DUBLIN

Roadmap

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TOMORROW

Dublin Roadmap

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ZERO TOGETHER

Towards a cleaner, healthier Dublin

Codema

Dublin's Energy Agency

Zero Together: A Roadmap for Dublin's Energy Transition

TOMORROW

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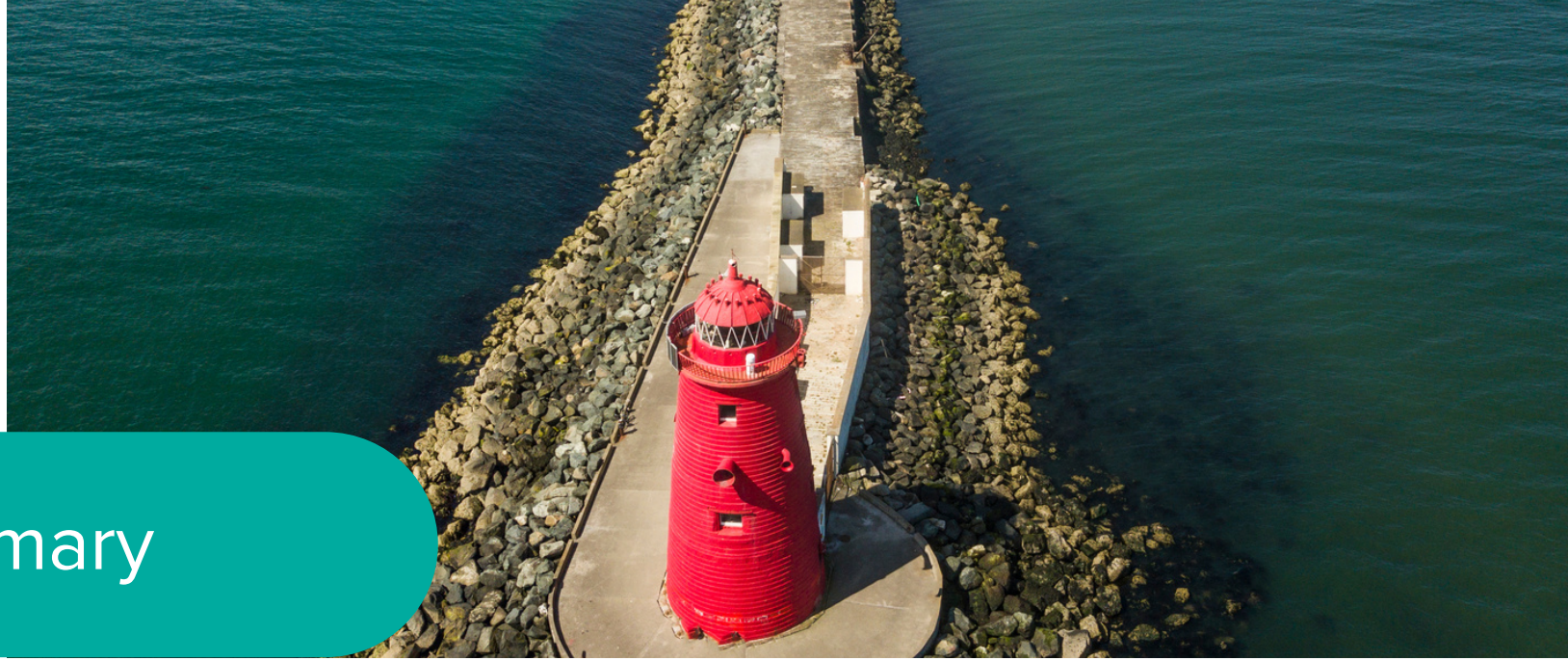

Executive Summary

Zero Together is a unique initiative that is bringing together diverse perspectives and experience from businesses, communities, transport groups, academia and local authorities to work towards the same goal of moving Dublin away from fossil fuels as soon as possible, with the ultimate aim of developing the county into a clean and healthy region to live, work, study and visit.

The purpose of Zero Together is to create and deliver on a shared vision and strategy for a fossil-fuel-free Dublin that is ambitious and inclusive. Zero Together aims to be a catalyst and support for ongoing collaboration, holding decision-makers to account and engaging the people of Dublin in the energy transition.

In July 2021, President Higgins signed Ireland's Climate Action and Low Carbon Development (Amendment) Bill 2021. This bill enshrined into law, a 51% emission-reduction target for 2030 and a carbon-neutrality target for 2050. Every faction of society has a role to play in meeting these targets. Zero Together presents a collaborative roadmap for Dublin's role in the energy transition to ensure these targets are achieved. Section 1 provides background and context to the Zero Together initiative detailing the three core elements driving the process; 1) collaboration, 2) an evidence-base 3) public engagement and communication.

Section 2 presents the collaborative approach taken, including the formation of the Zero Together Transition Team, the creation of a shared vision and identifying the four strategic directions that ultimately underpin the roadmap which are: 1) Accounting for a Just Transition, 2) Making climate action more democratic and inclusive, 3) Providing clear and honest communication and education and 4) Designing, planning and delivering solutions for climate and biodiversity.

The "5 by 2050" roadmap is introduced and detailed in Section 3. An explanation of the five systemic solutions (District Heating, Offshore Wind and Solar, Building Upgrades, Energy Planning and Transport) is provided. Alongside key targets and policy recommendations, this section explores each solution through the four strategic directions outlined in Section 2 and details 2030 SMART goals to ensure success and progress is measured.

Section 4 illustrates the importance of public engagement and communication in Dublin's energy transition, presenting the activities implemented as part of the Zero Together initiative thus far and the SMART goals to 2030.

INTRODUCTION

Time is running out to limit global temperature rise to 1.5°C above pre-industrial levels(1). Recognition of this urgency is evident in the publishing of Ireland's Climate Action and Low Carbon Development (Amendment) Bill 2021, which enshrined into law a 51% emission-reduction target for 2030 and a net-zero target for 2050(2). To achieve these targets, the Act requires the setting of economy-wide carbon budgets, essentially determining the total amount of emissions Ireland can produce every five years, which were presented by the Climate Change Advisory Council in September 2021(3). The first carbon budget requires a 4.8% reduction annually between 2021 and 2025 and the second necessitates a 8.3% reduction in greenhouse gas emissions between 2026 and 2030(4).

To put this emission reduction challenge into perspective, it is important to understand the current situation. Ireland has a population of approximately 5.12 million people. In 2021, we produced the equivalent of 61.53 million tonnes of carbon dioxide, meaning that we have the second highest emissions per person in Europe, after Luxembourg. According to the Environmental Protection Agency (EPA), Ireland's population is expected to grow to 5.5 million by 2030 and 6.2 million by 2050 and at current emissions per person, "each additional 500,000 people would contribute an additional 6 million tonnes of CO2eq each year"(5). At a time when our emissions should be rapidly decreasing, they are on the rise, with an increase of 4.7% in 2021 alone.

Although agriculture is the single largest contributor to Ireland's overall emissions, the energy sector is also culpable. In 2021, energy-related emissions relating to transport, industry and the residential sector were responsible for 45.8% of Ireland's total greenhouse gas emissions, demonstrating the necessity to reduce our dependence on fossil fuels and rapidly move towards cleaner, renewable energy.

This task is immense and will require a whole-of-society effort. There is no "one-size-fits-all" solution to Ireland's energy transition, as every region across the country presents differing societal and technological needs, requiring a response that is fit for purpose. With this in mind, Codema, Dublin's Energy Agency, recognised a need to localise the response to the energy transition and from this, the Zero Together initiative was born. With support from the Sustainable Energy Authority of Ireland (SEAI), the EU Horizon 2020 TOMORROW project, the four Dublin Local Authorities and the Dublin Metropolitan Climate Action Regional Office (CARO), Codema has created an evidence-based, collaborative roadmap to meet the emission-reduction targets.

This process has involved 1) the identification of the most realistic, evidence-based solutions to reduce emissions related to heat, electricity, transport and buildings in Dublin, 2) engaging a diverse range of stakeholders across the region to form the Zero Together Transition Team and collaborate on the development of the roadmap 3) providing opportunities for the people of Dublin to get involved and informed on Dublin's energy transition.

The following roadmap documents this collaborative process and presents specific, measurable, achievable, realistic and timely actions to 2030, ensuring that our capital is on track to meet a 51% reduction in emissions by 2030 and net-zero by 2050. Zero Together provides a blueprint for other regions in Ireland and further afield to approach the energy transition in a collaborative, evidence-led, holistic and inclusive way.

A MESSAGE FROM OUR TEAM

Ali Sheridan

Climate Advocate and Sustainability Practitioner

I became involved in Zero Together as I saw a growing gap for a unifying vision for what Dublin could become as it undertakes a climate transition. One that provided clarity and honesty for the climate and biodiversity measures that need to be taken, that was built on co-creation and collaboration between diverse stakeholders across society, and that provided a clear and rallying call to action towards a safer and better future for all citizens.

With the myriad of climate policies, initiatives, and projects now coming on stream, as well as the intensifying of climate breakdown, Zero Together can help make sense of this landscape and play a critical role in the necessary shift from intent to action. Zero Together also has the opportunity to provide a much-needed space for a new approach to climate action, that provides a more democratic approach, and that breaks through existing barriers and silos.

> Zero Together has the opportunity to provide a much-needed space for a new approach to climate action.

> We need real leadership and commitment to help Dublin achieve its emission targets and Zero Together can lead the way forward with this approach.

Donna Gartland

CEO of Codema, Dublin's Energy Agency

Working on the Dublin Local Authorities' own Climate Change Action Plans highlighted the need to address not just emissions produced by the municipalities (which only account for 5% of the total in Dublin) but also by those key sectors that contribute to the remaining 95%. For the first time in Dublin, Zero Together provides a unique platform to bring these different stakeholders together to build an ambitious vision of our capital free from fossil fuels, along with strategic and realistic actions to make it happen.

We need real leadership and commitment to help Dublin achieve its emission targets and Zero Together can lead the way forward with this approach. I am very proud of this roadmap and all the hard work and dedication that has gone into producing it and I am confident that the actions outlined, when implemented, will put Dublin on the map as a leading sustainable EU capital.

A MESSAGE FROM OUR TEAM

Gavin Harte

Sustainability Consultant, Climate Action Coach and Environmental Activist

Working as part of the Zero Together team was hugely rewarding. It is rare that such a diverse and talented group of individuals in the field of climate action get the opportunity to share their experience and knowledge towards a common goal. I am hopeful that the outputs from our group will be of value to the wider Dublin community and will help other groups and communities embarking on their own climate action journey.

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> I also hope that Dublin will be an exemplary prototype for local authorities throughout the country.

Theresa O'Donohue

Co-founder of Clare PPN, An Taisce's Climate Committee and creator of ClimateCARE.ie

I have been impressed by the approach Codema has taken in designing Zero Together. I hope that my input helps ensure that everyone in the greater Dublin region has a say in designing and implementing a sustainable vision that ensures the wellbeing of current and future generations. I also hope that Dublin will be an exemplary prototype for local authorities throughout the country.

WHAT IS ZERO TOGETHER?

Zero Together brings together diverse perspectives and experience to work towards the same goal of moving Dublin away from fossil fuels as soon as possible. This initiative is premised upon the idea of cultivating collaboration across the region of Dublin, with the ultimate aim of developing the county into a clean and healthy region to live, work, study and visit. One aim of this initiative is to create a collaborative strategy and roadmap for the whole of Dublin to ensure we meet our 2030 and 2050 climate targets.

The genesis of Zero Together starts in 2019, when the four Dublin Local Authorities, the Dublin Metropolitan Climate Action Regional Office (CARO) and the Dublin energy agency Codema came together to collaborate on and produce Climate Change Action Plans (CCAPs) for each local authority. We carried out an extensive consultation period with the public and organised a series of very well attended public information events so that the people of Dublin could learn more about how the councils are acting on climate change.

While there were hundreds of submissions and the Plans were very well received overall, the CCAPs only tackled areas within the councils' own remit and the public wanted to know what the plan was for the whole of Dublin.

This - coupled with the fact that the public sector only accounts for 5% of total emissions in the whole of Dublin - highlighted the urgency to create a plan that would address the entire Dublin region and tackle the remaining 95% of emissions. This would involve bringing all the relevant sectors together for the first time to agree and develop the best strategy for our capital towards 2030 and 2050.

This was the realisation that something like Zero Together had to happen in order to have real impact and make Dublin a healthy, sustainable and vibrant region that we can all be proud to live, study and work in.

THREE CORE ELEMENTS

To ensure the Zero Together roadmap is fair and impactful, this process is grounded in three core elements: 1) collaboration across a diverse range of sectors, moving beyond silos and working together to develop and disseminate the roadmap 2) an evidence-base to direct the roadmap and ensure that it is grounded in the best available information and science and 3) public engagement and communication.

01

Collaboration

No single organisation, individual or sector can fully transform Dublin into a clean, healthy and emission-free region. We need to work together. Zero Together is creating a space for the necessary groups to come together and build consensus on clear pathways to move Dublin away from fossil fuels. By doing so, we can create a shared vision and a strategy for Dublin that is ambitious and more importantly, inclusive.

02

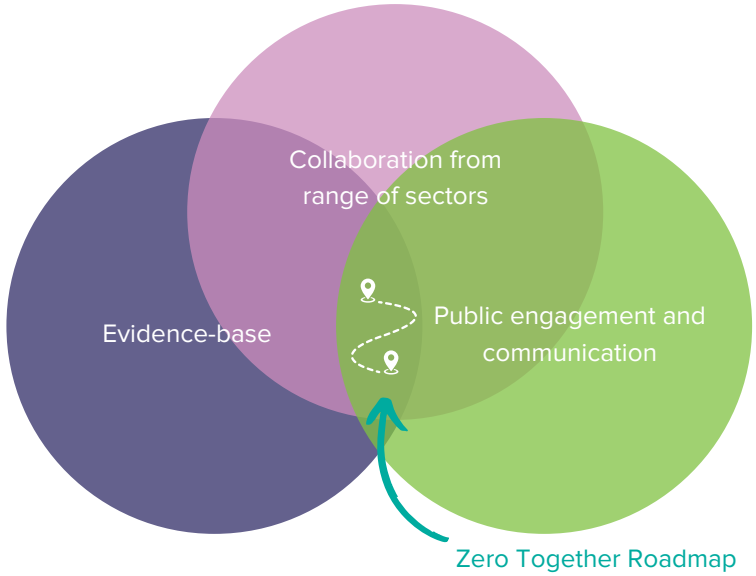
An Evidence-Base

Zero Together is guided by the best available global, national and regional information and scientific evidence. For example, Dublin's Energy Agency, Codema, recently published the Dublin Region Energy Master Plan. This three-year study, which is the first of its kind to be carried out for any city or town in Ireland, identified the most realistic, evidence-based solutions to reduce emissions related to heat, electricity, transport and buildings in Dublin.

03

Public Engagement and Communication

The people of Dublin want to be engaged and have their views included in how their county reduces emissions and moves away from fossil fuels. Zero Together aims to address this by providing accessible information on Dublin's energy transition and opportunities for the people of Dublin to participate and have their say in how we move Dublin away from fossil fuels.



All of these three elements are in motion; the Transition Team has been formed and engaged through nine exploratory workshops on what it means to move Dublin away from fossil fuels. The Dublin Region Energy Master Plan, the evidence base supporting the roadmap, is the culmination of three years of research by Codema and was completed in February 2022. A series of public engagement activities have taken place over the last 18 months and the Codema team is now in the process of exploring the possibility of conducting a Citizens' Jury for Dublin as part of the Zero Together roadmap. More information on each of these elements is provided throughout this document.

ZERO TOGETHER

Towards a cleaner, healthier Dublin

Collaboration

Zero Together Transition Team

No single organisation, individual or sector can fully transform Dublin into a clean, healthy and low-carbon region. Zero Together is the catalyst to create a space for the necessary groups to come together and build consensus on the best pathways to move Dublin away from fossil fuels and to create a vision and strategy for Dublin that is ambitious, and more importantly, inclusive.

This task requires expertise and perspectives from a broad range of sectors in Dublin and a team of committed people. Codema grounded the recruitment of this team in the theory of Transition Management; an approach used as a blueprint for countries, regions and cities in transition. Transition Management encourages the creation of a “transition arena”, which is a “a temporary setting that provides an informal and well-structured space to a small group of changes agents from diverse backgrounds”. The Dutch Research Institute for Transitions (DRIFT) describes the gathering of change agents within this transition areas as:

> ...a group of ambassadors inspired to go beyond current interests and daily routines to engage in a series of meetings, jointly elaborating on a transition challenge, drafting a long-term vision, developing transition pathways to realise this vision.... developing a shared transition agenda, which provides a starting point for involving a wider group and instigating new activities, networks and collaborations(6).

This formed the basis of the creation of the Zero Together Transition Team. In 2020, representatives from the four Dublin Local Authorities and the Dublin CARO committed to collaborating on the Zero Together initiative and participated in a workshop with Codema to identify other potential members of this team.

By September 2021, Codema, the four Dublin Local Authorities and the Dublin CARO had identified and recruited over 20 change agents across academia, transport, communities, energy and NGOs to join the Zero Together Transition Team.

The Transition Arena

According to the Dutch Research Institute for Transitions (DRIFT), the "transition arena" is defined as the facilitation of an informal and well-structured space. Codema was acutely aware of the time constraints of the change agents identified and the importance of providing a process that was of value to everyone involved. Therefore, Codema conducted a review of the literature around transition management and effective workshop structures.

Themes began to emerge throughout the literature such as 1) defining the purpose of the team, 2) identifying the issue, 3) visioning into the future, 4) idea generation and 5) implementation. Figure 1 below demonstrates the overlap of these themes (left) with the Transition Management process (right).

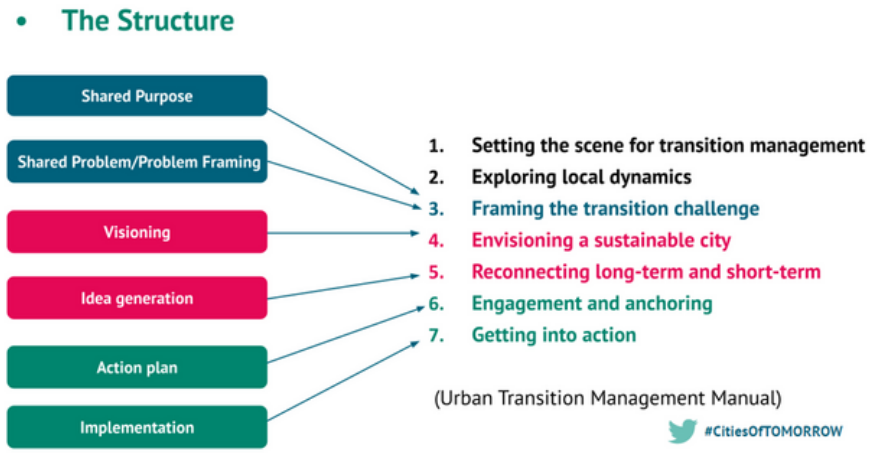


Figure 1 : Transition Management Stages from DRIFT Urban Transition Manual

From this analysis, Codema designed a broad structure for the Transition Team workshops. This formed the basis of a brief used to procure a professional facilitator to design the workshop process in more detail and facilitate the "informal and well-structured" space that this team deserved.

Over the course of 10 months, Helene Jewell facilitated nine workshops with the Transition Team. Throughout 30 hours of deliberation, the team has brought their knowledge and expertise to the process, building out a vision for Dublin. They have examined the barriers to this vision and the solutions needed to overcome these obstacles. The following sections outline the output of this process.

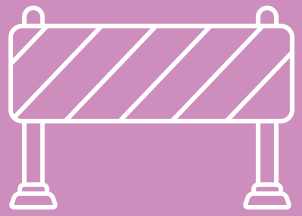
Transition Team Workshop Timeline

Workshop 1:
Intro and Purpose

Sept 2021

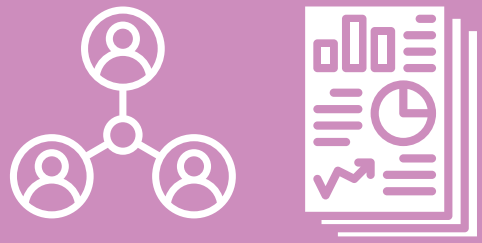
Workshop 2:
Visioning

Dec 2021



Workshop 3:
Underlying Contradictions

Jan 2022

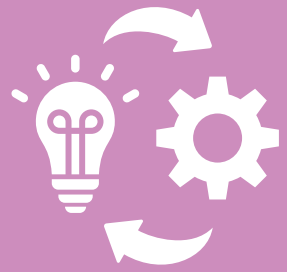


Workshop 3a + 3b:
Stakeholder Buy-in and DREM presentation

Feb & Mar 2022

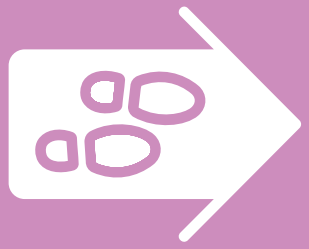
Workshop 4:
Strategic Directions

April 2022



Workshop 5:
Focused Implementation and
Leuven Case Study

May 2022



Workshop 6:
Next Steps

June 2022

Workshop 7:
Draft Roadmap Review

Nov 2022

Purpose

In September 2021, the first online workshop with the Transition Team took place. The objective of this session was to help the team work together to develop their shared purpose and to help the team get to know each other.

The team produced some key purpose statements and identified core values that were important to the group, such as being “honest”, “genuine” and providing “support” and “engagement” in the transition away from fossil fuels.

The purpose of the team is:

"to create and deliver on a vision and a strategy for a fossil fuel-free Dublin that is honest, ambitious and inclusive. To be a catalyst and support for 1) ongoing collaboration 2) holding decision-makers to account and 3) engaging the wider public."

Creating a Vision for Dublin in 2050

Visioning ideal futures is a tried and tested tool that has been used across sectors and disciplines over many years. It is a tool to facilitate access to truly desired futures without the constraints of thinking about pathways, technologies, mechanisms, etc. to achieve the vision(7). Therefore, it allows for the free articulation of desires for the future because visions are not compromised by what is thought possible from the prevailing systems and technologies of the present. As such, it is a method to dream of an ideal or utopia, from which desired and preferred futures can be explored(8), and action and policy to achieve the vision can later be developed and interrogated.

Figure 2: Presentation of the Transition Team Group Visions

The visioning workshop, which took place online in December 2021, was a full day session. The workshop involved guided meditation, a clay model exercise, storytelling and consensus building. The team was asked questions such as 'What would Dublin look like in 2050 if there were no constraints, plenty of resources and no restrictive laws?'

Environmental scientist and educator Donella Meadows articulated the importance of visioning in her 1994 speech(7) titled “Envisioning a Sustainable World”, as she states:

> Even if information, models, and implementation could be perfect in every way, how far can they guide us, if we know what direction we want to move away from but not what direction we want to go toward? There may be motivation in escaping doom, but there is even more in creating a better world. And it is pitifully inadequate to describe the exciting possibilities of sustainability in terms of mere survival — at least that’s what my vision of sustainability tells me.

The team reached consensus on a vision for Dublin in 2050 reflected in the following 10 core vision elements, shown below:

1. Dublin has delivered action against climate change
2. Dublin's people, places and biodiversity are thriving
3. Dublin and the people of Dublin have limitless opportunities to enjoy natural spaces and the urban, rural and coastal environment
4. People are actively involved and benefiting from a fair energy transition and a just, democratic society
5. Dublin is a vibrant city of towns, villages and neighbourhoods with connected communities
6. Dublin has warm cosy homes with a good built environment
7. Dublin looks forward to a better 2100
8. Dublin has appropriate control, governance and resources to implement community-led action
9. Together, Dublin's people are informed, empowered and active in living sustainable lives
10. Dublin has a healthy zero-waste and circular economy working for the betterment of all

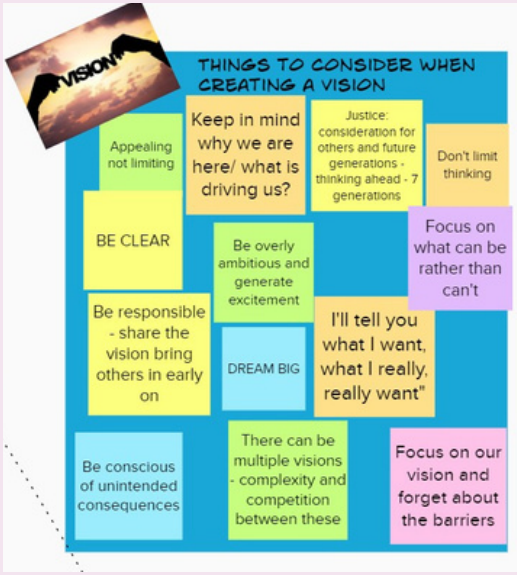


Figure 3: Transition Team Mural Board Discussion of Things to Consider When Creating a Vision

Figure 4: Word Cloud of Important Values Highlighted by the Transition Team

Barriers to Achieving our Vision

The third workshop took place in January 2022 and was focused on defining the key barriers to achieving our vision. As previously mentioned, the step of "problem framing" or "framing the transition challenge" in the workshop process is crucial, as it shines a light on the core issues facing the energy transition in Dublin. During this half-day workshop, the Transition Team built consensus on the main barriers facing the Dublin region (outlined below) in achieving the vision elements presented in the previous section.

1. Supply Chain and Skills Issues

As set out in Ireland's Climate Action Plan 2021, the Government has set an ambitious target of 500,000 retrofits to be completed on Irish homes by 2030 (or an average of 75,000 retrofits per year). However, there are significant challenges in being able to match the pace and scale of delivery needed to achieve this target and cater for demand. According to the Sustainable Energy Authority of Ireland (SEAI), just 8,600 upgrades to B2 standard were expected to be completed in 2022 (9).

There are also significant barriers around the number of skilled workers available to carry out these retrofits, with the Construction Industry Federation stating that the target of retrofitting 500,000 Irish homes by 2030 will require a significant increase in skilled workers from 4,000 to 17,000 by 2024(10). This issue is compounded by competing demands in the construction industry, with strong demand for new builds in the midst of a national housing crisis.

In Spring 2022, SEAI launched its new one-stop-shop service to carry out deep retrofits on Irish homes. It had expected around 20 one-stop-shop providers to be registered in 2022(11) but as of November, just 12 one-stop-shops were fully registered on the SEAI website (12), so it is uncertain as to whether this target will be met.

Furthermore, in October 2022, SEAI told an Oireachtas Committee on Environment and Climate Action that its home energy grant programmes were "experiencing significant levels of demand from homeowners" with over 36,000 applications received. It also highlighted how Ireland's National Retrofit Plan is experiencing supply-chain constraints in terms of sourcing labour and materials(13). According to Codema's Dublin Region Energy Master Plan, the most common BER (17% of total) for Dublin homes was a D2 rating for the year 2021. Buildings rated D1 or lower made up 58% of the housing stock, whereas A and B rated buildings made up 12% of the stock, demonstrating the scale of the challenge to retrofit Dublin's ageing housing stock to a B2 energy rating.

2. Massive Over-Reliance on Fossil Fuels

According to SEAI's Energy in Ireland 2021 report, 86% of Ireland's primary energy came from fossil fuels (oil, gas, coal, or peat) in 2020(14). This means that we are largely dependent on fossil fuels to heat and power our homes, for commercial and industrial activities and for transport. In addition, energy-related CO2 emissions from the combustion of fossil fuels accounted for 57% of Ireland's total greenhouse gas emissions. We also have to import the vast majority of these fossil fuels and in 2020, Ireland's import dependency was at 72%, well above the EU average(14).

While significant progress has been made in decarbonising the electricity sector (a low-wind year saw a reduction from 42.3% renewable electricity in 2020 to 34.7% in 2021, against the increased target of 80%(15)), we are still largely reliant on fossil fuels for heating and transport in particular. Looking at Dublin specifically, we are currently spending over €1 billion per year for our heating needs.

Within this, 91% of this comes from fossil fuels. Transport energy costs in Dublin amount to €963 million per year, 87% of which is fossil-fuel based(16). By moving away from fossil fuels and making use of low-carbon technologies and increasing renewable energy, this can provide multiple opportunities. By using indigenous, sustainable sources to meet Dublin's energy needs, the region can reduce its reliance on fossil fuel imports, and by making use of local solutions to reduce emissions, it can help generate more employment for Dublin's citizens.

3. Economic, Social and Environmental Injustice

Social, economic and environmental injustice often go hand in hand - those who experience socio-economic disadvantage often experience the most environmental injustice as well (such as living with increased air pollution, environmental degradation, experiencing energy poverty, etc). Research on the social distribution of environmental quality and dimensions of environmental justice are limited for Ireland(17). However, a recent study by Community Law and Mediation on environmental justice and marginalised groups (i.e. the traveller community, non-EU migrants, women and vulnerable and elderly people) highlights how groups that experience social exclusion and economic deprivation also experience various dimensions of environmental injustice.

For example, these groups are more likely to experience exclusion from environmental decision-making and planning processes, higher rates of energy poverty and substandard housing and residential environments. Similarly, a recent report by Think-Tank for Action on Social Change (TASC) on inequality in Ireland also shows how socio-economic deprivation and environmental injustice (specifically energy poverty) are increasingly experienced simultaneously.

They underline the structural drivers of the current cost of living crisis, highlighting the impact of living in energy-inefficient homes in the face of rising prices, which is more likely for lower-income households(18). This is even more acute for households in the traveller community living in mobiles, 77% of whom were considered to be living in energy poverty previous to the current crisis(19), and the majority living in mobiles with standards not fit for year-round living(20).

Specific to Dublin, the Dublin Region Energy Master Plan suggests 12 areas within Dublin that are most at risk of energy poverty, linking the deprivation index, BER ratings and unemployment data at an electoral district level. It suggests the prioritisation of these areas for energy upgrades to ensure a just transition in Dublin's move away from fossil fuels(16).

4. There is no Shared Social, Cultural and Individual Acceptance of the Challenges and Opportunities

Climate change is a wicked problem and the ways in which climate change is understood, alongside the necessary actions to address it, varies widely. This is reflected in public opinion among the Irish public. Although research conducted for the Environmental Protection Agency (EPA)(21) suggests that a majority (96%) of Irish people believes climate change exists, there lacks a unified understanding regarding the impacts and necessary actions (whether individual and/or structural) to address it.

For example, there is clear division regarding the opportunities of taking action on climate change and the challenges posed as a consequence of inaction, with 62% of people thinking that climate action will improve Ireland's economic position, 19% thinking that climate action will have no impact (neither positive nor negative), and the remaining 19% believing it will have a negative impact.

In addition, there are differences over when people expect to experience the benefits of investment in mitigation efforts. Half of participants in a study conducted by the Economic and Social Research Institute (ESRI)(22) expect benefits relatively soon, in contrast to the other half who expect few short-term benefits. Moreover, at an individual level, studies conducted for the EPA and by the Policy Institute at King's College London(23) both demonstrate a broad spectrum of opinion over the degree to which people believe they will be affected by climate change and the impact of individual behaviour in addressing climate change.

5. Non-Participatory Democracy: Designed Exclusion

According to Social Justice Ireland “citizen participation is key to a thriving democracy” and providing opportunities for people to be involved and included in decisions that affect them and their local communities is a core element of real democracy(24). Participatory mechanisms that are limited in their power to engage citizens are the widely-used conventional and traditional methods of engagement. A recognisable form of one of these methods is the “audience-style room setup”, whereby the audience members are limited in their engagement by both a fixed agenda and a narrow time-frame(25).

This “top-down participatory model” views the “public as consumers” rather than active participants(26). Other forms include “attitude surveys, neighbourhood meetings, and public hearings”(27). In an Irish context, this can be seen in the use of public consultations. These traditional, participatory mechanisms are often criticised for being “procedural”, a “window-dressing ritual” and a box ticking exercise(28). Through enabling a hierarchical and non-inclusive approach to decision-making, it compounds a “hidden premise of leaving issues to the experts”(29).

Furthermore, fees to make submissions, high legal costs and the expectation to engage with online platforms all compound the exclusionary nature of Ireland’s participatory processes. This is particularly evident in a study investigating Environmental Justice in Ireland in which specific marginalised and vulnerable groups such as the Traveller community, women and migrants were engaged. This research found that participants “expressed frustration with consultation processes, where the final decisions side-lined their concerns altogether”(17). If the ultimate objective is to foster meaningful participation where citizens have a seat at the decision-making table, these conventional mechanisms are ineffective.

Ireland’s highly-centralised government “means that citizens are represented more by professional politicians than by their local constituency representatives”(24). It is crucial that individuals and groups have not only access to relevant information but are provided with ways to engage with policy makers(24). Citizens have a desire for engagement that reaches beyond acquiescent bystanders to a decision-making process whereby they are “seen as partners rather than subjects”, also referred to as “authentic participation”(30).

6. Growth Focus

Ireland's economy is geared toward economic growth and it is an explicit policy goal(31). Growth in the economy as articulated through growth in GDP is assessed positively across national and international bodies and institutions(32,33) and is a positive measure of political and economic performance and a key indicator underpinning the perceived legitimacy and competence of political authority. However, currently growth in the economy is dependent upon harmful environmental impacts, which cause and exacerbate climate change(31).

One of the main problems with using GDP or growth in GDP as a primary indicator to assess performance stems from the lack of distinction between growth that either enhances or harms social and environmental systems(34). Employing the concept of planetary boundaries (which estimates a safe operating space for humanity)(35,36), Ireland's current socio-economic system when measured by consumption exceeds six of seven boundaries and by significant margins(37). Moreover, the economy relies on increasing material inputs and outputs to realise growth(31) at a rate that is not considered sustainable However, to ensure that planetary boundaries are respected, growth needs to be decoupled from an unsustainable increase in inputs and outputs, and in simple terms, growth needs to be generated by a circular and regenerative economy(31,37).

While a circular economy is a key policy direction at both the national and Dublin regional level, it is nascent(38), with only a 2% circular material use rate within Ireland's economy, which is low compared to international standards (e.g. Ireland is placed 26th out 27 EU member states)(39). OECD research on the circular economy in Ireland outlines various obstacles to the transition to a circular economy, ranging from a limited state of knowledge, awareness, and capacity among the business community and within civil society, coupled with capacity constraints at the institutional level(38).

Moreover, current plans conceptualise a circular economy at a sectoral level(38), as opposed to a fundamental structure of the whole of the economy to ensure all economic activity respects the capacity of the earth's ecosystems to support life. As such, a transition away from the current economy-nature relationship, while urgently needed, is some time off, and continuous growth underpinned by the current relations will continue to see Ireland's economy exceed biophysical limits.

7. Inadequate Policies and Implementation of Policies and Legislation, which are Conflicting with the Scale and Urgency of the Climate Emergency

At an international level, a recent report released by the United Nations Framework Convention on Climate Climate Change (UNFCCC) prior to COP 27 states that current actions and plans to limit global warming and keep warming below 2°C by 2100 are insufficient, with current pathways on track to produce between 2-3°C of warming(40). In Ireland, more ambitious and urgent action is a consistent observation regarding Ireland's plans and implementation of climate policies. While plans have improved from 2021 to 2022, with sectoral emissions ceilings only recently agreed and articulated, there is a lack of clarity regarding how these targets will be met.

The target for national emissions reduction is 51% by 2030; however, reductions as quantified and expressed only amount to a 42% reduction in emissions(41). As such, for Ireland to achieve its emission reduction targets, additional measures are needed alongside a revision of existing plans and actions to account for pathways for deeper emissions reductions(41,42).

In general, action on climate change has been slow, with targets consistently missed across international and national agreements and commitments. Rapid and transformational change is required for Ireland to reach emission reductions targets. However, the current pace of implementation will not realise the change necessary for Ireland to achieve its targets(42). The energy sector has been the most successful sector so far in tackling emissions. However, with the current energy crisis and recent weather patterns affecting renewable energy generation, fossil fuel use (particularly coal, oil and gas) has increased, not decreased as emission reductions necessitate(41,42).

At the regional level, the four Dublin Local Authorities each have a Climate Change Action Plan. However, in addressing only public sector emissions, these plans account for 5% of total emissions in Dublin(16). There is a need for greater collaboration between different actors and stakeholders across the region to develop consistent and coherent emission reduction strategies for Dublin(16). While collaboration is currently limited across actors, the state of knowledge and actionable plans for achieving emission reductions within sectors is also lacking(43,44). Moreover, legislation for the private sector currently does not require the majority of companies to report on their environmental and social impacts(43). Taking account of the existing limitations within businesses to address climate change, it can be assumed that many do not currently account for nor have plans to address their impacts(44).

8. Greenwashing and Resistance to Change

Greenwashing is the intersection of poor environmental performance and positive communication about environmental performance(45) undertaken by firms. Greenwashing has increased over the last number of years with a greater and growing demand for 'green products' from consumers as a result of increased environmental awareness and demand for businesses to produce and provide more sustainable products and performance(43,46). EU law is also increasingly targeting practices that can result in greenwashing, especially with the commencement of the EU Green Deal, which aims to shift investment from unsustainable products and businesses to ones that are more sustainable(43).

Until recently, greenwashing has been poorly regulated and enforced(46). It is common in a range of practices and forms, and as a consequence, it is hard for a consumer to identify greenwashing, challenge it(46) and make more sustainable choices.

If consumers don't start consuming more sustainably, a transition to an economy supported by sustainable businesses will be prolonged and protracted. Fundamentally, customers need factual information to make sustainable choices(47).

With regard to specific instances of greenwashing, in 2020 the European Commission - along with national consumer authorities - did a sweeping audit of websites across the EU member states and found that in over half of the cases, not enough information was provided by traders for consumers to be able to judge the accuracy of their 'green' claims. Moreover, in 42% of cases, the claims were suspected to be completely false. Three traders in Ireland were approached as a result of the study but no penalties were issued; however, amendments and clarifications were later made to relevant websites(48).

EU law is strengthening, with new regulations to take effect in 2023-2024. There is greater requirement for green claims to be substantiated with evidence,(43,49) which was not previously required. For example, under the Unfair Commercial Practices Directive (UCPD), consumer protection has been extended to claims made regarding the environmental and social impact of products (i.e. a trader cannot mislead consumers on these dimensions).

However, there is no specific law in Ireland to prevent greenwashing(48). The Consumer Protection Act (CPA) 2007, does incorporate the UCPD from the EU so as this directive is strengthened, so too will the CPA in regards to greenwashing. However, other authorities that could help prevent greenwashing lack the power to enforce rules such as the Advertising Standards Authority in Ireland, which has established rules regarding misleading advertising. Moreover, the Competition and Consumer Protection Commission (the authority in 'policing' consumer protection in Ireland) does not get involved in cases between individual consumers and traders. Consumers have to pursue any claims through the courts, which is prohibitive.

Strategic Directions for Dublin's Energy Transition

The fourth workshop focused on deciding what innovative, substantial actions would deal with the barriers identified in the previous workshop and move us towards our vision. These actions were grouped based on their intention and were then named. From this process, the team agreed on four key strategic directions for Dublin's energy transition, which are outline below.

Accounting for a Just Transition

Making Climate Action more Democratic and Inclusive

Providing Clear and Honest Communication and Education

Designing, Planning and Implementing Solutions for Climate and Biodiversity Action

These strategic directions are the foothold and foundational principles of the roadmap and should underpin the actions outlined in the Zero Together roadmap.

Accounting for a Just Transition

According to the National Economic & Social Council (NESC)(50), a just transition approach means:

> embracing change, and it embodies a commitment to a participative process of in-depth exploration with stakeholders and those experiencing the transition and change first-hand, particularly in relation to climate.

To ensure that we are accounting for a just transition in Dublin, it is useful to understand the concept of "energy justice", of which there are five tenets: procedural justice, distributional justice, recognition justice, cosmopolitan justice and restorative justice. Each of these explores the costs and benefits of the energy transition by asking "who gains, who is involved and who's affected?"(26).

> 1. Procedural Justice views the process and mechanisms used to develop energy policy and visions, with a consideration of who is included/ excluded within that process.

2. Distributional Justice considers where developments are sited (whether they are just or unjust), who has access to energy and how benefits to developments are distributed.

3. Recognition Justice considers who is included and who is neglected from the decisions made around energy systems and sectors.

4. Cosmopolitan Justice advocates that the principles of Energy Justice are applied to people of all nations, and that there is a global responsibility in energy transitions. This includes the impact that energy choices have on those beyond the immediate location of a project (for example, the way energy decisions in the Global North can affect societies in the Global South).

5. Restorative Justice aims to restore and recompense the injustice that has occurred through energy developments of the past.

The energy transition is a multi-dimensional issue and to recognise this is to understand that equity is at the core of the process(51). Broadly speaking, environmental problems affect us all. However, it is important to recognise that the effects of issues such as pollution, rising energy costs and climate change and the policies designed to address these issues, are not experienced equally (Distributional Justice). Furthermore, people do not have the same resources and power to impact decisions about our environment and the energy transition (Recognition Justice). It is evident that "social positioning, identity, class and geography can have a significant bearing on the type and degree of environmental burdens that certain communities bear"(52).

Discernible examples of inequity are the extent and severity of energy poverty in Ireland significantly impacting low-income households, the elevated exposure to air pollution for those living or working in lower socio-economic areas and transport poverty defined as "a lack of access to essential goods and services, as well as 'lock-out' from planning and decision-making processes"(17). Policies that are formed without engaging the very individuals and groups who will be affected by these issues can lead to "lop-sided outcomes that will benefit those who have access, while excluding others, most notably the vulnerable"(24) as well as tension and resistance in the public sphere (Procedural Justice)(53).

Making Climate Action more Democratic and Inclusive

According to MaREI, "while democracy is concerned with the greater public good, for it to be effective, citizens need to be active and to be involved both politically and socially"(54). Similarly, the Working Group report on Citizen Engagement with Local Government, the catalyst report for creation of the Public Participation Network, states that it is crucial for local communities and stakeholders to be involved in "shaping decisions that affect them"(55).

Participation in environmental decision-making and access to environmental information such as 1) the state of the environment, 2) human health issues and 3) policies and measures taken by a public organisation, are rights to all citizens under the Aarhus Convention(56). However, current structures and processes make it difficult for people to exercise these rights and participate in environmental decision-making in any meaningful way(17).

Social Justice Ireland summarises the challenge we face in making climate action more democratic and inclusive at a national level:

> If Ireland is to succeed in addressing the challenges it faces, the pathway to doing so must be founded on consensus, must be well-managed, and must be properly evaluated. Reforming governance and widening participation must remain a key goal. An increased recognition of the need to include all stakeholders in the decision-making process is needed. A deliberative decision-making process, involving all stakeholders and founded on reasoned, evidence-based debate is required.

The EPA defines the benefits of participation as two-fold; firstly, it is a way of increasing acceptance or the understanding of benefits, so enabling timely deployment, and secondly, it is also a basic right, as outlined above, that leads to collective action, inclusion, empowerment, transparency and accountability(57). At a regional level, it is evident that there is an appetite from the people of Dublin to be included in the energy transition. For example, the Zero Together survey published in 2021 found that over 70% of respondents felt that their views and concerns are rarely or never taken into account in relation to how we use and produce energy in Dublin.

Furthermore, when asked how they would like to be engaged going forward, 68% of respondents stated that they would like to be involved in a representative deliberative process on Dublin's energy transition. This is a clear signal that people across Dublin want the opportunity to be included in decisions at a local level. This finding is aligned with feedback from the National Dialogue on Climate Action, which found that participants wanted to see "national policy ambition reflected where they live"(58).

To ensure that climate action and the energy transition are more democratic and inclusive, it is critical to recognise the importance of capturing the lived experience of people at a local and hyper local level. To do this, however, will require "investment in capacity building, sustained support and a deliberative, participatory form of dialogue that makes room for the voice of the marginalised"(17). There is also a tension between actively involving people in decisions that will impact their lives and taking urgent action in relation to the climate crisis and more specifically, Dublin's energy transition. According to MaREI, "there is a danger that this urgency, and the level of response required, will determine the engagement methods used and override the principles of engaged citizenship and participatory democracy"(54).

To address this tension, Zero Together supports and promotes the need for a local approach to participation and democracy. With this in mind, an implementation plan has been developed to support a mini-public on Dublin's energy transition (outlined in Section 3: Public Engagement and Communication). A "mini-public" is defined as a microcosm of "ordinary citizens who deliberate together about a policy issue before reaching a binding decision or conveying their opinions to decision-makers"(59,60). This setup has been actualised internationally in processes such as Citizens' Assemblies and Citizens' Juries(61). Mini-publics are considered a "promising response to today's crisis of democracy" in which there is increased "voter apathy, distrust in politicians, and the prevalence of disinformation"(59). Moreover, evidence shows that representative deliberative mechanisms can aid in galvanising support and trust from the wider public who are more likely to buy into a decision that is delivered by ordinary people, like themselves(62).

Providing Clear and Honest Communication and Education

Communication and education have an essential role to play in promoting and supporting a response to Dublin's energy transition. However, there is little consensus on how to communicate climate change and the energy transition effectively(63). Consensus is found across areas such as 1) the importance of appealing to people's values and lived experience, 2) the importance of leveraging trusted sources of information and 3) the importance of communicating co-benefits relating to taking action on the climate crisis. Zero Together aims to be the platform for clear and honest information and education relating to Dublin's energy transition; therefore, it is crucial to explore all of these elements in more detail.

-Power of local

Connecting with people at a local level is reported to represent "a central facet of effective climate crisis communication"(64). Understanding this need is to recognise that people have very different lived experiences, values and views of the world and we need to meet people where they are.[1] While a majority of people may support climate policy, we know from on-the-ground project roll-out that when it directly impacts people in their local area, i.e. bike lanes on their driving route, or reduced car parking on their road, the support can disappear(65). The energy transition and climate crisis are interconnected and urgent issues. It is crucial to achieve timely public buy-in and support for solutions that are essential to meeting the sectoral carbon budgets. To aid in this, research conducted by the EPA suggests that engagement and communication strategies should be structured around shared values, concerns and local places and spaces "including the use of local imagery and storytelling"(64). Similarly, Dr. Atyia Martin states that "most people do not think about the world in probabilities and charts, we think of the world through images, stories, experiences"(66).

Therefore, communication tailored to the experiences of local areas and communities in Dublin is an important consideration for Zero Together.

-Trusted sources

Research conducted by the EPA (2020) garnered insight from citizens on trusted sources in relation to climate action. The most trusted sources of information were environmental protection organisations (28%) and scientists (26%). The least trusted sources were economists (4%), national government (5%) and local authorities (3%). The reasons for trusting a source was that "they have genuine concern but no conflicts of interest". Similarly, the Zero Together survey asked respondents about trusted sources of information relating to climate change and energy with results aligning to the EPA's research. For example, the least trusted sources were the national government, local authorities, businesses and elected members. Yet, these groups and sectors were considered most responsible for moving Dublin away from fossil fuels(67).

To address the low level of trust at local authority level, the EPA recommends including "trust building as part of communication and engagement initiatives". Similarly, "identification with and involvement in the local community can empower and enable citizens; it can help to foster trust and social capital and also improve the transparency and accountability of government"(68). It is paramount to identify and support trusted communication and engagement tools and channels. For example, according to research from the EPA, "there is significant untapped potential within intermediary groups that are not directly associated with the energy transition" and identifying community and energy champions that are "known locally and are respected and trusted".

The recommendation from this report is to provide “practical support…for intermediary organisations, such as Tidy Towns, if their role is to be maximised” in the energy transition. Furthermore, there is a critical need to embed information and engagement on the climate crisis and energy transition into the educational system as compulsory subjects or through local education programmes, along with investing in “trusted information proxies” such as mini-publics, which have proven potential to “influence and shape public opinion, as opposed to solely shaping public policy”(64).

-Communicating the co-benefits

Although it will be paramount to be honest about the trade-offs associated with Dublin’s energy transition in relation to district heating, offshore wind, solar, etc., it is also crucially important to clearly communicate the co-benefits of this transformative change. Messages of fear and guilt are often rejected and are unlikely to empower the wider public(66). Therefore, it is important to find a balance between communicating the sacrifices and trade-offs associated with Dublin’s energy transition and the positive outcomes of moving away from fossil fuels. For example, in relation to transport, reducing car dependency results in less noise and air pollution, more inclusive neighbourhoods and reduced feelings of loneliness, particularly among the elderly(69). One method of exploring this balance between sacrifice and positive outcomes is through future or “speculative” discussions.

Opening up this dialogue and conversation can “help motivate and mobilise citizen engagement in the face of the large-scale social, financial and technological transformations”. The recent Zero Together “Postcards from Dublin 2050” campaign addresses this concept of future thinking, as it aims to find out what is important to the people of Dublin as we move away from fossil fuels. This activity has, so far, allowed people to articulate their vision of Dublin in 2050, in turn communicating what has changed, what they have sacrificed and what they have benefited from. More detail on this campaign is provided in the chapter on public engagement and communication.

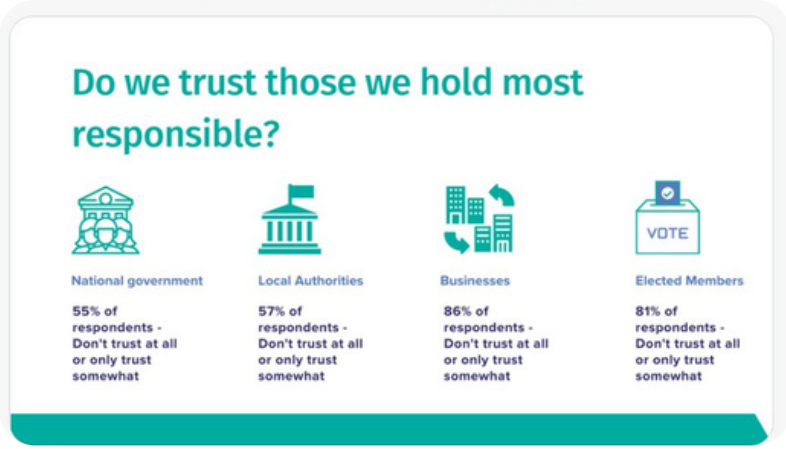


Figure 5: Zero Together Survey Results in relation to Trusted Sources of Information on Energy and Climate

Designing, Planning and Implementing Solutions for Climate and Biodiversity Action

Dublin’s future energy system will require significant solutions and infrastructural changes from how buildings, neighbourhoods and towns are designed to how heat, electricity and transport are delivered across the region. The complexity of this challenge is immense and will need ambition, innovation and, crucially, top-down and bottom-up support.

Dublin’s energy transition isn’t happening in isolation. This all-of-society transformation is occurring and will continue to occur in conjunction with national and global issues and trends such as the Covid-19 pandemic and the ongoing climate, energy, cost of living and biodiversity crises. Furthermore, according to the National Economic and Social Council (NESC), there are also several “complex transitions” occurring simultaneously such as “urbanisation, population growth, globalisation and a move towards a circular economy”(50).

Therefore, when it comes to designing, planning and delivering solutions that support and promote climate and biodiversity action in Dublin, it is crucial to look holistically at the national and local context and determine how each stage can support one another and take into account the “permacrisis” (i.e. an extended period of instability and uncertainty) occurring nationally and internationally.

For example, in 2019, Ireland declared a National Climate and Biodiversity Emergency and although the National Biodiversity Action Plan 2017-2021 promotes a clear action to ensure that all public authorities and private sector bodies move towards “no net loss of biodiversity through strategies, planning, mitigation measures…”, traditionally biodiversity has not been accommodated and considered in the design, planning and implementation of infrastructure across the country(70). While policies from sectors such as agriculture, forestry and fisheries are of prime concern, it is important that future energy-related solutions supporting Dublin’s energy transition consider the impact on biodiversity(71).

Another example of the interrelated nature of Dublin’s energy transition is the ongoing work to decarbonise the national electricity grid. EirGrid, the state-owned company responsible for developing and operating the national electricity grid, has communicated the urgent grid upgrades needed to ensure security of electricity supply and prepare the grid to meet the target of up to 80% of electricity coming from renewables by 2030(72). Understanding how stakeholders across Dublin can support this roll-out will be key to expediting current and future delays and keep us on track to meet our 2030 emission-reduction targets

It is also paramount to recognise the pivotal role local authorities play in planning for, and responding to, climate emergency situations. Given their close relationship witht the community, local authorities can react faster and more effectively to local climate events than other government agencies. This has been demonstrated in their response to extreme weather events in Ireland over recent years. They have essential local knowledge of the environment and have a critical role to play in managing climate risks and vulnerabilities, and identifying adaptation actions within their administrative areas.

They also deliver key services to the public either directly or in partnership with other Government Departments such as housing, planning, sanitation and maintenance of local roads, parks and waterways.

Given the evolving climate action policy context in Ireland and internationally, there is recognised potential for increased local authority-led integration between climate action and spatial planning policy. City / County Development Plans and other local authority plans, such as Strategic Development Zone (SDZ) Planning Schemes and Local Area Plans (LAPs), can play a key role in signposting and enabling evidence-based policy responses, to both climate change mitigation and adaptation.

It is also acknowledged that the ‘national climate objective’ and associated ‘sectoral emissions ceilings’ are not explicitly reflected in the Planning and Development Act 2000 (as amended). Future consideration could be given to aligning the ‘national climate objective’ and associated ‘sectoral emissions ceilings’, in spatial planning and other related legislation, regulations, etc. in the future.

ZERO TOGETHER

Towards a cleaner, healthier Dublin

5 by 2050

THE EVIDENCE

The Dublin Region Energy Master Plan

A pivotal element in identifying the type of solutions needed in Dublin is to understand the specific characteristics of the area. This is achieved through a process known as “master planning”, which “has a fundamental role to play in creating and supporting spatially appropriate energy solutions based on an understanding of settlement areas, land uses and the built environment”(73). A best-practice example is the Dublin Region Energy Master Plan, published by Codema and the first of its kind for any city or town in Ireland. The master plan presents the most realistic, evidence-based solutions for Dublin to achieve its 2030 and 2050 emission reduction targets. These pathways are based on Dublin’s unique spatial energy characteristics, which are often overlooked when examining low-carbon pathways at a national level.

The Dublin Region Energy Master Plan uses spatially-driven energy scenario modelling to identify the cost-optimal solution that considers the socio-economic impact at a local level in Dublin, based on the specific energy “characteristics” or profile of a particular area. Put very simply, this means that the master plan has looked at ‘what should go where’ for every area of Dublin, based on the type of area it is and the technologies that are best suited to reducing energy-related emissions within that area. The master plan also brings together national government plans and policies to show the impact they will have on Dublin.

To define the pathways for Dublin to meet its 2030 and 2050 targets, Codema first had to get a good understanding of the current situation in the county; this was followed by projecting the future business-as-usual energy demand and emissions (for the buildings, heat, electricity and transport sectors), and then identifying the low-carbon potential for these sectors. All of this information was then used to determine the net-zero pathway for Dublin.

The headline figures from this master plan show that:

- Dublin’s total energy-related emissions account for 5,969 ktCO2. The current gap to the 2030 target amounts to approximately 2,856 ktCO2 (requiring a 48% reduction in emissions from current levels)
- A reduction of 5,969 ktCO2 will be needed to meet the 2050 net-zero target
- Heat accounts for the majority of energy-related emissions within the Dublin region at 46%, followed by transport at 28% and electricity at 26%
- The sectors that have the highest impact on emissions are the residential and transport sectors, which combined, contribute around 57% to total emissions
- Commercial buildings and services, data centres and industrial (non-ETS) buildings account for 19%, 16% and 3% of total energy-related emissions, respectively
- Public sector emissions - which include all public buildings located in the Dublin region - represent approximately 5% of the total

The pathways to net-zero emissions proposed by the master plan seek to reduce Dublin's emissions by a total of 4,103 ktCO2 by the year 2030 and 8,240 ktCO2 by 2050, compared to future Business-as-Usual projections. The full Dublin Region Energy Master Plan report is available here.

Dublin's Energy-Related Emission Reduction Targets

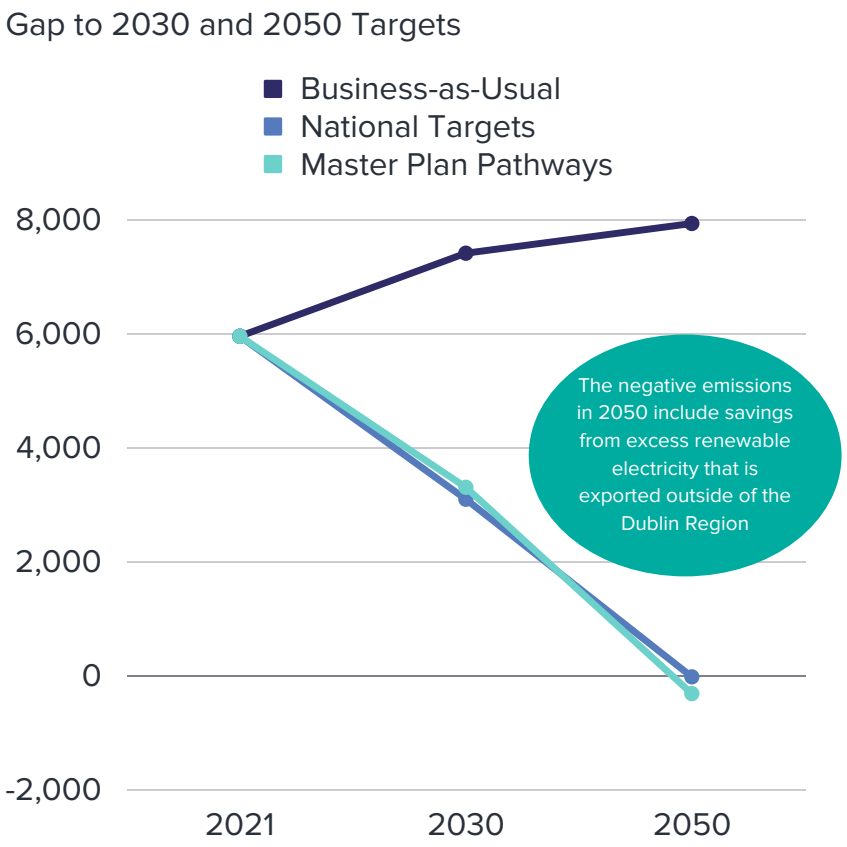


Figure 6: Dublin's energy-related emission reduction targets to 2030 and 2050

Dublin's Energy-Related Emissions by Sector

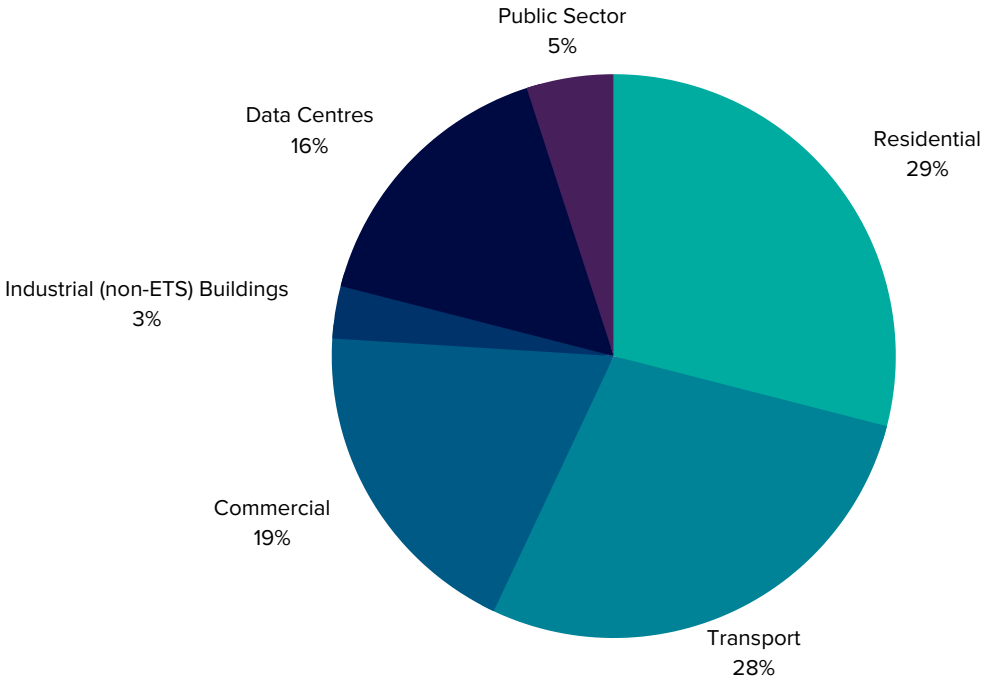


Figure 7: Dublin's energy-related emissions by sector

Benefits for Dublin

If all of the recommendations within this Dublin Region Energy Master Plan were carried out, it could potentially:

- Reduce energy-related emissions by 4,103 ktCO2 by the year 2030.
- Reduce energy-related emissions by 8,240 ktCO2 by 2050.
- Increase renewable electricity generation in the Dublin region by 14,780 GWh by 2050. This is enough electricity to power the equivalent of 3.5 million homes.
- Decrease electricity production costs by a total of €519 million per year by adopting renewable energy technologies (onshore and offshore wind, utility-scale solar PV and building integrated solar PV) .
- Avoid carbon costs of €24 billion (when accounting for the shadow price of carbon).
- Increase direct jobs by over 182,500 by 2050.
- Reduce pollution and provide better air quality.

Introducing 5 by 2050

From the Dublin Region Energy Master Plan, five systemic solutions have been identified as action areas that should be prioritised for implementation, as they provide the greatest impact to achieve our emission reduction targets.
These five solutions are:

1) District Heating
2) Offshore Wind and Solar
3) Building Upgrades
4) Energy Planning
5) Avoid, Shift and Improve Transport

Low-carbon solutions and infrastructure such as district heating systems and offshore renewable energy will ensure that we are moving towards a clean energy system instead of locking into fossil fuel-based systems for decades to come.

The next section details the five solutions providing key insights from the Dublin Region Energy Master Plan and an overview of how each solution is underpinned by the four strategic directions outlined in the previous section.

Following this, public engagement and communication activities are explored and presented. The people of Dublin should be included and provided with clear and accessible information relating to these five action areas. Therefore, engagement and communication is considered a priority for each action area.

ZERO TOGETHER
Towards a cleaner, healthier Dublin

1. District Heating

District Heating

According to the Dublin Region Energy Master Plan, district heating is the most feasible low-carbon heating option for Dublin, as it could supply 87% of the county's heat demand by 2050; this equates to 538,983 homes and 41,394 businesses being supplied with district heating. Heat pumps are the most feasible option to supply the remaining 13% of Dublin's total heat demand by 2050, serving 72,528 homes and 5,600 businesses.

There is 3,579 MW of heat available from renewable and waste heat sources in Dublin that is currently not being used. If we used this heat for district heating networks in Dublin, it would produce 24,244 GWh of heat per year, enough to heat the equivalent of over 1.6 million homes.

These heat sources could reduce the total fossil fuel bill for Dublin by almost €1 billion per year and reduce the region's exposure to price fluctuations and security of supply issues in the oil and gas markets. The total cost of developing district heating across Dublin by 2050 is estimated at €7.7 billion.

The majority of this investment (€4.1 billion) will go to local workers working on the installation of the network, providing 4,354 direct construction jobs. Once built, the network will also create a new local heat market estimated at €959 million per year in 2050. Much of this money previously would have left the country to pay for imported fossil fuels but instead could now support new permanent, local jobs.

What is District Heating?

District heating (DH) is a network of super-insulated pipework which allows heat generated from a single or several larger centralised source(s) (energy centres) to be delivered (typically in the form of hot water) to multiple buildings to serve their space heating and hot water requirements. These systems are “closed-loop”, so once the hot water coming from the energy centre has given up its heat to the building, this cooled water then returns to the energy centre to be reheated again.

DH networks benefit from economies of scale; the reduced coincidence of heat demand between different customers leading to lower capacity requirements (when compared with multiple building level units), increased efficiency of larger heat generation units and the reduction in maintenance costs of having a centralised plant. These benefits allow heat to be generated more efficiently and at a lower cost. Having fewer, larger heat generation units when compared to individual, building-level heating plants also allows for easier decarbonisation of heat in the long term, as it requires less individual heating units to be replaced when adopting newer technologies. These large-scale heating systems can also dramatically reduce the carbon emissions associated with heating without the need for significant retrofitting of buildings.

District heating is very flexible and can use the most renewable and low-carbon heat source that is available locally. This means customers are not locked into a single source of supply in the way they are with an oil or gas central heating system.

This can help guarantee reliability, continuity of service and can introduce an element of competition into the supply chain, where desired. District heating can also allow waste heat (e.g. from electricity generation, industrial processes, etc.) which is typically unused to be captured and used to supply heat to homes and businesses, reducing the need to consume further fuel and significantly reducing carbon emissions and the cost of heat.

Greater utilisation of green electricity can also be achieved through the development of DH networks. For example, heat pumps allow electricity to be converted into heat, which can be stored as thermal energy in the district heating network’s pipes and thermal storage vessel, effectively acting as a large thermal battery. This is done at a fraction of the cost of other electrical storage methods and allows the electrical grid to be balanced during periods of low electrical demand (e.g. night time). This off-peak demand allows intermittent, renewable generation technologies such as wind turbines to run during these periods, where previously they could not, and thereby increase the green contribution to the local energy system.

It is for these reasons that many of the most sustainable countries in the world have a large proportion of heat supplied by district heating systems. For example, DH plays a key role in the sustainability of cities like Copenhagen and Stockholm, where more than 98% and 80% of buildings are supplied by a DH network, respectively.

District heating is a low-carbon, low-cost method of supplying heat to a community, district or region and aligns with the energy and climate change ambitions to decarbonise heat in the region. DH has not been widely implemented in Ireland but there is now an increased focus on methods of decarbonising heat supply, as Ireland did not meet EU 2020 renewable energy targets in this area, and going forward, Ireland's 2030 targets will focus more on CO2 emissions from the heat and transport energy sectors.

City-wide DH schemes are typically started and developed by establishing a number of smaller, stand-alone networks (or nodes), which are subsequently connected together into a larger scheme. This is particularly common in publicly-led DH schemes, where the large capital expenditure required to implement a full city-wide scheme may not be easily accessed. Growing a large-scale DH system in this way allows the most financially attractive schemes to be established first, which then support the connection into adjoining areas that may be less financially attractive and ensures successful growth of the network.

The national target for district heating set out in the Climate Action Plan 2021 is for 2.7 TWh of heat demand to be supplied by DH by 2030. This equates to approximately 10% of all residential and commercial heat demand in the country. The potential for DH in Ireland is for up to 54% - 57% of heat demand to be supplied by heat networks based on two independent national heat studies produced by Heat Roadmap Europe and the SEAI.

Current Situation

Despite being a widely adopted and proven technology in many countries, with approximately 10,000 networks in existence in Europe, district heating currently represents less than 1% of the Irish heating market. To achieve the target of 10% by 2030 there is a need to build capacity in the required areas to develop projects (planning, design, installation, operation and maintenance, etc.). This represents a significant transition opportunity for those with complementary skills (civil workers, welders, engineers, etc.) who currently work in the fossil fuel sector.

DID YOU KNOW?

Dublin will soon be home to Ireland's first large-scale district heating system. Waste heat from a local Amazon data centre will be used to supply heat to new and existing South Dublin County Council buildings and the TU Dublin-Tallaght campus through this local district heating network.

District Heating Considering the Four Strategic Directions

District heating represents an opportunity for a just transition addressing distributional justice by providing employment opportunities for those with complementary skills currently working in the fossil fuel industry (welders, engineers, civil contractors, metering and billing staff, etc.). Certain renewable heat sources which are only viable at the scale provided by DH (like deep geothermal) also provide an opportunity for drillers, geologists, etc. currently working in oil and gas exploration to transition to a more sustainable sector.

As these networks are a local piece of infrastructure which utilise local heat sources and serve local buildings, the revenues from operating such systems stay within the local economy rather than being spent on imported fossil fuels. The reduced dependency on imported fossil fuels also reduces the impact of price fluctuations in these fuels, which can lead to increased instances of fuel poverty.

A not-for-profit business model for DH networks can also ensure that any profits that are made are reinvested into expanding networks to increase access to low-cost, low-carbon heat or in improving efficiencies to reduce emissions and heat prices.

More generally, all projects should involve extensive engagement with local communities and stakeholders from the earliest stage to ensure that the benefits of such projects are understood, to avoid misinformation, listen to real concerns and address these through adequate mitigation measures wherever possible.

Policy Recommendations for Heating in Dublin

1. Evidence-based zoning for district heating should be introduced and requirements put in place for buildings in these areas to be able to connect to a local network (both the demand and supply side).

2. Low-carbon heat sources including waste heat should be treated fairly in Part L building regulations (in line with Articles 15 and 23 of the Renewable Energy Directive).

3. Make financial support more easily available for these low-carbon solutions, by providing up-front capital grant funding for low-carbon heating and allowing district heating networks to earn credits under the proposed Renewable Heat Obligation (RHO).

4. The heat loss threshold required to secure grants for heat pumps should be reviewed to explore the potential for increasing the allowable heat loss index. This may enable more homes to qualify for support but without exceeding limits that would result in poor heat pump performance.

5. Adopt business heat models that support the ongoing efficient and reliable performance of heating systems by linking installer revenues to ongoing system performance.

6. Support capacity building across the supply chain for both district heating and heat pumps (planning, construction and installation, design, finance, legal, policy and regulation).

7. District heating is currently unregulated in Ireland. Customer protection will be required in order to ensure fair heat prices and that a good level of service is maintained by heat networks.

8. Fuels such as natural gas and hydrogen should not be used for space heating and hot water where more efficient and lower-carbon alternatives exist (e.g. heat pumps, district heating).

MEASURING PROGRESS: 2030 SMART GOALS

Legend:
- Accounting for a Just Transition
- Providing Clear and Honest Communication and Education
- Making Climate Action more Democratic and Inclusive
- Designing, Planning and Implementing Solutions for Climate and Biodiversity Action

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Energy planning process implemented in the DLAs	2023 - 2025	DLAs, Codema	Adoption of the use of energy statements in the planning system to support heat planning	
Develop a legal basis for utilities to provide information for the purposes of heat planning that addresses current concerns about GDPR	2024	DECC	Legal basis developed	
Review the relevant legislation in order to address the legal matters of Vires and the role of the local authority as a utility provider.	2023	DLAs, Codema	Review of legislation completed	
Part L of the Building Regulations and assessment methodologies shall be updated to accurately reflect the benefits of renewable heating technologies, waste heat and district heating.	2022	SEAI, DHLGH, DHSG	Part L updated	
Develop DH regulations in Ireland in line with regulatory oversight for other utilities. Particular focus on consumer protection.	2024	SCRU, DHSG	DH unit in CRU with finalised regulatory toolset.	

MEASURING PROGRESS: 2030 SMART GOALS

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
District Heating Public Engagement and Awareness Campaign	2024	DECC, SEAI, Codema, DHSG, IrDEA	Campaign delivered as part of wider Zero Together public engagement & awareness	
Behavioural research	2023	Codema, DHSG, ESRI	• Research partners identified • Funding secured • Research conducted & published	
Planning and coordination between infrastructure organisations	2023	GNI, ESB Networks, Eirgrid, Irish Water, NTA	Synergies identified & plans developed	
Complete Decarb City Pipes heat transition roadmap for Dublin, to further inform ZT roadmap	2023	Codema, Local Working Group	Finished heat transition roadmap report	
Phase down fossil fuel infrastructure within DH areas within a certain time frame of DH rollout beginning	2025	DECC	Legislation text developed and implemented	

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2. Offshore Wind and Solar

Offshore Wind and Solar

Offshore wind has the greatest potential to generate renewable electricity in the Dublin area with 5,241 GWh of generation by 2030 and 13,124 GWh in 2050(16). This electricity could cater for the equivalent of 1.2 million homes in 2030 and 3.1 million homes in 2050.

Utility-scale solar PV also presents a great opportunity for renewable electricity production in Dublin, with potential estimated at 854 GWh in 2030 and 1,057 GWh in 2050. The opportunity for building-integrated PV in Dublin is estimated at 84 GWh in 2030 and 270 GWh in 2050, which equate to the electrical demand for 19,984 and 64,394 homes, respectively.

Despite the higher wind speeds from the Atlantic Ocean in the West of Ireland, the east coast is still very suitable for offshore wind development, due to its shallow sand banks, which can greatly ease foundation construction and maintenance. Offshore wind represents the biggest opportunity in terms of renewable electricity production in the Dublin region. This is highlighted by the size and quantity of offshore wind farms in early planning stages that hope to be among the first large-scale projects developed in Ireland. Codema has estimated that these proposed offshore wind farms could produce enough renewable electricity to power the equivalent of 1.2 million homes by 2030 and over three million homes by 2050(16).

What is Offshore Wind?

Wind energy is produced primarily through wind turbines, which harness the wind to provide mechanical power to a generator to produce electricity. Wind turbines are a key technology in the decarbonisation of the electricity sector and are by far the largest renewable electricity generating method in Ireland, representing almost 40% of total electricity generation(74). The national target for renewable electricity is to have 80% renewables by 2030. It is envisaged that wind power will continue to play a leading role in meeting this target. Offshore wind is where the turbines are installed offshore in relatively shallow waters (generally less than 50m deep).

In the summer of 2022, the Irish Government increased the country's offshore wind target for 2030 from 5 GW (stated in the Climate Action Plan 2021) to 7 GW (24,528 GWh) after reaching an agreement on Sectoral Emissions Ceilings that set maximum limits on greenhouse gas emissions for each sector of the Irish economy to the end of the decade.

Current Situation

The current national installed offshore wind capacity is 0.025GW provided by the Arklow Bank offshore wind farm. There are seven offshore wind farms whose green electricity was identified as being likely to come to shore within Dublin's county boundary. These are listed with their planned upper and lower boundary installed capacities in the table on the right.

The total capacity of offshore wind delivered by these sites is expected to be between 6.2GW and 7.1GW (88%-101% of the national offshore wind target for 2030). The Codling, Dublin Array and North Irish Sea Array applied for Maritime Area Consent (MAC) in the summer of 2022, if granted, this would allow these projects to use the Irish seabed for offshore wind development. These projects would still require planning from An Bord Pleanála and would also compete in the Offshore Wind Renewable Electricity Support Scheme (ORESS) auctions, the first of which is scheduled for early 2023(75). If successful in the first auction, it is likely these wind farms would be operational by 2030. The other offshore wind farms have not currently applied for MAC.

There is a high degree of uncertainty around what percentage of this capacity will be in place by 2030 but in order to show we are on the pathway set out in the DREM we would need to ensure that at least 2 [1] GW[2] is installed by 2030.

Table 1: Offshore Wind Farms with Potential to Supply Dublin County Boundary

Name	Lower Bound Capacity (MW)	Upper Bound Capacity (MW)
Greystones	1200	1200
Dublin Array	600	900
Codling	900	1500
North Irish Sea Array	500	500
Braymore	1000	1000
Sea Stacks	800	1000
Sunrise Wind	1200	1200
Totals	6200	7100

What is Solar?

Solar photovoltaic (PV) cells convert solar radiation into direct current (DC) electricity. PV cells use energy from light to create electricity; when light shines on a PV cell, it creates an electric field across the layers causing electricity to flow. Individual PV cells only provide a small amount of electricity, so they are generally grouped together into a module for convenience. Both direct and indirect sunlight can be captured by solar PV cells, so while the weather in Ireland can be quite cloudy, there is still a significant solar resource, and the technology is capable of operating very effectively under these conditions. PV generation follows a very predictable daily profile, with generation rising and falling with the sun's position in the sky. It is, however, subject to significant seasonal variation, with more intense sunlight occurring during the summer months, combined with longer hours of daylight.

PV is generally more suited to areas where the electricity generated can supply a nearby load and the energy loss and costs associated with transmission and distribution are avoided. This is where rooftop PV can have significant impact, by directly supplying the home or building upon which it is mounted. A six-panel, 2.4 kWp domestic solar installation could generate approximately 2,000 kWh of electricity in a year, serving over one-third of a typical Dublin household's annual electricity needs.

The Climate Action Plan 2021 set a target of 1.5-2.5 GW of installed solar PV capacity by 2030. This national ambition has subsequently been increased to 5.5 GW by 2030 by the Government as part of the negotiations held on the sectoral emissions ceilings in Summer 2022. This is a highly ambitious target, and will require significant and rapid scaling up of the industry.

Current Situation

Codema assessed the potential generation available from building-integrated (rooftop) solar PV on Dublin's existing building stock as part of the DREM project, and found potential generation of 270 GWh per year, or roughly 317 MW of peak installed capacity(16). This represents just 6% of the highly-ambitious national target for 2030. Another study focusing on domestic rooftop PV potential, conducted by MaREI on behalf of the Irish Solar Energy Association (ISEA), found that up to 3.1 TWh of generation (or roughly 3.7 GW peak installed capacity) could be available from domestic rooftop PV nationally, if 10 PV panels were placed on every suitable roof(76). This study found that for Dublin, up to 23% of total domestic electricity demand could theoretically be met by rooftop PV on homes.

Codema also assessed the potential for utility-scale, commercial solar PV farms (i.e. large solar power plants) in County Dublin. These could be developed on marginal or low-value land with low biodiversity value, or integrated into existing agricultural lands. Due to economies of scale, these farms tend to have a minimum installed capacity of 5 MW, which would require a land area of approximately 10 hectares. It was found that up to 1,057 GWh of annual generation (1.2 GW peak installed capacity) could potentially be available utilising sites within 1 kilometre of the existing electricity network, representing nearly four times the potential generation of rooftop solar PV and 23% of the national solar PV target.

At present, there are no utility-scale solar PV farms in operation in Dublin, although three proposed sites in the north of the county have received grid connection offers, with a combined capacity of 48.9 MW, enough to power 9,000 homes(77).

No precise data is available on the amount of rooftop PV currently installed in Dublin. As of October 2022, ESB Networks reports that over 44,000 microgeneration (up to 6/11 kW) customers are now connected nationally, the majority of which would be domestic connections, with a further 300 added each week(78). Based on this figure, and a typical installation capacity of 2.4 kW, the total domestic rooftop capacity could be of the order of 58 MW. This excludes the growing number of commercial rooftop PV systems, which might generally range from 50-500 kW capacity and are typically sized to meet site demand rather than to feed exports to the grid. SEAI's 2021 Energy Balance Report states that 0.2% of domestic energy demand was met by self-generation of solar PV in 2021, an increase of 43% compared to 2020(74).

Over the past 12 months, significant developments have occurred in the solar PV sector in Ireland. From a planning perspective, homeowners can now install as much rooftop PV as they like without needing planning permission, subject to certain conditions. An exemption is also now in place for industrial, agricultural, community, religious and educational buildings, apart from those situated in 43 "solar safeguarding zones" around aviation sites, where a limit of 300m2 will apply(79).

From a grid connection perspective, new application processes have been put in place by ESB Networks to streamline the export connection process for solar PV and other renewable electricity generators, combined with a scaling up of internal resources to deal with these applications. This is a hugely significant development, which could see the connection offer timeline reduced from two years to just two months for many smaller projects.

Combined with this, the introduction of the long-awaited Clean Export Guarantee (CEG) in February 2022 means that all consumers who export their excess generation to the grid are now entitled to receive a payment for these exports from their energy supplier, based on the wholesale market rate. With wholesale electricity rates currently extremely high, consumers are currently being offered rates of 12-17c per kWh, significantly reducing the payback period for the installation.

For commercial renewable electricity generation projects, the first Renewable Electricity Support Scheme (RESS-1) auction was held in 2020. Sixty-three solar projects, including five community-led projects, were successful in the auction, ensuring financial support for up to 796 MW of solar generation for up to 15 years(75). The RESS-2 auction, held in 2022, secured support for a further 1,534 MW of solar PV generation(80). Additional RESS auctions are planned for the remainder of this decade to ensure that our 80% renewable electricity target is met, including specific auctions for Offshore Wind (ORESS).

The solar PV industry is really just on the cusp of taking off in Ireland, with planning, grid connection and route-to-market policies and regulations finally clearing the way for wide-scale adoption, both on rooftops and on utility-scale solar farms. Dublin has significant potential in both of these application areas.

Offshore Wind and Solar Considering the four Strategic Directions

The development of offshore wind and solar PV has great potential to address justice during the energy transition. For example, microgeneration through the installation of solar PV can transform people's current relationship with how energy is used and produced and enhance people's participation in energy systems. Currently, the majority of people are passive dependent consumers; this is highlighted in the Zero Together public survey, which showed that 71% of respondents felt that their opinions were rarely or never accounted for in how energy is used or produced in Dublin. Microgeneration offers the possibility to become active prosumers (producers and consumers).

Moreover, solar PV can facilitate increased engagement and agency over how and when energy is used. Households' proximity to both energy generation and end use can make energy more tangible, which can enhance energy awareness and literacy and promote positive behavioural change. Increased awareness of times of peak energy generation can shift heavy energy use to times when energy is generated. Moreover, this tangible relationship with energy can help people to better understand how they use energy in their daily activities(81).

To ensure that everybody benefits from microgeneration and to prevent excluding more vulnerable households, rooftop solar PV panels on local authority/social housing stock should be prioritised. Installation of solar PV panels can help address energy poverty by lowering the cost of electricity to households. Households living in local authority housing with solar PV can also potentially benefit from lower electricity bills through feed-in tariff rates, which will pay the householder for any excess electricity generated that is exported back to the grid.

However, as research shows, installation needs to be deployed in parallel with education for householders, so that they can understand how to maximise the benefits of installation and engage in energy efficient behaviour(82,83) (e.g. moving energy intensive activity to daylight hours where possible and limiting the number of appliances used simultaneously). Beyond the prioritisation of local authority housing, it is also necessary to incentivise private landlords to install solar PV. Data collected by the Central Statistics Office in 2020 reported that 65% of the population in Dublin reported to own their own home(84), meaning there is a significant proportion of the population dependent on their landlords (or otherwise) for energy efficiency improvements. However, there is currently no real incentive for landlords to do this. Imposing minimum BER ratings for residential buildings is one such way to drive building upgrades among landlords. As upgrading homes is costly, additional incentives such as financial supports (e.g. beneficial tax reductions/exemptions for upgrading works) can motivate landlords to improve the efficiency of their buildings.

Facilitating the broad installation of rooftop solar PV across private households, schools, apartment blocks, farming, businesses, etc., is also a pathway to empower a broad range of actors (citizens, businesses, organisations and institutions) to take both concrete climate action and meaningfully participate in the low-carbon energy system.

Facilitation can be through a number of mechanisms such as planning exemptions for installation, improved grants, and clean energy export guarantee and feed-in premiums. An exemption from the requirement for planning permission for the installation of solar panels on domestic rooftops was recently introduced, removing a previous barrier for many households.

However, installation is expensive and thus exclusionary(83), with costs rising further in the current economic environment. Although grants are available for solar PV, they only cover up to approximately one-third of the cost of installation, still keeping this out of reach for many households(83). The clean energy export guarantee and feed-in premiums have also recently been introduced, which pay households for the excess energy produced and fed back into the electricity grid. Widespread installation of solar PV has the potential to be one of the easiest ways to decarbonise the energy system as it helps deliver tangible benefits to householders.

With this in mind, mechanisms to ensure the distribution of benefits from offshore wind energy need to be considered, especially as this can bolster support for the development of often-contested infrastructure(81). Providing ways for communities to benefit from wind energy generation, such as having part of the infrastructure funding open to communities for crowd-funding investment (entitling communities to financial rewards from energy generation) can ensure that the benefits of wind energy are more equally distributed.

Community energy projects are also recognised as a fundamental part of a just energy transition. The community energy sector is growing in Dublin, with over 100 Sustainable Energy Communities signed up to the Sustainable Energy Authority Ireland (SEAI) programme, and more communities consistently enrolling. However, communities are struggling to coordinate and upscale their plans and ambitions(57).

This is partly to do with problems such as a skills and supply shortage, which limits communities' ability to implement projects on the ground. Moreover, there is high demand and expectations on these voluntary groups, with recognition that the support and resources available are ultimately insufficient to be sustainable. Furthermore, the policy and financial environment communities navigate is a barrier to upscale plans. The limitations of the current system need to be addressed for community energy projects to realise their potential(57) for both increasing renewable energy generation, alongside the empowerment and participatory benefits for communities within a decarbonised energy system.

The development and generation of renewable energy infrastructure will also have an impact on biodiversity; for example, being a competing activity for land/sea area and/or causing harm during construction and/or generation. Development and implementation of processes that avoid harm, minimise, remedy, and offset impacts to biodiversity are necessary to both account for biodiversity and ensure projects do not have (at minimum) a detrimental effect(85). This involves avoiding as much harm from the outset, implementing measures to minimise harm during development, remediating damage occurring during development, and, if necessary, improving biodiversity at additional sites to offset any unaccounted for damage from the first three measures(86). Renewable energy infrastructure sites can also have a positive impact and be places of biodiversity (re)generation. For example, offshore wind farms can generate an artificial reef effect, providing habitat, shelter and feeding grounds for a range of species. Implementation of no fishing zones in these areas can help fish stock recover, while removing traffic from fishing vessels will reduce pollutant sources(87,88).

Policy Recommendations for Electricity in Dublin

1. The development of enabling infrastructure needs to be supported to maximise Dublin's potential to generate renewable energy.

2. To reduce their climate impact, significant electricity consumers such as data centres and other large industrial sites should maximise on-site renewable generation and ensure any remaining demand is supplied through renewable Power Purchase Agreements (preferably those which match hourly site demand), which finance renewable electricity projects within Ireland or its territorial waters.

3. Ensure that the waste heat produced on site by servers, on-site power generation, etc. be characterised and made available for use for planned or existing district heating networks in the area. This has the added benefit of reducing the electrical and water consumption of large cooling systems such as those found in data centres and other industrial and commercial sites.

4. Minimise impact on the grid as much as possible. This will be assessed by relevant parties such as EirGrid in accordance with data centre grid connection processing procedure to ensure that grid integrity is maintained. Connection to district heating networks can also reduce the electricity demand associated with significant electricity consumers such as data centres and other large industrial sites and in heating the buildings connected to the network, when compared with individual heat pumps.

MEASURING PROGRESS: 2030 SMART GOALS

Legend:
- Accounting for a Just Transition
- Providing Clear and Honest Communication and Education
- Making Climate Action more Democratic and Inclusive
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Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Energisation of at least 2 GW of offshore wind generation	2030	Department of Housing, Local Government and Heritage, DECC, EirGrid, Wind Energy Ireland, An Bord Pleanála, ESBN	Capacity of offshore wind farms that have either been delivered or have a high likelihood to be developed by 2030 (i.e. have secured planning, foreshore licence etc. by 2027 - allowing 3 years for construction)	
Participation in energy infrastructure stakeholder groups - develop a forum for integrated infrastructure planning	2023	GESB, EirGrid, GNI, DH utilities, TII, NTA	Establishment of working group, no. of stakeholders engaged	
Public campaign in support of renewables, including LA declaration of support for enabling infrastructure, and addressing misinformation/"astroturfing"	2023	Codema, Local Working Group	No. of public engagement events, no. of media pieces	
Information provided on how to make the most cost-effective and efficient use of domestic solar PV and to support energy-efficient behaviours in retrofitted buildings	2023	Codema	Information published on Zero Together website No. of posts shared on social media platforms on this topic	

MEASURING PROGRESS: 2030 SMART GOALS

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Rooftop PV retrofitted to 35,000 Dublin homes - if 3 kW each, then approx. 75 MW capacity, 64 GWh generation. (For reference, there are over 350k private houses in Dublin, considering detached, semi-detached and terraced houses).[	2030	SEAI, DLAs, SECs, ISEA	No. of and installed capacity of PV export connections at each capacity band - micro-gen, mini-gen, small-scale, utility scale for Dublin. Ideally at CSO small area or substation level.	
Minimum levels of rooftop PV mandated for all new developments, potentially under the recast Energy Performance of Buildings Directive/Renewable Energy Directive	2025	Dept of Housing, Local Government and Heritage, SEAI, DECC	Relevant EU Directive transposed into Irish law/Building Regulations	
15 MW of community-owned utility-scale PV in Dublin (3 projects)	2030	SECs, DLAs, Community Power, ESBN, EirGrid, DECC, Wind Energy Ireland	No. and scale of projects with planning permission, grid connection offer, RESS offer (where applicable)	
Solar PV installed on all suitable school rooftops in Dublin	2030	Dept of Education, DECC, SEAI, An Taisce	No. of schools with PV installed (out of total of approximately 450 schools in Dublin)	

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3. Building Upgrades

Building Upgrades

To meet the scale of deep retrofit needed for the building sector in Dublin, a big increase in energy efficiency measures is needed. Overcoming the current shortfall in action and investment requires addressing key barriers, including low levels of awareness among homeowners and occupiers, a lack of information about appropriate retrofit measures and the financial options available to pay for them. Alleviating energy poverty is paramount and an important benefit of retrofitting in the residential sector. To alleviate energy poverty, the county should consider prioritising energy upgrades in areas that have been identified in the master plan as being energy poor.

In addition to the societal benefits of reducing energy use and emissions, benefits for building occupants include improved comfort, potential savings on bills, an environmentally-friendly building, and - for building owners - a potential increase in property value.

What are Building Energy Upgrades?

Building energy upgrades are modifications and changes carried out to a building's structure and energy systems with the aim of reducing the energy consumption and carbon emissions of the building. This typically means:

- Improving the building's energy efficiency by installing insulation and other measures to reduce building heat energy loss. Examples of typical actions taken here are roof insulation, wall insulation, floor insulation, draught proofing, window and door upgrades and smart heating controls.
- Installing low-carbon and renewable energy systems to reduce the building's consumption of fossil fuels. Examples of the typical actions taken here are the installation of heat pumps, solar water heating (solar thermal) and solar electricity (solar photovoltaic - PV).

Buildings energy upgrade targets for Ireland as outlined in the Climate Action Plan 2021 and Ireland's National Energy and Climate Plan 2021 - 2030 include:

- Retrofitting 500,000 homes to a B2 Building Energy Rating (BER) or cost optimal equivalent or carbon equivalent.
- Local Authorities upgrading their housing stock under Phase 2 of the social housing retrofit programme to bring dwellings to a BER level of B2 or cost optimal equivalent.
- Installing 400,000 heat pumps in existing buildings
- At least one third of total commercial properties to be upgraded to a BER of B.
- Public buildings need to meet a reduction of 50% in emissions by 2030 and use at least 50% renewable sources for space heating.
- Public sector ban on installation of new fossil fuel heating systems from 2023.

Current Situation

The current status of building energy use in the built environment according to Codema's Dublin Region Energy Master Plan is outlined below:

- Total energy demand from buildings and services accounted for 58% of total energy consumption in the Dublin Region
- 31% of the demand was met by electricity and the remaining 69% by fossil fuels (predominantly natural gas)
- 78% of the building stock in Dublin was built prior to the year 2000, which is higher than the national average

To meet 2030 and 2050 decarbonisation targets, the building stock will need to be highly energy efficient. This would mean that all new buildings are built to nearly zero-energy building (nZEB) standard and that the majority of existing buildings undergo energy efficiency upgrades or retrofits.

Home and business tenure is also an important consideration for building energy upgrades. People living or who have a business in rented accommodations are less likely to take on any upgrades to their property, whereas owner-occupied buildings are more likely to be retrofitted as the owner will be seeing upgrade benefits in the reduction of consumed energy costs. This often means that for rented accommodation and business properties, building owners would have very little incentive to invest in costly measures to improve energy efficiency as they do not directly benefit from them. Introducing minimum energy performance standards for rented buildings might be a way to increase the rate of retrofits in these buildings.

One of the main constraints to the adoption of individual building-level heat pumps is the requirement to have a sufficiently energy-efficient building that allows the heat pump to supply adequate heat (enough to keep the building at a comfortable temperature) without detrimental effects to the heat pump's efficiency.

Additionally, as outlined by the Irish Green Building Council (IGBC) in their 'Building a Zero Carbon Ireland' roadmap, the embodied carbon of buildings is a key factor in their emission impacts and needs to be accounted for in emission reduction pathways.

Key barriers around retrofits can be described as:

- Accessibility – making it possible and easy for decision makers to retrofit their buildings
- Affordability – retrofit costs can be quite expensive especially to meet specific building regulation standards
- Appetite – there is a need to make businesses and homeowners aware of the benefits of energy efficiency upgrades

DID YOU KNOW?

According to reland's Long Term Renovation Strategy(102) suggests that by 2050, it is expected that more than 1.5 million buildings in Ireland will need to be retrofitted.

Building Upgrades Considering the Four Strategic Directions

Building upgrades have strong potential to overcome the existing inequalities in the current energy system. Those most vulnerable in the existing energy system are people living in energy inefficient homes, on lower incomes and living in private rental or local authority housing stock. Living in inefficient dwellings increases energy demand (particularly for space heating), resulting in a higher proportion of household's income required to cover the energy needs of the home. This is a key driver of energy poverty. Lower levels of income increases both the probability and the effects of energy poverty, as households lack the means to cover the cost of energy and basic necessities(18). Supporting building upgrades for households with limited resources can help remedy households' experience of energy poverty.

Improving the current grant system for home upgrades is required to ensure they are accessible to a broader range of households and to ensure inclusion of households more at risk of energy poverty. In addition, provision of clear and accessible information is also required regarding the benefits and potential impact of building upgrades for households. For example, simplifying grant applications, providing clear guidelines on what upgrades should be prioritised for greatest impact and guidance around the importance of ventilation when planning an upgrade.

The rollout of building upgrades also needs to account for more vulnerable and dependent types of tenure. People living in local authority housing and rental properties are dependent on the authorities and landlords to undertake building upgrades to improve energy efficiency. Phase 2 of the social housing retrofit programme aims to bring dwellings to a BER level of B2 or equivalent, aiding in the inclusion of those in local authority housing.

However, similar to the measures highlighted in relation to solar PV installation, incentives for landlords to undertake building upgrades are also required. Inefficient rentals are more likely to be under the ownership of smaller private landlords(103) and currently, there is no benefit to a landlord to undertake building upgrades(104). Therefore, providing tax cuts and exemptions may be one way to incentivise upgrades, alongside mandates requiring minimum standards for all rented residential properties(104). Mechanisms to prevent rent increases are also required to avoid placing further pressure on households' incomes.

Improved support and capacity building for Sustainable Energy Communities (SECs) would improve bottom-up, locally-led action in relation to building upgrades. One avenue for providing more support could be to create a structured process that supports SECs to engage with 'one-stop-shops'. There is significant potential in this scheme for both community engagement and delivery of retrofit targets, if SECs are used as an aggregator to bundle projects for one-stop-shops.

In addition, it is paramount to address the needs of the traveller community in relation to building upgrades, as current mobile accommodation is considered unfit for year-round living(20). Moreover, due to limited resources, households within the travelling community are more likely to use fossil fuels for their heating and electricity needs. These material conditions driven by the low standard of homes, can impact the health of communities (for example, through poor internal and external air quality). More recognition of the specific needs, living conditions and vulnerabilities of the travelling community is required and needs to be better accounted for and supported in energy efficiency action.

Policy Recommendations for Building Upgrades in Dublin

1. Alleviating energy poverty is crucial and an important benefit of retrofitting in the residential sector. To alleviate energy poverty, the county should consider prioritising energy efficiency upgrades in areas that have been identified in the master plan as being energy poor. These upgrades will provide an improved quality of life for those living in these areas - especially for the vulnerable - and can help ensure a more just transition for all.

2. Rented accommodation in Dublin makes up over one-third of all dwellings, with over 165,100 households living in rented accommodation. Therefore, regulatory solutions to tackle the issue of split incentives should be considered, and it is recommended that minimum energy efficiency standards for rented properties are applied and structures should be in place that facilitate landlords to achieve this; this would ensure that inefficient buildings will undergo the energy efficiency upgrades needed.

3. Funding mechanisms for energy efficiency upgrades, particularly addressing long payback periods and high upfront costs in both the residential and non-residential sector, need to be addressed. Therefore, incentives and financing solutions for building retrofits should be prioritised in the county.

4. Forward planning is essential to ensure the necessary heat, transport or electrical infrastructure is in place to serve new developments with low-carbon, low-cost energy. In order to facilitate more accurate forward planning, it is recommended that a simple energy assessment form be submitted with all planning applications*.

5. In order to increase efficiency across transport, electricity, heating, water and other utilities in accordance with the Regional Policy Objective 7.40, it is recommended that the minimum default density for new developments in the County be increased.

This form should include general information relating to energy use within the development such as annual and peak demand for heat and electricity, floor area, BER, heating system details, details of renewables on site, EV charging details, etc.

MEASURING PROGRESS: 2030 SMART GOALS

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Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Fabric upgrades to deliver 206 ktCO2 savings	2030	SEAI, Dublin Local Authorities, Public Sector Organisations	tCO2 savings	
84 GWh of building integrated solar PV	2030	SEAI, Dublin Local Authorities, Public Sector Organisations, ISEA	GWh building integrated solar PV	
Review Heat Loss Index (HLI) threshold for heat pumps	2025	SEAI	Study carried out. Policy revised to reflect study outcome	
Prioritise and deliver building energy upgrades for energy poor areas (local authority stock)	2030	Dublin Local Authorities	% of all local authority residential buildings with energy upgrade complete	
Delivery of grant support programmes and financing mechanisms to reduce cost barriers to retrofit programmes	2025	SEAI, DECC	Implementation of programme to reduce cost barriers to retrofit	
Delivery of electricity network upgrade programmes to support realisation of heat pump installation targets	2030	EirGrid, ESB Networks	Upgrade programmes complete and no connection delays for commercial, public, and residential customers	

MEASURING PROGRESS: 2030 SMART GOALS

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Delivery of electricity network flexibility schemes to support realisation of heat pump installation targets	2025	EirGrid, ESB Networks	Implementation of electricity distribution system flexibility market	
Definition of a minimum BER for rented commercial and residential buildings	2023	DHLGH	BER defined	
Implementation of a plan to deliver building energy upgrades for rented buildings while minimising effects on housing supply	2025	DHLGH, SEAI	Plan designed and implemented	
At least one-third of total commercial properties to be upgraded to a BER of B	2030	SEAI, Department of Enterprise, Trade and Employment	% of commercial properties with BER of A or B	
Public buildings need to meet a reduction of 50% in emissions by 2030 and use at least 50% renewable sources for space heating.	2030	Public sector bodies, Climate Action Delivery Board	% emissions reduction from public buildings, % renewables used in space heating in public buildings	
Incorporation of building upgrade co-benefits into Zero Together public engagement plan and website	2023	EirGrid, ESB Networks	Public engagement plan designed w/co-benefits included. Public engagement plan launched.	

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4. Energy Planning

Energy Planning

In Ireland, there is a real need to bridge the gap between energy and spatial planning. Traditionally, energy planning in Ireland is primarily focused at a national level and there is little integration with spatial planning, particularly at a local authority level. Bottom-up energy planning allows us to consider holistic energy solutions that combine different energy systems, rather than having different solutions or technologies working in isolation. Local-level energy planning is key to helping local authority areas achieve 2030 and 2050 emission reduction targets.

Therefore, we need to build on city and county-wide development plan energy policies, focusing on more evidence-based and spatially-appropriate policies and objectives. Now is the time to ensure environmental considerations for sustainable development are integrated within the planning system at the earliest opportunity and to stop treating sustainable energy planning and spatial planning as separate processes.

What is Spatial Energy Planning?

The objective of Spatial Energy Planning is to consider energy as an essential factor in planning processes. Spatial planning has a fundamental role in the implementation of successful and long-term sustainable energy solutions. In spatial energy planning energy production, supply and demand are spatially and structurally adapted to the specific needs and characteristics of an area and its inhabitants. Without bottom-up energy planning, the unique energy solutions and synergies available only at a local level are often overlooked.

Spatial energy planning activities include:

- Informing decision-makers about opportunities for renewable energy with a strong evidence base and spatial understanding of energy demand and supply.
- Adopting an integrated approach to city-wide infrastructure that combines waste, energy generation, distribution and reduced energy demand from transport.
- Holistic integrated strategic neighbourhood energy planning.
- Identification of opportunities for sustainable energy and energy efficiency linked to specific urban structure or land-use relationships.

Current Situation

Spatial energy planning is at a very early stage of development in Ireland and in Dublin. Progress to date includes:

- Development of spatial energy demand analyses and Dublin Region Energy Master Plan
- Completion of carbon and energy assessments at a local authority level
- Commitment in City and County Development plans to implement an energy statements process
- Engagement with Covenant of Mayors initiative
- Early stage preparation for decarbonising zones

A key target of spatial energy planning is for local authorities to use their powers in spatial planning, land-use, planning policy and public infrastructure planning to deliver emission reductions within the boundaries of the local authority.
This can be achieved by including spatial energy planning as an input to:

- Preparation of County/City Development Plans
- Preparation of Local Authority Climate Action Plans
- Identification of Strategic Energy Zones
- Assessment of Decarbonising Zones
- Preparation of climate mitigation plans
- Roll out of low-carbon infrastructure (district heating, public transport and active travel infrastructure, electric vehicle (EV) charging, etc.)
- Creation of EU Covenant of Mayors Sustainable Energy and Climate Action Plans

Targets for energy planning as outlined in Codema's Dublin Region Energy Master Plan include:

- All Dublin Local Authorities signed up to the EU Covenant of Mayors initiative.
- Guidelines for local-level energy planning made available to local authorities.
- Energy planning as a requirement for implementing local authority plans with clear pathways and long-term commitments to a low-carbon future.
- Inclusion of an energy assessment form be submitted with all planning applications. This form should include general information relating to energy use within the development such as annual and peak demand for heat and electricity, floor area, BER, heating system details, details of renewables on site, EV charging details, etc.
- Carbon and energy assessment of planning applications.
- A GIS-based database of low-carbon technology installations within the County should be maintained. This should include information on the size, type, grid connection details (where applicable) and energy generation (kW peak, annual kWh) of each installation.

Energy Planning Considering the Four Strategic Directions

A key dimension of ensuring that energy planning accounts for a just transition is acknowledging the spatial or geographic distribution of vulnerabilities and injustices experienced in the current energy system(105). For example, the Dublin Region Energy Master Plan, through spatial analysis, has identified areas in Dublin that are most at risk of energy poverty and recommends that they be prioritised for energy efficiency upgrades. To identify areas most vulnerable to energy poverty, BERs with a D1 rating or less were coupled with high unemployment levels (greater than 20%) and a Deprivation Index of less than -10 (disadvantaged)(16). By identifying areas at this cross-section, it is possible to prioritise and address energy vulnerable locations across Dublin.

It is important to recognise that areas with higher levels of deprivation may also have limited capacity to draw upon the necessary finances, knowledge, skills or networks to advance community energy projects or ensure inclusion in decision-making processes. As such, activities to advance the energy transition tend to be “top-down”, resulting in communities being excluded from energy planning and development. This exclusion, in turn, can result in a lack of trust in top-down proposals. This can manifest in resistance to plans, the implementation of which can risk further marginalisation of communities' perspectives. Meaningful and early engagement of communities is recognised as a way of overcoming these dynamics(106).

Moreover, citizens’ juries or assemblies are a key governance mechanism to address issues of justice and general disempowerment of the public in the planning, development and implementation of transition plans(106). They create a space for public inclusion in the decision-making processes, and provide increased legitimacy to proposed plans. Therefore, implementing a mini-public in Dublin has the potential to significantly impact justice during transition, formally recognising who is affected by development (the public), and providing a space for them to exercise power and authority over decision-making.

Coordination across local authority plans, alongside national plans, is necessary. Lack of coordination risks an unequal distribution of impacts and benefits across the region(106). Moreover, there needs to be greater institutional recognition that all policies have spatial implications, whether explicit or not(106). Training and education within local authorities on spatial energy planning can improve awareness over the spatial implications of local authority goals and actions.

Key Recommendations for Energy Planning

1. Guidelines for local-level energy planning are provided to local authorities, with the scope to base energy planning policies and objectives on a robust, spatial understanding of the existing and future energy synergies across sectors at a local authority scale.

2. Energy planning becomes a requirement for implementing local-level energy plans with clear pathways and long-term commitments to reducing energy-related emissions.

3. In order to support more cost-effective and sustainable development of infrastructure (electricity grid, heat networks, transport infrastructure, etc.) higher building density should be promoted within the county as part of the various local authority county development plans.

4. A GIS-based database of low-carbon technology installations within the County should be maintained. This should include information on the size, type, grid connection details (where applicable) and energy generation (kW peak, annual kWh) of each installation. This will allow tracking of progress towards targets and updates to allow pathways to respond to future cost fluctuations and account for the proportion of the identified potential that has been realised.

MEASURING PROGRESS: 2030 SMART GOALS

Legend:
- Accounting for a Just Transition
- Providing Clear and Honest Communication and Education
- Making Climate Action more Democratic and Inclusive
- Designing, Planning and Implementing Solutions for Climate and Biodiversity Action

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Implementation of energy statements process across all Dublin local authorities	2023-2025	Codema, Dublin Local Authorities	Process implemented	
Development of a GIS-based database of building energy demands and low-carbon technology installations from energy statements	2030	Codema, Dublin Local Authorities	Database operational	
Development of guidelines for local-level energy planning for local authorities	2025	Codema, Dublin Climate Action Regional Office, Dublin Local Authorities	Guidelines complete	
Energy planning implemented as a requirement for all local level planning	2025	Codema, Dublin Local Authorities	% planning applications evaluated from energy and emissions perspective	
Delivery of decarbonising zone plan and governance structure	2023	Codema, Dublin Local Authorities, SECs	Report complete	
Development and delivery of spatial energy planning training courses for local authorities	2025	Codema, Dublin Local Authorities, LASNTG	No. of local authority staff trained	

MEASURING PROGRESS: 2030 SMART GOALS

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Completion of Dublin Region Energy Master Plan 2.0	2025	Codema	Project complete	
Adoption of law that requires utilities to share information for the purpose of energy planning to address concerns about GDPR	2025	DECC	Legislation enacted	

ZERO TOGETHER

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5. Avoid, Shift and Improve Transport

Transport

Codema's master plan research found that transport accounts for 28% of Dublin's total energy-related emissions. Cars account for 65% of transport emissions in Dublin and may be costing the county up to €2.8 billion per year in external societal costs. Reducing car dependency and enabling a shift to active travel and public transport needs to be the number one priority, followed by the electrification of a reduced car fleet. While electrification of transport can significantly reduce energy demand and emissions for Dublin, EV charging infrastructure needs to be provided in a way that does not prioritise private cars over active travel or public transport users.

What is Meant by Transport in Dublin?

Transport in this context refers specifically to land-based movement of people and goods within the county of Dublin. This includes all trips completed within the county, as well as the portion of any inter-county trips which are carried out within the county. This includes active travel (walking, wheeling and cycling), public transport, private cars and light and heavy commercial vehicles. Aviation and maritime transport have not been included, on the basis that international aviation and maritime navigation are not counted as part of Ireland's national emission inventory, as prepared by the EPA(89).

Dublin's transport system is heavily car-dependent, with 65% of transport-related emissions coming from this source(16). Facilitating and convincing people to switch to more sustainable modes such as active travel and public transport will be a significant challenge, given the existing car-centric development patterns and transport infrastructure in the county.

Decarbonising commercial transport will also be a challenge, particularly as the number of goods vehicle movements is predicted to grow over the coming years(16).

To achieve significant emission reductions in the transport sector, national level policies were set out in the Government's 2019 and 2021 Climate Action Plans. However, these are not consistent with the 50% target for 2030 and will need to be revised. Codema's DREM analysis, based on the Climate Action Plan 2019, found that the actions detailed would only achieve a 33% reduction in transport emissions in Dublin by 2030. Similarly, the Draft Greater Dublin Area Transport Strategy 2022-2042 is currently being revised by the NTA, as the measures contained within it would only achieve a 31% reduction in transport emissions by 2030.

Under the national sectoral emissions ceilings, which aim to reduce Ireland's GHG emissions by 51% by 2030, the Transport sector is required to reduce its emissions by 50% by 2030. This is based on a 2018 baseline year.

For the Dublin Region Energy Master Plan, Codema set a 51% emissions reduction target for 2030, with a net-zero target by 2050. Compared to the Business-as-Usual scenario, this corresponds to a reduction in annual emissions of 930 kt of CO2 by 2030 and a reduction of 1,884 kt of CO2 by 2050 to reach net-zero.

Among the main measures outlined in the national Climate Action Plan 2021 for 2030 are the following:

- Provide for an additional 500,000 daily public transport and active travel journeys
- Develop the required infrastructural, regulatory, engagement, planning, innovation and financial supports for improved system, travel, vehicle and demand efficiencies
- Increase the fleet of EVs and low emitting vehicles (LEVs) on the road to 945,000, comprising of:
  - 845,000 electric passenger cars
  - 95,000 electric vans
  - 3,500 low emitting trucks
  - 1,500 electric buses
  - an expanded electrified rail network
- Raise the blend proportion of biofuels to B20 in diesel and E10 in petrol
- Reduce internal combustion engine (ICE) car kilometres by c. 10% compared to present day levels
- Undertake a programme of work which will review progress and further refine measures that will seek to deliver the additional c. 0.9 MtCO2 reduction by 2030 in a fair and equitable manner

Specifically within Dublin, the Draft GDA Transport Strategy 2022-2042 identified a number of major projects to be completed by 2030. These consist of:

- BusConnects New Dublin Area Bus Network
- BusConnects Core Bus Corridors
- Next Generation Ticketing
- DART+ expansion of electrified heavy rail network
- Luas Green Line Capacity Upgrade
- GDA Cycle Network
- City Centre Management Measures
- Climate Action Management Measures

Current Situation

As previously mentioned, cars account for 65% of transport emissions in Dublin. Heavy goods vehicles (HGVs) are next at 15% of the total, followed by light goods vehicles (LGVs) at 12%. Public transport, consisting of bus, light rail and heavy rail services account for approximately 7%, while rail freight barely registers at all, at just 0.01% of the total. In the DREM analysis, the national EV target was scaled down to 213,000 EVs for Dublin, while the Dublin Local Authority EV Charging Strategy found that up to 4,600 public charge points may be required to enable this(90). Even if these ambitious EV targets are met, the number of kilometres driven by fossil-fuelled cars in Dublin will need to be reduced by at least 23% by 2030 to meet the 51% emissions reduction target.

The Department of Transport has since realised that the one million EV target, originally proposed in the Climate Action Plan 2019, is unrealistic and would lead to an overall increase in the number of cars on our roads, locking in more car-dependency and making our emission targets more difficult to achieve. This target is currently being revised as part of the Climate Action Plan 2022, and is expected to change to a 30% share of EVs in the national car fleet by 2030, combined with an overall reduction target for kilometres travelled by private cars. If Dublin's 2020 fleet of 554,000 cars (24,000 of which were already plug-in hybrid or full EVs)(91) did not grow any further, this would equate to a total of 166,000 EVs by 2030.

The DREM research found that the most cost effective way to reduce emissions from car travel is by providing the necessary infrastructure and services to make active travel and public transport safer, more comfortable, cheaper and more convenient than driving.

Reducing car dependency will require a re-balancing of public space away from the private car, and prioritisation of active travel and public transport in the design of the public realm, in line with long-established national policy(92).

At a national level, the SEAI found that transport energy demand increased by 8.3% in 2021 compared to 2020(74). This is in sharp contrast to the overall annual reduction of 4.8% required each year under the first carbon budget from 2021 to 2025. Much of the increase seen was a rebound effect from suppressed transport demand due to travel restrictions imposed during the Covid-19 crisis. More worrying still, the SEAI's provisional results for the first six months of 2022 indicate that petrol and diesel demand has increased nationally by 27% and 15% respectively, compared to the same period in 2021(74).

DID YOU KNOW?

Even if current EV targets are met, the number of kilometres driven by fossil-fuelled cars in Dublin will need to be reduced by at least 23% by 2030 to meet the 51% emissions reduction target.

As of the end of October 2022, car traffic volumes in Dublin had returned to 96% of pre-Covid levels, compared to the same week in 2019(93). It's clear that despite the increased focus on active travel and public transport within Dublin in recent years, a huge amount of work is still needed to reduce car dependency and transport emissions.

The guiding principles of "Avoid-Shift-Improve" are still not being adhered to in transport planning in Dublin. While there has been increased focus on the "Shift" and "Improve" aspects (e.g. active travel and electric vehicles), the crucial "Avoid" principle is still being largely ignored, in spite of national and local government policy(94). Integrated land use and transport planning is crucial to ensure that the requirement for people to make trips is reduced as much as possible. This can be achieved through compact growth, and the co-location of housing, employment, commercial, social and community facilities in mixed-use developments. The '15-minute city' concept is an excellent example of this, whereby all day-to-day services and high-quality public transport are accessible within a 15 minute walk or cycle.

Rather than seeing new developments being built around existing, strong public transport hubs and corridors, or on urban infill sites, car-centric sprawl on the edge of the urban footprint is still unfortunately the norm. A recent OECD report heavily criticised Ireland's car-dependent transport systems, illustrating that policy here is focused on increased mobility, leading to car-dependency, rather than sustainable accessibility(95). A complete system transformation is required, rather than just the electrification of the existing system.

Transport Considering the Four Strategic Directions

Reducing car dependency would assist greatly in making transport accessible to all. The AA estimates that the cost of running a car in Ireland is approximately €10,000 per year, making forced car ownership a significant strain on many household budgets(96). By designing our society to be more accessible through affordable public transport and active travel, this barrier to travel can be significantly reduced. Grants for bikes, e-bikes, cargo bikes and adapted cycles should be available to all, not just PAYE tax payers as currently is the case with the Cycle-to-Work scheme.

High-quality active travel routes can be used independently by many people with disabilities, on standard or adapted cycles or other mobility aids. This includes people with conditions that preclude them from driving. Active travel can also provide more independence for children, teenagers and the elderly. The needs of women - who tend to carry out more complex trips than men(97) - must also be taken into account when designing high-quality transport networks.

Electric vehicles are currently very expensive to buy, with the cheapest new EV currently retailing at €25,000 and no real second hand market to speak of(98). Even in the second hand market, prices are inflated due to high levels of demand, putting an EV out of reach of most people. Focussing on the national one million EV target is therefore exclusionary and only facilitates climate action for those who can afford it, ignoring the needs of households with less resources. The Dublin Region Energy Master Plan found that electrification of cars is a necessary but insufficient measure to reduce transport emissions, and does not address the numerous other societal issues associated with car dependency.

Therefore, clear and honest communication and education around transport in Dublin should focus on the co-benefits of reducing car dependency. These benefits include quieter and safer streets, improved air quality, more inclusive neighbourhoods with reduced feelings of loneliness (particularly among the elderly(69)) and more space for nature.

Cars will remain a necessary part of our transport system but we just need to use them less and communicate the benefits of doing so. Enabling and educating those who can to switch to more sustainable modes will mean less congestion for those who have no feasible alternative to driving.

In switching to active travel and reducing car dependency, it is important that this process is as democratic and inclusive as possible. Non-statutory public consultations have become much more common in recent years for transport projects in Ireland. This is a very important and useful tool for planners to get a better understanding of users' needs and requirements before the detailed design stage. However, the public is now at risk of becoming overwhelmed or burnt-out with consultations for every small active travel or public transport improvement.

Planning authorities and elected representatives should understand that just because a large number of respondents may express a similar strong opinion on something, this opinion may not necessarily be the best for society as a whole. It is often only the loud minority opposed to a proposal that will engage with consultations, while those who are happy with it will remain silent(99).

Planning authorities need to take account of and try to work out any valid concerns raised, rather than simply viewing the consultation as a referendum on whether a project should proceed or not. It will be impossible to keep everyone happy during this transition to a more inclusive, fairer, healthier and more environmentally sustainable transport system, and this adjustment will be more challenging for some than others.

There is, however, clear consensus among the public that a reallocation of road space is necessary in order to enable sustainable transport, with a recent poll showing 66% support for such measures(100). This level of consensus is consistent across voters of all the major political parties. A lot of tough decisions need to be made to decarbonise transport but any hard decisions made today will be far preferable to the harder decisions which may otherwise have to be made later in this decade, such as the implementation of fuel rationing, distance-based vehicle taxation, car ownership caps, etc.

Transport infrastructure for Dublin is planned by the National Transport Authority (NTA) in cooperation with various stakeholders, including the Dublin Local Authorities, Transport Infrastructure Ireland (TII), Iarnród Éireann and Dublin Bus. Under the Dublin Transport Authority Act 2008, a plan for the next 20 years is set out within the Greater Dublin Area Transport Strategy, which is reviewed every six years.

Following the approval of the reviewed strategy by the Minister for Transport, an Integrated Implementation Plan is drawn up for the next six year period. The latest Draft GDA Transport Strategy 2022-2042 was published in November 2021; however, the final strategy has yet to be published. On an implementation level, TII manages the motorways and national road network in the country, as well as the Luas lines.

The local authorities have control over regional and local roads, but are often limited when it comes to the reallocation of road space to active travel or public transport. The local authorities also have powers over the regulation of shared bike and car operators.

It has been argued that a directly elected Mayor for Dublin could greatly influence and accelerate the urgent delivery of sustainable transport infrastructure and services in the County(101). This is particularly true in areas such as traffic circulation and regulation, car parking, public realm, and strategic oversight. However, the strategy will still need to consider the region surrounding Dublin, where many commuters travel to and from daily.

There will also still be the requirement for central Government funding, as the Dublin transport network will require significant investment over the coming years to make up for decades of under-investment. On a practical level, there may be the risk of duplication of tasks within the Mayor's office and the NTA or Department of Transport nationally, as well as a shortage in the supply of suitably qualified staff. Nonetheless, a directly-elected Mayor, answerable to the citizens of Dublin, could play a strong role in driving ambition onwards and accelerating climate action in the county.

Policy Recommendations for Transport

1. Active travel is the simplest, quickest and most cost-effective way to reduce emissions associated with personal transport, particularly for shorter journeys. Dublin is a highly urbanised county, with huge potential for active travel if the appropriate policies are put in place. The accelerated delivery of the Greater Dublin Area Cycle Network will be key to unlocking this potential. This network must be designed in a manner to ensure that walking and cycling routes are safe, comfortable and attractive for all ages and abilities.

2. The Government's Five Cities Demand Management Study identified the '15-Minute Neighbourhoods' concept as a key priority to address carbon emissions, congestion and air quality issues in Dublin. To help enable this, City and County Development Plans should consider adopting a strict limit on the distance between new developments and regularly-used amenities (e.g. shops, schools, etc.) with good active travel and public transport links between both.

3. Financial incentives to reduce transport emissions need to be rebalanced in favour of active travel and public transport rather than private car ownership. In the design of new transport networks, the distinct travel needs of all user groups, and in particular women, must be given far greater consideration.

4. Additional powers are required to allow local authorities to reallocate existing road space to more sustainable modes and to implement low-traffic neighbourhoods and filtered permeability schemes. Reallocating public space away from traffic can also provide additional safe space for nature, for people to relax and socialise and for children to play. Regulations to provide for experimental road traffic orders, allowing for trials of 6-18 months, should be enacted.

MEASURING PROGRESS: 2030 SMART GOALS

Legend:
- Accounting for a Just Transition
- Providing Clear and Honest Communication and Education
- Making Climate Action more Democratic and Inclusive
- Designing, Planning and Implementing Solutions for Climate and Biodiversity Action

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
33% decrease in number of children arriving to school by car. As of 2016 Census, 62,000 primary school students arrive daily by car, and 24,000 secondary students.	2022, 2027 (every 5 years)	CSO, An Taisce, NTA, DLAs, Dept of Transport, Dept of Education	No. of children recorded on CSO Census travelling to school by car, no. of school routes improved under “Safe Routes to School” programme, km of traffic-free streets	
67% reduction in no. of private cars entering Dublin city centre via canal cordon during peak morning period (7-10am) compared to 2019.*	2030	DCC, NTA, Iarnród Éireann, TII, Dublin Bus	No. of private cars entering city via canal cordon on annual count day	
Reduction in number of private cars licensed in Dublin by 50,000 from 2020 value of 554,000.**	2030	NTA, Dublin Local Authorities, Department of Transport	No. of private cars licensed in Dublin	
20,000 shared cars available in Dublin, 50% of which would be BEVs.***	2030	NTA, Dublin Local Authorities, Car Share Operators, ESB Networks, Insurance Companies	No. of ICE and BEV car share vehicles available in Dublin	

*This would see a reduction from 46k private cars to 15k. Time window to be broadened beyond 7-10am for all future counts to capture changing travel habits.

**This would represent a 9% decrease on current numbers. Over the past 14 years, the number of cars on Dublin’s streets has grown by 18%, or 6,000 cars per year on average.

***This could assist greatly towards the proposed reduction target of 50,000 privately owned cars, as each shared car has the potential to displace 10 privately owned cars. This target could include peer-to-peer car sharing, as well as commercial operators.

MEASURING PROGRESS: 2030 SMART GOALS

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Greater Dublin Area Cycle Network completed*	2030	Dublin Local Authorities, NTA	Annual update on km of new segregated and protected cycle routes, no. of Dutch-style protected junctions	
Grant scheme in place for e-bikes and e-cargo bikes, including for businesses, in a similar manner to those provided for electric cars	2023	Department of Transport, SEAI, Department of Finance	Availability of grant for all new (e)bike and (e)cargo bike purchases. Annual no. of (e)bike grants provided	
Adoption of default 30 km/h speed limit in urban areas in all four Dublin Local Authority areas.**	2030	DLAs, Local Elected Representatives, Road Safety Authority	Default 30 km/h limit adopted in each Dublin Local Authority	
Ensuring transport is safe for women	2023	TII, NTA, RSA, An Garda Síochána	Development of policy based on findings from the 2020 TII report “Travelling in a Woman’s Shoes”	

*The full network will comprise of 322km of primary routes, 1,060 km of secondary routes and 954 km of greenway (within the Greater Dublin Area, not just County Dublin).

**In line with Stockholm Declaration, of which Ireland is a signatory

MEASURING PROGRESS: 2030 SMART GOALS

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
100% low emissions public bus fleet by 2032, 100% zero emissions public bus fleet by 2035	2032, 2035	NTA, Dublin Bus, Bus Éireann, Private Bus Operators	% zero and low emissions vehicles in public bus fleet, % of zero emissions public bus vehicle-km travelled	
50% of new homes within Dublin constructed within the existing built-up urban footprint	2022 onwards	DLAs, Department of Housing, Local Government and Heritage, An Bord Pleanála	Annual % of new homes permitted and built within urban footprint of Dublin	
Accessibility of transport: active and ongoing engagement with accessibility groups and stakeholders to ensure best practice in achieving modal shift	2022 onwards	DLAs, identified stakeholders	No. of groups identified No. of engagements/interactions	

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Public Engagement and Communication

Public Engagement and Communication

According to Climate Outreach's Theory of Change "achieving rapid social change, with the consent and participation of the population, requires effective communications and the active engagement of the public, or it will not succeed". Similarly, Ireland's Climate Action Plan 2021 states that "local communities need to be empowered to address the challenges that they face in transitioning to a carbon neutral economy and society".

We are living in an unprecedented time with the decisions made in the next eight years impacting the lives of the people living, working and studying in Dublin for decades to come. Codema has provided ground-breaking research with the Dublin Region Energy Master Plan but, as Climate Outreach states, the rapid and urgent change that is needed will not succeed unless we effectively engage the people of Dublin in these solutions and the decision-making process, ensuring that we communicate clearly and honestly about Dublin's energy transition. Since the Zero Together initiative began in 2021, several public engagement and communication activities have been implemented including:

- Hosting and participating in a range of events as part of Dublin Climate Action Week that aimed to inform, engage and inspire the public on how we currently use energy and produce emissions in Dublin, and how we can improve on this towards 2030 and 2050. These events ranged from tours of district heating sites, information on saving energy in the home, engaging businesses in the energy transition, through to identifying barriers and solutions for Sustainable Energy Communities in the Dublin and Mid-East Region.
- Creating Zero Together social media channels on platforms such as Facebook, Instagram and Twitter to generate awareness on the need to move Dublin away from fossil fuels and the science behind it.
- Commissioning a dedicated website for Zero Together to act as a central hub of information for the public, so that the people of Dublin can be informed on the best pathways to meet our 2030 and 2050 targets and have clear calls to action on how they can play their part.
- Campaigns such as the Zero Together survey and Postcards from Dublin 2050, both of which provide a clear insight into what the key issues are as we move away from fossil fuels. This campaign also uncovered how engaged Dubliners feel, how they want to be engaged in the future and what their vision of a fossil fuel-free Dublin looks like in 2050.

Figure 8: The Dublin Local Authority, Codema and Dublin Metropolitan Climate Action Regional Office Climate Action Teams

Zero Together Survey

The ‘Zero Together’ survey, which ran during September and October 2021, received over 1,000 responses from the public, who shared their views on a range of issues on how best to move Dublin away from fossil fuels.

Ninety-five per cent of those who answered the survey lived in Dublin, with the remainder commuting to the capital for work. There was a slightly higher proportion of female respondents at 56% of the total, with 41% male respondents, 2% choosing not to identify and 1% identifying as non-binary. The majority (67%) of respondents were aged between 25 and 54; the sample is broadly representative of the population of Dublin but with some over-representation in the 35-44 and 45-54 age categories.

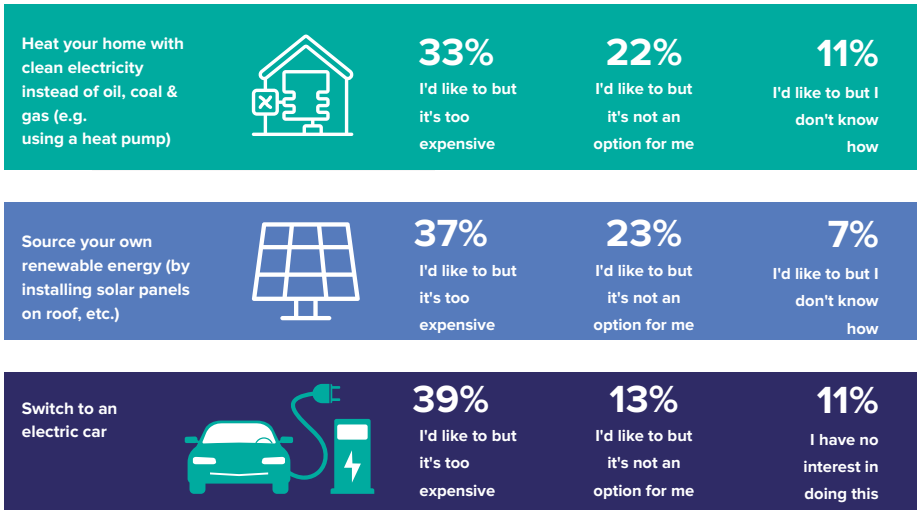


Figure 9: Results of the Zero Together Survey Detailing Actions that Need the Most Support

Trust

When asked to select the top five groups most responsible for moving Dublin away from fossil fuels, the vast majority of respondents placed responsibility with our national government at 92%, followed by local authorities at 76%, businesses at 70%, individuals at 67% and elected members at 46%. However, when asked who the public trusts in relation to information on energy and climate change, the survey analysis showed that levels of trust are quite low among those groups that are held most responsible. For example, 55% of respondents said that they trust our national government “somewhat” or “not at all”, with 57% only trusting local authorities “somewhat” or “not at all”.

Levels of trust were also very low among businesses and industry and elected members, with 86% and 81% responding that they only trusted these groups “somewhat” or “not at all”, respectively. This is in contrast to a strong level of trust among the public on information on energy and climate change coming from scientists (67%), environmental organisations and charities (36%) and universities and schools (21%).

Impact and Energy Use

The public were asked to rank the level of impact they can make as an individual to reduce Dublin’s reliance on fossil fuels for energy. The overall average score was 47 (with 0 being no impact and 100 representing a big impact), indicating that people living in Dublin feel they can have “some impact” with moderate self-efficacy.

The public were also asked how often they think about their everyday energy use, with the vast majority (96%) answering that they thought about their energy use either all of the time (48%) or some of the time (48%), with very few indicating that they never thought about their daily energy use. When asked what the key areas of concern were, 84% of respondents cited “environment and climate” as the main trigger for thinking about their energy use, highlighting that issues related to climate change and global warming are very much top of mind for the majority of those living in Dublin.

Action and Barriers

The survey also highlighted actions that people living in Dublin are doing already to reduce emissions, with 69% walking and cycling more, 69% reducing their waste and repairing products, 62% using energy more efficiently at home and 56% using public transport more. Interestingly, there was a lower uptake in the number of people switching their energy supplier, with just 39% of respondents indicating that they had already switched to a supplier that uses renewable energy.

The survey also indicated areas where the public need further support in moving away from fossil fuels, which related mainly to activities where financial investment or technical knowledge is required. Thirty-three per cent of respondents said they wanted to move away from fossil fuels to heat their homes (e.g. by switching to a heat pump) but felt this was too expensive. A further 33% said they would like to be in a position to do this but it was “not an option” for them or they “don’t know how”.

Additionally, many respondents said they would like to be able to source their own renewable energy (e.g. by installing solar panels) but felt that that this was either too expensive (37%), not an option for them (23%) or they didn’t have information on how to do this (7%). With over 31% of Dublin’s total emissions coming from the residential sector, this survey highlighted that barriers such as cost, poor infrastructure and a lack of information and awareness need to be addressed, to enable those living in Dublin to take direct action.

Of the total 1,102 survey respondents, 39% said they drove frequently, a further 43% said they drove sometimes, while 18% of respondents said they didn’t drive at all. Almost one in five (19%) respondents said that they were planning to switch to an electric car; however, the majority (52%) of those surveyed said that this was either “too expensive” or “not an option” for them at this time.

Figure 10, Members of the Sustainable Energy Communities at a Regional Workshop Held in Dublin

Engagement

The survey findings also indicated that previous levels of engagement among the public is very low, with 71% of respondents saying that their views or concerns on how we produce and use energy in Dublin had “rarely” or “never” been taken into account. When asked how they want to their views and concerns to be captured in the future, 68% of respondents said that they would like to see initiatives that “allow people living and working in Dublin to discuss, propose and vote on actions that could be presented to local authorities and national government”, indicating that a local citizens’ assembly or a citizens’ jury is very much welcomed by the people of Dublin.

Postcards from Dublin 2050

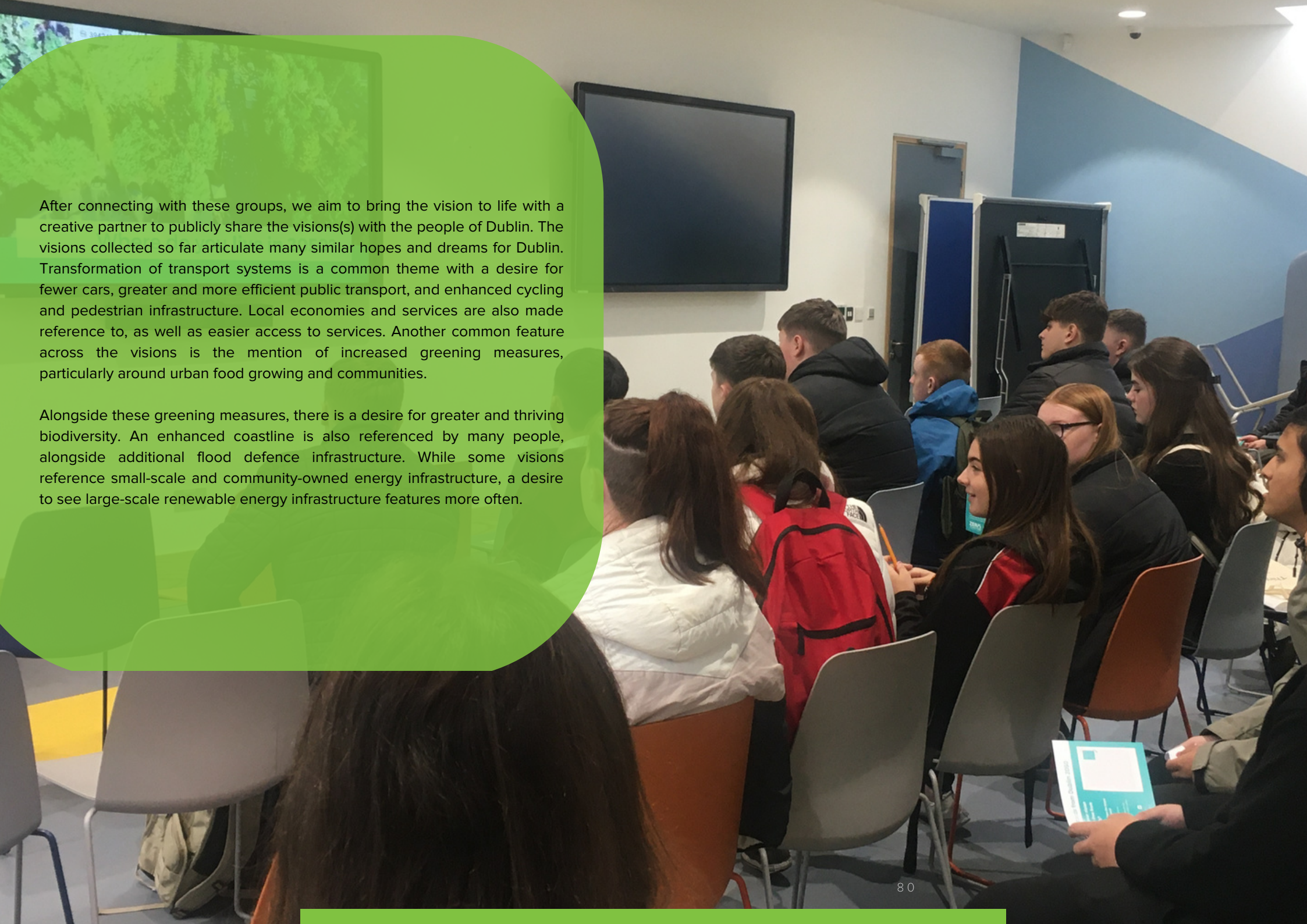
In September 2022, Codema launched a public engagement campaign called "Postcards from Dublin 2050" with the aim of creating a vision of a fossil fuel-free Dublin in 2050, with the people of Dublin. This campaign aims to spark a conversation with the people of Dublin about what is important to them in a fossil fuel free future.

Engaging the public in visioning the future is a first step in helping the public realise agency and responsibility for defining the future. The future can be conceptualised in many ways, and under the authority of elites or decision makers (106). This can be especially true when the general public is often left out of policy making and planning (107). Giving space for the people of Dublin to think about the future of the region is a first-step in the public shaping the Dublin of the future(106,107) and addressing the injustice stemming from exclusion.

The way we think about the future can have profound implications for how we act in the present(106) and our ability to achieve net-zero futures(108). Positive narratives about the future can inspire action in the present(109) and are increasingly recognised as being a key tool to bridge belief and knowledge about climate change and action to address it.

Dublin's energy transition will require many actors across sectors and civil society, so pathways to inspire and spark action among the general public is vital. Since the launch of this campaign, 250 visions have been collected describing how people imagine life in an ideal version of the capital.

These visions have been collected primarily from events associated with Dublin Climate Action Week and relevant events Codema has been organising or attending. The participants so far have spanned across a range of age groups, sectors and communities across Dublin, with visions from sustainable energy community members, young people in transition year, businesses from Dublin, and those active in the climate change space. The next phase of the campaign will target groups usually excluded from discussions on climate change and the energy transition to ensure there is a greater representation of responses.



After connecting with these groups, we aim to bring the vision to life with a creative partner to publicly share the visions(s) with the people of Dublin. The visions collected so far articulate many similar hopes and dreams for Dublin. Transformation of transport systems is a common theme with a desire for fewer cars, greater and more efficient public transport, and enhanced cycling and pedestrian infrastructure. Local economies and services are also made reference to, as well as easier access to services. Another common feature across the visions is the mention of increased greening measures, particularly around urban food growing and communities.

Alongside these greening measures, there is a desire for greater and thriving biodiversity. An enhanced coastline is also referenced by many people, alongside additional flood defence infrastructure. While some visions reference small-scale and community-owned energy infrastructure, a desire to see large-scale renewable energy infrastructure features more often.

A Mini-Public on Dublin's Energy Transition

It is clear that levels of citizen engagement sit on a spectrum from passive to active engagement. However, broadly speaking, public engagement can be defined as “direct public involvement in decision-making processes whereby people share in social decisions that determine the quality and direction of their lives”(110). Deliberative democracy is viewed as one of the most extensive citizen engagement mechanisms(111).

Deliberation is the cultivation of a space in which there is dialogue “under conditions of fairness and equality” among citizens who are open to differing points of view with a commitment to reach a resolution (112,113). This forum is primarily used to deliberate and discuss contentious and complex issues in which the answers and pathways are not clearly defined or simple.

A report published by the OECD(60) found that deliberative processes, when implemented properly, “can lead to better policy outcomes, enable policy makers to make hard choices and enhance trust between citizens and government”. More specifically, representative deliberative democracy promotes the inclusion of a group of participants that are reflective of the population, as well as involving those affected by a particular decision-making process(114). This form of deliberation is known as a “mini-public”. It is important to note that this process directly aligns with the four strategic directions of this roadmap.

1. If planned and implemented correctly, a mini-public can include those who are traditionally excluded from the decision-making process (Accounting for a Just Transition)
2. A mini-public is a proven democratic method for including people in the decision-making process, building a social mandate for action and impacting policy (Making climate action more democratic and inclusive)
3. A mini-public provides a means and a platform for clear and honest information and education with participants and the wider public (Providing clear and honest communication and education)
4. A mini-public provides time and space for participants to understand the scale of the challenge and opens up dialogue on the trade-offs and co-benefits associated with the solutions needed to meet our emission-reduction targets (Designing, planning and implementing solutions for climate and biodiversity action)

What is a Mini-Public?

A mini-public involves "recruiting a group of randomly selected citizens to come together over a selected period of time, to learn about a particular policy issue, deliberate and present agreed-upon feedback to decision-makers" (59). This form of public engagement is premised upon five normative characteristics:

DIVERSE

The group of participants should resemble the wider population in all its diversity, having been selected at random to match the demographic characteristics of the population.

INFORMED

Participants are informed through a rigorous learning process. They should leave as experts in their own right, having heard from witnesses' with "professional, lived and academic experience of the topic at hand"(116).

DELIBERATION

Mini-publics harvest deeper, more considered judgements rather than "top-of-the-head opinions". They are meticulously designed and impartially facilitated to enable rich and meaningful participation by all members, ensuring that everyone contributes equally and is given the space to express themselves freely.

BY AND FOR THE PEOPLE

Recommendations are made by mini-public members, not by politicians or officers. They should be published without "revision, caveat or manipulation and responded to by decision makers".

Figure 11: The Mini-Public Process as Outlined by the RSA (116)

Three Pathways to Impact

In Ireland, mini-publics have become increasingly popular as a means of bringing pertinent policy issues to the public for deliberation. Previous forums, also known as Citizens' Assemblies, have proposed recommendations on a range of topics such as climate change, gender equality, marriage equality and the eighth amendment to the Constitution. More recently, Citizens' Assemblies on a Directly-elected Mayor and Biodiversity have been commissioned.

The recommendations proposed and views brought forward by citizens' assemblies have led to constitutional change and opened up important dialogue amongst the public and the State. For example, Ireland's referendum on Marriage Equality and to repeal the 8th Amendment of its constitution were both preceded by a Citizens' Assembly, which recommended these reforms. Ireland is considered a frontrunner in deliberative democracy often held up as best-practice on the global stage demonstrating a new and innovative approach to public engagement, decision- making and democracy.

This form of public engagement has significant potential. This potential can be viewed through the lens of three pathways to impact:

1) the policy landscape
2) wider society
3) participants of the mini-public

We know from national and international examples that this kind of public participation and engagement can impact the policy landscape, it can impact wider society in building a social mandate for action and it can open dialogue and build trust amongst participants and government.

Why a Mini-Public for Dublin?

Addressing a "Wicked Problem"

By conducting a mini-public on Dublin's energy transition we are moving beyond conventional means of how we traditionally engage with the public. Dublin's energy transition will involve complex trade-offs as well as the need for wide-scale societal buy-in and behavioural change. Implementing this forum would demonstrate recognition of the scale of this challenge and provide the public with an opportunity to deliberate on some of the most "thorny" or complex of issues, providing solutions that have their support and are reflective of their lived experience.

The Power of Local

The power of local refers to the impact of a local approach to and view of policymaking, public engagement and data analysis. For example, the Dublin Region Energy Master Plan provides a perfect example of the need for a regional approach to the energy transition. A one-size-fits all process is not going to address local needs or be reflective of the experience of those living in a particular area and that's what needs to be captured and understood.

As Weeks and Quinlivan state in their book All Politics is Local (117), local authorities are the "mouthpiece of shared community interests" and can act as a "laboratory of democracy" responding quickly to situations and developing innovative solutions and strategies. This is precisely what is needed to respond to the ongoing energy crisis and to plan for the transition away from fossil fuels.

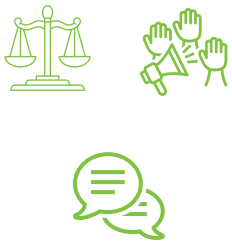
Conducting a mini-public for Dublin is an opportunity to:

1. Support ongoing council initiatives and projects
2. Garner local knowledge and solutions
3. Build trust
4. Including those traditionally excluded and most vulnerable

Figure 12: Implementation Plan for a Mini-Public on Dublin's Energy Transition

MEASURING PROGRESS: 2030 SMART GOALS

Legend:
- Accounting for a Just Transition
- Providing Clear and Honest Communication and Education
- Making Climate Action more Democratic and Inclusive
- Designing, Planning and Implementing Solutions for Climate and Biodiversity Action

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Commission research to understand who is and will be most affected by Dublin's energy transition	2023	Codema, TASC	Funding secured Report produced with key recommendations and actions	
Form at least five strategic partnerships with groups representing those most impacted by Dublin's energy transition (as identified by the above research)	2023	Codema, identified stakeholders	Five strategic groups identified Initial meetings w/ groups identified No. of collaborative projects identified for 2023	
Host a minimum of five deliberative workshops in Q1 and Q2 of 2023 with impacted groups identified by TASC's research. *	2023	Codema	Deliberative workshops hosted No. of attendees at workshops No. of postcards received No. of sign ups to Zero Together newsletter Pre and post workshop surveys	

*The workshops will aim to inform participants on Dublin's energy transition & roadmap, discuss their views and capture participants' visions for a fossil fuel-free Dublin.

MEASURING PROGRESS: 2030 SMART GOALS

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Develop and launch a communications and public engagement plan to support the roadmap "5 by 2050" in collaboration with strategic partners	2023/24	Codema, identified stakeholders	Funding secured Comms campaign designed Comms campaign launched No. of interactions across print & digital media No. of media coverage earned No. of stakeholder groups engaged No. of presentations of roadmap to stakeholder groups	
Continue engagement with the current Zero Together transition team -Create terms of engagement with the team by Q1 2023 -Agree on governance structure for the Transition Team by Q1 2023	2023	Codema	Governance / coordination plan developed and agreed No. of Transition Team meetings held	
Create executive-level energy roundtable	2024	Codema, Dublin Local Authorities, ESB, EirGrid, Wind Energy Ireland	No. of members signed up to energy roundtable No. of meetings held with steering group	

MEASURING PROGRESS: 2030 SMART GOALS

Goal	Timeframe	Key stakeholders	KPIs	Strategic Directions
Design and implement a mini-public on Dublin's energy transition	2023	Codema, Dublin Local Authorities, Dublin Metropolitan Climate Action Regional Office, Dublin Mayors, DCU, Agency specialising in deliberative democracy	Funding secured Local government (Senior level) buy-in and endorsement of the mini-public Agency procured Mini-public implemented Recommendations presented to key stakeholders across Dublin No. of events presenting recommendations to local communities in the four Dublin Local Authority areas	
Launch Zero Together website	2022	Codema, Transition Team	Development of website No. of attendees at launch	
Facilitate meeting with key biodiversity stakeholders to discuss mechanisms that would aid in accounting for biodiversity in future energy-related solutions & infrastructure	2023	Codema & TBC (e.g. Irish Wildlife Trust, National Biodiversity Data Centre, Irish Environmental Network)	Stakeholders identified Meeting held to discuss Zero Together roadmap No. of actions agreed for areas for further collaboration	

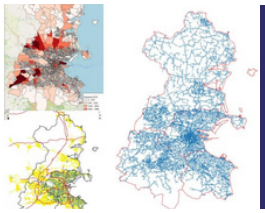
CONCLUSION

In developing the Zero Together roadmap we have considered, not only the technological and systemic solutions needed to achieve the emission-reduction targets set by National Government, but what the implementation of these solutions could mean for wider society. By exploring the four strategic directions throughout the roadmap, it highlighted how interconnected the energy transition is to issues such as justice and democracy and the importance of clear communication and inclusiveness throughout the designing, planning and implementation of the five solutions.

Although the vision of the roadmap extends to 2050, it was crucial to ground the roadmap in reality. By articulating what needs to be done to progress and implement the five core solutions of the roadmap through the 2030 SMART goals, it's now possible to visualise the specific actions and ongoing collaboration needed to meet our targets.

The Zero Together process and roadmap is an exceptional example of what can be achieved when we have the courage to move beyond our silos and engage in collaborative and deliberative discussion around the future of our capital. The pathways and goals outlined in this document are directly aligned to national ambition whilst reflecting the specific needs and requirements for Dublin. This is a first-step in responding to the challenge of Ireland's energy transition through a locally-led, bottom-up approach.

Zero Together commits to holding decision-makers to account and providing a space for ongoing collaboration and participation in Dublin's energy transition, as we now move from intent to action.

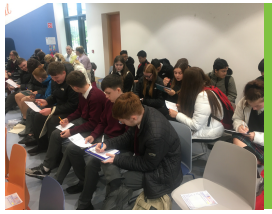


Evidence

Through the evidence-base of the Dublin Region Energy Master Plan, we uncovered what solutions are required to reach net-zero by 2050

Collaboration

Through the collaborative process of the Zero Together we explored how to implement these actions and who we need to involve to ensure success



Public Engagement and Communication

Through ongoing public engagement and a commitment to provide clear and honest communication, Zero Together has the potential to make Dublin's energy transition accessible and inclusive.

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Towards a cleaner, healthier Dublin

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