ENERGY & BUILDINGS

Photo Source: South Dublin County Council

OVERVIEW

48.4 GWh consumed in 2017

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10,710 tonnes CO_2

TARGET

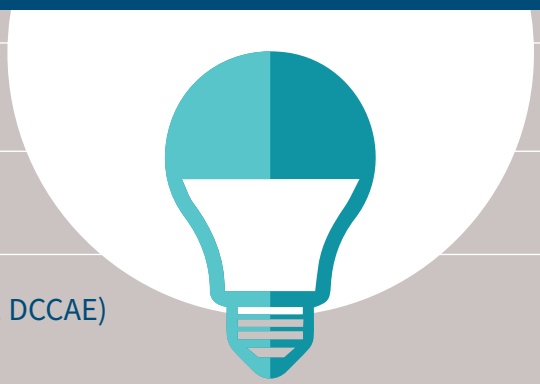
33% IMPROVEMENT IN ENERGY EFFICIENCY BY 2020

40% REDUCTION IN COUNCIL'S GHG EMISSIONS BY 2030

EXAMPLES OF MAIN ACTION TYPES

- Energy Master Plan for the Dublin Region
- Public lighting upgrades
- Tallaght District Heating Scheme
- Social housing retrofits
- Home Energy Saving Kits in selected SDCC libraries
- Upgrades in buildings using Energy Performance Contracts

STAKEHOLDERS TO WORK WITH AND INFLUENCE



- PRIVATE BUSINESSES
- PRIVATE CITIZENS
- GOVERNMENT DEPARTMENTS (e.g. DCCAE)
- SEAI
- ENERGY SUPPLIERS
- DEVELOPERS

South Dublin County should aspire to becoming as carbon neutral as possible and make every effort to increase energy efficiency and unlock renewable energy potential.
- County Development Plan 2016-2022

In 2017, South Dublin County Council consumed 48.4 GWh of primary energy across its buildings and public lighting, which amounted to 10,710 tonnes of CO_2. The actions outlined in this section show how, through better energy planning using energy mapping, improvements in building energy efficiency, the use of renewables, and increased innovation, SDCC will reduce the emissions from its operations and service delivery. For example, the Council will lead the way by implementing Ireland's first large-scale district heating system, which will provide low-carbon heat to public and private buildings in the Tallaght area. SDCC is not responsible for the upgrading of private buildings in South Dublin; however, it will also provide information on how it has retrofitted its own social housing stock and Council-owned buildings, and how it has deployed renewable energy systems. In addition, SDCC is helping citizens to become more aware of their energy use by trialling Home Energy Saving Kits in a selection of its public libraries.

ENERGY PLANNING

South Dublin County Council has an established track record in participating in and delivering European projects in the area of climate change mitigation. These include the LEAP and SPECIAL projects around energy and spatial planning, which were funded by the EU Intelligent Energy Europe programme and involved partnership with other local authorities and professional organisations across Europe. Through these EU projects, and in partnership with Codema, SDCC was the first local authority in Ireland to carry out a Spatial Energy Demand Analysis (SEDA) to directly inform spatial planning policy (in particular, the *South Dublin County Council Development Plan 2016-22*).

The South Dublin SEDA provided information on the current and future energy demand and local energy resources of the South Dublin 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.

The Council has since advanced this evidence-based approach to undertake the Clonburris Strategic Development Zone (SDZ) Energy Master Plan and the Grangecastle Business Park Energy Master Plan, both of which were supported by the Sustainable Energy Authority of Ireland (SEAI). The Clonburris Master Plan also identified Clonburris and Kishogue urban centres as potentially viable areas for local heat networks.

CASE STUDY

Photo Source: Fáilte Ireland / Patrick Bolger

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

CASE STUDY

The Clonburris Energy Master Plan
Prepared in conjunction with the SDZ Planning Scheme, the Clonburris Energy Master Plan builds on the South Dublin SEDA, and sets out the viability and economic analyses of a range of sustainable energy options for the area, including energy efficiency, energy storage, and renewable heating, cooling and electricity. These energy options vary from 'kick start' local networks or district energy schemes, to more localised, block and individual building level opportunities.

The Clonburris and Kishogue urban centres were also identified as potentially viable areas for local heat networks. The Clonburris Energy Master Plan recommends that all major developments within these two urban centres should be designed to be able to connect to a local heat network in the future if or when such a network becomes available in the future. This Master Plan also identifies a range of delivery models and financing structures for such local heat networks.

Photo Source: South Dublin County Council / clonburris.ie

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.

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'

With regards 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.

ENERGY EFFICIENCY AND RENEWABLES

The energy performance of existing buildings is one of the foremost considerations in responding to the energy challenge in South Dublin County. Increased efforts in this area, in particular the upgrading and refurbishment of homes and business premises, can make a significant contribution in reducing energy demands and costs.
- County Development Plan 2016-2022

SDCC will be a climate leader in renewable energy uptake and energy efficiency through retrofits of SDCC's buildings and housing stock. Presently, SDCC has several ongoing programmes to replace boilers, update lighting, improve insulation, upgrade windows and doors, and install solar photovoltaic (PV) panels in SDCC owned buildings. It has also installed solar panels on County Hall and Clondalkin Leisure Centre and CHP units in Tallaght Leisure Centre, among other civic facilities.

Social Housing Upgrades

South Dublin County Council is continually upgrading its social housing units. Through SDCC's upgrade programme, many units have been refurbished, resulting in significant energy and cost savings and improved comfort level for residents. This programme is set to continue over the next few years.

Annual Energy Reviews

Codema has produced Energy Reviews for SDCC for 2016 and 2017. The aim of these Energy Reviews is to help SDCC in its energy planning programmes, in order to meet the public sector 2020 energy targets. The Energy Reviews show a breakdown of SDCC's energy use for these years, highlighting where energy was used, what drove its consumption, and where the greatest energy savings can be achieved. This data allows Codema to develop a specific list of energy-saving recommendations, which will guide SDCC on how best to tackle their Significant Energy Users (SEUs) and meet public sector energy targets. Codema will continue to produce these annual Energy Reviews, in order to guide the Council on the best action to take to meet the 2020 target.

Display Energy Certificates (DECs)

The information from Codema's energy database and energy surveys is used to prepare Display Energy Certificates for SDCC's public buildings with a floor area greater than 250m^2, as required under the Regulation S.I. 243 of 2012. Codema assisted SDCC with the annual inspection and certification of 18 public buildings in total in 2018. This information was entered into the SEAI system and Codema issued certificates to the managers of all of these buildings, along with information on how much energy would need to be saved in the following year to improve their energy rating. Each building manager also received a copy of Codema's *Guide to Display Energy Certificates in Local Authority Buildings* to accompany these certificates and encourage direct action.

CASE STUDY

HeatNet NWE and the Tallaght District Heating Scheme

HeatNet NWE is a €11.5 million Interreg NWE project that aims to increase the uptake of 4th generation heating and cooling technologies in the North-West Europe region. As part of this project, SDCC has secured grant money to develop a cutting-edge district heating scheme in Tallaght town centre.

Codema is working with SDCC to develop Ireland's first large-scale district heating network involving its County Hall and other public and private buildings in the surrounding area. The Tallaght District Heating Scheme has recently gone out to tender and is estimated to save the Council 1,736 tonnes of CO_2 on full system roll out.

The proposed system seeks to utilise a low temperature waste heat source from a data centre through a large-scale heat pump, in order to supply space heating and hot water to a cluster of local buildings. The system will also have the capacity to supply other nearby customers in the following phases. This innovative district heating scheme will provide low-carbon, low-cost heat to the Tallaght area, and will be the only not-for-profit energy utility in Ireland.

This project has also recently secured almost €4.5 million in funding through the Climate Action Fund.

Public Lighting

As public lighting is key to SDCC achieving its energy efficiency target, the Council is committed to achieving further energy reductions in this area.

Within SDCC's stock of public lighting, there is currently over 15,000 SOX lamps. The manufacture of these SOX lamps is in the process of being phased out, so these will have to be replaced, and LED lights, with their very high energy efficiency, are the obvious replacement. By replacing 4,000 of these SOX lamps by 2020, SDCC could achieve savings of 2.3 GWh and 514 tonnes of CO_2. This would have a significant impact on the Council's 2020 targets.

Energy Efficiency in Council Buildings

Leisure Centres - Leisure centres are one of the largest energy consumers within SDCC. SDCC currently operates two large leisure centres, Tallaght and Clondalkin Leisure Centres, which accounted for 13% of the Council's total primary energy requirement in 2017.

To tackle this high energy use, Codema is currently helping SDCC to implement an Energy Performance Contract (EPC) project within Tallaght and Clondalkin Leisure Centres. The EPC model is a way of ensuring that projected energy savings in a building are actually achieved after upgrades are carried out, as the contractor is responsible for guaranteeing these savings over the lifetime of the contract. A similar project has already been successfully carried out in three of Dublin City Council's leisure centres, achieving energy savings of 38% in the first year alone. The initial energy audits of Tallaght and Clondalkin Leisure Centres show that a potential 1.6 GWh of primary energy and 373 tonnes of CO_2 could be saved by implementing this EPC project in these facilities.

CASE STUDY

County Hall

SDCC has an ongoing programme to upgrade the lighting in its County Hall building to LEDs. A number of fluorescent tube ceiling panels have already been replaced with 40 watt LED panels, combined with occupancy sensors and light dimming switches. In addition to the 44% reduction in energy consumption per light fitting, fewer fittings are required to achieve the same lighting effect as the old fittings.

Codema has also carried out an energy audit of County Hall, which shows that a further 517 megawatt hours (MWh) and 155 tonnes of CO_2 could be saved by replacing the remaining 2,600 light fittings with high-efficiency LEDs. The reductions could be greater still if some unessential fittings are removed, and a full roll-out of occupancy sensors and light dimming controls is carried out throughout the building.

CASE STUDY

Home Energy Saving Kits

SDCC, in partnership with Codema, is actively encouraging citizens to become more energy-aware by trialling Home Energy Saving Kits in a selection of its libraries. The kits will be available for the public to borrow free of charge from four of SDCC's libraries - County Library (Tallaght), Clondalkin Library, Lucan Library and Ballyroan Library - from autumn 2018. The kits contain six tools for householders to assess how energy-efficient their homes are. The scheme is the first of its kind in Ireland, and has had great success, having been used in over 1,000 homes across the country so far, as well as garnering awards and recognition, both nationally and at an EU level.

RESEARCH AND INNOVATION

To maximise the benefits of advances in technology, SDCC is part of the Smart Dublin programme 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. Phase 2 of the SBIR competition was launched in April 2018, and has a further €800,000 in funding to develop solutions for areas such as bathing water quality, staff workplace mobility and last mile delivery in urban centres.

ENERGY AWARENESS

A key aspect of reducing energy use is public awareness, as retrofits, technology and innovation can only achieve a portion of SDCC's goals. SDCC, in partnership with Codema, is regularly engaging with staff and citizens about how to save energy. For example, building on the Think Energy campaign in SDCC's County Hall, the Council has trialled Codema's Home Energy Saving Kits with its staff, to help them assess the energy efficiency of their homes; the kits are now available to the public in three of SDCC's libraries since the autumn of 2018.

CASE STUDY

Think Energy

The Think Energy campaign was rolled out in SDCC throughout 2016. The campaign aimed to help staff in County Hall become more aware about the energy use of the building and to encourage positive behavioural changes. As part of the Think Energy campaign in SDCC, Codema developed a monthly activity programme, which was rolled out in association with the OPW and included actions such as a staff survey, a lunchtime energy talk and an energy-saving Christmas colouring competition for children of the staff.

ENERGY & BUILDINGS

NO	ACTION	TIMEFRAME	LEAD DEPT(S)	INDICATORS	TARGET(S) IMPACTED
ACTIONS CURRENTLY BUDGETED					
ENERGY PLANNING					
1	Create Energy Master Plan for the Dublin Region	2018 onwards	Codema	Website with e-Map	
2	Develop Public Lighting Master Plan	Ongoing	Public Lighting	Plan developed, # of lights upgraded	
3	Prepare South Dublin Sustainable Energy and Climate Action Plan	2019	Codema	SECAP complete	
4	Evidence-based Climate Change Chapter in *County Development Plan 2022-2028*	2020 onwards	Land Use, Planning & Transportation	Chapter with policies and development management standards	
5	Evidence-based climate change chapter in *Tallaght Town Centre Local Area Plan*	2019	Land Use, Planning & Transportation	Climate change chapter in Local Area Plan	
ENERGY EFFICIENCY & RENEWABLES					
6	Comply with obligations for local authorities set under S.I. No. 426/2014	Ongoing	Architects	Compliant with S.I. No. 426/2014	
7	Display Energy Certificates for SDCC's public buildings	Ongoing	Codema	# of DECs generated for Council buildings	
8	Annual Monitoring and Reporting to SEAI	Ongoing	Codema	SDCC's energy data uploaded to SEAI M&R system	
9	Development of yearly Energy Reviews for SDCC	Ongoing	Codema	Energy Review published, # of recommendations implemented	
10	Development of the Tallaght District Heating Scheme	2019 onwards	Architects, Codema	# of buildings connected	
11	Deep retrofits of the Council's housing stock	Ongoing	Housing Maintenance, Architects	# of housing units upgraded	
12	Energy efficiency works in Council owned and operated buildings	Ongoing	Architects	# of upgrades carried out	
13	Ongoing upgrading of lights in County Hall to LEDs	Ongoing	Architects	# of LEDs installed	
14	Energy Performance Contract carried out in Tallaght and Clondalkin Leisure Centres	2019	Architects, Codema	EPC awarded, measurement and verification of savings	
15	Replace 4,000 SOX lamps with LEDs	2020	Public Lighting	# of SOX lamps replaced with LEDs	

NO	ACTION	TIMEFRAME	LEAD DEPT(S)	INDICATORS	TARGET(S) IMPACTED
RESEARCH & INNOVATION					
16	Expand and develop Small Business Innovation and Research (SBIR) programme	2018 onwards	Smart Dublin, LEO	Energy and climate change challenges identified for SBIR challenges	
ENERGY AWARENESS					
17	Monitor and develop the Home Energy Savings Kit scheme in SDCC libraries	2018 onwards	Codema, South Dublin County Libraries	# of kits in branches, borrowing rates in libraries	

ACTIONS AWAITING BUDGET

18	*Assess feasibility of additional low carbon district heating networks: Clonburris and Grange Castle*	*2020*	*Codema, Planning*	*Study completed*	
19	*Expand housing assistance programme to include tenant energy awareness*	*2019*	*Housing, Maintenance*	*# of tenants provided with energy saving tips*	

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 - Buildings other than Dwellings 2017
- 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. 426/2014 - European Union (Energy Efficiency) Regulations
- S.I. No. 243/2012 - European Union (Energy Performance of Buildings)
- South Dublin County Council Development Plan 2016 -2022 (Policies E4; E6; E7; E8; E9)
- South Dublin Sustainable Energy Action Plan (SEAP)
- Support Scheme for Renewable Heat