



**Codema**  
Dublin's Energy Agency

# CODEMA ANNUAL REPORT 2021



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## 01. CEO FOREWORD

"In response to this sector growth, we welcomed three very talented new staff to Codema in 2021, with further recruitment ongoing. We also secured one of our biggest EU project budgets to date, so despite many challenges, we've managed to grow our business and increase our impact."

2021 has been another extraordinary year globally as we turned the tide on Covid and attempted to return to a 'new normal' after the pandemic. However, the economic shockwaves are still lingering; escalating costs due to inflation and labour shortages continue to impact businesses in Ireland at a time when work in the energy and climate sector is ramping up at unprecedented levels. In response to this sector growth, we welcomed three very talented new staff to Codema in 2021, with further recruitment ongoing. We also secured one of our biggest EU project budgets to date, so despite many challenges, we've managed to grow our business and increase our impact.

The step-up in ambition on climate action from the Government has moved from policy to action in 2021, with programmes and budgets announced, sending clear signals to the market. Businesses are also upping their game in response to these actions, and to changing customer demands. Communities are more engaged than ever, with Codema welcoming 37 new Sustainable Energy Communities as part of our work for the SEAI Dublin and Mid-East region. We also held 12 very successful events with over 450 attendees and engaged with over 1,100 survey participants, as part of the very first Dublin Climate Action Week. In response to the increased engagement, and the real need for local collaboration to achieve our targets, Codema established a 'Zero Together' network of stakeholders. This diverse team of highly regarded sector experts have volunteered their time to help us to design a roadmap for Dublin's Energy Transition, and we look forward to continuing work with them in 2022.

In 2021, we also hit other big milestones, with a lot of years of work turning into on-the-ground construction on the Tallaght District Heating Scheme, which achieved national news coverage. The scheme is on track to deliver heat in mid-June 2022. Building on our leading position in this sector, we also kick-started the planning of a new potential district heating scheme in Blanchardstown, working on behalf of Fingal County Council, and partnering with a local data centre to supply heat. We continued our work supporting Dublin City Council in developing the business case and procurement strategy for the Dublin Docklands District Heating System. Codema has always been involved in leading innovation and research, and in 2021 we were busy finalising the work on the first-of-its-kind Dublin Region Energy Master Plan and successfully securing funding from SEAI for two new RD&D projects on energy sector integration and recycled urban biomass.

We continue to lead the successful roll-out of Energy Performance Contracts in Ireland with the signing of new contracts for Dún Laoghaire-Rathdown County Council and Fingal County Council, with guaranteed energy savings of 24% and 32%, respectively. We kicked off our latest EU Horizon 2020 project 'DeliverREE' in June, which will fund Codema to establish a Project Implementation Unit to scale up the delivery of renewable and energy efficiency projects across Dublin, starting with a pilot pipeline of €20m projects with the Dublin Local Authorities. We are delighted to have partnered with legal and financial experts Philip Lee Solicitors, Resourceful Futures and SDCL who will bring their experience to this project.

We are very proud of our achievements in 2021, and have so much more planned and in the pipeline for 2022, including a citizens' jury for the Dublin Energy Transition, which will be the first of its kind in Ireland. We would like to take this opportunity to thank our Board members for giving up their time to support us in achieving our mission. Our relationship with the Dublin Local Authorities and engagement with EU programmes are key to enabling us to deliver large-scale, low-carbon innovation and engagement in Dublin that will transform the county and put us on track to be a future 'Green Capital' of Europe!



**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 agency 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, Fingal County 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 and new contracts awarded this year for Dún Laoghaire-Rathdown County Council and Fingal County Council. Our Energy Planning team has just completed an Energy Master Plan for the entire Dublin Region, which is the first of its kind in Europe and provides spatially-led, 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, through the Zero Together initiative.



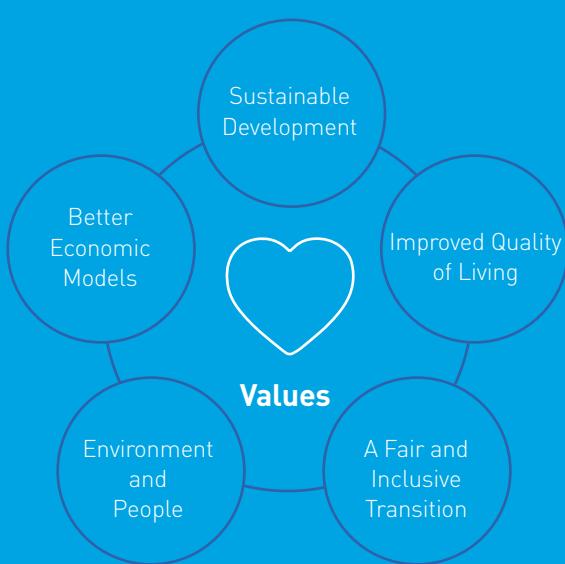
#### Vision

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.



**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

Codema's Board of Directors oversees the governance of the company and helps 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 sectors. The Codema board meets 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 (resigned 2021)**

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

### **Eithna Felten (resigned 2021)**

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

### **Barry Gavin**

Non-Executive Director  
Chair of Audit and Risk Committee

## 02. ABOUT CODEMA

(CONTINUED)

### The Codema Team

Codema currently employs 18 staff who have qualifications and experience in areas such as Engineering, Sustainable Development, Sustainable Infrastructure, Energy Planning and Policy, 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, Communication and Engagement, Research, Development and Innovation and Management Support.





**Donna Gartland**  
**Chief Executive Officer**  
MSc in Sustainable Energy  
Planning and Management  
BEng in Energy and  
Environmental Engineering



**Edel Giltenane**  
**HR & Operations Manager /  
HR Lead**  
Diploma in Human Resource  
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



**Dec McCormac**  
**Project Manager / Project,  
Resource & Funding Lead**  
PMI Project Management  
Professional (PMP)  
Certificate in Public  
Procurement  
MSc in Sustainable  
Development  
BA (Intl) in Geography and  
Archaeology



**Joe Hayden**  
**Executive Manager,  
Project Implementation  
Lead**  
Certificate in Public  
Procurement  
Certified Measurement and  
Verification Professional (CMVP)  
MSc in Sustainable  
Development  
BA/BAL in Mechanical and  
Manufacturing Engineering



**Emily Clarke**  
**Energy Engineer**  
BEng (Honours) in  
Environmental Engineering  
Bachelor of Arts in French and  
International Studies  
Certified Energy Manager in  
Training



**Suzanne Fitzpatrick**  
**Communications  
Manager / Executive  
Manager, Awareness,  
Communication &  
Engagement**  
Executive Diploma in Digital  
Marketing  
Certificate in Internal  
Communications  
Diploma in PR and Event  
Management  
BA in Journalism



**Katie Harrington**  
**Energy and Climate  
Awareness Officer**  
MSc in Climate Change  
Postgraduate Diploma in Digital  
Marketing  
BSc in Marketing



**Katia Tikhoniouk**  
**Communications and  
Project Coordinator**  
Diploma in Graphic Design and  
Desktop Publishing  
Certificate in Project  
Management  
Diploma in Digital Marketing  
MA in Architecture  
BA in Architectural Science



**Shannen Healy**  
**Project Coordinator**  
Higher Diploma in Sustainability  
in Enterprise  
MSc in Food Business and  
Innovation  
BSc in Microbiology



**Ciarán Murphy**  
**Policy Manager /  
Research, Development &  
Innovation Lead**  
BE in Mechanical Engineering  
Masters in Energy Systems  
Engineering



**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



**Lovelord Meda**  
**Graduate Engineer**  
Masters in Renewable Energy  
Systems  
BEng (Honours) in Industrial  
and Manufacturing Engineering



**Conor Leahy**  
**Senior Energy Manager /  
Local Authority Lead**  
MSc in Energy Management  
BE in Biosystems Engineering  
Certified Measurement &  
Verification Professional  
Certified Energy Manager



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



**María Fernanda Diaz  
Andrade**  
**Energy Manager**  
Specialisation in Operations  
Management  
BEng in Energy Technologies

## 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



## AWARENESS, COMMUNICATION AND ENGAGEMENT

Zero Together  
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



## MANAGEMENT SUPPORT

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



## PROJECT IMPLEMENTATION

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



## 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

## 03. WORK PROGRAMME 2021



# 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. The target of a 33% improvement in energy efficiency by 2020 has now been met by all four DLAs. As set out in the Government's Climate Action Plan 2021 Securing our Future, new targets of a 50% improvement in energy efficiency and a 51% reduction in CO<sub>2</sub> by 2030 have been set for the public sector. In addition to this, 50% of thermal demand in buildings must be met by renewable sources by 2030.

These new targets 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. The 50% renewable heat target is expected to be the most demanding of these targets to be met, and is likely to require considerable capital investment. 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 and develop a pathway towards achieving their new 2030 targets.

As set out in the Government's Climate Action Plan 2021 Securing our Future, new targets of a 50% improvement in energy efficiency and a 51% reduction in CO<sub>2</sub> by 2030 have been set for the public sector. In addition to this, 50% of thermal demand in buildings must be met by renewable sources by 2030.



### 2030 Targets for the Public Sector

#### National Climate Action Plan

50% improvement in energy efficiency

#### National Climate Action Plan

51% reduction in CO<sub>2</sub>

#### National Climate Action Plan

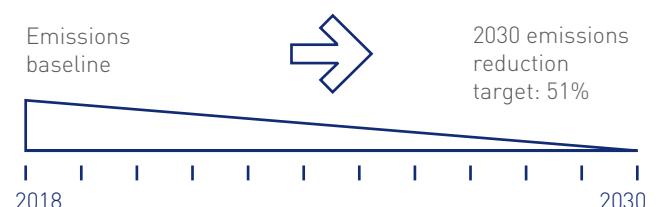
50% of thermal demand in buildings must be met by renewable sources

### 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.

### Emission Target to 2030



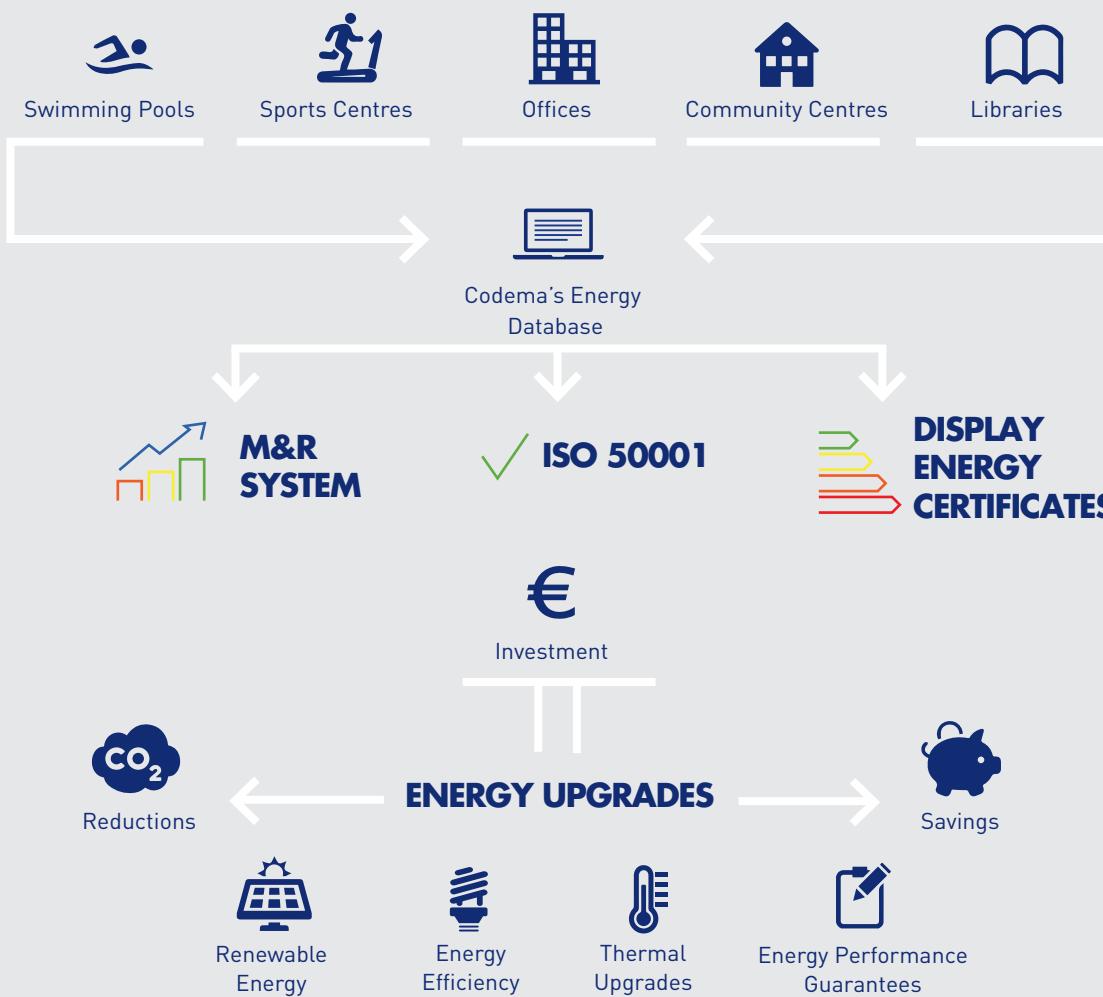
## 03. WORK PROGRAMME 2021

### LOCAL AUTHORITY ENERGY MANAGEMENT (CONTINUED)

Codema can assist the DLAs with the following Energy Management Processes



### ENERGY SURVEYS OF BUILDING GROUPS





In 2021, 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 very useful for tracking the individual local authority's progress towards their 2030 energy efficiency, emissions and renewable heat targets. A new baseline year of 2018 will be used for the greenhouse gas reduction target, with previous baselines retained for the energy efficiency

In 2021, SEAI published an updated Gap to Target tool, to assist local authorities in identifying the energy efficiency improvements and greenhouse gas emission reductions that each will be required to make by 2030. A pilot version of this tool was trialled by Codema in May 2021 using DCC's energy data and details of their planned future projects. Subsequent to this, a later version of this tool was also populated and used to determine future energy demands and required actions as part of both DLRCC's and FCC's ISO 50001 Energy Review process.

## **Energy Reviews**

For the past number of years, Codema has been producing annual Energy Review documents for each of the DLAs. 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, guiding each DLA on how best to tackle their Significant Energy Users (SEUs) and continue to meet public sector energy targets. In 2021, Codema developed a new ISO 50001-compliant Energy

Review template for the DLAs. This document was based on the previously produced Energy Reviews, but included a significantly increased level of detail. It is envisaged that the deep level of analysis included in the new Energy Review would not need to be completed again each year, unless significant changes occur in relation to how a given DLA consumes energy. Instead, a brief Energy Update would be produced on an annual basis, to inform management and elected members as to the performance of the organisation over the previous 12 months, and progress towards the 2030 targets.

In 2021, this new format Energy Review was completed for DLRCC as part of its ISO 50001 management system, and was found to be satisfactory during the process of their surveillance audit in November 2021. Based on this successful outcome, the new Energy Review process was commenced for FCC in December 2021.

## **ISO 50001**

In 2021, 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.

FCC completed SEAI's ISO 50001 masterclass in 2019, and received certification to the new 2018 standard in February 2020. In November 2021, FCC passed its latest surveillance audit.

South Dublin County Council signed up to SEAI's ISO 50001 masterclass and completed the course in 2019. This masterclass aimed to guide the local authorities towards

## 03. WORK PROGRAMME 2021

### LOCAL AUTHORITY ENERGY MANAGEMENT (CONTINUED)

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 2022.

Dublin City Council completed SEAI's masterclass in 2016 and Codema is currently aiding the Council towards full certification by the end of 2022.

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 2021, DLRCC successfully passed its second surveillance audit to the new 2018 standard.

#### Energy Team Meetings

In 2021, Codema helped to facilitate 16 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.

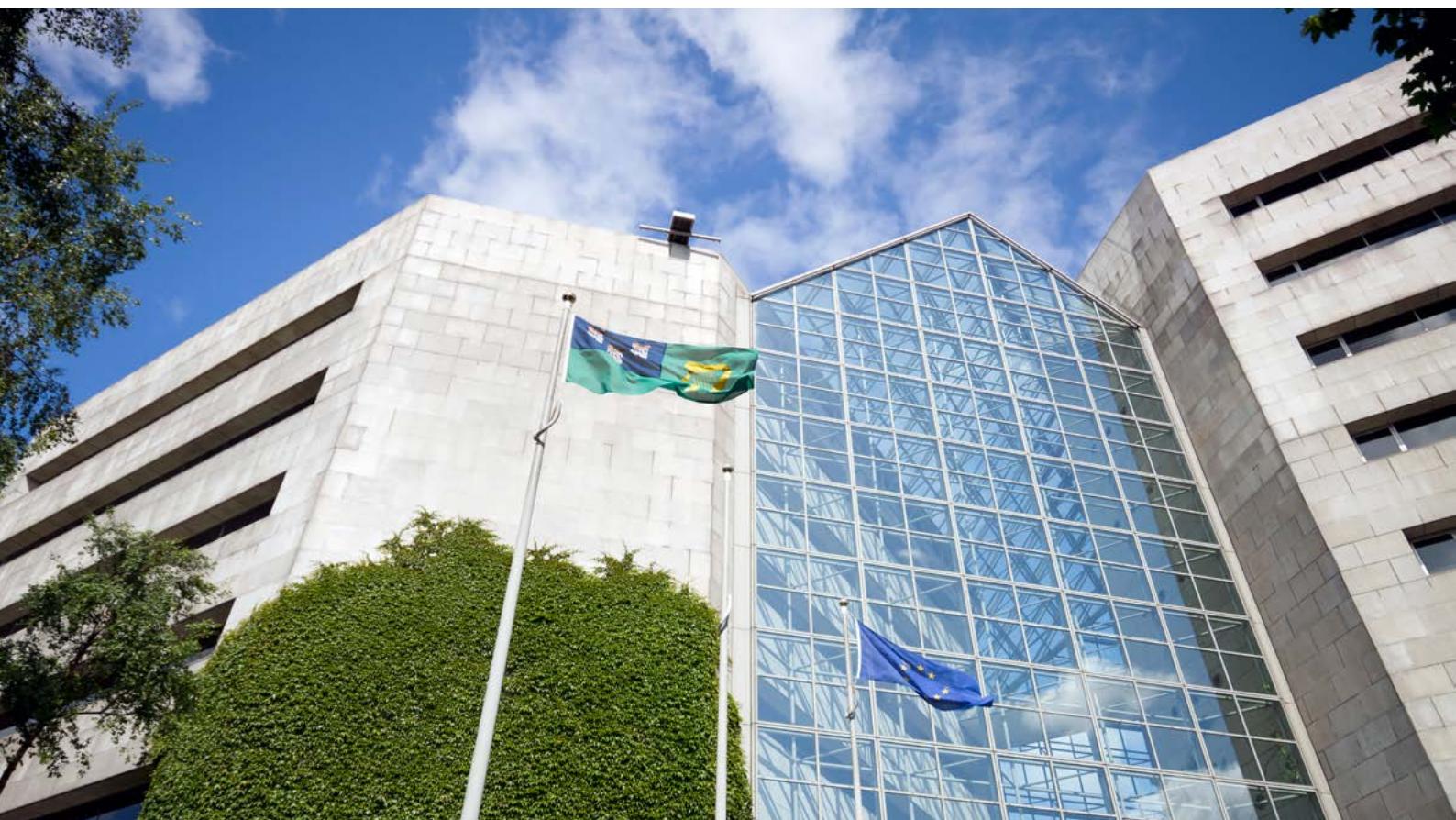
FCC and DLRCC currently have ISO 50001 energy management systems in place. As part of these systems, both

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 publicly-accessible local authority building with a floor area greater than 250 m<sup>2</sup>, as required under the regulation S.I. 243 of 2012. DECs allow for a comparison of a particular building's energy performance against a standard benchmark, and are updated annually with the actual energy consumption over the previous 12 month period. This then allows for the building's energy performance from one year to the next to be tracked.

Codema assisted the four DLAs with the certification of 90 public buildings in total in 2021. 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.

### **Energy Audits and Analysis**

In 2021, Codema completed a non-domestic building energy rating (BER) assessment for DCC's Palace Street office building. This involved a site visit and analysis of site drawings and schematics, and resulted in a BER certificate and advisory report being issued.

### **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.

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

Photo courtesy of Fingal County Council



## 03. WORK PROGRAMME 2021

### LOCAL AUTHORITY ENERGY MANAGEMENT (CONTINUED)

#### LOCAL AUTHORITY ENERGY MANAGEMENT - KEY OUTPUTS FOR 2021



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



**ISO 50001 CERTIFICATION RETAINED FOR DLR AND FINGAL COUNTY COUNCILS**



**DLRCC ISO 50001 ENERGY REVIEW PRODUCED**

#### Local Authority Energy Management - Actions and Outputs 2021

Date	Actions	Project support	Outputs
<b>January</b>	MPRNs & GPRNs verified for all DLAs for M&R	--	2,793 energy accounts entered into the M&R
	Presentation to DCC Environmental SPC	--	Presented on 2019 Energy Review, Covenant of Mayors & Energy Master Plan
	FCC Energy Team Meeting	--	Presented on LA's current energy performance
	DLRCC Energy Team Meeting	--	Presented on LA's current energy performance
	DCC Q4 updates completed for CCAP	--	Annual update for CCAP completed
	AIEA Meeting	--	Presentation on Codema's BER B Report
	Microgeneration Support Scheme consultation response	--	Contributed to two separate submissions made on behalf of the three large energy agencies and ISEA
<b>February</b>	Dublin Local Authority Energy Action Committee Meeting	--	Discussion relating to work plan for the year
	DLRCC Energy Team Meeting	--	Presented on LA's current energy performance
	AIEA/CARO training presentation	--	Training presentation delivered
<b>March</b>	DLRCC Energy Team Meeting	--	Presented on LA's current energy performance
	FCC Energy Team Meeting	--	Presented on LA's current energy performance
	FCC ISO 50001 Management Review	--	Presentation to Senior Management
	Carbon Neutral Report	--	Completed Report
	DLRCC Energy Team Meeting	--	Presented on LA's current energy performance

Date	Actions	Project support	Outputs
<b>April</b>	DLRCC Energy Team Meeting	--	Presented on LA's current energy performance
	NOAC Returns for Public Lighting Indicators for FCC and SDCC	--	NOAC performance indicators confirmed
	Other fuel data updated on M&R for all DLAs	--	Annual M&R reporting completed
	LexIcon Energy Team Meeting	--	Presented on energy performance of LexIcon facility
	AIEA Meeting	--	Presentation on Decarbonisation Zones
<b>June</b>	DLRCC Energy Team Meeting	--	Presented on LA's current energy performance
<b>July</b>	DLRCC Legal and Other Requirements	--	Register of relevant legal and other requirements compiled as per ISO 50001 requirement
	SDCC Energy Team and ISO 50001 Meeting	--	Plan to progress ISO 50001 certification process
<b>August</b>	NDBER generated for DCC's 3 Palace Street office building	--	BER certificate and advisory report
<b>September</b>	DECs sent out to all 4 DLAs	--	Certificate, explanatory brochure and letter sent to each facility manager
	FCC M&R returns finalised - resolution of Balleally and Dunsink LFG export issues	--	Final 2020 M&R results available
	FCC Energy Team Meeting	--	Presented on LA's current energy performance
	DLRCC Energy Team Meeting	--	Presented on LA's current energy performance
<b>October</b>	S.I. 426 compliance signed off for DLRCC & FCC under ISO 50001 EnMS	--	Compliance with S.I. 426 confirmed
	FCC Energy Team meeting	--	Presented on LA's current energy performance
	DLRCC Energy Team Meeting	--	Presented on LA's current energy performance
<b>November</b>	DLRCC ISO recertification audit - passed, no non-conformities	--	ISO 50001 certification retained
	FCC ISO recertification audit - passed, no non-conformities	--	ISO 50001 certification retained
	FCC Energy Team meeting x2 (& updated monthly graphs x1)	--	Presented on LA's current energy performance
	DLRCC Energy Team meeting x2 (& updated monthly graphs x1)	--	Presented on LA's current energy performance
	DLRCC ISO 50001 Energy Review	--	New ISO 50001 compliant Energy Review process completed
	FCC internal audits - public lighting, libraries	--	Internal audits completed as per ISO 50001 requirements

## 03. WORK PROGRAMME 2021



### PROJECT IMPLEMENTATION

Over the past six years, Codema has facilitated the investment of over €11 million 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, four Energy Performance Contract (EPC) projects involving 15 buildings and a renewable energy project involving six buildings.

What is unique about the majority of these projects (as set out in Table 1) 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 six years, Codema has facilitated the investment of over €11 million 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
<b>DCC Civic Office and Library PV</b>	Traditional Contract	Works only	€200,000	100% Local Authority
<b>Irishtown Stadium LED lighting</b>	Energy Performance Guarantee	3 months	€33,000	70% Local Authority / 30% Grant
<b>OBI boiler replacement</b>	Energy Performance Guarantee	1 Year	€230,000	100% Local Authority
<b>DCC Leisure Centres EPC</b>	Energy Performance Contract	8 years	€670,000	70% Grant / 30% ESCo
<b>DCC Sports and Leisure EPC</b>	Energy Performance Contract	8 years	€630,000	63% Local Authority / 37% ESCo
<b>DLR Leisure Centres EPC</b>	Energy Performance Contract	8 years	€600,000	50% Local Authority / 50% ESCo
<b>Tallaght District Heating Scheme</b>	Energy Supply Contract	10 years	€7,972,000	61% Grant / 39% ESCo
<b>Fingal County Council EPC</b>	Energy Performance Contract	8 years	€1,000,000	50% Grant / 50% ESCo
<b>Total</b>			<b>€11,335,000</b>	

## 03. WORK PROGRAMME 2021

### PROJECT IMPLEMENTATION (CONTINUED)

#### **DeliveREE**

In early 2021, Codema was awarded funding under the Horizon 2020 Project Development Assistance call for the DeliveREE project. Through DeliveREE, Codema will build on the experience of the past six 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

In 2021, Codema put in place a dedicated Project Implementation Unit (PIU), which aims to 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 first task completed was a full assessment of the current Energy Performance Contract market in Europe.

This included a desktop review of previous publications in the focus area and interviews with 14 organisations across Europe (ESCos, other facilitators, Irish Government Bodies and financiers) involved in the EPC market. The outcomes of this task were compiled into a Guidance Document for the Development of the Project Implementation Unit and Protocols and Procedures, which addressed the five key barriers that were identified to the development of the EPC market in Ireland, summarised the findings from the market assessment and presented a gap analysis which proposes a clear roadmap for

Photo courtesy of South Dublin County Council



the development of the Project Implementation Unit. 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. Based on Codema's experience of delivering projects with a mix of financing sources, we aim to have a financing split of local authority, grant funding and private financing across all contracts. As part of DeliveREE, Codema and the local authorities have identified a potential project pipeline that 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 24 GWh energy savings over the contract lifetime, amounting to 3.8 ktCO<sub>2</sub> savings. The total Capital Expenditure of the pipeline is estimated to be at least €20.4m, with an estimated total contract value of these energy projects of approximately €23.5m, of which at least €9.75m will be privately financed.

Codema is currently working with the local authorities and SEAI to secure Pathfinder funding for the proposed projects. The overall intention behind the SEAI-developed Pathfinder Scheme is to provide capital support to public bodies to create a step-change in energy efficiency and decarbonisation by supporting public sector projects that reduce greenhouse gas emissions

and not just energy demand reduction measures. The scheme prioritises complete approaches to building retrofit to at least BER 'B' standard using renewable heating systems.

DeliveREE and Pathfinder are highly complementary. Through DeliveREE, the four DLAs have aligned their objectives with the principles of the Pathfinder programme. They have come in a partnership approach to implement a range of energy efficiency, renewable energy and low-carbon deep retrofit projects with the aim of reducing energy-related greenhouse gas emissions. The overall aim is to bring all buildings in the pipeline to a minimum 'B' energy rating and clear pathway to this standard in cases where this is not initially feasible. Through DeliveREE, the DLAs have secured a project implementation unit for the facilitation of the proposed project pipeline. This ensures that any funding provided through Pathfinder will be utilised in the most efficient and targeted manner. Pathfinder funding will ensure that the proposed pipeline of projects can be delivered within three years. It will accelerate the process and provide certainty for the local authorities and encourage deep retrofit projects. It will also demonstrate the effectiveness of a highly scalable innovative project funding model that facilitates private investment in combination with client (and grant) financing, while providing guaranteed energy and greenhouse gas emission savings. This is critical if we are to meet our 2030 and 2050 reduction targets.



## 03. WORK PROGRAMME 2021

### PROJECT IMPLEMENTATION (CONTINUED)



Photo courtesy of dlr Leisure

#### **Energy Efficiency Projects**

##### **FCC Office Building EPC Project**

In 2021, Codema assisted FCC with the procurement of its first Energy Performance Contract (EPC) project. Codema facilitated the procurement process from start to finish, including the drafting of all necessary documents, selecting the preferred bidder and managing all communications throughout the competition and with the successful bidder. This project involves FCC's headquarters at County Hall in Swords and the Civic Offices building in Blanchardstown. The project plans to upgrade the existing lighting, heating and ventilation systems in the two buildings. Boiler upgrades, control systems and renewable energy systems such as PV panels will also be installed. The contract, which is for nine years, will achieve energy savings of 1.3 GWh and 330 tCO<sub>2</sub> per annum, which represents 32% of total energy consumption at present. Works are currently underway and the total cost savings are expected to be €139,828 per year.

##### **DLR Leisure EPC Project**

Codema assisted DLR Leisure with the procurement of its first EPC project for Meadowbrook, Loughlinstown and Monkstown Leisure Centres. The project was awarded to Noel Lawler Green Energy Solutions in January 2021 and works are near completion after some delays due to Covid restrictions. The project includes 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 contract, which is for eight years, will achieve energy savings of 1.5 GWh and 318 tCO<sub>2</sub> per annum, which represents 24% of total energy consumption at present. The total cost savings are expected to be €98,179 per year, a reduction of 31%.

##### **Measurement and Verification Support**

In 2021, Codema continued to assist DCC with the ongoing Measurement and Verification (M&V) of its two ongoing 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 sixth year of an eight-year contract and the latest M&V figures show that between December 2016 and June 2021, the project has achieved energy savings of 13.6 GWh, with a value of €896,674. The project has also saved 3,634 tonnes of CO<sub>2</sub> and average annual energy savings of 37%. Codema will continue to assist DCC with managing this M&V process in 2022.

DCC's second EPC 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 service period began on the 1st March 2020. The latest M&V figures show that between March 2020 and June 2021, the project has achieved energy savings of 1.5 GWh with a value of €182,343. The project has also saved 525 tonnes of CO<sub>2</sub> and average annual energy savings of 23%. Codema will continue to assist DCC with managing this M&V process in 2022.

##### **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.



Photo courtesy of Ben Ryan

If, however, the system performs even better than expected, a bonus payment is made to the contractor along with the retained 7.5%. The works are now complete and the new boiler has been installed. The efficiency of the new installation will be measured for the next year.

#### EPC Facilitator Training

In 2021, Codema was contracted by SEAI to develop a training course for EPC Project Facilitators. The aim of the course is to provide other public and private organisations with the necessary information, tools and skills to facilitate the implementation of Energy Performance, Energy Supply or Energy Guarantee projects within their own organisation or on behalf of a client. The course focuses on the complete project development cycle, including initial project identification, technical analysis, financial analysis, risk analysis, contract selection, procurement and measurement and verification.

#### Arthurstown PV Project

Codema is currently working with SDCC with the aim of developing a 40kW solar PV array for the leachate treatment facility at Arthurstown. This facility represents one of the largest electricity demands within the Council. The primary goal of a project at this site would be to generate a sufficient amount of renewable electricity to cover the existing site demand, allowing for "carbon-neutral" operation (i.e. net zero imports). Initial feasibility reports have been completed and the team is currently preparing the procurement documentation and assessing planning permission requirements for the project.

#### District Heating Contracting

##### Tallaght District Heating Scheme

In 2021, Codema continued to assist South Dublin County Council with the development of the innovative Tallaght District Heating Scheme. This district heating network will use excess heat from a recently completed Amazon Web Services' (AWS)

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 homes and businesses.

Trading as Heat Works, the district heating company has contracted Fortum, a large Finnish energy services company with extensive district-heating experience throughout Scandinavia and Eastern Europe, to carry out the design, installation and operation of the Tallaght network. The installation of the first pipes in the network began in Spring 2021 and the majority of the network is now in place. The energy centre has also been constructed and is currently being fitted out with the necessary mechanical equipment including the large-scale heat pumps and backup electric boiler which will provide heat to the network. The scheme is on track to be operational by June 2022.

#### Dublin Docklands District Heating System

Codema continues to work with Dublin City Council in the development of the Dublin Docklands District Heating System. In 2021, Codema provided ongoing technical input in helping to finalise assumptions for the economic model and project business case for presentation to the project board.

Codema continued 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 and the recognition of waste heat on a comparable basis to renewable energy. Codema also provides ongoing input into the legal discussion concerning the proposed structuring and development of the wider project.

## 03. WORK PROGRAMME 2021

### PROJECT IMPLEMENTATION (CONTINUED)

#### PROJECT IMPLEMENTATION - KEY OUTPUTS FOR 2021



**DELIVEREE  
PROJECT  
KICK-OFF**



**CONTRACTS  
AWARDED FOR DLR  
& FINGAL EPCS**



**DRAFT PROGRAMME  
DEVELOPED FOR EPC  
FACILITATOR TRAINING**

#### Project Implementation - Actions and Outputs 2021

Date	Actions	Project support	Outputs
<b>January</b>	DeliveREE Project Awarded	--	DeliveREE Contract
	DLR EPC project awarded for Meadowbrook, Loughlinstown and Monkstown Leisure Centres	--	Contract signed and awarded
<b>February</b>	EPC II Measurement and Verification Report for DCC	--	Measurement and Verification Report produced
	Drafting of first TDHS customer supply contract	--	Draft customer supply contract
<b>March</b>	O'Brien Institute Boiler Replacement kick-off meeting with contractor	--	Meeting
	Development of DeliveREE project management structure	--	DeliveREE Miro board produced
<b>April</b>	Project management plan developed for small-scale renewable energy project at Arthurstown	--	Project management plan
	Build Upon2 Workshop	--	Presentation on EPC II
	Drafting of SEC Framework Request for Tender documents	--	Request for Tender documents
	Prepared draft training pack for SEAI EPC facilitator's training programme	SEAI	Draft training modules (1-3) produced

Date	Actions	Project support	Outputs
<b>May</b>	Prepared draft training pack for SEAI EPC facilitator's training programme	SEAI	Draft training modules (4-7) produced
	Energy pricing structure for Dominick Hall apartments	--	Pricing strategy report produced
<b>June</b>	Prepared Strategy Report for the delivery of EPC facilitation training programme	SEAI	Strategy to deliver EPC facilitation training and Register Report submitted to SEAI
	Pathfinder/DeliveREE Funding DLA Meeting	DeliveREE	Minutes of meeting and next steps
<b>August</b>	District Heating Primary Energy Factor Calculation report - response to department proposal	--	Report detailing Codema response to Department proposal
<b>September</b>	Meeting with SDCC on next steps for Arthurstown projects	DeliveREE	Minutes of meeting and next steps
	Board meeting presentation on the PI cell	--	Presentation
	DeliveREE kick-off meeting	DeliveREE	Meeting minutes and presentations
<b>October</b>	Pathfinder position paper for the four Dublin Local Authorities	DeliveREE	Draft position paper
	Completion of DeliveREE deliverable 1.3 Internal Communication Protocol	DeliveREE	D1.3: Internal Communication Protocol
	Completion of DeliveREE deliverable 1.8 Risk Assessment Plan	DeliveREE	D1.8: Risk Assessment Plan
<b>November</b>	Prepared and delivered draft training pack for SEAI EPC facilitator's training programme	SEAI	Mock training recordings & powerpoint presentations & materials submitted to SEAI
	Completion of DeliveREE Task 2.1: Interviews with key stakeholders	DeliveREE	Notes from 10 interviews from experts across Europe
<b>December</b>	Completion of DeliveREE deliverable 2.1: Guidance document for the development of the PIU and protocols and procedures (including Gap Analysis)	DeliveREE	D 2.1: Guidance document for the development of the PIU and protocols and procedures (including Gap Analysis)
	FCC Energy Performance Contract signing	--	Signed contract
	DLA and SEAI meeting on Pathfinder proposal	--	Meeting notes and presentations

## 03. WORK PROGRAMME 2021



# AWARENESS, COMMUNICATION AND ENGAGEMENT

### **Zero Together**

In 2021, Codema's Awareness, Communication and Engagement team continued to work on the Dublin Energy Transition Roadmap, which was branded in September that year as the 'Zero Together' initiative. Zero Together 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.

Zero Together recognises that local authorities in Dublin only account for 3% of total emissions within the county; therefore, in order to have real impact, we need to involve other key sectors (e.g. businesses, transport, communities, energy) in agreeing the best pathways for getting Dublin to net-zero emissions and moving away from fossil fuels.

The Zero Together initiative is supported through the Horizon 2020 TOMORROW project, which brings together six pilot cities (Dublin plus Brasov, Brest-Metropolis, Mouscron, Nis and Valencia), with Energy Cities as co-ordinator and the 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.

### **Zero Together Transition Team**

In April 2021, Codema hosted a stakeholder identification workshop with the Dublin CARO, Smart Dublin and DLA teams to identify key frontrunners from a range of sectors (business, community, energy, transport, etc.) to join the existing Transition Team. More than 30 leading stakeholders were

identified during this workshop and these were then narrowed down to the 10 most committed, influential and intrinsically motivated frontrunners within these sectors. Codema then held one-to-one interviews with each of these frontrunners and in July 2021, the wider Zero Together Transition Team was formed.

In parallel to this, Codema also designed a year-long workshop process for the team to develop the Zero Together roadmap and set out Dublin's strategy for reaching its 2030 and 2050 targets. This included a rigorous procurement process to identify and hire a highly-skilled professional facilitator to manage the workshop process with the team. The first two workshops were held in 2021 and focused on:

- Shared Purpose: Getting to know each other, finding our 'why' and exploring the values of the Zero Together Transition Team [September 2021]
- Visioning: Creating a vision for Dublin in 2050 [December 2021]

The remaining four workshops will take place in 2022 and the goals for Zero Together for the next year are:

- For the Transition Team to work together to develop a strategy to ensure that Dublin will achieve net-zero by 2050
- To have firmly established a governance and organisational structure for the Transition Team to ensure the effective dissemination and roll-out of this strategy to relevant stakeholders
- To have included and engaged those living, working and studying in Dublin and incorporated their views into the final strategy



- To gain senior political buy-in by ensuring that the roadmap is adopted in policies/plans; using effective communication to ensure those that we need to secure support from, at a senior level, are fully committed.

#### **Zero Together Public Engagement**

As a starting point for public engagement around the Zero Together initiative, Codema developed the 'Zero Together' survey, which ran during September and October 2021 and received over 1,000 responses from the public who shared their views on a range of issues on how best to move Dublin away from fossil fuels and make the capital a clean and healthy county to live, work and visit.

The survey results were analysed and then disseminated in December 2021, with some very interesting insights around daily energy use, levels of self-efficacy among the public, responsibility for moving Dublin away from fossil fuels and levels of trust among key groups.

Interestingly, when asked how they want to their views and concerns to be captured in the future, 68% of respondents said that they would like to see initiatives that "allow people living and working in Dublin to discuss, propose and vote on actions that could be presented to local authorities and national government", indicating that a local citizens' assembly or a citizens' jury is very much welcomed by the people of Dublin.

Codema will build on these insights in 2022 by exploring the potential for designing and funding a citizens' jury so that the people of Dublin can have their say in the design of the roadmap and how we move the capital away from fossil fuels.

#### **Think Energy**

##### **Home Energy Saving Kit**

Throughout 2021, the Home Energy Saving Kit scheme was supported through ongoing training with library networks across the country, webinars and consistent online promotion. The kits are now available to borrow from over 120 libraries in Ireland and are available for the public to borrow free-of-charge.

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 scheme, Codema carried out extensive staff training on the Home Energy Saving Kit and promoted the kit at a range of webinars focused on energy savings and efficiency, with a combined audience of over 300 participants. This allowed library staff and the general public 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. These events included a webinar in support of TCD Green Week to 30 participants, a module for 13 individuals taking part in a four week "Sustainable Life School" programme, a presentation to over 200 students in DCU taking part in their annual Hackathon, a webinar for EU Sustainable Energy Week to over 30 attendees from EU Direct Clones in Monaghan and a webinar on saving energy at home for Dublin Climate Action Week with over 30 participants.

## 03. WORK PROGRAMME 2021

### AWARENESS, COMMUNICATION AND ENGAGEMENT (CONTINUED)

#### Think Energy in the DLAs

##### *Dún Laoghaire-Rathdown County Council*

In October, Codema helped Dún Laoghaire-Rathdown County Council to host a free webinar on Home Energy Upgrades, as part of the Open House Dublin programme. The webinar was targeted at homeowners who are interested in making their home comfortable and saving energy. The event featured examples and insights from architects and energy experts who illustrated what can be achieved with energy upgrades and what supports are available. Local architect Mel Reynolds described how A ratings are achievable, drawing on the upgrading of his own home. SEAI, Electric Ireland Superhomes, the Irish Green Building Council, Dalkey Sustainable Energy Community and our Energy and Climate Awareness Officer, Katie Harrington, shared information around grants available and energy saving actions on an individual and community level. The event was very successful with over 150 participants attending. Additionally, Codema worked with DLRCC to develop a quiz for Council staff to engage them in energy saving actions, which was launched to coincide with Dublin Climate Action Week.

#### Think Energy

Due to the pandemic, Codema primarily promoted energy savings actions through a range of online resources consisting of the creation of a Think Energy Hub blog and YouTube playlist. Several resources were developed to encourage energy savings and efficiency such as "Become an Energy Champion in 7 days". This challenge was promoted on our website and social media channels with the aim of getting parents and children engaged during homeschooling and remote-working. Through the Think Energy Hub, Codema launched a YouTube series called "Ask The Expert" in which our Energy and Climate Awareness Officer interviewed several experts on home energy upgrades, heat pumps and switching energy suppliers. The series concluded in 2021 with a very successful live Ask The Experts event during Dublin Climate Action Week where participants could ask questions directly to a panel of experts about home energy upgrades. The panel of experts included Ruth Buggie from SEAI, Eric Dennis from KSN Energy and Noel Rowland from Churchfield Home Services and saw over 150 participants register for the event.



## Key Events

### Dublin Climate Action Week 2021

Codema was delighted to be part of the organising committee for Dublin's very first Climate Action Week [DCAW21], which took place from 13th - 19th September 2021. In order to organise this week-long programme of events, a Steering Group was established in February and was chaired by Dún Laoghaire-Rathdown County Council and included representatives from Codema, the four DLAs and the Dublin CARO. The overall vision for DCAW21 was 'to highlight Dublin's climate action progress to its citizens and demonstrate the leadership role of the four local authorities in conjunction with other partners'.

Codema took a lead on the web development of the programme and oversaw the design of the [dublinclimateactionweek.ie](http://dublinclimateactionweek.ie) website, which went live in June 2021 as part of the DCAW21 soft launch. The website acted as the central platform to allow the public to view and register for all events taking place during the week. Online event registration opened in August 2021 and allowed people to register for a range of great events covering topics such as energy and buildings, transport, flood resilience, nature-based solutions, resource management and citizen engagement.

Over 75 online and in-person events took place throughout the week, which included webinars, workshops, site visits, cycles and walking tours. Within this, Codema organised or supported the following successful events during Dublin Climate Action Week:

- Tour of the Tallaght District Heating Site (walking tour)
- Creating a Carbon Neutral Dublin - The Dublin Region Energy Master Plan (live webinar)
- Sustainable Energy Communities Information Webinar
- REDAP Tool Demonstration (live webinar)
- Transforming Dublin with Low-Carbon Heat (live webinar)
- Saving Energy at Home (live webinar)
- Ringsend-Irishtown Sustainable Energy Community Walking Tour
- Phibsboro Village Climate Club (launch of their draft Energy Master Plan, Biodiversity Master Plan and Circular Economy Map)
- Dublin Triple Sustainable Energy Communities (SEC) Webinar
- Women in Energy (live webinar)
- Ask the Expert - Home Energy Upgrades (live webinar)
- Belarmine SEC presents Fernhill Walking Tour

Photo courtesy of Peter Kavanagh



## 03. WORK PROGRAMME 2021

### AWARENESS, COMMUNICATION AND ENGAGEMENT (CONTINUED)



#### Planning our Energy Future - Ireland's First Energy Planning Conference

In November 2021, Codema organised 'Planning our Energy Future', which was Ireland's first conference focused on the important role that energy planning plays in developing and implementing actions that will help us achieve ambitious national climate targets towards 2030 and 2050.

The conference was very successful, with over 300 people registered for this online event. Topics discussed on the day included:

- The importance of energy planning within an Irish/national context
- The role of energy planning in achieving government ambitions and aligning with policies such as the Climate Action Plan 2021
- Current situation on energy planning in Ireland - local to national
- The evolution of energy planning at a local level
- Irish case studies: The Dublin Region Energy Master Plan, which has been developed with the support of SEAI RD&D funding, and the Dingle Peninsula/Corca Dhuibhne 2030 Initiative
- International examples and learnings for Ireland

#### Sustainable Energy Communities

Throughout 2021, Codema continued its work as 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 2021, Codema and its County Mentors facilitated the recruitment of 37 communities to the SEC network in the Dublin and Mid-East Region, bringing the total number of SECs in the region to 150 by the end of the year.

Throughout the year, Codema's Communications Team highlighted new SECs that joined the network and continued to promote the work of SECs within the region. The team developed an information brochure about the SEC programme and this was shared widely online, via social media, and with the DLAs and the SECs themselves.



### SEC Events

As mentioned earlier in this section, Codema organised a key information event about the Sustainable Energy Communities programme as part of Dublin's first Climate Action Week in September 2021. In addition, Codema also supported individual SECs with the organisation of their own individual events during the week, namely:

- Ringsend-Irishstown Sustainable Energy Community Walking Tour
- Phibsboro Village Climate Club (launch of their draft Energy Master Plan, Biodiversity Master Plan and Circular Economy Map)
- Dublin Triple Sustainable Energy Communities (SEC) Webinar
- Belarmino SEC presents Fernhill Walking Tour

In April 2021, Codema also organised a very successful online event for councillors in Dublin, Wicklow, Kildare and Meath. This event was very well attended, with over 50 councillors represented, and gave participants an overview of the SEC programme, explained the role of the local authorities in supporting SECs and allowed councillors to ask questions about the programme.

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

- February: SEC Event for South Dublin
- March: Maynooth SEC Domestic Solar Webinar
- March: Raheny SEC Webinar, Drimnagh SEC event with Capital Credit Union One-Stop-Shop Model
- April: Marino SEC Online Event
- May: Fingal SEC Information Event
- June: Partnership Evening for Fingal SECs
- July: Q&A on Domestic Energy Upgrades and Grants with DCU
- October: Kildare Climate and Energy Week: Time to Switch On
- November: Kildare PPN Energy Event, Drimnagh SEC event with Retrofit Suppliers and Homeowners

## 03. WORK PROGRAMME 2021

AWARENESS, COMMUNICATION AND ENGAGEMENT (CONTINUED)

### AWARENESS, COMMUNICATION AND ENGAGEMENT - KEY OUTPUTS FOR 2021



**ORGANISED / SUPPORTED  
12 EVENTS FOR DUBLIN  
CLIMATE ACTION WEEK**



**1,102 RESPONSES FROM  
PUBLIC TO ZERO TOGETHER  
SURVEY**



**2 X WORKSHOPS CARRIED  
OUT WITH ZERO TOGETHER  
TRANSITION TEAM**

### Awareness, Communication and Engagement - Actions and Outputs 2020

Date	Actions	Project support	Outputs
<b>January</b>	Galway HESK Training	--	Provided training to over 20 library staff across the Galway region
	Energy Champion social content	--	1 infographic and 7 days worth of social content
	Top 10 Energy Saving Tips When Working From Home produced	--	A 4 minute YouTube video detailing top energy saving tips when working from home
<b>February</b>	Presentation at TCD Green Week	--	Presented an online webinar on energy savings in the home to over 30 people at Trinity's Green Week
	Funding application developed with Digital Hub for energy virtual showcase	--	Application submitted to the Public Sector Innovation Fund
	Information leaflet developed on the Dublin Energy Transition Roadmap	TOMORROW	Information leaflet circulated to TOMORROW partners and Transition Team
	Steering group formed for Dublin Climate Action Week	--	Codema represented on steering group, alongside the four DLAs and CARO
	Information brochure developed about the Sustainable Energy Communities programme	SEC	Brochure uploaded online and circulated to DLAs and CARO
	Promotion of South Dublin SEC Event	SEC	Assisted local mentor with promotion of event
	Launch of #AskTheExpert series with Eric Dennis from KSN Energy	--	3 x YouTube videos on Home Energy Upgrades on Think Energy hub playlist
	Dublin Energy Transition Roadmap promotional video	TOMORROW	Development of a 2 minute video detailing the energy transition roadmap

Date	Actions	Project support	Outputs
<b>February</b>	Interview with Calin Tasnadi on heat pumps for Ask the Expert series	--	2 x YouTube videos on heat pumps
<b>March</b>	Promotion of Raheny SEC Event	SEC	Supported Dublin City mentor with promotion and organisation of event
	Drimnagh SEC event with Capital Credit Union One-Stop-Shop Model	SEC	Supported Dublin City mentor with promotion and organisation of event
	Maynooth SEC Domestic Solar Webinar	SEC	Supported Maynooth SEC with promotion of event
	Funding application for SEAI RD&D under Topic 22 developed to explore motivations and barriers to behavioural change and home retrofitting	--	Application submitted to SEAI
	Brand logos and templates finalised for Heat Works	Special project	Suite of design templates developed for Heat Works
	Focus group on energy behaviour during Covid carried out with DCC staff	--	Focus group held with approx 10 participants
	Presented at DCU Hack4Change event	--	Presented for over 200 students for DCU's Hack4Change event
<b>April</b>	Infographic updated to promote DCC Fabric Upgrade Programme	--	Infographic sent to DCC and uploaded online
	Info session on SEC Programme organised for local authority councillors	SEC	Info Session on SEC Programme attended by approx 50 elected members from 7 LAs
	Interview with Switcher.ie for Ask The Expert series	--	2 x Youtube videos on switching energy supplier
	Stakeholder workshop held with Codema, DLAs and Dublin CARO to identify frontrunners for Transition Team	TOMORROW	30+ stakeholders identified, narrowed down to 10 key frontrunners to involve in team
	Promotion of Marino SEC event	SEC	Supported local Dublin City mentor with promotion of event
<b>May</b>	Sustainable Life School presentation on energy savings	--	Presented on energy savings to 13 students of the Sustainable Life School programme
	Fingal SEC event	SEC	Supported FCC and local mentor with promotion of online event
<b>June</b>	Partnership Evening for Fingal SECs	SEC	Supported FCC and local mentor with promotion of online event
	Dublin Climate Action Week website developed	Special project	Launch of website, to coincide with #DCAW21 soft launch
	HESK training for Carlow libraries	--	10 library staff in attendance
<b>June-July</b>	1-2-1 interviews with nominated frontrunners	TOMORROW	Interviews held with 10 nominated frontrunners

## 03. WORK PROGRAMME 2021

### AWARENESS, COMMUNICATION AND ENGAGEMENT (CONTINUED)

Date	Actions	Project support	Outputs
July	HESK online training organised for Monaghan Libraries	--	HESK online training delivered for Monaghan Libraries
	HeatNet NWE Rollout Strategy completed	HeatNet NWE	HeatNet NWE Rollout Strategy complete
	Q&A on Domestic Energy Upgrades and Grants with DCU	SEC	Supported with event promotion
August	HESK demo recorded	--	YouTube video uploaded demonstrating how to use each tool in the kit
	Event registration opens on Dublin Climate Action Week website	Special project	75+ events open for public registration on Dublin Climate Action Week website
September	Assisting Ringsend-Irishtown SEC with the promotion of their DCAW event	--	Walking tour of Ringsend-Irishtown SEC carried out during DCAW - 15 attendees
	Assisting Phibsboro SEC with the promotion of their DCAW event	--	Online promotional support for event
	Assisting Belarmino SEC with the promotion of their DCAW event	--	Online promotional support for event
	Assisting Cabra, Phibsboro & Stoneybatter SECs with the promotion of their joint DCAW event	--	Online promotional support for event
	Organisation of SEC Information Webinar for DCAW	--	Webinar held with 27 attendees
	Organisation, implementation and hosting of Master Plan results webinar	--	Webinar held with 102 attendees
	Organisation, implementation and hosting of REDAP tool webinar	--	Webinar held with 48 attendees
	Organisation of walking tour of Tallaght District Heating Scheme during DCAW	--	Walking tour held with 12 attendees
	Organisation, implementation and hosting of District Heating webinar	--	Webinar held with 48 attendees
	Organisation, implementation and hosting of Save Energy at Home webinar	--	Webinar held with 38 attendees
	Organisation, implementation and hosting of Women in Energy event	--	Webinar held with 116 attendees
	Organisation, implementation and hosting of Ask The Experts webinar	--	Webinar held with 83 attendees
	Development of Zero Together brand for Dublin Energy Transition Roadmap	TOMORROW	Name, logo and visual identity created for roadmap
	Organisation and implementation of 1st workshop for Transition Team	TOMORROW	Shared purpose and team introductions discussed

Date	Actions	Project support	Outputs
<b>September - October</b>	Launch of Zero Together survey and outreach campaign	TOMORROW	1,102 survey responses in total. 700+ direct emails sent, 29 social media posts, social media campaign
<b>October</b>	Hosting of and presentation of HESKs at DLRCC energy webinar	--	Over 150 participants attended the webinar on Sunday 17th Oct
	Presentation for EU Sustainable Energy Week for EU Direct Clones in Monaghan	--	Over 30 attendees for lunch time webinar. Presented on energy savings in the home and HESKs
	Interview with Codema CEO for Ask The Expert series	--	1 x YouTube video Buzzword Buster
	Kildare Climate and Energy Week: Time to Switch On	SEC	Supported local mentor with event promotion
<b>November</b>	Kildare PPN Energy Event	SEC	Supported local mentor with event promotion
	Branding process for DeliveREE commenced	DeliveREE	Discovery workshop held with branding agency
	Organisation of Planning our Energy Future: Ireland's first Energy Planning Conference	--	Energy Planning Conference held with over 300 participants registered
	Drimnagh SEC event with Retrofit Suppliers and Homeowners	SEC	Supported local mentor with event promotion
<b>November-December</b>	Organisation, implementation and hosting of online Dublin study visit for TOMORROW project partners / pilot cities	TOMORROW	Study visit held with TOMORROW partners
<b>December</b>	Organisation and implementation of 2nd Transition Team workshop	TOMORROW	10 key vision elements agreed for Dublin's energy transition
	Publication of the Zero Together survey results	TOMORROW	Views of over 1,000 survey respondents widely disseminated

## 03. WORK PROGRAMME 2021



# RESEARCH, DEVELOPMENT AND INNOVATION

## Energy Planning

### Dublin Region Energy Master Plan

The Dublin Region Energy Master Plan (DREM) is the first regional energy master plan in Ireland. The master plan provides realistic, costed pathways for the Dublin Region to achieve its carbon emission reduction targets to 2030 and 2050. These pathways have been based on detailed local-level, spatially-driven energy scenario modelling and identify low-carbon technologies specific to the energy characteristics of a particular area at a local level, which has not been carried out before for any county in Ireland.

To do this, the master plan brings together and amalgamates, for the first time, all the relevant government and various energy-related departments' plans and policies together to show their impact at a county/local level. The master plan addresses all energy sectors of electricity, heat and transport, and crucially has been modelled from a spatial perspective, technology perspective and also from a socio-economic perspective. This project also identifies and supports the use of low-carbon sources indigenous to Dublin, develops and harnesses new local level energy policy practices, and strengthens Ireland's integrated energy system modelling capabilities. Two baseline scenarios have been established; the first being the current situation and the future 'business as usual' situation, which models the effects of current national level policy implementation to 2030 and 2050.

From these, Codema then established the gap-to-targets, and evaluated the possible local level low-carbon pathways to meet these targets. The low-carbon potential of Dublin has

been based on its unique spatial energy characteristics, which are often overlooked when examining low-carbon pathways at a national level. This project is the first of its kind in Ireland, and aligns with the objectives outlined in national level energy and climate change policy.

During 2021, Codema completed most of its deliverables and was working on finalising a draft report of the DREM. Throughout the year, the Codema team engaged with a number of stakeholders and also organised workshops with local authority staff to share the initial outputs of this master plan. The team also presented this master plan at a number of meetings and conferences, namely Dublin's first Climate Action Week and also the first Energy Planning Conference in Ireland.

The master plan brings together and amalgamates, for the first time, all the relevant government and various energy-related departments' plans and policies together to show their impact at a county/local level.



## 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 March 2022, 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.

During 2021, the project progressed significantly and the digital platform that helps to inform and guide the decarbonisation process is close to completion. A number of workshops and demonstration meetings were held throughout the year – namely demonstrations to Irish local authorities, ‘need-owners’ in Austria and Sweden, and also a tool demonstration during Dublin Climate Action Week. Following on from a ‘need-owners’ workshop in 2020, which was organised by Spatial Outlook, which Codema helped facilitate and participated in, in 2021, Codema, the Austrian Institute of Technology (AIT) and Chalmers University completed a ‘need-owners’ requirements report that has helped to focus the REDAP project on specific need-owners’ requirements.

## 03. WORK PROGRAMME 2021

### RESEARCH, DEVELOPMENT AND INNOVATION (CONTINUED)



#### **GHG Modelling**

##### **Q-GasSP**

Codema, along with Tallinn University of Technology (TalTech), Stockholm Environment Institute (SEI) and Oivan, was awarded the tender for Q-GasSP in July 2020 and the project will be complete in April 2022. 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.

The expected primary objective of the Q-GasSP project is the development and delivery of a robust, simple and proportionate tool for quantifying and forecasting the relative GHG impacts of alternative spatial planning policies in three areas (buildings, land use, transport), and impacts arising from household consumption with possible post-project pan-European applicability. The purpose of this approach is to help inform policy alternatives at different administrative scales, and which can ultimately assist national, regional and local policy decision-makers across EU Member States and ESPON Partner States in meeting their GHG emission reduction targets. 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 tool being developed by the Q-GasSP project has been tested on four pilot case study areas: Meath (Ireland), City of Edinburgh (Scotland), Rathlin Island (Northern Ireland) and the Kymenlaakso Region (Finland).

The case study pilots have been linked to relevant policy processes and during 2021, a number of online stakeholder meetings have been held, to ensure that the link between case study and relevant spatial planning policy is present. The case studies include a qualitative analysis, through focussed engagement with key local stakeholders at various stages, to provide continuous feedback and insights from policymakers on practical deployment and usability in differing geographic contexts. The consortium completed a number of deliverables including inception and interim reports, along with a draft final report. Additionally, Codema also completed four draft case study reports.



## Low-Carbon Heat

### Dublin Docklands District Heating System

Codema is part of the Dublin Docklands District Heating System (DDHS) project team, advising on policy, energy planning, technical aspects and energy procurement/contracting. On behalf of the Project Team, Codema attended 10 meetings and workshops in 2021, 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. This work fed into a preliminary business case for the project in September of 2021, which provided a financial and economic appraisal of the proposed district heating network.

### Tallaght District Heating Scheme

In 2021, Codema supported the delivery of some key milestones on the Tallaght District Heating Scheme (TDHS), including the commencement of construction work on site in the first quarter of 2021, providing advice on approaches to secondary system design which incorporate new best practice on temperature regimes, reviewing network extension and connection costs. Codema participated in 26 TDHS meetings in 2021 and organised two site visits for Irish District Energy Association members and Dublin Climate Action Week attendees. Codema has been continuously liaising and negotiating with possible TDHS customers, including Trulife

and the PM Group, and has 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 and operation of the network. A draft connection cost calculator tool was also developed to help assess likely connection costs for new customers.

### Blanchardstown District Heating Scheme

In 2021, Codema kick-started stakeholder engagement on a proposed district heating system for the Blanchardstown area. Stakeholders in attendance included key customers such as TU Dublin Blanchardstown, HSE Connolly Hospital, Sport Ireland and their engineering consultants Arup, and Fingal County Council, as well as stakeholders from a potential local heat supply, Equinix Data Centre. Codema started the process of gathering the technical information to develop a high-level feasibility analysis in order to gauge the project's viability, before moving onto a detailed techno-economic analysis. Business model options have also been identified and key partners contacted.

### 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). In 2021, Codema supported South Dublin County Council in the reporting and preparation for drawing down funds from the CAF. Codema will continue to assist the local authorities with any applications for funding through later rounds of this scheme.

## 03. WORK PROGRAMME 2021

### RESEARCH, DEVELOPMENT AND INNOVATION (CONTINUED)

#### Decarb City Pipes 2050

In 2021, Codema continued our work on the Decarb City Pipes 2050 project. This three-year 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 2021, Codema attended 10 management team meetings to develop the overall direction of the project in conjunction with the other management team members and four full consortium meetings, which ensure input from all partners is included in developing the direction of the project. Codema attended two multi-day project meetings in March and September 2021. These online project meetings were 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 2021, Codema brought together key local stakeholders of the Dublin Local Working Group for two meetings to discuss the role of the group and to present a draft heating and cooling outlook for Dublin.

As part of this project in 2021, Codema supported analysis of the governance structures in Dublin (carried out by University of Utrecht), completed our draft heating and cooling outlook and draft heating and cooling plans, contributed to multiple knowledge sharing workshops (on heat planning, geothermal heating, cost modelling, heat as a service, waste heat recovery etc.) and contributed to the first meeting with the project advisory board to discuss topics like EU policy and the use of hydrogen.

Codema is 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.

#### Fundamentals of District Heating Training Course

In 2021, Codema delivered the first "Fundamentals of District Heating" course in conjunction with Engineers Ireland. This course aims to introduce the key concepts and fundamentals of district heating systems across the main stages in a heat network's development from initial heat planning and policy, business case development, through to the design



and construction of the network. This course looks to build capacity in the area of district heating, a sector which is expected to grow dramatically to meet 10% of Ireland's commercial and residential heat demand by 2030. This course was attended by a broad spectrum of attendees from engineering consultancies, utilities and developers and is due to take place again in the coming year to further build knowledge in the sector.

## Climate Change

### Dublin Local Authority Climate Change Action Plans

In 2021, Codema 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 DLAs' Climate Change Action Plans (CCAPs) and the CoM requirements.

Codema is also charged with the maintenance and updating of [www.dublinclimatechange.ie](http://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 2022, 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](http://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

## Development Plans & Policy Papers

### County Development Plans Energy & Carbon Assessment Report

Codema performed an energy and carbon analysis to inform the Dún Laoghaire-Rathdown and South Dublin County Development Plans. These reports were finalised in 2021 and in the case of South Dublin, a summary chapter was produced for inclusion in their County Development Plan. An updated and more in-depth assessment of the impact on energy demand and evidence-based actions to reduce energy and carbon emissions formed part of the Dublin Region Energy Master Plan, which was developed by Codema in parallel. One of the key requirements of these assessment reports was 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:



## 03. WORK PROGRAMME 2021

### RESEARCH, DEVELOPMENT AND INNOVATION (CONTINUED)



- 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)

#### Ongoing Support for Local Authority Planning Teams

Codema also provided ongoing support to the four Dublin Local Authority planning teams with respect to planning decisions where energy or climate mitigation was a key consideration. Such sites include data centres and other large energy users.

#### Evidence Base Reports for Decarbonising Zones within the four Dublin Local Authority Areas

Codema supported the DLAs in identifying suitable Decarbonising Zones (DZs). Each local authority is required to identify a minimum of one DZ within their administrative area under Action 165 of the CAP 2019. Codema has provided maps to act as an evidence base to aid in the selection of suitable areas as DZs. These maps include the following information which were identified as key indicators of suitability through discussions with the DZ teams within the DLAs: building

energy rating maps, emissions maps from residential and commercial buildings, transport emissions maps, sustainable energy community maps, heat source maps, population density, and building ownership. Codema produced an Evidence Base report for each of the areas shortlisted by DCC, SDCC and FCC to assist their decision. These areas were submitted to the DHLGH for the 30th April deadline to give a high-level broad overview of the general areas being considered and the actions and methodology being considered. This allowed any feedback on the proposed areas to be considered in the more detailed implementation plan to be prepared.

#### Public Consultations

In 2021, 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:

- Draft Development Plan Guidelines for Planning Authorities
- Introduction of a Renewable Heat Obligation
- Draft Guidance for Energy Efficiency in Traditional Buildings
- EU Energy Performance in Buildings Directive
- Micro-generation Support Scheme
- Interreg Peace Plus Consultation (Geothermal Energy & District Heating focus)

## RESEARCH, DEVELOPMENT AND INNOVATION - KEY OUTPUTS FOR 2021



**COMPLETION OF DUBLIN REGIONAL ENERGY MASTER PLAN ANALYSIS**



**FUNDAMENTALS OF DISTRICT HEATING COURSE DELIVERED**



**2 X ENERGY & CO<sub>2</sub> ASSESSMENTS FINALISED**

### Research, Development and Innovation - Actions and Outputs 2021

Date	Actions	Project support	Outputs
<b>January</b>	First meeting of the Decarb City Pipes Local Working Group of key stakeholders in the transition to a decarbonised heat sector	H2020 - Decarb City Pipes	Online meeting with key stakeholders to provide introduction to the project and outline the role of the LWG
	District heating stakeholder engagement with DECC, DHLGH and SEAI regarding the treatment of DH with respect to Part L compliance modelling	--	Online meeting to discuss the options on how to accurately integrate district heating into the Part L compliance modelling framework to reflect treatment of waste heat as set out in the Renewable Energy Directive
<b>February</b>	Public Consultation response on the Micro-Generation Support Scheme	--	Consultation document
	SEAI National Heat Study Stakeholder Consultation	--	Complete stakeholder consultation document
	Dublin Region Energy Master Plan Workshop for Planners	SEAI RD&D	Presentation informing planners of the Dublin Region Energy Master Plan, presentations from other cities on their energy planning work, feedback & discussion around key functionality for planners
<b>March</b>	Finalised DLRCC CDP Energy & CO <sub>2</sub> Assessment Report	--	Report completed and sent to DLRCC
	District Heating presentation at TUD Green Week	--	Presentation on DH to approximately 80 attendees at TUD Green Week
	Finalised SDCC CDP Energy & CO <sub>2</sub> Assessment Report	--	Report completed and sent to SDCC
	Finalised Carbon Neutral Certification Report	--	Produced a short summary report for the DLAs

## 03. WORK PROGRAMME 2021

### RESEARCH, DEVELOPMENT AND INNOVATION (CONTINUED)

Date	Actions	Project support	Outputs
April	Review of the Houses of the Oireachtas Spotlight report on Geothermal Energy in Ireland - Barriers and Advantages to Geothermal Energy Adoption	--	Reviewed document with comments and updates included in track changes
	SDCC CDP Energy & CO <sub>2</sub> Assessment chapter for SDCC's final CDP	--	Produced a Chapter summarising Codema's work and a number of the outputs for inclusion in SDCC's CDP
	Delivered module 'Measuring Performance - Baseline Data & Accounting' for Planning for Climate Change Course	--	Over 4 weeks from April to May, Codema delivered a module as part of the Local Authority Climate Action Training Programme
	Delivered Evidence Base to Inform DLAs' Decarbonising Zone Selection Reports	--	Reports produced to help the DLAs' decision making process to selecting a DZ
May	Interreg Peace Plus consultation - Focusing on Theme 5: Supporting a Sustainable and Better Connected Future - Geothermal Energy Demonstration Programme	--	Consultation submitted via online portal
	Developed Recommendations Paper on boosting waste heat recovery from data centres for use in district heating & cooling systems in conjunction with Euroheat & Power and stakeholders from the data centre and district heating industry.	--	Published Recommendations Paper
	Presentation of heating & cooling outlook to key local stakeholders in the Local Working Group	Decarb City Pipes	Presentation of heating and cooling outlook for Dublin to LWG
June	Consultation response on the EU Energy Performance of Buildings Directive	--	Consultation submitted via online portal
	Worked on the development of the Celsius Cities Manifesto for Fossil-Free Heating and Cooling with representatives from other cities across Europe.	--	Celsius Cities Manifesto for Fossil-Free Heating and Cooling Document
September	Submission to the Public Consultation on the Draft Guidance for Energy Efficiency in Traditional Buildings	--	Consultation response document
	Presentation on the Regional Energy Demand Analysis Tool at Climate Action Week	TOMORROW	Delivered tool demonstration on the REDAP tool
	Presentation on the Dublin Region Energy Master Plan at the first Dublin Climate Action Week	SEAI RD&D / TOMORROW	Delivered presentation on the preliminary findings from the Dublin Region Energy Master Plan

Date	Actions	Project support	Outputs
<b>October</b>	Presentation to the Residential Modelling Group on Codema's Irish Building Stock Generator and open-source Dublin Region Energy Master Plan tools	SEAI RD&D	Presentation and demonstration of the Irish Building Stock Generator and other open-source tools developed as part of the Dublin Region Energy Master Plan
	Submission to the Consultation on the Introduction of a Renewable Heat Obligation	--	Consultation response document
	Submission to the Public Consultation on the Draft Development Plan Guidelines for Planning Authorities	--	Consultation response document
	Delivered presentation on the use of data centre waste heat in district heating networks at the Celsius Initiative virtual stand for EU Energy Week	--	Presentation and discussion on the use of data centre waste heat in DH networks based on the experience of the Tallaght district heating network
<b>November</b>	Delivered the first "Fundamentals of District Heating" course for the Engineers Ireland CPD training programme	--	Delivery of the course - developing the syllabus, creating slides, developing exercises for attendees, presenting course content online via Zoom
	Presentation on the Dublin Region Energy Master Plan at the National Energy Planning Conference	SEAI RD&D	Delivered presentation on the Dublin Region Energy Master Plan
	Presentation on the Tallaght District Heating Scheme at the Institute of Refrigeration UK	--	Delivered presentation on the use of data centre waste heat in DH networks using TDHS as an example

## 03. WORK PROGRAMME 2021



# 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.

### DeliveREE

In early 2021, Codema was awarded funding for the Horizon 2020 project DeliveREE. The project budget is €1.2m and has eight partners - Codema, the four Dublin Local Authorities, Philip Lee Solicitors, Resourceful Futures Ltd and Sustainable Development Capital LLP. The project will enable Codema to develop internal protocols and systems to streamline the project development and implementation process, through upskilling staff, the creation of project documentation templates and defined processes for similar project types. There is a pipeline of over €20m capital projects, ranging from solar PV, retrofitting and EV fleets. Codema is the lead partner with responsibility for the overall delivery of the project goals and also the management of both the project consortium and project budget. This will be achieved through a series of

reporting, meetings and action tracking. The kick off meeting was held in September and we will have a project meeting every six months for the duration. The project will hopefully result not only in the project pipeline delivery but a continuing system of project implementation and aggregation.

### HeatNet NWE

Codema led the €11.5m HeatNet NWE project, which aimed 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 was supported through the Interreg North-West Europe programme to address the challenge of reducing CO<sub>2</sub> 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 consisted of 13 partners (including Codema as lead partner and SDCC as the other Irish partner) across these five countries and aimed to achieve savings of 15,000 tonnes of CO<sub>2</sub> each year by the end of the project.



Codema successfully completed the final report, which was submitted in August 2021. We also completed two audits of finances which have been approved. The project is now complete and all budget has been drawn down and distributed. The project received a commended report from the Interreg management. All six pilot projects were delivered; the Tallaght District Heating Scheme should be operational in the second quarter of 2022.

#### 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 2021, Codema continued to apply for EU funding to increase innovation and learning in the Dublin region. The following projects were applied for under the Horizon 2020 stream as a partner: Dr Rubicon, SWIFT Change and GAP.

The H2020 stream is extremely competitive and unfortunately, although short listed, none of these projects received funding at this time.

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

## 03. WORK PROGRAMME 2021

### MANAGEMENT SUPPORT (CONTINUED)

#### Local Project Management

##### Sustainable Energy Communities

Codema acts as 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 County Mentors assigned to the seven local authority areas in the region. This includes overseeing monthly reporting, tracking recruitment figures 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 seven local authorities in the Dublin and Mid-East Region to enable each Council to act as the lead partner applicant on the EMP applications of their area's SECs.

In October 2021, Codema began setting up a framework for EMP consultants within Dublin City Council, from which all seven local authorities are able to draw consultants for their SECs' Energy Master Plans. The Framework went live in December 2021, with five successful consultants securing a place on the panel. All five consultants have a wealth of experience in EMPs and were trained by Codema on best practice, to ensure quality and comparability across the Dublin and Mid-East region. A MOU was created by Dublin City Council and SEAI to accurately reflect the EMP Framework created by Codema. So far, four SECs and LAs have drawn from the list of consultants.



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

### Dublin Region Energy Master Plan

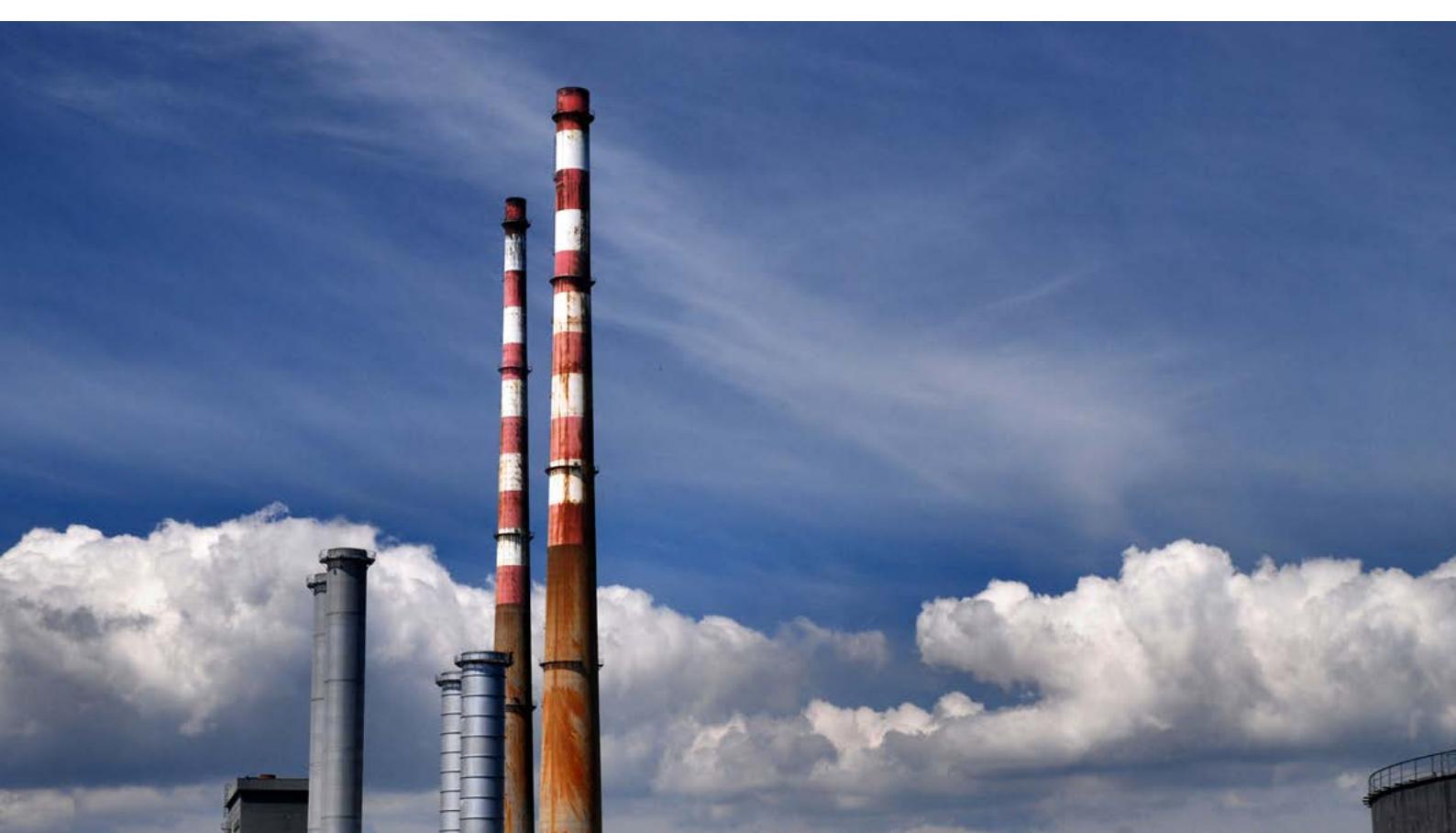
In 2021, Codema completed the analysis for the Dublin Region Energy Master Plan and developed the most economic, socially and spatially optimal scenario for decarbonising the heat, electricity and transport energy sectors in Dublin to meet our 2050 targets. The project draft report was compiled which explains these scenarios and also the methodology behind the business-as-usual and preferred scenarios.

All the data sets and associated generated maps are made available on the <https://codema-dev.github.io/posts/> link. Codema held the first dedicated Energy Planning conference in November online where the master plan was presented to attendees. The master plan was also presented during the Dublin Climate Action Week in September with 102 people attending this event. The work on the master plan RD&D was drawing to a close at the end of 2021 but Codema will continue

its dissemination work through workshops and information sessions and is actively looking at how to improve and promote the findings for planning purposes.

### New RD&D Applications

Codema submitted three applications to the SEAI RD&D call in 2021. Codema led the application for two of these projects. The first project, 'Energy Habits', aimed at increasing awareness and uptake of residential energy efficient housing upgrades by conducting large-scale research into the current barriers and opportunities and then designing a series of tools around this. The second 'Curtailment' project looked at using curtailed renewable energies for increasing grid interaction with other renewable and low-carbon outputs such as district heating and hydrogen fuel generation and using the Poolbeg area as a case study. The 'Curtailment' funding application was approved by SEAI and will commence in March 2022. The third project, in which Codema is a partner in, was also successful. This project looks at using local Dublin-based municipal



## 03. WORK PROGRAMME 2021

### MANAGEMENT SUPPORT (CONTINUED)

biomass waste and producing high-quality biomass fuel for use in large boilers. This will also commence in the first quarter of 2022.

#### **Development and Delivery of EPC Facilitator Training and Register of EPC Facilitators**

In February 2021, Codema was awarded the tender for the development and delivery of EPC facilitator training after a successful application under SEAI's Public Sector Framework. The overall aim of the training course is to give potential facilitators a solid foundation in EPC facilitation and enable them to go out and initiate EPC projects. This course will demonstrate how EPC is supported at EU level in both the Energy Performance of Buildings Directive and the Energy Service Directive and at a national level in the Climate Action Plan. EPC can play a significant role in helping to meet energy efficiency targets (such as the 'BER to B' objective) by both encouraging more holistic projects of scale and enabling private finance to invest in these projects.

A strategy document was prepared in June to outline the management and delivery of the training. The training modules developed for the course were informed by learnings from European projects (such as GuarantEE and EESI2020,

where Codema participated as a partner), EnergyPro's report 'EPC Facilitation Global Best Practices and Irish Training Needs Assessment' and from SEAI's EPC Framework. Content was developed for seven training modules and this is currently with SEAI's design team. Codema will deliver two training sessions in 2022 as part of this tender. The seven modules of the course are:

- Identifying EPC Project Opportunities
- Selling the Added Value of EPC and Presenting the Business Case to EPC Clients
- Evaluation and Managing Risk
- Project Financing and Financial Evaluation
- Legal and Contractual Requirements for EPC and Guaranteed Savings
- Procurement of EPC
- Measurement and Verification

#### **Examples of National and European Projects**



Decarbonising Heating & Cooling



Stakeholder Engagement



Energy Master Planning



Project Applications



Energy Performance Contracting



Energy Efficiency and Renewable Project Delivery

#### **European Network**



Learning from experienced EU partners



Showcasing Dublin's achievements to international audience

## Project Funding

### European Funding in 2021

In 2021, Codema drew down funding from the following EU projects:

Funding Programme	Project	Aim	Project Timeline	Net Grant Drawdown 2021 (€)
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	€58,118
Horizon 2020	DeliveREE	The DeliveREE project will test and develop a one-stop-shop project implementation unit for energy-efficient and renewable energy projects in Dublin.	June 2021 - June 2025	€307,672
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	€10,176
Horizon 2020	TOMORROW	TOMORROW aims at empowering local authorities to lead the transition towards low-carbon cities by engaging citizens and stakeholders in the development of 2050 transition roadmaps. <a href="http://www.citiesoftomorrow.eu">www.citiesoftomorrow.eu</a>	September 2019 - November 2022	€30,152
Horizon 2020	guarantEE	To foster the use of Energy Performance Contracting in the public and private sector across Europe. <a href="http://www.guarantee-project.eu">www.guarantee-project.eu</a>	April 2016 - March 2019	€15,426
ESPON	Q-GasSP	The main objective of this service is to produce a robust, simple and proportionate methodology that will allow competent planning authorities at national, regional and local administrative levels to quantify and forecast the influence of spatial planning policies on GHG emissions in a consistent manner.	October 2020 - April 2022	€38,212
<b>Total EU Funding</b>				€459,756

### National Funding in 2021

Funding Programme	Project	Aim	Project Timeline	Net Grant Drawdown 2021 (€)
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	€246,457
SEAI RD&D	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 - October 2021	€70,161
<b>Total National Funding</b>				€316,618

## MANAGEMENT SUPPORT - KEY OUTPUTS FOR 2021



**5 APPLICATIONS FOR EU AND NATIONAL PROJECTS SUBMITTED**



**37 NEW SUSTAINABLE ENERGY COMMUNITIES JOINING THE NETWORK**



**FINAL HEATNET NWE PROJECT REPORT AND CLAIM SUBMITTED**

### Management Support - Actions and Outputs 2021

Date	Actions	Project Support	Outputs
<b>January</b>	10th claim for SEC and report submitted	SEC	Report and grant drawn down
	DR Rubicon application	--	Application submitted
	Swift Change Application	--	Application Submitted
	EPC Facilitator Training Application	--	Application submitted
<b>February</b>	Awarded the tender for the development and delivery of EPC facilitator training under SEAI's Public Sector Framework	--	Successful application
	Master Plan 2020 H2 report submitted	DREM	Claim and report submitted
	11th claim for SEC and report submitted	SEC	Report and grant drawn down
	SEC Lead Partner Applicant training webinar for Local Authorities organised	SEC	SEC Lead Partner Applicant training webinar for Local Authorities attended by LA staff on 3rd February
<b>March</b>	Biannual review conducted with Dublin & Mid-East Region mentors	SEC	Biannual mentor review completed
	12th claim for SEC and report submitted	SEC	Report and grant drawn down
	Curtailed RE RD&D application	--	Application submitted
	Energy HABITS RD&D application	--	Application submitted
<b>April</b>	Final DeliveREE grant agreement submitted	--	Grant agreement prepared
	13th claim for SEC and report submitted	SEC	Report and grant drawn down
<b>May</b>	14th claim for SEC and report submitted	SEC	Report and grant drawn down
	Biannual review conducted with Dublin and Mid-East Region mentors	SEAI	Biannual mentor review completed
<b>June</b>	Request for Tender for framework of consultants for Energy Master Plan published	SEC	RFT published and promoted
	15th claim for SEC and report submitted	SEC	Report and grant drawn down
	HeatNet NWE onsite 1st level audit	HeatNet NWE	Audit completed and approved

Date	Actions	Project Support	Outputs
<b>July</b>	16th claim for SEC and report submitted	SEC	Report and grant drawn down
	HeatNet NWE 2nd level audit	HeatNet NWE	Audit completed
<b>August</b>	17th claim for SEC and report submitted	SEC	Report and grant drawn down
	Tender Requests for Framework for EMP evaluated and contracts finalised	SEC	Contracts created
	Final HeatNet NWE project report and claim submitted	HeatNet NWE	Report approved, project closed
	Master Plan H1 2021 Claim submitted	DREM	Report submitted
<b>September</b>	18th claim for SEC and report submitted	SEC	Report and grant drawn down
	EMP Framework and Roles and Responsibilities Charter Created	SEC	EMP Framework and supporting documents finalised. Evaluated and set up framework
	Training with 7 LAs on EMP Framework and Roles and Responsibilities	SEC	All Stakeholders clear on roles for EMP Framework, ensures success of framework
	DeliveREE Kick Off Meeting Held	DeliveREE	Meeting held with all stakeholders to kick off DeliveREE project
	HeatNet NWE 2nd level audit report	HeatNet NWE	Report signed off and approved
<b>October</b>	19th claim for SEC and report submitted	SEC	Report and grant drawn down
	Biannual review conducted with Dublin & Mid-East Region mentors	SEC	Biannual mentor review completed
	EMP Training Session prepared for Consultants of the Framework	SEC	Training Material prepared
	Creative Climate Action Fund application developed	--	Application submitted
<b>November</b>	20th claim for SEC and report submitted	SEC	Report and grant drawn down
	Letters of success and regret sent to consultants. Reminder emails sent	SEC	EMP Consultants set up on framework
<b>December</b>	EMP Consultants trained on framework and roles and responsibilities	SEC	All Stakeholders clear on roles for EMP Framework, ensures success of framework
	21st claim for SEC and report submitted	SEC	Report and grant drawn down
	Application of RE curtailment RD&D approved	-	Approved application

## 04. FINANCIAL REPORT

### Income and Expenditure Account 2021

**Codema**

**INCOME AND EXPENDITURE ACCOUNT**

For the year ended 31st December 2021

2021

€

<b>Income</b>	<b>1,574,389</b>
Expenditure	-1,598,028
<b>Surplus before Interest</b>	<b>-23,639</b>
Interest receivable and similar income	5
Interest payable and similar expenses	-508
<b>Loss/Profit before Tax</b>	<b>-24,142</b>
Tax on loss	2,970
<b>Loss for the Financial Year</b>	<b>-21,172</b>
<b>Total Comprehensive Income</b>	<b>-21,172</b>

## Balance Sheet 2021

**Codema**

**BALANCE SHEET**

For the year ended 31st December 2021

2021

€

### Fixed Assets

Tangible Assets	45,662
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### Current Assets

Debtors	77,997
Cash and cash equivalents	685,431
	<b>763,428</b>

<b>Creditors: Amount falling due within one year</b>	<b>-522,485</b>
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<b>Net Current Assets</b>	<b>240,943</b>
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<b>Total Assets less Current Liabilities</b>	<b>286,605</b>
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### Reserves

Called up share capital presented as equity	0
Income and expenditure account	286,605

<b>Equity attributable to owners of the company</b>	<b>286,605</b>
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## 05. APPENDICES

### Abbreviations

4DHC	4th Generation District Heating and Cooling	FCC	Fingal County Council
AWS	Amazon Web Service	GHG	Greenhouse Gas
CAF	Climate Action Fund	GIS	Geographic Information System
CARO	Climate Action Regional Office	GPRN	Gas Point Reference Number
CCAP	Climate Change Action Plan	HESK	Home Energy Saving Kit
CHP	Combined Heat and Power	H2020	Horizon 2020
CMVP	Certified Measurement and Verification Professional	ITT	Invitation to Tender
CO <sub>2</sub>	Carbon Dioxide	LA	Local Authority
DCC	Dublin City Council	LED	Light-emitting diode
DCU	Dublin City University	LWG	Local Working Group
DDHS	Dublin Docklands District Heating System	M&R	Monitoring and Reporting
DEAP	Dwelling Energy Assessment Procedure	M&V	Measurement and Verification
DEC	Display Energy Certificate	MOU	Memorandum of Understanding
DECC	Department of the Environment, Climate and Communications	MPRN	Meter Point Reference Number
DHLGH	Department of Housing, Local Government and Heritage	NDBER	Non-Domestic Building Energy Rating
DLAs	Dublin Local Authorities	NEAP	Non-Domestic Energy Assessment Procedure
DLRCC	Dún Laoghaire-Rathdown County Council	NWE	North-West Europe
DREM	Dublin Region Energy Master Plan	PIU	Project Implementation Unit
DRIFT	The Dutch Research Institute for Transitions	PMP	Project Management Professional
DZ	Decarbonising Zone	PV	Photovoltaic
EMP	Energy Master Plan	RD&D	Research, Development and Demonstration
EPC	Energy Performance Contracting	REDAP	Regional Energy Demand Analysis Portal
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	SEDA	Spatial Energy Demand Analysis
EU	European Union	SEU	Significant Energy User
		SPC	Strategic Policy Committee
		TCD	Trinity College Dublin
		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](http://www.codema.ie)



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