



codema
Dublin's Energy Agency

CODEMA ANNUAL REPORT 2020



01.	CEO FOREWORD	02
-----	-------------------------	-----------

02.	ABOUT CODEMA	04
	Vision, Mission and Values	04
	The Codema Board of Directors	05
	The Codema Team	06
	Core Competencies	08

03.	WORK PROGRAMME 2020	10
	Local Authority Energy Management	10
	Project Implementation	20
	Awareness, Communication and Engagement	30
	Research, Development and Innovation	40
	Management Support	50

04.	FINANCIAL REPORT	58
	Income and Expenditure Account 2020	58
	Balance Sheet 2020	59

05.	APPENDICES	60
	Abbreviations	60

01. CEO FOREWORD

“In 2020, Codema continued to lead the local-level response to the energy transition in the Dublin region, with contracts signed on the first large-scale district heating system in Ireland, three further Energy Performance Contracts advanced, and taking on a new role as the regional coordinator of the Sustainable Energy Authority of Ireland’s Sustainable Energy Communities programme.”

Every foreword of every report published this year will inevitably start with reference to the unprecedented year we have experienced due to the spread of the Covid 19 virus across the world. At Codema, we have been in the privileged position to be able to carry on delivering our services while working from home, and the switch over to a fully-digital work life has been very successful, thanks to the cooperation and dedication of our staff and our project partners.

It has been very encouraging to see the continued focus on energy and climate change issues in Ireland despite the pandemic. The new ambitious carbon emissions reduction targets as published in the 2020 *Programme for Government: Our Shared Vision* highlights the challenges we face to meet those targets by 2030 and to put Ireland on a pathway to carbon neutrality by 2050. The *All of Government Climate Action Plan 2019* was already an ambitious plan, and the new 7% per year CO₂ reduction target means this needs to be stepped up even further. The increased focus on climate mitigation at a national level has continued to keep us very busy and increased our services delivered in 2020.

In 2020, Codema continued to lead the local-level response to the energy transition in the Dublin region, with contracts signed on the first large-scale district heating system in Ireland, three further Energy Performance Contracts advanced, and taking on a new role as the regional coordinator of the Sustainable Energy Authority of Ireland’s Sustainable Energy Communities programme. We continued our successful roll-out of the Home Energy Saving Kit across the library network in Ireland with a major expansion, and furthering our citizen engagement work with online workshops and social media campaigns aimed at reducing energy at home, which is more important than ever with so many of us spending so much of our time there.

We kicked off a new European project that will help us to use best practices from across Europe, with partner cities Munich, Vienna, Rotterdam, Bilbao, Bratislava and Winterthur, to develop a transition roadmap to move away from fossil fuel use for heat, which is a large part of our emissions in Dublin. We also put a lot of time and energy into a successful application for EU funding for Project Development Assistance to roll out a large pipeline of projects across Dublin worth more than €20 million. We furthered our work on evidence-based energy planning, advancing the Dublin Region Energy Masterplan, which will be a very useful tool for local authorities in their climate action work, such as identifying Decarbonising Zones, and also as a communications tool for engagement with citizens across Dublin. It will also be used in the Dublin Energy Transition Roadmap.

We continue to keep the local authorities' own energy targets at the heart of our services, and worked with their energy teams throughout 2020 to establish energy management systems and pipelines of projects to achieve the new 50% energy efficiency and CO₂ 2030 targets. This included a feasibility study of a large number of public buildings across all four local authorities for energy efficiency and PV installation, which was submitted to the Climate Action Fund's Expressions of Interest call, and further technical assessment of large scale solar PV on closed landfill sites.

We welcomed three new team members during 2020, bringing us to a team of 16 staff working across our five new restructured service areas of Local Authority Energy Management, Research, Development and Innovation, Project Implementation, Awareness, Communications and Engagement, and Management Support. We also established a new Board, which will help us to achieve our strategic goals and to oversee Codema's operations as a not-for-profit company limited by guarantee.

It has also been my pleasure to take up the role of CEO of Codema in 2020, after 22 very successful years under the leadership of Codema's founder, Gerry Wardell. We are delighted that Gerry is able to remain with us as a board member of Codema, given his wealth of knowledge and experience in the sector.

Looking ahead to 2021, we look forward to continuing our successful partnerships with the Dublin Local Authorities and the Dublin Metropolitan Climate Action Regional Office, and we also look forward to working with new allies and partners. Tackling climate change is an all-of-society challenge; it will require as much bottom-up as top down action, and this is where the role of energy agencies will be needed, to act as a conduit between local and national levels to effectively roll-out and implement the actions required on the ground. There are many actors working in the climate action space, promoting the use of many different methods and technologies to lower our emissions, but one pathway is evidently clear - we need to work together and we need all the solutions on the table. Every citizen, every organisation and every technology will have a part to play. We look forward to playing our part and to new and further collaborations in 2021.



Donna Gartland
Chief Executive Officer, Codema



02. ABOUT CODEMA



Vision, Mission and Values

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

We pride ourselves in being very successful in bringing innovative energy projects and methods to Ireland. For example, we are working with Dublin City Council and South Dublin County Council to develop Ireland's first large-scale

district heating networks, which will supply homes and businesses in the Dublin area with low-carbon, renewable heat. Using our knowledge of European best practice, we are working with all four Dublin Local Authorities to implement Energy Performance Contracting (EPC), with two projects already ongoing in Dublin City Council. Our Energy Planning team is currently working on an Energy Master Plan for the entire Dublin Region, which will be the first of its kind in Europe and will provide evidenced-based solutions for reducing our carbon emissions towards 2030 and 2050. We are also using innovative methods to improve energy and climate awareness among citizens, such as our successful Home Energy Saving Kit scheme and the development of a collaborative roadmap for Dublin's energy transition, with citizens at the forefront.



Vision

Codema's vision is for a better quality of life for all citizens through a fair and inclusive transition to a low-carbon society.



Mission

Our mission is to accelerate Dublin's low-carbon transition through innovative and inclusive local-level energy and climate change research, planning, engagement and project delivery, in order to mitigate the effects of climate change and improve the lives of citizens.

Our Approach



Working with the four Dublin Local Authorities in leading and influencing the low-carbon transition



Making innovative energy projects mainstream with wide-scale impact



Influencing national and European policy through our on-the-ground knowledge of best practice models in Europe



Supporting networks of communities in developing a low-carbon energy model



Identifying and championing best-practice, low-carbon transport and building solutions



The Codema Board of Directors

In 2020, Codema formed a Board of Directors to oversee the governance of the company and to help ensure that Codema's vision and mission are achieved. The board members consist of senior representatives from the Dublin Local Authorities, along with representatives from the energy, legal and financial sector. The Codema board will meet on a bi-monthly basis.



The Codema Board Members consist of the following members:

Owen Keegan (Chair)

Board Chairperson and Non-Executive Director, Dublin City Council board nominee

Chief Executive, Dublin City Council

Gerry Wardell

Board Secretary
Non-Executive Director, Codema

Donna Gartland

Executive Director
Chief Executive Officer, Codema

Robert Burns

Non-Executive Director, Dún Laoghaire-Rathdown County Council board nominee

Director of Infrastructure and Climate Change, Dún Laoghaire-Rathdown County Council

Ethna Felten

Non-Executive Director, Fingal County Council board nominee

Director of Aircraft Noise Competent Authority, Fingal County Council

PJ Rudden

Non-Executive Director
Managing Director, Aengus Consulting Limited

Teresa Walsh

Non-Executive Director, South Dublin County Council board nominee

Director of Environment, Water and Climate Change, South Dublin County Council

Mark Varian

Non-Executive Director
Partner, Eversheds Sutherland

02. ABOUT CODEMA

(CONTINUED)

The Codema Team

Codema currently employs 16 staff who have qualifications and experience in areas such as Engineering, Sustainable Development, Sustainable Infrastructure, Energy Planning, Architecture, Communications, Marketing, Project Management and Financial Administration. This allows the team to deliver key services within areas such as Local Authority Energy Management, Project Implementation, Awareness, Communications and Engagement, Research, Development and Innovation and Management Support.





**Gerry Wardell -
Non-Executive Director**

Certificate in Advanced Negotiation
Certificate in SME Management
PhD in Experimental Physics



**Donna Gartland – Chief
Executive Officer**

MSc in Sustainable Energy Planning
and Management
BEng in Energy and Environmental
Engineering



**Edel Giltenane - HR &
Operations Manager**

Diploma in HR Management
Certificate in SME Management
PMI Project Management
Professional (PMP)
MSc in Environmental Resource
Management
BSc in Earth Science



**Claire Donoghue – Office
Administrator**

Diploma in Digital Marketing
GDPR Training
MA in Film and Television Studies
BA in Media Production and
Management
HND Television Operations and
Production Management



**Kevin Craven - Project
Finance Manager**

Diploma in Financial Services
Certified Project Management
Diploma
BA in English, Sociology and Politics



**Joe Hayden - Senior
Executive Engineer**

Certificate in Public Procurement
Certified Measurement and
Verification Professional (CMVP)
MSc in Sustainable Development
BA/BAI in Mechanical and
Manufacturing Engineering



**Dec McCormac - Project
Manager**

PMI Project Management
Professional (PMP)
Diploma in Public Procurement
MSc in Sustainable Development
BA (Intl) in Geography and
Archaeology



**Suzanne Fitzpatrick -
Communications Manager**

Executive Diploma in Digital Marketing
Certificate in Internal Communications
Diploma in PR and Event Management
BA in Journalism



**Brian Connolly – Energy
Manager**

BSc in Sustainable and Electrical
Control Technology
BSc in Electrical Services and Energy
Management
Qualified DEC Assessor
Non-domestic BER Assessor



**John O'Shea - Energy
Systems Analyst**

Post-Graduate Diploma in Sustainable
Energy
CIBSE-certified Heat Networks
Consultant
BEng in Civil Engineering



**Rebecca Cachia - Civil
Engineer**

MEng in Sustainable Infrastructure
B.E. & A. (Hons) in Architecture and
Civil Engineering



**Katia Tikhoniouk –
Communications and Project
Coordinator**

Diploma in Graphic Design and
Desktop Publishing
Certificate in Project Management
Diploma in Digital Marketing
BA & MA in Architecture



**Eoin Ahern – Energy
Manager**

MEngSc in Sustainable Energy
Research
MEngSc, UCC - Renewable Natural Gas
BE in Mechanical Engineering
Certified Energy Manager (CEM)
Non-domestic BER Assessor
Registered DEC Assessor
Registered Energy Auditor



**Rowan Molony - Energy
System Modeller**

BE & MA in Mechanical &
Manufacturing Engineering



**Oisín Doherty - Junior
Energy Systems Analyst**

ME in Energy Systems Engineering
BSc in Mechanical Engineering



**Katie Harrington - Energy
and Climate Awareness
Officer**

MSc in Climate Change (currently
being completed)
Postgraduate Diploma in Digital
Marketing
BSc in Marketing

02. ABOUT CODEMA

(CONTINUED)

CORE COMPETENCIES



LOCAL AUTHORITY ENERGY MANAGEMENT

Monitoring and Reporting
Energy Databases
Energy Surveys
Energy Audits
Display Energy Certificates
ISO 50001
Energy Efficiency Upgrades
Measurement and Verification
Energy Management System Implementation



PROJECT IMPLEMENTATION

Energy Efficiency Projects
Renewable Energy Projects
District Heating Contracting
Project Procurement and Finance



AWARENESS, COMMUNICATION AND ENGAGEMENT

Think Energy Campaign
Home Energy Saving Kits
Energy and Climate Awareness Programmes
Staff Engagement
Educational Workshops and Events
Information Events
Promotion of Local Authority Energy and Climate Change-Related Projects
Sustainable Energy Communities
Dublin Energy Transition Roadmap



RESEARCH, DEVELOPMENT AND INNOVATION

EU and National Energy and Climate Change Policy
Climate Mitigation and Adaptation
Energy Planning across Electricity, Heat, Transport and Building Energy Efficiency
GHG Modelling
Techno-Economic Energy System Analysis
Detailed Energy System Financial Appraisals
Energy Master Planning
District Heating Expertise
Advice on Development Plans and Policy Papers
Socio-Economic Impact Analysis



MANAGEMENT SUPPORT

Financial Administration and Reporting
Project Proposals
Tender Development
Local and EU Project Management
National and EU Funding Applications

03. WORK PROGRAMME 2020



LOCAL AUTHORITY ENERGY MANAGEMENT

Monitoring and Achieving Public Sector Energy Targets

Codema works with the Dublin Local Authorities (DLAs) to help them monitor and achieve their public sector energy efficiency targets, which have been set at a 33% improvement in energy efficiency by the year 2020. These targets have been set through successive National Energy Efficiency Action Plans (NEEAPs), under the European Energy Efficiency Directive (2012/27/EU). In the third NEEAP of 2014, this 33% target was reiterated as a central pillar of our national energy efficiency policy.

All four local authorities have now provisionally met their 2020 target, and further 2030 public sector targets have been set, based on the Government's Climate Action Plan 2019 To Tackle Climate Breakdown. New targets of a 50% improvement in energy efficiency and a 30% reduction in CO₂ by 2030 have been set for the public sector. This will demand continued and increased focus on the energy performance of the Councils' buildings and operations over the coming decade. As many of the "low hanging fruit" energy saving actions have already been implemented, this will require the development of more ambitious and innovative energy programmes and projects, and Codema will continue to work with the relevant DLA Energy Performance Officers (EPOs) and Energy Teams to help them to identify and implement the best energy-saving opportunities in their organisations.

All four local authorities have now provisionally met their 2020 target, and further 2030 public sector targets have been set, based on the Government's Climate Action Plan 2019 To Tackle Climate Breakdown.



2020 Energy Efficiency Targets

European

European Energy Efficiency Directive (2012/27/EU)
20% energy reduction

National

National Energy Efficiency Action Plan (NEEAP)
33% improvement in energy efficiency

Local

Annual Reporting of Energy Efficiency Data under S.I. 542 of 2009 (restated under S.I. 426 of 2014)



2030 Energy Targets

Covenant of Mayors for Climate and Energy / Climate Change Action Plans
40% reduction in GHGs

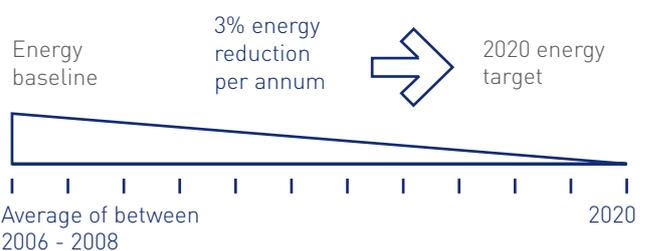
National Climate Action Plan
50% improvement in energy efficiency for public sector bodies

Management of Public Sector Monitoring and Reporting

In January 2017, the government launched the Public Sector Energy Efficiency Strategy. The aim of the strategy is to ensure that senior leadership and accountability on energy efficiency are core to the local authorities' objectives. Senior managers in over 300 public bodies have been given the responsibility of ensuring compliance with existing energy performance reporting and monitoring requirements, and embedding structured energy management practices in their organisation.

Under S.I. 426 of 2014, the DLAs have an obligation to report annually on their energy performance. In practice, this annual reporting involves compiling full data of their previous year's energy consumption. This comprises mainly of MPRN data for all electricity accounts and GPRN data for all natural gas accounts, along with the annual consumption data for non-metered public lighting, heating oil and transport fuels.

Yearly Energy Targets



03. WORK PROGRAMME 2020

LOCAL AUTHORITY ENERGY MANAGEMENT (CONTINUED)

Codema can assist the DLAs with the following Energy Management Processes



ENERGY SURVEYS OF BUILDING GROUPS

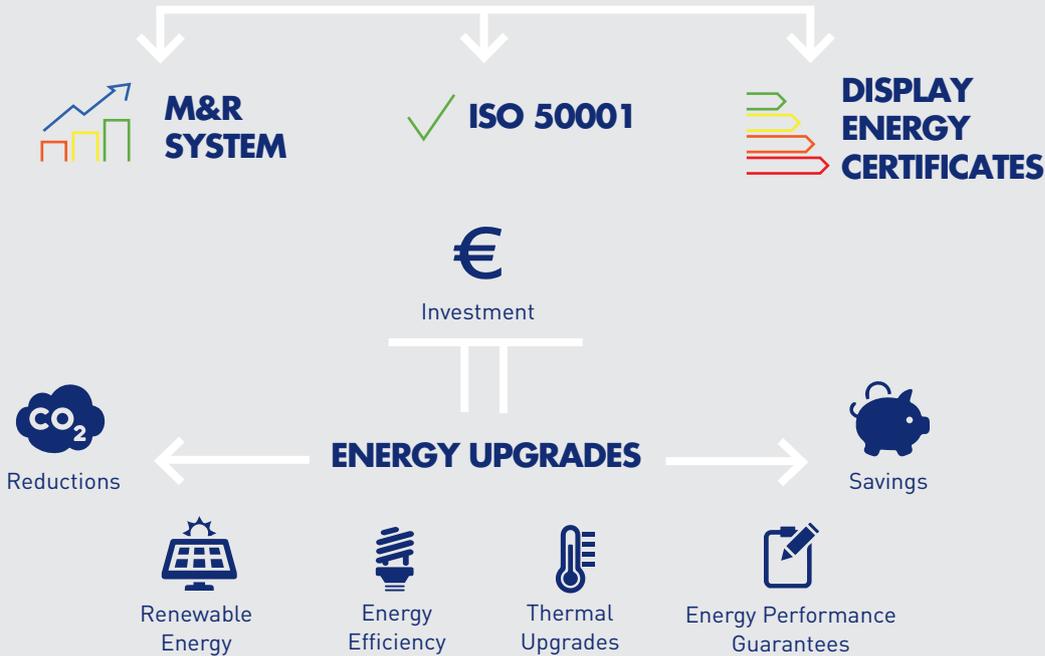
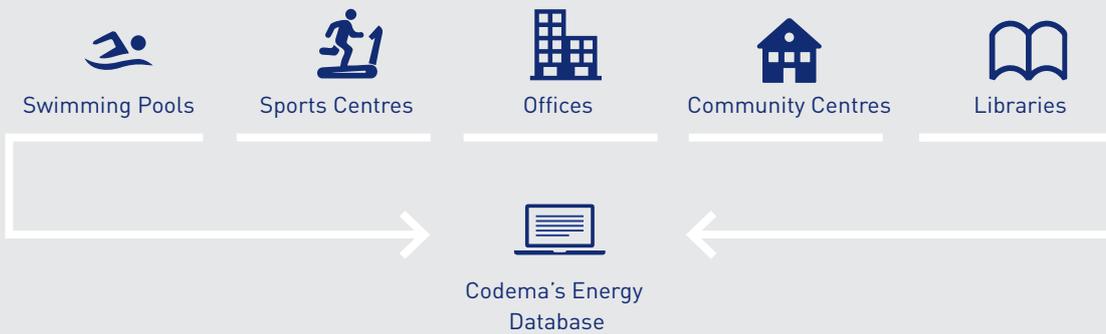




Photo courtesy of Fingal County Council

In 2020, Codema supported all four DLAs with this statutory reporting to the national energy Monitoring and Reporting (M&R) system operated by the Sustainable Energy Authority of Ireland (SEAI) on behalf of the Department of the Environment, Climate and Communications (DECC). The M&R system is useful for tracking the individual local authority's progress towards the 2020 target, compared to its baseline year, which is 2009 for DLRCC, and an average of between 2006 and 2008 for Dublin City Council (DCC), Fingal County Council (FCC) and South Dublin County Council (SDCC). This means that each DLA must reduce its annual energy use by approximately 3% each year up to 2020, from its baseline year.



Energy Reviews

In 2020, Codema produced the annual Energy Reviews for all four Dublin Local Authorities. These were based on 2019 data and aimed to help the DLAs in their energy planning programmes, in order to meet the 2020 energy target and look towards the new 2030 target for the public sector. The Energy Reviews highlighted the total amount of energy that the Councils consumed throughout the year, along with the total cost and carbon emissions associated with this energy use in the same year. This data allowed Codema to develop a specific list of energy-saving recommendations, which will guide each DLA on how best to tackle their Significant Energy Users (SEUs) and continue to meet public sector energy targets.

ISO 50001

In 2020, Codema worked regularly with the DLAs in relation to the implementation and management of their energy management systems to coordinate all actions towards reaching and maintaining certification to ISO 50001 standard and meeting energy efficiency and carbon reduction targets.

Fingal County Council and South Dublin County Council signed up to SEAI's ISO 50001 masterclass and both completed the course in 2019. This masterclass aimed to guide the local authorities towards achieving ISO 50001 accreditation. Codema is currently aiding SDCC in completing outputs from these masterclasses and is helping the Council to progress the energy management system to a stage where it can apply for certification in 2021.

After completing the masterclass, FCC, with the aid of Codema, completed its Stage 2 audit with Certification Europe in December 2019 and was recommended for certification. In

03. WORK PROGRAMME 2020

LOCAL AUTHORITY ENERGY MANAGEMENT (CONTINUED)

February 2020, FCC received certification to the new industry standard ISO 50001-2018. In April 2020, FCC completed the first surveillance audit of the newly-implemented management system, which the Council successfully passed.

Dublin City Council completed SEAI's masterclass in 2016 and Codema is currently aiding the Council towards full certification by the end of 2021.

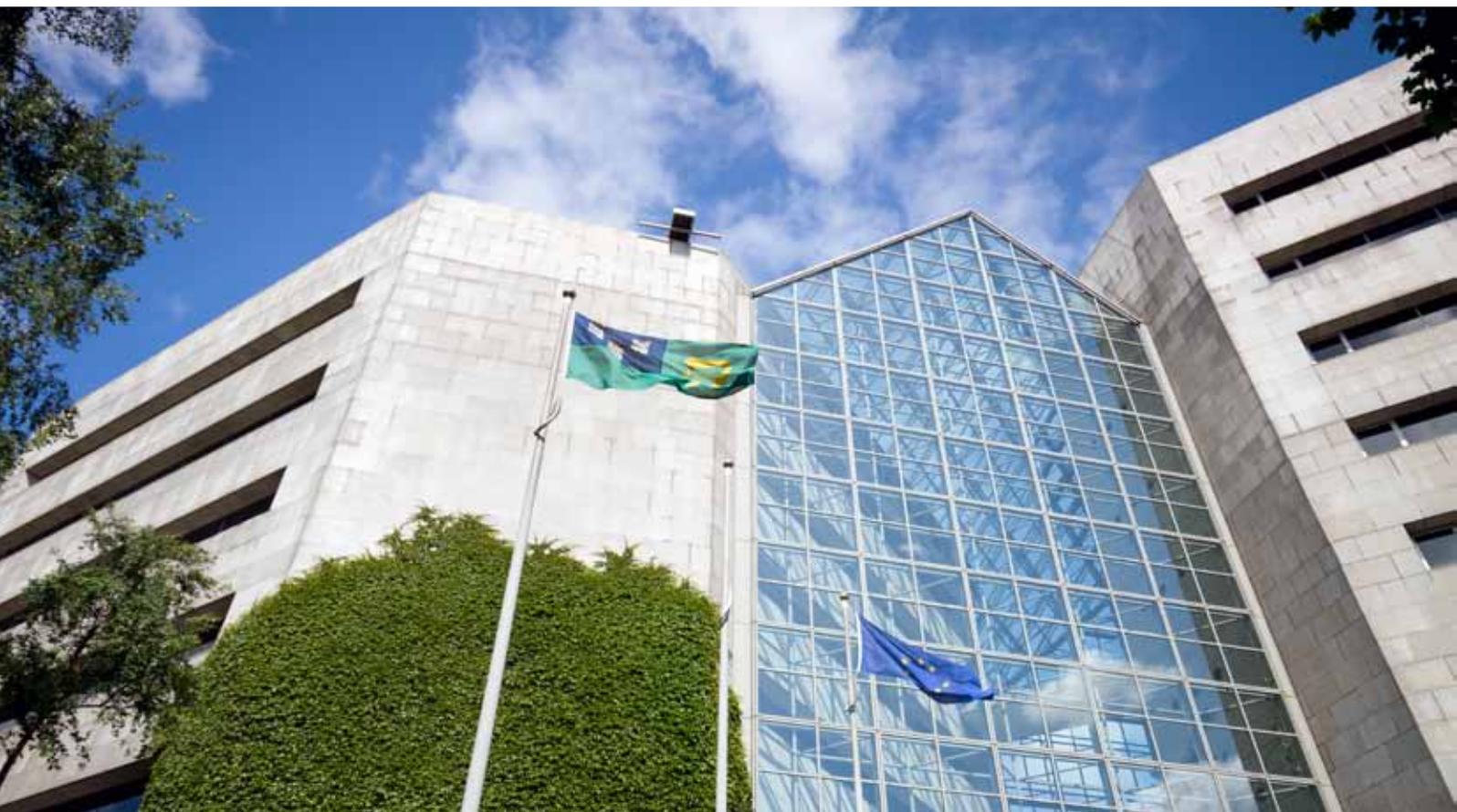
Dún Laoghaire-Rathdown County Council achieved ISO 50001 accreditation in 2016 on the back of SEAI's initial ISO 50001 masterclass. Codema agreed a work programme to aid the local authority with its energy management system and throughout the recertification process. In November 2020, DLRCC successfully passed its first surveillance audit to the new 2018 standard.

Energy Team Meetings

In 2020, Codema helped to facilitate 12 energy team meetings across the four Dublin Local Authorities. These energy team meetings are part of the structured energy management system that the Councils have either achieved certification for or are in the process of achieving certification.

In DCC, Codema helped facilitate an Inter-Departmental Energy Oversight Committee meeting. This meeting aimed to identify and cost potential projects across each of the Council's Significant Energy Users (SEUs), in order to help the Council maintain its energy efficiency targets. Projects were identified during the Energy Review process and an action plan was established, in order to ensure that the Council makes consistent progress towards its 2030 carbon reduction target. One of the most significant projects that was identified was the continued roll out of LEDs by the Public Lighting Department. DCC has committed to replacing the remaining 36,000 street lamps with LEDs, coupled with the roll-out of a central management system to manage street lights remotely, and to facilitate smart cities applications within the capital. The project aims to replace up to 8,000 lamps per year and it is envisioned it will take up to eight years to complete.

DCC is also investigating the potential to install a combined heat and power (CHP) unit in its Civic Offices to provide electricity to the building and backup power in the case of a blackout. Codema will continue to work with the Energy Oversight Committee in 2021, and will continue to develop an energy management system within DCC, as part of this process.



FCC and DLRCC currently have energy management systems in place. As part of these systems, both local authorities meet regularly with their team members, in order to keep track of energy performance, as well as the energy management system in its entirety. These energy teams also keep track of action plans and ensure SEUs are on target to achieve their energy efficiency and carbon reduction goals. These team meetings are a crucial part of the Councils' energy management system and Codema helps both local authorities to facilitate these meetings by helping to set agendas and work with each SEU area, all with the view to ensure they reach their targets and that the energy management system continues to improve.

Display Energy Certificates (DECs)

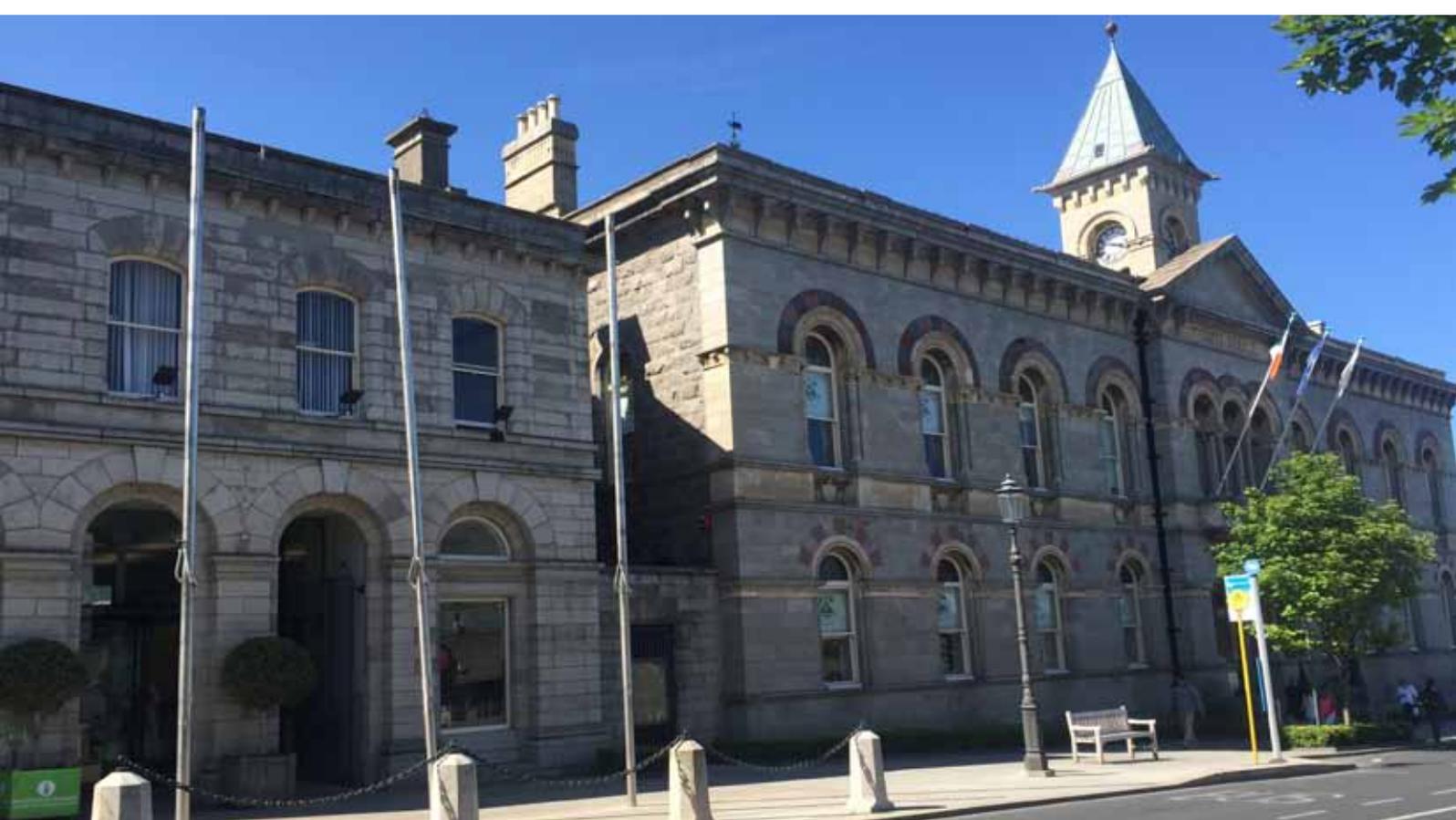
The information from Codema's energy database and energy surveys is used to prepare Display Energy Certificates for each local authority public building with a floor area greater than 250m², as required under the regulation S.I. 243 of 2012.

Codema assisted the four DLAs with the annual certification of 89 public buildings in total in 2020. This information was entered into the SEAI system for the local authorities, 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.

Display Energy Certificates are a form of Building Energy Rating for public buildings, which give an indication of their energy efficiency.



03. WORK PROGRAMME 2020

LOCAL AUTHORITY ENERGY MANAGEMENT (CONTINUED)



Photo courtesy of Dublin City Council

Energy Audits and Analysis

In 2020, Codema continued with energy audits and analysis of Council buildings, despite the challenges that the Covid pandemic presented. While no physical site visits were possible, Codema facilitated energy audits of four DLRCC facilities to ascertain the feasibility of a possible future energy performance contract. These facilities included County Hall, Harbour Square, dlr Lexicon and Ballyogan Operations Depot. All site visits were carried out under strict guidelines from the local authority.

Project Proposals / Feasibility Studies

Once completed, energy audit reports carried out by Codema are presented to the DLAs. Based on the findings of these reports, the DLAs may wish to explore the possibility of implementing the recommendations. Codema will then put together a project identification and proposal document, which gives a brief description of the project and displays the findings from the financial analysis carried out to ensure the measures are financially viable and that there is a cost benefit to the project.

In 2020, Codema also drafted a proposal to examine the potential savings from a number of energy upgrades to DCC's Civic Offices. These potential measures include the installation of a CHP unit and also an LED lighting retrofit. The findings from this proposal were presented to senior management in

DCC and it is hoped that this proposal can be explored in more detail in 2021 if Covid restrictions are eased.

Codema also carried out research to assess both the practicality and feasibility of all public buildings achieving a 'B' Building Energy Rating (BER) by 2030, a target which was set out under the government's Climate Action Plan 2019. This is particularly relevant to the four Dublin Local Authorities, and will contribute towards their 2030 energy efficiency and carbon emissions targets. The report will inform policy makers at a national level of the practical efforts of this target, as well as any issues Codema has identified and potential solutions.

Additionally, Codema carried out a feasibility study in 2020 for installing solar panels on Council-owned buildings. The report provided a high level analysis of the suitability of DLA properties to accommodate solar photovoltaic (PV) panels and presented the potential for a project encompassing all suitable properties. Government policy states that energy efficiency measures should be considered before the use of renewable energy systems, therefore it is strongly recommended that for each individual site, any PV installation would be combined with an LED lighting retrofit at the very least, and perhaps further measures such as controls, heating systems or building fabric upgrades. An LED retrofit was therefore included with the PV installation for each of the buildings investigated.

LOCAL AUTHORITY ENERGY MANAGEMENT - KEY OUTPUTS FOR 2020



**2,793 ENERGY
ACCOUNTS ENTERED
INTO M&R SYSTEM**



**4 ENERGY REVIEWS
PRODUCED**



**BER 'B' REPORT
DEVELOPED**

Local Authority Energy Management - Actions and Outputs 2020

Date	Actions	Project support	Outputs
January	MPRNs & GPRNs verified for all DLAs for M&R	--	2,793 energy accounts entered into the M&R
	M&R Consultation submitted to SEAI	--	Completed consultation paper to SEAI on new M&R methodology
	Presentation to DCC Environmental SPC	--	Presentation given to DCC SPC on update on energy in buildings section of the CCAP
February	DLR Work Programme completed	--	Work Programme in relation to the EnMS completed and presented to DLR management team
	DLR Energy Team Meeting	--	DLR Energy Team meeting held in County Hall. Presentation prepared for Ballyogan and Corporate Services
	Presentation given at the EPC Facilitation Workshop	--	Presentation prepared for workshop
	FCC Energy Team Meeting	--	FCC Energy Team Meeting held in County Hall
May	SRSS Survey Template completed	--	SRSS Survey Template completed and sent to EPOs
	DLR energy actions in CCAP updated	--	Energy actions updated
	Presentation to FCC Energy Team	--	Update on energy performance of the Council and SEUs

03. WORK PROGRAMME 2020

LOCAL AUTHORITY ENERGY MANAGEMENT (CONTINUED)

Date	Actions	Project support	Outputs
May	Presentation to DLR Energy Team	--	Update on energy performance of the Council and SEUs
	Moderated breakout sessions in Build Upon2 workshop	Build Upon2	Workshop facilitated
June	SRSS Surveys completed	--	Surveys completed for DLAs and uploaded
	First Draft of BER to B Report	--	Draft reviewed internally
July	BER to B report completed	--	Report completed and sent to DLAs
	Detailed Energy Review completed for FCC ahead of ISO 50001 surveillance audit	--	Detailed Energy Review completed
	FCC ISO 50001 surveillance audit	--	ISO 50001 surveillance audit carried out by Certification Europe and successfully passed
	DLRCC M&R DVA submission completed	--	Response completed on behalf of DLRCC, submission successfully passed assessment
	SDCC 2019 Energy Review completed	--	SDCC 2019 Energy Review published online and circulated to key staff
August	FCC competitive dialogue meetings for EPC	--	Meeting organised and hosted remotely
	DLRCC competitive dialogue meetings for EPC	--	Meeting organised and hosted remotely
	Completed DLRCC's DEC's	--	20 DEC's completed and sent to facility managers
	DLR Energy Team Meeting	--	Update on energy performance of the Council and SEUs
	Finding from SDCC's Energy Review presented to senior management	--	Presentation to senior management
September	FCC 2019 Energy Review completed	--	FCC 2019 Energy Review published online and circulated to key staff
	CCAP updates completed for all DLAs for Q3	--	Updated templates and sent to coordinators
	DLR Energy Team Meeting	--	Update on energy performance of the Council and SEUs
	DCC Energy Oversight Committee meeting	--	Update on energy performance of the Council's SEUs and presentation given on preliminary data from 2019 Energy review process
	Completed DCC's DEC's	--	43 DEC's completed and sent to facility managers

Date	Actions	Project support	Outputs
September	Completed FCC's DECs	--	7 DECs completed and sent to facility managers
	Completed SDCC's DECs	--	19 DECs completed and sent to facility managers
November	DLR Energy Team Meeting	--	Update on energy performance of the Council and SEUs
	DLRCC 2019 Energy Review completed	--	DLRCC 2019 Energy Review published online and circulated to key staff
	FCC ISO 50001 surveillance audit	--	ISO 50001 surveillance audit carried out by certification europe and successfully passed
December	DCC 2019 Energy Review completed	--	DCC 2019 Energy Review published online and circulated to key staff
	FCC Energy Team Meeting	--	Update on energy performance of the Council and SEUs

03. WORK PROGRAMME 2020



PROJECT IMPLEMENTATION

Over the past five years, Codema has facilitated the investment of €10.4m in energy efficiency, renewable energy and low-carbon projects for the Dublin Local Authorities. This includes the first large-scale district heating project in Ireland connecting both public and private customers, three Energy Performance Contract (EPC) projects involving 11 buildings and a renewable energy project involving six buildings.

What is unique about the majority of these projects (as set out in Table 1 on the next page) is the use of Energy Performance Contracts; the Dublin Local Authorities are among the first public bodies in Ireland to use these types of contract structures in Ireland.

Energy Performance Contracts are a key tool in the successful implementation of energy efficiency and renewable energy projects as they have a number of key advantages over traditional contracting approaches. They provide for the transfer of the technical risk to the contractor who provides a performance guarantee, they provide a mechanism for the local authority to cap their financial contribution to the project by providing a fixed sum and they provide a mechanism for the introduction of private sector finance via the Energy Service Company (ESCO) or contractor. These three key attributes of the EnPC ensure that the local authority gets value for money.

Over the past five years, Codema has facilitated the investment of €10.4m in energy efficiency, renewable energy and low-carbon projects for the Dublin Local Authorities.



Table 1: Energy Efficiency and Renewable Energy Projects facilitated by Codema

Project Name	Contract	Contract duration	Capital investment	Source of funding
DCC Civic Office and Library PV	Traditional Contract	Works only	€200,000	100% Local Authority
Irishtown Stadium LED lighting	Energy Performance Guarantee	3 months	€33,000	70% Local Authority / 30% Grant
OBI boiler replacement	Energy Performance Guarantee	1 Year	€230,000	100% Local Authority
DCC Leisure Centres EPC	Energy Performance Contract	8 years	€670,000	70% Grant / 30% ESCo
DCC Sports and Leisure EPC	Energy Performance Contract	8 years	€630,000	63% Local Authority / 37% ESCo
DLR Leisure Centres EPC	Energy Performance Contract	8 years	€600,000	50% Local Authority / 50% ESCo
Tallaght District Heating Scheme	Energy Supply Contract	10 years	€7,972,000	61% Grant / 39% ESCo
Total			€10,335,000	

03. WORK PROGRAMME 2020

PROJECT IMPLEMENTATION (CONTINUED)

DeliveREE

In September 2020, Codema made a successful application for funding under the Horizon 2020 Project Development Assistance call for the DeliveREE project. Through DeliveREE, Codema will build on the experience of the past five years and create an innovative project finance and delivery structure for energy efficiency and renewable energy projects in the Dublin region, across the four Dublin Local Authorities, using various performance-based contracting structures.

By creating a structured approach, DeliveREE will accelerate the formation of large-scale projects by standardising the project development process, allowing projects of various types and sizes to be aggregated to create scale. This enables the use of energy performance and energy supply contracts whose performance guarantees are both critical for achieving value for money, providing a mechanism for the involvement of private capital and limiting the exposure of the local authority to cost overruns. DeliveREE will do this by:

- Creating a 'one-stop-shop' Project Implementation Unit (PIU) for project owners to go to for energy saving projects
- Creating an innovative standardised central project delivery system for processing potential projects to achieve speed of assessment and give confidence and familiarity to clients

and market players

- Removing legal and administrative barriers through cooperatively designing approved assessment templates and procedures to ensure quality control and due diligence
- Aggregating projects, bundling multiple small and medium projects together to attract ESCo market and private financing, and gain large scale impact on efficiency in the building stock
- Using a range of performance-based contracts to ensure long-term, guaranteed energy savings and de-risk cash-flows

DeliveREE will allow Codema to develop a dedicated Project Implementation Unit (PIU) with the roll-out of a pipeline of energy efficiency projects in public sector buildings and services across the four Dublin Local Authorities over four years. The pipeline includes over 140 buildings and sites across the four Councils, including a mix of building types such as leisure centres, fire stations, theatres, libraries, head offices, community buildings and landfill treatment facilities.

The project will save an average of 24GWh energy savings over the contract lifetime, amounting to 3.97 ktCO₂ savings. The total capital expenditure of the pipeline is €20.4m, with an

Photo courtesy of South Dublin County Council



estimated total contract value of these energy projects of circa €23.5m, of which at least €9.75m will be privately financed. Based on Codema's experience of delivering projects with a mix of financing sources, we aim to have a financing split of 20% project owner, 30% grant and 50% private financing on average across the contracts.

One of the key aims of DeliveREE is to accelerate the development of energy efficiency and renewable energy projects in Dublin. Key to this will be the reduction of the project finance burden on the local authorities. Table 1 on the previous spread demonstrates how Energy Performance Contracts can be used to access private finance; it is the aim of DeliveREE to build on this knowledge and experience and combine this with available grants to achieve a financing split of 20% project owner, 30% grant and 50% private financing on average across the contracts.

Energy Efficiency Projects

DLR Leisure EPC Project

In 2020, Codema assisted DLR Leisure with the procurement of its first EPC project. Codema facilitated the project from start to finish, including complete management of the procurement process including drafting of all necessary documents, selection of preferred bidder and the management of all communications throughout the competition and with the successful bidder.

The process began in May 2020 with the publication of the Pre-Qualification Questionnaire (PQQ) for the EPC project for Loughlinstown, Meadowbrook and Monkstown Leisure Centres. This was then followed by the evaluation process in June and the selection of the three preferred ESCos to advance to the Competitive Dialogue stage. The Invitation-to-Participate in Competitive Dialogue (ITPCD) was issued in July, where the three successful ESCos were invited to complete their Investment Grade Audits of the three buildings. This was followed by a round of interviews where each ESCo presented their proposed solution for consideration. Following these interviews, the final Client Requirements were established and the Invitation-to-Tender was issued in November 2020. The project was awarded to Noel Lawler Green Energy Solutions in January 2021 and works are due to begin in March 2021.



Photo courtesy of Dlr Leisure

03. WORK PROGRAMME 2020

PROJECT IMPLEMENTATION (CONTINUED)



Photo courtesy of Fingal County Council

The project will include the installation of a new Combined Heat and Power (CHP) system, upgrades to existing external lighting, upgrades to the building management systems and upgrades to heating, ventilation and pumping systems across the three buildings. The total expected savings are €98,179 per year, a reduction of 31%.

FCC Office Building EPC Project

In September 2019, Codema began work on the procurement phase of an EPC project in FCC with the issuing of a Pre-Qualification Questionnaire on e-Tenders. This project involves FCC's headquarters at County Hall in Swords, along with the Civic Offices, Draíocht Arts Centre and public library in Blanchardstown. The project plans to upgrade the existing lighting, heating and ventilation systems in the three buildings. Boiler upgrades, control systems and renewable energy systems such as PV panels will also be considered.

The Invitation-to-Participate-in-Competitive-Dialogue (ITPCD) was issued in June 2020 and the successful ESCos were invited to complete their Investment Grade Audits of the facilities. This was followed by a round of interviews where each ESCo presented their proposed solution for consideration. Following these interviews, the decision was taken to reduce the project to two buildings and for the project to focus on County Hall in Swords and the Civic Offices in Blanchardstown. The final Client Requirements were then established and the Invitation-to-Tender is due to be issued in February 2021. The total savings are expected to be in the region of €124,000 per year, a reduction of 33%.

Measurement and Verification Support

In 2020, Codema continued to assist DCC with the ongoing Measurement and Verification (M&V) of its two ongoing Energy Performance Contract (EPC) projects.

The first EPC project involved a number of energy efficiency upgrades to Ballymun, Finglas and Markievicz Sports and Fitness Centres. The contract is now in its fifth year of an eight-year contract and the latest M&V figures show that between December 2016 and June 2020, the project has achieved energy savings of 10.2 GWh with a value of €678,079. The project has also saved 2,734 tonnes of CO₂ and an average annual energy savings of 36%. Codema will continue to assist DCC with managing this M&V process in 2021.

Codema also helped DCC during the completion works phase and the M&V of its second EPC project. This project involved upgrading the existing lighting, heating and ventilation systems across seven sports and leisure buildings. The largest building is Ballyfermot Sports and Fitness Centre; the other six buildings are dry sports halls, namely St Catherine's Community Centre, Ballybough Community Centre, Cabra Parkside, Irishtown Sports and Fitness Centre, Bluebell Sports Centre, and Poppintree Community Sports Centre. The works were completed in February 2020 and the eight-year services period began on the 1st March 2020. Initial savings measurement and verification figures will be reported in April/May 2021.



O'Brien Institute Training Centre EPG Project

In 2019, Codema assisted the Dublin Fire Brigade with the procurement of an EPG (Energy Performance Guarantee) contract for the replacement of the existing gas boiler system in the O'Brien Institute. Under the EPG arrangement, 7.5% of the successful contractor's fee is withheld for one year to allow for the efficiency of the new system to be measured over the course of a full heating season. If the system operates as expected, then the contractor receives the retained amount. However, if it fails to perform as expected then only a proportion (or none) of the retained amount is returned. If, however, the system performs even better than expected, a bonus payment is made to the contractor along with the retained 7.5%. The boiler replacement is due to take place in the summer of 2021 when the heating demand of the building is low. Codema will continue to assist with the project and with the measurement and verification process.

Renewable Energy Projects

Dublin Urban Solar Farm Project CAF Expression of Interest

An expression of interest for grant funding under the Climate Action Fund (CAF) was completed for a possible Solar Farm in the Dublin Region in February 2020. Buildings that spend less than €30,000 per year on energy make up 66% of the total building stock and are responsible for 40% of the total building energy consumption. The two measures that are most suited to these smaller public buildings are LED lighting and solar photovoltaic (PV) panels. Acting on the principle of efficiency first, this project would upgrade the existing lighting to LED and then install solar PV panels on the roof of each building. The LED lighting would significantly reduce the electricity consumption of the buildings, allowing the PV to provide a net 100% of the electricity needs. The solar PV systems would be networked together to create a 2.4MW Urban Solar Farm spread over 80 local authority buildings providing for the possibility for the system to be centrally monitored and controlled as one.

In addition, the local authorities would pilot four green roofs with a PV array, one in each area. These would be monitored to measure the efficiency gains of the PV panels through associated cooling. They would also be monitored for data on CO₂ sequestration, air pollution mitigation and water retention as an adapted SuDS solution.

The project is proposed to be undertaken on a framework with four lots, one per local authority. It would be procured as an energy supply contract, which would consist of continuous monitoring of the PV generation. This will also allow for display and awareness activities in the publicly-accessible buildings to educate visitors.

03. WORK PROGRAMME 2020

PROJECT IMPLEMENTATION (CONTINUED)



Photo courtesy of Pixabay / Zsuzsa Bóka

PV & LED Project Local Authority Reports

Preliminary analysis of the proposed Dublin Urban Solar Farm project was carried out for the CAF expression of interest, as stated on the previous page. Following on from this, detailed reports were completed for each of the four Dublin Local Authorities and issued in February and March. The reports provide a high-level evaluation of the suitability of an initial short list of facilities for inclusion in the project, as well as an initial financial appraisal, calculated both with and without CAF funding. Suitability for PV was assessed in terms of available roof area, orientation, pitch, shading and structural integrity. This analysis was carried out as a desktop assessment, using Google satellite imagery and streetview. The analysis was carried out with a view towards maximising electricity generation, with the assumption that exports to the grid would receive a feed-in tariff of €0.06 per kWh. Savings from LEDs were estimated based on the existing annual electricity consumption for each facility.

European City Facility Application

A joint application was made to the European City Facility (EUCF) for the Dublin Urban Solar Farm, involving all four DLAs and with DLRCC as the main project sponsor. The EUCF is a European initiative to support municipalities, local authorities and their groupings across Europe to develop investment concepts to accelerate investments in sustainable energy. In the form of a €60,000 grant, the EUCF finances services and activities to support the development of the investment concept, such as (technical) feasibility studies, market analysis, stakeholder analysis, legal, economic and financial analysis, risk analysis and the coordination and organisation of activities. It was hoped that the EUCF would

provide funding for initial audits of each building in order to assess its suitability in terms of the condition of its roof structure and electrical system, providing a more accurate list of suitable buildings. This would then enable the completion of the technical, legal and financial analysis required to prepare the project for procurement. Unfortunately the Dublin Urban Solar Farm was unsuccessful in this application.

Arthurstown Renewable Options Report

This report was prepared to provide an update on the options available to South Dublin County Council in developing a renewable electricity project at the Arthurstown Landfill Site. This builds on previous analysis carried out by Codema in relation to the various renewable energy options on the site, with two prior reports issued over the past two years. The leachate treatment facility at Arthurstown represents one of the largest electricity demands within SDCC. The primary goal of a project at this site would be to generate a sufficient quantity of renewable electricity to cover the existing site demand, allowing for "carbon-neutral" operation (i.e. net zero imports). The secondary goal would be to maximise the potential of the site for renewable electricity generation and export as a commercial concern. In either case, solar PV is seen as the most suitable technology. Solar PV costs have been steadily declining, with prices now falling below €1,000 per kW of installed capacity for large installations. Significant developments have occurred in the areas of grid connections and the Renewable Electricity Support Scheme (RESS) in Ireland over the past year. This report described in detail these developments, and provided a clear set of actions required to enable the progression of either a large or small-scale PV project.



Photo courtesy of South Dublin County Council

District Heating Contracting

Tallaght District Heating Scheme

In 2020, Codema continued to assist South Dublin County Council with the development of the Tallaght District Heating Scheme. This district heating network will use excess heat from a customisation to Amazon Web Services' (AWS) recently completed data centre to provide low-carbon heat to public sector, residential and commercial customers.

As part of the project, SDCC has established Ireland's first publicly-owned, not-for-profit energy company, to provide low-carbon heat to local community buildings. Trading as Heat Works, the district heating company has contracted Fortum, a large Finnish energy supply company with extensive district-heating experience throughout Scandinavia and Eastern Europe, to carry out the design, installation, and operation of the Tallaght network. The contract structure used to engage Fortum is an Energy Supply Contract under which Heat Works will pay Fortum based on the heat produced, thus passing the technical and operational risk of the energy centre and wider district heating network to Fortum.

Codema assisted SDCC at all stages of the procurement of this contract, drafting all the necessary documents and helping to finalise the contract details during 2020. The installation of the first pipes in the network is due to begin in Spring 2021.

Dublin Docklands District Heating System

Codema continues to work with Dublin City Council in the development of the Dublin Docklands District Heating System. In 2020, Codema provided ongoing technical input in helping to finalise assumptions for the economic model of the proposed project. Codema are also in discussions with the Sustainable Energy Authority of Ireland (SEAI) concerning the accommodation of the proposed district heating system into the DEAP and NEAP methodologies in regards to the calculation of the primary energy factors of the system. Codema also provides ongoing input into the legal discussion concerning the proposed structuring and development of the wider project.

SDCC has established Ireland's first publicly-owned, not-for-profit energy company, to provide low-carbon heat to local community buildings.

03. WORK PROGRAMME 2020

PROJECT IMPLEMENTATION (CONTINUED)

PROJECT IMPLEMENTATION - KEY OUTPUTS FOR 2020



CONTRACT SIGNED FOR DELIVERY OF TALLAGHT DISTRICT HEATING SYSTEM



DETAILED ASSESSMENTS ON SUITABILITY OF PV INSTALLATION AND LED UPGRADE WORKS ON DLA BUILDINGS



3 X EPC PROJECTS ADVANCED

Project Implementation - Actions and Outputs 2020

Date	Actions	Project support	Outputs
January	OBI Energy Performance Related Payment Contract Signing	--	Signed contract
February	Completed detailed report on possible energy efficiency works in Civic Offices	--	Project appraisal report
	Completed detailed report on suitability of PV installation and LED upgrade works on FCC facilities	--	Project appraisal report
	Expression of interest for CAF Funding completed for possible Solar Farm in the Dublin Region	--	Expression of interest report
March	Completed detailed report on suitability of PV installation and LED upgrade works on SDCC and DCC facilities	--	Project appraisal report
May	DLR Leisure PQQ uploaded to e-Tenders	--	PQQ document
	TDHS TUD Tallaght Report on connecting to the TDHS	HeatNet NWE	TUD Tallaght Report
June	Updated PV Report for DLRCC	--	Project appraisal report
	DLR Leisure EPC PQQ Evaluation	--	PQQ evaluation document
	FCC ITPCD	--	ITPCD document

Date	Actions	Project support	Outputs
July	Arthurstown Options Report	--	Project appraisal report
	DLR Leisure ITPCD	--	ITPCD document
August	FCC EPC Competitive Dialogue Meetings	--	Final project client requirements
	DLR Leisure EPC Competitive Dialogue meetings	--	Final project client requirements
September	DeliveREE Project Application drafted	--	Project application document submitted for funding
	EUCF Application	--	Application document submitted
October	Mansion House Energy Review	--	Findings from review presented to Lord Mayor
November	ITT for DLR Leisure EPC	--	ITT document
December	ITT for FCC EPC	--	Final Draft ITT document issued to FCC for review
	ITT evaluated and successful ESCo selected for DLR Leisure EPC	--	ITT evaluation report

03. WORK PROGRAMME 2020



AWARENESS, COMMUNICATION AND ENGAGEMENT

Think Energy

Think Energy in the DLAs -Dún Laoghaire-Rathdown County Council

In 2020, Codema helped Dún Laoghaire-Rathdown County Council to promote energy awareness among its staff and the general public.

In October, Codema helped the Council to host an online event entitled 'How to Make Your Home Energy Efficient and Build a Sustainable Community', as part of the Open House Dublin programme. The webinar was targeted at homeowners who might be considering a refurbishment or extension and want to learn more about how they can improve the energy efficiency of their home, the expected costs and the benefits. The event also gave information on the Sustainable Energy Communities (SEC) programme, and how local communities can work together to access expertise and financial support to make their communities more sustainable, as well as information on grants available from the Sustainable Energy Authority of Ireland (SEAI). Finally, there were practical case studies from architect James Walsh and from Sarah Cassidy in Dún Laoghaire-Rathdown County Council, who spoke about her experience retrofitting her home and the benefits it provided. The event was very successful, with over 300 attendees registered.

Additionally, Codema worked with DLRCC to develop a handbook to help Council tenants to save energy. The handbook included a range of simple tips to help tenants make their homes more comfortable and cosy, while also

saving money on their energy bills, and covered areas such as heating your home, hot water, electrical appliances, lighting and cooking. Codema also adapted energy awareness posters for use in the Council's libraries and leisure centres.

Dublin City Council Covid Staff Survey

Throughout 2020, Codema took part in a working group with Dublin City Council to develop a staff survey about changed working practices during the Covid pandemic and the impacts these changes had on staff perceptions and behaviour on a range of climate action areas such as energy usage, transport, waste generation and biodiversity. Codema took a lead on preparing the energy theme of the survey, which more than 1,300 staff members took part in.

One of main findings from the energy section of the survey showed that the majority of staff felt that they were consuming more energy in their household during Covid restrictions, compared to the level they would normally use. The vast majority of staff reported an increase in home energy use, with 73% responding that their household was using more energy, 19% experienced no real change, 6% didn't know and only 2% felt they were using less energy. Eighty-seven per cent of respondents reported an increase in using and charging PCs, laptops, phones, tablets and printers. The majority also reported increases in home entertainment (51%), while 34% said they were heating water more and 29% said they were heating rooms (i.e. space heating) more. Interestingly, 45% of office-based staff said that they would like to receive training and/or further information on saving energy at home.



The next step of the survey process will be to carry out in-depth focus groups with selected staff in Spring 2021 to explore these issues in greater depth. This will help DCC to learn about the challenges, benefits, needs and possible opportunities that the pandemic has presented both for the Council and for individual employees. The findings of the focus groups will allow training programmes to be developed and rolled out across different themes (e.g. energy, transport, waste) to support staff awareness and action and Codema will lead in developing the energy focus group as part of this. In addition, the views of staff from the focus groups will help to inform the current barriers and motivations that exist around the ability of citizens to take action on climate change (e.g. upgrading your home, changing your mode of transport, etc.) and these barriers can be documented and reported back to decision-makers at local and national level.

Home Energy Saving Kit

The Home Energy Saving Kit scheme had a very successful year in 2020, with another 150 kits developed during the year. This allowed us to considerably expand the kits to existing libraries, including additional kits for libraries in Dublin City, Dún Laoghaire-Rathdown and Fingal. The Home Energy Saving Kits were also introduced into eight new counties/library networks in Ireland - Carlow, Meath, Westmeath, Monaghan, Louth, Waterford, Wicklow and Galway. This brings to 116 the total number of libraries in Ireland where the kits are available for the public to borrow free-of-charge. Codema also supplied each branch with a range of promotional material (such as the *Guide to Home Energy*

Savings, Worksheet and Promotional Leaflet) to support the scheme and raise awareness with the public.

The Home Energy Saving Kit contains five practical tools to help you save energy and identify possible problem areas in your home that may need addressing and has been running very successfully since it was first piloted in Dublin City Council's Public Libraries in 2016.

As part of the expansion of the scheme, Codema also carried out extensive staff training on the Home Energy Saving Kit with 43 libraries in seven library networks. This allowed staff to get a demonstration of the Home Energy Saving Kit, see how the tools work and ask any questions about the scheme and the borrowing process, so that staff can ultimately be ambassadors for the scheme in their local library. This training was all conducted online due to the pandemic.

Home Energy Saving Kit Events

Codema also ran or participated in a number of events related to the Home Energy Saving Kit in 2020, such as the Sustainable Days event organised by Dublin City Council, a presentation to over 40 staff in Ipsen, a presentation on home energy savings to a group of 12 individuals taking part in a four week "Sustainable Life School" programme, a webinar provided to over 50 staff in Solas on energy saving when working from home organised in collaboration with the Sustainable Life School, and a presentation as part of an SEC recruitment event organised by Codema with over 90 attendees.

03. WORK PROGRAMME 2020

AWARENESS, COMMUNICATION AND ENGAGEMENT (CONTINUED)

Promotion of Housing Upgrades

In 2020, Codema helped DCC's Housing and Community Section to promote the work that they had done in upgrading their social housing. In July, Codema updated infographics and web content to highlight the work carried out as part of DCC's ongoing Fabric Upgrade Programme for its social housing units. Between 2013-2019, DCC upgraded 8,871 social housing units, resulting in significant cost and energy savings and improved comfort levels for its tenants. In October 2020, Codema assisted DCC's Housing and Community Services section in promoting its domestic boiler upgrade programme in a clear and engaging way to tenants. Codema generated an infographic to highlight the main differences between the old and new heating systems, so that the tenants could understand the main differences (e.g. weather compensation) and the benefits in terms of energy and costs savings associated with the new system.

Remote Working

With so many people working remotely and spending more time at home during the pandemic, Codema's Communications Team developed a 'Remote Working' section on the Think Energy hub, with some top tips for saving energy while working at home. These tips were also featured regularly on social media posts, to encourage action among organisations and the public.

Dublin Energy Transition Roadmap

Codema is currently developing the Dublin Energy Transition Roadmap, which aims to motivate a range of stakeholders such as citizens, businesses, transport groups, academia and public bodies to commit to action and work together towards the same goal of developing Dublin as a sustainable, healthy, leading carbon-neutral region by 2050.

The Dublin Transition Energy Roadmap is being developed with the support of the Horizon 2020 TOMORROW project, and Codema was able to carry out the following activities under the guidance of the project throughout 2020:

- Actor analysis of stakeholders in Dublin who need to be engaged in Dublin's energy transition
- Development of an extensive Work Plan for the development of the roadmap
- Formation of an initial Transition Team, comprising of representatives from each DLA, Smart Dublin and the Dublin Climate Action Regional Office (CARO)
- Commencement of the Marketing Strategy, setting out a clear plan of action to engage and mobilise stakeholders for implementation in 2021

Photo courtesy of Pixabay / Claire Tardy



- Regular participation in TOMORROW workshops and partner meetings to discuss plans and progress
- Presentation of the Dublin Energy Transition Roadmap at the TOMORROW learning relay

As citizen and stakeholder engagement will be at the heart of the roadmap development, Codema will roll out an extensive programme in 2021 to get input from the public and key stakeholders on the best pathways forward for Dublin's energy transition.

Sustainable Energy Communities

In February 2020, Codema became the regional coordinator for the Dublin and Mid-East Region of SEAI's Sustainable Energy Community (SEC) Programme. The region includes SECs in Dublin City, Dún Laoghaire-Rathdown, Fingal, South Dublin, Wicklow, Kildare and Meath, with at least one dedicated County Mentor assigned to each local authority area.

In 2020, Codema and its County Mentors facilitated the recruitment of 24 communities to the SEC network in the Dublin and Mid-East Region, bringing the total number of SECs in the region to 103 by the end of the year.

To assist SECs with their Energy Master Plans and help reduce any associated financial or administrative burdens for communities, Codema also set up a partnership with all four Dublin Local Authorities, which will enable each DLA to act as the lead partner applicant on the Energy Master Plan applications of their area's SECs.

Promoting your SEC

Throughout 2020, Codema developed a range of online supports to provide resources to SECs in the Dublin and Mid-East region and to help shine a spotlight on the work



Photo courtesy of SEAI

03. WORK PROGRAMME 2020

AWARENESS, COMMUNICATION AND ENGAGEMENT (CONTINUED)



they are doing. In May, an online hub was created on the Codema website with a range of information on the SEC programme, and in September, Codema developed a range of communication templates to help SECs promote themselves, such as a customisable leaflets and posters, social media templates and case studies. Codema's Communications Manager also gave a presentation to SECs at the regional event in December 2020 on the different tools and methods SECs could use to promote themselves (see SEC events below).

Codema's Communications Team also surveyed SECs in the Dublin and Mid-East Region to get a better understanding of their current needs and challenges, and to see what further information, training and supports are needed to help SECs progress to the next stage.

SEC Events

Codema organised two key SEC events in December 2020. The first event was held online on the evening of the 9th December and was aimed at SECs in the existing network in the Dublin and Mid-East Region. Speakers included a representative from Volunteer Ireland, who gave advice on how to effectively manage time and resources within your SEC and Capital Credit Union, who explained the role of credit unions within the SEC process. Two SECs - Drimnagh and Maynooth -

shared their experience of the "Plan" stage within the SEC process and Codema's Communications Manager presented the various tools and techniques that SECs could use to spread the word about the work they are doing and encourage recruitment.

The second online event was held the following evening and was aimed at a more public audience. The event gave an overview of the SEC programme and featured speakers from two successful Sustainable Energy Communities - Laragh/ Glendalough SEC and Ringsend/Irishtown Energy Cooperative. Codema's Energy and Climate Awareness Officer also gave an introduction to the Home Energy Saving Kit, as well as providing some very useful home energy saving tips to attendees.

In addition to these events, Codema also helped SECs to promote the following local events:

- June: DLR PPN Webinar for SEC Programme
- June: Drimnagh SEC Webinar
- September: Dublin City SEC Webinar
- September: Maynooth SEC Webinar
- November: Wicklow County-level SEC Webinar



District Heating Promotion

Throughout 2020, our Communications Team carried out a range of activities to promote our work on district heating. District heating is a network of insulated pipes that delivers heat from a central energy source to provide space heating and hot water to the buildings connected to the network. It is a very low-carbon, sustainable heating solution for large towns and cities, as it can combine multiple, locally-available renewable and low-carbon heat sources and can also recycle heat produced from electricity generation or industrial processes for use in homes and businesses connected to the network.

Some of our work to promote district heating in Ireland in 2020 included:

- **Organisation of the annual conference on behalf of the Irish District Energy Association** - This conference was held online in November 2020 and was very successful, with approximately 150 attendees from organisations such as the Department of the Environment, Climate and Communications, the European Commission, Vattenfall and the Heat Trust UK. The conference explored the latest developments in district heating in Ireland and abroad, in terms of policy, finance, technology and ongoing case studies.
- **Promotion of the HeatNet NWE project** - Codema is the lead partner in the HeatNet NWE project, which is part-funded through the Interreg North-West Europe programme. As part of this project, Codema developed the online platform www.guidetodistrictheating.eu, which went live in March 2020. The platform is a central online hub to provide municipalities across Europe with key information and tools to make a more informed decision about developing district heating in their area, including the benefits of district heating and how to know if a particular area is suitable for developing a scheme.
- **South Dublin District Heating Company** - In 2020, Codema worked with a creative brand and design agency to develop a visual identity for Heat Works, which is Ireland's first not-for-profit energy utility operated by South Dublin County Council. Heat Works will oversee the development of the Tallaght District Heating Scheme as its pilot project, which will begin construction in 2021 and will be the first large-scale district heating scheme in the country. Codema will continue to work with the design agency in 2021 to develop the company branding, including a dedicated website to provide information and project updates to key stakeholders.

03. WORK PROGRAMME 2020

AWARENESS, COMMUNICATION AND ENGAGEMENT (CONTINUED)

AWARENESS, COMMUNICATION AND ENGAGEMENT - KEY OUTPUTS FOR 2020



HOME ENERGY SAVING KITS AVAILABLE TO BORROW IN 116 PUBLIC LIBRARIES ACROSS IRELAND



24 NEW SECS RECRUITED TO THE DUBLIN & MID-EAST REGION



WORK PLAN DEVELOPED FOR THE DUBLIN ENERGY TRANSITION ROADMAP

Awareness, Communication and Engagement - Actions and Outputs 2020

Date	Actions	Project support	Outputs
January	Transition Roadmap - Actor Analysis Workshop	TOMORROW	Main actor / stakeholder groups identified for Dublin Energy Transition Roadmap
	Meeting with DCC departments & DCC Libraries to discuss climate work programme for libraries	--	Main programme ideas discussed and identified
February	Lighthouse study visit to Nantes	TOMORROW	Nantes engagement plan presented, Dublin system needs identified
	Sustainable Energy Communities (SEC) introductory workshop	SEAI	SEC programme and plan introduced
	DLA Climate Change Action Plans shortlisted at Irish Planning Institute Awards 2020	--	CCAPs highly commended in Climate Change category
	150 cases ordered for Home Energy Saving Kits	--	Order placed for 150 kits
March	HeatNet NWE online learning platform finalised	HeatNet NWE	Online HeatNet NWE platform www.guidetodistrictheating.eu goes live and is promoted
	Cultural Adaptations transnational project partner meeting at Axis Ballymun	Cultural Adaptations	Presentation of Dublin City Council Climate Change Action Plan to the project partners
April	Fingal County Council Climate Change Action Plan Half-Year Progress Update Report put into InDesign template	--	Designed Fingal County Council Climate Change Action Plan Half-Year Progress Update Report
	All Home Energy Saving Kit online and print materials updated for 'Phase 3' of the Home Energy Saving Kit	--	All HESK materials updated and sent to print for Phase 3 of the kit

Date	Actions	Project support	Outputs
April	HESK entry submitted to Sustainable Business Impact Awards	--	HESKs shortlisted in CSR by SME category
May	Created a Sustainable Energy Communities hub for the Dublin and Mid-East Region on the Codema website	SEAI	Sustainable Energy Communities hub for the Dublin and Mid-East Region on the Codema website
	Developed a new remote working energy saving tips section for the Codema website	--	Remote working energy saving tips section created on the Codema website
June	District Heating in NorthWest Europe: A Guide for Energy Consumers put into InDesign template	HeatNet NWE	Designed District Heating in NorthWest Europe: A Guide for Energy Consumers brochure
	Local Authority Tenant Handbook created for DLRCC	--	Handbook to help tenants in DLRCC social housing to reduce energy in their homes
	Engaged with Dublin project embedded artist Maeve Stone	Cultural Adaptations	Linked Embedded Artist to DCC CCAP: Action F10, Dublin Bay Biosphere Action T33, Royal Canal cycleway Action E10, Solar PV
	150 Home Energy Saving Kits developed	--	145 of these kits delivered to library regions around Ireland, including 8 new counties/ library networks. Brings to 18 the total number of library networks/counties in Ireland where the kit is available
	Draft Work Plan for the Dublin Energy Transition Roadmap finalised	TOMORROW	Peer-review on Draft Work Plan carried out by Valencia, Energy Cities and DRIFT
	Technical and promotional assistance for IrDEA district heating design webinar	HeatNet NWE	Approx 45 participants in attendance
	Promotion of DLR PPN webinar for SEC programme	SEAI	Approx 40 participants in attendance
	Promotion of Drimnagh SEC webinar	SEAI	Webinar promoted on social media and website
July	Codema newsletter template created and populated	--	First Codema newsletter sent to Codema mailing list
	Work Plan finalised for the Dublin Energy Transition Roadmap	TOMORROW	Work Plan circulated to TOMORROW partners and DLAs
	Energy awareness posters adapted for DLR Libraries and DLR Leisure	--	Posters circulated to DLR Libraries and DLR Leisure staff
	HESK online training organised for Waterford Libraries	--	HESK training carried out with Waterford Libraries staff

03. WORK PROGRAMME 2020

AWARENESS, COMMUNICATION AND ENGAGEMENT (CONTINUED)

Date	Actions	Project support	Outputs
July	Energy questions prepared for DCC staff survey on climate action during COVID-19	--	Staff survey issued with over 1,300 responses
	HESK online training organised for Meath Libraries	--	HESK training carried out with Meath Libraries staff
August	HESK online training organised for Monaghan Libraries	--	HESK online training delivered for Monaghan Libraries
	HESK online training organised for Westmeath Libraries	--	HESK online training delivered for Westmeath Libraries
September	Range of communication templates developed to support SECs	SEAI	Templates circulated to all SECs in Dublin and Mid-East Region
	Survey developed to assess needs of SECs	SEAI	Survey issued with 15 responses from SECs
	Energy Saving in the Workplace handbook created for DLRCC	--	Handbook to help DLRCC's staff to reduce energy in their workplace
	HESK training organised for Louth Libraries	--	HESK training organised for Louth Libraries
	HESK training organised for Wicklow Libraries	--	HESK training organised for Wicklow Libraries
	Workshop organised for DLAs to explain the aim of the Dublin Energy Transition Roadmap	TOMORROW	Workshop held and presentations given by DRIFT and Energy Cities to the DLAs
October	Meeting held with Dept of An Taoiseach to discuss findings from Citizens' Assembly	TOMORROW	Process discussed with dept representatives to see how it could be adapted to local assembly on the energy transition
	Infographic informing residents of social housing of the difference between old and new boilers created for DCC	--	Infographic created for DCC
	DCC Climate Change Action Plan Annual Progress Report 2020 put into InDesign template	Dublin CARO	Designed DCC Climate Change Action Plan Annual Progress Report 2020
	Presentation given on Dublin Energy Transition Roadmap at Learning Relay	TOMORROW	Presentation given to approx 25 attendees
	HESK online training organised for Kildare Libraries	--	HESK online training facilitated for Kildare Libraries
	HESK online training organised for Kilkenny Libraries	--	HESK online training facilitated for Kilkenny Libraries
	Presentation to Ipsen on home energy savings & HESK	--	Presentation delivered to over 40 staff
	Presentation to 12 individuals taking part in Sustainable Life School programme	--	Presentation on HESKs and energy saving in the home

Date	Actions	Project support	Outputs
November	DLRCC Climate Change Action Plan Annual Progress Report 2020 put into InDesign template	Dublin CARO	Designed DLRCC Climate Change Action Plan Annual Progress Report 2020
	SDCC Climate Change Action Plan Annual Progress Report 2020 put into InDesign template	Dublin CARO	Designed SDCC Climate Change Action Plan Annual Progress Report 2020
	FCC Climate Change Action Plan Annual Progress Report 2020 put into InDesign template	Dublin CARO	Designed FCC Climate Change Action Plan Annual Progress Report 2020
	Peer review of Valencia's Work Plan	TOMORROW	Meeting held and feedback given
	Promotion of and assistance with the Wicklow County-level SEC webinar	SEAI	Approx 40 participants in attendance
	First meeting of Dublin Energy Transition Team organised	TOMORROW	Presentation given on role of team and next steps
	Organised and promoted the Irish District Energy Association Annual Conference online	IrDEA	Approx 100 attendees each day
	Sustainable Days HESK video promotion	--	Participated in Sustainable Days programme, a family-friendly online series of events organised by DCC
December	Aligning Dublin Energy Transition Roadmap to policies and strategies finalised	TOMORROW	Chart created showing how the Dublin Energy Transition Roadmap is aligned to EU, national and regional policies and strategies
	Stakeholder engagement workshop organised for TOMORROW partners	TOMORROW	Participated in workshop delivered to all project partners
	Presentation to SOLAS	--	Presentation to 50 staff on HESK and energy saving when working from home
	Regional event for existing Sustainable Energy Communities in the Dublin and Mid-East Region organised and promoted	SEAI	Approx 40 participants in attendance on 9th December
	Regional event to recruit new Sustainable Energy Communities organised and promoted	SEAI	Approx 90 participants in attendance on 10th December
	HESK training organised for DCC public libraries (refresher)	--	HESK training delivered for DCC public libraries
	2nd Codema newsletter issued	--	Newsletter issued to over 700 subscribers

03. WORK PROGRAMME 2020



RESEARCH, DEVELOPMENT AND INNOVATION

Energy Planning

Dublin Region Energy Master Plan

The Dublin Region Energy Master Plan will create evidence-based, realistic, and costed pathways for the Dublin Region to achieve its carbon emission reduction targets to 2030 and 2050. The plan will focus on the energy areas where actions can be taken to introduce energy efficiency measures and reduce CO₂ emissions. In 2020, Codema's work on WP1 was completed, establishing the 'current situation' energy model. This involved data gathering and processing from multiple sources, including the Central Statistics Office (CSO), SEAI, the Commission for the Regulation of Utilities (CRU), ESB, etc. The current situation model is a granular, hourly-system model, showing all energy use in heat, transport and electricity across Dublin. Codema's work on WP2 (Developing Future Business-as-Usual model) is near completion as well as many parts of WP3, assessing the low-carbon potential for Dublin. Learnings from this project, which is funded through SEAI's Research, Development and Demonstration (RD&D) programme, have also been used to inform the County Development Plans of DLRCC and SDCC. Codema will complete this project in 2021, building on the current system model to predict the impacts of existing planned policy interventions over the next 10 years, and where these are most likely to happen.

The Dublin Region Energy Master Plan will create evidence-based, realistic, and costed pathways for the Dublin Region to achieve its carbon emission reduction targets to 2030 and 2050



Photo courtesy of Pexels / Pok Rie

REDAP

Codema is a partner in the REDAP (Regional Energy Demand Analysis Portal) project, which was approved under the 2018 European Research Area Network (ERA-Net) Smart Energy Systems fund and is supported by the Sustainable Energy Authority of Ireland.

REDAP, which started in November 2019 and will continue until November 2021, presents a cross-sectoral approach to regional energy systems and will help end-users to spatially visualise and better understand the characteristics of urban energy demand. This project builds on the work Codema had previously done in developing the Spatial Energy Demand Analysis (SEDAs) for the four DLAs and will give insight into the building stock energy demands as well as the transport sector. It combines GIS with urban energy planning data to provide an integrated approach to energy in both the building and transport sectors, and spatial planning.

This, in turn, enables planners, policy-makers and investors to make more informed decisions relating to energy demand, energy efficiency and renewable energy alternatives, whilst also generating an increased evidence base to inform further project feasibility and implementation.

The second project partner meeting was held in February 2020 and was hosted by the Austrian Institute of Technology (AIT). Following the partner meeting, Codema developed a SEDA methodology report that would be replicated in Austria and Sweden. In May, the online portal for REDAP (www.redap.eu) was launched, and in August the REDAP team finalised the core data report. This report allows insight into the open source data used and how it will be applied to the REDAP tool.

REDAP is being managed by an Irish-based partner, Spatial Outlook, and brings together public-sector focused 'need owners' including Codema, the City of Gothenburg Council and Energieagentur der Regionen in Austria. In September 2020, a 'need-owners' workshop was organised by Spatial Outlook, which Codema helped facilitate and participated in. The outputs of this workshop will be used to outline 'need-owners' requirements in a need-owners report that is currently at draft stage.

03. WORK PROGRAMME 2020

RESEARCH, DEVELOPMENT AND INNOVATION (CONTINUED)



GHG Modelling

Q-GasSP

Codema, along with Tallinn University of Technology (TalTech), Stockholm Environment Institute (SEI) and Oivan were awarded the tender for Q-GasSP in July 2020, with the kick-off meeting held in October. The objective of this research project is to produce a methodology that will allow planning authorities at national, regional and local administrative levels to quantify the influence of spatial planning policies on GHG emissions in a consistent manner. More specifically, the objective is to address the knowledge demands and technical requirements of the four stakeholders included within this Targeted Analysis Project, namely, the Eastern and Midlands Regional Authority who are the lead stakeholder in this project, the Scottish Government – Planning and Architecture Division (UK); Department of Infrastructure, Northern Ireland (UK), and the Regional Council of Kymenlaakso (FI).

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

- Aid Member States in meeting their GHG emissions targets

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

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

This research is financed through the European Spatial Planning Observation Network (ESPON) programme, which is an applied research programme aimed at supporting the formulation of territorial development policies in Europe.

The duration of the project is 12 months with an end date in October 2021. Codema's role in this project is to lead the case study pilots, building-related GHG methodology and data collection. Since the start of the project, the consortium has met virtually for weekly meetings and has submitted the first draft of the project's inception report to the project stakeholders and ESPON.



Low-Carbon Heat

Dublin Docklands District Heating System

Codema is part of the DDHS project team, advising on policy, energy planning, technical aspects and energy procurement/contracting. On behalf of the Project Team, Codema attended 30 meetings and workshops in 2020, providing advice on district heating planning, policy, demand risk, financial feasibility, technical design review, quality assurance and assessing extension opportunities for the district heating network. Codema is also working with the legal and procurement team on the assessment of the most optimal contracting and procurement approach for the development and roll out of the system and with the development of the draft Joint Venture agreement.

Tallaght District Heating Scheme

In 2020, Codema delivered some key milestones on the Tallaght District Heating Scheme (TDHS), including finalising and signing of the contract with the Energy Services Company (ESCO) responsible for the design, build, operation and maintenance of the network. Codema participated in 27 TDHS meetings in 2020. Codema has been continuously liaising and negotiating with possible TDHS customers, including the PM Group and the Greenleaf Group, and has developed targeted marketing materials analysing the benefits for developers, supporting on the inclusion of the TDHS in BER assessments and providing information to the Mechanical and Electrical designers to inform their secondary system design. Codema also installed heat meters and analysed the heat consumption at customer premises and provided this information to the district heating network designers to help optimise the design.

In 2020, Codema acted as the spearhead of the Celsius Waste Heat Recovery Group. During these meetings Codema presented methodologies adopted in developing the TDHS project, which will utilise waste heat from a data centre. The topics covered included technical design aspects, pricing approach, contracting approach, business model, network extensions, etc. Codema also presented at the Celsius Summit events in June and again in December of 2020.

National District Heating Working Group

Codema is an active member of the Department of the Environment, Climate and Communications' District Heating Working Group, which was officially established in November 2017. The aim of the group is to develop a National District Heating Policy Framework to encourage the development of district heating and this working group is due to reconvene in 2021 following the publication of the framework, which is expected in Q1 of 2021.

Climate Action Fund

Codema was instrumental in securing funding for two local authority district heating projects in the first call of the government's Climate Action Fund (CAF). Throughout 2020, Codema liaised with the Minister and the CAF team in order to keep the Department updated on the projects' progress, and we will begin reporting for drawdown of funding in 2021.

The second round of the CAF will be released in 2021 and we will assist the local authorities with any applications for funding.

03. WORK PROGRAMME 2020

RESEARCH, DEVELOPMENT AND INNOVATION (CONTINUED)

Decarb City Pipes 2050

In 2020, Codema began working on the Decarb City Pipes 2050 project. This project focuses on the decarbonisation of heat through capacity building in cities. This includes creating local working groups (made up of key local stakeholders) to outline gaps in knowledge (planning methodologies, tools, policy instruments, effective governance structures, etc.) and then go about addressing these gaps through deep peer-to-peer learning with input from an experienced advisory board.

Codema is part of the project's management team. In this role in 2020, Codema helped to develop the overall direction of the project in conjunction with the other management team members. Codema attended the three-day project kick-off meeting in September 2020. This online meeting was held to get to know city partners and the key topics for each, hear about the heating and cooling outlook for each city, discuss roles and responsibilities within each work package, outline expectations and discuss next steps. In 2020, Codema brought together key local stakeholders to develop the Dublin Local Working Group.

Codema are also leading the Transition Roadmap Work Package (WP4), supporting local working groups in each partner city to develop robust, actionable, time scheduled transition roadmaps which have local buy-in and clearly identified responsible parties. Codema will continue to work closely with other WP leaders to develop peer-to-peer learning sessions that address knowledge gaps identified by the Local Working Group.



Climate Change

Dublin Local Authority Climate Change Action Plans - Annual Progress Reports 2020

The Dublin Local Authorities' Climate Change Action Plans (CCAPs) were adopted by the various Council elected members between April and May 2019 and were officially launched in September that year. The implementation of the Plans were then handed over to the relevant staff within the local authorities. In 2020, Codema assisted in a number of ways, such as taking a lead on several actions within the plans and providing support to a number of other projects and helping to roll out these actions. This will continue until the actions are completed and delivered; new actions involving Codema will also be added periodically. Codema also submitted updates and KPIs on all our actions and assisted in quantifying other actions within the plan.

Codema was also engaged in designing a CCAP Annual Progress Report template for each of the Dublin Local Authorities, based on the design specifications of each DLA's original CCAP report and including the creation of new page layouts and graphics. Codema also provided content for the introduction and conclusion sections, as well as assisting the Dublin CARO with the gathering, tracking and compilation of report content for all four of the DLA progress reports.

Codema then transferred all collated content into the new design templates, creating a fully-designed CCAP Annual Progress Report 2020 for each DLA, with a smaller interim report also designed for Fingal in addition.

Codema also attended the quarterly CARO regional steering committee meetings and climate action team meetings and we continue to liaise with the Covenant of Mayors (CoM) to ensure alignment between the DLA CCAPs and the CoM requirements.

Codema is also charged with the maintenance and updating of www.dublinclimatechange.ie which is used to keep the public up to date with developments and the roll out of actions in the DLA CCAPs. In 2021, Codema will:

- Continue to attend the Dublin CARO regional meetings
- Continue to attend DLA climate team meetings
- Work with the relevant climate staff in the four DLAs
- Manage the www.dublinclimatechange.ie platform
- Continue to develop, support and execute climate mitigation actions for the four DLAs
- Return reporting data on Codema-led and supporting actions



03. WORK PROGRAMME 2020

RESEARCH, DEVELOPMENT AND INNOVATION (CONTINUED)



Development Plans & Policy Papers

County Development Plans Energy & Carbon Assessment Report

Codema performed an energy and carbon analysis to inform the draft Dún Laoghaire-Rathdown and South Dublin County Development Plans. An updated and more in-depth assessment of the impact on energy demand and evidence-based actions to reduce energy and carbon emissions will form part of the Dublin Region Energy Master Plan, which is currently being developed by Codema in parallel to the update of the County Development Plans. One of the key requirements of these assessment reports is to inform Dún Laoghaire-Rathdown and South Dublin County Council's County Development Plans to ensure that they support the wider regional objectives as set out in the Eastern and Midlands Regional Assembly's Regional Spatial and Economic Strategy. As part of these assessments, Codema analysed and made policy recommendations in the following areas:

- Green infrastructure and increased carbon sequestration
- District heating opportunities and identified strategic energy zones
- Electric vehicles, charging infrastructure and transport
- Wind energy, both onshore and offshore, solar energy and the potential increase in renewable energy generation
- Energy efficiency in buildings and net-zero energy buildings
- Social and economic impacts from proposed policy recommendations (for SDCC)

Developing Decarbonising Zones in Ireland

Codema, in conjunction with the Dublin Climate Action Regional Office (CARO) and with contributions from stakeholders across the country, produced a position paper relating to Action 165 of the Government's Climate Action Plan 2019, which requires local authorities to identify and develop plans for one Decarbonising Zone in their administrative area. This Briefing Paper aimed to define a Decarbonising Zone (DZ) in the Irish context, in order to signpost and facilitate further discussion across a range of stakeholders. This paper considers the policy and legislative context, the importance of local energy planning, relevant case studies from Ireland and elsewhere, energy master planning and policy development, highlights thematic areas and data analysis, and draws a range of conclusions and recommendations.

Public Consultations

In 2020, Codema made numerous submissions to public consultations that support our work and the work of the DLAs in the area of energy and climate change. These submissions are listed below:

- District Heating Policy Framework
- EU Green Deal & EU Strategy on Adaptation to Climate Change
- Ireland' Long-Term Renovation Strategy
- ESB Electrification of Heat and Transport Strategy
- EU Green Deal Public Consultation - District Heating
- North West Energy Regional Energy Strategy
- Public Sector Energy Efficiency and CO₂ Reduction Targets 2030

RESEARCH, DEVELOPMENT AND INNOVATION - KEY OUTPUTS FOR 2020



WP1 COMPLETED ON DUBLIN REGION ENERGY MASTER PLAN



4 X ANNUAL PROGRESS REPORTS DEVELOPED FOR CLIMATE CHANGE ACTION PLANS



2 X ENERGY & CO₂ ASSESSMENTS DRAFTED FOR 2 LOCAL AUTHORITIES

Research, Development and Innovation - Actions and Outputs 2020

Date	Actions	Project support	Outputs
January	First project partner meeting hosted in Dublin	REDAP	Main programme ideas discussed, Codema presented the SEDA methodology to all partners
	Presentation to the Danish Board of District Heating and industry stakeholders (e.g. Danfoss, Frese, Eurogas, Climate Academy)	HeatNet NWE	During a site visit to Odense and Assens in Denmark, Codema presented an overview of district heating in Ireland and the projects currently under development in Dublin
February	Consultation response drafted on the District Heating Policy Framework	--	Consultation response submitted on the District Heating Policy Framework
	Project partner meeting in Vienna	REDAP	Codema presented to all the EU partners and the Austrian 'need owner'
	Meeting with the climate teams in the 4 DLAs	--	Presentation on the CoM commitments, a brief description of the SECAP methodology and next steps
March	Data collation methodology and guidelines	REDAP	SEDA Methodology Report for the project partners
	Celsius Spearhead City presentation	--	Presentation made on district heating in Dublin. Codema elected to become the first Spearhead for the Celsius Forerunner Group on Waste Heat Recuperation
	Presentation on district heating at Engineers Week (Organised by Engineers Ireland)	--	Presentation to approx 50 attendees in Rua Red in Tallaght in relation to district heating in Ireland and the use of data centre waste heat to provide low-carbon heating
April	EMRA tender "Quantitative Greenhouse Gas Impact Assessment Method for Spatial Planning Policy (Q-GasSP)"	--	Bid to tender submitted

03. WORK PROGRAMME 2020

RESEARCH, DEVELOPMENT AND INNOVATION (CONTINUED)

Date	Actions	Project support	Outputs
May	Submitted draft final DLRCC CDP Energy and CO ₂ Assessment Report to inform DLRCC County Development Plan	--	Draft final report submitted to DLRCC planning team
	REDAP website set up	REDAP	Website live at https://www.redap.eu/
	Submissions to EU Green Deal & EU Strategy on Adaptation to Climate Change Public Consultations	--	Submission to public consultations made
June	Submission to the Public Consultation on the European Green Deal focussing on role of district heating	--	Submission made on European Green Deal
	Celsius Summit presentation on district heating in Ireland and current projects in Dublin	HeatNet NWE	Online presentation to attendees of the Summit
	Presentation of the initial findings from the DLRCC CDP Energy and CO ₂ Assessment Report	--	Presentation of the initial findings and recommendations from the report to the DLRCC planning team
	Presentation on district heating and its potential to the DLRCC SPC	--	Presentation on district heating to councillors on the SPC group for Environment, Climate Change and Energy
	Presentation on district heating at Irish BioEnergy Association webinar	--	Presentation on DH as part of IrBEA's webinar series
June - December	Celsius Forerunner Group presentations	--	Various presentations made to the Waste Heat Recuperation group on methods and approaches adopted in developing the TDHS project
July	Q-GasSP Tender awarded	--	Tender awarded to Codema, TalTech, SEI and Oivan
July - December	Residential Modelling Research Group set up (UCC, TU Dublin, NUIG, UCD, Codema, SEAI, CIT)	SEAI	Monthly meetings
August	Core data package and data requirements	REDAP	Core Data Report
	Set up Github platform to share and enable sharing of data sources between energy modelling research groups	SEAI	https://github.com/energy-modelling-ireland/energy-data-source
	Set up the codema-dev github account to manage and publish all Master Plan-related open source software	SEAI	https://github.com/codema-dev
September	Need-owners workshop	REDAP	Workshop held to establish a better understanding of the energy-related challenges of the different need owners

Date	Actions	Project support	Outputs
September	Project kick-off meeting	Decarb City Pipes	A 3-day online meeting held
	HeatNet NWE Final Conference	HeatNet NWE	Final conference held online
October	Design, build, operate and maintain contract signed with Fortum (the ESCo) for the delivery of the Tallaght District Heating Scheme	HeatNet NWE	TDHS DBOM contract signed
	1st steering committee meeting held between the stakeholders and the service providers for Q-GasSP	Q-GasSP	Main programme ideas discussed and official kick-off meeting held
October - November	Fully-designed Climate Change Action Plan Annual Progress Report 2020 created for each of the 4 DLAs	Dublin CARO	Designed four Climate Change Action Plan Annual Progress Reports 2020, for DCC, DLRCC, FCC and SDCC
November	Draft Inception Report developed	Q-GasSP	Draft Inception Report received by ESPON and the stakeholders
	Presentation on the status of Dublin's district heating projects at the Irish District Energy Association's annual conference	--	Presentation delivered to approximately 100 participants
December	Submitted draft SDCC CDP Energy and CO ₂ Assessment Report to inform SDCC's County Development Plan	--	Draft report submitted to SDCC planning team
	Submission made to Ireland's Long Term Renovation Strategy public consultation	--	Submission made to the Department of the Environment, Climate and Communications
	Decarbonising Zone Position Paper	--	Position paper on decarbonising zones developed in conjunction with CARO finalised and submitted to LGMA, DHPLG and other key stakeholders

03. WORK PROGRAMME 2020



MANAGEMENT SUPPORT

EU Project Management

Codema initiates and manages projects that can access EU funding in areas that are beneficial to the Dublin Local Authorities (DLAs). These EU projects help the DLAs to stay up-to-date on the latest energy developments in Europe, test methods and technologies in Ireland that are already widely used in other countries, and gain further knowledge and expertise on improved energy efficiency and renewable energy technologies. Management of these projects involves overseeing the delivery of activities and outputs, communication with EU partners, as well as project administration and financial management.

HeatNet NWE

Codema is leading the €11.5m HeatNet NWE project to promote the roll-out of 4th Generation District Heating and Cooling (4DHC) across North-West Europe. 4DHC integrates heat, electricity and energy storage to achieve an overall smart energy system, combining high energy efficiency, high shares of renewable energy and waste heat resources.

HeatNet NWE is supported through the Interreg North-West Europe programme and addresses the challenge of reducing CO₂ emissions in the region by creating an integrated, transnational approach to the supply of renewable and low-carbon heat (including waste heat) to residential and commercial buildings, developed and tested in local district heating and cooling networks in Ireland, the UK, Belgium, France, and the Netherlands.

The project consists of 13 partners (including Codema as lead partner and SDCC as the other Irish partner) across these five countries and aims to achieve savings of 15,000 tonnes of CO₂ each year by the end of the project.

As part of HeatNet NWE, Codema carried out the following tasks for the project in 2020:

- Lead partner: day-to-day project management and supervision of communications within the project
- Financial management - successfully submitted the sixth financial claim and received requested grant funding
- Continued to lead the Long-Term work package, which involved the creation of business cases, transition roadmaps and promotion of 4DHC
- Continued input into the Evaluation work package
- Developed the HeatNet NWE Model, which will help municipalities to begin implementing 4DHC projects
- Supported SDCC in developing Dublin's first large-scale public district heating network in Tallaght, with waste heat coming from a large local data centre. The project contract was awarded in the last quarter of 2020 and work will begin in Spring 2021.

Codema also helped organise the HeatNet NWE final conference; this was due to take place in Heerlen, Netherlands in April but due to Covid was rearranged online in September.

Codema also applied successfully for a Covid-related extension to the project, which will now finish in August 2021.



Photo courtesy of Energy Cities

TOMORROW Project

In 2020, Codema continued its work as a project partner in the Horizon 2020 TOMORROW (TOwards Multi-stakeholders transition ROADmaps With citizens at the centre) project, which aims at empowering local authorities to lead the transition towards low-carbon, resilient and more liveable cities by engaging citizens and stakeholders in the development of 2050 transition roadmaps.

TOMORROW brings together six pilot cities (Dublin plus Brasov, Brest-Metropolis, Mouscron, Nis and Valencia), with Energy Cities as co-ordinator and the Dutch Research Institute for Transitions (DRIFT) providing the transition management expertise. Pilot cities such as Leuven and Nantes have been identified as energy transition pioneers and will contribute to peer-to-peer and capacity building activities.

Codema attended a project meeting in Nantes in February 2020 where the municipality presented its local citizen engagement campaign and a workshop was held to identify the system needs of Dublin and the other pilot regions, while the remainder of the project workshops and partner meetings were then held online due to the pandemic.

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

REDAP - ERA-Net Smart Energy Systems Programme

In 2020, Codema continued its work on the REDAP (Regional Energy Demand Analysis Portal) project, under the ERA-Net Smart Energy Systems programme. REDAP builds upon the work already carried out by Codema on the Spatial Energy Demand Analyses (SEDAs) to help the DLAs integrate energy planning into their practices. The project will build a live, online energy and emissions map for the Dublin Region, using GIS, energy modelling and computer programming expertise from partners in Ireland, Sweden and Austria. The first three milestones of the project have been met, these milestones include developing a project plan, completing a user requirement report and a preliminary data model. As part of Work Package 2, Codema developed a SEDA methodology report that could be replicated in Austria and Sweden and in August, the REDAP team finalised the core data report, which gives insight into the open-source data used and how it will be applied to the SEDA methodology report.

Codema initiates and manages projects that can access EU funding in areas that are beneficial to the Dublin Local Authorities.

03. WORK PROGRAMME 2020

MANAGEMENT SUPPORT (CONTINUED)

Cultural Adaptations

Codema is supporting the Ballymun Axis Centre, which is a partner in the Cultural Adaptations project. The project is funded under the Creative Europe programme and brings together the cultural arts and climate sciences, in order to share their approaches to tackling the issue of climate change.

The Ballymun Axis Centre, like many such theatres and arts centres around Ireland, is linked to its local authority. Codema can help the centre to become more climate-aware in its operations and also better prepared for the effects of climate change on their business (e.g. event cancellations due to bad weather).

Each partner is also researching, developing, planning and implementing an Embedded Artist Project, placing an artist in a local adaptation project to provide new ways of thinking and different approaches to tackling climate change challenges. The Dublin Embedded Artist is Maeve Stone, director / writer for film and theatre whose work responds to issues of climate change. The partner cities are Glasgow (lead partner is Creative Carbon Scotland), Gent, Gothenburg and Dublin.

Decarb City Pipes 2050

Climate urgency calls on all political levels to act more stringent and faster. The Decarb City Pipes 2050 project is the first to unite cities across Europe to work out actionable, spatially differentiated transition roadmaps to decarbonise heating and cooling for buildings by 2050, taking up the challenge to phase out natural gas in heating. Decarb City Pipes 2050 showcases how cities can succeed in this challenge. Bilbao, Bratislava, Dublin, Munich, Rotterdam, Vienna and Winterthur will join forces to learn from each other and elaborate innovative responses together.

We will explore pathways suitable for Dublin's local challenges and build up skills in the use of data, planning tools and instruments, techno-economic as well as process and transition management know-how. In a participatory process with key stakeholders (e.g. government departments, local authorities, utility regulators) in our Local Working Group, we will develop tangible transition roadmaps, building up trust and commitment for its implementation along the way. In deep peer-to-peer exchanges, cities and utilities share knowledge to benefit from other perspectives, stages of advancement and planning traditions. Together, they will advocate for the needed changes to framework conditions and empower stakeholders within the cities (in areas such as change management, governance and citizen engagement) to implement this plan.

Photo courtesy of Cultural Adaptations project



This project officially began in July 2020 with the development of a broad heating and cooling outlook for each city by 2050, which provides a high-level vision for cities that local working groups can build upon. The project began in earnest for the partner cities in September 2020, with an initial kick-off meeting. Codema is part of the project's management team and are also leading the Transition Roadmap Work Package (WP4), supporting local working groups to develop robust, actionable, time scheduled transition roadmaps for each partner city, which has local buy-in and clearly identified responsibilities.

Q-Gas SP

Codema was asked to join a consortium of European partners led by the Academy of Architecture of Urban Studies, Tallinn University of Technology, Estonia (TalTech). The objective of this research project is to produce a methodology that will allow competent planning authorities at national, regional and local administrative levels to quantify the influence of spatial planning policies on GHG emissions in a consistent manner. The ESPON EU funding stream co-financed the tender along with some regional authorities, one of which is the Eastern Midlands Regional Authority (EMRA) in Ireland. This was a competitive tender bid rather than a traditional EU application. The project will last 12 months.

New EU Funding Streams

Codema regularly scopes all EU funding streams in order to assess their suitability to support local projects for the DLAs. Once a suitable project is identified, Codema can then assist the DLAs in the preparation of project applications, and will submit the applications to the programme's administrators on their behalf.

In 2020 Codema continued to apply for EU funding. The following projects were applied for:

DeliveREE

In September 2020, Codema submitted a funding application to the EU Horizon 2020 Project Development Assistance funding call. The call is aimed at projects with a value of €7.5m to €50m and provides funding for project development or project assistance costs. The overall goal of DeliveREE is to create an innovative project finance and delivery structure for energy efficiency and renewable energy projects in the Dublin region. Building on our experience, Codema will further develop a structured approach and standardise the project development process, allowing projects of various types and sizes to be aggregated to create scale.



03. WORK PROGRAMME 2020

MANAGEMENT SUPPORT (CONTINUED)

This process will be guided by the feedback from the project advisory board members who provided letters of support and engagement to Codema for the project application. The board consists of representatives from:

- Department of the Environment, Climate and Communications (DECC)
- Department of Public Expenditure and Reform (DPER)
- National Development Finance Agency (NDFA)
- Jožef Stefan Institute (IJS) Energy Efficiency Centre, Slovenia
- Sustainable Energy Authority of Ireland (SEAI)
- ESCo: Noel Lawler Green Energy Solutions Ltd
- Association of Irish Energy Agencies (AIEA)

The overall task of developing the innovative project finance and delivery structure will be the responsibility of the DeliveREE consortium, which consists of technical, facilitation, project management, communications, procurement, legal and financial experts, as well as project owners who will test the DeliveREE structure. In addition to the four Dublin Local Authorities and Codema, the consortium includes Resourceful Futures Ltd (UK), Philip Lee Solicitors Ltd and Sustainable Development Capital LLC.

Belfast City Council will also be involved in the project as a follower city, so we can share our approach, learnings and results on a more in-depth basis, and this will be supported by study visits, training workshops and peer-to-peer exchanges.

Other Projects

Other projects that we successfully applied for were:

- A partner in Decarb City pipes under the H2020-LC-SC3-2018-2019-2020 call (as mentioned earlier in this section)
- A partner in Q-GasSP (as mentioned earlier in this section), which was a tendered project receiving funding from ESPON and supported by the Eastern and Midlands Regional Assembly (EMRA)

Local Project Management

Sustainable Energy Communities

In February 2020, Codema became the regional coordinator for the Dublin and Mid-East Region of SEAI's Sustainable Energy Community (SEC) programme. Codema's responsibilities focus on the coordination of the 10 County Mentors assigned to the seven local authority areas in the region. This includes overseeing monthly reporting, tracking recruitment figures

Photo courtesy of Noel Lawler Green Energy Solutions



and overall programme progress, liaising with SEAI, providing mentors with training and/or ad-hoc advice regarding programme matters such as recruitment, energy master plan applications and rollout, and assisting with communication activities.

Codema is also actively working to streamline the delivery of the programme in the region, and to try to address or reduce barriers that may arise during the programme's 'Learn, Plan and Do' stages for SECs. For example, to assist SECs with their Energy Master Plans (EMPs) in the 'Plan' stage, Codema set up a partnership with all four Dublin Local Authorities, for each DLA to act as the lead partner applicant on the EMP applications of their area's SECs. In October 2020, Codema started working on the tender and template documents that will be used to set up a framework for EMP consultants within Dublin City Council, from which all four Dublin Local Authorities will be able to draw consultants for their SECs' Energy Master Plans. The setup of this framework is in progress and it is planned to be in place by April 2021.

Energy Research, Development & Demonstration (RD&D) Projects

Dublin Region Energy Master Plan

In 2020, Codema continued its work on the development of an Energy Master Plan for the Dublin Region, funded by SEAI's Research, Development and Demonstration (RD&D) programme. This master plan will create evidence-based, realistic and costed pathways for the Dublin Region to achieve its carbon emissions reduction targets to 2030 and 2050. The plan will focus on the energy areas where actions can be taken to introduce energy efficiency measures and reduce CO₂ emissions.

The first two milestones of the project have been met, which is to assess the current energy system in Dublin through a range of datasets in the residential, commercial and transport sectors. Following on from this a 'business-as-usual' scenario has been extrapolated to allow the team to assess the impact on the energy system and associated emissions that current practices will have up to 2050, which has been adjusted for growth and demand. The project will finish in October 2021.

Codema continued to report to SEAI on the project results bi-annually and claim associated financial funding.

Examples of National and European Projects



Decarbonising Heating & Cooling



Stakeholder Engagement



Energy Master Planning



Project Applications



Energy Performance Contracting



Climate Change

European Network



Learning from experienced EU partners



Showcasing Dublin's achievements to international audience



03. WORK PROGRAMME 2020

MANAGEMENT SUPPORT (CONTINUED)

Project Funding

European Funding in 2020

In 2020, Codema drew down funding from the following EU projects:

Funding Programme	Project	Aim	Project Timeline	Net Grant Drawdown 2020 (€)
Interreg North-West Europe	HeatNet NWE	To promote the roll-out of 4th Generation District Heating and Cooling (4DHC) across North-West Europe	September 2016 - August 2021	€272,071 (60% funded)
Horizon 2020	Decarb City Pipes 2050	The Decarb City Pipes 2050 project will unite cities across Europe to work out actionable, spatially differentiated transition roadmaps to decarbonise heating and cooling for buildings by 2050	September 2020 - August 2023	€141,300 (pre-payment, 100% funded)
Horizon 2020 / ERA-Net	REDAP	REDAP presents a cross-sectoral approach to regional energy systems and will help end-users to spatially visualise and better understand the characteristics of urban energy demand	Sept 2019 - August 2022	€8,608 (100% funded)
Total EU Funding				€421,979

National Funding in 2020

Funding Programme	Project	Aim	Project Timeline	Net Grant Drawdown 2020 (€)
SEAI	Sustainable Energy Communities	The Sustainable Energy Communities (SEC) initiative is a funding and support programme, which helps communities to work together to become energy-smart and more sustainable	February 2020 - January 2024	€159,905
SEAI	Dublin Region Energy Master Plan	The Dublin Region Energy Master Plan sets out how Dublin can achieve its carbon emission reduction targets to 2030 and 2050	October 2018 - April 2021	€32,560
Total National Funding				€192,465

MANAGEMENT SUPPORT - KEY OUTPUTS FOR 2020



**DELIVEREE APPLICATION
DRAFTED AND
SUBMITTED**



**2 NEW EU PROJECTS
INITIATED**



**1 X HEATNET NWE
INTERNATIONAL
CONFERENCE HELD**

Management Support - Actions and Outputs 2020

Date	Actions	Project Support	Outputs
January	Notification of successful application for Decarb City Pipes 2050	--	Project approved
February	Awarded contract for Dublin and Mid-East Region's Regional Coordinator	SEAI	Contract signed
March	H2 2019 Master Plan Report	SEAI	H2 2019 Master Plan Report submitted
April	6th progress report and financial claim submitted	HeatNet NWE	Report approved and grant drawn down
	1st claim for SEC and report submitted	SEAI	Report and grant drawn down
May	2nd claim for SEC and report submitted	SEAI	Report and grant drawn down
June	3rd claim for SEC and report submitted	SEAI	Report and grant drawn down
July	Decarb City Pipes 2050 project starts	Decarb City Pipes 2050	Contract signed and project commenced
	Q-GasSP tender evaluated	--	Tender successfully awarded
	4th claim for SEC and report submitted	SEAI	Report and grant drawn down
August	5th claim for SEC and report submitted	SEAI	Report and grant drawn down
	Biannual review conducted with Dublin and Mid-East Region mentors	SEAI	Biannual mentor review completed
September	6th claim for SEC and report submitted	SEAI	Report and grant drawn down
	2nd progress report and financial claim submitted for REDAP	SEAI/ERA-Net	Report approved and grant drawn down
	DeliveREE application to H2020 submitted	--	Full project application submitted to EU
October	H1 2020 Master Plan Report	SEAI	H1 2020 report submitted
	Extension request, staff additions and change of project lead	SEAI	Change documents and new schedule submitted
	7th claim for SEC and report submitted	SEAI	Report and grant drawn down
	Request for Covid extension	HeatNet NWE	Request submitted and approved
	Kick off Meeting for Q-GasSP	ESPO	Online meeting attended
November	8th claim for SEC and report submitted	SEAI	Report and grant drawn down
December	9th claim for SEC and report submitted	SEAI	Report and grant drawn down

04. FINANCIAL REPORT

Income and Expenditure Account 2020

Codema

INCOME AND EXPENDITURE ACCOUNT

For the year ended 31st December 2020

2020

€

Income	4,161,991
Expenditure	-4,106,733
Surplus before Interest	55,258
Interest receivable and similar income	30
Interest payable and similar expenses	-614
Surplus before Tax	54,674
Tax on surplus	-7,157
Surplus for the Financial Year	47,517
Total Comprehensive Income	47,517

Balance Sheet 2020

Codema

BALANCE SHEET

For the year ended 31st December 2020

2020

€

Fixed Assets	
Tangible Assets	46,611
Current Assets	
Debtors	43,918
Cash and cash equivalents	1,420,217
	1,464,135
Creditors: Amount falling due within one year	-1,202,958
Net Current Assets	261,177
Total Assets less Current Liabilities	307,788
Reserves	
Called up share capital presented as equity	0
Income and expenditure account	307,788
Equity attributable to owners of the company	307,788

05. APPENDICES

Abbreviations

4DHC	4th Generation District Heating and Cooling	GIS	Geographic Information System
AWS	Amazon Web Service	GPRN	Gas Point Reference Number
CAF	Climate Action Fund	HESK	Home Energy Saving Kit
CARO	Climate Action Regional Office	H2020	Horizon 2020
CCAP	Climate Change Action Plan	IrDEA	Irish District Energy Association
CHP	Combined Heat and Power	ITT	Invitation to Tender
CMVP	Certified Measurement and Verification Professional	LED	Light-emitting diode
CO ₂	Carbon Dioxide	M&R	Monitoring and Reporting
CRU	Commission for Regulation of Utilities	M&V	Measurement and Verification
CSO	Central Statistics Office	MPRN	Meter Point Reference Number
DCC	Dublin City Council	NDFA	National Development Finance Agency
DDHS	Dublin Docklands District Heating System	NEEAP	National Energy Efficiency Action Plan
DEC	Display Energy Certificate	NWE	North-West Europe
DECC	Department of the Environment, Climate and Communications	PIU	Project Implementation Unit
DLAs	Dublin Local Authorities	PMP	Project Management Professional
DLRCC	Dún Laoghaire-Rathdown County Council	PV	Photovoltaic
DRIFT	The Dutch Research Institute for Transitions	RD&D	Research, Development and Demonstration
EMP	Energy Master Plan	REDAP	Regional Energy Demand Analysis Portal
EMRA	Eastern and Midland Regional Assembly	RESS	Renewable Energy Support Scheme
EPC	Energy Performance Contracting	RSES	Regional Spatial and Economic Strategy
EPG	Energy Performance Guarantee	SDCC	South Dublin County Council
EPO	Energy Performance Officer	SEAI	Sustainable Energy Authority of Ireland
ERA-Net	European Research Area Network	SEC	Sustainable Energy Communities
ESCo	Energy Service Company	SECAP	Sustainable Energy and Climate Action Plan
EU	European Union	SEDA	Spatial Energy Demand Analysis
EUCF	European City Facility	SEU	Significant Energy User
FCC	Fingal County Council	SPC	Strategic Policy Committee
GHG	Greenhouse Gas	SuDS	Sustainable Urban Drainage Systems
		TDHS	Tallaght District Heating Scheme





The Loft, 2-4 Crown Alley,
Temple Bar, Dublin 2, Ireland D02 TK74
+353 (0)1 707 9818
www.codema.ie



Printed on 100% recycled paper

