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Developing Decarbonising Zones in Ireland

A Briefing Paper for the Local Authority Sector



Cumann Lucht Bainistíochta Contae agus Cathrach
County and City Management Association

Oifig Réigiúnach um
Gníomhú ar son na hAeráide
Rialtas Áitiúil
Réigiún Cathrach Bhaile Átha Cliath

Climate Action
Regional Offices
Local Government
Dublin Metropolitan



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The four Climate Action Regional Offices were established by the Government of Ireland in 2018 in response to Action 8 of the 2018 National Adaptation Framework (NAF) – Planning for a Climate Resilient Ireland. The CAROs are managed through local authorities. The offices are mandated to co-ordinate engagement across the varying levels of government and help build on experience and expertise that exists in the area of climate change and climate action. The offices have a role in driving climate action at both regional and local levels, including implementation of local adaptation plans / Climate Change Action Plans. The Dublin CARO works across the four Dublin local authorities – Dublin City Council, Dún-Laoghaire Rathdown County Council, Fingal County Council and South Dublin County Council.

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Codema is Dublin’s Energy Agency and is committed to leading Dublin's low-carbon transition towards 2030 and 2050. Codema is the energy adviser to the four local authorities in Dublin - Dublin City Council, Dún Laoghaire-Rathdown County Council, Fingal County Council and South Dublin County Council - and support each council in leading and influencing this low-carbon transition by improving their energy efficiency, incorporating renewable energy technologies and reducing their greenhouse gas emissions.

This Position Paper has been prepared on behalf of the County and City Management Association (CCMA) by the Dublin Climate Action Regional Office and Codema.

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Note: This Briefing Paper aims to define a Decarbonising Zone (DZ), and has been developed in the absence of national guidance relating to Action 165 of the Climate Action Plan 2019 - Each local authority will identify and develop plans for one “Decarbonising Zone”. As further guidance will be issued from DHPLH in relation to a proposed framework, this paper is not intended to provide a detailed methodology as to how a Decarbonising Zone can be identified and developed. Further guidance at national level will address a proposed framework for LAs including guidance and next steps for the implementation of Action 165.

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1. Introduction

Action 165 of the Government's Climate Action Plan 2019, requires Local Authorities to identify and develop plans for one Decarbonising Zone. This Briefing Paper aims to define a Decarbonising Zone (DZ) in the Irish context, to signpost and facilitate further discussion across a range of stakeholders. In this effort, this paper considers the policy and legislative context, the importance of local energy planning, relevant case studies from Ireland and elsewhere, energy masterplanning and policy development, highlights thematic areas and data analysis, and draws a range of conclusions and recommendations.

The definition of a Decarbonising Zone is proposed as follows:

A **Decarbonising Zone** is an area spatially identified by the local authority, in which a range of climate mitigation measures can co-exist to address local low carbon energy, greenhouse gas emissions and climate needs. The range of policies and projects developed are specific to the energy and climate characteristics of the spatial area covered by the DZ. This can include a range of technologies and measures addressing electricity, heat, transport, building energy efficiency, carbon sequestration, energy storage, grid frequency/inertia etc.

A Decarbonising Zone should also address the wider co-benefits of air quality, improved health, biodiversity, embodied carbon, agricultural practices, sustainable land management, lower noise levels, waste, water, circular economy etc., and should integrate with smart data and 'smart cities' initiatives (as relevant).

A Decarbonising Zone can also explore the co-benefits of climate adaptation, and examine a range of local measures such as climate proofing, afforestation, green and blue infrastructure, reducing heat island effects, citizen awareness and behavioural change.

The **Climate Action Plan 2019 – To Tackle Climate Breakdown** represents the Government's all of society approach, aimed at enabling Ireland to meet its EU targets to reduce its carbon emissions by 30% between 2021 and 2030, and lay the foundations for achieving net zero carbon emissions by 2050. The Plan contains a range of multi-stakeholder actions across the electricity, buildings, transport, agriculture, enterprise and waste and circular economy sectors. The Climate Action Plan also advocates the need for a just transition and improving the climate resilience of all communities and citizens.

The **Programme for Government** sets out the political and societal consensus on a just transition to a sustainable future for all communities in Ireland. The Government is committed to an average 7% per annum reduction in overall greenhouse gas emissions from 2021 to 2030 (a 51% reduction over the decade) and to achieving net zero emissions by 2050. This position is also underpinned by the the Draft Climate Action and Low Carbon Development (Amendment) Bill 2020, published in October 2020.

The Climate Action Plan also highlights the leadership role of the public sector, including local authorities, and the importance of citizen engagement and community leadership. At the heart of the Plan, is the key message that climate action requires a range of thematic areas to overlap and blend together to meet the challenge. This will require strong governance, robust and evidence-based policy at all levels, a variety of funding supports, technical advancements, exploration of co-benefits, societal innovation and ultimately - creativity and imagination.

The need to identify and develop Decarbonising Zones by each local authority in Ireland, is Action 165 of the Climate Action Plan 2019. The implementation of this action will be led by the Department of Housing, Local Government and Heritage (DHLGH), together with the Sustainable Energy Authority of Ireland (SEAI) and local authorities.

The Government recognises the key enabling role that local authorities have in advancing climate action at the local and community level. Local authorities play a pivotal role in planning for, and responding to, climate emergency situations. Given their close relationship with 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, as well as the ongoing response to COVID-19 restrictions. They have essential local knowledge of the natural and manmade environment, and have a critical role to play in managing climate risks and vulnerabilities, and identifying adaptation actions within their administrative areas. Local authorities also have a key role to play in climate mitigation and adaptation efforts by way of their land use planning and regulatory functions, including the preparation and adoption of City / County Development Plans. They also deliver key services to the public either directly, or in partnership with other Government Departments and agencies such as housing, planning, sanitation and maintenance of local roads, parks and waterways.

The identification and development of Decarbonising Zones in the Irish context should explore the components of policy, projects and partnerships and their associated inter-relationship. The definition and scope should also reflect the diverse climate baselines and opportunities provided by both the urban and the rural environments. The identification and development of DZs across the country can also benefit from the range of multi-stakeholder partnerships already in place, from national to local level. This includes existing broad ranging supports from the Department of Environment, Climate and Communications (DECC), the Environmental Protection Agency (EPA) and the Sustainable Energy Authority of Ireland (SEAI), and many others. With regard to the evolving role of spatial planning and climate action, the Department of Housing, Local Government and Heritage and The Office of the Planning Regulator (OPR) will have an important leadership role, in providing continued guidance and support to local authorities. The role of Energy Agencies is also important to include work undertaken in local authority areas that could be considered as Decarbonising Zones.

2. The Policy & Legislative Context

This section outlines the policy and legislative context that will influence the identification and development of Decarbonising Zones in Ireland, ranging from European to local level. A review of relevant policy and legislation, highlights the range of climate action issues to be addressed, climate targets to be achieved and the ongoing need for multi-stakeholder engagement.

2.1 European



On the 4th March 2020, the European Commission presented a proposal to enshrine in legislation the EU's political commitment to be climate neutral by 2050, the [European Climate Law](#). The EU has already put in place some ambitious climate legislation, but current policies are expected to only reduce greenhouse gas emissions by 60% by 2050 compared to 1990

levels. Against this background, the European Climate Law sets the ambitious target to reach net-zero greenhouse gas emissions in the EU by 2050 and a framework for achieving this climate-neutrality objective. The Law also aims to enhance efforts on adaptation to climate change. Furthermore, a new European Climate Adaptation strategy is being prepared for 2021.

At the State of the Union address on 16th September 2020, European Commission President Ursula von der Leyen pledged that the European Commission will drive a sustainable and transformational recovery that will give Europe a global platform to lead economically, environmentally and geopolitically. The President revealed that the European Commission is proposing to increase the 2030 target for emissions reduction from 40% to at least 55% compared to 1990 levels.



This will put the EU on track for climate neutrality by 2050 and for meeting its Paris Agreement obligations. The Carbon Border Adjustment mechanism will help ensure others will follow Europe's lead. The Commission will revise all of the EU's climate and energy legislation to make it 'fit for 55'. These proposals will most likely have implications for Ireland's energy and emission targets and other national targets set on in the Climate Action Plan 2019.

The [European Green Deal](#) is the roadmap for making the EU's economy sustainable. This will happen by turning climate and environmental challenges into opportunities across all policy areas, and making the transition just and inclusive for all. Climate change and environmental degradation are an existential threat to Europe and the world. To overcome these challenges, Europe needs a new growth strategy that transforms the Union into a modern, resource-efficient and competitive economy where:



- there are no net emissions of greenhouse gases by 2050;
- economic growth is decoupled from resource use; and
- no person and no place are left behind.

The European Green Deal provides a roadmap with actions to boost the efficient use of resources by moving to a clean, circular economy, restore biodiversity and cut pollution. It also outlines investments needed and financing tools available. To do this, the European Climate Law is aimed at turning the political commitment into a legal obligation and a trigger for investment. Reaching this target will require action by all sectors of our economy, including;

- investing in environmentally-friendly technologies;
- supporting industry to innovate;
- rolling out cleaner, cheaper and healthier forms of private and public transport;
- decarbonising the energy sector;
- ensuring buildings are more energy efficient; and
- working with international partners to improve global environmental standards.

The EU will also provide financial support and technical assistance to help people, businesses and regions that are most affected by the move towards the green economy. This is called the Just Transition Mechanism and will help mobilise at least €100 billion over the period 2021-2027 in the most affected regions.



The [High-Level Panel of the European Decarbonisation Pathways Initiative – Final Report](#), was published In December 2018, during COP24 in Poland. In preparing the final report, the HLP invited experts and stakeholders in the fields of energy, transport, industry, agriculture, finance, urban planning, social innovation, policymaking and more, to debate the key challenges for decarbonisation and the research and innovation needs, in particular those emerging from economic and societal sectors for which the transition to a zero-emission future still looks difficult. The report states ‘cities are the “melting pot” where decarbonisation strategies for energy, transport, buildings and even industry and agriculture coexist and meet. In the zero-carbon transition, integrated urban planning and cross-sectoral governance is crucial’ (Publications Office of the European Union, 2018).

The report proposes the established of ‘Transition Super-Labs’, very-large-territory initiatives of real-life management of the transition, from typical fossil-fuel-based local economies to zero-carbon ones. These areas would be flagship demonstrators where research, business, administration and civil society co-produce integrated solutions. Super-Labs would be realised in critical locations where the energy transition can be particularly difficult – such as coal-mining areas, territories characterised by high density of energy intensive industries, cities with very energy inefficient building stock, etc.

The report notes that ‘the major policy challenge facing the EU at present is precisely to design a decarbonisation strategy which reduces emissions but also supports the core political priorities of giving a new boost to jobs, growth and investment while shielding the weaker sections of society. The role of public capital will be particularly crucial for infrastructure development, while private capital should play a leading role with respect to funding technologies’ (Publications Office of the European Union, 2018).

2.2 National

[UN Sustainable Development Goals \(SDGs\)](#)

The 2030 Agenda for Sustainable Development encourages countries to develop national responses to the Sustainable Development Goals (SDGs) and incorporate them into planning and policy. The Minister for Communications, Climate Action and Environment has lead responsibility for promoting and overseeing national implementation of the 2030 Agenda for Sustainable Development and its 17 SDGs. This is a whole-of-government initiative where all Ministers retain responsibility for implementing the individual SDGs relating to their functions. The full range of SDGs have relevance to the identification and development of Decarbonising Zones in Ireland, in particular Goal 13 - Take urgent action to combat climate change and its impacts.



DCCAIE was assigned responsibility for preparing the first SDG National Implementation Plan and the Voluntary National Review (VNR). The first National Implementation Plan was published in early 2018. The Plan sets out arrangements for inter-departmental coordination, stakeholder engagement and periodic progress reporting at national and global levels. Ireland's first VNR was submitted to the UN in June 2018, and formally presented to the High-level Political Forum at the UN Headquarters in New York in July 2018.

The Sustainable Development Goals (SDG) Champions Programme is an initiative established by the SDG Unit at DCCAIE. The Minister and the Department believe that the SDG Champions Programme has the potential to achieve nationwide prominence and raise public awareness of the Sustainable Development Goals. The purpose of the SDG Champions Programme is primarily to raise public awareness of the SDGs, and secondarily to illustrate practical ways in which organisations and individuals can contribute to achieving the SDGs, using Champion organisations' practices as examples.

The development of Decarbonising Zones can also contribute to the achievement of the Sustainable Development Goals (SDGs). Climate policies can interact and have synergies with many Development Goals.

National Energy & Climate Plan 2021-2030



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Department of Communications,
Climate Action & Environment

National Energy & Climate Plan

2021-2030

The 2019 NECP was prepared to incorporate all planned policies and measures that were identified up to the end of 2019 and which collectively deliver a 30% reduction by 2030 in non-ETS greenhouse gas emissions (from 2005 levels).

Under the Programme for Government, *Our Shared Future*, Ireland is committed to achieving a 7% annual average reduction in greenhouse gas emissions between 2021 and 2030. The NECP was drafted in line with the current EU effort-sharing approach, before the Government committed to this higher level of ambition, and therefore does not reflect this higher commitment. Ireland is currently developing those policies and measures and intends to integrate the revision of the NECP into the process which will be required for increasing the overall EU contribution under the Paris Agreement.



The [Climate Action Plan 2019 To Tackle Climate Breakdown](#), was published by the Government in June 2019. The Plan is a statement of Irish government policies relevant to decarbonisation and adapting to a changing climate, with 183 specific actions assigned across “all-of Government”. It will be updated annually, with progress on the actions reported quarterly. The plan identifies how Ireland will achieve its 2030 targets for carbon emissions, and puts us on a trajectory to achieve net zero carbon emissions by 2050. Actions have been earmarked across several sectors: electricity, enterprise,

built environment, transport, agriculture (with forestry and land-use), waste (and the circular economy) and the public sector. The Climate Action Plan 2019 also states *‘this is a strong foundation on which to build a Climate Action Plan committed to achieving a net zero carbon energy systems objective for Irish society and in the process, create a resilient, vibrant and sustainable country’* (Government of Ireland, 2019).

The Climate Action Plan includes a range of cross-sectoral targets, which include the following:

- Reduce CO₂ eq. emissions from the built environment sector by 40 – 45% relative to 2030 pre-NDP projections;
- Sharply reduce fossil fuel use, given the current heavy reliance on gas, oil, coal and peat in the sector;
- 70% electricity generated from renewable sources by 2030;
- Increase the number of electric vehicles by 2030 to approximately 1 million;
- Complete 500,000 building retrofits to achieve a B2 BER / cost optimal equivalent or carbon equivalent;
- Install 600,000 heat pumps (400,000 to be in existing buildings); and
- Increase the number of Sustainable Energy Communities to 1,500.

The role of spatial planning in addressing climate action is also addressed in the Plan. It is stated that *‘there is a need to combine measures to influence the spatial pattern of development, urban structure and overall mobility, with low carbon technology measures’* (Government of Ireland, 2019).

Action 165 of the Climate Action Plan relates to the development of Decarbonising Zones. Actions 81 and 65 are also of relevance to the development of Decarbonising Zones. Action 81 relates to the establishment of low emission zones. Action 65 relates to the development of a climate-action toolkit and audit framework for development planning at local authority level. There will need to be interplay between these actions in the identification and development of Decarbonising Zones. The full text of the actions are included overleaf.

Action 165: Extend flagship low-carbon projects to other towns and villages

Steps Necessary for Delivery	Timeline by Quarter	Lead	Other Key Stakeholders
Each local authority will identify and develop plans for one "Decarbonising Zone"	Q4 2019	DHPLG	SEAI, LAs
Develop a category of low carbon town projects for future calls under the Climate Action Fund	Q3 2020	DCCAE	
Develop Portlaoise as a low carbon town using suite of initiatives and a range of technologies deployed to serve as demonstrator for other towns	Q4 2020	Laois CC	SEAI, CARO, Downtown Portlaoise, ESB Networks, Midland Energy Agency, TII, DCCAE
Carry out a mid-project review of the Portlaoise project and identify practical actions for other towns	Q4 2020	DHPLG	

Action 81: Develop a regulatory framework on low emission zones and parking pricing policies, and provide local authorities with the power to restrict access to certain parts of a city or a town to zero-emission vehicles only. Examine the role of demand management measures in Irish cities, including low emission zones and parking pricing policies

Steps Necessary for Delivery	Timeline by Quarter	Lead	Other Key Stakeholders
Commission a Demand Management study to: <ul style="list-style-type: none"> - Consider key demand management drivers in an Irish context (e.g. congestion, air quality, climate considerations) - Review international best practices on measures such as congestion charges, LEZs, and parking policies - Recommend most appropriate responses for Dublin/Cork/Galway/Limerick taking into account overall transport strategies in each case 	Q4 2019	DTTAS	NTA, LAs
Publish findings of the Demand Management study	Q3 2020	DTTAS	
Based on findings of study develop proposals for setting an appropriate regulatory framework	Q4 2020	DTTAS	NTA, LAs

Action 65: Develop and establish a climate-action toolkit and audit framework for Local Authority development planning to drive the adoption of stronger climate action policies in relation to the patterns and forms of future development

Steps Necessary for Delivery	Timeline by Quarter	Lead	Other Key Stakeholders
Develop the Project Ireland 2040 Implementation Report and Project Tracker to include progress in supporting climate-action objectives Publish updated statutory guidelines under Section 28 of the Planning Act on local authority development plans setting out the appropriate requirements for integration of climate-action considerations in the preparation of the plan	Q2 2020	DPER DHPLG	LAs, SEAI

The Draft [Climate Action and Low Carbon Development \(Amendment\) Bill 2020](#) was published in October 2020 and aims to enshrine in law the approach and actions outlined in the National Climate Action Plan. The Bill puts into law a commitment for net-zero greenhouse gas emissions by 2050, through establishing a ‘National 2050 Climate Objective’ that the State will pursue the transition to a ‘climate resilient and climate neutral economy’ by the end of the year 2050.

The Draft Bill includes the following key elements:

- Establishes a **2050 emissions target**;
- Introduces system of successive 5-year, economy-wide **carbon budgets** starting in 2021;
- Strengthens the role of the **Climate Change Advisory Council** in proposing carbon budgets;
- Introduces a requirement to annually revise the Climate Action Plan and prepare a **National Long Term Climate Action Strategy** at least every decade;
- Introduces a requirement for all Local Authorities to prepare individual **Climate Action Plans** which will include both mitigation and adaptation measures; and
- Gives a stronger oversight role for the Oireachtas through an **Oireachtas Committee**.

The Draft Bill includes the requirement for local authorities to prepare a Climate Action Plan addressing both climate mitigation and adaptation measures within 12 months of receipt of a request from the Minister. These climate change action plans will contribute to the national 2050 climate objective and shall be reflected specifically within the development planning processes. It is anticipated that the final Climate Bill will be published by government before the end of 2020.

The establishment of a 2050 net zero emissions target and five yearly, economy-wide carbon budgets provide a robust basis for the identification and development of DZs, which can be aligned to national targets and be used as test beds to advance bottom up efforts in achieving these national targets.

The [Planning and Development Act 2000](#) (as amended) forms the foundations for planning in Ireland. This Act covers a wide range of planning-related issues, and combines a wide range of different legislation into one place.

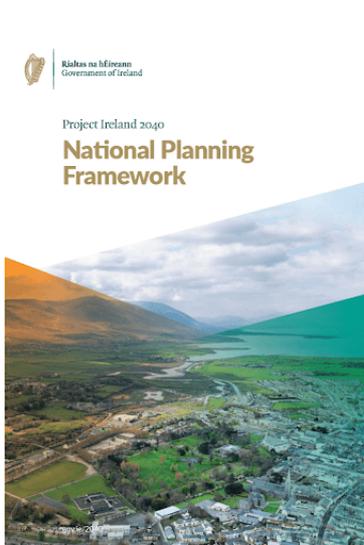
- It sets out the detail of regional spatial and economic strategies, development plans and local area plans.
- It explains how Ministerial Guidelines work.
- It sets out how the process of applying for and obtaining planning permission works.
- It contains special requirements for protected structures, conservation areas and areas of special planning control.
- It explains the relationship between planning and social housing supply.
- It sets out Ireland’s planning appeals and enforcement processes.
- It describes Strategic Development Zones and Environmental Impact Assessment.
- It clarifies how a range of particular planning processes, including for State development, operates.

With specific regard to the requirements of making a Development Plan, Section 10(2)n) of the Act requires that a Development Plan shall include objectives for:

The promotion of sustainable settlement and transportation strategies in urban and rural areas including the promotion of measures to —

- (i) reduce energy demand in response to the likelihood of increases in energy and other costs due to long-term decline in non-renewable resources,
- (ii) reduce anthropogenic greenhouse gas emissions, and
- (iii) address the necessity of adaptation to climate change; in particular, having regard to location, layout and design of new development;

Guidelines, to be prepared by the Department of Housing, Local Government and Heritage, will provide clarification around the development of a suitable methodology for measuring carbon emissions, appropriate to strategic land use designation and related transport infrastructure in the context of the preparation of City/County Development Plans. It is noted that The Office of the Planning Regulator is also undertaking work in this area, relating to the climate assessment of City/County Development Plans, in the context of the above provisions of the Planning & Development Act 2000 (as amended).



The [National Planning Framework](#) states that *'the planning process provides an established means through which to implement and integrate climate change objectives, including adaptation, at local level. Planning legislation also requires different levels of the planning process to address climate change'* (Government of Ireland, 2018).

Strategic Outcome No.6 of the National Planning Framework is to 'Transition to a Low Carbon and Climate Resilient Society'. The NPF also states that; *'in addition to legally binding targets agreed at EU level, it is a national objective for Ireland to transition to be a competitive low carbon, economy by the year 2050. The National Policy Position establishes the fundamental national objective of achieving transition to a competitive, low carbon, climate resilient and environmentally sustainable economy by 2050'* (Government of Ireland, 2018). This is based on an aggregate reduction in carbon dioxide (CO₂) emissions of at least 80% (compared to 1990 levels) by 2050 across the electricity generation, built environment and transport sectors.

There are a range of National Policy Objectives included in the NPF, which address a variety of climate action issues, across urban and rural environments, including:

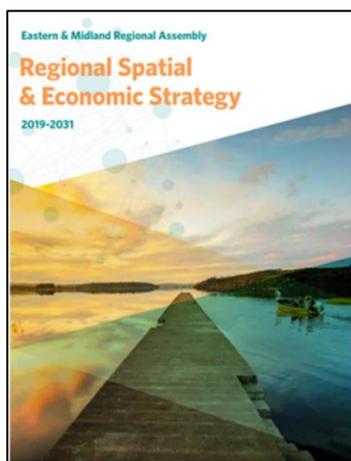
- **integrating climate action** into the planning system in support of national targets for climate policy mitigation and adaptation objectives;
- **promoting renewable energy** use and generation at appropriate locations within the built and natural environment;
- ensuring **flood risk management** informs place making by avoiding inappropriate development in areas at risk of flooding;

- integrating **sustainable water management** solutions, such as Sustainable Urban Drainage (SUDS), non-porous surfacing and green roofs, to create safe places;
- integrating planning for **Green Infrastructure** and ecosystem services will be incorporated into the preparation of statutory land use plans; and
- improving **air quality** and helping to prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning.

The preparation of new City / County Development Plans, Strategic Development Zones etc., provide an opportunity for evidence based policies and objectives relating to the identification and development of Decarbonising Zones in Ireland.

2.3 Regional

The **Regional Spatial & Economic Strategy (RSES)** for the [Eastern and Midland Regional Assembly](#) area, the [Northern and Western Regional Assembly](#) area, and the [Southern Regional Assembly](#) area, have all been made and are in effect. As a result, the constituent local authorities within the Regions are required to restart, review, or vary their City / County Development Plans. There are a number of climate action related Regional Policy Objectives (RPOs) included in all three RSES's. The RSES's are also underpinned by a climate action focus covering key areas such as compact growth, integration of land use and transport, brownfield / infill development, renewable and low carbon electricity and heating generation, employment and enterprise development, infrastructure development and green infrastructure strategies. The RSES's also support energy efficient and climate resilient building design.



The Eastern & Midlands Regional Assembly is currently leading on an ESPON project titled “Quantitative Greenhouse Gas Impact Assessment Method for Spatial Planning Policy (QGasSP)”. The ESPON Programme is an applied research programme aimed at supporting the formulation of territorial development policies in Europe.

This project will specifically target the EMRA's RSES Regional Policy Objective (RPO) 3.6 - City and county development plans shall undergo assessment of their impact on carbon reduction targets and shall include measures to monitor and review progress towards carbon reduction targets.

The programme aims to identify the potential of regions and the challenges they face and produces territorial data in the form of statistics, analysis and maps, which are accessible and understandable to local policy-makers. Participating partners in this programme include, Scottish Government Planning and Architecture Division, the Northern Ireland Regional Planning Directorate and Finland's Regional Council of Kymenlaakso. A major challenge for all partners is the need to balance the need for economic development and the need to

reduce GHG emissions. The partnership brings together organisations at national and regional level addressing similar challenges.

The ESPON Targeted Analysis is a tool to develop cross-border evidence. For this project, the purpose of the targeted analysis is to identify robust methods for quantifying the relative impact on GHG emissions of alternative spatial planning policies to inform strategic alternatives. The outputs will:



- aid Member States in meeting their GHG emissions targets;
- inform strategic alternatives at different administrative levels which will ultimately aid Member States in meeting their GHG emission reduction targets; and
- inform Strategic Environmental Assessment and Environmental Impact Assessment.

With relevance to the development of Decarbonising Zones, the Eastern and Midland Regional Assembly RSES contains the following Regional Policy Objective:

RPO 7.35 EMRA shall, in conjunction with Local authorities in the Region, identify Strategic Energy Zones as areas suitable for larger energy generating projects, the role of community and micro energy production in urban and rural settings and the potential for renewable energy within industrial areas. The Strategic Energy Zones for the Region will ensure all environmental constraints are addressed in the analysis. A regional landscape strategy could be developed to support delivery of projects within the Strategic Energy Zones.

2.4 Local

All thirty-one Local Authorities were required to make, approve and submit a **Local Authority Adaptation Strategy** to the Department of Communications, Climate Action and Environment by September 30th 2019. The four Dublin local authorities prepared [Climate Change Action Plans](#) and Meath County Council prepared a [Climate Action Strategy](#); these plans addressed both climate adaptation and mitigation. The full range of local authority plans are available to view at Climate Ireland's [Local Authority Adaptation Wizard](#). Local Authority Adaptation Strategy Development Guidelines were published in December 2018 to guide the preparation of the strategies.

The four Dublin local authority Climate Change Action Plans (CCAP) 2019-2024, address both mitigation and adaptation; this results from the ongoing work of Codema – Dublin's Energy Agency, in addressing local authority climate change mitigation efforts. The Dublin local authority CCAPs address the five key theme areas of – Energy and Buildings, Transport, Flood Resilience, Nature-Based Solutions and Resource Management and have four key targets:

- 33% better energy use by the Council by 2020;
- 40% reduction in the Council's greenhouse gas emissions by 2030;
- To make Dublin a climate resilient region, by reducing the impacts of future (and current) climate change-related events; and

- To actively engage and inform citizens on climate change.

A number of local authorities across the country have also signed up to the [EU Covenant of Mayors for Climate & Energy](#). The Covenant brings together thousands of local governments voluntarily committed to implementing EU climate and energy objectives. The Covenant of Mayors was launched in 2008 in Europe, with the ambition to gather local governments voluntarily committed to achieving and exceeding the EU climate and energy targets. The initiative now gathers 9,000+ local and regional authorities across 57 countries, drawing on the strengths of a worldwide multi-stakeholder movement and the technical and methodological support offered by dedicated offices.



The [Global Covenant of Mayors](#) is capitalising on the experience gained over the past eight years in Europe and beyond, and is building upon the key success factors of the initiative: its bottom-up governance, its multi-level cooperation model and its context-driven framework for action.

2.5 Local Authority Climate Action Charter

Under the Climate Action Plan, a new [Local Authority Climate Action Charter](#) was developed in October 2019, in consultation with the local government sector, and commits signatories to several objectives to address the climate challenge and advocate for climate action and behavioural change among citizens.

The Charter commits Local Authorities to several actions that will ensure that they play a key leadership role locally and nationally in delivering effective climate action. Among other commitments, all local authorities will:

- Be **advocates for Climate Action** in our own policies and practices, and in our many various dealings with citizens and to underpin this role through the corporate planning process;
- Put in place a process for **carbon proofing** major decisions, programmes and projects on a systematic basis, including investments in transport and energy infrastructure;
- Deliver on a **new target** for the public sector of 50% energy efficiency and a 30% reduction in carbon emissions by 2030;
- Ensure all suppliers provide information on their **carbon footprint** and steps they plan to reduce its impact;
- Build local **citizen engagement**, particularly with young people;
- **Partner & collaborate** on climate action initiatives with local community groups, local enterprise and local schools and higher-level institutions;
- **Support our employees** to undertake changes in their lifestyles both at work and at home, to reduce carbon impact and encourage work-based employee-led groups to identify and implement ideas for improvement; and
- **Monitor, evaluate and report** annually on the implementation of activities under the Charter.

3. Energy Planning as a Tool for Delivering National Objectives

Energy planning is a crucial first step in laying the foundations for a low-carbon future – the decisions made today on what we build, and where and how we build it, will have long lasting effects that are very difficult and costly to try to change in the future. Local and regional level energy planning is a common practice across Europe. It involves the analysis of local level energy demand and supply resources available for heat, electricity and transport, and identifying the unique low-carbon solutions and synergies available at a local level, due to the specific energy characteristics of that area. These solutions are often not considered at national level, due to the inherent heterogeneous nature of national level policy.

The majority of Ireland’s energy related policy and regulation is enacted at a national level, and stems from EU level directives and mandatory targets. This approach has been most successful in changing systems that can be influenced most easily at a national level, such as the electricity grid and the transport fuel supply blend. Other areas, like decarbonising heat and modal shift in transport, are very much linked to local level systems and structures that are not as easily influenced at national level, as they require buy-in and involvement of many stakeholders and individuals actions. Heat and transport are sectors Ireland has struggled to decarbonise, and these sectors have now become more important as the EU 2030 CO₂ emissions target is based on ‘non-ETS’ emissions – which are the emissions from all other sectors except electricity generation and large industry, who trade emissions on the EU carbon market.

Analysis of local and regional level low-carbon possibilities through energy planning practices, allows local actors to find solutions that contribute to national objectives based on what is best-suited to the area. These solutions can be implemented from a bottom-up approach, involving local stakeholders which also helps to overcome potential opposition to changes and new solutions. The local level analysis of solutions also helps to highlight the benefits of projects to local communities, such as local employment, cleaner air and lower energy costs.

The practice of energy planning is common in many other European regions and used to define energy or emission ‘zones’. For example, under the Act on Municipal Energy Planning, all Swedish municipalities are required to carry out and implement an Energy Plan¹. In 1979, the first Heat Supply Act was introduced in Denmark requiring municipalities to create heat energy plans for their areas, giving them the power to engage in local heat planning, decision-making on energy infrastructure and resource prioritisation². In Germany, all federal states have incorporated national level energy policy objectives into their planning roadmaps, and according to German law, renewables expansion and land use conflicts must be dealt with through municipal spatial planning practices. One of the three key principles of Scotland’s Energy Strategy is to create a *“smarter local energy model – enabling a smarter, more*

¹ Wretling et al. (2017), *Strategic municipal energy planning in Sweden – Examining current energy planning practice and its influence on comprehensive planning*, Energy Policy Volume 113, p.688-700

² State of Green (2016) *District Energy: Energy Efficiency for Urban Areas*, part of Think Denmark series of White Papers for a green transition

coordinated, approach to planning and meeting distinct local energy needs that will link with developments at the national scale”³.

All of these national level laws and strategies recognise the vital role and impact of local level energy planning on national level targets. The advantages of implementing effective local level energy plans are clear; the most sustainable cities in Europe, like Stockholm, Copenhagen and Hamburg, have implemented city wide energy plans, with clear pathways and long-term commitments to a low-carbon future. The implementation of these plans not only accelerates carbon reductions, but enhances the cities competitiveness, reputation, and quality of life. The ability to link energy analysis with local level spatial data allows unique opportunities, including the identification and development of Decarbonising Zones at various locations.

Existing examples of other energy planning tools include the following;

Codema has developed a guide to assist LAs [Developing CO₂ baselines - A step-by-step guide for your Local authority](#)¹. The guide is based on the various methodologies used in the generation of the Dublin region’s energy use and baseline emissions inventory. This baseline report aims to provide the information required for the local authorities to increase uptake of energy efficiency and renewable energy, through improved policies and raising awareness on climate change.

In 2013, SEAI published a [Methodology for Local Authority Renewable Energy Strategies \(LARES\)](#)² to provide guidance to local authorities engaging with spatial planning for renewable energy. This methodology aims to facilitate consistency of approach in the preparation of LARES, and to assist local authorities in developing robust, co-ordinated and sustainable strategies in accordance with national and European obligations. SEAI is currently reviewing the LARES guidance in collaboration with University College Dublin (UCD).

³ Scottish Energy Strategy (2017) <http://www.gov.scot/Topics/Business-Industry/Energy/energystrategy>

4. Case Studies – Europe and Ireland

The identification and development of Decarbonising Zones in Ireland can benefit from existing best practice in other jurisdictions and learning from continuing exemplar projects and initiatives in Ireland. The two European case studies of Stockholm Royal Seaport and Malmo Western Harbour, showcase the key role that local authorities (municipalities) can play in delivering low carbon and sustainable communities, and also showcase a multi-faceted approach to planning for climate action. A number of Irish case studies are presented, highlighting the importance of multi-stakeholder partnerships, technical interventions, policy integration and cultural innovation. This section concludes with a number of key learning outcomes, which should be further considered in the context of identifying and developing Decarbonising Zones in Ireland. Based on comments received on the first Draft of this paper some additional case studies have been included in Appendix A of this paper.

4.1 European

Stockholm Royal Seaport

Stockholm Royal Seaport is the largest urban development area in Sweden, with plans for at least 12,000 new homes and 35,000 workplaces by 2030. More than 2,700 new housing units



are now occupied and added to the existing residential area of 1,600 households. One of the main objectives in Stockholm Royal Seaport is to limit greenhouse gas (GHG) emissions. As part of this work, the City of Stockholm joined the C40 network and the Climate Positive

Development Program. The expected outcome of this collaboration is that the Royal Seaport project will become a climate positive urban district. Key sustainability targets for the project include the following:

- Target energy use: 55 kWh per square metre per year;
- Target emission rates: Carbon dioxide emissions below 1.5 tonne per person by 2020 and fossil fuel free by 2030; and
- Public transport: Metro, biogas and electro hybrid buses, and commuter boat.

The calculated reduction in GHG emissions for the present requirements is approximately 30,000 tonnes CO₂e/year, or 60% less than the City of Stockholm's conventional baseline planning. If more-stringent requirements are applied, a further reduction of some 10,000 tonnes CO₂e/year could be achieved (-80%).

Malmo Western Harbour

Västra Hamnen – the Western Harbour – is one of Malmö's largest residential construction projects. Once a declining post-industrial area, the Western Harbour has been transformed into an attractive and sustainable modern dockland development. By 2031, when the area is expected to be completed, it will be the home for 25,000 people and 25,000 workplaces.



Many buildings in Västra Hamnen have solar panels for both heat and power production. There are a total of over 3,000 m² of solar panels supplying heat to the district heating network. Some buildings also have small wind turbines on the roof, and the Bo01 area gets its power from a large wind turbine in Norra Hamnen. Nearly all dwellings in Western Harbour are heated by district heating, produced both from waste incineration and from solar energy and inter-seasonal storage in the bedrock.

The City of Malmö has a target of reducing car journeys by Malmö residents to 30%. Västra Hamnen's long-term objective is for walking, cycling and public transport to account for at least 75% of residents' journeys, and 70% of journeys to work by 2031.

Clean Air Zones (CAZ) and Low Emissions Zone (LEZ)



Clean Air Zones (CAZ) and Low Emissions Zones (LEZ) are relatively new measures designed to tackle increasing air pollution within cities. Action 81 of the Climate Action Plan 2019 relates to the establishment of low emission zones across Ireland. The EU Air Quality Directive 2008/50/EG has resulted in national regulations outlining acceptable levels of air pollution.

Air pollution caused by particulate matter and nitrogen dioxide has direct impacts on public health for those living and working within our cities. Numerous countries have been brought to the EU court of justice by the commission for failure to adhere to the limits and failure to take preventative measures. In Ireland, the Road Safety Authority defines a Low Emission Zone (LEZ) as areas which limit the use of vehicles with higher emissions or those that pollute the most. In some cases low emission zones prohibit such vehicles and in others they must pay a charge. To date, whilst poor air quality is an issue in many parts of the country particularly during the winter heating season, there are no designated Clean Air Zones or Low Emissions Zones in Ireland.

CAZ or LEZ zones have been implemented in relatively few European cities and countries, though many are planned in response to EU actions against countries breaching limits. Across the UK, five cities (Birmingham, Leeds, Nottingham, Derby and Southampton), have been mandated to introduce CAZs. Birmingham and Leeds were expected to introduce the

measures in 2020, however this timeline will likely be impacted as a result of the Covid-19 pandemic.

In Germany, a national standardised sticker system, which is currently applied to 52 LEZ and 86 cities, has resulted in reductions in PM₁₀. In Paris, a similar sticker system has been implemented and has resulted in a drop of 19% in NO_x concentrations, 13% of PM_{2.5} and 8% of PM₁₀.

European Commission - European Green Capital Network



At a city level, there are a number of extremely useful case studies in the recently published European Green Capital Network Renewable Energy Toolkit '[How Can your City Become 100% Renewable](#)'³.

Cities like Umea, Lisbon, Nuremberg and Ljubljana detail how measures like deep retrofitting, decarbonising public transport, public private partnerships, renewable energy technologies, energy cooperatives and community participation have helped to decarbonise their cities and make them more sustainable.

4.2 Ireland

Dundalk 2020

Dundalk was Ireland's first sustainable energy community under [SEAI's Sustainable Energy Communities \(SEC\) Programme](#). The vision of the Dundalk 2020 project was "to stimulate a national move towards sustainable energy practice through demonstration in an exemplar community". SEAI created a SEC blueprint based on the success of Dundalk 2020, and has since



created over two hundred and fifty additional SECs across Ireland. It is an action of the Climate Action Plan 2019 to increase the number of SECs to 1,500 by 2030.

The Dundalk 2020 Sustainable Energy Community⁴ was a 'living laboratory' which demonstrated how different energy technologies and techniques could be used in an intelligent and integrated way within the community, to bring together what were individual projects and individual plans. It involved local authorities, agencies, professional organisations, businesses and local community groups, with the aim of reducing energy use, achieving energy-efficiency targets and installing renewable energy where feasible. These initiatives were integrated, monitored and analysed at a local level. SEAI acted as the catalyst

in creating networks and action groups, and worked with the various parties to help achieve the stated goals.

[Dingle Creativity and Innovation Hub – Sustainable Energy Community](#)

The Dingle Hub has established a Dingle Sustainable Energy Community (SEC), the initial stage of which was the preparation of a Dingle Peninsula Energy Master Plan. This SEC is also being carried out as part of the [Dingle Peninsula 2030](#) initiative, an ambitious partnership of The Dingle Hub, MaREI Centre – Marine and Renewable Energy Ireland, ESB Networks and North East West Kerry Development (NEWKD).



The Energy Master Plan determines how much energy the SEA area is currently using, and then provide an energy efficiency roadmap for the Peninsula. Research to date has shown that the SEC area is currently using 315GWh of energy at a cost of €37m per annum and this equates to almost 90 ktonnes of CO₂.

The Dingle Sustainable Energy Community has also commissioned a feasibility study on the Development of Anaerobic Digestion in the Dingle Peninsula, with the aim to become a leader in the development of the rural bio-economy in Ireland. In Dingle, ESB Networks aim to work with the local community to play a key role in discovering what opportunities the future of energy can unlock for local residents.

Lisheen Mine and Lisheen Bog, Tipperary



A National Bio-Economy Campus is being developed at a former zinc and lead mine located between the villages of Moyne and Templetuohy, in Tipperary, 10 kilometers from Thurles. This National Campus is being led by the Irish Bio-economy Foundation with a range of stakeholders, including universities, private enterprise and is supported through Enterprise

Ireland. The campus will have a range of facilities, which will enable industry, entrepreneurs and researchers to scale technologies that convert Ireland's natural resources (including residues) to products of high value, for use in a wide variety of sectors including food ingredients, feed ingredients, pharmaceuticals, natural chemicals, biodegradable plastics and more.

This project demonstrates how a former large-scale brownfield industrial site in a rural area can be re-purposed through a partnership approach, to facilitate low carbon industries and by harnessing strategic land use assets (grid connection, transport nodes etc.). The Lisheen

Campus is set at the northern edge of Littleton Bog Complex, a bog of over 4,000 hectares under the ownership of Bord na Mona.

The Bog Complex, following the cessation of peat extraction, is now host to a number of wind farms and it is also subject to a comprehensive rehabilitation programme. Bord na Mona, Tipperary County Council, Coillte & the South Tipperary Development Company are working in partnership to look at the long-term strategic potential of these lands, including development of a tourism amenities etc. This cluster of activities in this area, demonstrates a number of key learnings in terms of partnerships, regeneration, use of public lands, importance of rural areas in terms of climate adaptation and mitigation.

Mountlucas Wind Farm



Mountlucas Wind Farm is located on 1,100 hectares of peatlands near Daingean, Co. Offaly, and was commissioned in 2014. There are twenty-eight 3MW Siemens 3.0DD -101 turbines in operation in Mountlucas. These turbines have the capacity to generate up to 84MW of electricity. Mountlucas has a 10km public walkway-cycleway open to the community for most of the year and ideal for nature exploration and bird watching.

Bord na Móna Powergen set up the Mountlucas Community Gain Scheme in 2014, thanks to the help and cooperation of the communities' local to Mountlucas Wind Farm. An annual fund of €1,000/MW per installed capacity per annum for the lifetime of the wind farm was established. The funding has benefited schools, sports clubs, general amenity, social initiatives, as well as community facilities. Since Mountlucas Wind Farm opened its doors to the public:

- Almost 150,000 visits have been made to the Wind Farm's 10km amenity facility. This is used for cycling, walking, and running by local community schools, sports and athletics clubs, and societies;
- Over 20,000 visits have been made by appointment to the Wind Farm for events and guided tours; and
- Completed the installation of the Learning Hub at Mountlucas Wind Farm, which contains a series of interactive hands-on activities based around wind energy and technology.

Belfast Power to X Project

Power to X (P2X) refers to energy conversion technologies that allow for the decoupling of power production plants from the electrical market, to use their product in a number of other sectors (hence the “X”), such as transport, heating and chemicals. The Belfast city centre proposal will produce hydrogen, oxygen, grid services and heat at scale using electrolysis, powered by renewable energy, and subsequently stores and distributes these gases for later use in heat, power, transport and industrial applications.



The project will include a range of infrastructural elements including renewable energy supply, electrolysis, hydrogen storage and distribution, hydrogen use in the transport sector, hydrogen use for CHP, hydrogen enrichment of natural gas and oxygen storage and distribution.

Work is also ongoing with Northern Ireland's Department for Economy (DfE), Department for Infrastructure (DfI), Strategic Investment Board (SIB), NI Water and their various consultants, to broadly define the attributes of a Belfast Decarbonisation Zone.

Portlaoise Low Carbon Town

[2040 and Beyond; A Vision for Portlaoise](#)

published by Laois County Council, presents a unique opportunity for Portlaoise to become Ireland's first Low Carbon Town Centre. The vision for Portlaoise will be achieved through reducing the impacts of car use on the public realm, improving overall air and environmental quality, encouraging more walking and cycling, and providing a better quality environment for leisure and social use.



This aim will be supported by removing large volumes of traffic from the Town Centre via delivery of the Portlaoise Southern Circular Road, aided by reconfiguration of traffic flows through the Town Centre, this will deliver a less trafficked and contested place. By directing traffic towards parking areas adjacent to the Town Centre and away from the pedestrian priority areas of James Fintan Lalor Avenue, Lyster Square, Market Square, Main Street and other key public areas, priority will be given to the pedestrian rather than the car.

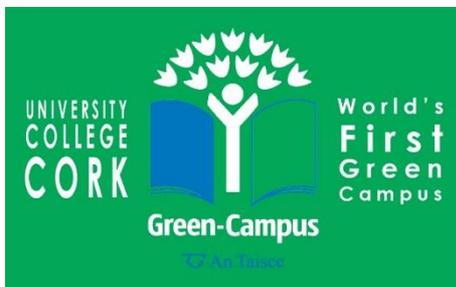
Making a genuine shift to a more pedestrian-friendly and low carbon place requires re-balancing the amount of car parking provided and replacing a significant area of what is currently tarmac with green, planted areas and trees. This will reduce the amount of carbon emitted in these key public spaces, delivering significant health benefits. Other

opportunities include the potential for renewable-powered public lighting and adopting more sustainable energy sources in County Hall, County Library and other public buildings.

An interim report on the Low Carbon town has been prepared outlining progress to date. An Implementation Group comprising representatives from the public sector and private sector including academia, energy generation, health service, retail, transport, etc, has been established to focus on the delivery and implementation of the Low Carbon town. A key component of the project comprises a carbon footprint assessment of Portlaoise town which is being prepared with consultancy support. Objectives of the study include the following:

- To provide a “Carbon Footprint” for the town of Portlaoise; this carbon footprint must be capable of being recalibrated in future years (under a separate contract) so as to provide a “progress achieved” measure.
- Provide a baseline of total and sectoral energy usage in Carbon tonnes by fuel and energy-related CO₂ emissions for the Study Area, including for Scope 1, 2 and 3 Emissions as per the GHG Protocol.
- Provide an estimate of the renewable energy potential for the Study Area
- Establish a register of opportunities for the reduction of energy demand and the transition to renewable energy supply.
- Identify organisations (including State companies and organisations) that may be able to provide assistance.

University College Cork Green Campus



In February 2020, UCC Green Campus celebrated its 10th anniversary. Instigated as a pilot Green Campus programme, with the help of An Taisce, the partnership would see the university become the first in the world to be awarded a Green Flag from the Foundation for Environmental Education. UCC renewed its Green Flag in 2013 and 2016, and in 2016 published its Sustainability Strategy. The programme is student-led, research-

informed and practice-focused and success to date demonstrates the strong commitment across all levels and divisions in the university. In 2018, UCC became the first university in Europe to be awarded a Gold Star from the Association for the Advancement of Sustainability in Higher Education.

With specific regard to Energy, Water and Climate Change, UCC is cognisant of the environmental and societal impacts of energy and water use, and is committed to reducing it impacts through continuous performance improvement. The University has a dedicated energy manager and in 2011 became the first third level institution worldwide to achieve the ISO 50001 standard for Energy Management Systems.

The UCC Saver Saves scheme is also the first of its kind in Ireland, devolving power and responsibility to building users to drive energy savings within their areas, and reinvest savings

in environmental projects. Thirteen of UCC's 130 buildings are responsible for using 87% of the university's €4 million energy budget.

Cork Lower Harbour Energy Group

Cork harbour is the second largest natural harbour in the world and is one of the most important industrial centres in Ireland. The harbour offers employment for large numbers of people and is a strategic port for shipping, while at the same time providing significant residential and leisure amenities for people.



CORK LOWER HARBOUR
ENERGY GROUP

Cork Lower Harbour Energy Group demonstrated how a collaborative venture between four well-known companies in the pharma/medical devices sector (DePuy Synthes, GSK, Janssen Biologics and Novartis) can have widespread benefits.

The group built three 3MW wind turbines, reducing their sites' electricity costs by 30% and used a community outreach team to assist with grant funding for sustainable initiatives. Through sharing resources, lessons learned and best practice, this collaborative effort has increased competitiveness, increased energy efficiency, benefitting the local environment and local communities. The wind turbines have a hub height of 100m and a rotor diameter of 100m giving an overall blade tip height of 150m.

4.3 Learning Outcomes

The range of case studies presented outline the holistic and multi-faceted opportunity that exists, in the identification and development of Decarbonising Zones in an Irish context. A number of key learning outcomes can be summarised as follows:

- **Local authorities can be the key drivers** to advance the implementation of Decarbonising Zones and can demonstrate and foster leadership across all sectors and engagement of local communities;
- The **private sector and other sectors** such as third level institutions, should be key partners in the development of Decarbonising Zones, with particular regard to testing advancing technologies, cultural innovation and change management;
- As cities and urban areas are hot spots of higher density development and energy demand, they can operate as effective '**living laboratories**', engaging a range of sectors to test climate innovation, disruptive technologies and smart technologies in practice;
- Consideration should be given to the **redevelopment of brownfield and former commercial / industrial sites** for re-use as a DZ in conjunction with other relevant policies and priorities;
- Existing **local level initiatives** such as **Sustainable Energy Communities (SEC)**, **Renewable Energy Communities (REC)**, **Energy Cooperatives** or the **Renewable Electrical Support Scheme (RESS)** can provide an enabling framework for community participation in renewable and low carbon energy projects;

- The further integration of **climate action policy and spatial planning** is required to enable holistic and replicable Decarbonising Zones to develop. Such policy areas include energy efficiency measures, renewable and low carbon electricity sources, district heating, energy storage, agricultural practices and rural land management, carbon sequestration measures etc;
- **Transport orientated development** should be a key component of Decarbonising Zones. Mobility hubs, easy access to walking and cycling, and the promotion of measures to facilitate electric vehicles (such as dedicated parking and charging points) should be prioritised in the areas. Such measures result in co-benefits such as improved air quality, improved health, lower noise levels, and integrates well with 'smart cities' initiatives;
- The identification and development of Decarbonising Zones could include the **exploration of climate adaptation and associated co-benefits**, in particular carbon sequestration including re-wetting and restoring peatland areas, biodiversity protection and enhancement, re-use of formally LA owned and managed landfills, the enhancement of carbon sinks, continued afforestation and tree planting measures etc;
- Decarbonising Zones can be **test beds and have synergies with other sustainability measures** such as promoting - the circular economy, waste management, the potential for sustainable employment such remote working opportunities, active and sustainable land management etc.; and
- To foster and replicate learnings from Decarbonising Zones, continuous efforts will be needed to **monitor and collect data** on building efficiency, energy usage and citizen behaviour.

5. Energy Masterplanning and Policy Development

Regional or county scale energy masterplanning is an emerging area in Ireland. Evidence-based forward planning is essential to ensure the required heat, transport or electrical infrastructure is in place to serve both new and existing developments with low-carbon, low-cost energy. Energy masterplanning also covers broader issues such as development density, which is key to improving efficiency and ensuring a high level of service in these areas. Evidence-based planning policy can also influence emissions through the consideration of embodied carbon in building materials, production of green spaces for carbon sequestration, rainwater harvesting for adaptation etc. This work has also enabled the development of [Positive Energy Districts](#) across Europe, whereby there is annual net zero energy import and net zero CO₂ emissions, working towards a surplus production of renewable energy, integrated in an urban and regional energy system. A case study from Limerick City and County Council on the CityXChange project is included in Section 9 of this paper.

It is also important to note that by integrating the three main energy sectors (heat, electricity and transport) into a single plan, better and more efficient solutions can be developed. Figure 1 indicates what a future integrated energy system might look like for Dublin. This more integrated and flexible system facilitates synergies between these three main sectors to be utilised through;

- DH networks utilising waste heat from industrial processes (waste-to-energy power plants, water treatment plants, data centres etc.),
- reducing curtailment of renewable electricity generation and balancing the electricity grid by storing electricity as heat in DH networks or as electricity in electric vehicles,
- using excess renewable power or waste to produce green gas for heavy industry and for transport of heavy goods etc.

Figure 1: Vision of an Integrated Energy System for the Dublin Region (Source: Codema)

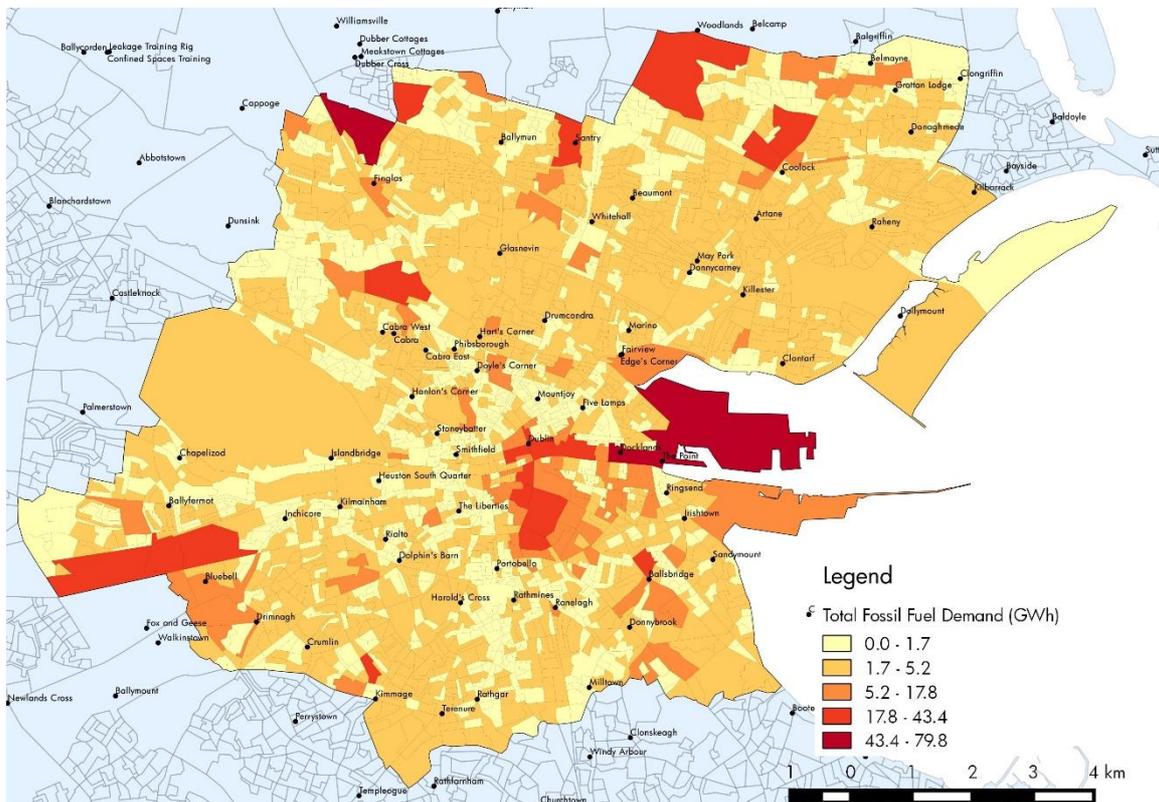


Dublin has been a leader in this field over the past ten years, with Codema – Dublin’s Energy Agency specialising in this area and developing projects on behalf of the Dublin local authorities, working closely with the Dublin Climate Action Regional Office. Both past and current projects which outline Dublin’s experience in energy masterplanning are summarised below, to highlight how this practice is applied in an Irish context at a local authority level.

❖ Spatial Energy Demand Analysis (SEDA)

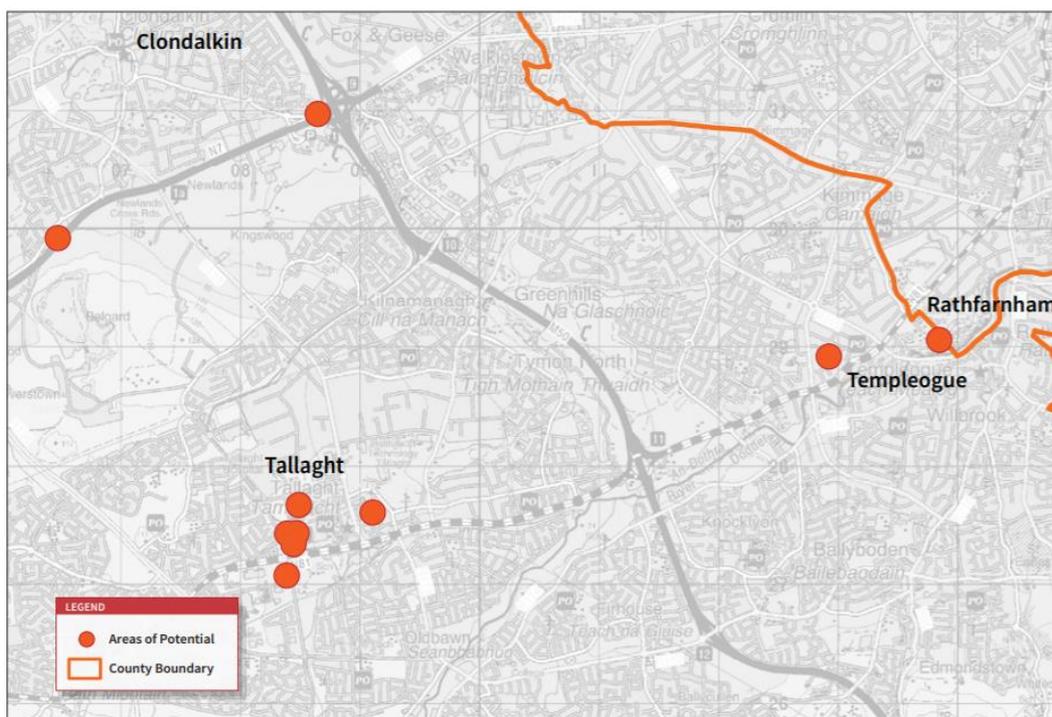
A SEDA involves analysing the energy demand within a given area and creates a spatial visualisation of this information, resulting in evidence-based energy maps, which can be used as a tool by planners and policy makers to create effective policies and actions to influence future energy use. The SEDA bridges the gap between spatial and energy planning methodologies at a local level in Ireland, and builds on the experience of other leading European countries. SEDAs have been developed by Codema on behalf of each of the four Dublin local authorities. Examples of some of the results from the SEDAs are maps highlighted areas with the lowest Building Energy Ratings (BERs), which could be areas highlighted as priority areas for energy efficiency retrofit schemes. Where these areas of low BERs overlapped with areas with high energy costs and high unemployment, allowed the identification of areas which could be at risk of energy poverty. The maps also showed areas with the highest concentration of fossil fuel usage and emissions – which were typically older developments with high use of oil or solid fossil fuels or areas with large industrial development.

Figure 2: Total Fossil Fuel Demand (GWh) per Small Area in Dublin City Local Authority area (Source: Codema)



South Dublin County Council (SDCC) Land Use Planning & Transportation Department were the first to pioneer using the SEDA analysis to inform the current South Dublin County Development Plan 2016-2022. The chapter on Energy set out the findings of the SEDA and the planning team developed appropriate planning objectives based on those findings. Policies included by SDCC which are of particular relevance to this paper, are those identifying 'Low Carbon District Heating Areas of Potential', as shown in Figure 2. The mapping is particularly important for locating areas of high heat demand density which is a crucial element in planning for District Heating (DH) schemes. This is an example of how local authorities have been able to introduce innovative energy policy based on spatial energy analysis evidence. As a direct result of the energy planning policy introduced by SDCC, the Tallaght District Heating System has been able to secure a waste heat supply.

Figure 3: Low Carbon District Heating Areas of Potential in South Dublin County



(Source: South Dublin County Council Development Plan 2016-2022)

❖ Transition Roadmap for Developing District Heating in South Dublin

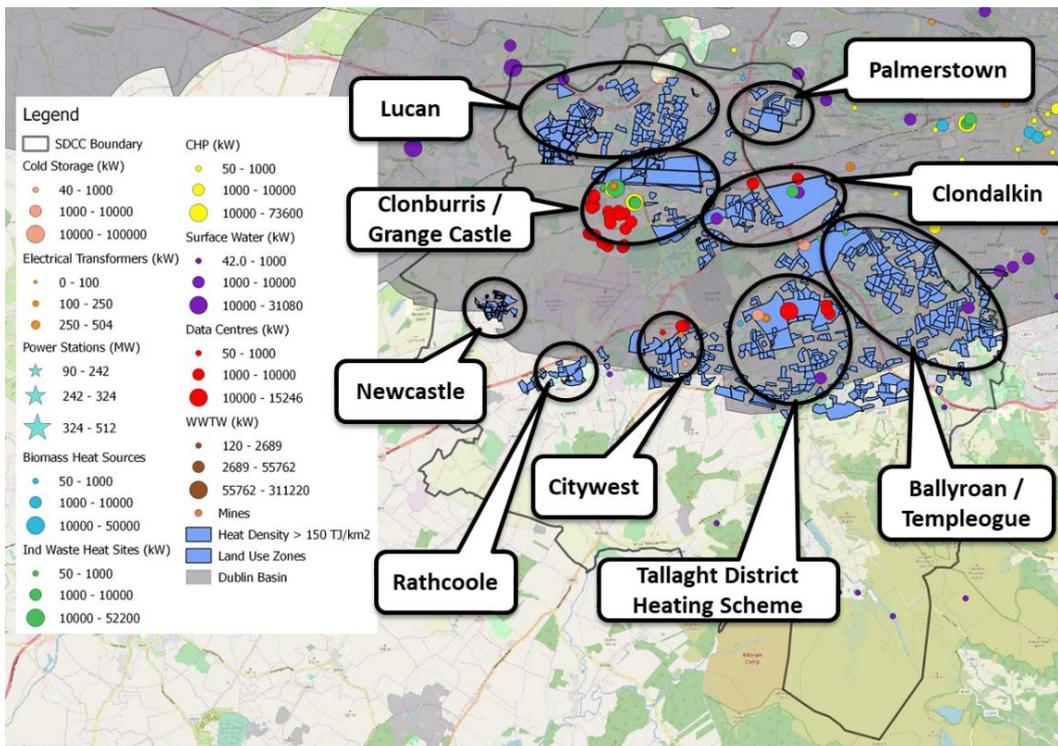
Heat and transport are energy sectors which are particularly hard to decarbonise, yet are becoming more and more important to decarbonise due to Ireland's new 2030 GHG targets. Urban areas have high concentrations of heat and transport use due to population density, and this concentration of energy use allows specific solutions to become more feasible, such as public transport, bike sharing schemes, and district heating.

The objective of the Transition Roadmap is to help decarbonise the heating sector in South Dublin County, through the adoption of 4th generation district heating principles, e.g. utilising local, low-carbon heat sources such as industrial waste heat, and help SDCC achieve its CO₂ and energy efficiency targets. The roadmap suggests step-by-step actions to be taken in the

short, medium and long-term to catalyse and promote the development of district heating (DH) networks in the County. Some of these actions and are set out below:

- Develop a heat source map which locates and quantifies the heat capacity of 18 different types of heat source;
- Identify opportunity areas with South Dublin using the combined heat source, heat demand and physical constraint maps; and
- Create a prioritised list of opportunity areas to create a pipeline of possible projects to undergo more in-depth feasibility analysis.

Figure 4: District Heating Sustainable Energy Zones Map – Including Heat Sources and High Heat Demand Zones (in blue)



(Source: Transition Roadmap for Developing District Heating in South Dublin)

The Transition Roadmap also provides high-level guidance in the following areas:

- How to effectively engage with stakeholders;
- Information that can be provided to developers regarding DH;
- Policy options that could be considered to support the roll-out of DH networks;
- Business model options – the key objective is to balance the local authorities appetite for risk against the necessary level of control;
- Procurement – with an emphasis on risk allocation and leveraging capacity in the private sector to deliver the required outcomes from the project; and
- Emphasising the importance of good quality techno-economic analysis in order to select the most viable projects to bring forward to development.

❖ Dublin Regional Energy Masterplan

The Dublin Region Energy Masterplan is an SEAI funded RD&D project due for completion in 2021. This Masterplan will provide an evidence-base to support and inform policy making. The masterplan will provide detailed, realistic, and costed pathways for Dublin to achieve its carbon emission reduction targets. These pathways to 2030 and 2050 will be based on detailed local-level, spatially-driven energy scenario modelling, and will identify system optimisations specific to the energy characteristics at a local level, which has not been carried out before for any county in Ireland. This innovative local-level planning methodology builds upon leading international class energy research in the area, and will be directly applied and demonstrated by the Dublin local authorities. Other public bodies and local authorities can then learn from the results and outcomes, and the Dublin Region Energy Masterplan will become the catalyst for similar energy planning practices in other regions across Ireland. The resulting masterplan will, importantly, also inform the energy sector, SME sector and general public as to the possible low-carbon future for Dublin and increase cooperation opportunities and general awareness.

The masterplan will address all energy sectors of electricity, heat and transport, and will be modelled from a spatial perspective as well as from a technology perspective. Two baseline scenarios will first be established; the current situation and the future 'business as usual' situation which will model effects of current national level policy implementation to 2030 and 2050. From these, Codema will then establish the gap-to-targets, and evaluate the possible local level low-carbon pathways to meet these targets, which will then be agreed upon by the Dublin local authorities and other local stakeholders (details of external collaboration are outlined under 'Tomorrow' project below). This information can be used to identify low-carbon technologies best suited to particular areas and could be used to create Decarbonising Zones on this basis. The low-carbon potential of Dublin will be based on its unique spatial energy characteristics, which are often overlooked when examining low-carbon pathways at a national level. This project aligns with the objectives outlined in national level energy and climate change policy.

❖ Tomorrow Project

Dublin is a partner in the EU H2020 TOMORROW (Towards Multi-stakeholders transition Roadmaps With citizens at the centre) project, which aims to use the Dublin Regional Energy Masterplan as an evidence base to inform and empower key stakeholders from across the Dublin region to lead the transition towards low-carbon, resilient and more liveable cities. Through engaging local authorities, citizens and other key stakeholders in the development of 2050 transition roadmap actions, these actions will draw on the knowledge and commitment of these key stakeholder groups, and help ensure their successful implementation. These actions can also be mapped and potentially used to inform the establishment of Decarbonising Zones.

TOMORROW brings together six pilot cities (Dublin, Brasov, Brest-Metropolis, Mouscron, Nis and Valencia), with Energy Cities as co-ordinator. Pilot cities such as Leuven, Nantes and Växjö have been identified as energy transition pioneers and will contribute to peer-to-peer and capacity building activities. TOMORROW officially began in September 2019 and will build on

key concepts of transition management that focus on the development process of transition roadmaps, i.e. establishing multi-stakeholder transition structures, which ensure mutual responsibility amongst all actors and ensure a large audience of beneficiaries. Subsequently, Dublin and the above-mentioned cities will be supported during the transition road mapping process, based on principles and experiences from transition management.

Together, TOMORROW's pilot cities aim at increasing the quality of life in a low-carbon future for EU citizens and beyond by contributing to the implementation of the Energy Union objectives. Therefore, they will develop 2050 transition roadmaps with their respective communities, but also engage and empower other local authorities in Europe to follow the journey to a Europe of TOMORROW.

The above energy planning projects are an example of how local authorities, using expertise and resources such as those found in their local energy agency, have been able to develop real projects and introduce innovative policies that can, and have, had a positive effect on the carbon emissions in their region. Although the examples from Dublin highlight urban specific solutions, the same methodologies and practices can be applied and adapted for more rural applications, including spatially-led analysis of sectoral emissions for example in agriculture. The findings of these projects and the methodologies used will be disseminated with the aim of being replicated across Ireland, and can be used to meet some of the various energy and emissions related planning policies within the national and regional planning context.

6. Thematic Areas and Data Analysis

It is important to note that statistics on energy at a local level are not readily available – for example, SEAI collect and analyse statistics at a national level only. There is no data available on actual metered energy use and emissions from each building – these are not shared by energy providers due to commercial sensitivity of data and customer GDPR. Energy and emissions data for local level must, therefore, be estimated based on best available data sets available at the time.

Codema has been working on methodologies for local level energy and emissions analysis for over ten years, and have in that time used best practice research learnings from across Europe to refine the analysis as more data becomes available. There are many publicly available data sources that can be utilised when analysing potential for Decarbonising Zones. Data from the Central Statistics Office (CSO), Valuation Office, SEAI, National Transport Authority (NTA), EPA and local authorities, amongst others, are combined to create a ‘digital twin’ of the area.

Local spatial and energy-related characteristics determine whether certain low-carbon solutions are technically feasible, such as density of development, grid availability, population density, available suitable space for new infrastructure, and available natural resources. There are also social and economic characteristics that can be overlaid with the technical data, to identify areas where policies will have most success or impact, such as areas at risk of energy poverty, areas with high traffic, areas of new development etc.

On the basis of the information presented and analysis undertaken in this paper, it is considered that Decarbonising Zones do not just refer to low-carbon and renewable energy generation (electricity and heat) technologies, but should also consider:

- **Transport** – transport should be developed in accordance with the CO₂ emissions hierarchy;
- **Buildings** – energy efficient buildings which limit energy demand;
- **Green spaces** – providing carbon sequestration, reduce heat island effects etc;
- **Energy planning and policy** – dwelling density to support more energy efficient use of infrastructure in the areas of energy, transport, water etc. Trial site for certain policy mechanisms. Maintaining accurate and detailed data sets (GIS etc.) which can be represented spatially is vital for energy planning; it is also important that a list of these data sets be maintained to allow planners and policy makers to understand the information that is at their disposal;
- **Complementary infrastructure** to facilitate high proportions of renewable generation (e.g. providing transmission, grid balancing, frequency control etc.);
- **Land value** – be it economic (contaminated land, cutaway bog land, land with low agricultural or development potential etc.) or environmental (such as SPAs, SACs, NHAs etc.);
- **Air quality** – the implementation of a range of measures, including low emissions methodology should overlap with air quality monitoring and improvement etc.; and

- **Gap to Target contribution** - The delivery and overall monitoring and upscaling / replication of these zones should include gap to target contributions on thematic climate targets at EU, national level etc. The role of DZs in contributing to the 2050 net zero carbon emission target, by exploring ambitious local standards and targets, should also be considered.
- **Biodiversity** – to include objectives from the National Biodiversity Action Plan⁵
- **Waste Management** - to include National Waste Action Plan for a Circular Economy⁶
- **Just Transition** - to include reference to outputs from the Just Transition Commission and First progress report⁷

7. Definition of Decarbonising Zones

Based on the information and analysis presented throughout this report, the definition of a Decarbonising Zone is proposed as follows:

A **Decarbonising Zone** is an area spatially identified by the local authority, in which a range of climate mitigation measures can co-exist to address local low carbon energy, greenhouse gas emissions and climate needs. The range of policies and projects developed are specific to the energy and climate characteristics of the spatial area covered by the DZ. This can include a range of technologies and measures addressing electricity, heat, transport, building energy efficiency, carbon sequestration, energy storage, grid frequency/inertia etc.

A Decarbonising Zone should also address the wider co-benefits of air quality, improved health, biodiversity, embodied carbon, agricultural practices, sustainable land management, lower noise levels, waste, water, circular economy etc., and should integrate with smart data and 'smart cities' initiatives (as relevant).

A Decarbonising Zone can also explore the co-benefits of climate adaptation, and examine a range of local measures such as climate proofing, afforestation, green and blue infrastructure, reducing heat island effects, citizen awareness and behavioural change.

The definition above proposes that the DZ area should be spatially identified by the local authority in the first instance. The area to be identified as a DZ will require a balanced and consensus based approach, and should be established using a robust evidence base and policy supported position. A local authority could identify and develop plans for a DZ having regard to the full range of its facilities, services and functions, in particular in the preparation and adoption of local authority plans and strategies including new Climate Action Plans, City / County Development Plans etc. The area selected to be a DZ could also have regard to the full portfolio of the local authority's own buildings, significant energy users, location of social housing etc. A local authority project can also be used to anchor a DZ and its development can involve diverse partnerships across sectors.

The results and learnings from the identification and development of a DZ in each local authority across the country, can inform replication and the development of further DZs, as required and as appropriate. Given the diverse range and profiles of all thirty-one local authorities in Ireland, there should be some flexibility in the mechanism used by each in the identification and development of a DZ, whilst achieving the aim and ambition of Action 165 of the national Climate Action Plan 2019 and any further guidance to issue from stakeholders, including the Department of Housing, Local Government and Heritage. The case studies highlighted in this paper demonstrate the variety of mechanisms and approaches that could be used in developing a DZ.

Figure 5 below outlines the steps that could be taken by a local authority in identifying and developing a DZ. Climate action should continue to be mainstreamed across local authority

facilities, services and functions, including the established of an inter-departmental and multi-disciplinary climate action team. Some local authorities already have such teams in place and some have teams established to address other related policy drivers such as energy use, active travel, public realm etc. This approach should be taken in the relation to the development of a DZ in each local authority.

A DZ could be implemented on the basis of an existing or proposed Sustainable Energy Community as supported by the SEAI. Detailed guidance is available on the steps that can be followed to implement an SEC⁸.

It is important that appropriate funding opportunities are identified in tandem with establishing DZ priorities. The CAROs and Codema have developed a related guide titled '[Funding Opportunities for Climate Action Research, Project Development and Capital Funding](#)'. Examples of potential funding sources for Decarbonising Zone projects include the Climate Action Fund, The European Regional Development Fund (ERDF), Urban Regional Development fund (URDF), The Sustainable Energy Authority of Ireland etc. Local Authority capital funding as well as private sector funding are also sources that should be considered.

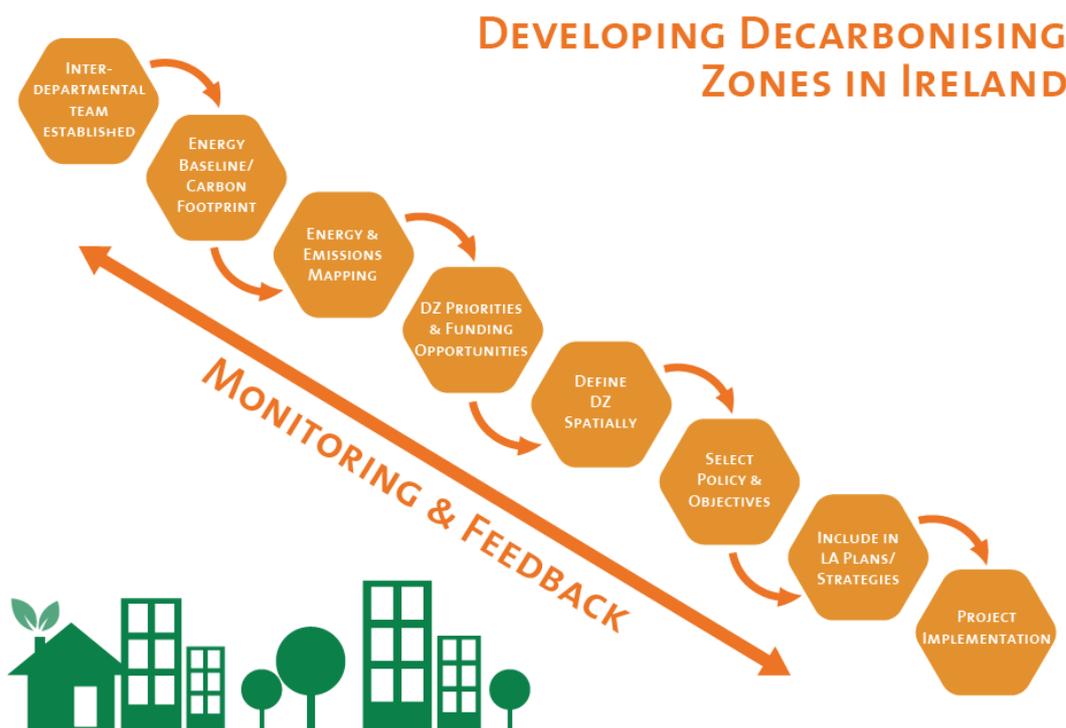


Figure 5: An approach to developing Decarbonising Zones in Ireland

Each of the steps involved are summarised below:

- **Inter-departmental team established:** In order to identify and develop a DZ, an Inter-departmental team needs to be established i.e. Climate team/energy team etc. with support from senior management and elected representatives. Where available support from Local Energy Agency would be advantageous.
- **Energy Baseline/Carbon Footprint** – a robust understanding of energy and climate data is needed to inform the spatial area and priorities for the DZ. SEAI's Monitoring and Reporting (M&R) energy data submitted to SEAI on an annual basis can inform the LAs own energy baseline. However, where the DZ contains a mix of public and private sector energy profiles, additional methodologies will be required (for example see Carbon Footprint for Portlaoise in Section 4). Also, as an example Codema have prepared baseline emission reports for the four Dublin LAs which informed their climate change actions plans published in 2019⁹. Also, Energy Master Plans as part of an Sustainable Energy Community could be considered.
- **Energy Emissions Mapping:**
Once energy baseline and carbon footprint has been undertaken, a spatial representation of emissions can be undertaken for example, high emission areas for priority reduction can be identified.
- **DZ Priorities and funding opportunities:**
Once mapping has been undertaken then agreement is needed on which emission sources should be priorities e.g. buildings, transport, renewable energy etc. An assessment of available funding opportunities should be undertaken in parallel with prioritisation of measures for the DZ.
- **Define DZ Spatially:** The DZ should be spatially defined for example land area, building area, population size etc. The DZ should also be represented on a map identifying it's various components for examples specific buildings, roads, commercial areas etc. The availability of GIS expertise would be advantageous to allow overlapping of different data sets for example land-use, transport buildings etc.
- **Select Policy and Objectives:** The plan or policy mechanisms through which the DZ will be implemented need to be specified. This may include new LA Climate Action Plans, City or County Development plans or other mechanism see section below on CDP. Specific targets for DZ measures could be agreed for example % reduction greenhouse gas emissions or improvement in energy efficiency within a certain timeframe. Other metrics and objectives could include, reduction in air pollution (e.g. PM₁₀ or NO_x reductions to a certain level) or reduction in traffic numbers or traffic emissions. Some targets and objective may need to be considered having regard to the proposed carbon emission budgets in the Draft Climate Action Bill 2020.
- **Include in LA plans/Strategies:** The measures and actions specified in the DZ need to be included in the relevant LA plans and strategies.
- **Project Implementation:** this step involves the commencement and implementation of measures across plans and strategies that define the DZ. Appropriate measurement, metrics and key performance indicators (KPIs) will need to be considered to measure the success of measures compared to the baseline. Where

appropriate, measures in the DZ should be linked to the M&R reporting from SEAI. Updated guidance on new 2030 and 2050 targets for the public sector is being prepared by the SEAI.

The Role of the City and County Development Plan

The **National Planning Framework** states that *'the planning process provides an established means through which to implement and integrate climate change objectives, including adaptation, at local level. Planning legislation also requires different levels of the planning process to address climate change'* (Government of Ireland, 2018).

City / County Development Plans provide one policy based mechanism for the identification and development of Decarbonising Zones; they have a statutory basis and are made by each local authority in Ireland. The sample policy wording below is an example of how a DZ could be included in the Development Plan. It's inclusion and the final wording should be aligned to the broader policy priorities of the particular local authority, including the rural / urban context of the Development Plan etc.

CLIMATE ACTION (CA) Policy X – Decarbonising Zone

It is the policy of the Council to identify and develop a Decarbonising Zone(s) at XXXXX (and XXXXX).

Objectives for CLIMATE ACTION (CA) Policy X.X

Objective 1: To promote and initiate the development of.....

Objective 2: To promote the generation and supply of low carbon and renewable energy alternatives

Objective 3: To ensure that all development proposals in the Decarbonising Zone....

Objective 4: To work in conjunction with

And so forth...

Other mechanisms for identification and developing DZs include; Strategic Development Zones (SDZs), Local Area Plans (LAPs), and other non-statutory separate plans (e.g. 2040 and beyond a vision for Portlaoise).

8. Conclusions & Recommendations

Conclusions

Local authorities have an essential role to play in leading a bottom-up approach, contributing to the national climate action agenda. This includes the identification and development of a range of Decarbonising Zones across all local authorities, with particular regard to the variety of local climate and energy needs in both urban and rural environments.

The variety of plans and strategies prepared by local authorities, aligned to the variety of services they provide, offer a unique platform for the development of Decarbonising Zones. This paper has outlined the importance of energy planning at the local scale, and as such, the development of new local authority Climate Action Plans, City / County Development Plans etc. can provide a robust platform for enabling a variety of climate mitigation, adaptation and others measures to be developed. The inclusion of Decarbonising Zones as part of local authority plans and strategies can also provide for 'living laboratories', facilitating overlap with other cross-cutting themes of local authority services and functions. Identified Decarbonisation zones also have significant potential to deliver balanced regional development and job creation in rural areas.

As the title suggests Decarbonising Zones should bolster local climate mitigation efforts. However, as outlined above, it is considered that the identification and development of Decarbonising Zones should fully explore synergies with a range of other sustainability issues, and should be aligned to enhance climate adaptation co-benefits. DZs could focus on the wider community benefits that can be gained from including 'place-making' and not focus solely on the implementation of energy and climate mitigation measures.

Projects and initiatives arising from Decarbonising Zones should also inform the wider 'gap-to-target' agenda, and can assist in localising the range of energy and climate targets included in the Climate Action Plan 2019. The roll-out of DZs also provide for a focused project area to be identified in seeking wider technical and project finance support. Shared learning, capacity building and replicability should be at the heart of DZs; this can provide for appropriate overlap between DZs in Ireland and across Europe, which is very much aligned to the EU's advancing climate action agenda to 2050.

Local authorities have been at the heart of the COVID-19 response across local communities, a key part of which includes continued engagement with a range of Government departments and other agencies. The continuing climate efforts and development of Decarbonising Zones will require ongoing and enhanced engagement between a range of sectors and stakeholders. As outlined in the Climate Action Plan 2019, Action 165 will be led by the Department of Housing, Local Government and Heritage, together with the Sustainable Energy Authority of Ireland and local authorities. Local energy agencies, third level institutions and the private sector also provide key support to local authorities and should be involved in the development of Decarbonising Zones.

In order for Decarbonising Zones to be identified and developed by all LAs, it is important that Action 65 of the National Climate Action Plan is inherently linked with Action 165. This would ensure that Decarbonising Zones are informed by a robust evidence base that can be applied across all LAs. In the absence of such a linkage, there is a risk of a piecemeal approach to the identification, and development of Decarbonising Zones, which is contrary to the ambition of the Climate Action Plan.

Recommendations

The recommendations below are based on the feedback of the stakeholders who made submissions on the first draft of this paper;

In order for a DZ methodology to be agreed and for DZs to be identified and developed across all LAs, further detailed consideration is required, including but not limited to;

Additional guidance needed

- As per **Action 15** of the Climate Action Plan 2019 - ***Develop a methodology and guidance for local authorities to estimate and evaluate the greenhouse gas emissions impact of strategies for future development as part of the City/County development plan process, to include arrangements for the publication and evaluation of such information and measures for monitoring and review***
- As per **Action 65** of the Climate Action Plan 2019- ***Publish updated statutory guidelines under Section 28 of the Planning Act on local authority development plans setting out the appropriate requirements for integration of climate-action considerations in the preparation of the plan***
- As per **Action 65** of the Climate Action Plan 2019- ***Develop the Project Ireland 2040 Implementation Report and Project Tracker to include progress in supporting climate-action objectives***
- As per the recommendation in the [Low Emission Vehicle Taskforce report](#) - ***Issue guidance to planning authorities to ensure a consistent and future proofed approach to the rollout of EV charging infrastructure through planning decisions.***

Other recommendations

- A number of submissions to this draft paper suggested that a **derogation or amendment to planning legislation** may be required to facilitate Decarbonising Zones.
- Consideration should also be given to **updating/amending Guidelines** on Development Plans/Local Area Plans could be amended and/or updated to include the identification of DZs
- It is recommended that there is guidance given on the **thresholds** of what constitutes a DZ – given that the purpose is to decarbonise, the minimum threshold could be based on a CO₂ emissions impact indicator, which would help tackle areas of high emissions as a priority. Such an indicator could be linked to the new **2030 and 2050 Carbon and energy efficiency targets Public Sector** (pending guidance from SEAI)
- It is recommended that DZs are defined through a collaborative cross-departmental approach and not just a single department decision and responsibility.

- Create supports for LAs to gather an evidence-base for local area energy & emissions planning (i.e. energy demand, low-carbon resources, carbon sinks and carbon emissions analysis)
- Some submissions to the draft paper stated that as Action 165 from National Climate Action Plan states that LA must designate ‘one’ Decarbonising Zone, that there may be an interpretation that areas outside of DZs don’t need to decarbonise or may feel left out and it is recommended that this is addressed.
- **Detailed examples and guidance** on how DZs can go from LA policy to implementation and achieve carbon savings should be provided.
- Given the limited remit of LAs in reducing emissions outside of infrastructure and buildings within their direct control, particularly in existing private sector buildings, it would be useful to give guidance on what types of policy instruments LAs could use and potential role of communities and businesses property tax, development contribution levies.
- The role **Public and citizen engagement** should not be underestimated in articulating and implementing the vision of a DZ and ensuring support from the wider community for measures within a DZ.

Appendix A

CityXchange – Limerick City and County Council

Limerick City and County Council is part of a European H2020 project which will develop solutions for buildings located in the Georgian Innovation District to generate clean energy, and to encourage the residents and businesses in city centre of Limerick to become champions of a carbon neutral future. Several buildings forming a Positive Energy Block, are becoming the first part of a new renewable energy management structure which will allow for the two-way flow of energy. The +CityxChange project is developing and deploying Positive Energy Blocks and Districts (PEB/PED) and scaling these out as part of the European Clean Energy Transition in cities.

The first **Positive Energy Block (PEB)** block in Limerick is a designated zone of 5 buildings that has the capacity to annually produce more energy than they consume. The block will benefit from carbon neutral energy resources located within the city, producing renewable energy dedicated for the PEB.

The PEB ethos includes the development of a framework and supporting tools to enable a common energy supply market supported by a connected community. This is leading to recommendations for new policy interventions, market regulation and business models that will deliver positive energy communities integrating e-Mobility as a Service.

Through the goal of becoming a low carbon city, there will be great challenges, and opportunities for citizens and businesses to benefit from the infrastructural changes in buildings, transport and energy services. A smart energy grid will enable local citizens to take more control over their energy use, to participate in how energy is generated, stored and distributed at a local level. The project is helping local businesses to reduce their carbon footprints. Electric Mobility as a Service, together with a range of low carbon transport initiatives are being piloted in Limerick to support its low carbon transition.





Templederry Community Power, Tipperary

In 1999 Templederry Community, with financial assistance from Tipperary Leader Company, led the development of a Community Development Plan. After holding regional meetings in Killeen, Latteragh, Curreeny and Templederry the plan was presented in May 2000. A specific goal within this plan was that of ‘Environmental Protection’ and Renewable Energy was emphasised as one mechanism for achieving this. A Limited company Templederry Energy Resources Ltd. (T.E.R Ltd) was formed specifically for the development of the wind project. All members of the community were given the opportunity to become shareholders.

In 2003 planning permission was granted to Templederry Windfarm Ltd, a wholly owned subsidiary of TER for 3 x 1.3 MW turbines. In November 2012, Templederry Wind Farm (4.6 MW installed capacity) in Tipperary became the first entirely community owned Wind Farm to connect to the National Grid and began selling renewable electricity for the benefit of its members. The group is now producing approximately 15GWh per annum of green electricity which would equate to a CO₂ displacement of approximately 40,000 tons since commissioning. An offshoot of the wind farm development was the establishment of a subsidiary ‘Renewable Energy’ supply company ‘Templederry Renewable Energy Supply Ltd.’ trading as Community Power (CP).



Templederry Renewable Energy Supply Ltd., trading as Community Power (CP) is Ireland's first Community Owned Licensed Supply Company trading on the Integrated Single Electricity Market (ISEM). CP purchases and sells electricity on behalf of its customers and is working to support and promote local energy markets within communities where citizens and communities actively participate in renewable energy generation and distribution projects, for

the benefit of their local community.

Community Power has secured grid connection, land lease, Planning Permission for 2 X 5MW solar farms and both these have been successful in the recent RESS 1* Auction. Both of these are currently being process through various financial modules/streams and are expected to

move to development stage in Q3/Q4 of 2021. There are several more projects being lined up for RESS 2, RESS 3 and future auctions.

Community Power secured funding through Interreg NWE to explore the concept of developing a Community Virtual Power Plant (cVPP). A key element of this Project was to identify Communities around Ireland and encourage active engagement and participation in the energy transition. The communities identified and approached to engage with the development of a cVPP in Ireland are also registered as Sustainable Energy Communities (SEC's). The selection of these Community Groups for participation in the cVPP took into account their specific knowledge, their added value, level of influence and interest in the project. These stakeholders were invited to specific information & discussion meeting.

These communities involved are;

- Aran Islands Energy Co-operative
- Energy Communities Tipperary Co-operative
- Claremorris and Western District Energy Co-operative
- Tait House Community Enterprise, Limerick (The Urban Co-op)

Wicklow Tidy Towns Sustainable Energy Community - SEAI



A Sustainable Energy Community (SEC) is an SEAI funded programme where groups of people come together to improve how energy is used for the benefit of their community. They look at how they can use energy in a sustainable, holistic way. Energy communities often look at projects in homes, transport and local business. They also look at community buildings such as schools, community centres, and sports facilities. An example of a recent SEC is Wicklow Tidy Towns Sustainable Energy Community (SEC) whom in early 2020 were awarded a grant of €15,000 by the Sustainable Energy Authority of Ireland (SEAI) to prepare an Energy Master Plan (EMP) for the town of Wicklow. Consultants have already been appointed to work on this EMP.

The EMP will identify the energy consumption in the town across all sectors – households, businesses, clubs, schools, community facilities, transport, etc – and will generate plans appropriate for Wicklow as to how energy consumption can be reduced over the next 5 years. By doing so, it is aimed that the community of Wicklow can make a reasonable contribution towards Ireland's Climate Change targets without compromising on their lifestyle.

The Steering Committee of the SEC says that “the Plan will be done in 2 phases – a LEARN phase and a PLAN phase. While there is an amount of official information available, the SEC will be looking for people to take part in energy audits and for people to pass on their experiences where they have carried out or plan energy improvements. Once the LEARN

phase is complete the PLAN will generate a list of potential energy projects together with costings, potential timescales and the benefits that can be gained”.

A critical element of the plan will be to try and ensure that those who spend a high amount of their income on energy are assisted to become less reliant on expensive fuels enabling a ‘just transition’. In certain cases, the full cost of adding insulation and other basic measures can be met through grants

Once COVID restrictions permit, the SEC aims to hold an Energy Awareness Day that will bring energy improvement contractors and potential customers together. Several electric cars will be there for demonstration and hopefully an electric bicycle. Talks will be given on simple measures that can save energy and it is expected that some freebies like LED bulbs will be available. Grants will be explained. The SEC hopes that if projects of a similar nature can be organised together then lower construction prices will be available. A Facebook page called [Wicklow Sustainable Energy Community](#) has been started up.

Wexford Technology Park¹⁰

Wexford County Council is now in the process of developing a UN Centre for Excellence in Energy Efficiency in Enniscorthy, in collaboration with Waterford and Wexford Education and Training Board (WWETB), which is already delivering Nearly Zero Energy Buildings (NZEB) standard training at its centre in Enniscorthy.

Wexford is also a co-founder of a collaborative network of International Centres of Excellence on High-Performance Buildings (ICE-HPB), organisations focused on supporting their local industry in the rapid development of next-generation buildings consistent with UN Framework Guidelines for energy efficiency standards in buildings. The centres provide education, training and other critical resources to regional building industry practitioners, whilst also sharing these resources globally through collaboration with other network participants. “We expect that the Wexford centre will be designated as the national centre for NZEB,” according to Tony Larkin, Director of Services with Wexford County Council.

At the moment, NZEB training is delivered in a bespoke training centre established by WWETB – in time, the Centre of Excellence headquarters will be located in office accommodation being built in the first phase of the new council-owned Enniscorthy Technology Park. “We’ll require funding under the Climate Action Fund for the new Centre of Excellence building with the centre moving [from its current ETB premises] to the Enniscorthy Technology Park in 2021,” he added. The new centre, which will stretch over 30,000 square feet, “will have a research and development arm and work with third level institutions around new practices and materials,” Larkin added.

The County Council is collaborating with the WWETB to train people in the techniques required to achieve these improvements in the building and heating of houses. Funding in setting up the Centre of Excellence will be provided by Wexford County Council initially with applications for funding from Climate Action Fund to follow.

“The third element will be the network, which is designed to spread best practice around the world. We’re delivering best practice at the moment in terms of NZEB social housing in Wexford. And we will share that know-how into the network so that countries can benefit from that learning. In Ireland, we’re at the cutting edge of this.”



**High Performance Building Alliance (HPBA):
A UN Centre of Excellence**

Enniscorthy, Co. Wexford, Ireland

Proposed roles:

- Supporting the UN Network of International Centres of Excellence (NICE)
- Advisory service to European Partners, Government Departments, Local Authorities, ETBs and other relevant stakeholders
- Training facility to provide up-skilling opportunities for those involved in the development of high performance buildings
- Research in collaboration with Irish and international third level education providers
- Awareness and dissemination of information
- Supporting the Continuous Professional Development of persons engaged in the Construction Industry

References:

- ¹ Codema (2017) Developing CO₂ baselines A step-by-step guide for your Local authority https://www.codema.ie/images/uploads/docs/South_Dublin_Baseline_Report.pdf
- ² SEAI (2013) Methodology for Local Authority Renewable Energy Strategies <https://www.seai.ie/publications/Methodology-for-Local-Authority-Renewable-Energy-Strategies.pdf>
- ³ European Commission 2020 - European Green Capital Network – How to Make your City become... 100% Renewable? <https://ec.europa.eu/environment/europeangreencapital/wp-content/uploads/2020/04/EGCN-toolkit-renewable.pdf>
- ⁴ Sustainable Energy Authority of Ireland <https://www.seai.ie/community-energy/sustainable-energy-communities/join-the-sustainable-ener/index.xml>
- ⁵ National Biodiversity Action Plan <https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf>
- ⁶ DECC (2020) Waste Action Plan for a Circular Economy <https://www.gov.ie/en/publication/4221c-waste-action-plan-for-a-circular-economy/>
- ⁷ Just Transition First Progress Report - April 2020 <https://www.gov.ie/en/publication/e0e7e-climate-action-plan-to-tackle-climate-breakdown-just-transition/>
- ⁸ Sustainable Energy Authority of Ireland (SEAI) <https://www.seai.ie/community-energy/sustainable-energy-communities/>
- ⁹ Codema SDCC Baseline Emission Report 2016 https://www.codema.ie/images/uploads/docs/South_Dublin_Baseline_Report.pdf⁹
- ¹⁰ Wexford to centre on curbing carbon emissions <https://oceanpublishing.ie/council-review/wp-content/uploads/sites/3/2020/04/Wexford-NZEB-Centre-3.pdf>