impacts. The need to develop policies that acknowledge and deliver on the critical substance of these recommendations is immense, and arguably continues to be made more difficult by equally strident challenges from market-driven imperatives; these obstacles have effectively curtailed progress towards more proactive climate change interventions (Tompkins *et al*., 2010). European environmental policy is strongly aligned with international targets to limit global warming. Climate ambitious frameworks, such as the European Green Deal, which seeks to make the EU climate neutral by 2050, further stress the importance of timely and inclusive measures.

In the Irish context, the notion of long-term exposure to climate change has been difficult to reconcile with shorter-term political cycles and policy targets (O'Gorman, 2020). Addressing climate change would cause considerable disruption to our current development path, with consequent social and political implications; as a result, long-term goals have been diluted by business-as-usual targets and objectives (O'Gorman, 2020). However, this situation is changing (Table 2.1); Ireland has undertaken a multi-stakeholder initiative, the NDCA, with the aim of creating awareness, engagement and motivation to act (locally, regionally and nationally) in relation to the challenges presented by climate change (Revez and Mullally, 2019). The Irish government also published its first statutory National Adaptation Framework (DECC, 2018), wherein selected sectors, as well as all 31 local authorities, were tasked with creating climate change adaptation plans to be revised and renewed on a 5-year basis. Four local authority Climate Action Regional Offices (CAROs) have also been established to drive climate action at the local and regional levels in Ireland (CARO, 2021). On the mitigation side, the statutory National Mitigation Plan was published in July 2017 (DECC, 2017). These statutory plans and frameworks have been produced on the back of the 2015 Climate Action and Low Carbon Development Act (2015) (Torney, 2017). The Act also called for the creation of a Climate Change Advisory Council. This independent advisory body is tasked with assessing

Table 2.1. Timeline of key policy developments in Ireland

Year	Key policy developments in Ireland
2004	Renewable Energy Development Group (establishment of a group of key players in the renewable energy sector)
2006	Energy green paper (emphasis on efficiencies)
2007	Energy white paper: *Power of One*
2008	Grid 25 (call for multi-stakeholder approach)
2012	Strategy for Renewable Energy (2012–2020) and Non-statutory Climate Change Adaptation Framework
2014	Energy green paper (with empowering energy citizens as the main priority)
2015	Energy White Paper (2015–2030): *Ireland's Transition to a Low Carbon Energy Future*
2015	Climate Action and Low Carbon Development Act
2017	Establishment of the NDCA
2018	Project Ireland 2040 Climate Action Priority Area "empowering communities for climate action" and the 2018 National Adaptation Framework
2019	Report of the Joint Committee on Climate Action: *Climate Change: A Cross-party Consensus for Action*
2019	Creation of four Climate Action Regional Offices and Climate Action Plan section 15: "citizen engagement, community leadership and just transition"
2019	Renewable Electricity Support Scheme (key emphasis on community benefits and projects) and Extinction Rebellion protests nationwide
2019	Climate Action Plan 2019 – Action 168 (provide improved training and support initiatives for community and voluntary stakeholders to support community, local and national low-carbon development, incorporating community outreach elements)
2020	Programme for Government 2020 (a commitment to "bringing communities with us")
2021	Climate Act 2021 (the first two carbon budgets proposed by the Advisory Council shall provide for a reduction of 51% in the total amount of GHG emissions over the course of the first two budget periods ending on 31 December 2030; it requires the development of local authority climate action plans accounting for mitigation and adaptation actions)

and advising on how Ireland is making the transition to a low-carbon, climate-resilient and environmentally sustainable economy by 2050 (CCAC, 2021). More recently, the Irish government passed the Climate Action and Low Carbon Development (Amendment) Act 2021, which increased near-term (2030) and long-term (2050) mitigation ambition to a 51% reduction in GHGs and net zero GHGs, respectively (essentially doubling the rate of GHG emission reductions over the period 2020–2030). This Act also instituted the use of 5-yearly carbon budgets and cited "the requirement for a just transition to a climate neutral economy".

The Act introduced a requirement that each local authority prepare a climate action plan, which will include both mitigation and adaptation measures and which must be updated every 5 years. Local authority development plans will also be required to align with their climate action plans.

Most of the targets and strategies outlined above make use of very pertinent energy modelling analyses and climate modelling, using a range of scenarios, pathways and predictive, contingency and foresight modelling tools that have led to key targets and solution portfolios to redirect Ireland towards a low-carbon and climate-resilient future. These tools rely on techno-economic forecasts and do not consider societal and socio-political dimensions. Internationally, energy modelling analyses have been used to support both ambitious and non-ambitious policy output (Süsser *et al*., 2021).

In Ireland, many of the published studies have described higher-ambition pathways (Deane *et al*., 2013; Curtin *et al*., 2017) and have been used as such by their policymaker target audience. With one exception (Sharma *et al*., 2020), formal stakeholder involvement is not explicitly described in such studies. Similarly, although national guidelines for the development of adaptation strategies highlight a requirement for wide-ranging stakeholder engagement, deeper descriptions of stakeholder involvement are not included in published local authority and sectoral adaptation strategies. However, as we will argue and demonstrate in the sections that follow, future-oriented and deliberative methodologies can and should be used with multiple stakeholders, in ways that do not just inform us about probable futures related to climate change but also help envision alternative preferred futures that are consistent with societal goals, capacities and aspirations.

2.2 Research Approach

The Imagining2050 project is driven by a consortium of researchers committed to transdisciplinary and future-oriented knowledge development and exchange across different social, political, economic, environmental and technological contexts. This form of research promotes reflexivity and pays closer attention to dynamics of inclusion, exclusion and circulation in processes of knowledge formation (Byrne *et al*., 2017). We contend that transdisciplinarity is particularly relevant in the promotion of visions of and pathways to sustainability, as it establishes the grounds for a form of science that is interconnected, holistic, adaptive and anticipatory (Loorbach *et al*., 2017). We thus seek to go beyond the tendency to reduce and silo climate solutions by adopting technological fixes as a panacea for complex societal issues (Byrne *et al*., 2022).

The Imagining2050 team is composed of academic researchers from a variety of backgrounds including sociology, political science, political economy, geography, planning, climate modelling, energy system modelling, environmental social science and chemical and process engineering. We leveraged this diversity to ground our wider transdisciplinary ethos and research objectives, seeking to explore and articulate a strategy for local deliberative engagements in low-carbon transition and climate resilience. These engagements entailed the inclusion of various visualisation and scenario co-creation tools, which we embedded within a wider deliberative action research approach. We drew insights from several pieces of literature and practices, including participatory action research, co-production and deliberative democracy. In drawing from a rich and wide-ranging set of literature and research practices, we sought to maximise the range of experiences, voices and perspectives in order to increase and enhance "deliberative moments", i.e. moments of justification and reflection within the research process (Dryzek *et al*., 2019; Harris *et al*., forthcoming). The research was undertaken in a series of stages and with multiple stakeholders (see Figure 2.1).

Stage 1 was targeted at local community residents and local community stakeholders and focused on establishing in the first instance the issues of interest to the community, recruitment for stage 2 and exploring considerations for the future with the broader community. Informal activities included "knocking on doors" (Davies, 2011), informal meetings and a survey

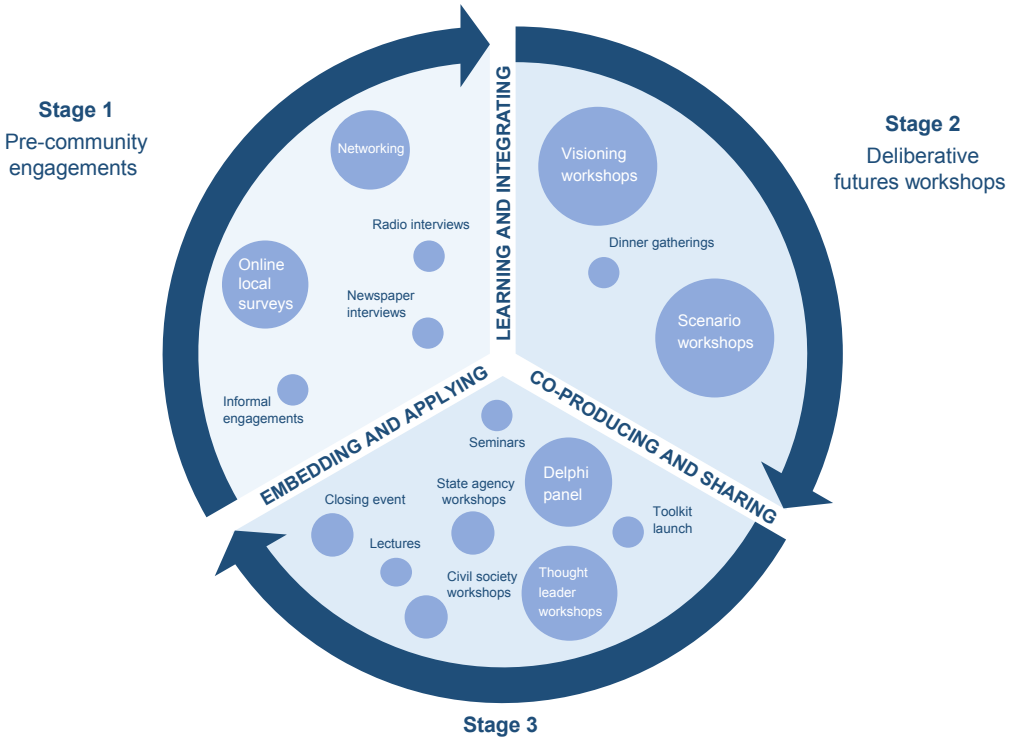

Figure 2.1. Imagining2050: the three stages of the engagement process.

that was carried out both face to face and online. The survey served to establish wider preliminary connections with local communities and supported the setting of themes to cover at the deliberative futures workshops. We also engaged with local media channels and did radio and newspaper interviews to share information about Imagining2050 and to help with the recruitment process.

Stage 2 comprised two weekend-long events (one in Ballincollig and one in Athlone) involving local community residents, community representatives and those with an interest in the locality. This stage focused on the co-development of visions and scenarios of change for the local community using deliberative futures workshops. A more detailed summary of the deliberative process and the visioning and scenario tools used is given in Chapter 5. In each location, workshops were complemented by a social dinner event, during which participants, organisers and experts had an opportunity to meet and exchange ideas and pose and answer questions in a more informal setting.

Stage 3 entailed wider societal engagement; during this stage the local visions and scenarios and the innovative deliberative futures method developed in stage 2 were considered by multiple stakeholders, including researchers, policymakers and climate policy experts. A Delphi panel survey was carried out to capture more systematic insights regarding the local visions and scenarios of change linked to stage 2.

In total, this three-stage engagement process involved two online surveys, 16 workshops (including four local community deliberative futures workshops and four thought leader workshops) and a Delphi panel process.

To promote the creative deliberation and co-construction of knowledge, we incorporated a number of innovative techniques within the design of our community and stakeholder engagements to facilitate the development of visions and pathways for a low-carbon and climate-resilient society. These innovative techniques included the use of experimental research-creation methods in the form of performative research and visual and activity-focused techniques, discussed in more detail in Chapters 4 and 5.

We also leveraged the use of participatory evaluation approaches to identify new metrics for the testing and evaluation of the processes and outputs emerging from our stakeholder dialogue framework, while at the same time exploring the validity of these approaches from a participant perspective. Evaluation was a continuous process, and further information on the methods used is given in section 5.4.

3 Innovative Approaches for Deliberative Dialogue

In this chapter we offer a definition of deliberation and deliberative democracy, an overview of innovations to operationalise it and examples of good practice.

Deliberative democrats emphasise the virtues of inclusion, justification and reflection (Dryzek, 2016). Collective decisions, they contend, should stem from inclusive, reflective public reasoning and should emphasise "civility and argumentative complexity" (Dryzek *et al*., 2019). Those subjected to a policy should, they argue, have the right, opportunity and capacity to contribute to deliberations on it (Hendriks *et al*., 2007). Critical of the status quo, theories of deliberative democracy are transformative and promote emancipation against domination (Dryzek, 2002; Hammond, 2019; Curato *et al*., 2020).

Efforts to refine, strengthen and ensure equality in democratic processes have generated new and promising approaches closely tied to deliberative democracy experimentation (Fishkin, 2002). In recent years, these new processes and tools have been advanced nationally and internationally to align our democratic systems more closely with the deliberative principles of inclusion, justification and reflection (Dryzek, 2016). This growing interest in developing new measures for knowledge development and decision-making focused on such principles stems from ongoing reforms to more traditional democratic systems (Grönlund and Himmelroos, 2009; Farrell *et al*., 2019). Ongoing work in this area is particularly relevant in the context of societal transition towards sustainability, as it can help accelerate processes of change and mitigate likely challenges to our democratic system, such as political uncertainty, disruption and unrest. While protest and mobilisation can be fruitful and transformative – for instance, the divestment movement has shown potential for positive transformative change (Healy and Barry, 2017) – deliberative processes provide an opportunity to bring together disparate perspectives in ways that facilitate a more coherent and considered integration of multiple views. Thus, in the face of growing mistrust in political representatives and associated ambivalence towards scientific expertise, the inclusion of deliberative dialogue into climate change debates appears to be a means to recapture citizen participation in less polarised and siloed ways (Dryzek and Niemeyer, 2019). Deliberative democratic fora are also a way of developing the deeper democracy required to overcome the democratic myopia prevalent in many societies (Krznaric, 2020; Smith, 2021).

The guiding principles that underline deliberative democracy seek to create more meaningful ways to share information, generate knowledge, express public opinion and even widen the range of choice presented to voters in interlinked representative and direct democracy fora (Wells *et al*., 2009; Gastil and Richards, 2013; Reedy *et al*., 2014; Richards, 2016). The inclusion of deliberative processes in traditional democratic procedures such as agenda-setting, ballot information, ballot measures, policy formation and constitutional change is seen to increase the salience and accessibility of information provided and significantly boost trust in sources of information (Richards, 2016; Suiter and Reidy, 2019). Experimentation in this area has yielded promising results, with several emergent models being described as "real utopian" designs insofar as they promote substantial social change through more realistic political reform (Gastil and Richards, 2013, p. 255). Experimental deliberative models have also been described in Ireland as providing for deliberative pathways towards referendum votes (Suiter and Reidy, 2019). Ireland's Citizens' Assembly (2016–2018) has been recognised internationally, in large part for the transformative citizen-led recommendations for addressing the climate crisis that have emerged from it but also for its role in supporting referenda for constitutional change with regard to marriage equality and abortion (Farrell *et al*., 2019; Devaney *et al*., 2020).

3.1 Overview of Different Approaches

In this section we offer an overview of prevalent approaches, stressing the fact that deliberative processes are varied and often respond to particular needs or objectives. This diversity extends to those who drive the process, to recruitment procedures and

to typical results associated with the process. The use of deliberative processes has become widespread across Europe and internationally. Experimentation with new processes has led to considerable diversity in deliberative fora, which can vary in terms of initiation, agenda-setting, processes, sampling procedures, size and powers.

These deliberative democratic fora, ranging from futures workshops to citizens' assemblies, have been established to provide spaces for deeper public discussion and examination on an issue. They invite ordinary citizens to consider the arguments of differently situated and opinionated others, to present reasons for their own preferences, to weigh up the arguments and to be open to changing their minds as a result (Dryzek, 2010; Isernia and Fishkin, 2014).

Mini-publics is an umbrella term that encompasses a diverse set of fora such as citizens' assemblies, citizens' juries, consensus conferences, deliberative opinion polls and planning cells (Elstub, 2014; Elstub and Escobar, 2017; Escobar and Elstub, 2017). They involve the random selection of participants to ensure diversity and representativeness as well as professional facilitation and "civility norms", such as respectful, reasoned argument.

They have been employed in different contexts and formats in the various countries in which they have been created, and levels of governmental responsiveness to their proposals have varied.

As a method of policy analysis they can, as a process of co-design, engage citizens in the systematic analysis of policy problems in ways that are inclusive, evidence based, transparent and accountable (Harris, 2021). In bringing "scientific evidence together with public views and values", they have much to offer in terms of addressing the climate emergency. As Howarth *et al*. (2020) argue, they can "support citizens to imagine different ways of living ... making society a co-designer of climate action". As deliberative democratic processes they emphasise informed, respectful and considered judgement. Their work includes expert witness presentations and testimonies to inform the deliberations, and members are invited to deliberate both with experts and among themselves respectfully to develop what Offe and Preuss (1991) have defined as "fact, future and other regarding" recommendations.

Deliberative democratic processes are seen as an ideal means to deliver a reimagined democratic platform based on good-quality, well-informed and reasoned political discussions (Elstub, 2014; Escobar and Elstub, 2017), a platform from which emerge citizen recommendations or policies based on informed dialogue rather than a simple aggregation of individual preferences (Caluwaerts and Deschouwer, 2014).

The proliferation of deliberative processes has led to the establishment of several designs with differing purposes and approaches (see Harris, 2019; OECD, 2021).

The recurring link between deliberation and democratic innovation is telling, particularly as deliberative techniques have been around for quite some time. Emphasis on innovation thus speaks of an ongoing effort to introduce deliberative processes into wider systems at different scales and initiated by multiple stakeholders. It also speaks of its important role in advancing democratic transformative change.

Thus, the use of deliberative fora has become increasingly diffused in recent decades. Table 3.1 offers an overview of some of these approaches. Note that the size of these fora, in terms of number of participants, as well as the number of meetings and the type of outcome typically generated, show considerable variation.

Continued experimentation and innovation in this area is likely to deliver new and promising experimental models of citizen deliberative engagement that seek to meet contemporary needs and concerns; for instance, a new model developed in Belgium seeks to develop a permanent forum (rather than one-off events) to bring together citizens and parliamentarians annually to deliberate on themes supported by citizens (Reuchamps, 2020).

Another innovation is highlighted by della Porta and Felicetti (2022), who explored further the possibilities and linkages between social movements, activism and deliberative democracy, and suggested that new fora and designs could support citizen-led innovation. This model could counter prevailing and top-down processes on policy, build consensus and foster deeper connections with state agencies.

Research in the field finds that deliberation has led to changes in opinion, voting intentions, interest

Table 3.1. Overview of approaches to deliberative and participatory dialogues

	Planning cells	Consensus conferences	Deliberative opinion poll	Citizens' juries	Citizens' assemblies	Future workshop	Deliberative futures workshop
No. of participants	100–500	10–25	100–500	12–26	100–160	12–25	12–25
Length of meetings	4–5 days	7–8 days	2–3 days	4–5 days	20–30 days	1 day	3–4 days
Selection method	Random selection	Random selection and self selection	Random selection	Random selection	Random selection	Open to all and targeting	Open to all and targeting
Activities	Information and deliberation	Information and deliberation	Information and deliberation	Expert presentations and small group deliberation	Expert presentation and small group deliberation	Critique, visioning and implementation	Information, critique, visioning and implementation
Result	Survey opinions and collective position report	Collective position report	Survey opinions	Collective position report	Detailed recommendations	Action plan	Community report with detailed proposals

Informed by Elstub (2014) and www.involve.co.uk.

in public dialogue, collective consistency, civic capacities and efficacy (Fishkin, 2009; Farrar *et al*., 2010; Farrell *et al*., 2013; Offe, 2014). It has also shown that citizens become more informed after participating in deliberative mini-publics (DMPs) and develop increased trust in politicians and democratic institutions and increased satisfaction with democracy (Grönlund, 2016). Findings on their impact on the wider citizenry are less readily available. Fournier *et al*. (2011) note that few Canadians knew anything about Canada's citizens' assemblies, and many were misinformed about their composition and processes. In addition, Elkink *et al*. (2017), in their study of the Irish marriage equality referendum campaign, found that respondents from the wider citizenry had good levels of awareness of the convention's composition, and a significant majority of them (77%) knew that the convention had recommended a referendum on marriage equality. Research on the abortion referendum (2018) notes the importance of the Citizens' Assembly preceding the referendum and found that those aware of the Citizens' Assembly were more likely to vote yes (Elkink *et al*., 2020).

3.2 Reflections on Good Practice

Achieving genuine deliberation is challenging. As we continue to find new ways to make these processes more inclusive, equitable and informative, it is unrealistic to expect to achieve full deliberation in any given process. Work towards meeting and achieving these goals is tied to a much wider set of institutions and fora; no one process or government body can be singled out. In fact, it is recommended that deliberative processes are most effective if they can bring together different institutions and practices in a way that allows "each of these parts to consider reasons and proposals generated in other parts" (Mansbridge *et al*., 2012, p. 23). This systemic view of deliberation recognises that deliberative processes may be tied to different stages in a policy process and situated across a variety of institutions. Adequately performed deliberative processes should be grounded in a commitment towards integration of views and insights stemming from complementary institutions, essentially signalling a sequential and collaborative process of policy formation, decision-making and engagement that is highly networked, responsive and self-reflexive.

3.2.1 Mixed levels of impact

Despite increased popularity, deliberative processes such as mini-publics have experienced mixed levels of impact. Thus far, the most impactful and transformative processes have been government-led initiatives. The Irish Convention on the Constitution (2012–2014) was very impactful in its recommendations to change the constitution to allow for marriage equality, to

repeal the 8th amendment and to remove the offence of blasphemy, as was the Irish Citizens' Assembly (2016–2018) in its recommendations on climate action. However, it should be noted that a number of recommendations of these initiatives have been rejected, overlooked or "long-fingered" (see Harris *et al*., 2020a and The Citizens' Assembly, 2018).

Deliberative processes have proven beneficial in expanding and enhancing the ballot process (Uhrenfeldt, 2019). Combining techniques and innovations in an integrated way, which considers the wider democratic system, has been shown as a promising strategy (Jonsson, 2015). Contributions include the following:

- agenda-setting through citizen-led and deliberative initiatives;
- enhancement of ballot information through "citizen statements" collected through deliberative processes;
- enhancement of ballot measures and choices.

While the inclusion of deliberative processes is seen to increase the salience and accessibility of information provided and significantly boost trust in sources of information (Richards, 2016; Suiter and Reidy, 2019), many have argued that deliberative innovations are lacking in terms of impact, as they are often only "decision-recommending" (Smith, 2005, 2009), and have been referred to as "exercises in 'reformist tinkering' rather than 'revolutionary reform'" (Fung, 2003, p. 339). Indeed, there is always the concern that such processes, particularly government-sponsored ones, may be used as tokenistic consultative exercises, following which decision-makers cherry-pick those recommendations that are politically acceptable (Böker and Elstub, 2015). They may also be a way of deferring a decision on a divisive issue or a form of co-option. As Curato *et al*. (2019) observe, they risk becoming a technocratic formulaic public engagement process that serves as a "deodoriser to unpleasant issues" (p. 175).

Experimentation in this area continues to tackle some of these challenges. Deliberation increasingly occurs at multiple levels and contributes to the larger democratic system at multiple scales, and some models, such as popular referenda or community deliberative fora with a ballot component, go beyond decision-recommending measures (Smith, 2005).

The transformative aspect of deliberative processes hinges on links with wider democratic systems and processes through their contribution to a highly reflective and reflexive network of deliberative exchanges (Böker and Elstub, 2015).

3.2.2 Consensus-building and agonistic practices

An interesting area of discussion about the role of deliberative democracy in wider democratic systems and particularly its capacity to accelerate processes of change towards sustainability relates to its traditional focus on building consensus. The proposition underlying the deliberative approach is that decision roadblocks associated with diversity of opinion, disagreement, conflict and contestation can be overcome through frequent, inclusive and reasoned political discussion (Dryzek, 2005). The capacity of deliberative processes to build bridges across political divides has shown positive results; for instance, Caluwaerts and Deschouwer (2014) show how presenting groups with strong decision-making incentives can overcome the atmosphere of conflict in cross-group communication. The strength of deliberative democracy in solving real-world problems, which are often characterised by discord, is that deliberation leads to opinion change (O'Malley *et al*., 2020). As argued by Fishkin (2012), the value of deliberation is its ability to increase "thoughtfulness".

While deliberative processes offer a space for consensus-building, "there is a need for caution about how such processes are structured, and what claims are made arising from them" (Smith and Stirling, 2008). Seeking to reach consensus on what is the "best" path forward risks ignoring some of the voices in the room. For example, Trutnevyte (2014) has observed that, in the case of energy system modelling, visions for the development of energy systems tend to gloss over potential conflicts and negative consequences.

However, given the complexity of issues and the disruptive character of climate change mitigation and adaptation solutions, many have argued that we should focus on disruptive processes and conflict as drivers of change (Machin, 2013). Mouffe (2000) proposes an alternative approach to deliberative democracy, based on "agonistic pluralism", whereby political adversaries are acknowledged and respected.

This approach posits that the inevitability and the benefits of conflict rest on the prevalence of power asymmetries which cannot be properly established or voiced without accessing and making visible neglected fault lines that separate empowered and disempowered stakeholders (Dawkins, 2015). Mouffe argues that this alternative approach, while not built on consensus, moves political differences from spaces of antagonism to spaces of agonism, as part of which diverse political identities are at least acknowledged and given voice. Offering a direct critique of consensus-driven processes, this approach argues against the view that the drive towards finding the "best" or most reasonable argument should outweigh irrational or unreasonable claims and perceptions (Jones, 2014). The central issue is that, while some arguments may have no clear universal applicability, and therefore be deemed highly subjective or irrational, they may in fact be essential points of divergence that explain wider asymmetries between stakeholders (Jones, 2014). Swyngedouw (2009) argues that the quest for consensus largely depoliticises key contemporary issues associated with sustainability, as consensus leads to stagnant discourse and managerial-style approaches. The author calls for a re-centring of politics which understands difference not as the basis of negotiation but rather as a driver for change. Significantly, and countering consensus-driven processes, protest and conflict are seen to enable those with less power to defend their positions and to protect their vulnerable interests from more powerful stakeholders (Dawkins, 2015).

Thus, consensus, while a cited outcome of deliberative processes, is also the most problematic (Niemeyer and Dryzek, 2007). More recent developments in deliberative democratic theory acknowledge that consensus should not be an "aspiration for real-world decision-making" (Curato *et al*., 2017), and should recognise that a focus on consensus may come at the expense of inclusion, particularly minority inclusion, and restrict the scope for discourse (Young, 2002). It is also claimed that deliberative democracy can help avoid manipulation and arbitrary decision-making (Dryzek and List, 2003) and produce robust outcomes through "reason-recognising" procedures (Estlund, 1997). Equally, in the view of Niemeyer and Dryzek (2007), it is wrong to focus on deliberative outcomes without due attention to process, as these should be interconnected at a foundational level. This essentially ensures a coherence in viewpoints, through exchange and dialogue that is open and amenable to opinion change, and which connects process and outcome in a positive way (Niemeyer and Dryzek, 2007; O'Malley *et al*., 2020). Niemeyer and Dryzek (2007) thus argue for clarity regarding the orientation of deliberative processes and their end results. The authors propose two types of deliberative ends as an alternative to the consensus paradigm: meta-consensus and inter-subjective rationality. Meta-consensus is a looser form of agreement concerning the nature of issues discussed, which may not necessarily result in a consensus or a decision being reached. Instead, the process ensures reflection on and acknowledgement of what should be deemed relevant reasons and considerations regarding particular subject matter. This includes recognition of the legitimacy of disputed values (Dryzek, 2013). Inter-subjective rationality concerns consistency around points of convergence and divergence, connections between specific positions, and the establishment of preferences in a manner that accurately integrates all relevant perspectives (Niemeyer and Dryzek, 2007). Thus, a desired result of deliberation should be a collective understanding of competing perspectives and agreement and coherence around legitimate reasons and preferences. The framing proposed above counters prevailing notions of consensus that would require people to converge on which values, beliefs and preferences are more relevant. Instead, what is recognised in the first instance is the legitimacy of different positions (Dryzek, 2013).

3.2.3 Towards deeper democracy

Acknowledging that citizens' assemblies and other DMPs alone cannot deepen democracy in the long term, Smith (2021) notes the need for more creative experimental approaches and the space to develop them. Future-oriented democracy needs to be both wider and deeper (Harris *et al*., forthcoming). It needs to be widened to include those who have been overlooked or omitted to date, e.g. children and future generations. A deeper democracy requires "a vibrant democratic ecology" (Escobar, 2017) that combines multiple democratic approaches and involves associational, participatory, direct and representative democratic institutions at different stages in the policymaking process.

In practical terms, deliberative democracy processes and fora discussed in this section are best understood if they are considered in the context and situations in which they are performed. This helps to develop closer connections with the immediate surroundings, and it is also key as a stepping stone to promote deeper forms of citizen engagement and policy development. In this light, good practice is linked to a more critical stance and a greater awareness of the many processes, decisions and practices that come to structure and reproduce a larger democratic system.

4 Imagining the Future and Transformative Change

Historically, we have leveraged the power of imagination either to help create and represent an existing reality or to produce something original and innovative beyond a given reality. The tools that we use and the paradigms that we rely on to steer human imagination have evolved with time; for instance, in the premodern era, imagination was largely conceived as a "mirror" that reflects nature and human nature in its "true" form. With the advent of modernity, this shifted considerably, and closer attention was paid to creativity, authenticity and the authority of the artist or author; they were often likened to a "lamp", whereby individual artists and creators would be deemed to bring a source of light to otherwise obscured knowledge and events (Taylor and Winquist, 2002). Recently, imagination has become a more unstable concept and is now much harder to define in reference to reality or creativity. This perceived demise of imagination is largely due to mass media reproduction of images, which has arguably weakened our ability to understand and control who and what informs our sense of self, the world around us and our conceptions of the future (Kearney, 2002). Yet, faced with the catastrophic consequences of climate change, further emphasis is placed on the creative power of human imagination so that we can accurately represent our predicament in all its complexities and reimagine transformative pathways towards a sustainable future (Bai *et al*., 2016; Norgaard, 2018).

The scale, complexity and long-term impacts of climate change represent a unique challenge to the human imagination (Bai *et al*., 2016; Norgaard, 2018; Hopkins, 2019). Responding to this challenge demands an unprecedented change of course, which requires the envisioning and establishment of new and disruptive social, political and economic pathways (Steffen *et al*., 2018).

To adequately address these challenges and mobilise our creative capacity for innovation and renewal, new ways of thinking are required that transcend more linear models and overcome short-term frames of reference. Felt and Fochler (2011) argue that such approaches should consider different constellations and moments in time, which engage with various societal stakeholders in a manner that promotes mutual learning and establishes meaningful roles and opportunities for them.

Imagination and anticipation are emerging as areas of growing interest in ongoing research and policy that seeks to accelerate societal transformation towards sustainability (Milkoreit, 2017). Deliberative scholars, such as Dryzek (2016), call for multiple and open practices to enable the imagination of new institutions and systems to meet the demands of living in an increasingly unstable and highly dynamic social and environmental period, which is commonly referred to as the Anthropocene. As noted by Sage *et al*. (2022), we have developed a greater appreciation for the powerful role of stories and imagination in shaping the way we think about the present and the future. There is thus a growing interest in imagination not just in terms of how it shapes the way in which we perceive the world and the challenges that we face, but also its ability to reach beyond our present frames to find new ways to overcome the challenges posed by climate change (Galafassi, 2018).

Significantly, these ideas suggest ways to leverage individual and collective processes to help resolve, connect and mobilise society towards more stable configurations (Galafassi, 2018). Imagination is closely tied to society's capacity for transformative change and can shed new light in our understanding of knowledge development, learning and capacity-building. Moreover, it is a key component of our (in)ability to connect new sources of knowledge, handle uncertainty and promote forward-looking thinking (Luke, 2015). Progress towards sustainability is thus tied to processes that embrace complexity through creativity and anticipation (Byrne and Mullally, 2014). Drawing on rapid literature mapping, Figure 4.1 outlines key components of emerging discussions.

This brief mapping exercise outlines recent literature pertaining to imagination in climate and sustainability research and shows its relevance across different thematic areas and disciplines. The exercise included a search of peer-reviewed journal articles and books

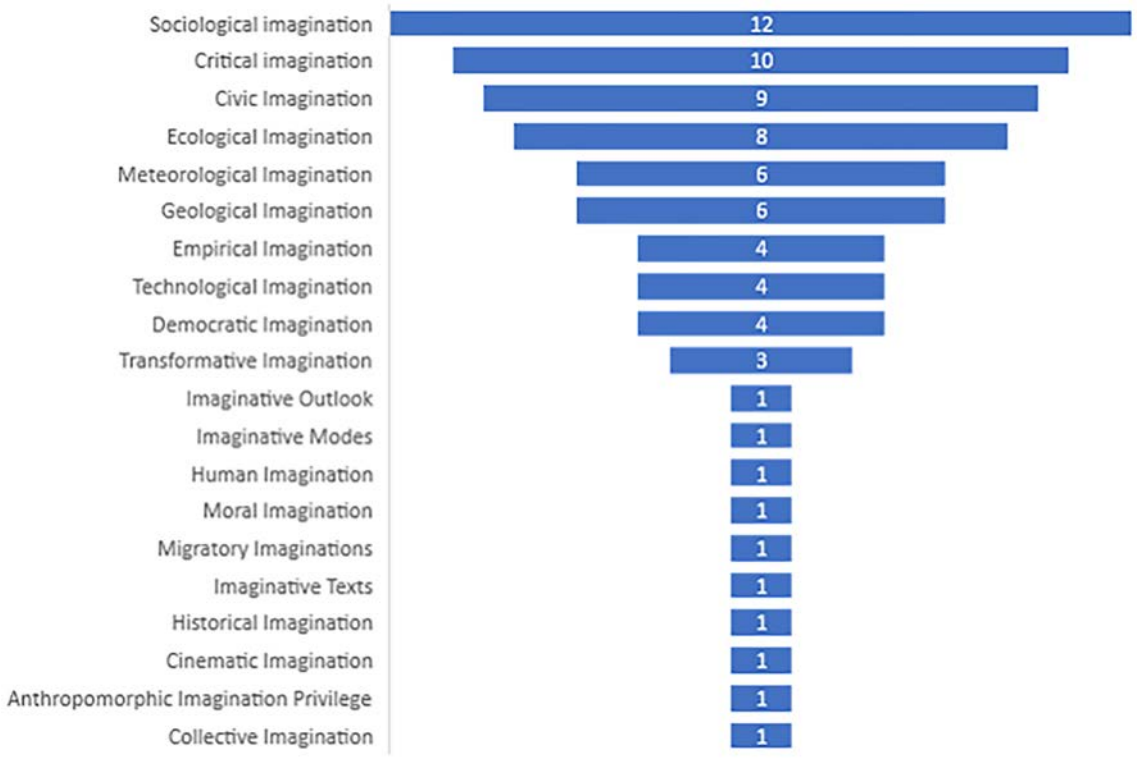

Figure 4.1 Overview of "imaginations" and indicative qualitative illustration of emerging themes based on a rapid mapping exercise with an outline of the number of articles retrieved per theme.

in academic databases.[1] In the following sections we expand on some of these debates.

4.1 The Sociological Imagination: Awakening Our Historical, Social and Spatial Consciousness

The concept of the sociological imagination emerged in a particular historical time of transition, transformation and uncertainty (Raskin, 2009; Bauman, 2010; Zizek, 2011), not unlike the times we are currently experiencing due to the COVID-19 pandemic. The concept was introduced by C. Wright Mills in the aftermath of the Second World War and on the cusp of the Cold War. It significantly opened explorations of the social world to connecting history and experience. It can be defined as "the capacity to range from the most impersonal and remote transformations to the most intimate features of the human self – and to see the relations between the two" (Mills, 1959; cited in Norgaard, 2018). It brings together individual biography, societal processes and history, in a way which considerably expands our perceived space and position in the world.

The concept is broad; indeed, geographer David Harvey (2005) notes that the sociological imagination is not confined to sociology but rather represents a common bond between all social sciences, which awakens our historical, social and spatial consciousness in interconnected ways.

In the context of climate change, the sociological imagination re-emerges as a key idea. The ability to discern connections between our history, legacy and biography is considered critical for our collective understanding and perceptions of place and the built environment (Borer, 2010); it also widens and deepens our current frames beyond individual consumption and behaviour choice, an area in which social context has been damagingly absent (Norgaard, 2018). Calls to integrate a sociological imagination into the climate change debate could reasonably be interpreted as

1 Search criteria included "Imagination" OR "Imaginary" in title OR abstract AND "Climate Change" OR "Sustain*" in title OR abstract. This was not a systematic review of existing literature and it is not intended to provide a comprehensive review of key themes; rather, it shows its disciplinary and thematic diversity.

simply making a disciplinary claim or contribution that has hitherto been absent or marginalised. Alternatively, it could be regarded as a return to a foundational primacy of the social (Urry, 2013; Murphy, 2014). Either way, we are talking about a context that increasingly valorises interdisciplinary and transdisciplinary research (Brondizio *et al*., 2016) and recognises that approaches to sustainability should not be mutually exclusive, as they are intimately entangled in "our common future" (Mullally, 2017).

This consciousness is key in a co-creation ambition driven by the realisation that our history, our institutions and our social and spatial interactions are important building blocks in how we gradually build our own "realities", and it disrupts more linear, predetermined views of how the future may unfold (Castoriadis, 1997).

4.2 Civic Imagination – Finding New Expressions of Political Agency

From an early age, children can understand complex systems of conventions and institutions. Young children often "pretend play" around these concepts and are capable of participating in games with shared rules and make-believe scenarios (Bloch, 2016). This ability to imagine such interactions speaks of our capacity to transpose existing concepts into new configurations and contexts.

Civic imagination can be defined as the capacity to imagine alternative realities in ways that acknowledge the role of civic agents in processes of change and bring new dimensions to real-world spaces and places (Jenkins *et al*., 2020). It addresses conceptions of shared agency, social justice, equality and the increasingly blurred lines between the public and private spheres (Biekart and Fowler, 2008). These imagined "civic" dimensions determine how we respond to differences in social and cultural norms and gender inequalities, how we attach value to the wider wellbeing of society and the natural environment, and how we ascribe specific rights and responsibilities regarding collective institutions (Biekart and Fowler, 2008).

Civic imagination is particularly important in the context of ongoing change in the architecture of our institutions, the widening of governance regimes and enduring calls for deeper forms of citizen engagement with climate change. Emerging issues include the neoliberal trend towards more dispersed governance regimes, with multiple stakeholders, including businesses, experts, lobby groups and citizens, having a stake in driving processes of change (Felt and Fochler, 2011). Another important issue relates to ongoing debates about the employment of upstream or downstream engagement (i.e. linking engagement to a specific stage – either at the start or towards the end of project development), with increased calls to reconceive civic engagement beyond specific points in time in a way that strives to promote continuous and networked processes of innovation and change (Felt and Fochler, 2011).

Thus, new ideas of shared agency, which look beyond our negative footprints (i.e. carbon consumption) and towards more positive "social handprints", have advanced as an important way to leverage the power of civic imagination (Hayward, 2012). In this context some scholars have been critical of our overemphasis on consumer practices, and they highlight social, economic and gender differences in the way in which agency is performed and practised (Huddart Kennedy *et al*., 2018; Lennon *et al*., 2019). Thus, it is problematic to see consumer practices as a panacea for social or environmental problems, but we should not reject these. Rather, what is needed is a more inclusive and embracing concept that brings together different and emerging forms of engagement as part of the wider ecologies of participation that make up our democratic systems (Pallett *et al*., 2019). For instance, in the context of migrant groups and minority groups, these civic imaginings are conceived as diasporas that speak of the "right to have rights", the pursuit of influence in agenda-setting and inclusive policymaking (Ongayo, 2018, p. 161).

An impactful example of emerging civic engagement comes from youth protest. A "new age of dissent" and youth activism associated with climate change bring to light emerging manifestations of civic participation by young citizens, who have been perceived in the past as largely disengaged from climate change issues (O'Brien *et al*., 2018). Young people are finding new ways to express their political agency and have disrupted traditional power structures and political processes. Divestment campaigns across universities and other institutions, for instance, have proven to be an impactful platform for change, with young people key agents of change (Healy and Barry, 2017). Indeed, "system change not climate change" has become the mantra for a new form of ecological activism, with

young people's voices being increasingly prevalent (Hayward, 2020). On a more critical note, Herbert (2021) argues that, while these emerging calls for change can be impactful, a clear pathway to achieve desired outcomes is often lacking. Through interviews with young activists, Herbert (2021) found that there is a demonstrable gap between current social realities and an imagined more just and sustainable future. This is associated with difficulties in envisioning social and political pathways towards a just future and calls for greater attention to work in this area.

4.3 Technological Imagination

The belief that climate change is an issue that can be contained has been a prevalent narrative fed largely by our "science-fueled imaginations" (Hulme, 2014, p. iv). From more controversial solutions, such as geoengineering, to advances in carbon capture innovation and renewable energy deployment, as a society we place a great deal of hope in technology as the solution to climate change. Research has shown that there persists among some cohorts, including younger generations, an enduring technological fix (techno-fix) worldview that significantly reduces perceptions of environmental risk (Liu *et al*., 2014). This particular narrative is framed in a way that acknowledges climate change as an issue but often limits and compartmentalises how climate change can be dealt with and how the environment can be manipulated (McGuire and Lynch, 2017). The attractiveness of the techno-fix approach can be seen in the influence of energy system models, which in many ways are an embodiment of technological imagination. For example, a decisive factor in the decision in 2019 by the UK government to legislate a net zero GHG emissions target by 2050 came from a set of techno-economic energy system models that indicated that such a target could be achieved by technological change rather than lifestyle change.

Many technological developments have stemmed from economic and policy drivers, with less regard for broader societal contexts, including ethical implications, potential unintended consequences, the precautionary principle and local public acceptability (Byrne *et al*., 2022). Technological innovations are often seen and employed as either economic opportunities or individual techno-fixes for what are complex, societal "wicked" problems[2] (Byrne *et al*., 2022). The extent to which climate change is amenable to a technological solution mimics scholarly debate on whether technology itself should be defined either instrumentally or culturally; proponents of the former view technology as a means to an end, whereas those in favour of the latter understand it as an extension of culture and values (Schatzberg, 2018).

In fact, our "technological imagination" fuelled, until recently, conceptions of the future that assumed that the future was "predestined" to experience constant positive growth and progress in ways that would make it largely predictable (Schulz, 2016). However, there is a notable disruption in how "past futures" and "present futures" are conceived, driven by new unknowns associated with climate change, and which technology alone is unable to address (Felt and Fochler, 2011). To some extent, the lack of progress has energised "the technological imagination" of climate change solutions that promote bigger and bolder technological solutions (such as geoengineering and carbon capture and storage). On the other hand, some organisations, such as the International Energy Agency, which previously adopted a strong techno-fix approach, are now pointing to the insufficiency of a technology-only approach to mitigating climate change and have started pointing to the need for contributions from behaviour changes (IEA, 2021). Notwithstanding these disruptive visions of the future, historical processes of technological innovation remain informative and relevant, particularly if they overcome more selective accounts of how technological innovation is constructed and negotiated (Felt and Fochler, 2011). Views from the past also show the dangers and influence of a *lack* of imagination, as exemplified by the "Victorian fatalism towards coal ... which led to ... an inability to abandon this energy" despite widespread acknowledgement of its polluting impacts (Mathis, 2020).

Thus, much can be gained from exploring the historical and cultural dimensions of technological progress and innovation to tap into an innovation and technological development process that is inclusive and conducive to collective forms of experimentation and learning (Felt and Fochler, 2011). Furthermore, in advancing technological development, there is a need to acknowledge that the advantages of technology are

2 A wicked problem is a complex problem involving multiple factors and a rapidly changing context.

accompanied by a dark side and that there are costs associated with specific technologies (Barry, 2017). As noted by Barry (2017), not all technologies are driven by the motivation to enhance life, but rather the opposite, and in this spectrum creative capacities can be destructive rather than offering solutions for the common good.

By drawing from participatory processes, the promising aspects of technological innovation are strengthened, and issues concerning acceptance, diffusion, justice and agency are established alongside and as part of the innovation process (Felt and Fochler, 2011).

4.4 Imagery and Visualisation in and for Climate Action

Visualisation and the use of imagery in climate science and environmental policy is increasingly understood as an important element in bridging the gap between abstract ideas or concerns and everyday lived experience (Nicholson-Cole, 2005). Yet there are few texts that consider the impact that this form of communication has on how people engage with climate change issues (O'Neill, 2020). A recent review by Metze (2020) shows that visualisation now plays an important role in data communication, influencing decision-making, informing public perceptions, encouraging public participation and facilitating knowledge co-creation. Visualisations such as the National Aeronautics and Space Administration (NASA) Goddard Institute for Space Studies (GISS) Land Ocean Temperature Index (Figure 4.2) show how effective images can be in communicating complex issues. Equally, the warming stripes created by Ed Hawkins very successfully communicate quite striking temperature changes between 1850 and 2017 (see Figure 4.3).

Many of these visualisations are likened to contemporary art, in that they raise awareness and have the ability to mobilise public opinion, leading to shared learning and making complex knowledge more accessible (Metze, 2020). Visualisations thus represent a significant addition to science and have been used rather effectively as conversation starters and as a way to disrupt commonplace thinking, challenging complacency regarding the impacts and the context in which climate change is unfolding (Velarde, 2019). Some images have become iconic. For example, the Blue Marble photo (Figure 4.4), taken from space in 1972 (coincidently the same year as the publication of the highly influential *Limits to Growth* report; Meadows *et al*., 1972), depicts both the beauty and vulnerability of life on Earth (Metze, 2020) and has become the most shared image across the globe (Wuebbles, 2012). Similarly, imageries and illustrations of retreating ice have become iconic depictions of climate change. These images are impactful and evocative and give the climate debate an emotive quality (Luke, 2015).

Yet this potential is not without problems. The use and replication of images is implicated in what Luker (2009) calls the explosion of "info-glut". This trend for the mass media reproduction of images and the excessive and overwhelming rate at which information is consumed, replicated and shared has undermined our ability to reach out to each other in meaningful ways. These circulations and their use and manipulation by

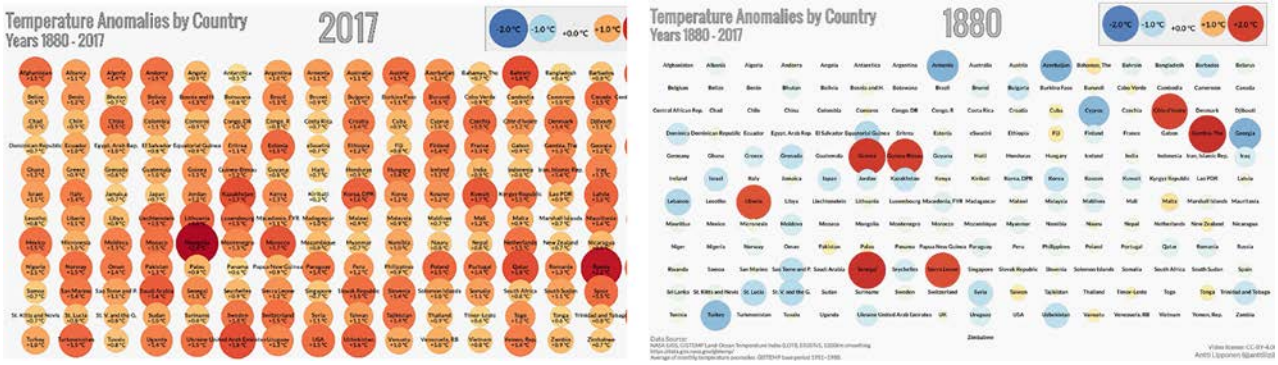

Figure 4.2. Animation screenshot of temperature anomalies by country, years 1880–2017 (Lipponen, 2018). Data source: NASA GISS, GISTEMP Land-Ocean Temperature Index (LOTI), ERSSTv%, 1200km smoothing (https://data.giss.nasa.gov/gistemp/). Licensed under CC-BY-4.0 (https://creativecommons.org/licenses/by/4.0/).

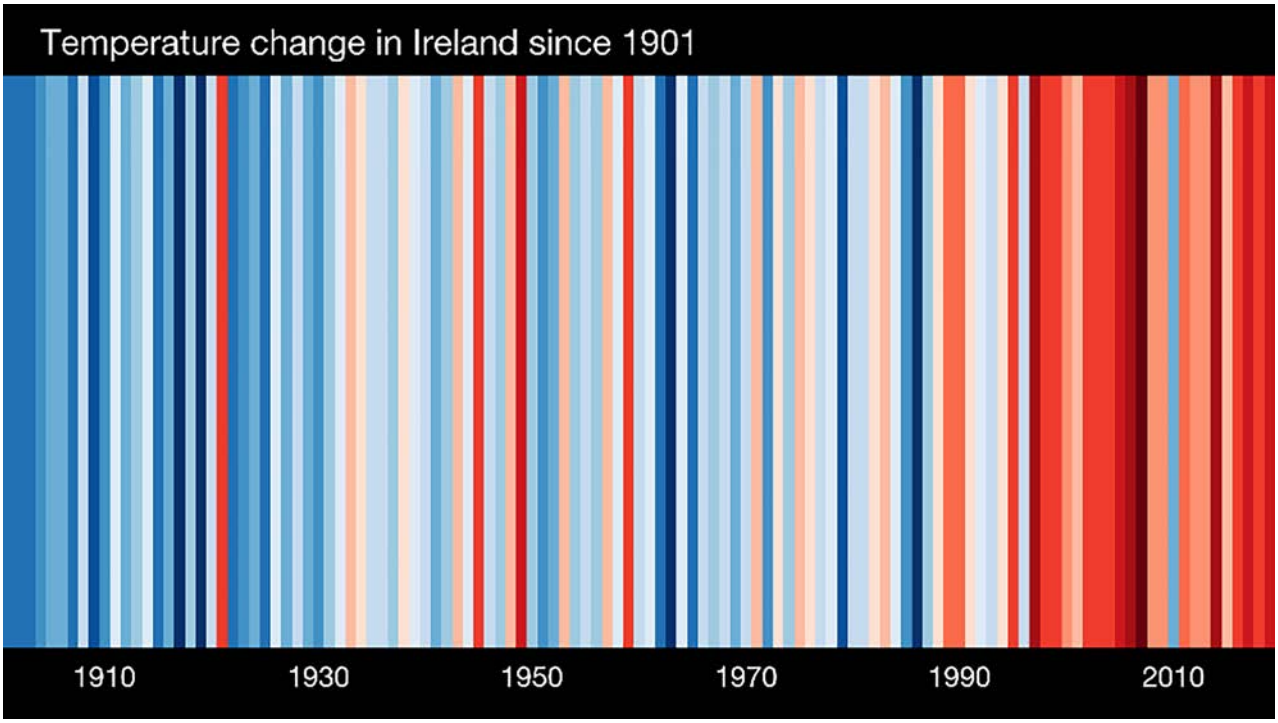

Figure 4.3. ShowYourStripes illustration by Ed Hawkins. Reproduced from Hawkins (2021); licensed under CC-BY-4.0 (https://creativecommons.org/licenses/by/4.0/).

Figure 4.4. The Blue Marble. Source: NASA/ Apollo 17, 1971; taken by either Harrison Schmitt or Ron Evans; licensed under Wikimedia.

several stakeholders can also spark subversion and caricature, which often feed into narratives of climate denial (Luke, 2015; O'Neill, 2020). People have also become jaded by certain images that have become well-worn tropes, such as the polar bear on the melting iceberg (Wang *et al*., 2018). Furthermore, often the simplicity of images used to illustrate scientific or policy matters can provide the, perhaps convenient, "illusion" that policymakers and experts actually have a full grasp of what is happening and what the best means to respond to the issues are (Luke, 2015, p. 287).

Of course, part of the challenge is that the majority of information that people receive about climate change comes not directly from scientific sources but from the media (Corner *et al*., 2012). Hajer and Versteeg (2019) further state that "Imagining futures is not innocent … mediatization has become so pervasive that it leaves an imprint on how we conceive of our realities: we are unable to think beyond the circulating images". So much so, that Luke (2015) argues that "images of rapid global climate change remain works-in-progress that are risky arts" (p. 292).

Inclusive approaches are a way to counter some of these issues. Research shows that inclusion of public inputs in the development of visual communication materials can widen public perception and interaction with visual representation in more critical and co-creative ways (Felt and Fochler, 2011). Recent research also shows that most climate change images targeting the general public focus on problems

rather than on solutions, and that they often portray climate change impacts on the environment rather than on people (Wang *et al*., 2018). Additionally, it is becoming increasingly important to understand which images capture the public's imagination, how they promote action and indeed how they may lead to misrepresentation of important issues (Wang *et al*., 2018; Metze, 2020).

4.5 Imagination as Method: Use of Visualisation in Research and Research-creation Approaches

The use of visualisation and the incorporation of artistic elements into the research realms have become more valued in recent times. There is an increased interest in moving research in a direction that valorises imaginative, creative and non-conventional methodologies that foreground promise over fact and the possible over the real (Hayes *et al*., 2015).

Ideas such as "research-creation" have been leveraged in the social sciences and humanities and can be broadly defined as research endeavours that have an element of artistic work, the use of experimental visual or aesthetic devices or some other creative process (Chapman and Sawchuk, 2012).

There are numerous orientations guiding the application and knowledge of these more creative research activities, and at times this is seen as challenging in terms of demonstrating a more rigorous application and documentation of methodologies and related outputs (Bruce, 2017). For instance, the increased use of documentaries and cartoons in some areas of research has multiple purposes, including revealing hidden truths, problematising accepted realities and facilitating engagement (Van Munster and Sylvest, 2015).

In attempting to narrow down a wider spectrum of approaches, Chapman and Sawchuk (2012) have classified these under four different modes: research for creation, research from creation, creative presentations of research and creation as research. The first three modes of research-creation suggested by the authors are associated with a stage of the research process. For example, research for creation indicates an early process of data-gathering that will enable a later creative process. In contrast, research from creation suggests that creation is a form of data generation itself, which, unlike the previous mode, does not come at the end of the research process but instead can be used to elicit new insights at the start. Creative presentations of research are used to portray a research mode whereby results are presented in creative form. Finally, creation as research adopts a more complex approach, one that uses the creative process to experiment, analyse, critique and depict the research process itself. Thus, in this instance, research is the end goal, working as a performative medium that can be engaged in different creative directions. In putting forth this typology, the authors suggest the need for a fluid interpretation of these categories as merely mapping different orientations, which, when applied in a real research context, are not mutually exclusive or easily demarcated from one another (Chapman and Sawchuk, 2012).

Notwithstanding the blurred divisions between these research-creation modes, some authors have argued that in recent years there has been an increased interest in creation as research, whereby the interlinked processes of gathering, analysing and revealing knowledge emerge and are situated within a creative process. This is seen as an ideal means to tap into a level of reflexivity, inquiry and observation that enables hidden knowledge to emerge.

The term "performative research", coined by Haseman (2006), describes a concept that helps to further build on the creation-as-research idea, by placing further emphasis on practice and situated experience as a key research activity, in terms of both doing research and presenting outputs. Many researchers have highlighted the benefits of performative and experiential research methodologies across a variety of disciplines (Riley and Hunter, 2009; Straatemeier *et al*., 2010; Mayoh and Onwuegbuzie, 2015; Flood *et al*., 2018). Transcending what are often more rigid and potentially limiting research processes and outcomes, research-creation methods allow access to innovative forms of societal and cultural analysis, expression and presentation beyond more conventional means such as books, essays and reports (Chapman and Sawchuk, 2012). Research-creation methods are also seen as a useful means to express and explore interdisciplinary perspectives and approaches, exactly because they are often not bound by preconceived working practices.

4.6 Implications, Challenges and Benefits of Future-based Approaches

Despite the promising impacts of leveraging imagination and imagery to accelerate and promote transformative change, ongoing issues to respond at scale and in a timely fashion have been seen by many as a failure of the imagination (Brown *et al*., 2010; Luke, 2015; Wapner and Elver, 2016; Milkoreit, 2017). The complex and non-linear unfolding of climate impacts coupled with siloed thinking, risk aversion and cognitive overload are some of the recognised impediments to more accurate and innovative forecasts and strategic thinking for the future (Schoemaker and Tetlock, 2012; Gowing and Langdon, 2018; Nightingale *et al*., 2020).

The Imagining2050 project proposes several tools that are innovative, with a view to enhancing foresight capabilities and supporting alternative ways to explore and plan for the future in the face of climate change. It encourages deeper levels of deliberation by allowing citizens to engage with information in a more interactive and imaginative manner. Methods that support the sharing of stories, narratives and visual techniques can be used to improve collaborative communication and impact. In the next chapter we explore the inclusion of these methods in deliberative processes and their role in transcending conventional, more rigid, political deliberation and traditional community engagement processes by allowing access to innovative forms of societal and cultural analysis, expression and presentation beyond more conventional means such as books, essays and reports.

The ability to create images in the brain and to project these onto the past and future significantly broadens our sense of self, in a manner that extends our lifetime beyond our individual life cycles (Bloch, 2016). The use of images and imaginative methods would, therefore, appear to be key towards more future-oriented visions of change that break away from the pervasive and problematic tendency for short-term thinking.

5 Research Methods

5.1 Deliberative Engagement Design

The format adopted by Imagining2050 was the deliberative futures workshop, the aim of which was bringing theory and practice together to highlight and explore the central role of citizens in decision-making processes and also to facilitate this through adequate tools and methodologies (Hammond, 2019). In this context, participatory action research and action research are new leading paradigms (Kindon *et al*., 2007). These approaches require a closer collaboration between participants and researchers in co-creation practices to solve real-world problems (Newton and Parfitt, 2011).

Our design draws extensively from deliberative processes and also from participatory and anticipatory democracy methodologies. As noted in Chapter 3, deliberative processes emphasise the value of informed, respectful and reason-based dialogue. Participatory processes, on the other hand, prioritise the benefits of wide participation, through inclusion, direct engagement and empowerment. Anticipatory democracy complements these approaches and it involves enhanced participation in terms of shaping the future towards more equitable and sustainable futures (Bezold, 2019). It is essentially an approach that seeks to counter short-cycle politics by "futurising" democratic processes (Bezold, 2019).

The approach adopted recognises the systemic turn in deliberative democratic theory (see Figure 5.1) and embeds a range of visioning and scenario co-creation tools within a wider deliberative action research approach. In doing so, we have attempted to draw in multiple experiences, voices and perspectives with a view to increasing and enhancing "deliberative moments" within the process.

Participatory evaluation methods have been employed to critically assess and explore new metrics for evaluating engagement processes to ensure continued validity, innovation and enhancement of engagement strategies. This is particularly relevant in the context of more experimental methodologies, such as those adopted by Imagining2050. This work culminated in the development of an animation and toolkit, which are freely available for use and which seek to cater for a wide range of stakeholders who may be interested in incorporating deliberative and visual methods in their community engagement strategy.

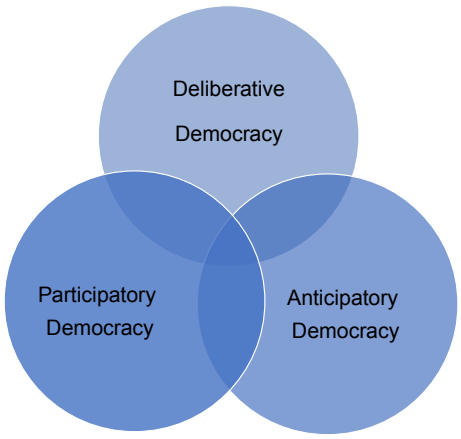

Figure 5.1. Illustration of democratic theory foundations of the deliberative futures workshop.

5.2 Brief Overview of the Multi-stakeholder Approach

The multi-stakeholder approach included a staged process of dialogue that was structured in a way that helped bridge the local deliberative futures workshops and other complementary engagements, such as thought leader workshops, state agency workshops and wider civil society workshops (as discussed in Chapter 1).

The deliberative futures workshop used research facilitators and moderators to guide the forum and organise the expert-led presentations that informed subsequent deliberations and debates. At the community level, the deliberative futures workshops took place over two weekends. The first weekend focused on a visioning phase, looking to explore and brainstorm diverging conceptions of climate change and sustainability, and the second weekend focused on revisiting key ideas and identifying points of convergence and divergence, leading towards the co-development of pathways and scenarios for change. Imagining2050 had originally intended to carry

out this work in three distinct communities. These were Athlone in County Westmeath, Ballincollig in County Cork and Lahinch in County Clare. The choice of communities considered geographical diversity and urban/rural profiles. However, because of public health restrictions necessitated by the COVID-19 pandemic, the events organised with the community in Lahinch had to be cancelled. Consequently, this work is skewed towards urban community insights and priorities.

The thought leader workshops served as critical engagement opportunities to reflect on the applicability and upscaling of methods and findings towards the development and deepening of methods and recommendations stemming from the research process.

The workshops with local stakeholders and government representatives looked in more detail at the practical and policy implementation levels of the work, enabled from discussions with local community stakeholders, such as public body representatives with a community engagement for the climate action brief, non-governmental organisations and community development groups. The deliberative futures workshops findings were also input into a Delphi panel format to gain insights from policymakers and climate science experts in Ireland. They were composed of scientific expert groups with national- or international-level knowledge of climate change and sustainable transition pathways; Table 5.1 offers a full breakdown of all the engagements carried out. Public health restrictions related to the COVID-19 pandemic meant that many workshops were conducted online, which made these more limited in terms of time (sticking to a time limit of 1 hour) than face-to-face workshops, which would typically have run for a full morning or afternoon. It also constrained our plans to go back

Table 5.1. Breakdown of Imagining2050 multi-stakeholder events between 2019 and 2021

Stage	Activity type	Description	Date	Number of participants
1	Thought leader “Community Engagement” workshop	Workshop with experts mapping community engagements and dialogues in Ireland	January 2019	24
1	Online survey in Athlone	Local online survey exploring local perceptions and prioritisations of environmental change	May 2019	257
2	Athlone deliberative futures workshop: Visioning	First deliberative futures workshop event in Athlone; focused on visioning local futures	June 2019	13
2	Athlone deliberative futures workshop: Scenarios	Second deliberative futures workshop event in Athlone; focused on development of local scenarios to enable change	October 2019	12
3	“Envisioning energy futures” workshop	Workshop with experts exploring energy portfolios generated by multiple stakeholders	October 2019	20
1	Online survey in Ballincollig	Local online survey exploring local perceptions and prioritisations of environmental change	November 2019	155
2	Ballincollig deliberative futures workshop: Visioning	First deliberative futures workshop event in Ballincollig; focused on visioning local futures	November 2019	18
2	Ballincollig deliberative futures workshop: Scenarios	Second deliberative futures workshop event in Ballincollig; focused on the development of local scenarios to enable change	February 2020	12
2	Lahinch deliberative futures workshop: Visioning	First deliberative futures workshop event in Lahinch; focused on visioning local futures[a]	n/a	n/a
2	Lahinch deliberative futures workshop: Scenarios	Second deliberative futures workshop event in Lahinch; focused on development of local scenarios to enable change[a]	n/a	n/a
3	Online futures thinking workshop	Workshop exploring the use of deliberative futures with state agency representatives	November 2020	6
3	Online thought leader “the future citizen” workshop	Workshop with experts, assessing potential impact of deliberative futures approaches in enabling change	December 2020	8
3	Delphi panel	Panel integrating local community recommendations with expert feedback and comments	January 2021	21

[a]Cancelled because of COVID-19 public health restrictions.

n/a, not applicable.

to the Athlone and Ballincollig communities to offer feedback on these multi-stakeholder engagements. All rescheduled events entailed more limited timelines and constrained online dynamics than face-to-face exchanges.

5.3 Guiding Principles for Community Engagement

Reflecting the core norms of deliberative democracy, the Imagining2050 community engagements were guided by the principles of inclusion, equality and considered judgement.

5.3.1 Inclusion

Inclusion involves the representation of diverse groups, e.g. a mix of gender, ages, nationalities, ethnicity and socio-economic backgrounds, in a process. It is also concerned with ensuring that diverse views and perspectives are represented. In practice, inclusion can be achieved through the recruitment of participants to a process (see section 5.6).

How the process and its discussions are framed and formatted has a bearing on levels of inclusion and involves considering the questions of how the topic for discussion is chosen and how the topic is discussed.

How is the topic for discussion chosen?

The organisers may choose a specific topic (with little room for deviation) or select a general theme and invite participants to decide which issues related to that theme should be further discussed. The topic may also be selected by the community itself, e.g. through a website to crowdsource wider public views on what is important, or stem from focus group research or polling within the wider community. The process used to choose the topic for discussion, and indeed how it is worded (framed), has an impact on participant influence and empowerment. The Imagining2050 approach involved an open invitation to participate that was publicised widely using posters, community radio, social media, and so forth. Additionally, certain sectors were targeted, including local public participation networks, resource and community centres, rural development organisations, local chambers of commerce and higher education institutions. It also used surveys (both face to face and online) to facilitate wider community input to the topic chosen.

How is the topic discussed?

The format used in deliberative democratic innovations such as citizens' assemblies involves a learning phase, in which expert witnesses are invited to present participants with brief, accessible information (and participants have the opportunity to question these expert witnesses), a deliberation phase that involves facilitated small-group discussions on the topic and a final decision/recommendation phase. This format raises a whole range of subquestions, such as:

- Who chooses the experts?
- How is their "expertise" framed?
- What form of facilitation is used?
- What form of decision-making tool is employed?
- What is the balance of information to discussion?

Good practice suggests that organisers should be guided by an advisory group when choosing the experts and their brief. This group may include experts in the topic area as well as experts in processes of community engagement. It is also recommend that discussions are professionally facilitated, to ensure that all participants are allowed the opportunity to voice their views (a balance of 20% information to 80% participation is generally a good rule of thumb). Traditionally it was felt that participatory and deliberative processes should strive for consensus decisions. However, it is now recognised that this goal can place undue pressure on a group, may prevent the inclusion of minority opinions and can restrict discussions. Other decision-making options include voting.

5.3.2 Equality

If inclusion is concerned with representation and presence within any deliberative process, then the focus of equality is on giving all participants in that process an equal voice. It is not enough to offer someone a "place at the table". They need to be guaranteed voice, respect and consideration once there. This does not require each person to speak for the same amount of time. Instead, it requires that all participants have opportunities to speak and be listened to with respect.

In practice, deliberative and participatory forms of engagement operate within real-world systems marked by inequalities in power, wealth, knowledge, access to information, and so on. These inequalities

may act as social and class barriers or as cultural barriers to participation and to the undue weight given to some participants' contributions (e.g. university-educated, middle-class men). One cohort that may be disadvantaged in such processes is women, who tend to participate less often than men, and as a result have fewer opportunities to contribute and, therefore, less influence and authority. One way of facilitating female participation is to ensure they are not in a minority in any small-group discussion.

Facilitators have a vital role to play in this regard. They strive to ensure that all members have the opportunity to contribute, that the tone of the discussions remains respectful and that no one member dominates the proceedings.

5.3.3 Considered judgement

Deliberative processes involve informed, reasoned and respectful discussions with an emphasis on the common good and an honest sharing of differences.

Participants are invited to explain and justify their preferences on a matter. They are also asked to respectfully consider the differing opinions and experiences of others, and to be open to changing their position on an issue if, in the light of new information, they can no longer justify it.

Storytelling and rhetoric can also have a place in deliberative processes. Participants may be invited to, or indeed wish to, share their lived experiences of an issue or even to voice their anger at injustice, thereby expressing other perspectives and reactions. In some cases, this may help move a process from discussion, through debate, to a decision.

Finally, in terms of the common good, we suggest that decisions should be based on facts, the future and the consideration of the needs of others.

These shared principles provided a framework for the Imagining2050 research and the way in which the team operated. They offered guidance on the process and were adopted in an incremental way, in recognition of inherent barriers to and difficulties in delivering perfect results on all these principles in one forum or process.

5.4 Imagining2050 Workplan

The project developed a predefined structure based on five distinct work packages (WPs). The workplan structure provided a systematic, incremental and iterative approach to the research, which enabled different WPs to complement subsequent work for the lifetime of the project. Figure 5.2 illustrates this incremental process.

The process started with a review of the literature pertaining to sustainability transition and imagination and imaginaries (WP1). This was followed by a complementary scoping review of best practice and practical guidance on carrying out deliberative engagements (WP2). WP3 represented a core part of the work. It involved all the work of organising, staging and analysing the materials from local community engagements. Following the critical engaged work in WP3, further engagements and analysis were pursued to develop scenarios for climate action based on the co-creative process. WP4 aimed to draw findings from WP3 to integrate these into a set of coherent pathways and priorities for climate adaptation and mitigation. Finally, WP5 focused on appraising the use of different visualisation techniques in local deliberative processes.

All work was conducted in accordance with the approval of the University College Cork Social Research Ethics Committee.

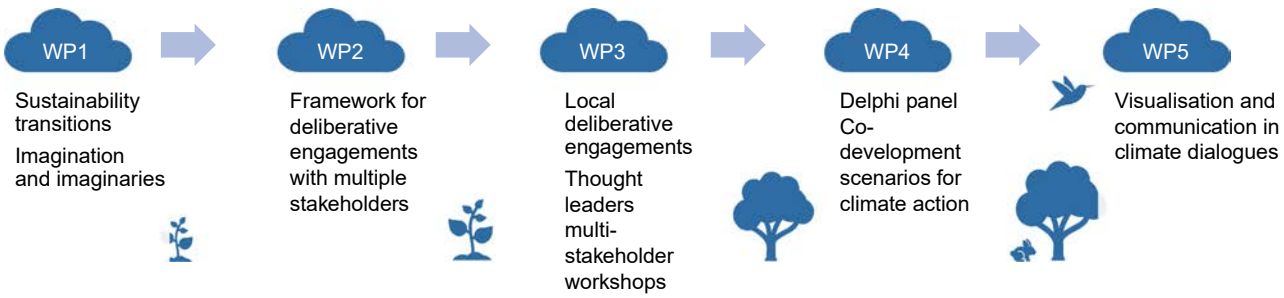

Figure 5.2. Illustration of the Imagining2050 work package structure and associated tasks.

5.5 Sampling and Recruitment

Recruitment is a vital element for community-based research, and commonly the methods employed to secure participation draw from wider methodological and research considerations. For deliberative approaches, a key concern is to reconcile the development of well-informed and considered processes with other democratic values, such as equality and inclusion, which favours mass public consultation as an ideal way to express and operationalise the public voice (Fishkin, 2002). This implies a trade-off, as deliberative approaches typically require more time, resources and commitment, and bring added barriers in terms of securing and enabling participation in large numbers. Thus, aspirations for more thoughtful and informed spaces for research and decision-making are often limited to a microcosm, which at best can be portrayed as a "miniature version of the public in both its demographics and attitudes" (Fishkin, 2013, p. 497).

Although the aim of deliberative processes is to be inclusive and give equal consideration to everyone's views, achieving this in a meaningful way is challenging. In particular, defining "everyone" and determining how best to ensure an inclusive process remains problematic (Fishkin, 2013). A common way to achieve this goal within deliberative processes, such as mini-publics, is to recruit using random or stratified sampling, a process whereby everyone has an equal chance of being invited into the deliberative forum (Elstub, 2014). The size of this sample can vary substantially. Indeed, mini-publics, as mentioned in Chapter 3, are a broad category that covers fora of different sizes and objectives (Escobar and Elstub, 2017). The random sampling approach usually adopted in mini-publics is particularly good for ensuring that all interested parties have the same opportunity to participate and that the deliberative space is not dominated by lobby groups, which tend to undermine other voices and perspectives (Gregory *et al*., 2008).

However, in practical terms, random sampling does not fully resolve difficulties in drawing in minority and hard-to-reach groups and in overcoming wider barriers to inclusive engagement. Some cohorts, even if invited, may choose for many reasons not to take part. Typically, these barriers have links to gender, racial, ethnic, age and disability disparities that constrain greater participation. Achieving diversity in group composition is one of the most difficult issues to overcome, and is most evident in small samples (Fishkin, 2002; Roberts and Escobar, 2015). Figure 5.3 outlines some of the most common barriers.

Emerging methods employed in deliberative action research approaches seek to address these issues with an added focus on mobilising diverse people and communities through more open, transparent and accessible processes to help overcome issues associated with inclusive recruitment. For instance, co-productive processes of agenda-setting may significantly increase the validity, salience and communication of tangible benefits for participants.

Partnerships between research institutions and community groups, and the individual capabilities

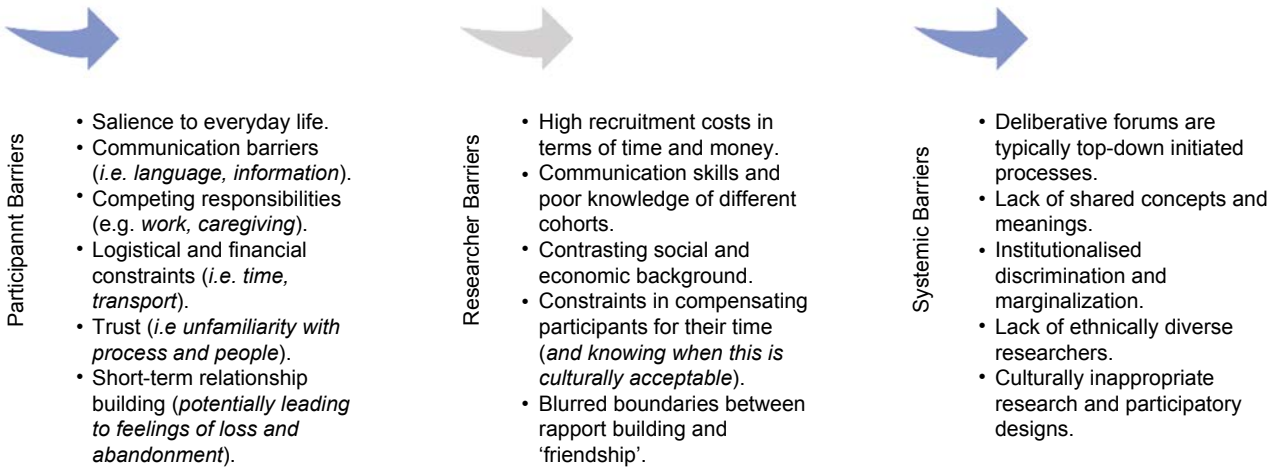

Figure 5.3. Breakdown of recruitment barriers for participants and researchers, and systemic barriers.

and qualities of recruiters also appear to be critical factors in increased rates of participation and inclusion. The creation of volunteer registries have also shown promising results in other areas, such as health research (Chadiha *et al*., 2011). Figure 5.4 provides a breakdown of potential enablers to increase recruitment across diverse cohorts as well as some strategies to ensure the increased retention of participants.

5.6 Imagining2050: Recruitment Experience and Limitations

To overcome some of the typical barriers outlined above with regard to random sampling, the Imagining2050 project used a combination of techniques to recruit participants. These included purposive and snowball sampling. We also engaged in extensive informal networking, social media exchange, targeted emails to local organisations and knocking-on-door methods, and we engaged with local media, such as radio and newspapers, to share information about the project and seek wider participation among different cohorts.

"Door knocking" was a key method of recruitment. This is a rich and fruitful approach that offers the opportunity to combine recruitment with the collection of observational materials (Davies, 2011). It enables the collection of information regarding the community setting, neighbourhood dynamics and initial responses to research ideas as well as a more general sense of awareness of and concern about climate change-related issues. Davies (2011) further argues that even those who decline to participate, or who are negative about the theme, can provide information about why they think the topic does not apply to them or why they do not wish to participate, which in itself leads to insights regarding the way people relate to the topic being discussed.

For Imagining2050, this approach was extremely relevant, and it enabled a much greater understanding of how local participants perceive this problem within their own environment and communities. It also helped us to identify and access influential stakeholders, such as community leaders and local political representatives, as well as issues important to the communities involved. To this end, we visited numerous public places in the community including the local universities and institutes of technology, local libraries, community and resource centres, shopping centres, post offices, parks and shops. While time-consuming, this was a key process for recruiting participants.

Recruitment and continuous engagement with local participants presented a significant challenge to the Imagining2050 project and remains a research limitation that needs to be acknowledged. Research requires considerable work and commitment and

Figure 5.4. Breakdown of enablers to increase recruitment and retention of participants.

available options for recognising the effort and commitment of participants, and in some way compensating them for their time, are limited. Deliberative engagement processes tend to be long, and place further demands on people's time. The Imagining2050 team took great care to make the research space comfortable and welcoming. The team had set aside a small budget for child care and any additional care costs or travel costs for people with disabilities, but this was not taken up by any of the participants.

There were also significant difficulties in reaching out to some cohorts, specifically those aged between 18 and 24 years. In both Athlone and Cork we tried to encourage participation from younger university students in our deliberative futures workshops, but with no success.

5.7 Data Collection and Analysis

Imagining2050 used a broad approach to data collection, one that relied substantially on visual methods for enabling dialogue, collecting information and developing co-created knowledge insights. While the methods were largely qualitative, traditional methods such as interviews or focus groups did not feature in the process. In addition, the research was inductive in style, and started by exploring more widely emergent issues for communities in visioning and creating pathways for change at the local level towards sustainability and climate resilience. The process of data collection derived from all stages and was used to feed into the subsequent stages of research to enable reflexive and inclusive knowledge creation. The team engaged visual consultants to support the development of visioning tools and help with facilitation (Think Visual) and a video montage professional to follow the process (Brianoval).

The work carried out in the deliberative futures workshops formed the core component of data collection. This involved work over two weekends in two distinct communities (four weekends in total). The workshops used six main exercises of knowledge generation (see Figures 5.5–5.11).

This was followed by a ballot process to decide on final recommendations and a complementary evaluation process to appraise the effectiveness of the process and the tools utilised.

The use of the ballot permitted an equal voice for all at the final recommendation stage, removed any pressure for consensus and emulated the processes used by the Irish Convention on the Constitution (2012–2014) and the Irish Citizens'

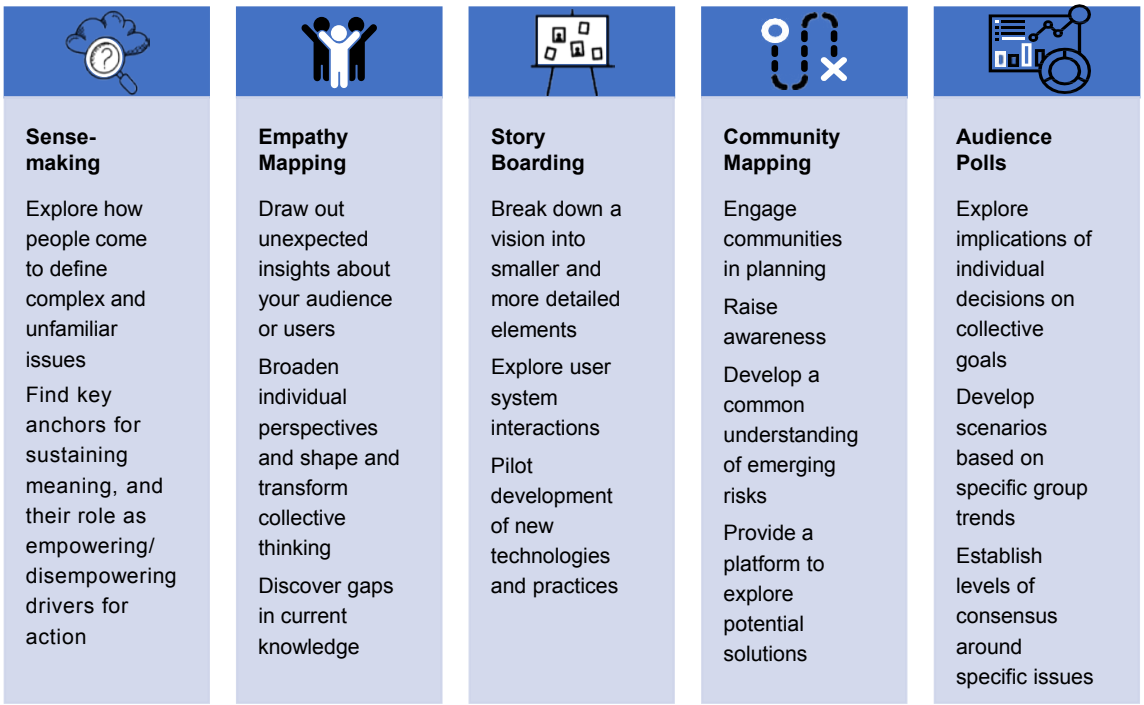

Figure 5.5. Visioning and scenario tools used to enable dialogue and collect data.

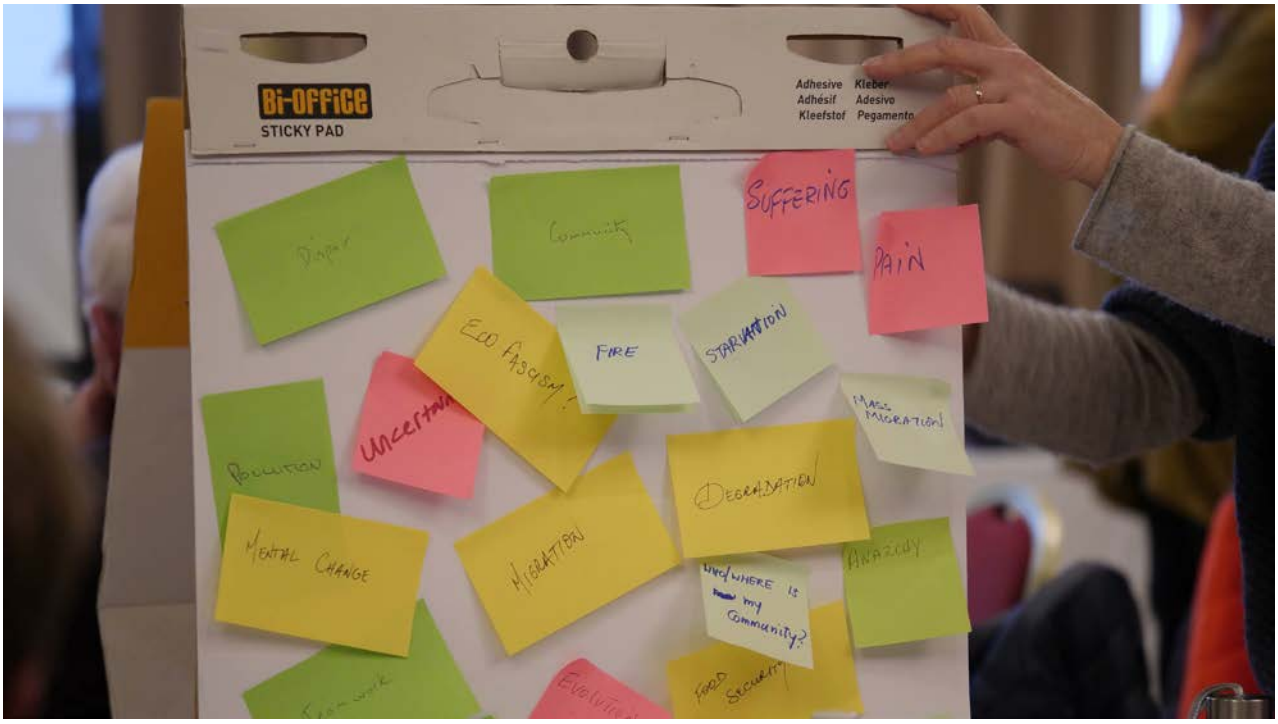

Figure 5.6. Sense-making exercise from the Imagining2050 process.

Figure 5.7. Empathy mapping exercise. Digitised compilation of empathy doodles from engagements in Ballincollig and Athlone.

Assembly (2016–2018). Subsequently, a Delphi panel process was developed, which sought to compare the collective visions co-generated from the Imagining2050 community engagements in Athlone and Ballincollig, with the opinions of scientific and policy experts from across the field of climate action.

The Delphi method is based on structured group communication and is pursued to obtain reliable

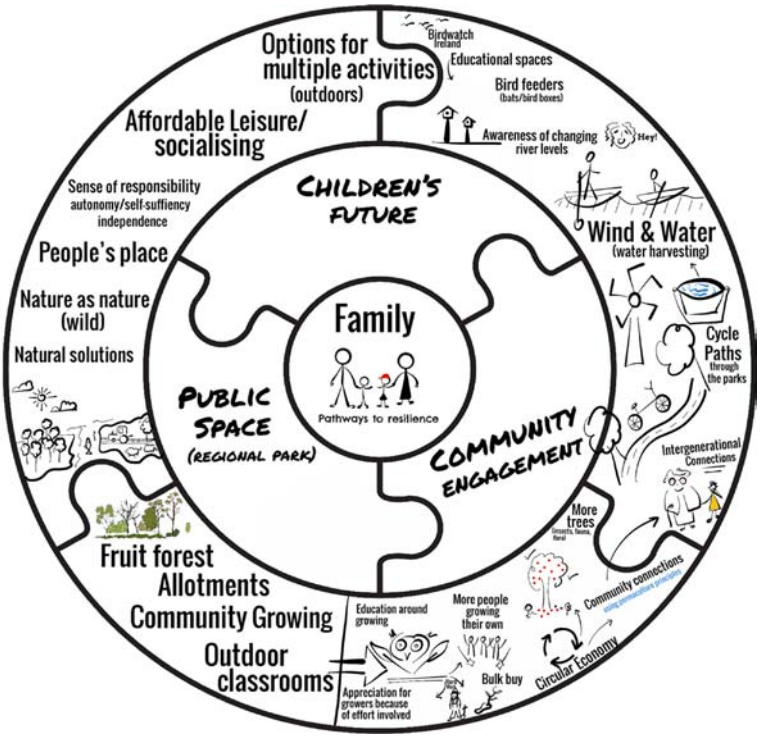

Figure 5.8. Storyboarding. Digitised and streamlined version.

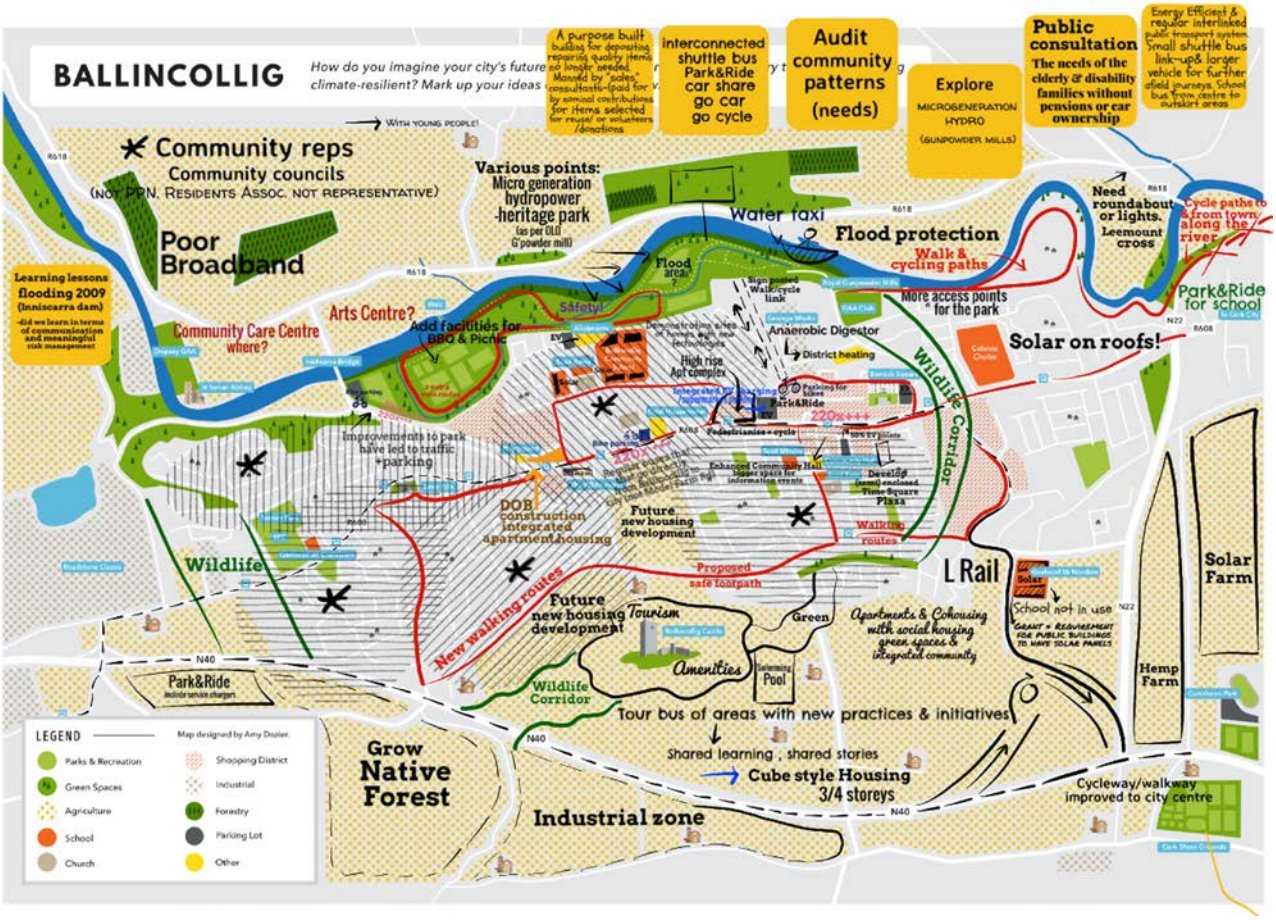

Figure 5.9. Community mapping. Digitised and streamlined version.

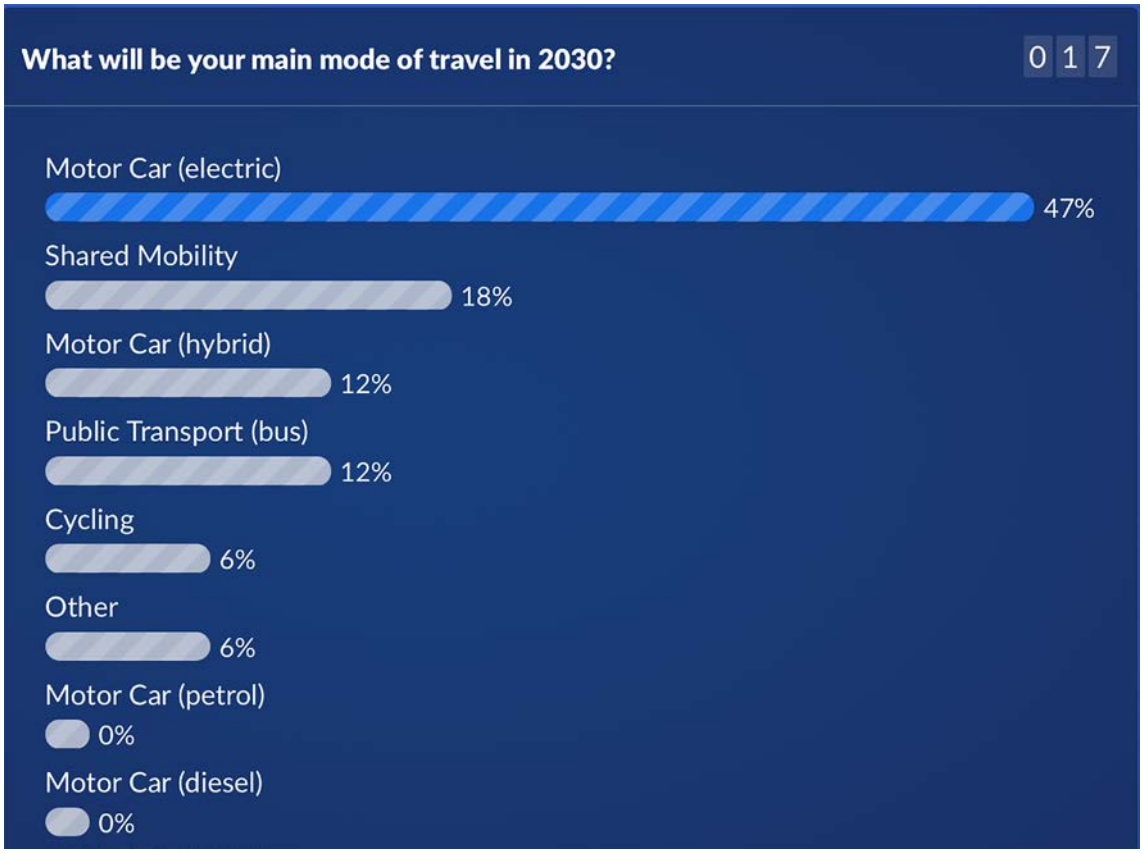

Figure 5.10. Audience pool. Results of the questions from the exercise in Ballincollig.

Question 9: Please consider the following suggestions and rank in order of your preference a climate initiative you believe would be most impactful for Ballincollig in the next 10 year period	
	Rank in order of your preference (1, 2, 3...)
Zoning land for energy and community projects	
Power purchase contract for Ballincollig (Micro-generation, feed in tariff)	
Food growing initiatives (community gardens and allotments, community supported agriculture garden)	
Improved bus transport system	
Fleets of small bus carriers	
Segregated cycling routes	
Carbon Neutral agriculture	
Community-led housing projects	
Park and Ride (East and West of Ballincollig, with shared mobility facilities and EV points)	
Pedestrianised town centre	
Set-up of local energy co-op	

Figure 5.11. Ballot. Sample question from the exercise in Ballincollig.

consensus or identify dissent or non-convergence on a given issue (Linstone and Turoff, 2011).

Rowe and Wright (1999) identify four characteristics that are necessary for defining a Delphi procedure. These are anonymity, iteration, controlled feedback and the statistical aggregation of results. The iterative nature of the process is particularly unusual, and sets it apart from more traditional survey methods. In particular, it allows participants to reconsider their original responses in light of the expressed knowledge and opinions of the other Delphi panel participants. This innovative method, on account of its reflexive qualities, can act as a means of generating social learning (Flood *et al*., 2018; Revez *et al*., 2020).

A two-round Delphi survey was carried out between November 2020 and January 2021. The survey was composed of 12 questions, which were put to a panel of 21 participants. Participants remained anonymous throughout the process to ensure a more open process of engagement with panel feedback. The Delphi panel was diverse and included researchers and state-agency officials with a wide range of expertise and disciplinary backgrounds. Based on feedback and comments offered on the first round of the survey, the 12 questions were refined or reframed. In the second round, the Delphi panel was asked to reconsider their position based on these changes and based on a summary of comments made by the panel (the findings are outlined in section 6.1).

5.8 Participatory Evaluation

The evaluation of programmes and initiatives has advanced substantially towards more participatory and reflexive models (Chouinard, 2013). Several authors have called for more participatory models by arguing that evaluation is in essence a social process, which implies the need for more democratic and participatory approaches (Gregory, 2000; Chouinard, 2013). However, there have been tensions between the traditional managerial-style approaches to programme evaluation and participatory forms. It follows that different methodological choices are favoured by disparate approaches to evaluation. Participation in policy and research has gained substantial support and the involvement of stakeholders in the evaluation process is a principle that is now generally accepted, yet difficult to theorise. In particular, there is a lack of agreement in terms of the best instruments to facilitate evaluation (Daigneault and Jacob, 2009).

At the heart of these tensions are diverging positions concerning the best means to describe, measure and interpret different programmes and community services (Cooper and Ord, 2012). The current appetite in mainstream policy for more managerial-style and evidence-based approaches is often positioned in opposition to more democratic forms of evaluation (Cooper and Ord, 2012). This tension arises not because these approaches are intrinsically incompatible, but rather because the scope of what is considered to be measurable using participatory approaches is now significantly wider than what can be evaluated using more traditional evidence-based approaches. For instance, attention to more “relational” conceptions of community, power relations and agency are embracing of different forms of knowing and experiencing reality.

Engagement in evaluation significantly increases reflexive learning, as the participatory process encourages a deeper level of awareness of the impact of specific programmes at both individual and collective levels (Cooper and Ord, 2012). Indeed, as Suárez-Herrera *et al*. (2009) have argued, a distinct feature of participant-led evaluation is that “emphasis is no longer on proving but on improving” (Cooper and Ord, 2012). A key element in the development of participatory evaluation of programmes is a more active role in identifying and designing the terms of reference, interpreting findings and accessing and using this information (Gregory, 2000).

5.9 The Imagining2050 Evaluation Process

Imagining2050 used three methods to enable participatory evaluation. The methods used were iterative and followed a process of doing, evaluating and reflecting (see Figure 5.12). The first method (using a feedback board) was non-prescriptive and was used throughout several workshops in a way that encouraged anonymity.

The second technique, which was key in participatory evaluation, involved open discussion on how the workshop had prompted changes of attitude towards climate-related future pathways and action. To enable

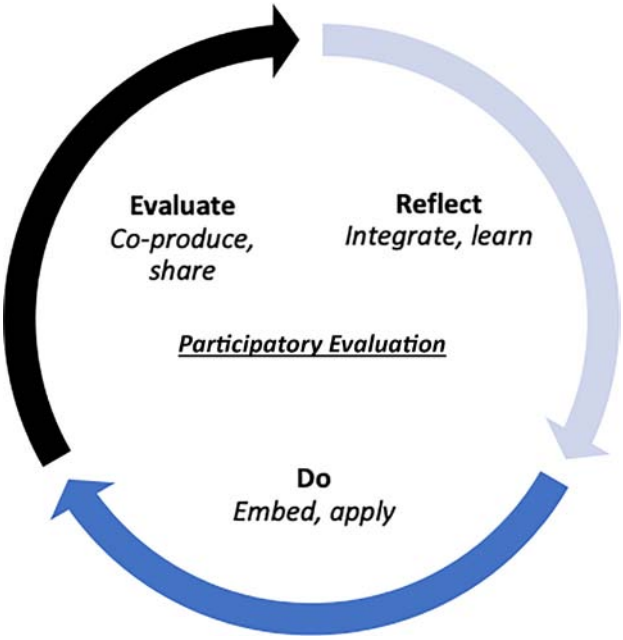

Figure 5.12. Integrated evaluation practices in the Imagining2050 engagement processes.

conversation, two or three open-ended questions were posed, for example:

- In what ways has the workshop enabled new insights?
- What expectations has the workshop generated?
- What different measures of success do participants attach to the process?

Open-ended evaluation occurred as an emergent process during which participants named relevant criteria. This provided a valuable opportunity to explore a diversity of ideas and measures driven by individual wants and needs of the participants rather than by the needs of the organisers. The informal and dynamic way in which feedback was sought increased the quantity and quality of comments received, compared with written evaluation. Note-taking is essential to pick up on key points.

The third method was part of the final workshop evaluation and used a questionnaire focused on the deliberative process as well as on more practical organisational components. The questionnaire aimed to elicit if participants felt they had equal opportunities to voice their perspectives, if they were provided with relevant and insightful information to enable deeper discussion, if the dialogue allowed for open and respectful exchange, if the tools and activities were engaging and inclusive and if they felt motivated to continue further dialogue after the workshop. It was informed by similar surveys used in the Convention on the Constitution (2012–2014) and the Citizens' Assembly (2016–2018), which were in turn informed by the Perception of Deliberative Quality Index (for discussion, see Farrell *et al.*, 2021). More practical questions on the ease of access to the venue, information given, food choices and communication with the organisers were also included (the findings are detailed in section 6.2).

6 Research Findings

The work carried out with communities explored visions and scenarios for change at the local level. As discussed in Chapter 5, the materials collected were varied and included empathy maps, storyboards, community maps and audience polls. The outcomes of this work included over 20 visual outputs. A core part of the work entailed participatory mappings, and these were used to collate and converge some core findings across the Athlone and Ballincollig communities. Below we offer a brief outline of these findings for each community. We also look at differences in key dimensions of change proposed by the communities and those proposed by policymakers and academics through a Delphi panel exercise. In the final section, we offer some insights from the participatory evaluation process on the use of deliberative futures workshops at the local level.

6.1 A Community Map towards Sustainability in Ballincollig

Ballincollig is a fast-growing residential satellite town in the west part of Cork City. It is located beside the River Lee and close to the Inniscarra Dam. Change has been seen as a hallmark of life in Ballincollig since the 1950s and 1960s, as the town has grown substantially, from a sparsely populated area to a vibrant and residential urban community, with a population of over 18,000. It has a large regional park, which has been identified as a major asset by the local community.

Participants in the workshop considered that greater access to and use of the park for learning and engaging with nature is important in promoting sustainability in the community. Many saw value in extending green areas across the city to multiply the benefits of green spaces beyond the regional park site, including the development of wildlife corridors. Participants noted that further change in the community should be pursued with a balanced approach by providing social, residential and environmental infrastructures across different areas. Traffic continues to be a problem, and emphasis on future diversification of mobility choices for residents is seen as crucial for sustainability and wellbeing. Participants in Ballincollig were keen to identify key areas of action and maximise current assets towards local low-carbon pathways and climate resilience.

This vision of change is orientated towards making local communities more vibrant and finding opportunities for Ballincollig to benefit from low-carbon transitions. This includes improved housing, diversification of local economy, an increase in green areas, improvement of local energy efficiencies and the promotion of local food and grassroots eco-innovations (see Box 6.1).

Proposed long-term solutions (out to 2050), drawing from the community mapping exercise (see Figure 6.1), include:

- the establishment of community councils;
- improvements in cycling and walking infrastructure;
- improvements in the public transport system
- a substantial increase in the number of allotments and green areas;
- a transition to organic farming practices;
- improvements in local community care infrastructure;
- local microgeneration and renewable energy;
- the installation of solar panels on all public buildings (schools, medical centres, community centres).

6.2 A Community Map towards Sustainability in Athlone

Athlone town is situated in County Westmeath. It was built around the banks of the River Shannon and is a hub of activity in the Irish Midlands. Visions of change for Athlone focus on actions to “fix communities” rather than “fixing the climate” and on “getting the basics right”. Sustainability/unsustainability is seen to be deeply connected to community empowerment and wellbeing, housing and mobility options. Our community map findings (see Figure 6.2) show that local participants see engaging communities in climate action as essential, but it should be promoted through regular meetings that are inclusive and include a diverse range of participants. Social clubs, the local public participation network and other existing local

Box 6.1. Five key community-led recommendations – Ballincollig

These recommendations are based on the results of the ballot process that was carried out to mark the end of the deliberative futures weekend workshops. For Ballincollig, emerging recommendations included the following:

- Public transport and research and innovation should be key priorities towards decarbonisation of the energy system and to build resilience. Half of participants thought that continued improvement of the bus service would be the most impactful strategy in the short term.
- Nearly two-thirds of participants (64%) agreed with the aim of increasing the overall renewable energy supply from the current 10% to 70% by 2030, in accordance with current energy targets (including electricity, transport and heat). However, 54% of these participants thought that 50% by 2030 would be more realistic for a number of economic and political reasons.
- Priority areas to target in terms of increased regulation by the government include, in order of preference, agriculture, public transport and private cars.
- Community ownership was identified as the preferred option to minimise the local impact of renewable energy generation.
- Future funding of flood alleviation, recovery and prevention should come from innovative shared-cost arrangements.

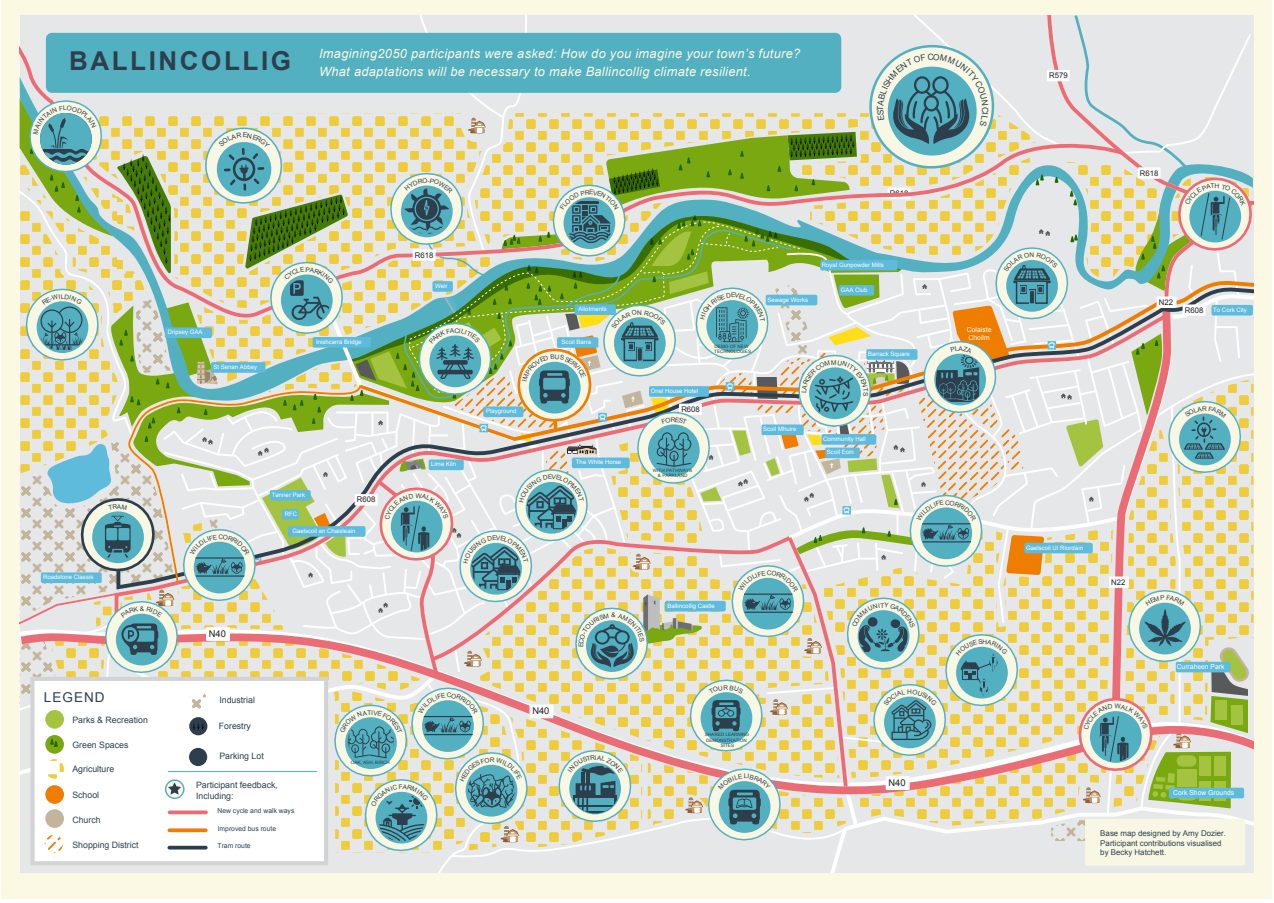

Figure 6.1. A community map towards sustainability in Ballincollig based on deliberative workshop engagements over two weekends (*n* = 22).

Box 6.2. Five key community-led recommendations – Athlone

These recommendations are based on the results of the ballot process that was carried out to mark the end of the deliberative futures weekend workshops. For Athlone, emerging recommendations included:

- Public transport and research and innovation should be key priorities towards decarbonisation of the energy system and to build resilience. More than two-thirds of participants (70%) thought that a focus on a public transport initiative would be the most impactful strategy in the short term.
- More than two-thirds of participants (70%) agreed with the aim of increasing overall renewable energy supply from the current 10% to 70% by 2030, in accordance with current energy targets (including electricity, transport and heat). However, 50% of these participants thought that more modest increases are more realistic for political and economic reasons.
- Priority areas to target in terms of increased regulation by the government include public transport, food packaging and private transport.
- Community ownership and subsidised rates were identified as preferred options to minimise the local impact of renewable energy generation.
- Future funding of flood alleviation, recovery and prevention should come from innovative shared-cost arrangements.

Figure 6.2. A community map towards sustainability in Athlone based on deliberative workshop engagements over two weekends (*n* = 20).

groups are seen to have the potential to facilitate greater engagement with local climate action issues.

Transport and housing are highlighted as key areas to promote sustainability in Athlone (both through the preliminary survey and during the deliberative future workshop process). Actions include the provision of new housing and the roll-out of transport programmes, such as supporting the provision of a rural bus scheme to ensure access to health services and shops. Adequate service levels are key to improving trust in public service transport. Alternative mobility options highlighted in Athlone include expanding the cycling infrastructure and making it family friendly, building more walkways and cycle lanes in the town and expanding the greenway.

Air quality in Athlone is highlighted as an issue and is seen to be aggravated by high volumes of traffic and congestion. To counter this, a Park & Ride system at both ends of the town is required, as is the need to tackle commuter patterns associated with the lack of housing. Correct siting of new developments is seen as a critical issue. A problematic legacy of flooding related to building on flood plains is an ongoing concern.

Long-term solutions with a view to 2050 include:

- investing in renewable energy following inclusive community process in siting and developing projects;
- reconsidering settlement patterns;
- changing farming practices through knowledge-sharing and the development of supportive peer-to-peer networks;
- providing greater incentives for forestry in a manner that includes farmers;
- exploring the re-establishment of older practices towards more sustainable lifestyles, such as shopping locally and reclaiming the market square;
- developing an actionable flood management plan with clear steps and milestones (see Box 6.2).

6.3 Imagining the Citizen of the Future

The empathy mapping exercises also proved fruitful in capturing the diverse experiences and potential challenges faced by different people in relation to climate change. Below we offer collated insights from both communities on visions for different citizens into the future.

6.3.1 The younger person

Some of the distinguishing challenges for the younger citizen in the future include exacerbated stress and poor health, time poverty and increased exposure to urban pollution. They were portrayed as being more motivated and active in mobilising in terms of protests and activism for climate change strategies. Uncertainty and undefined life paths due to climate disruption are perceived as primary challenges, and ongoing issues with housing are expected to impact young people more than other cohorts into the future. Mental health is identified as a concern for this age group.

6.3.2 The disabled person

The disabled citizen was portrayed as facing a number of challenges, including increased difficulties in emergency situations, limited housing and transport options and diminished ability to secure/maintain independence through adequate care service provision. Participants in the mapping exercise named this citizen “Hope” and voiced ambitions to establish closer ties between sustainability and critical care for people with disabilities.

6.3.3 The older person

Some of the challenges that participants considered would affect older citizens in particular in the future included poor health, isolation and diminished financial capacity. It was considered that all these issues would be exacerbated by the impacts of climate change, and they were identified as concerns in the sense that they would reduce access to healthy food and warm and energy-efficient housing, reduce mobility and make it difficult for older people to maintain connections in the community.

6.3.4 The farmer

The farmer citizen was portrayed as struggling to cope with harsher weather conditions, unfavourable supply chain dynamics and stricter environmental regulations. Growing isolation and a lack of mobility choices were considered key issues for the future farmer, reflecting

a growing divide in rural areas around mobility and transport services and family income.

6.3.5 The family

The family was identified as an important unit in the community that faces considerable challenges as a result of climate change. Trends identified as affecting families include higher fuel cost and cost of living, an ageing population and changing transport infrastructure. Community services, adequate housing and local schools were identified as important assets to help families towards sustainability and climate resilience.

6.4 Emerging Issues and Future Scenarios for Change: A Comparative Multi-stakeholder Perspective

In response to accelerated and disruptive processes of change associated with climate mitigation and adaptation challenges, we have seen the substantial growth of scenario analysis, using a range of approaches employing dynamic adaptive pathways and predictive, contingency and foresight modelling tools. Scenario-based tools are extremely relevant in the context of addressing uncertainty and have been used by policymakers to assess the impact and feasibility of different adaptation and mitigation strategies that account in more detail for uncertain futures (Rohat *et al*., 2021).

However, the need to further advance and promote future-thinking tools is critical for multiple stakeholders, including communities and local decision-makers, to make the case for, and enable, climate action (Vidal, 2006; Dunagan, 2018; Dator, 2019). If we are to succeed in our goal to achieve a low-carbon and climate-resilient society in the future, all actors, communities and stakeholders must share the same positive visions. To encourage this multi-stakeholder approach, a clearer link to democratic processes is required. This presents some challenges, particularly as noted by Inayatullah (2018), who stated that “when the mind searches for the future, it sees the past” (p. 15). While it is true that there are important path dependencies that shape the future, there is a need to also consider emergence and disruption (perhaps paying attention to weak signals), which may lead to unforeseen trajectories (Derbyshire, 2016). To counter some of these challenges, new and more inclusive approaches to scenario-building have emerged (Inayatullah, 2018).

We have presented several key dimensions of futures scenario that were identified by multiple stakeholders exploring social change in the context of their communities, their own lives and broader societal elements. The use of storyboarding, empathy mapping, community mapping and other tools, as outlined in Chapter 5, enabled a more granular and holistic understanding of how the future could unfold.

Furthermore, the combined use of explorative and mixed methodologies, linking deliberative futures insights with Delphi panel findings, offers an opportunity to form more coherent scenarios of the future, and to transcend approaches that focus on forecasting probable and possible futures, aiming instead to establish alternative preferred futures (Tapio *et al*., 2011; Revez *et al*., 2020). These dimensions are represented by four building blocks or converging points of action for local communities in the creation of sustainable pathways.

We found some valuable complementarities in the visions communicated in the two communities of Athlone and Ballincollig. These include prioritisation of transport as an area of action with overarching benefits in terms of providing for more diverse ways of travelling, health, community engagement and the greening of urban areas. Linked to this is an agreement around developing approaches at the nexus of sustainable housing, transport infrastructure and planning.

6.5 Overarching Findings from Community Engagements

The future-oriented perspectives collected through the deliberative engagement process enabled the consideration of multiple issues deemed relevant for the promotion of low-carbon and climate-resilient development pathways at the local level. The deliberative process ensured that these perspectives were informed by a consideration of relevant facts and issues linked to climate change. Expert presentations covered issues concerning climate mitigation targets, projected climate change impacts and wider implications in terms of a Sustainable Development

Goals framework. The deliberative process also enabled the development of non-prescriptive insights, which allowed for the exploration of salient projections grounded in the priorities and concerns for these communities. This significantly departs from typical scenarios and predictions, which tend to "collapse futures into more probable outcomes" (Gariboldi *et al*., 2021, p. 4).

The process of engagement enabled the identification of key building blocks and entry points. These are relevant in strategic terms and present opportunities for actionable interventions that have been proposed by communities as desirable to reorient Irish society towards a low-carbon and climate-resilient future.

Figure 6.3 outlines what are considered to be the core building blocks for sustainability and climate action at the local level. These include refinement of climate policy with a focus on addressing housing issues (mentioned in all communities as a major dimension of social and climate vulnerability), enhancing funding of adaptation capabilities through alternative cost-sharing arrangements and accelerating the uptake of electric vehicles, as well as significant improvements in public transport infrastructure and service delivery.

Figure 6.3. Four key dimensions for a low-carbon and climate-resilient future at the local level. Drawn from thematic analysis of deliberative futures workshop insights in Athlone and Ballincollig (*n* = 42).

The creation of a strong local economy, which can leverage opportunities in transitioning to a low-carbon, climate-resilient future, is also a key dimension. This includes rolling out community ownership models and opportunities regarding communities as producers of renewable energy, ring-fencing carbon tax to fund local mitigation strategies and promoting diverse local economies. Social vibrancy encapsulates a multifaceted dimension of community capacity that reflects a wider recognition of the local scale when considering the benefits of climate action initiatives for local communities. This enables the development of holistic measures that embrace cross-sectoral insights and the nexus between sustainable housing, transport infrastructure and planning, which is considered a critical issue. Finally, a healthy environment emerged in both communities as a key dimension, which speaks of future life in the face of climate change, with a focus on concepts of wellbeing.

6.6 Overarching Comparative Findings from the Delphi Panel

To develop a more coherent understanding, these key dimensions and insights were explored by a Delphi panel of experts, as outlined in Chapter 5. This resulted in several interesting points, some converging and others diverging.

In particular, we noticed a high level of agreement in terms of the overarching ideas proposed by the communities, but there was divergence in opinions in relation to the finer details and how these overarching aims could be achieved. Furthermore, prioritisations diverged somewhat from the local community engagements. This is likely to reflect the positioning of climate change as a national or global issue rather than a local one (see Figure 6.4).

In terms of climate policy, the important role of agriculture in achieving national targets emerged as a key issue for our panel of policy experts and researchers. In addition, vulnerability and evolving local disparities were considered to emerge from failure to tackle climate change at the global level. There was convergence with the community insights about the need for diversification of local economies and more accountable funding allocation, e.g. carbon tax ring-fencing. Community ownership is seen to have a place, but within a multiple models approach in which ownership is operationalised in ways that promote participation and inclusion. In contrast to local communities, which placed more weight on “fixing communities rather than fixing the climate”, the Delphi panel identified climate change as the overarching concern, to be prioritised over social vibrancy. However, there was convergence of opinion in relation to the creation of targets and measures that focus on the local aspects of climate mitigation and adaptation. In terms of a healthy environment, these align more with environmental measures and include the creation of services to support communities dealing with droughts, flooding and extreme heat. Nature-based solutions were also placed within the wider suite of infrastructural projects considered by the panel as meriting more immediate attention.

6.7 Evaluation of Deliberative Process at the Local Level

At the end of each workshop in Athlone and in Ballincollig, participants were asked to complete a survey. The results, summarised in Figure 6.4, offer an aggregated overview of all the deliberative futures workshops.

The survey results show that participants were positive about the quality of information given by the expert speakers and that they were also satisfied with the structure of the activities proposed during round-table discussions. Furthermore, the survey shows that the process of dialogue facilitated inclusiveness; 70% indicated this, while 23% were neutral on this issue and 8% of participants indicated that they may have kept some thoughts to themselves. In terms of changes in perspective or position, the survey shows that participants were largely neutral about whether they felt that they changed their viewpoints as a result of these deliberative discussions; 49% responded to this question with a neutral position. The most impactful outcome stemming from the process was motivation to continue engaging in climate issues, with over 98% of participants feeling more encouraged to collaborate and participate in climate action issues. These findings are reinforced by the participatory action research open-ended evaluation also carried out at each workshop, described in section 6.8.

In terms of the participants’ profile, the survey indicates that overall the workshops had a diverse

Figure 6.4. Four key dimensions for a low-carbon and climate-resilient future at the local level. Drawn from analysis of insights from national policymakers and academics as part of a Delphi panel exercise (*n* = 21).

attendance in terms of age, with a notable absence of the younger adult cohort aged 18–24 years. The survey also shows that there was a gender imbalance, as only 32% of participants were male. This figure largely meets the "critical mass" criterion, which stands at 33%, and is a reminder of the need to ensure that designs facilitate inclusive engagement (Harris *et al*., 2020b). Interestingly, the Imagining2050 deliberative engagement workshops bucked the trend for deliberative processes, such as citizens' assemblies, to be dominated by anti-system, anti-politics males (Pilet *et al*., 2020).

Qualitative observational insights during the workshop also suggest that there was imbalance in the socio-economic status and degree of previous "engagement" of participants (the majority of whom appeared to be middle class and to have prior interest in and engagement with climate issues).

6.8 Participatory Action Research Feedback – On the Weekend and Post Engagement

A key component of the participatory action research evaluation was an open-ended evaluation process.

This was held at the end of the deliberative futures workshops. It consisted of an open invitation for feedback and dialogue using three key prompts to ascertain (1) how the workshop may have enabled new insights, (2) what expectations participants had of the workshop and (3) the different measures of success participants attached to the process.

This open-ended process facilitated emergent criteria for evaluation other than using measures and criteria structured by the organisers. The facilitators took notes to capture comments across the four workshops. Additional insights were collected through an open "comments" box in the survey, which generated 40 additional comments. See the survey results in Figure 6.5.

6.9 Key Findings

Below we outline key findings from this open-ended evaluation. We developed the key findings into themes, giving voice to issues raised by participants.

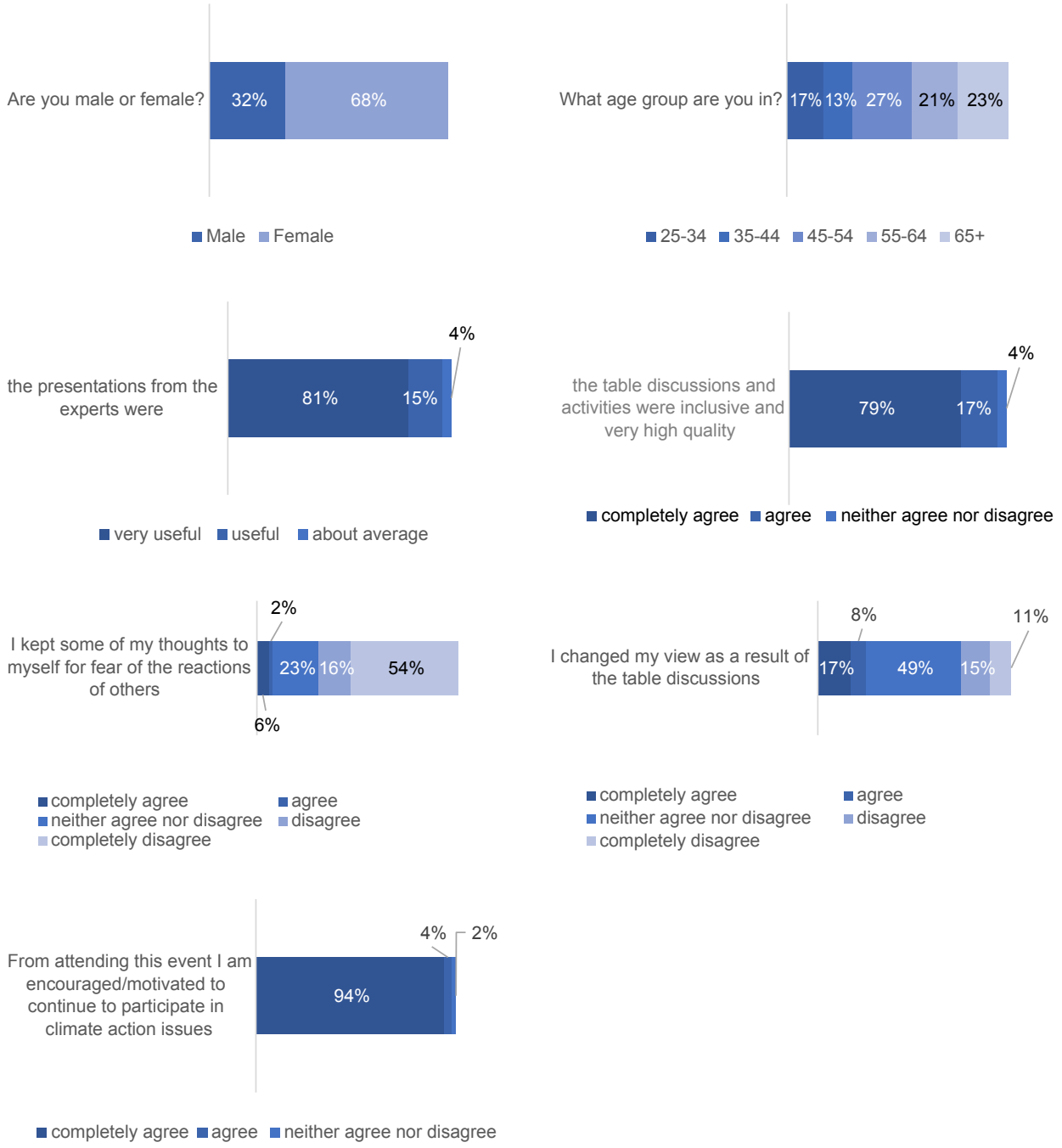

Figure 6.5. Evaluation survey results from four weekend-long deliberative futures workshops (*n* = 48).

6.9.1 How the workshop may have enabled new insights

- More optimism about addressing climate change issues, despite the daunting scale of issues.
- Comments on the return to old, "traditional" practices to progress to a more sustainable future.
- Making a connection between everyday life and climate change issues and solutions.
- Emphasis on "fixing communities rather than fixing the climate".
- Finding a voice and a role in processes of change towards sustainability.
- Mixed debates on the ideal "forum" to pursue local-led climate action in the long term (some doubts about available formats and groups).
- Positive thoughts on visual-based interactions (replicated by some of the members in other fora – teaching, tidy towns engagements).
- Resourcing and support from the EU seen as desirable.

6.9.2 What expectations participants had for the workshop

- Wider inclusion of climate sceptics and those disengaged from environmental or local issues.
- Larger attendance from local areas.
- Provision of clearer supports to facilitate participation (child care, venue locations, etc.).
- Political representation and presence (councillors and local civil servants) in the room.
- Ensuring continuity and impact linked to more visibility and influence in decision-making practices.
- Mobilising the wider community through direct and visible results, by:
  - generating more bottom-up pressure for change;
  - deeper discussions on technological developments;
  - expanding iterative process, which includes more feedback on solutions from experts and local planners.

6.9.3 Different measures of success participants attached to the process

- Accessible and inclusive forms of participation.
- Interactive and inclusive visual tools that offered opportunities to share ideas more widely and engage with others.
- Bringing workshop ideas into the wider community ("What would the community say about these plans"?).
- Replicating the methodologies used by Imagining2050 across other areas.
- Getting one action established.
- Fostering larger networks to enable people to work together.
- Making research and recommendations visible.
- Attending to the wellbeing of the community.
- Making the focus of meeting more controversial to motivate and mobilise wider attendance.
- Perceived bias of a significant portion of participants, such as those with a pre-established interest in the environment.

7 Reflections on Cross-sectoral and Cross-scale Insights

Putting people and communities at the centre of climate change mitigation and adaptation challenges government-led assumptions about what climate action might (or should) look like at the local level. Local participants in climate action are usually expected to align with wider goals on reducing GHG emissions, decarbonising the energy system, changing behaviours and building adaptive capacity (generally conceived in Irish policy as increasing awareness, sharing information and engaging in targeted training). Usually considered more peripheral in climate action, issues such as housing provision, health and wellbeing are emerging as defining factors in local-led frameworks for climate mitigation and adaptation.

Findings across the different methods we used to co-create visions of change with communities highlighted the need for robust social, residential and environmental infrastructure to ensure wellbeing and resilience in the community. Most of the "futures" imagined by our communities are grounded on visions that acknowledge path dependencies tied to problematic trends in housing, health and employment.

For instance, a core vision statement emerging from Athlone was "getting the basics right", which essentially calls for a strengthening of the social infrastructure required to sustain change and societal transformation in a fair and equitable manner. By contrast, few high-tech futures were proposed, with participants generally favouring micro-generation and nature-based solutions rather than dominant state-led ideas that envision much larger-scale projects and infrastructure. These contrasting visions signal the need to promote change in ways that enhance livelihoods for local people and that provide more balanced measures in terms of harms and benefits for communities. For example, large-scale renewable energy projects might be beneficial if we consider national benefits, but may be detrimental to local areas in terms of value of property, amenities, etc. Fostering an understanding that there may be diverging priorities at different scales, which are nonetheless equally relevant, requires further cross-scale and cross-sectoral dialogue and negotiations.

These findings have important implications for climate change strategies in Ireland. As climate change impacts intensify and accumulate, we have seen emerging calls for a deepening and broadening of climate action, away from management and control, with its emphasis on maintaining the status quo and providing fixed answers to evolving problems, and towards more critical approaches that explore new conditions to support our complex human and environmental systems. Reconciling larger-scale and local visions of the future opens up this possibility, but implies a need to come to terms with a plurality of perspectives. This moves us away from centralised and state-led conditioned thinking to a more decentralised, reflexive approach. Providing more opportunities to engage in local climate action and the local democratic process, involving local authorities and other local structures of decision-making, has an important role to play in bridging this gap.

These findings also signal the importance of embracing "human security" as a core concept, as defined in the UN report *Human Security Now* (Commission on Human Security, 2003), acknowledging the critical value of creating systems that give people the building blocks of survival, livelihood and dignity (Adger *et al*., 2014). This notion, once conceived in the context of developing nations, is now being applied to climate change issues in the acknowledgement that the disruptive nature of climate change can significantly compromise the ability of states to provide key social and public services (O'Brien and Barnett, 2013). This concept parallels better-understood and leveraged concepts such as energy security (Glynn *et al*., 2014, 2017).

Unforeseen issues, such as the economic recession of 2012 and the COVID-19 pandemic, have degraded living conditions and have exposed vulnerabilities in housing and public health provision. Our findings show that communities rightly prioritise the strengthening of our social infrastructure to sustain disruptive change, build resilience and adequately cope with climate change.

What this means in terms of policy is that climate change strategies require a broad spectrum of conversations and dialogue. More specifically, these strategies should attend to weakening conditions on our social systems that in the long run may undermine the choices available to communities that desire to be active and positive participants in the pursuit of low-carbon and climate-resilient futures. Expectations that communities will embrace a low-carbon future need to ensure that priorities such as health, housing and wellbeing are adequately incorporated into long-term plans.

8 Conclusions and Recommendations

8.1 Overview

The Imagining2050 project has engaged with civil society using innovative, future-oriented, deliberative engagements to explore and co-develop future visions of and pathways to a low-carbon and climate-resilient future. The compelling drive behind the project was to inform the ongoing work of the NDCA regarding approaches and structures for engagement with society at different levels to promote public support for and co-creation of short-term and long-term climate action plans. A co-production research approach was adopted, as this is particularly helpful in advancing climate action strategies, by establishing the grounds for a form of science that is interconnected, holistic, adaptive and anticipatory. This approach is innovative to the extent that it blends elements of mini-publics with more participatory and future-oriented processes. It draws from participatory action research, co-production and deliberative democracy and pays close attention to dynamics of inclusion and exclusion. The development of a holistic deliberative engagement process also entailed an early mapping of community engagement initiatives in Ireland to help situate this form of engagement within a wider ecology of initiatives and collaborations across Ireland (a full report can be found here: https://www.ucc.ie/en/media/projectsandcentres/imagining2050/InnovativeMethodsofCommunityEngagement(lowres).pdf).

The multi-staged research approach used commenced with preliminary local engagements, which were followed by deeper community involvement to co-develop low-carbon, climate-resilient visions and pathways of change, and finally extended to wider engagements with civil society organisations, policymakers and experts (see https://youtu.be/5KDHVAQON0c). The research involved a series of formal and informal engagements and knowledge co-development processes, which included two preliminary online surveys, knocking on doors, four weekend-long deliberative futures workshops, eight multi-stakeholder workshops, three thought leader workshops and a Delphi panel survey. The project co-developed visions and pathways of change with two communities, in Athlone and Ballincollig. An added innovative component of the project was the use of creative communication methods such as empathy mapping, storyboarding and audience polls (https://www.ucc.ie/en/media/projectsandcentres/imagining2050/Imagining2050Toolkit.pdf).

The co-production approach ensured a continuous evaluation and improvement of tools and visions of change. Traditional approaches would have provided a more limited and static vision of change, which would give little insight into how to turn these visions into more actionable objectives, in a manner that considers multiple stakeholders at different scales and from different sectors.

The deliberative futures workshop blends elements of the DMP with more participatory workshops (to the extent that recruitment is open to all) and future-oriented workshops. This is reflected not just in the recruitment methods used but also in the process. It moved from the "learn, deliberate and decide" approach used by DMP models to include visualisation and scenario-building. Like many deliberative processes, it used a professional facilitator for parts of the engagement. Given the future and imaginary orientations of the process, a facilitator with specific visualisation techniques and artistic skills was employed.

8.2 Summary of Key Findings

The research work has shown that community engagement remains an important yet challenging issue. Deliberative fora such as the deliberative futures workshops, while promising, cannot be considered a panacea for the many issues that encumber our social and democratic systems. There are a number of reasons why this is the case. The review of literature shows that deliberative processes remain "top-down" processes, as they are often, including in the Irish context, dependent on government to drive their establishment, provide resources and ensure that they have an impact in terms of links to decision-making and legislation. Deliberative democracy is a "commitment to emancipation" (Curato *et al*., 2019) and requires more than a few discrete fora to be

realised. Additionally, it is clear that deliberative reform does not entail replacing other structures and forms of engagement, but rather should be promoted in the context of a wider democratic system that pays closer attention to connections with other organisations and stakeholders in a continuous and reflexive manner. Furthermore, depending on context, other forms of engagement may be more suitable. There are times when deliberation is not always the "superior mode of political action" and other forms of political action may be more appropriate (e.g. exit, protest) (Curato *et al*., 2019, p. 175).

The deliberative futures workshop seeks to address this issue by exploring the potential of inserting deliberative processes within a wider system of community engagement and planning practices, which seek to provide continuity and extend dialogue with and across different groups and stakeholders in society.

8.3 Recommendations

8.3.1 Promotion of deliberative dialogues at the local level

- The NDCA should support deliberative engagements initiated by different stakeholders and particularly processes that seek out more connected exchange and knowledge development. These could include emerging grassroots initiatives, community development organisations, social enterprises and advocacy groups. Accelerating societal transformation requires access to these multiple engagement formats.
- Resources and capacity-building around climate action at the community level are needed to promote further engagement. Local leadership and ownership of climate initiatives are key to promoting and accelerating processes of change. Deliberative dialogues and co-creative practices, such as the deliberative futures workshop model, can and should be promoted in this context.
- Better communication and measurement of climate targets at the local level are needed. Climate justice outcomes are linked with cross-scale dialogue and perspectives.
- Recruitment efficiencies to ensure inclusive processes in climate dialogue is an overarching concern identified by multiple stakeholders. The deepening of partnerships at the local level and the creation of a volunteer registry could help overcome some of these barriers and include people who have not previously engaged with climate issues. More resources and support materials need to be allocated to this stage of engagement for research, policy outreach and community development.
- Preliminary and informal engagements are a valuable process to learn more about existing issues in the community, help establish links and support recruitment. Climate issues should also be framed by taking into consideration the social, economic and cultural context of communities. In the context of everyday struggles and concerns, debates over wider climate change issues may seem remote and disconnected from real life.
- Deliberative principles of equality, inclusion and considered reflection can be incorporated across different engagements and with multiple stakeholders.
- Deliberative processes should entail a long-term commitment to participants in terms of sharing information and following up on actions proposed.

See Figure 8.1 for a summary of key recommendations for the promotion of deliberative dialogue at the local level.

8.3.2 Use of deliberative and future-oriented tools with, by and for communities

- Future-oriented approaches with multiple stakeholders can help promote more detailed and coherent pathways of change.
- The role of intermediaries is relevant to facilitate deliberative dialogues, to provide training and to ensure well-connected and reflexive processes within wider democratic systems. Deliberative approaches at grassroots level are desirable, and care should be taken not to develop overly prescriptive or overly formalised approaches, which may alienate and disempower communities.
- Closer connections with decision-making, community uptake and links to actionable and tangible outcomes are the most valuable criteria for communities that engage in deliberative dialogues. For example, the consultation processes undertaken during the creation of

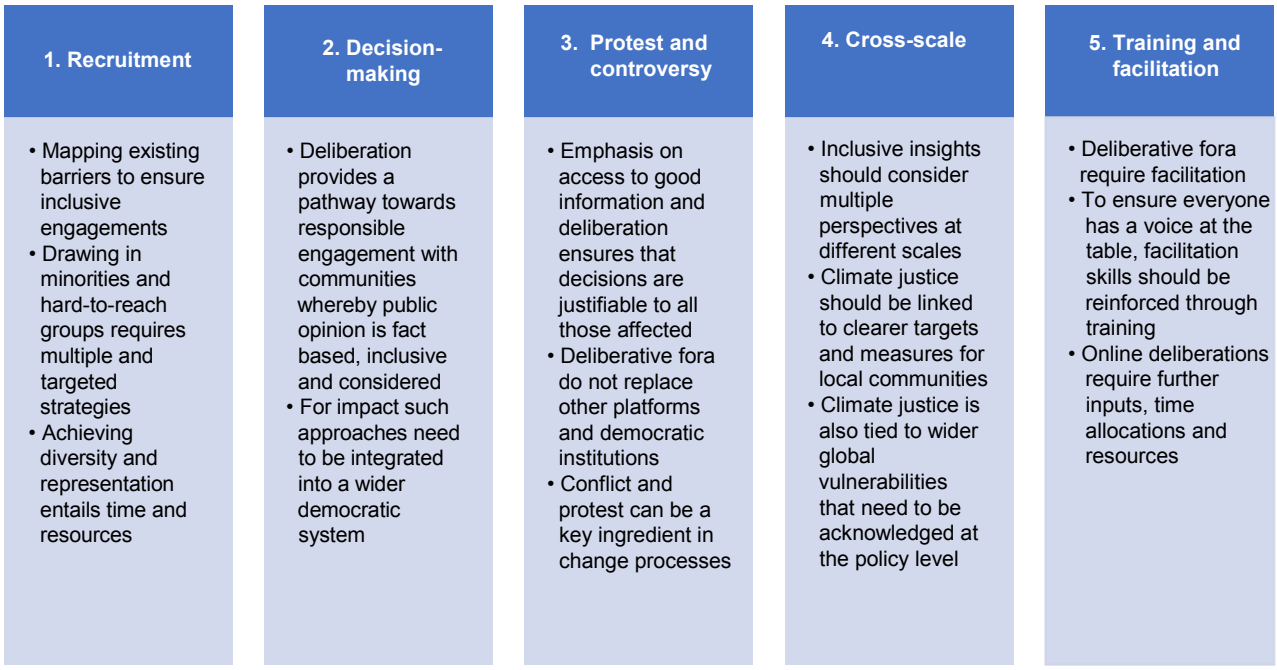

Figure 8.1. Five key recommendations for the promotion of deliberative dialogue at the local level.

county development plans and climate action plans could be enhanced by incorporating some of the tools outlined.

- Bottom-up deliberative approaches should be encouraged and more widely promoted. Further research and insights are needed on how to ensure that these remain impactful and how stronger links can be made with decision-making structures and systems.
- Care should be given to inclusive recruitment. Even when using local definitions of community, different criteria exist. These should be discussed and acknowledged to clarify and correct any misconceptions.
- Deliberative fora are best understood as processes that allow high-level discussion on how to frame complex and subjective issues, based on inclusive, equal and reasoned deliberation, and that lead to agreement on relevant facts and perspectives. They should not be considered a tool to eradicate protest or controversy.
- Participatory evaluation of deliberative processes and programmes should be considered to ensure salience and the emergence of inclusive metrics regarding impact.

8.3.3 Use of art and creative tools

- The inclusion of visualisation tools in deliberative processes can support dialogue and create more accessible materials to communicate findings and exchange ideas with wider audiences. However, tools should be accessible, adequately facilitated and flexible. The process can present challenges, and alternatives and support should be available.
- The use of art and creative tools supports the development of future-oriented action. It offers the potential to enhance communication and the sharing of knowledge. Insights from the Creative Climate Action Fund are likely to reveal further impacts in this space.
- Visualisation and art can help connect different disciplinary approaches and stakeholders into more collaborative spaces.

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Abbreviations

DECC	Department of the Environment, Climate and Communications
DMP	Deliberative mini-public
EPA	Environmental Protection Agency
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
NDCA	National Dialogue on Climate Action
SDG	Sustainable Development Goal
UN	United Nations
WP	Work package

AN GHNÍOMHAIREACHT UM CHAOMHNÚ COMHSHAOIL
Tá an Ghníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaol a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaol a chosaint ó éifeachtaí díobhálacha na radaíochta agus an truaillithe.

Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

Rialú: *Déanaimid córais éifeachtacha rialaithe agus comhlíonta comhshaoil a chur i bhfeidhm chun torthaí maithe comhshaoil a sholáthar agus chun díriú orthu siúd nach gcloíonn leis na córais sin.*

Eolas: *Soláthraímid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spriocdhírithe agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.*

Tacaíocht: *Bímid ag saothrú i gcomhar le grúpaí eile chun tacú le comhshaol atá glan, táirgiúil agus cosanta go maith, agus le hiompar a chuirfidh le comhshaol inbhuanaithe.*

Ár bhFreagrachtaí

Ceadúnú
Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaol:
- saoráidí dramhaíola *(m.sh. láithreáin líonta talún, loisceoirí, stáisiúin aistrithe dramhaíola)*;
- gníomhaíochtaí tionsclaíocha ar scála mór *(m.sh. déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta)*;
- an diantalmhaíocht *(m.sh. muca, éanlaith)*;
- úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe *(OGM)*;
- foinsí radaíochta ianúcháin *(m.sh. trealamh x-gha agus radaiteiripe, foinsí tionsclaíocha)*;
- áiseanna móra stórála peitril;
- scardadh dramhuisce;
- gníomhaíochtaí dumpála ar farraige.

Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil
- Clár náisiúnta iniúchtaí agus cigireachtaí a dhéanamh gach bliain ar shaoráidí a bhfuil ceadúnas ón nGníomhaireacht acu.
- Maoirseacht a dhéanamh ar fhreagrachtaí cosanta comhshaoil na n-údarás áitiúil.
- Caighdeán an uisce óil, arna sholáthar ag soláthraithe uisce phoiblí, a mhaoirsiú.
- Obair le húdaráis áitiúla agus le gníomhaireachtaí eile chun dul i ngleic le coireanna comhshaoil trí chomhordú a dhéanamh ar líonra forfheidhmiúcháin náisiúnta, trí dhíriú ar chiontóirí, agus trí mhaoirsiú a dhéanamh ar leasúchán.
- Cur i bhfeidhm rialachán ar nós na Rialachán um Dhramhthrealamh Leictreach agus Leictreonach (DTLL), um Shrian ar Shubstaintí Guaiseacha agus na Rialachán um rialú ar shubstaintí a ídíonn an ciseal ózóin.
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaol.

Bainistíocht Uisce
- Monatóireacht agus tuairisciú a dhéanamh ar cháilíocht aibhneacha, lochanna, uiscí idirchriosacha agus cósta na hÉireann, agus screamhuiscí; leibhéil uisce agus sruthanna aibhneacha a thomhas.
- Comhordú náisiúnta agus maoirsiú a dhéanamh ar an gCreat-Treoir Uisce.
- Monatóireacht agus tuairisciú a dhéanamh ar Cháilíocht an Uisce Snámha.

Monatóireacht, Anailís agus Tuairisciú ar an gComhshaol
- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairisciú neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus na n-údarás áitiúil *(m.sh. tuairisciú tréimhsiúil ar staid Chomhshaol na hÉireann agus Tuarascálacha ar Tháscairí)*.

Rialú Astaíochtaí na nGás Ceaptha Teasa in Éirinn
- Fardail agus réamh-mheastacháin na hÉireann maidir le gáis cheaptha teasa a ullmhú.
- An Treoir maidir le Trádáil Astaíochtaí a chur chun feidhme i gcomhair breis agus 100 de na táirgeoirí dé-ocsaíde carbóin is mó in Éirinn.

Taighde agus Forbairt Comhshaoil
- Taighde comhshaoil a chistiú chun brúnna a shainaithint, bonn eolais a chur faoi bheartais, agus réitigh a sholáthar i réimsí na haeráide, an uisce agus na hinbhuanaitheachta.

Measúnacht Straitéiseach Timpeallachta
- Measúnacht a dhéanamh ar thionchar pleananna agus clár beartaithe ar an gcomhshaol in Éirinn *(m.sh. mórphleananna forbartha)*.

Cosaint Raideolaíoch
- Monatóireacht a dhéanamh ar leibhéil radaíochta, measúnacht a dhéanamh ar nochtadh mhuintir na hÉireann don radaíocht ianúcháin.
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha.
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta.
- Sainseirbhísí cosanta ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

Treoir, Faisnéis Inrochtana agus Oideachas
- Comhairle agus treoir a chur ar fáil d'earnáil na tionsclaíochta agus don phobal maidir le hábhair a bhaineann le caomhnú an chomhshaoil agus leis an gcosaint raideolaíoch.
- Faisnéis thráthúil ar an gcomhshaol ar a bhfuil fáil éasca a chur ar fáil chun rannpháirtíocht an phobail a spreagadh sa chinnteoireacht i ndáil leis an gcomhshaol *(m.sh. Timpeall an Tí, léarscáileanna radóin)*.
- Comhairle a chur ar fáil don Rialtas maidir le hábhair a bhaineann leis an tsábháilteacht raideolaíoch agus le cúrsaí práinnfhreagartha.
- Plean Náisiúnta Bainistíochta Dramhaíola Guaisí a fhorbairt chun dramhaíl ghuaiseach a chosc agus a bhainistiú.

Múscailt Feasachta agus Athrú Iompraíochta
- Feasacht chomhshaoil níos fearr a ghiniúint agus dul i bhfeidhm ar athrú iompraíochta dearfach trí thacú le gnóthais, le pobail agus le teaghlaigh a bheith níos éifeachtúla ar acmhainní.
- Tástáil le haghaidh radóin a chur chun cinn i dtithe agus in ionaid oibre, agus gníomhartha leasúcháin a spreagadh nuair is gá.

Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil
Tá an ghníomhaíocht á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóirí. Déantar an obair ar fud cúig cinn d'Oifigí:
- An Oifig um Inmharthanacht Comhshaoil
- An Oifig Forfheidhmithe i leith cúrsaí Comhshaoil
- An Oifig um Fianaise is Measúnú
- Oifig um Chosaint Radaíochta agus Monatóireachta Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag comhaltaí air agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair imní agus le comhairle a chur ar an mBord.

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A Roadmap for Local Deliberative Engagements on Transitions to Net Zero Carbon and Climate Resilience

Authors: Gerard Mullally, Alexandra Revez, Clodagh Harris, Niall Dunphy, Fionn Rogan, Edmond Byrne, Connor McGookin, Brian Ó Gallachóir, Paul Bolger, Barry O'Dwyer, Stephen Flood, Evan Boyle, James Glynn, John Barry and Geraint Ellis

Identifying Pressures

Ireland faces considerable challenges in transitioning to a net-zero carbon and climate resilient future. Imagining 2050 focused on the often overlooked challenge of engaging citizens and communities in climate action while also recognising that new and novel approaches are required to enable the transition to climate resilience. The transition requires technological and political responses as well as a wider societal response. Individuals and communities must be engaged, informed, willing to participate and change their behaviour, and they must feel empowered that they have influence and a role to play in deciding the direction of this response. Deliberative approaches like the Irish Citizens' Assembly and the National Dialogue on Climate Action (NDCA) play an increasingly important role in informing both policymakers and the national conversation, but this must be broadened to include local engagement and action in response to the scale of social changes that will need to be addressed.

Informing Policy

Imagining 2050, hosted by the Environmental Research Institute in UCC in partnership with Queen's University Belfast (QUB), developed innovative techniques and tools to support citizens and communities in engaging with climate change, and to envision future pathways for a net-zero carbon and climate resilient Ireland. Imagining 2050 has consolidated existing research capacity in UCC and QUB on i) societal transitions, ii) climate mitigation, iii) climate adaptation and combines them with iv) innovative participative and deliberative methods. A key innovation in the project was a recursive and iterative process combining deliberative processes with technical scenario analysis to envision and co-produce pathways for a low carbon, climate resilient Ireland. The project offers a roadmap for informing local deliberative engagements for achieving these goals. The project findings, tools and outputs are playing a key role in informing national climate action policy and the NDCA.

Developing Solutions

Imagining 2050 introduced a novel approach that we termed the '*deliberative futures workshop*', which integrates deliberative dialogues into wider democratic and multi-stakeholder systems. Central to the project's success was its ability to harness the extensive cross-disciplinary nature of the team and the trans-disciplinary nature of the research. The co-creation of the *Deliberative Futures Toolkit* together with local, scientific and policy communities, provides a resource that can be used by communities and policymakers. It is generating significant interest among a range of actors seeking to engage in a deliberative way with communities in climate action discourse and in co-developing and implementing climate action solutions. The toolkit includes a range of interactive tools that can be integrated into the deliberative process and that encourages dialogue through the use of visual future-oriented methodologies. We offer insights into pathways for transition at the local level and a multi-stakeholder appraisal of these pathways using the Delphi Method to ascertain areas of divergence and synergies between these visions and those of other groups, such as policymakers and researchers.

EPA Research: McCumiskey House, Richiew, Clonskeagh, Dublin 14.

Phone: 01 268 0100
Twitter: @EPAResearchNews
Email: research@epa.ie