

Chapter 14 Climate Change, Energy and Renewable Resource

“To reduce the carbon footprint by integrating climate action into the planning system in support of national targets, support indigenous renewable sources in order to reduce dependence on fossil fuels and improve security of supply and the move to a competitive low carbon economy”.

14.1 Introduction

Climate Action includes the two approaches necessary to tackle climate change – Mitigation and Adaptation. This plan seeks to protect, mitigate and adapt to the impacts of climate change. The Council is committed to addressing climate change in a proactive manner through the careful consideration of growth and development.

Climate action is integrated into every chapter and strategy in the plan. Each chapter includes a sub-section outlining how the spatial strategy and policy objectives for each topic have been climate proofed and/or will contribute to mitigation and adaptation to climate change. To avoid duplication with other strategies and policy documents, including the Council’s Climate Adaptation Strategy, the plan addresses climate change only in so far as it relates to spatial planning. It is an underlying theme and it expressly influenced the formulation of a number of strategies in the plan including settlement, movement, economic development, renewable energy, flood risk management and coastal zone management.

This chapter addresses the effects of climate change including the increasing risks from flooding within County Galway.

This Chapter also outlines the importance of supporting the development of renewable energy resources and related infrastructure in the interests of delivering the renewable energy targets outlined in the Climate Action Plan 2019. To facilitate the sustainable growth of renewable energies a Local Authority Renewable Energy Strategy (LARES) has been prepared as part of the County Development Plan and is located within Appendix 1. The LARES outlines the potential for a range of renewable energy resources and developments and acknowledges the significant contribution that they can make to the county in terms of energy security, reduced reliance on traditional fossil fuels, enabling future energy exports, meeting assigned national targets and the transition to a low carbon economy.

14.2 Strategic Aims

The Council shall work with the appropriate stakeholders and agencies in order to achieve an integrated and sustainable approach to the development of the County. This will accord with the following strategic aims:

- To reduce the County’s CO₂ emissions by achieving national, regional and any local targets for achieving a low carbon economy by 2050; and increase energy efficiency in Local Authority activities through its development management functions;
- To promote the sustainable development of the County by ensuring that future development is considered and managed against the risk of flooding; To increase awareness of the potential

impacts of climate change to enable people to adapt and manage future extreme weather events such as flooding within the County;

- To reduce County Galway's dependency on imported fossil fuels and to provide alternative energy sources by harnessing the County's potential for renewable energy sources while strengthening the grid transmission networks;

14.3 Strategic Context

This chapter is prepared in the context of the following International, National and Regional Plans, Policies and Guidelines:

EU Commission European Green Deal 2019
2030 EU Climate and Energy Framework 2014
EU Renewable Energy Directive 2009/28/EU
A Roadmap for Moving to a Competitive Low Carbon Economy in 2050
Draft National Energy and Climate Plan (NECP) 2021 – 2030
National Policy Position on Climate Action and Low Carbon Development 2014
The Climate Action and Low Carbon Development Act 2015
Climate Action Plan 2019; To Tackle Climate Breakdown by Government of Ireland
Energy White Paper Ireland's Transition to a Low Carbon Energy Future 2015 -2030
Programme for Government - Our Shared Future 2020
Project Ireland 2040 National Planning Framework
National Development Plan 2018-2027
Investing in the Transition to a Low-Carbon and Climate Resilient Society 2018-2027.
Northern and Western Regional Spatial and Economic Strategy 2020-2032
National Adaptation Framework, Planning for a Climate Resilient Ireland, 2018
Environmental Protection Agency's 2019 guidance note 'Integrating Climatic Factors into the Strategic Environmental Assessment process in Ireland'
Galway County Council Climate Change Adaptation Strategy 2019 -2024
EU Directive on the Energy Performance of Buildings (2002/91/EC)
Ireland's Second Energy Efficiency Action Plan to 2020
Grid Development Strategy-Your Grid, Your Tomorrow, Eirgrid, 2017
Tomorrow's Energy Scenarios 2017 – Planning our Energy Future, Eirgrid
Eirgrid's Tomorrow's Energy Scenarios 2019 System Needs Assessment
Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure
Offshore Renewable Energy Action Plan (OREPD)
Draft National Marine Planning Framework Baseline Report 2018
Harnessing Our Ocean Wealth – An Integrated Marine Plan for Ireland, 2012.
Wind Farm Development Guidelines for Planning Authorities, 2006
Draft Wind Energy Guidelines 2019
The Planning System and Flood Risk Management Guidelines for Planning Authorities, 2009
'Flood Risk Management. Climate Change Sectoral Adaptation Plan. Prepared under the National Adaptation Framework', OPW. September 2019.
EU Floods Directive 2007/60/EC

14.3.1 National Policy Framework

The National Planning Framework (NPF) sets out the role of the planning system in facilitating mitigation of, and adaptation to, climate change via National Strategic Outcome NSO No. 8 which is

dedicated to achieving transition to a low carbon and climate resilient society and NSO 9 which proposes sustainable management of Water, Waste and other Environmental Resources. The Council will demonstrate compliance with further National Policy Objectives (NPOs) within the theme of climate change and how adaptation and mitigation measures are required in areas such as NPO 3(a), Compact Growth, NPO 21 competitiveness of rural areas and NPO 54 reduction of carbon footprint. In relation to water resource management and flooding NPO 57 aims to enhance water quality and resource management.

The NPF includes a number of NPOs and priorities for policy objectives in the energy and renewable energy sector such as NPO 42, NPO47, NPO 54, NPO 55, NPO 56 . The aim of National Strategic Outcome 8 is to ‘Transition to a Low Carbon and Climate Resilient Society’ and sets out the new requirements and policy emphasis relevant to Energy.

14.3.2 Regional Spatial and Economic Strategy

The Regional Spatial and Economic Strategy (RSES) identifies a number of key Regional Strategic Objectives RPO’s related to Climate Change, Energy/Renewable energy/Transmission Network and Flooding including the following which are incorporated into the relevant chapters/strategies in the Development Plan: Climate Action RPO 5.1, RPO 6.51, RPO 9.4, Flooding RPO 3.10, RPO 3.11, Key Energy/Renewable Energy/Transmission Network: RPO 4.16, RPO 4.18, RPO 4.19, RPO 4.17, RPO 8.1, RPO 8.2 RPO 8.3 RPO 8.4.

14.3.3 Draft National Energy and Climate Plan (NECP) 2021 – 2030

Ireland's first Draft National Energy and Climate Plan (NECP) 2021-2030 was submitted to the European Commission in December 2018. This first draft of the NECP takes into account energy and climate policies developed to date. The draft NECP is the first step in the process of putting together our final National Energy and Climate Plan and further iterations of the plan will take into account additional policies and measures committed to under *the Programme for Government, Our Shared Future* and the all-of-Government *Climate Action Plan 2019*.

14.3.4 Climate Action Plan 2019 to Tackle Climate Breakdown

The Government’s Climate Action Plan 2019 reflects the central priority that climate change will have in Ireland’s political and administrative systems. The Climate Action Plan contains 183 actions, together with hundreds of sub-actions and measures which will be implemented by 13 Government Departments and 40 agencies under the remit of those Departments. It 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. Every relevant sector is addressed: electricity, enterprise, housing, heating, transport, agriculture, waste, the public sector and charts a course towards ambitious decarbonisation targets. While this framework of goals and performance monitoring is crucial, it will be equally important that every public body adopts a Mandate for Climate Action and key measures which will help create a framework across the entire public sector outlined in the CAP.

The Government’s Climate Action Plan (2019) is of direct relevance to the County Development Plan. Actions relating to local authorities include signing up to the Climate Action Charter, the development of the Electric Vehicle (EV) charging network, the preparation of local adaptation strategies and in alignment with the NPF the new CDP must deliver compact, connected, sustainable growth that must meet our needs for power, heat, travel, land use and other resources in a greatly more efficient and sustainable way.

14.3.5 County Galway Climate Change Adaptation Strategy 2019 - 2024

As part of the National Climate Change Action Plan 2019, County Galway produced and adopted its first Climate Adaptation Strategy in August 2019.

The strategy is developed around 4 key themes/goals; 1. Critical Buildings & Infrastructure 2. Natural and Cultural Heritage 3. Water Resources & Flood Risk Management 4. Community Services, most of which have relevance for the Council's planning functions and which aim to increase resilience to climate change by planning and implementing appropriate adaptation measures. There are four high-level goals which are high-level long-term statements, while the Objectives define strategies or implementation steps to attain the identified Goals. The Targeted Specific Objectives outlined in County Galway's Climate Adaptation Strategy are common across all four Goals and set out the steps to implementing the Strategy. Each of these themes/goals is underpinned by a set of objectives and actions which have been incorporated, where relevant, into the County Development Plan.

Climate change adaptation considerations are mainstreamed and integrated successfully into all functions and activities of Galway County Council ensuring operational protocols, procedures and policies implement an appropriate response in addressing the diversity of impacts associated with climate change. This plan actively supports the implementation of these identified objectives and the associated actions identified in the *Galway County Council Climate Adaptation Strategy*.

14.4 Climate Change Adaptation and Mitigation

Progressing climate action is a priority for this plan which will be done through a Climate Strategy which incorporates national and regional policy through an approach which includes mitigation and adaptation. The two components of climate action are critical in order to build resilience and adapt to the changing climate in a planned and structured way.

The impacts and risks of climate change can be reduced and managed through mitigation and adaptation actions. The aim of climate adaptation is to reduce the vulnerability of our environment, society and economy and increase resilience.

The policy objectives in this plan seek to mitigate and reduce the severity of future climate change and to manage the risks and impacts associated with existing or anticipated impacts of climate change. The policy objectives have had regard to the Climate Action Plan 2019 which sets out an ambitious course of action over the coming years to address the nature and scale of the challenge. The Plan examines the key sectors including electricity, transport, built environment, industry and agriculture as outlined in the CAP and the ambitious decarbonisation targets and proposed measures that chart County Galway's course in transitioning to a low carbon, climate resilient and environmentally sustainable economy by 2050.

Galway County Council is committed to making the transition to becoming a low carbon and climate resilient County, promoting the economic, social and environmental benefits of low carbon development, with an emphasis on the reduction in energy demand and greenhouse gas emissions. This includes a combination of effective mitigation and adaptation responses to climate change as can be seen in the tables 14.1 and 14.2 below.

Topic	Climate Mitigation Measures, including
Buildings	<ul style="list-style-type: none"> • Support energy-efficient building design • Promote building of energy efficient smaller homes/higher density homes appropriate to demographics and with greatest infrastructure available • Promote renewable and low carbon energy • Create or enhance carbon sinks
Transport	<ul style="list-style-type: none"> • Support construction of green routes/cycleways/pedestrian routes • Support car-free developments • Strengthen public transport linkages and encourage their use • Support localisation of jobs/shops/services to minimise the need for most common travel patterns • Support electric vehicle charging points and electrification of the Council fleet
Energy production	<ul style="list-style-type: none"> • Promote energy-efficient building design • Promote links between developments and renewable energy resources, for instance by sourcing energy on-site renewably or from low-carbon fuel sources
Minerals/Waste	<ul style="list-style-type: none"> • Locate developments strategically (e.g. waste materials) to minimise the need to travel, subject to health aspects/business needs
Agriculture, Land Management and Forestry	<ul style="list-style-type: none"> • Establish new community woodlands in urban/urban fringe areas • Support production of sustainable biofuels (farm contributions to localised energy supplies – biofuels/wind energy production) • Implement higher level plan recommendations/objectives/policies

Table 14.1 Climate Mitigation Measures

Topic	Climate Adaptation Measures, including
Buildings	<ul style="list-style-type: none"> • Take into account effects of building density and mixed developments on energy consumption when considering applications for development • Promote the repair and reuse of existing buildings particularly of underused upper floors in urban areas • Support green roofs and good ventilation • Support enhancement of flood resilience of buildings, e.g. elevated work surfaces and storage facilities, raised sockets and electrical infrastructure, enhanced flood boards • Assess existing Council infrastructure for “fitness for purpose” under new climatic conditions • Promote the use of permeable surfaces to decrease run-off rates • Support grey-water recycling schemes that seek to decrease abstraction of potable surface water resources, thus reducing water stress during periods of low rainfall • Support efforts to maximise water conservation • Plant drought-resistant plants/ trees in public amenity areas to provide shade and increase green infrastructure linkages
Agriculture, Land Management and Forestry	<ul style="list-style-type: none"> • Support diversification of the rural economy to promote crop viability options etc. • Encourage afforestation (where environmentally appropriate) to enhance interception and infiltration of precipitation within river basin catchments • Support restoration of peat bogs when turf cutting has ceased • Take into account relevant recommendations from the National Peatlands Strategy when implementing the Plan

Topic	Climate Adaptation Measures, including
Water management	<ul style="list-style-type: none"> • Support increased resilience to flooding through Sustainable Drainage System • Support grey-water recycling schemes that seek to decrease abstraction of potable surface water resources, thus reducing water stress during periods of low rainfall • Ensure adequate/appropriate water supply and drainage provision when considering applications for development • Require Water Conservation Strategies as relevant
Infrastructure, including flood defences	<ul style="list-style-type: none"> • Ensure that existing Council critical infrastructure and services (particularly emergency services) are resilient to new climatic conditions • Ensure that applications for new critical infrastructure demonstrate resilience to new climatic conditions
Wildlife and biodiversity	<ul style="list-style-type: none"> • Support the creation/enhancement of ecological linkages and buffer zones from development • Support the creation/protection of ecologically resilient and varied landscapes to help support a wide range of species
Economy and tourism	<ul style="list-style-type: none"> • Support opportunities for increased tourism as a result of warmer summers, within the limits of existing infrastructure • Promote Wetlands Ecosystems Services in developments where relevant and appropriate
Human Health, Risk and Insurance	<ul style="list-style-type: none"> • Provide green infrastructure to provide shade in urban areas • Support the provision of building methods and materials to reduce the impacts of heat stress • Support appropriate maintenance of surface water drainage infrastructure to avoid flood risk

Table 14.2 Climate Adaptation Measures

14.5 Integrating Climate Action Into the Plan

The overall vision and strategic aims of the county development plan have been influenced by climate action, a necessary measure that is supported by the legislative and policy framework relating to climate action outlined in section 14.3 above. This chapter seeks to address issues of climate change, energy supply, flooding and sustainability through the adoption and implementation of national policy at a local level.

The climate change mitigation pathways presented in Chapter 4 of the Climate Action Plan 2019 entail a coherent set of abatement measures across the five sectors that contribute most to our greenhouse gas emissions: Agriculture, Transport, Electricity, Built Environment, and Industry/Enterprise. This section of plan identifies each of the policy objectives, which contribute towards achieving each of the targets set for the relevant sectors.

Climate action policy objectives including mitigation and adaption policy objectives are outlined in this chapter and are included in each chapter. Table 14.3 demonstrates how climate action provisions have been incorporated into the County Development Plan with Mitigation and Adaptation Policy Objectives included in each chapter.

Climate Action Plan, 2019 - Sectoral roadmap	Mitigation/Adaptation Policy Objectives - GCDP
<p>A detailed sectoral roadmap has been set out in the Climate Action Plan, 2019 which is designed to deliver a cumulative reduction in emissions, over the period 2021 to 2030, of 58.4 MtCO₂eq. outside the ETS, 17 MtCO₂eq. within the ETS, and 26.8 MtCO₂eq. from land use. The following is a brief account of the main sectoral targets for the relevant sectors;</p> <p>Electricity</p> <ul style="list-style-type: none"> • Reduce CO₂ eq. emissions from the sector. • Increase reliance on renewables from 30% to 70% adding 12GW of renewable energy capacity from onshore wind, offshore renewable energy, grid scale solar energy (with peat and coal plants closing). • Streamline the consent system, the connection arrangements, and the funding supports for the new technologies on and offshore. • Support scheme for micro-generation with a price for selling power to the grid. • Opportunity for community participation in renewable generation and community gain. <p>Buildings</p> <ul style="list-style-type: none"> • Reduce fossil fuel use, given the current heavy reliance on gas, oil, coal and peat in the sector. • Reduce CO₂ eq. emissions from the sector. • Introduce stricter requirements for new buildings and substantial refurbishments of existing homes to upgrade to B2 Building Energy Rating (BER). • Group together home retrofits to be funded and delivered. • Promote the install of heat pumps in existing and new buildings. • Implement a roadmap for delivering District Heating potential. • Increase the number of Sustainable Energy Communities. <p>Transport</p> <ul style="list-style-type: none"> • Reduce CO₂ eq. emissions from the sector. • Accelerate the take up of EV cars and vans so that we reach 100% of all new cars and vans being EVs by 2030. • Make growth less transport intensive through better planning, remote and home-working and modal shift to public transport. <p>Agriculture</p> <ul style="list-style-type: none"> • Deliver greenhouse gas abatement through adoption of improvements in farming practice in line with recommendations from Teagasc. • Deliver expansion of forestry planting and soil management to ensure carbon abatement from land-use. • Support diversification within Agriculture and land use to develop sustainable and circular value chains and business models for lower carbon intensity farming. <p>Enterprise and Services</p> <ul style="list-style-type: none"> • Reduce Ireland's ETS industry emissions. • Embed energy efficiency, replacement of fossil fuels, careful management of materials and waste, and carbon abatement across all enterprises and public service bodies • Mobilise clusters regionally and sectorally to become centres of excellence for the adoption of low carbon technologies. • Plan for the delivery of quality employment and enterprise in the new areas of opportunity being opened up. <p>Waste and the Circular Economy</p> <ul style="list-style-type: none"> • Develop reduction strategies for plastics, food waste and resource use. • Increase the level and the quality of recycling. • Eliminate non-recyclable plastic. • Reduce the reliance on landfill with sharp reductions in plastics and compostables entering landfill. <p>Public Sector</p> <ul style="list-style-type: none"> • Reduce CO₂ eq. from the sector. • Improve the energy efficiency of public sector buildings. 	<p>Volume 1: Written Statement Chapter 2 Core Strategy, Settlement Strategy & Housing Strategy CS1-5, MM1, SS1-SS8, HS1-HS4, SH4</p> <p>Chapter 3 Placemaking, Regeneration & Urban Living PM1-6, PM7, CGR1-4, CGR6-9, CGR11, CGR12, UL1-3, UL5.</p> <p>Chapter 4 Rural Living & Development RCI-3, RC5-7, RH6, RH7, RD2, RD4, AD1, AD3, H2,F2-F5</p> <p>Chapter 5 Economic Development & Retail Development ES1, EL1, EL4, SC03, SC04, SC08, RD1, CS3, CS12.</p> <p>Chapter 6 Transport & Movement GCT51-4, ILUTP1, ILUTP2, WC1-5, GW1, EV1, PT1, PT2, PT5-7, NNR6, NNR8, PH3.</p> <p>Chapter 7 Infrastructure, Utilities & Environmental Protection WS1-4, WS6, WS7, CWS1-3, WW5, WW7, WW8, WM1, WM2, WM7, WM9, EG2, EG5, ICT1, ICT2, ICT9, AQ1-AQ3,</p> <p>Chapter 8 Tourism and Landscape VEPP1, TI3, GBW1, GBW2, HT3, LCM1.</p> <p>Chapter 9 Marine and Coastal Management NMPF1, MCD1, MCE1, SMT1, AF1, SF2, MCT2, RE1, MCH2, MCC1-4.</p> <p>Chapter 10 Natural Heritage, Biodiversity & Green/Blue Infrastructure NHB 1-6, WR1,WR2,WTWF1, P1-P3, P01,TWHS1-3, PG1-3, IW1,P01-3.</p> <p>Chapter 11 Community Development & Social Infrastructure SC1, SC1, MU1, CF1, CF3, EDU1, EDU5, EDU7, H1-H3, PA1, SPR2-4, SPR6, CWH1, PWB1-PWB3.</p> <p>Chapter 12 Architecture, Archaeology & Cultural Heritage Ah1-AH6, AH8,ARC1,CA2.</p> <p>Chapter 13 The Galway Gaeltacht and Islands GA3, IS2, GIED2, GIED5, GICT4.</p> <p>Chapter 14 Climate Change, Energy & Renewable Resource CC1-CC10, FL1-FL15, RE1-RE7.</p> <p>Volume 2-Settlement Plan Metropolitan Area Strategic Plan (MASP) GCMA 1 – 6, GCMA 12- 21. Small Growth Towns SGT 1-4, SGT 8, SGT 15, SGT 16-18 Small Growth Villages SGV1-4, SGV 8, SGV 15-18</p>

Table 14.3 Climate Action Policy Objectives incorporated into the County Development Plan.

Policy Objectives Climate Change

CC 1 Climate Change

Support and facilitate the implementation of European, national and regional objectives for climate adaptation and mitigation taking into account other provisions of the Plan (including those relating to land use planning, energy, sustainable mobility, flood risk management and drainage) and having regard to the Climate mitigation and adaptation measures.

CC 2 Transition to a low carbon, climate-resilient society

It is the Council's policy objective to support the transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050, by way of reducing greenhouse gases, increasing renewable energy, and improving energy efficiency.

CC 3 County Galway Climate Adaptation Strategy 2019-2024

To implement the County Galway Climate Adaptation Strategy 2019-2024 as appropriate

CC 4 Local Authority Climate Action Plan

Support the preparation of a Climate Action Plan for County Galway.

CC 5 Climate Adaptation and Mitigation

To promote, support and direct effective climate action policies and objectives that seek to improve climate outcomes across County Galway through the encouragement and integration of appropriate mitigation and adaptation considerations and measures into all development and decision-making processes.

CC 6 Local Authority Renewable Energy Strategy (LARES)

To support the implementation of the Renewable Energy Strategy contained in Appendix 1 of the Galway County Development Plan to facilitate the transition to a low carbon county.

CC 7 Climate Action Fund

Support the delivery of sustainable development projects under the European Green Deal and utilise the Climate Action Fund/ Just Transition Fund established under the National Development Plan to encourage public and private climate mitigation and adaptation projects in line with criteria set out by the Fund at that time.

CC 8 Climate Action and Development Location

To implement, through the plan and future local areas plans, policies that support and encourage sustainable compact growth and settlement patterns, integrate land use and transportation, and maximise opportunities through development location, form, layout and design to secure climate resilience and reduce carbon dioxide and greenhouse emissions.

CC 9 Mainstreaming Climate Change Adaptation

Galway County Council shall incorporate climate change adaptation into land use planning, building layouts, energy, transport, natural resource management, forestry, agriculture and marine waters.

CC 10 Green Infrastructure

Galway County Council shall promote the benefit of open spaces and implement the integration of green infrastructure/networks (e.g. interconnected network of green spaces (including aquatic ecosystems) and other physical features on land) into new development and regeneration proposals in order to mitigate and adapt to climate change.

14.6 Flooding

Flooding is an environmental phenomenon that can pose a risk to human health as well as causing economic and social effects. It is expected that climate change will impact on flood risk in Galway into the future from an increase in the number of heavy rainfall days per year leading to an increase in frequency, pattern and severity of fluvial (river) and pluvial (surface water drainage) flooding. Sea level rise will exacerbate coastal flooding. Accordingly, it is more important than ever to take account of flood risk in spatial planning. This section sets out the Council's approach to address the effects of climate change including the risks from flooding within County Galway.

Flooding cannot be completely eliminated, but its impacts can be minimised with proactive and careful management of catchments and identified flood risk areas and by ensuring that development does not individually or cumulatively give rise to new flood risks. In order to minimise the impact of increased future flood risk, there are various steps that Local Authorities can take. These include flood protection works, stormwater attenuation and more significantly, avoidance of development in floodplains, except in very limited circumstances.

14.6.1 CFRAM Programme

The Office of Public Works (OPW) is the lead organisation for flood risk management in Ireland. The OPW is implementing the national Catchment and Flood Risk Assessment and Management (CFRAM) programme which commenced in 2011 and it is intended to deliver on the main elements of the National Flood Policy 2004 and on the requirements of the EU Floods Directive [2007/60/EC], in co-operation with local authorities and other public bodies. CFRAM studies are being undertaken for each of the six river basin districts in Ireland. County Galway is located within both the Shannon International and the Western River Basin Districts. Galway County Council will be required to take account of the CFRAMs Flood Risk Management Plans.

The OPW produced and has made available various historical and predictive flood risk indicator mapping, including that relating to fluvial, coastal, pluvial and groundwater flooding, for the entire country. The Stage 2 Strategic Flood Risk Assessment for County Galway accompanies this plan and has been informed by this mapping.

The national guidelines 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' (2009) introduced mechanisms for the incorporation of flood risk identification, assessment and management into the planning process. Planning Authorities are required to have regard to the guidelines when carrying out their functions under the Planning Acts.

The core objectives of the Flood Risk Management Guidelines are to:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood elsewhere, including that which may arise from surface water run-off;
- Ensure effective management of residual risk for development permitted in floodplains;
- Avoid unnecessary restrictions of national, regional or local economic and social growth;
- Improve the understanding of flood risk among relevant stakeholders; and

- Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management. The key principles set out in the Flood Risk Management Guidelines are to:
- Avoid flood risk where possible;
- Substitute less vulnerable uses when avoidance is not possible;
- Mitigate and manage the risk where avoidance and substitution are not possible.

The guidelines follow the principle that development should not be permitted in flood risk areas, particularly flood plains, except where there are no alternative and appropriate sites available in lower risk areas that are consistent with the objectives of proper planning and sustainable development.

14.6.2 The County Development Plan and Flood Risk Considerations

The County Development Plan is required to undergo an appropriate level of Strategic Flood Risk Assessment (SFRA) and in this regard a Stage 2 Strategic Flood Risk Assessment is being carried out as part of the plan preparation process. The findings of this assessment are available as a support document to the plan. The SFRA process is also integrated into the Strategic Environmental Assessment process which is also being undertaken alongside the preparation of the County Development Plan. Lower tier plans, such as the Local Area Plans, will also be subjected to their own SFRA requirements.

The SFRA has been undertaken and prepared in accordance with The Planning System and Flood Risk Management – Guidelines for Planning Authorities (2009). The purpose of the SFRA is to identify flooding or surface water management issues related to the County that may warrant further investigation at the appropriate plan level, or at planning application level, and also to suggest measures to be integrated into the County Development Plan that will contribute towards both flood risk management in the County and compliance with the Flood Risk Management Guidelines.

Areas of County Galway are vulnerable to flooding and this vulnerability can be exacerbated by changes associated with global warming such as increased occurrences of severe rainfall events, sea level rise, increased storm frequency and associated flooding. Local conditions such as low-lying lands and slow surface water drainage increase the risk of flooding. This risk can also be increased by human actions including clearing of natural vegetation to make way for agriculture, draining/rehabilitation of bog and wetland areas and the development of settlements in the flood plains of rivers and low lying or eroding coastlines as well as by changing weather patterns. Inadequately planned infrastructural development, forestry operations and urban development in the floodplain, for example, can also give rise to flooding hazards, coastal erosion/flooding and loss of habitats.

The County Galway SFRA contained within the supporting documents of this Development Plan, provides information on flood risk within the County.

14.6.3 Flood Zones and the Sequential Approach

The Planning System Flood Risk Management Guidelines (2009) prescribe the use of a sequential approach to ensure development is directed towards land that is at a low risk of flooding. The sequential approach makes use of flood risk assessment and of prior identification of flood zones for river (fluvial) and coastal flooding. It is essential that the risk potentially arising from other sources of flooding (e.g. groundwater and pluvial) should also be taken into account in all areas and stages of the planning process.

There are three types or levels of flood zones defined for the purposes of implementing the Planning System Flood Risk Management Guidelines:

- 1. Flood Zone A** – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding);
- 2. Flood Zone B** – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding); and
- 3. Flood Zone C** – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas which are not in zones A or B.

Table 14.4 indicates the types of land uses that are appropriate in each of the Flood Zones identified within the County, in accordance with The Planning System and Flood Risk Management Guidelines (2009). Where developments/land uses are proposed that are considered inappropriate to the Flood Zone, then a Development Management Justification Test and Site-Specific Flood Risk Assessment will be required in accordance with The Planning System and Flood Risk Management Guidelines (2009).

Land Uses	Flood Zone A	Flood Zone B	Flood Zone C
HVD - Highly Vulnerable Development	Inappropriate (if proposed then Justification Test & detailed FRA required)	Inappropriate (if proposed then Justification Test & detailed FRA required)	Appropriate (screen for flood risk)
LVD – Less Vulnerable Development	Inappropriate (if proposed then Justification Test & detailed FRA required)	Inappropriate due to climate change (if proposed then Justification Test & detailed FRA required)	Appropriate (screen for flood risk)
WCD Water Compatible Development	Appropriate (detailed FRA may be required)	Appropriate (detailed FRA may be required)	Appropriate (screen for flood risk)

Table 14.4: Flood Zones and Appropriate Land Uses

Note: Refer to Flood Risk Management Guidelines for additional detail.

- 1. HVD** – Houses, schools, hospitals, residential institutions, emergency services, essential infrastructure, etc.
 - 2. LVD** – Economic uses (retail, leisure, warehousing, commercial, industrial, non-residential institutions, etc.), land and buildings used for agriculture or forestry, local transport infrastructure, etc.
 - 3. WCD** – Docks, marinas, wharves, water-based recreation and tourism (excluding sleeping accommodation), amenity open space, sports and recreation, flood control infrastructure, etc.
- In general, flood vulnerable development in flood plains should be restricted. Development should also be restricted on lands identified as “benefiting lands” as there may be legacy flood risk issues in these areas.

Advice Note:

Flood hazard and flood risk information is an emerging dataset of information. The flood hazard maps used by the Council may be altered in light of future data and analysis, in particular the CFRAMS. Therefore, all landowners and developers are advised that Galway County Council accept no responsibility for losses or damages arising due to assessments of vulnerability to flooding of lands, uses and developments. Owners, users and developers are advised to take all reasonable measures to assess the vulnerability to flooding in a particular area, prior to submitting a planning application.

Policy Objectives Flood Risk Management

FL 1 Flood Risk Management Guidelines

It is the policy objective of Galway County Council to support, in co-operation with the OPW, the implementation of the EU Flood Risk Directive (2007/60/EC), the Flood Risk Regulations (SI No. 122 of 2010) and the DEHLG/OPW publication The Planning System and Flood Risk Management Guidelines (2009) (and any updated/superseding legislation or policy guidance) and Department Circular PL2/2014 or any updated / superseding version.

FL 2 Flood Risk Management and Assessment

Comply with the requirements of the DoEHLG/OPW The Planning System and Flood Risk Management Guidelines for Planning Authorities and its accompanying Technical Appendices Document 2009 (including any updated/superseding documents).

This will include the following:

- (a) Avoid, reduce and/or mitigate, as appropriate in accordance with the Guidelines;
- (b) Development proposals in areas where there is an identified or potential risk of flooding or that could give rise to a risk of flooding elsewhere will be required to carry out a Site-Specific Flood Risk Assessment, and justification test where appropriate, in accordance with the provisions of The Planning System and Flood Risk Management Guidelines 2009 (or any superseding document); Any flood risk assessment should include an assessment of the potential impacts of climate change, such as an increase in the extent or probability of flooding, and any associated measures necessary to address these impacts;
- (c) Development that would be subject to an inappropriate risk of flooding or that would cause or exacerbate such a risk at other locations shall not normally be permitted;
- (d) Galway County Council shall work with other bodies and organisations, as appropriate, to help protect critical infrastructure, including water and wastewater, within the County, from risk of flooding.

FL 3 Principles of the Flood Risk Management Guidelines

The Council shall implement the key principles of flood risk management set out in the Flood Risk Management Guidelines as follows:

- (a) Avoid development that will be at risk of flooding or that will increase the flooding risk elsewhere, where possible;
- (b) Substitute less vulnerable uses, where avoidance is not possible; and
- (c) Mitigate and manage the risk, where avoidance and substitution are not possible.

Development should only be permitted in areas at risk of flooding when there are no alternative, reasonable sites available in areas at lower risk that also meet the objectives of proper planning and sustainable development. Vulnerable development in areas which have the highest flood risk should be avoided and/or only considered in exceptional circumstances (through a prescribed Justification Test) if adequate land or sites are not available in areas which have lower flood risk.

FL 4 Flood Relief Schemes

The Council shall support and co-operate with the Office of Public Works (OPW) in the delivery of Flood Relief Schemes.

FL 5 Catchment Planning

The Council will support the OPW'S CFRAM Programme and catchment-based Flood Planning Groups, especially where catchments go beyond the Council's administrative boundary, in the

development and implementation of catchment-based strategies for the management of flood risk - including those relating to storage and conveyance.

FL 6 Surface Water Drainage and Sustainable Drainage Systems (SuDs)

Maintain and enhance, as appropriate, the existing surface water drainage system in the County. Ensure that new developments are adequately serviced with surface water drainage infrastructure and promote the use of Sustainable Drainage Systems in all new developments. Surface water run-off from development sites will be limited to pre-development levels and planning applications for new developments will be required to provide details of surface water drainage and sustainable drainage systems proposals.

FL 7 Protection of Waterbodies and Watercourses

Protect waterbodies and watercourses within the County from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains. This will include protection buffers in riverine, wetland and coastal areas as appropriate.

FL 8 Flood Risk Assessment for Planning Applications and CFRAMS

Protect Flood Zone A and Flood Zone B from inappropriate development and direct developments/land uses into the appropriate Flood Zone in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009 (or any superseding document) and the guidance contained in Development Management Standard 69.

Site-specific Flood Risk Assessment (FRA) is required for all planning applications in areas at elevated risk of flooding, even for developments appropriate to the particular flood zone. The detail of these site-specific FRAs will depend on the level of risk and scale of development. A detailed site-specific FRA should quantify the risks, the effects of selected mitigation and the management of any residual risks. The Council shall have regard to the results of any CFRAM Studies in the assessment of planning applications.

Where a development/land use is proposed that is inappropriate within the Flood Zone, then the development proposal will need to be accompanied by a Development Management Justification Test in addition to the site-specific Flood Risk Assessment.

In Flood Zone C, where the probability of flooding is low (less than 0.1%, Flood Zone C), site-specific Flood Risk Assessment may be required and the developer should satisfy themselves that the probability of flooding is appropriate to the development being proposed.

FL 9 SFRA of Lower Tier Plans

Lower tier plans shall undertake SFRA (Strategic Flood Risk Assessment) in compliance with the Flood Risk Management Guidelines.

FL 10 SFRA/FRA and Climate Change

SFRAs and site-specific FRAs shall provide information on the implications of climate change with regard to flood risk in relevant locations. The 2009 OPW Draft Guidance on Assessment of Potential Future Scenarios for Flood Risk Management (or any superseding document) shall be consulted with to this effect.

FL 11 FRA and Environmental Impact Assessment (EIA)

Flood risk may constitute a significant environmental effect of a development proposal that in certain circumstances may trigger a sub-threshold EIA. FRA should therefore be an integral part of any EIA undertaken for projects within the County.

FL 12 Inland Fisheries

It is the Council policy objective to consult, where necessary, with Inland Fisheries Ireland, the National Parks and Wildlife Service and other relevant agencies in the construction of flood alleviation measures in County Galway.

FL 13 CFRAM

It is Council policy objective to take account of and incorporate into local planning policy and decision making, including possible future variations to this plan, CFRAM measures that may be published in the future, including planned investment measures for managing and reducing flood risk.

FL 14 Flood Vulnerable Zones

It is Council policy objective to ensure that applications pertaining to existing developments in flood vulnerable zones provide details of structural and non-structural risk management measures to include, but not be limited to specifications of the following - floor levels, internal layout, flood resilient construction, flood resistant construction, emergency response planning, access and egress during flood events.

FL 15 Flood Risk Management

Ensure each flood risk management activity is examined to determine actions required to embed and provide for effective climate change adaptation as set out in the OPW Climate Change Sectoral Adaptation Plan for Flood Risk Management applicable at the time.

FL 16 Benefitting Land

Applications for development on land identified as benefitting land may be prone to flooding, and as such site-specific flood risk assessments may be required in these areas.

14.7 Energy and Renewable Resource

14.7.1 Overview of Ireland's Energy Situation

Ireland remains heavily dependent on fossil fuels and there is currently a need to import two thirds of the country's energy needs at a significant financial cost to the economy and the environment. The main trends in the national energy fuel share for Ireland in 2019 were outlined by SEAI as follows;

- Fossil fuels accounted for (87%) of primary energy used in 2019 which included Oil accounting for 49% of the total primary energy requirement, Natural Gas 31%, Coal 2.6% Peat 4.3%.
- Renewables are disaggregated into wind, hydro, biomass and other renewables which in total accounted for 11% of primary energy.
- Non-renewable wastes and electricity imports accounted for the remaining energy in 2019. Ireland became a net importer of electricity in 2019 for the first time since 2015. Net electricity imports made up 2.1% of electricity generated by just 0.4% of total primary energy.
- Transport continues to be the largest of the end-use sectors. It accounted for 42% of total final energy consumption.
- Energy consumption in Ireland (approximately 33.5% required for heating, 35.4% transport and 31.2% electricity. (Source: SEAI - *Energy in Ireland, 2020*)

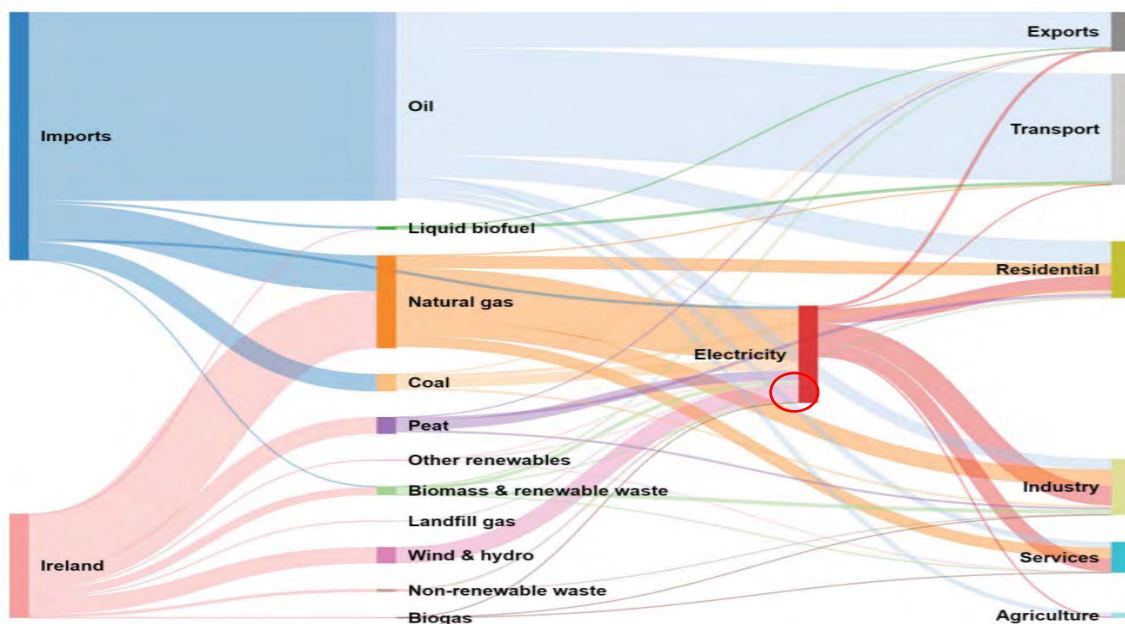


Figure 1 Energy Flows in Ireland 2018. Source: SEAI (*Energy Security in Ireland, 2020 Report*)

Figure 1 shows the split between Ireland's indigenous and imported energy as a flow diagram with an overview of the energy security illustrating each fuel type and end use segment. This shows that 67% of Ireland's energy was imported in 2018, mostly as oil, which is mainly used for transport. Another important features to note include that most electricity is currently generated by natural gas.

14.7.2 Energy Strategy

An efficient and secure energy supply is essential to the future growth and sustainable development of County Galway. Reliable and low-cost energy is essential for a high quality of life for the residents of County Galway and also to ensure that the County is an attractive place in which to do business. However, it is essential to ensure that energy demands are met without compromising environmental quality. Energy efficiency, renewable energy development and progression towards a low carbon economy are therefore central themes of this Plan.

Energy Expectation for Galway to 2028 is as follows:

- A reduction in demand for non-renewable energy sources, such as coal and oil, as well as an increased demand for electricity from all sectors, leading to more sustainable energy usage across the county.
- A significant increase in the demand for electricity is predicted resulting in a decrease in utilisation of fossil fuels. A large factor in this will be the Transport sector, as electric vehicles are developed and become more widespread, the oil usage by the sector is projected to decrease.
- A significant reduction in the use of coal and peat for home heating is anticipated due to advances in home heating technology, improvements in home insulation and new laws restricting the burning of fossil fuels for home heating due to environmental and climate change obligations.
- Natural gas will continue to have a role to play in the transition to a low carbon economy.

- In the longer-term fossil fuels will be replaced by renewable energy sources in County Galway in line with the *Strategy for Renewable Energy 2012 – 2020* which is aimed at decoupling energy from reliance on fossil fuels.
- The implementation of the targets and policy objectives outlined in the Renewable Energy Strategy which has been prepared for County Galway as part of the County Development Plan is contained within Appendix 1.

14.7.3 Electricity and Gas Network

The de-carbonisation of the economy will require a significant increase in the provision of a secure and adequate electricity infrastructure to meet the growth in demand and to ensure that an efficient and reliable electricity supply is available to households, business and industry. A strong transmission grid is essential to attract and retain industrial investment, to ensure competitive energy supplies, to achieve balanced development, to reduce dependency on fossil fuels, and to achieve climate change targets.

Eirgrid published a Transmission Development Plan (TDP) 2018-2027 for the development of the Irish transmission network and interconnection over a ten-year period and includes projects that are needed for the operation of the transmission network and future potential projects that could help to drive future needs and reinforce the National Grid. In the TDP, County Galway lies within the West Planning Area and the TDP identifies several new projects as being required in Galway between 2020 and 2032.

The Council welcomes and supports the inclusion of the Regional Solution Project relating to 400Kv transmission grid infrastructure in the RSES, in light of the identified lack of high-capacity transmission infrastructure needed to capitalise on the high renewable energy potential in the region.

The Gas network plays a key role as part of the supporting infrastructure for renewable energy developments. Gas will play an important part of Ireland's energy economy for the foreseeable future. Even with a clear move towards renewable energy in the growing electricity sector, Ireland is likely to rely on natural gas for about one-third of electricity generation in 2030 to support the transition to a low carbon economy. By this date, Ireland will be reliant on imported gas or gas generated from innovations in indigenous gas manufacturing.

The Gas Transmission Network in Ireland is operated by Gas Networks Ireland and their Network Development Plan (NDP) 2018-2027 indicates how the network will be delivered over a ten-year period and also assesses the future demand and supply position of the network. The NDP identifies existing gas pipeline connections serving Galway City, Craughwell, Tuam, Gort, Tynagh, Loughrea, Ballinasloe and Headford. This demonstrates that there is an established gas transmission network in County Galway capable of supporting renewable energy development across various parts of the County. Ireland owns and operates the gas transmission pipeline running from north to south through County Galway and the adjoining wayleaves.

Policy Objectives Electricity and Gas Network

EG 1 Gas Network and Generating Capacity

To support the development of the gas network and associated generating capacity in order to sustainably support and augment renewable electrical energy generated in County Galway.

EG 2 Electricity Transmission Networks

(a) To support the development of the transmission grid network in order to sustainably accommodate both consistent and variable flows of renewable energy generated in County Galway.

(b) Proposed renewable energy generation projects shall fully consider the capacity of the existing transmission grid network in determining the optimal grid connection for the project, in accordance with the proper planning and sustainable development of the area.

(c) In respect of proposed renewable energy developments, transmission grid capacity should be considered as a constraint where the Transmission Development Plan, or any other equivalent plan of the TSO, does not identify infrastructure reinforcement measures unless transmission grid capacity can be demonstrated.

(d) Notwithstanding ecological and environmental considerations, grid connection routing for development proposals should show all alternative routes that were considered, and should avoid materially impacting the road network, where possible. Undergrounding should be considered where it will significantly negate any identified impacts.

(e) It is important that the necessary transmission and distribution infrastructure is facilitated and put in place in order to maximise the renewable energy potential of County Galway. Liaison with Eirgrid, as a TSO, and alignment with their transmission plans and strategies will be of vital importance in this respect.

EG3 Natural Gas and Synthetic Networks

To facilitate the delivery and expansion of the Natural Gas and Synthetic Gas infrastructure for storage, transmission and energy generation throughout the County for both domestic and business/industry use and to have regard to the location of existing gas infrastructure pipeline in the assessment of planning applications.

14.8 Renewable Energy Generation

With projected increases in population and economic growth, the demand for energy is set to increase in the coming years. A secure and resilient supply of energy is critical to a well-functioning economy, being relied upon for heating, cooling, and to fuel transport, power industry, and generate electricity.

Renewable energy comes from natural sources that are continuously replenished by nature and is, therefore, a more sustainable alternative to our dependency on fossil fuels. The main sources are wind energy, solar energy, water energy (hydro, wave and tidal energy), geothermal energy (from heat below the surface of the earth) and biomass (wood, biodegradable waste and energy crops).

14.8.1 Local Authority Renewable Energy Strategy

To facilitate the sustainable growth of renewable energies a Local Authority Renewable Energy Strategy (LARES) have been prepared for the county as part the plan and is included in Appendix 1. The LARES' outlines the renewable energy resource potential in the county and it is a strategic aim to ensure that such developments are suitably located, economical and sustainable in the long term. The Strategy has been prepared taking account of relevant European, national, regional and local planning frameworks and guidelines.

The LARES replaces the Wind Energy Strategy of the Galway County Development Plan 2015 (as varied).

The LARES outlines the potential for a range of renewable resources, including bioenergy, micro renewables, wind, solar, geothermal, hydro, energy storage and marine renewables (offshore, wave and tidal energy). It acknowledges the significant contribution they can deliver to make to the county more energy secure, less reliant on traditional fossil fuels, enabling future energy export and meeting assigned climate change targets. The LARES recognises the importance of infrastructure within the county including road, electricity, gas and rail networks, and ports. The Strategy also sets out renewable energy resource targets for the county which will contribute to both national renewable energy targets and the transition to a low carbon economy.

Policy Objectives Renewable Energy

RE1 Renewable Energy Generation and ancillary facilities

To facilitate and support appropriate levels of renewable energy generation and ancillary facilities in the county to meet national, regional and county renewable energy targets, to facilitate a reduction in CO2 emissions and the promotion of a low carbon economy;

RE 2 Local Authority Renewable Energy Strategy

The policy objectives and Development Management Standards set out in the Local Authority Renewable Energy Strategy for County Galway shall be deemed the policy objectives and development management standards for the purpose of the Galway County Development Plan 2022-2028

RE 3 Wind Energy Developments

Promote and facilitate wind farm developments in suitable locations, having regard to areas of the County designated for this purpose in the Local Authority Renewable Energy Strategy. The Planning Authority will assess any planning application proposals for wind energy production in accordance with the Local Authority Renewable Energy Strategy, *the DoEHLG Guidelines for Planning Authorities on Wind Energy Development, 2006* (or any updated/superseded documents), having due regard to the Habitats Directive and to the detailed policy objectives and Development Standards set out in the Local Authority Renewable Energy Strategy.

RE 4 Solar Energy Developments

Promote and facilitate solar farm developments in suitable locations, having regard to areas of the County designated for this purpose in the Local Authority Renewable Energy Strategy. The Planning Authority will assess any planning application proposals for solar energy production having due regard to the Habitats Directive and to the detailed policy objectives and Development Standards set out in the Local Authority Renewable Energy Strategy.

RE 5 Renewable Energy Strategy

Support and facilitate the sustainable development and the use of appropriate renewable energy resources and associated infrastructure within the County having due regard to the Habitats Directive and to the detailed policy objectives and Development Standards set out in the Local Authority Renewable Energy Strategy as follows:

- Renewable Energy Transmission
- Renewable Energy Generation
- 'Strategic Areas' for renewable energy development
- Onshore Wind Energy
- Solar Energy
- Bioenergy/Anaerobic Digestion

- Micro-renewables
- Marine Renewables
- Hydro Energy
- Geothermal Energy
- Alternative Technologies
- Energy Efficiency & Conservation
- Sustainable Transport
- Auto production
- Battery Storage
- Repowering/Renewing Wind Energy Developments
- Community Ownership

RE 6 Oileáin Árann an Energy Transition Community

The Council shall continue to support Comharchumann Fuinnimh Oileáin Árann (Aran Islands Energy Cooperative), SEAI and Údarás na Gaeltachta in their objective to develop the Islands as being energy independent and becoming Ireland's first energy transition community.

RE 7 Renewable Energy Generation -Transition to a Low Carbon Economy

To facilitate and support appropriate levels of renewable energy generation in County Galway, considering the need to transition to a low carbon economy and to reduce dependency on fossil fuels.