ENERGY & BUILDINGS

OVERVIEW

47 GWh
consumed in 2017

=

10,470
tonnes CO_2

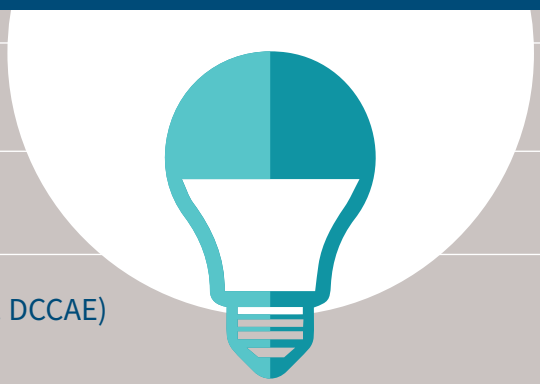
TARGET

33%
IMPROVEMENT IN ENERGY EFFICIENCY BY 2020

40%
REDUCTION IN COUNCIL'S GHG EMISSIONS BY 2030

EXAMPLES OF MAIN ACTION TYPES

STAKEHOLDERS TO WORK WITH AND INFLUENCE



PRIVATE BUSINESSES

PRIVATE CITIZENS

GOVERNMENT DEPARTMENTS (e.g. DCCAE)

SEAI

ENERGY SUPPLIERS

DEVELOPERS

It is Council policy to support on an ongoing basis the Government Programme for the development of Energy Policy and Legislation through the implementation of supporting policies in this County Development Plan - particularly those promoting use of renewable energy sources, energy efficiency, sustainable transport and land-use planning.
- County Development Plan 2016 - 2022

In 2017, Dún Laoghaire–Rathdown County Council consumed 47 GWh of primary energy across its buildings and public lighting accounts, which amounted to 10,470 tonnes of CO_2. The actions outlined in this section show how, through energy master-planning, building energy upgrades, and the use of renewables, DLRCC will reduce the emissions from its operations and service delivery. While the energy source of electricity and the distribution and transmission of electricity are not the direct responsibility of DLRCC, there are actions that DLRCC can implement to support the uptake of renewable energy technologies, to improve energy efficiency and to reduce demand within the County.

While DLRCC is not responsible for the upgrading of private buildings in Dún Laoghaire–Rathdown, or for the energy used by its social housing tenants, it can retrofit its social housing stock to be more energy efficient and can help citizens to become more aware of their energy use by trialling the Home Energy Saving Kits in its public libraries.

ENERGY PLANNING

Currently, analyses of energy use and related emissions are carried out at a national level and are used to develop strategic national level energy policies. However, local level energy planning allows for the identification of low-carbon solutions that are specifically designed to the distinct energy characteristics of the region examined.

The *Dún Laoghaire–Rathdown Spatial Energy Demand Analysis* (SEDA) was produced by Codema in 2016 to better understand the current and future energy demand of the Dún Laoghaire-Rathdown area, within a spatial context. Its methodology allowed for 'energy character areas' to be defined, i.e. areas with distinct types of energy needs, consumption patterns and fuel types used. These needs were then matched to the best available technical solution incorporating renewable resources and energy-efficient solutions.

Across Europe, there is a recognised need for increased local authority-led integration between planning for climate change and spatial planning tools and strategies. In the Dublin context, County Development Plans and other plans and strategies have a key role in directing evidence-based policy responses to both climate change mitigation and adaptation.


Photo Source: Fáilte Ireland / Jason Baxter

The key objectives of advancing evidence-based climate change policy at the local level are:

- To develop a closer link between European and national climate change policy and spatial planning policy for both climate change mitigation and adaptation
- To base climate change policies and objectives on a robust spatial understanding of the existing and future energy profiles across sectors at a local authority scale.
- To promote the generation and supply of low-carbon and renewable energy alternatives, having regard to the opportunities offered by the settlement hierarchy of local authority areas, the variety of land uses present, and the built environment.
- To stimulate the development of a more evidence-based regional methodology for spatial mapping of future climate risks and vulnerabilities and climate change adaptation policy development
- To educate local authorities, public and private sector organisations and climate stakeholders on measures and responses that are most relevant at the local level
- To encourage greater local authority involvement and leadership in the roll-out of climate change projects in partnership with other stakeholders
- To inform and support the EU Covenant of Mayors for Climate and Energy initiative, a key aim of which is to act ''together towards sustainable, climate-resilient and vibrant cities''

Having regard to the preparation of future County Development Plans, Strategic Development Zone Planning Schemes and Local Area Plans, there is an opportunity to develop or further develop integrated and standalone 'Climate Change' chapters that address both climate change mitigation and adaptation. Future spatial planning policies and objectives can become more spatially based, having regard to mapping areas suitable for energy networks, district heating projects, larger scale renewable energy projects, areas suitable for sustainable urban drainage systems and green infrastructure etc., in the urban context.

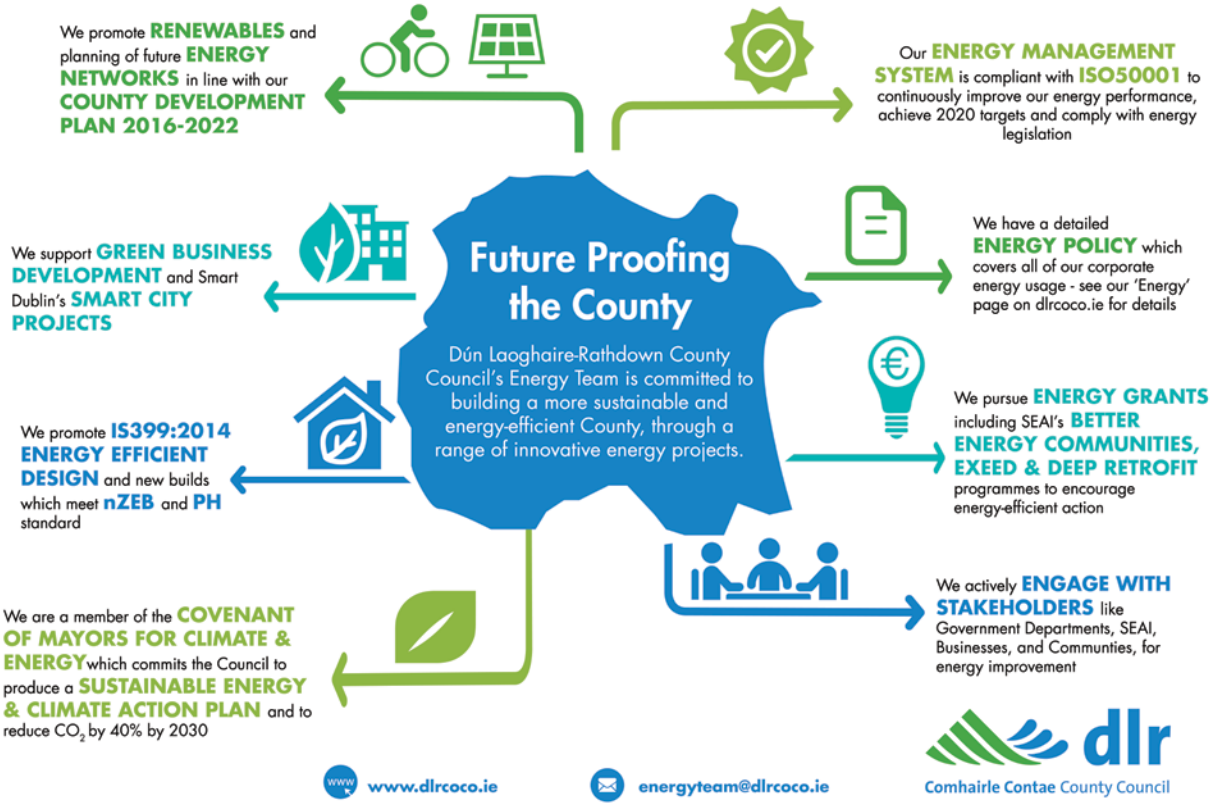
CASE STUDY

The Dublin Region Energy Master Plan

DLR's SEDA was the starting point for holistic energy planning in the area and, building on this work, Codema will develop an energy master plan for the entire Dublin Region. The Dublin Region Energy Master Plan will be supported by SEAI's Research, Development and Demonstration (RD&D) programme for over two years and will create evidence-based, realistic, and costed pathways for the Dublin Region to achieve its carbon emissions reduction targets to 2030 and 2050.

The scenario analyses will include all areas of energy use in the Dublin Region, and will be evaluated based on the socio, economic and environmental impacts. The resulting scenarios will give local authority and regional level planners, architects, engineers and other policy-makers the tools to create effective low-carbon policies and make strategic decisions to influence the use of energy in Dublin.

The plan will focus on the energy areas where actions can be taken to introduce energy efficiency measures and reduce CO_2 emissions, such as district energy systems and renewable energy technologies.



ENERGY EFFICIENCY AND RENEWABLES

Constructing less carbon-intensive forms of development will build resilience to Climate Change. This also negates concerns related to security of fossil fuel supply and the rising costs as a result of the limited future availability of fossil fuel.
- County Development Plan 2016-2022

DLRCC Energy Team

The DLRCC Energy Team is taking innovative action to future-proof the County through projects that reduce dependency on fossil fuels by promoting energy efficiency and the uptake of renewable energy. The DLRCC Energy Team is a multi-disciplinary team of individuals with expertise in energy, engineering, architecture, housing, leisure services, community and cultural development. The team uses this range of knowledge to develop and implement first-class energy projects.

Highlights:

- In April 2017, DLRCC was awarded the ISO 50001 Energy Management System Certificate.
- Nomination at the 2018 SEAI Energy Awards for the completion of 12 social housing units at St George's Place, which meet the highest environmental standards and have an 'A1' rating.
- In August 2017, the DLRCC Energy Team was nominated for an SEAI Energy Award in the Energy Manager/Team of the Year category.
- Rochestown House Phase 2 has received an award from the RIAI for Best Sustainable Project in 2017. The project was also a finalist at the SEAI Energy Awards in 2016.
- Undertaking pilots to support green businesses; this includes solar energy battery storage of photovoltaic (PV) generated electricity at St Michael's Terrace, Plus Heat trial - Infra Red Heaters, and planned trials of Smart Meters.

DLRCC will lead by example in renewable energy uptake and energy efficiency through retrofits of DLRCC's buildings and social housing stock. Presently, DLRCC has several ongoing programmes to replace boilers, update lighting, improve insulation, and upgrade windows and doors. Where possible, DLRCC is also installing solar PV panels to reduce dependency on fossil fuels, such as the Mews social housing project, which has achieved nearly Zero Energy Building (nZEB) standard.

Energy Performance Contracting

In 2017, Codema met with Dún Laoghaire-Rathdown County Council's Energy Team to begin developing the Council's first Energy Performance Contract (EPC) project, involving Loughlinstown, Meadowbrook and Monkstown Leisure Centres. An EPC is a contractual agreement by an Energy Service Company (ESCo) to guarantee energy savings over an agreed period of time. Codema has now completed the initial appraisal phase of this project, which involved a detailed survey of each of the proposed buildings to assess their suitability for EPC, and to assess the potential for energy savings. The project has the potential to save 2.3 GWh of energy and 495 tonnes of CO_2 per year. Codema is currently preparing the necessary procurement and contract documentation, with the aim of having a signed contract in 2019.

Rochestown House

Rochestown House is one of DLRCC's Exemplar Projects, and involved the conversion and remodelling of an existing two-storey building into 34 one-bed units for older citizens eligible for social housing. The project features communal areas for the residents' social activities. This project has set a new standard, and DLRCC is now striving for all of its housing to meet nearly Zero Energy Building (nZEB) standard.

Historic Buildings

Proposals to improve the thermal performance of or insert renewable energy technologies into historic buildings need to be sensitive to traditional methods of construction to ensure that the proposed works are appropriate and do not actually cause damage to the structure, require the removal of historic fabric such as original windows, doors and floors, or have a detrimental visual impact. The materials used traditionally allowed for moisture to be absorbed and released easily for the building to "breathe" and so the ventilation of the internal spaces performs an important function. Interventions that may be appropriate to a building of modern construction methods and materials, such as impermeable building products or air-tight spaces, could have unintended harmful consequences for historic and traditional buildings. Other solutions such as external cladding, internal wall linings, or replacement of windows and doors may be inappropriate as they would obscure or remove significant features. The location and use of solar panels, wind turbines, or other renewable technologies and their associated plant and cables must be carefully considered for the historic environment.

National guidance is available to owners to direct appropriate interventions through the Department of Environment, Heritage and Local Government publication "Advice Series: Energy Efficiency in Traditional Buildings" (2010). DLRCC will be mindful of this when carrying out works on any of its own historic building stock and will seek to promote and develop best practice in this area.

Photo Source: WikiCommons / Sarah777

RESEARCH AND INNOVATION

Energy and technology are rapidly evolving sectors. To maximise the benefits of advances in technology, DLRCC is using the Smart Dublin programme as a platform to engage with academia, the private sector and citizens to co-create solutions to the challenges facing the Dublin Region. The Smart Dublin programme was established in 2016 to enable the four Dublin Local Authorities to collaboratively take advantage of some of the big tech trends that are transforming how we live and work. In partnership with Enterprise Ireland, Smart Dublin runs Small Business Innovation Research (SBIR) competitions, which challenge smart technology providers, researchers and citizens to come up with solutions that will improve the operation and resilience of the Dublin Region. To date, €750,000 in funding has been awarded to small businesses to develop solutions in areas such as cycling, wayfinding, illegal dumping and flooding.

CASE STUDY

Energy Elephant – Smart Energy Monitoring

Energy Elephant is a mobile phone app that can be used by individuals and businesses to monitor their energy use. Users can take a photo of their energy bills, which the app then analyses and provides the user with information on the dashboard showing their current and projected energy use and carbon emissions. In 2016, DLRCC started using Energy Elephant to monitor its big energy users within the Council building stock. It is linked to monthly meter readings, which help generate accurate bills and energy usage to facilitate good energy management. The system helps generate reports to aid energy review and management.

CASE STUDY

LEDs and Smart Lighting

Public lighting represents a significant portion of DLRCC's energy use. As of November 2017, 21% of DLR's public lighting has been upgraded to LEDs, resulting in a 15% reduction in energy use. Being keen to use technology to further reduce energy demand, DLRCC has been trialling smart lighting with Central Management Systems (CMS). Together with ESB Telecoms and Silver Springs, DLRCC finalised a smart lighting CMS trial in Dundrum in September 2017, and has started a micro-SIM trial in Sandyford Industrial Estate. As a result of these trials, there are plans to continue upgrading public lighting in DLRCC by replacing sodium lights with LEDs and deploying CMS.

ENERGY AWARENESS

> **We are working to reduce dependence on fossil fuels through promotion of renewables and encourage planning of energy networks into the future to allow for viable businesses, industry, schools, homes and travel**
> - County Development Plan 2016-2022

A key aspect of reducing energy use is awareness, and DLRCC is actively engaging with staff and citizens about energy, from the benefits of renewables to providing tips on small steps that can be taken to reduce energy use and save money on energy bills. The DLRCC Energy Team is actively engaging with students on the work being undertaken to transition the Dublin Region to a low-carbon energy future. This is being achieved through the Eco Conference for secondary schools and the Green Schools programme. DLRCC hopes to build on these programmes and expand its engagement with the public.

CASE STUDY

Home Energy Saving Kits

DLRCC, in partnership with Codema, is actively encouraging citizens to become more energy-aware by trialling Home Energy Saving Kits in all of its public libraries. The kits contain six tools for householders to assess how energy-efficient their homes are, and to identify areas for improvement. The scheme is the first of its kind in Ireland, and has had great success, garnering awards and recognition both nationally and at an EU level.

The kits are also being trialled internally with staff working in DLRCC's County Hall, in order to encourage energy awareness not only at home but in a workplace setting as well.

ARCHAEOLOGICAL AND BUILT HERITAGE

Archaeological heritage includes buildings, field monuments, sites, landscapes and harbours, the survival of which not only provide a physical narrative of our past but tourism, recreational and educational opportunities. The very nature of these sites means many are situated in areas that are inherently susceptible to climate change impacts, i.e. close to rivers, coasts, islands, etc. There are approximately 438 recorded archaeological sites and monuments within DLR in private and public ownership that may be subject to a combination and interaction of impacts of climate change. It is essential that the vulnerability of the archaeological resource is understood, recognised and integrated into the adaptive policies and action process.

In relation to the built or architectural heritage of DLR, the County has a diverse historic building stock ranging from modest domestic architecture to Georgian and Victorian houses, churches and public buildings, to piers, slipways and bridges. Architectural heritage protections include individual properties known as Protected Structures and area-based designations known as Architectural Conservation Areas. There are approximately 2,058 Protected Structures in DLR and 26 Architectural Conservation Areas. DLR has an extensive coastal architectural heritage contained within its coastal towns and also on individual coastal sites which would be sensitive to any climate change impacts on sea levels.

Additionally, the construction materials and methods used in historic buildings across the whole County can easily be damaged by insensitive and inappropriate interventions. These structures were generally built from locally sourced, breathable materials (thatch, mud, lime, stone, brick, slate etc.) and so any energy efficiency upgrades need to be carefully considered and informed to ensure they do not cause damage to or remove the historic building fabric and features.

Local authorities have a role in protecting and maintaining the archaeological and architectural resources for future generations. Climate change actions should be carried out in consultation with local authority Architectural Conservation Officers, Heritage Officers and other relevant stakeholders.

ENERGY & BUILDINGS

NO	ACTION	TIMEFRAME	LEAD(S)	INDICATORS	TARGET(S) IMPACTED
ACTIONS CURRENTLY BUDGETED					
ENERGY PLANNING					
E1	Create Dublin Region Energy Master Plan	2018 onwards	Codema	Website with e-Map	GHG
E2	Prepare DLR Sustainable Energy and Climate Action Plan	2019	Codema	SECAP document	GHG
E3	Develop and implement Public Lighting Master Plan	Ongoing	Environment and Climate Change	Plan completed and ongoing conversion to LEDs	GHG
E4	Evidence-based climate change chapter in *County Development Plan 2022-2028*	2020	Planning	Chapter with policies and development management standards	GHG
ENERGY EFFICIENCY & RENEWABLES					
E5	Deep retrofits of housing stock to nZEB or EnerPHit standard	Ongoing	Housing	# of units reaching nZEB or EnerPHit Standard	GHG
E6	Undertake energy efficiency works in the Council's housing stock	Ongoing	Housing	% of housing stock with energy efficiency measures implemented	GHG
E7	Review all significant energy users within the Council to increase energy efficiencies	Ongoing	DLRCC Energy Team, Codema	Review savings monthly through Energy Elephant	GHG
E8	Implement EPC project in 3 Council leisure centres	Ongoing	DLRCC Energy Team, Codema	Contract signed, measurement and verification of savings	GHG
E9	Apply for energy funding through SEAI's BEC, EXEED and deep retrofit programmes	Ongoing	DLRCC Energy Team, Codema	# of successful applications	GHG
E10	Continue upgrading public lighting to LEDs	Ongoing	Environment and Climate Change	# of lights upgraded	GHG
E11	Continued compliance with ISO 50001	Ongoing	DLRCC Energy Team, Codema	Certification maintained	GHG
E12	Display Energy Certificates for public buildings	Ongoing	DLRCC Energy Team, Codema	# of DECs generated annually for public buildings	GHG
E13	Annual Monitoring and Reporting to SEAI	Ongoing	DLRCC Energy Team, Codema	M&R data submitted to SEAI annually	GHG
E14	Promote DLR's exemplar role of energy efficiency in public sector	Ongoing	DLRCC Energy Team, Codema	# of exemplar projects promoted	
E15	Publish Energy Review annually	2019 onwards	Codema	Review published, # of recommendations implemented	GHG

NO	ACTION	TIMEFRAME	LEAD(S)	INDICATORS	TARGET(S) IMPACTED
E16	Energy audit of Council-owned historic buildings and develop a programme of works to improve energy efficiency while ensuring measures do not compromise the character of the building	2019 onwards	Energy Team / All Departments	# of audits complete	
	RESEARCH & INNOVATION				
E17	Facilitate the Small Business Innovation and Research (SBIR) challenge for climate change solutions	Ongoing	Smart Dublin	# of successful applications	
E18	Monitoring of smart lighting trials in the County	Ongoing	Environment and Climate Change	Results from trial	
E19	Continue to use Energy Elephant to monitor energy use in Council buildings	Ongoing	DLRCC Energy Team	Monthly energy reports	
	ENERGY AWARENESS				
E20	Energy awareness initiatives in Council-owned buildings	Ongoing	DLRCC Energy Team, Codema	# of staff participating in events and activities	
E21	Monitor and develop the Home Energy Saving Kits in dlr libraries	Ongoing	DLRCC Energy Team, Codema	# of kits borrowed	

ACTIONS AWAITING BUDGET

E22	*Expand housing assistance programme to include tenant energy awareness*	*2020*	*Housing, DLRCC Energy Team*	*% of tenants attending programme*	

EXAMPLES OF RELEVANT LEGISLATION/POLICIES/GUIDANCE

- Technical Guidance Document L - Conservation of Fuel and Energy - Dwellings 2017
- Technical Guidance Document L - Conservation of Fuel and Energy - Building other than Dwellings
- dlrcoco County Development Plan 2016 - 2022
- Climate Action and Low Carbon Development Act 2015
- Energy Act 2016
- Energy Efficiency Directive (Article 14)
- Ireland's National Renewable Energy Action Plan (NREAP) - Energy White Paper
- National Energy Efficiency Action Plan (NEEAP)
- S.I. No. 243/2012 - European Union (Energy Performance of Buildings)
- S.I. No. 426/2014 - European Union (Energy Efficiency) Regulations
- Support Scheme for Renewable Heat