



codema
Dublin's Energy Agency

CODEMA ANNUAL REPORT 2019



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01. DIRECTOR'S FOREWORD

“Codema, in our continuing role as Dublin’s energy agency, is developing an ambitious strategy to greatly increase our impact in reducing fossil fuel consumption and increasing the share of renewable energy in Dublin, and Ireland as a whole.”

The high expectation for urgent action in response to the Climate Emergency declared by the Irish government is all the more pressing on Codema, given our role as a leading energy agency. As such, Codema should be and will be among the first to rise to this challenge.

As the year 2019 drew to a close, Codema’s dedicated team of 14 staff is already leading the transition to a low-carbon society through sustainable energy planning (such as the Dublin Region Energy Master Plan), innovative energy projects (such as new energy performance contracts and 4th generation district heating), and new ways of communicating with citizens (such as the Home Energy Saving Kits, which are distributed through the local authority public library networks). These, and our many other actions during the year, are described in the following sections of this Annual Report.

But this is not nearly enough to meet the new energy and climate ambitions for 2030. Codema, in our continuing role as Dublin’s energy agency, is developing an ambitious strategy to greatly increase our impact in reducing fossil fuel consumption and increasing the share of renewable energy in Dublin, and Ireland as a whole. This will involve growing and replicating the areas where we currently have strong skills, along with developing new skill sets in other sustainable energy areas.

As Director of Codema, I greatly appreciate the strong support that Codema has received from the Dublin Local Authorities over the past 22 years, since Codema was set up in 1997 – long before the scientific evidence of climate change was accepted by civil society and political leaders.

The Dublin Local Authorities’ energy use for their own operations (public buildings, pools and leisure centres, council vehicles, street lighting, etc.) has been and will continue to be Codema’s top priority in the decade ahead. In the past decade, the Dublin Local Authorities have made significant progress towards their 33% energy efficiency improvement target and, given that the annual energy bills varied between €10 million and €20 million per council in the baseline years, a very significant sum of money has already been saved.

Our future work will also support the many energy actions that have been identified in the four Dublin Climate Change Action Plans 2019 - 2024. These plans, which were developed by Codema on behalf of the four Dublin Local Authorities, were finalised in the summer of 2019 after extensive citizen and stakeholder consultation, in close collaboration with the newly appointed Dublin Climate Action Regional Office.

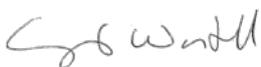
In the course of our work on the Climate Change Action Plans, it became clear that the proportion of emissions produced by the local authorities themselves is a small fraction, about 3% of the total emissions produced throughout the entire Dublin Region. This highlights the need to address the remaining 97% of emissions produced throughout the whole of Dublin, or at least the portion that aligns with the local authority priorities and the areas they can influence.

The future work of Codema will therefore expand in the areas of regional energy planning, further district heating projects, sustainable transport, photovoltaic renewable energy systems and energy and climate awareness.

This area of Codema's work will be complementary to the work of the Dublin Climate Action Regional Office, with whom we are collaborating closely. It is envisaged that such additional sustainable energy projects will be delivered in close liaison with regional and national agencies and may be supported by the Sustainable Energy Authority of Ireland, the Climate Action Fund and European programmes under the new Green Deal.

The end of 2019 marks the close of a decade of growing awareness about the direct link between burning fossil fuels and climate change and heralds a new era, which will drive a critical change in how society views its impact on the environment and adjusts to radically new lifestyle choices.

In the new decade ahead, from 2020 to 2030, there is a high expectation for all sectors to deliver on ambitious commitments by political leaders to reduce greenhouse gas emissions and transition to a low-carbon, climate-resilient future. Codema has never before been better prepared to step up to the challenge of climate change facing Dublin, and Ireland as a whole.



Gerry Wardell
Director, Codema



02. ABOUT CODEMA



Vision, Mission and Values

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

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

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



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

Accelerate Dublin's low-carbon transition through innovative, local-level energy and climate change policy, planning and projects, in order to mitigate the effects of climate change and improve the lives of citizens.

Our Approach



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



Make innovative energy projects mainstream with wide-scale impact



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



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



Identify and champion best-practice, low-carbon transport and building solutions



The Steering Committee

Codema reports to a Steering Committee whose members are appointed by the Chief Executives of Dublin City Council (DCC), Dún Laoghaire-Rathdown County Council (DLRCC), Fingal County Council (FCC) and South Dublin County Council (SDCC). This Steering Committee meets on a quarterly basis to draw up and review the annual work programme. At these meetings, Codema reports on the progress of actions, responds to any requests for specific work at departmental level, and keeps the DLAs abreast of the latest developments on energy and climate change policies in Ireland and abroad.



In 2019, the Steering Committee was made up of the following members from the Dublin Local Authorities and Codema:

 <p>Comhairle Cathrach Bhaile Átha Cliath Dublin City Council</p> <p>Céline Reilly Executive Manager Environment and Transportation</p> <p>John Ryan Senior Executive Officer Corporate Services</p>	 <p>Comhairle Contae County Council</p> <p>Frank Austin Director of Infrastructure and Climate Change</p> <p>Austin Baines Senior Executive Officer Infrastructure and Climate Change</p>	 <p>Comhairle Contae Fhine Gall Fingal County Council</p> <p>Gilbert Power Director Water Services and Environment Department</p>	 <p>Comhairle Contae Átha Cliath Theas South Dublin County Council</p> <p>Eddie Conroy County Architect</p>	 <p>Gerry Wardell Director</p> <p>Edel Giltenane Executive Manager</p> <p>Joe Hayden Senior Executive Engineer</p>
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02. ABOUT CODEMA

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The Codema Team

Codema currently employs 14 staff who have qualifications and experience in the areas of Engineering, Sustainable Development, Sustainable Infrastructure, Energy Planning, Architecture, Communications, Marketing, Project Management and Financial Administration. This allows the team to deliver its key services of Energy Monitoring and Management, Energy and Climate Awareness, Energy Planning and Policy, Project Management and Project Funding.





Gerry Wardell - Director
Certificate in Advanced Negotiation
Certificate in SME Management
PhD in Experimental Physics



Edel Giltenane - Executive Manager
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 & Management
HND Television Operations and Production Management



Kevin Craven - Project Finance Manager
Diploma in Financial Services
Certified Project Management
Diploma
BA in English, Sociology and Politics



Joe Hayden - Senior Executive Engineer
Certificate in Public Procurement
Certified Measurement and Verification Professional (CMVP)
MSc in Sustainable Development
BA/BAI in Mechanical and Manufacturing Engineering



Donna Gartland - Senior Energy Planner
MSc in Sustainable Energy Planning and Management
BEng in Energy and Environmental Engineering



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



Suzanne Fitzpatrick - Communications Manager
Certificate in Internal Communications
Diploma in PR and Event Management
BA in Journalism



Brian Connolly - Energy Manager
BSc in Sustainable and Electrical Control Technology
BSc in Electrical Services and Energy Management
Qualified DEC Assessor



John O'Shea - Energy Systems Analyst
Post-Graduate Diploma in Sustainable Energy
CIBSE-certified Heat Networks Consultant
BEng in Civil Engineering



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



Katia Tikhoniouk - Communications and Project Coordinator
Diploma in Graphic Design and Desktop Publishing
Certificate in Project Management
Diploma in Digital Marketing
BA & MA in Architecture



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



Rowan Molony - Energy System Modeller
BE & MA in Mechanical & Manufacturing Engineering

02. ABOUT CODEMA

(CONTINUED)

CORE COMPETENCIES



ENERGY MONITORING AND MANAGEMENT

Monitoring and Reporting
Energy Databases
Energy Surveys
Display Energy Certificates
Renewable Energy
Energy Efficiency Upgrades
Energy Performance Contracting
Measurement and Verification
Energy Management System Implementation



ENERGY AND CLIMATE AWARENESS

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



ENERGY PLANNING AND POLICY

National and International Energy and
Climate Change Policy
Climate Mitigation and Adaptation
Sustainable Energy Action Plans
Spatially-Led Energy Modelling
Techno-Economic Energy System Analysis
Detailed Energy System Financial Appraisals
Energy Master Planning
District Heating Expertise
Advice on Development Plans and Policy
Papers



PROJECT MANAGEMENT

Developing and updating local Climate
Change Action Plans
Local and EU Project Management
EPC Facilitation
Procurement Facilitation



PROJECT FUNDING

Project Funding from European
Programmes
European Co-operation
National Funding Applications

03. WORK PROGRAMME 2019



ENERGY MONITORING AND MANAGEMENT

Monitoring and Achieving Public Sector Energy Targets

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

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 organisations. Throughout 2019, Codema worked with the relevant DLA Energy Performance Officers (EPOs) to help them fulfil this role, and will continue to do so annually.

The aim of the NEEAP is for the public sector to lead the way in relation to energy efficiency and help achieve the 33% energy improvement target "through strong, committed action".



2020 Energy Efficiency Targets

European

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

National

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

Local

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

Management of Public Sector Monitoring and Reporting

Under S.I. 426 of 2014, the DLAs have an obligation to report annually on their energy performance. In practice, this annual reporting entails 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.

In 2019, 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 Communications, Climate Action and Environment (DCCA).

The M&R system is useful for tracking the individual local authority's progress towards the 2020 target, compared to its baseline year, which is 2009 for DLRCC, and an average of between 2006 and 2008 for DCC, FCC and SDCC. This means that each DLA must reduce its annual energy use by approximately 3% each year up to 2020, from its baseline year.

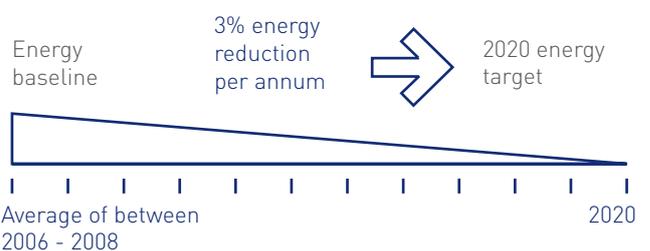


2030 Energy Targets

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

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

Yearly Energy Targets



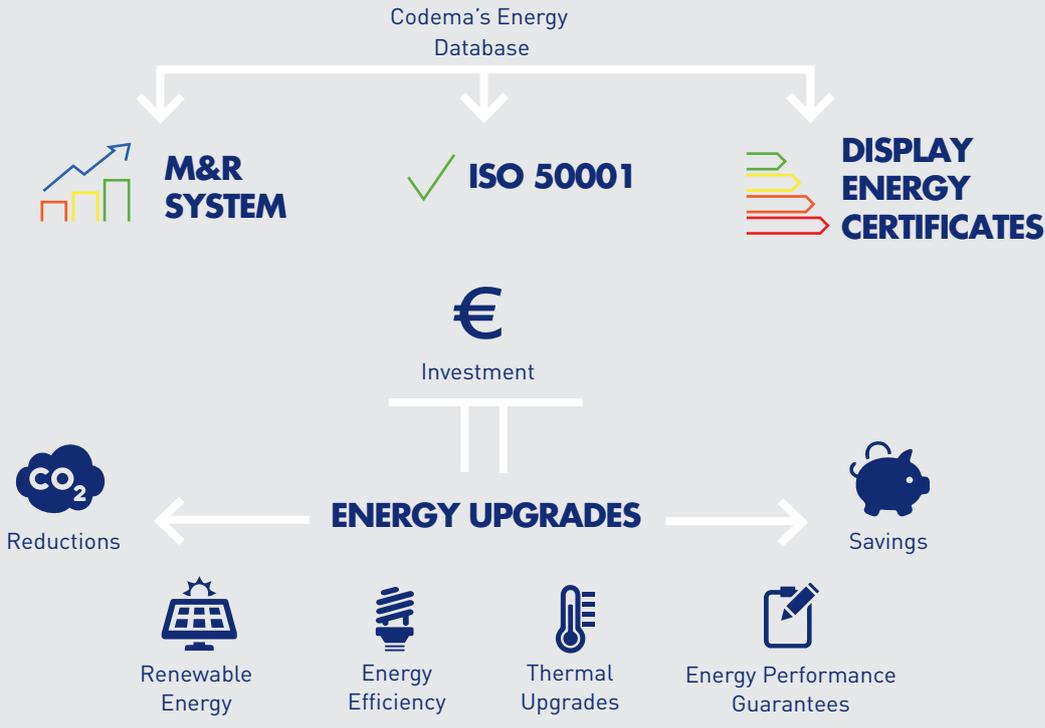
03. WORK PROGRAMME 2019

ENERGY MONITORING AND MANAGEMENT (CONTINUED)

Codema can assist the DLAs with the following Energy Management Processes



ENERGY SURVEYS OF BUILDING GROUPS





Energy Reviews

In 2019, Codema produced the annual Energy Reviews for all four Dublin Local Authorities. These were based on 2018 data and aimed to help the DLAs in their energy planning programmes, in order to meet the public sector 2020 energy target. The Energy Reviews highlighted the total amount of energy that the councils consumed throughout 2018, along with the total cost and carbon emissions associated with this energy use in the same year. This data allowed Codema to develop a specific list of energy-saving recommendations, which will guide each DLA on how best to tackle their Significant Energy Users (SEUs) and meet public sector energy targets.



ISO 50001

In 2019, Codema worked regularly with the DLAs to coordinate all actions towards reaching ISO 50001 accreditation and meeting the 2020 energy efficiency target.

Fingal County Council and South Dublin County Council signed up to SEAI's ISO 50001 masterclass and both completed the course in 2019. This masterclass aimed to guide the local authorities towards achieving ISO 50001 accreditation. Codema is currently aiding SDCC in completing outputs from these masterclasses and is helping the council to progress the energy management system to a stage where it can apply for certification in 2020.

After completing the masterclass, FCC, with the aid of Codema, completed its Stage 2 audit with Certification Europe in December 2019 and has been recommended for certification. The certification process is set to be completed in February 2020 and FCC is set to achieve council-wide certification to the new industry standard ISO 50001-2018. Dublin City Council completed SEAI's masterclass in 2016 and Codema is currently aiding the council towards full certification by the end of 2020.

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 December 2019, DLRCC achieved recertification to ISO 50001-2018 standard.

03. WORK PROGRAMME 2019

ENERGY MONITORING AND MANAGEMENT (CONTINUED)

Energy Team Meetings

In 2019, Codema helped to facilitate 19 energy team meetings across the four Dublin Local Authorities. These energy team meetings are part of the structured energy management system that the councils have either achieved certification for or are in the process of achieving certification.

In DCC, Codema helped facilitate two Inter-Departmental Energy Oversight Committee meetings. These meetings aimed to identify and cost potential projects across each of the council's Significant Energy Users (SEUs), in order to help the council to maintain its energy efficiency targets. Projects were identified during the Energy Review process and an action plan was established, in order to ensure that the Council makes consistent progress towards its 2030 carbon reduction target. One of the most significant projects that was identified was the continued role out of LEDs by the Public Lighting Department. The Public Lighting Department has committed to replacing 8,000 lights with LEDs by 2020. Due to the success of the pilot EPC project, Codema also helped DCC to procure a contractor for a second EPC (EPCII). The Mechanical and Energy Efficiency Section carried out retrofits on a number of facilities' HVAC systems throughout the city under SEAI's Better Energy Communities (BEC) grant scheme.

DCC is investigating the potential to install a combined heat and power (CHP) unit in its Civic Offices to provide electricity to the building and backup power in the case of a blackout. Codema will continue to work with the Energy Oversight Committee in 2020, and will continue to develop an energy management system within DCC, as part of this process.

FCC and DLRCC currently have energy management systems in place. As mentioned previously, DLRCC has a certified energy management system to ISO 50001 standard and FCC has been recommended for certification to ISO 50001 in February 2020. As part of these energy management systems, both local authorities meet regularly with their team members, in order to keep track of energy performance, as well as the energy management system in its entirety. These energy teams also keep track of action plans and ensure SEUs are on target to achieve their energy efficiency and carbon reduction goals. These team meetings are a crucial part of the councils' energy management system and Codema helps both local authorities to facilitate these meetings by helping to set agendas and work with each SEU area, all with the view to ensure they reach their targets and that the energy management system continues to improve.



Display Energy Certificates (DECs)

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

Codema assisted the four DLAs with the annual inspection and certification of 98 public buildings in total in 2019. 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.

As part of the 2019 programme, Codema carried out four energy surveys of DLRCC facilities, which have been identified as SEUs, in order to produce DECs. 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.

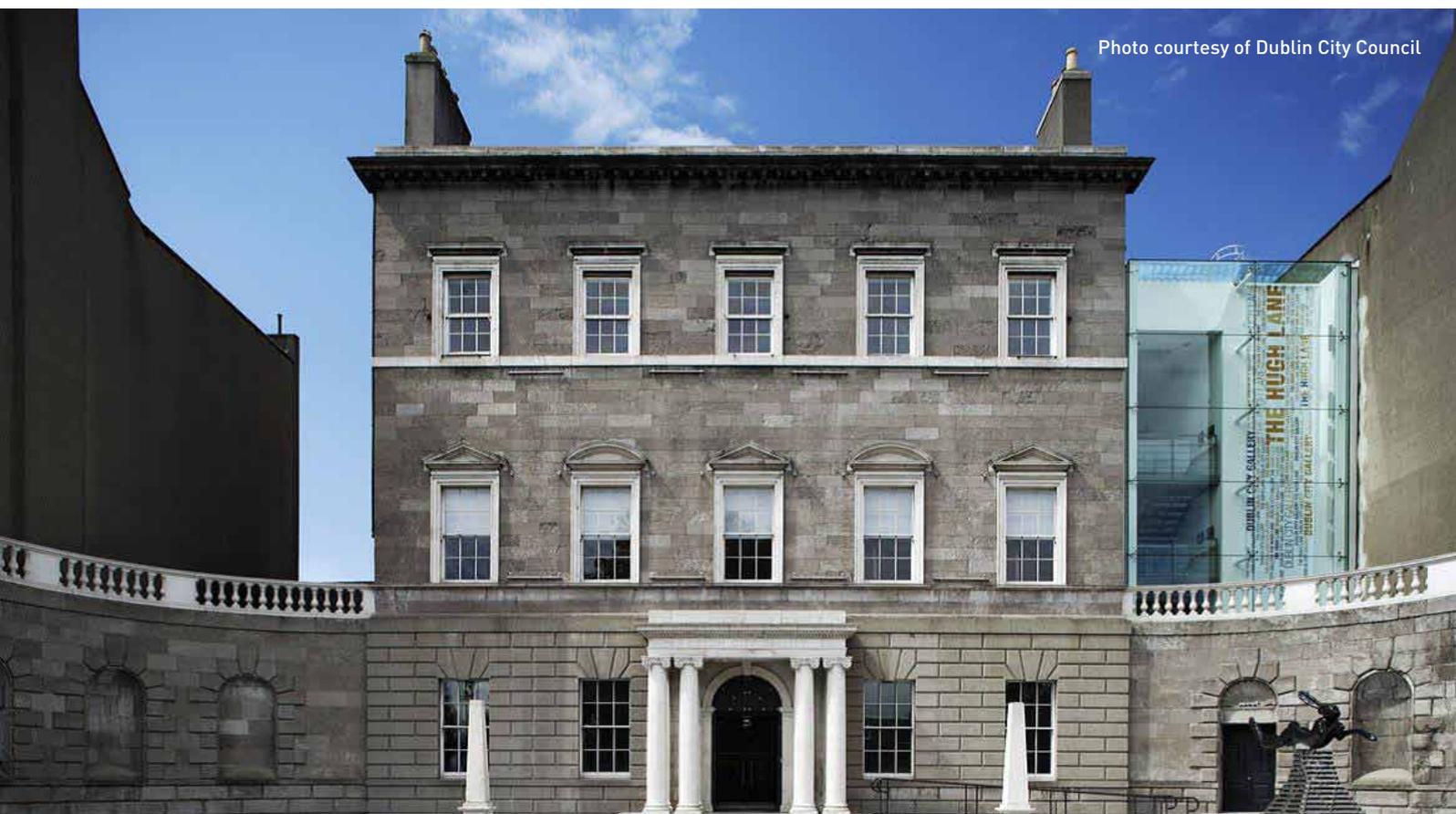
Energy Audits and Analysis

Throughout 2019, Codema conducted site visits to seven local authority facilities on behalf of DCC and DLRCC. Within this, Codema carried out four surveys for DLRCC to produce DECs, as mentioned previously. Two site surveys were carried out on behalf of DCC to produce non-domestic Building Energy Ratings (BERs) for Dorset Street Fire Station and Ballyfermot Civic Centre. DCC's City Architects Department is planning to upgrade these facilities and required preliminary BERs to identify the works needed to achieve the minimum BER rating of B, as set out in the government's Climate Action Plan.

Codema also carried out an energy audit on DCC's Hugh Lane Gallery. A detailed report, including a number of recommendations, was completed and presented to DCC. The report highlighted a large energy spend for the facility, which was due to the requirement of continuous strict control parameters around heating and ventilation in the facility, in order to preserve the artwork.

In 2020, we will continue with this auditing process and will use the results of these audits to see where energy-saving works can be best implemented across local authority buildings.

Photo courtesy of Dublin City Council



03. WORK PROGRAMME 2019

ENERGY MONITORING AND MANAGEMENT (CONTINUED)

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. This was the case for the Hugh Lane Gallery, as described in the previous section.

In 2019, Codema prepared the tender documentation for a new heating system at Dublin Fire Brigade's O'Brien Institute. The procurement method used was an Energy Performance Guarantee contract. Under this contract form, the contractor guarantees a minimum system efficiency and may be penalised or rewarded based on the actual system performance, thus ensuring that the system is properly designed and commissioned and minimising any risk to the council. Ten per cent of the final payment to the contractor will be withheld until a Measurement & Verification (M&V) process is completed after 12 months of operation. This project went

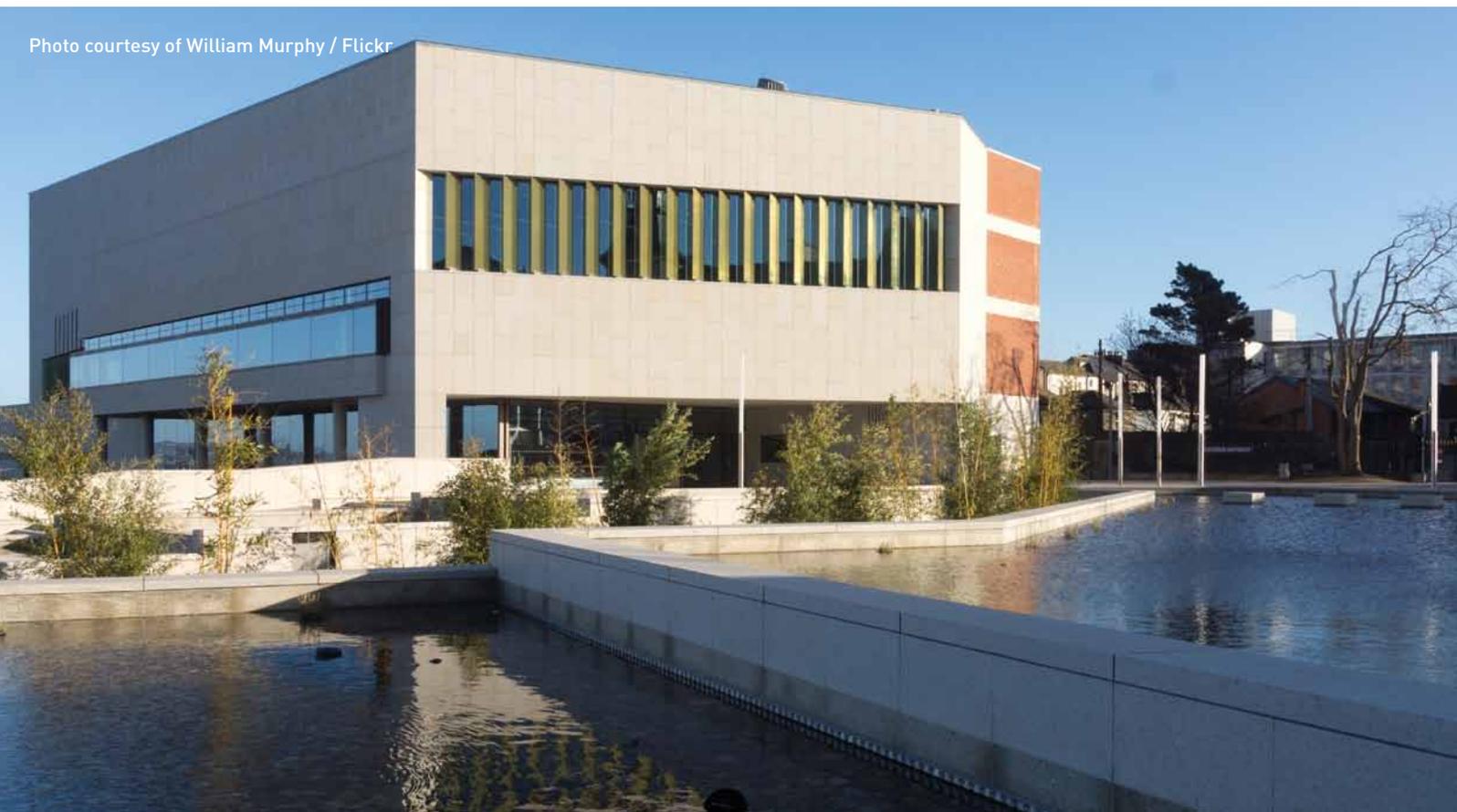
out to tender in December 2019, and works are expected to be completed in early 2020.

Codema also drafted a proposal to examine the potential energy savings from the retrofit of all the landlord lighting in DCC's social housing complexes throughout the city. After consultation with the electrical services team, the initial scoping exercise of the project requires a further design process and funding stream identification. The outcome of the initial scoping exercise was to divide the project into smaller, manageable call-off contracts after funding has been secured.

Following on from the renewable energy report produced for the Arthurstown landfill site in 2018, a second report was produced in 2019. This report detailed the scale of renewable energy systems that would be required in order to achieve carbon neutral operations on the site.

In addition, Codema also carried out a number of feasibility studies on other DLA facilities, which included a feasibility report to examine the potential for solar PV generation on the rooftops of DLRCC's corporate buildings. These options are currently being evaluated by the council.

Photo courtesy of William Murphy / Flickr



An Energy Performance Contract is a contractual agreement by an Energy Service Company (ESCo) to guarantee energy savings over an agreed period of time.

Energy Performance Contracting (EPC)

EPC in DCC Buildings

In 2019, Codema continued to assist DCC with the ongoing Measurement and Verification (M&V) of its first EPC project, which involved a number of energy efficiency upgrades to Ballymun, Finglas and Markievicz Sports and Fitness Centres. The latest M&V figures show that between December 2016 and June 2019, the project has achieved cost savings of €479,048 and energy savings of 38%. Codema will continue to assist DCC with managing this M&V process in 2020.

EPC II in DCC Buildings

Due to the success of the pilot project above, Codema also helped DCC to award its second EPC project in 2019. This project involves upgrading the existing lighting, heating and ventilation systems across seven council 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 contract was awarded to the successful Energy Service Company (ESCo) in August 2019 and followed the competitive dialogue procurement method of the previous EPC. By the end of 2019, work in the seven council buildings had progressed considerably, and the upgrades are due for completion in Spring 2020. The total energy savings from the project are expected to be 35% per year.

Photo courtesy of Dublin City Council



03. WORK PROGRAMME 2019

ENERGY MONITORING AND MANAGEMENT (CONTINUED)



Photo courtesy of Fingal County Council

Hugh Lane Gallery EPC

A feasibility study was conducted on the possibility of developing an EPC for the Hugh Lane Gallery. A detailed energy audit was carried out on the facility as part of this work. Due to significant heating, ventilation and air conditioning (HVAC) upgrade works which are already in progress at the gallery, it was decided not to proceed with an EPC at this time. Once all of the planned works are completed, it is proposed that an EPC-style maintenance contract could be developed.

EPC in DLRCC Buildings

In October 2018, Codema completed the project identification and initial appraisal phase for a potential EPC project in Dún Laoghaire-Rathdown County Council for its Loughlinstown, Meadowbrook and Monkstown Leisure Centres. In April 2019, the council decided to include County Hall and Harbour Square in this project. Codema is working with DLRCC to identify a suitable technical and financial model for the project, which will achieve average energy savings of 20% - 25%.

Once approval has been granted and funding and project management resources assigned, Codema will then proceed with the preparation of the necessary procurement and contract documentation, with the aim of having a signed contract by the end of 2020. Codema also assisted DLRCC in submitting a Stage 2 Project Assistance Grant (PAG) application to SEAI in early 2019.

EPC in FCC Buildings

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

The project aims to save the council over €80,000 on its energy and maintenance costs, and will achieve average energy savings of 20% - 30%. The Pre-Qualification stage of the project is now complete and the successful ESCOs have been shortlisted. Site surveys and the competitive dialogue phase will take place in early 2020, with award of the tender and works taking place by the end of 2020.

EPC Promotion

In November 2019, Codema participated in a workshop on the use of Energy Performance Guarantees in local authority projects, which was organised by SEAI and the Association of Irish Energy Agencies (AIEA). The workshop aimed to explore the ways in which local authorities can use models such as Energy Performance Guarantees, Energy Performance Contracts or Energy Supply Contracts in their projects. Different organisations presented real project examples at different levels, which was followed by a discussion on the various contract types and where and when they should be used. Codema also gave a presentation on the important role of the EPC facilitator at the SEAI Public Sector Energy Conference in January 2019 and at the SEAI Energy Show in March 2019.

ENERGY MONITORING AND MANAGEMENT - KEY OUTPUTS FOR 2019



**CONTRACT SIGNED
FOR SECOND EPC
PROJECT IN DCC**



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



**ASSISTED 2 DLAS IN
ACHIEVING / MAINTAINING
ISO 50001 ACCREDITATION**

Energy Monitoring and Management - Actions and Outputs 2019

Date	Actions	Project support	Outputs
January - December	Site visits of 7 DLA facilities	--	Site visits conducted of 7 DLA facilities
	Energy Team meetings with the 4 DLAs	--	19 Energy Team meetings throughout 2019
January	Facilitated an EPC workshop at the SEAI Public Sector Energy Conference	GuarantEE	Presentation on EPC delivered, approx 50 in attendance
February	Gathering MPRN and GPRN data for M&R process	--	2,793 energy accounts entered into M&R system
March	Co-hosted the "Unlocking the Energy Contracting Opportunity" seminar at the SEAI Energy Show	GuarantEE	70 participants in attendance
	Preparation of Energy Performance Contracting Policy Recommendations Report	GuarantEE	Report completed and disseminated
April	Oversight of 3rd M&V report completed for DCC EPC I	--	3rd M&V report produced
	Gathering of other fuels data for M&R process	--	M&R process completed for 2019
May	Application made to SEAI for PAG Stage 2 funding for SDCC District Heating Procurement and Contract	--	Application submitted to SEAI. Grant approved in June.
	DLA energy databases updated with new M&R data, including new DLRCC database	--	Databases ready for 2018 Energy Review process
June	Oversight of 4th M&V report completed for DCC EPC I	--	4th M&V report produced
	Carbon neutrality report for Arthurstown Landfill	--	Report completed

03. WORK PROGRAMME 2019

ENERGY MONITORING AND MANAGEMENT (CONTINUED)

Date	Actions	Project support	Outputs
July	Assessment of Hugh Lane Gallery for suitability for EPC	--	Project proposal completed
	Assessment of DLRCC leisure centres for suitability for EPC	--	Project proposal completed
	Assessment of DCC landlord lighting for energy efficiency upgrades	--	Project proposal completed
	Development of Energy Reviews for DCC and SDCC	--	Energy Reviews completed for DCC and SDCC
	Facilitated energy audit of DCC's Civic Offices	--	Energy audit of the Civic Offices completed
	Completed energy management system report for DLRCC senior management review	--	Report completed and presented to senior management review team
	Completed detailed report for DCC on the outcomes of the first EPC project	--	EPC I summary report completed
July - December	ISO 50001 Monthly Reports for DLRCC	--	Monthly reports completed for each SEU area
August	Development of Energy Reviews for FCC and DLRCC	--	Energy Reviews completed for FCC and DLRCC
	60 DEC's generated for DCC and DLRCC public buildings	--	DEC's issued for 60 public buildings
	Initiation of DCC's second EPC project for seven sports centres	--	EPC II contract signed
	Installed heat meter on heating system in SDCC's County Hall for TDHS assessment	HeatNet NWE	Heat meter installed
September	Presentation on DLRCC Energy Review 2018	--	Findings from Energy Review presented to senior staff members
	38 DEC's generated for FCC and SDCC public buildings	--	DEC's issued for 38 public buildings
	High-level project feasibility study on PV options for DLRCC buildings	--	PV Feasibility Report completed
	EPC Review Report developed for Ballymun, Finglas and Markievicz Sports and Fitness Centres	--	Report disseminated online
	Oversight of 5th M&V report completed for DCC EPC I	--	5th M&V report produced
	Installed heat meter on heating system in TUD Tallaght for TDHS assessment	HeatNet NWE	Heat meter installed

Date	Actions	Project support	Outputs
September - December	ISO 50001 Monthly Reports for FCC	--	Monthly reports completed for each SEU area
October	Application developed for Project Assistance Grant (PAG) funding for DLRCC's EPC project	--	Application submitted to SEAI
	ISO 50001 mock audit of County Hall carried out for FCC	--	Mock audit for FCC ISO 50001 completed
	Public Lighting report completed for SDCC's Public Lighting Department	--	Public Lighting report presented to SDCC senior management
	ISO 50001 Stage 1 audit carried out in FCC's Civic Offices in Blanchardstown	--	ISO 50001 Stage 1 audit for FCC completed and passed
	FCC EPC pre-qualification documentation published	--	Pre-qualification documentation published for FCC EPC project
	BERs completed for Dorset Street Fire Station and Ballyfermot Civic Centre	--	BERs completed and published on behalf of DCC's City Architects Department
November	Prepared tender documentation for the O'Brien Institute	--	Tender published on eTenders
	Co-ordinated SEAI/AIEA workshop on procuring guaranteed energy savings	--	Workshop attended by 20 people with presentations and examples of Energy Performance and Energy Supply Contracting
	Analysis completed on potential cost savings of DCC electrical accounts on the Energy Elephant Platform	--	Report completed with approx €27,000 savings identified
	ISO 50001 Stage 2 audit for DLRCC	--	ISO 50001 Stage 2 audit complete and DLRCC recommended for recertification
December	Oversight of 6th M&V report completed for DCC EPC I	--	6th M&V report produced
	ISO 50001 Stage 2 audit for FCC	--	ISO 50001 Stage 2 audit complete, FCC recommended for certification in 2020
	All tenders received for the OBI boiler replacement project	--	Tender evaluation completed

03. WORK PROGRAMME 2019



ENERGY AND CLIMATE AWARENESS

Climate Awareness

Climate Change Action Plans

To coincide with the public consultation period of the Dublin Local Authorities' Draft Climate Change Action Plans 2019-2024, Codema worked with the four councils and the Dublin Climate Action Regional office (CARO) to run a number of public engagement events, which all took place within the first two weeks of the six-week public consultation period.

The public consultation period ran from the 11th of February to the 25th of March 2019. On the first day of the public consultation, Codema launched the website www.dublinclimatechange.ie, which acted as the central online platform to host all information about the plans, details on how to make a submission, a filter function for users to easily view the actions in the plans by thematic area and/or by local authority area, case study area for successful completed projects, etc.

The bullet points below give an overview of key actions / statistics of public engagement during this time:

- 563 submissions in total across the four Dublin Local Authorities (breakdown: DCC 240 submissions, DLRCC 142 submissions, Fingal 74 submissions, SDCC 41 submissions).
- 4,000 individual users accessed www.dublinclimatechange.ie during the six-week public consultation period.
- Codema developed a generic information leaflet and event programme for the #Councils4ClimateAction events. This material helped to provide information on the plans and to promote what was taking place at each of the events. These leaflets were widely available online to help spread the word and cut down on the need for printed copies.
- 734 attendees across the four #Councils4ClimateAction public information events (DCC 470 attendees, DLRCC 121 attendees, Fingal 66 attendees, SDCC 77 attendees). It is worth noting that these figures come from the sign-in sheets at these events, and in reality are likely to be slightly higher, as members of the public may have been missed and large groups attending would not be listed individually.
- The use of the online event management platform Eventbrite was very effective in helping to promote the events and getting the public and organisations to register online. While it cannot be relied on to determine final numbers, Eventbrite was helpful in giving guidance on numbers to be expected and level of interest from the public.
- The use of social media was particularly effective throughout the public consultation process and for promoting the councils' events. The #Councils4ClimateAction hashtag trended on Twitter on the 16th February and there were at least 300 tweets mentioning the hashtag on this day.
- A video created to promote the Climate Change Action Plans was divided into two parts; Part 1 in the run up to



Photo courtesy of Conor McCabe Photography

the public events and Part 2 to include footage of the events and a continued call to action to get the public to make submissions. These videos were embedded on the dublinclimatechange.ie website and 30-second clips were used to promote the video on social media, with over 6,600 combined views of the 'Part 1' version alone on the Dublin CARO and Codema twitter accounts.

- Codema and the Dublin CARO acted as the central liaison point between all four councils' Communications Teams and together a central message was formed around the plans and the 'make a submission' call to action. Press releases were issued by the four DLAs and Codema in the run up to the public consultation period and the public events, resulting in widespread national and local media coverage such as the Irish Times, RTÉ Television Six-One and Nine O'Clock News Bulletins, Virgin Media One News Bulletins, RTÉ Radio 1 and Newstalk 106-108fm.

Dublin City Council #Councils4ClimateAction Public Information Event

- Saturday, 16th February 2019, Round Room at the Mansion House, 12-5pm
- Incorporating the launch of the Dublin CARO
- 470 attendees approximately
- External stakeholders included: SEAI (Energy), GoCar, UPS, BleeperBike, Hyundai, Vita (Transport), LAWPRO (Flood Resilience), Tree Council of Ireland and Green Leaf (Nature-Based Solutions), Stop Food Waste / EPA Master Composters, Refill and Rediscovery Centre (Resource Management), An Taisce, Cool Planet Experience, Comhairle na nÓg, Eco Unesco, Recreate (Climate/Environment/Youth Groups)
- Additional information sessions took place in four DCC public libraries on the following dates:
 - Cabra Library: Tuesday 19th March from 12.30 to 2.30pm
 - Central Library, Ilac Centre: Wednesday 20th March from 12.30 to 2.30pm
 - Rathmines Library: Thursday 21st March from 2.30 to 4.30pm
 - Raheny Library: Friday 22nd March from 12.30 to 2.30pm

03. WORK PROGRAMME 2019

ENERGY AND CLIMATE AWARENESS (CONTINUED)

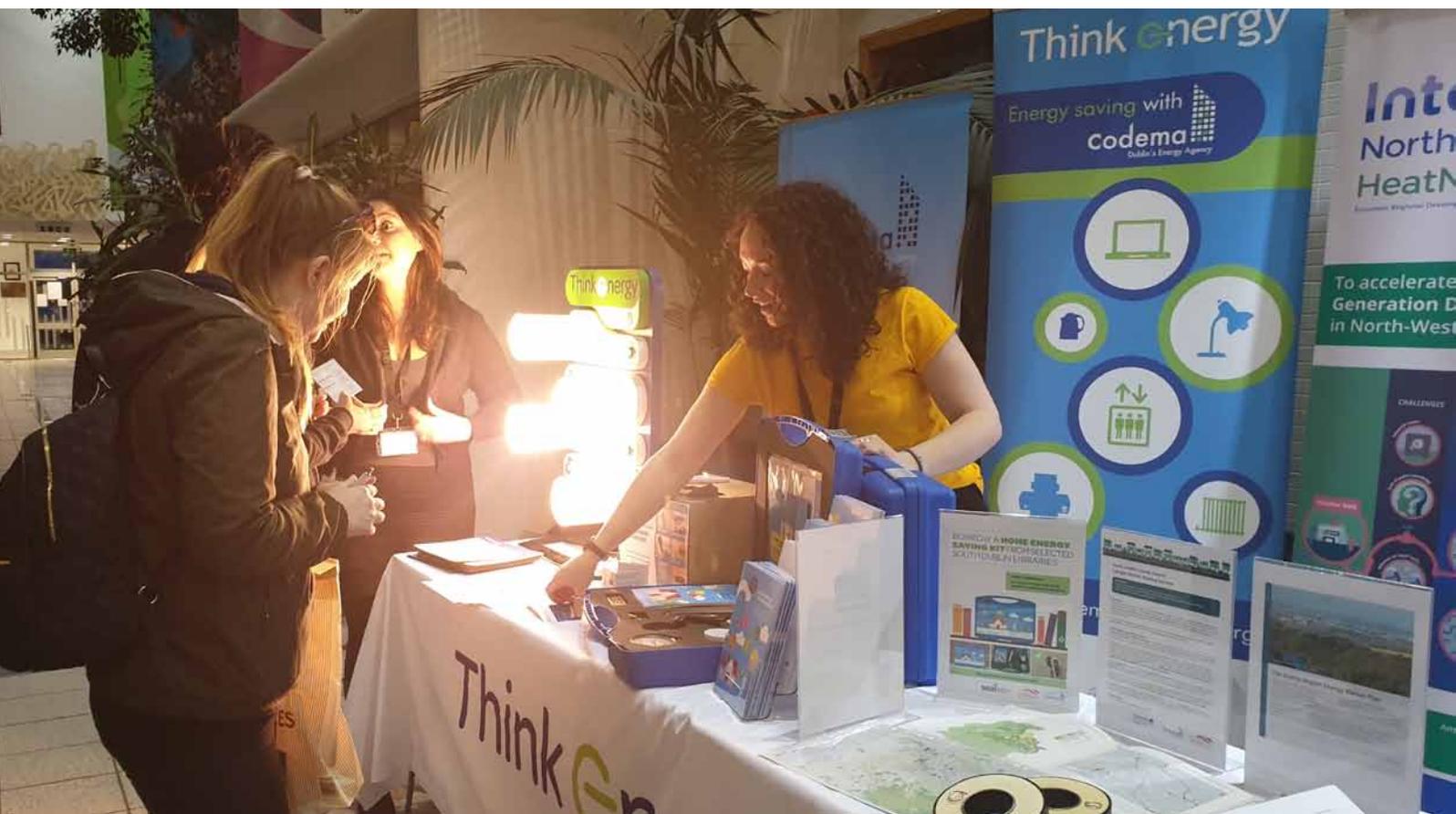
Fingal County Council #Councils4ClimateAction Public Information Event

- Monday 19th February 2019, County Hall, Swords, 5.30-8.30pm
- 66 attendees approximately
- External stakeholders included: SEAI (Energy), GoCar, BleeperBike, BMW (Transport), Stop Food Waste / EPA Master Composters (Resource Management) and Recreate (Kids' Zone)
- Fingal County Council also held additional public information events on the following dates:
 - 20th February: Bracken Court Hotel, Balbriggan (approx. 30 attendees)
 - 25th February: Crowne Plaza Hotel Blanchardstown (approx. 25 attendees)
 - 28th February: Marine Hotel Sutton (approx. 35 attendees)
- The council also carried out five climate change workshops with Transition Year secondary school students in the following schools, and received submissions from four out of the five schools:

- 12th March: Loreto College, River Valley Swords (33 students)
- 13th March: Malahide Community School (29 students)
- 15th March: Blakestown Community School, Blanchardstown (25 students)
- 19th March: Loreto Secondary School, Balbriggan (35 students)
- 21st March: Fingal Community College, Swords (31 students)

South Dublin County Council #Councils4ClimateAction Public Information Event

- Tuesday, 20th February 2019, County Hall, Tallaght, 6-9pm
- 77 attendees approximately
- External stakeholders included: SEAI (Energy), GoCar, Cycle Superstore, Nissan (Transport) and Stop Food Waste / EPA Master Composters (Resource Management)
- Additional public information sessions held in a range of South Dublin County Libraries



Dún Laoghaire-Rathdown County Council #Councils4ClimateAction Public Information Event

- Thursday, 21st February 2019, National Maritime Museum, 3-7pm
- 121 attendees approximately
- External stakeholders included: SEAI (Energy), GoCar, BleeperBike, Renault (Transport) and Stop Food Waste / EPA Master Composters (Resource Management)
- Additional public information session held in the Parish Hall, Holy Cross Church, Dundrum on 13th February

Home Energy Saving Kits

The Home Energy Saving Kit scheme had another very successful year in 2019, with further expansion to more libraries across Ireland and additional organisations throughout the year. The Home Energy Saving Kit contains six practical tools to help you save energy and identify possible problem areas in your home that may need addressing. The kits are currently available to borrow free-of-charge from 67 public library branches nationwide.

In January, Codema supplied Galway-Mayo Institute of Technology (GMIT) with a Home Energy Saving Kit to help staff become more aware of their energy use and in March, Kildare Libraries launched the kits into five of their library branches in Athy, Naas, Newbridge, Leixlip and Maynooth. The launch of the kits into these libraries also involved Codema carrying out staff training with representatives from each of the library branches prior to the introduction of the scheme, and supplying each branch with a range of promotional material (such as the Guide to Home Energy Savings) to support the scheme and raise awareness with the public.

By the end of 2019, another 50 kits were on order from various libraries and local authorities throughout the country, meaning that the scheme will expand even further and will be more widely-available to citizens in 2020. This includes additional Home Energy Saving Kits for libraries in Dublin City Council, Dún Laoghaire-Rathdown County Council and Fingal County Council, which are all experiencing strong demand from the public to help increase their level of energy awareness in the home.



03. WORK PROGRAMME 2019

ENERGY AND CLIMATE AWARENESS (CONTINUED)



Photo courtesy of Mark Stedman Photography

Think Energy

Think Energy in the DLAs

In 2019, Codema helped Dún Laoghaire-Rathdown County Council to develop an events and promotional schedule to help generate energy awareness among staff and the general public.

This included activities such as an online staff survey, which was carried out in August 2019. The aim of the survey was to help gauge levels of energy awareness among staff working in the various council buildings and to allow them make recommendations to improve energy efficiency. There was great interest among the staff, with 264 surveys completed in total.

This was followed in September by a staff lunchtime talk, which was held in the Council Chambers. During the talk, Codema staff gave an overview of the council's overall energy use, as well as tips on energy saving in the home and a demonstration of the Home Energy Saving Kit.

The council also organised a public energy-saving information seminar as part of the Open House Dublin programme, which Codema presented at, alongside the Sustainable Energy Authority of Ireland (SEAI) and architect Art McCormack.

The event took place on Sunday, 13th October in the studio theatre of the Lexlcon; the first session began at 12pm and was repeated at 2pm. There was great interest from the public, and both sessions were fully booked out.

Codema's Communications Manager presented the Home Energy Saving Kit scheme, which is available in all of DLRCC's libraries. She also covered low-energy lighting and what to look out for when replacing your bulbs with more energy-efficient ones, as well as advice on understanding your energy bills better. Representing SEAI, Eric Dennis spoke about the areas in your home that will have the most impact in terms of energy upgrades, along with the grants that are available from SEAI. Art McCormack from MosArt gave a very interesting and informative presentation on the deep energy retrofit of a multi-construction home in Wicklow.



Photo courtesy of Robbie Reynolds Photography

District Heating Promotion

Throughout 2019, our Communications Team carried out a range of activities to promote our work on district heating. District heating is a network of insulated pipes that delivers heat from a central energy source to provide space heating and hot water to the buildings connected to the network. It is a very low-carbon, sustainable heating solution for large towns and cities, as it can combine multiple, locally-available renewable and low-carbon heat sources and can also recycle heat produced from electricity generation or industrial processes for use in homes and businesses connected to the network.

Some of our work to promote district heating in Ireland in 2019 included:

- Organisation of the first national conference on behalf of the Irish District Energy Association** - This conference was held in April 2019 in the Radisson Blu Royal Hotel in Dublin and was very successful, with approximately 150 attendees from organisations such as the Department of Communications, Climate Action and Environment, SEAI, ESB, Veolia, local authorities, and media organisations. The conference explored the latest developments in district heating in Ireland and abroad, in terms of policy, finance, technology and ongoing case studies.
- Promotion of the HeatNet NWE project** - Codema is the lead partner in the HeatNet NWE project, which is part-funded through the Interreg North-West Europe programme. As part of this project, Codema developed a Guide to District Heating for Public Sector Organisations, which aimed to provide information to local authorities on the benefits of district heating, how to know if an area is suitable for a district heating scheme, etc. In July 2019, Codema appointed a web developer to create the HeatNet NWE online platform. The platform will act as an online hub to provide municipalities across Europe with key information and tools to make a more informed decision about developing district heating in their area.
- South Dublin District Heating Company** - In September 2019, Codema appointed a creative brand and design agency to develop a visual identity for the South Dublin District Heating Company, which will be fully-owned and operated by South Dublin County Council. The company will oversee the development of the Tallaght District Heating Scheme as its pilot project, which will begin construction in 2020 and will be the first large-scale district heating scheme in the country. Codema will continue to work with the design agency in 2020 to develop the company branding, including a dedicated website to provide information and project updates to key stakeholders.

03. WORK PROGRAMME 2019

ENERGY AND CLIMATE AWARENESS (CONTINUED)

ENERGY AND CLIMATE AWARENESS - KEY OUTPUTS FOR 2019



HOME ENERGY SAVING KITS AVAILABLE TO BORROW IN 67 PUBLIC LIBRARIES ACROSS IRELAND



5 X PRESENTATIONS ON ENERGY AND CLIMATE AWARENESS



4 X CLIMATE CHANGE PUBLIC CONSULTATION EVENTS ORGANISED

Energy and Climate Awareness - Actions and Outputs 2019

Date	Actions	Project support	Outputs
January	Home Energy Saving Kit delivered to Galway-Mayo Institute of Technology (GMIT)	--	Home Energy Saving Kit available for staff to use in GMIT
	Site visits for #Councils4ClimateAction Public Engagement Events	DLA Special Project	Site visits carried out and plans developed for events
February	Start of public consultation process for Dublin Local Authorities' Climate Change Action Plans	DLA Special Project	563 valid submissions received by DLAs during 6-week period
	Launch of www.dublinclimatechange.ie website	DLA Special Project	4,000 individual users accessed website during 6-week public consultation period
	4 x #Councils4ClimateAction Public Engagement Events held	DLA Special Project	734 attendees in total
March	Staff training on Home Energy Saving Kits for 5 Kildare Libraries	--	Branch staff from 5 Kildare Libraries trained in the Home Energy Saving Kits
	SEAI Energy Awareness Showcase Event	--	Home Energy Saving Kits presented to local authorities and public sector bodies
April	Home Energy Saving Kit launched into 5 Kildare Libraries	--	Home Energy Saving Kit available for public to borrow from Athy, Naas, Newbridge, Leixlip and Maynooth Libraries
	Organised first national conference for the Irish District Energy Association	--	150 attendees at conference
	Guide to District Heating for Public Sector Organisations developed	HeatNet NWE	Guide developed and shared online and with project partners

Date	Actions	Project support	Outputs
June-July	Post-consultation content updates to Climate Change Action Plans	--	Climate Change Action Plans finalised and prepared for print
July	Job spec developed for HeatNet NWE online platform	HeatNet NWE	Job spec issued and web developer selected
August	Event schedule planned for energy awareness events for DLRCC staff and public	--	Event schedule agreed with DLRCC
August-September	Content updated on www.dublinclimatechange.ie to reflect final CCAP content	--	All actions updated where relevant
September	Staff energy awareness survey for DLRCC staff	--	Survey online, 264 surveys completed by staff
	Energy-saving lunchtime talk for DLRCC staff	--	Information on DLRCC's energy use and energy saving in home presented to staff
	Job spec issued for development of website and branding for SDDH Co.	SDCC Special Project	Company appointed
	All 4 Dublin Local Authorities' Climate Change Action Plans finalised	--	Final CCAP launch in each DLA, plans uploaded on dublinclimatechange.ie and DLA websites
October	DLRCC free Public Energy Awareness Seminar	--	Presentation given by Codema, almost 200 members of public in attendance
	TOMORROW kick-off meeting in Brussels	TOMORROW	Kick-off meeting for TOMORROW project, which will guide local authorities in developing low-carbon Transition Roadmaps with citizen/stakeholder engagement
	Participated in DCC's Let's Talk Climate Action public event	--	30 people in attendance
November	Participated in DCC's Let's Talk Climate Action public event	--	25 people in attendance
December	Presentation given on design and branding options for SDDH Co.	SDCC Special Project	Branding / design narrowed down to 2 options for development in 2020

03. WORK PROGRAMME 2019



ENERGY PLANNING AND POLICY

Climate Change

Dublin Local Authority Climate Change Action Plans

In January 2019, the first completed drafts of the Dublin Local Authority Climate Change Action Plans (CCAPs) were finalised. These were edited and proofed by Codema, in order to be ready for the public submission period. The plans were printed for the four DLAs and distributed to a range of council buildings.

Parallel to this was the Strategic Environmental Assessment (SEA) process; this began in late 2018 and resulted in an SEA and Appropriate Assessment (AA) statement that were displayed along with the draft plans. This process resulted in suggested changes to the plans in order for them to be compliant with the EU SEA directive.

Four major public consultation events were organised and implemented in February; details of these events are in the previous Energy and Climate Awareness chapter.

Once the statutory six-week term was concluded, all submissions to the plans were collated. These were assigned to the relevant staff within the councils for comment and any changes that resulted were incorporated into the plans, and all changes were tracked and approved. The Dublin CARO took the lead on developing a Chief Executive report based on the changes. This report and the advanced draft were then presented to the four Councils for approval in April and

May. All four DLAs voted to approve the plans and they were unanimously adopted by the councillors with no objections.

The plans were then subject to a final process of proofing. The SEA and AA process was also finalised, and both the plans and the SEA and AA documents were made available to the public. Codema also took on the management of the Irish translation of the documents in September. This process is ongoing and is due to be finalised in February 2020.

Codema continued to attend DLA management meetings for the plans throughout the year. In addition, we attended the regional management meetings for the Dublin CARO and also the first two DLA climate team meetings, which will be ongoing to provide support to the plan.

Codema will manage the dedicated climate change website, which will be used to update the plans towards the first major review in 2022.

In 2020, Codema will:

- Continue to attend the Dublin CARO regional meetings
- Continue to attend DLA climate team meetings
- Work with the Climate Coordination officers in the four DLAs
- Manage the www.dublinclimatechange.ie platform
- Continue to develop, support and execute climate mitigation actions for the four DLAs



Covenant of Mayors for Climate and Energy

All four DLAs are signatories to the Covenant of Mayors for Climate and Energy. This initiative is a voluntary commitment by the signatories to reduce greenhouse gas (GHG) emissions by at least 40% by 2030 and to adopt an integrated approach to tackling climate change mitigation and adaptation.

Accordingly, in October 2019, Codema submitted Sustainable Energy and Climate Action Plans (SECAPs) on behalf of the four DLAs, which were accepted by the Covenant of Mayors. The SECAPs outline the key actions the DLAs plan to undertake, and this must be submitted within two years of signing up to the initiative and updated every four years.

The Climate Change Action Plans were the basis for the SECAP submissions, as they include a Baseline Emissions Inventory to track mitigation actions, an adaptation baseline and a Climate Risks and Vulnerability Assessment. The

Baseline Emissions Reports for the Dublin Region, which Codema developed in 2018, were also used to inform the Dublin SECAPs, as they outlined the total emissions in Dublin City, Dún Laoghaire-Rathdown, Fingal and South Dublin in areas such as the residential, commercial and transport sectors.

Dublin Region Energy Master Plan

The Dublin Region Energy Master Plan will create evidence-based, realistic, and costed pathways for the Dublin Region to achieve its carbon emission reduction targets to 2030 and 2050. The plan will focus on the energy areas where actions can be taken to introduce energy efficiency measures and reduce CO₂ emissions.

In 2019, Codema's work on WP1 was near completion, establishing the 'current situation' energy model. This involved data gathering and processing from multiple sources, including the Central Statistics Office (CSO), SEAI, the Commission for the Regulation of Utilities (CRU), ESB, etc. The current situation model is a granular hourly system model, showing all energy use in heat, transport and electricity across Dublin. Codema will advance the work on this project in 2020, building on the current system model to predict the impacts of existing planned policy interventions over the next 10 years, and where these are most likely to happen.

03. WORK PROGRAMME 2019

ENERGY PLANNING AND POLICY (CONTINUED)



National Consultations

In 2019, Codema made numerous submissions to national level consultations that support the work of the DLAs in the area of energy and climate change. These submissions are listed below:

- EU Clean Energy Package
- Eastern and Midland Regional Assembly Draft Regional Spatial and Economic Strategy (RSES)
- Draft National Energy and Climate Plan
- Long-term Strategy on GHG Emissions

In 2020, Codema will continue to lobby for supports for the DLAs to carry out projects to reduce greenhouse gas emissions, such as district heating, planning policy, energy retrofitting, renewable energy, and climate change action planning.

District Heating

National District Heating Working Group

Codema is an active member of the Department of Communications, Climate Action and Environment's District Heating Working Group, which was officially established in November 2017. The aim of the group is to develop a policy framework to encourage the development of district heating, and Codema attended a meeting in 2019 to advise the Department on the local barriers and opportunities for developing this low-carbon heating infrastructure across Ireland, and support the preparation of a district heating policy consultation document released in December 2019.

Climate Action Fund

Codema was instrumental in securing funding for two local authority district heating projects in the first call of the government's Climate Action Fund (CAF). Throughout 2019, Codema has coordinated the CAF validation phase on behalf of South Dublin County Council, liaising with the CAF steering committee (DCCAE, SEAI and the NDFA) and preparing financial reports. For further information on the Dublin Docklands District Heating System (DDHS) and the Tallaght District Heating Scheme (TDHS), please see the individual sections below.

In 2020, Codema will assist the local authorities with any applications to the next round of the CAF. Given our success rate in the last round and our understanding of the process, we are in a great position to get more funding applications over the line.

Dublin Docklands District Heating System

Codema is part of the DDHS project team, advising on policy, energy planning, technical aspects and energy procurement/contracting. On behalf of the Project Team, Codema attended 23 meetings and workshops in 2019, providing advice on district heating planning, policy and financial feasibility.

Tallaght District Heating Scheme

In 2019, Codema delivered some key milestones on the Tallaght District Heating Scheme, including Stage 2 of the procurement process (Competitive Dialogue), contract evaluation and awarding of contract. Codema participated in



Photo courtesy of Wiki Commons / Peyton Edward

In 2019, Codema delivered some key milestones on the Tallaght District Heating Scheme, including Stage 2 of the procurement process (Competitive Dialogue), contract evaluation and awarding of contract.

28 TDHS meetings in 2019. Codema has been continuously liaising and negotiating with possible TDHS customers, including the PM Group and the Greenleaf Group, and has developed targeted marketing materials analysing the benefits for developers. Codema installed heat meters and analysed the heat consumption at customer premises. In 2020, Codema will continue our role as technical, planning, policy, contract and procurement lead on the TDHS, and will initiate the Grangecastle district heating system technical and financial analysis.

In 2019, Codema completed the South Dublin District Heating Transition Roadmap, as part of the HeatNet NWE project. This roadmap was peer reviewed and presented to the HeatNet NWE partner cities in March. This roadmap gives local authority staff a full guide to the growth pathway for district heating development in the South Dublin area, and covers topics from planning to procurement strategy.

Emissions Trading Scheme

In 2019, Codema facilitated the trade of Dublin City Council carbon allowances on the EU Emissions Trading Scheme (ETS). An ethical trader was identified and Codema ensured a smooth transaction, communicating between the EPA, the trader and DCC's financial department. The sale of these credits has been ring-fenced for DCC climate actions in 2020. Codema will help DCC to utilise this money as effectively as possible, investigating funding opportunities for low-carbon projects.

03. WORK PROGRAMME 2019

ENERGY PLANNING AND POLICY (CONTINUED)

ENERGY PLANNING AND POLICY - KEY OUTPUTS FOR 2019



4 X CLIMATE CHANGE ACTION PLANS FINALISED



TENDER EVALUATION COMPLETED FOR TDHS PROJECT



4 X SECAPS SUBMITTED TO COVENANT OF MAYORS

Energy Planning and Policy - Actions and Outputs 2019

Date	Actions	Project support	Outputs
January - August	Co-ordination of SEA/AA Assessment for the four DLAs	--	Four SEA/AA Assessment Reports produced for the four DLAs
January - July	Support the 4 DLAs in their public consultation process for the Climate Change Action Plans	DLA Special Project	CCAPs finalised
January - December	Lectures / presentations delivered on energy systems, district heating and energy planning to 9 academic institutions or industry conferences	HeatNet NWE	14 lectures / presentations delivered in total
	Participation on DDHS project team	HeatNet NWE	Attended 23 DDHS meetings during 2019
	TDHS stakeholder engagement	HeatNet NWE	Attended meetings and emailed stakeholders regarding TDHS
	Regional CARO Steering Group	--	3 meetings
	DLA Climate Team Meetings	--	2 meetings
January	Prepared a response to the EMRA Regional Spatial Economic Strategy	--	Presentation given in City Hall on CCAPs
	H2020 TOMORROW project approved funding	--	Project commenced in September 2019 with an overall budget of €234,352 for Codema
February	TDHS Competitive Dialogue Meetings	HeatNet NWE	Meetings held with 4 bidders
March	ERA-Net "REDAP" proposal approved for funding at EU level by the Steering Board of the ERA-Net SES RegSys	--	Project approved
	South Dublin Transition Roadmap presented at HeatNet NWE partner meeting in Plymouth	HeatNet NWE	South Dublin Transition Roadmap presentation

Date	Actions	Project support	Outputs
March	HeatNet NWE Case to the Public Sector	HeatNet NWE	Developing District Heating in North-West Europe - A Guide for Public Sector Organisations printed and disseminated
May	Reviewed HeatNet NWE Non-Technical Guide to 4DHC	HeatNet NWE	Provided feedback on HeatNet NWE Non-Technical Guide to 4DHC
June	DDHS Phase 1 Designer Scope	HeatNet NWE	Provided assistance and comment on designer scope for Phase 1 of DDHS
June - July	Sensitivity modelling of TDHS contract and heat price methodology for ISFT	HeatNet NWE	Evaluation and finalisation of methodology on heat supply price for tender and contract
July	Euro Heat & Power Country by Country survey completed	--	Survey documents submitted to EH&P
	Invitation to submit final tender and supporting documents finalised for TDHS project	HeatNet NWE	Final ISFT uploaded to eTenders for the 4 bidders
	South Dublin Transition Roadmap finalised	HeatNet NWE	Digital copy shared with SDCC HeatNet NWE team
	CO ₂ and Renewable Energy Calculator developed for CAF and tender evaluation	HeatNet NWE	CO ₂ and Renewable Energy Calculator developed in Excel
	SSRH eligibility memo and checklist developed for heat pumps	HeatNet NWE	Memo and checklist developed
July - August	High-level scoping of possible Croke Park/ Croke Villas district heating opportunity	HeatNet NWE	Meetings with Croke Park (and their energy consultants) and DCC regarding Croke Villas public housing development and estimated heat demand profiles shared for CHP sizing purposes
September	TDHS tender evaluations	HeatNet NWE	Evaluation of final tender submissions and selection of preferred bidder
	South Dublin Transition Roadmap presented at HeatNet NWE partner meeting in Dublin	HeatNet NWE	South Dublin Transition Roadmap presentation
	District heating brochure for developers created to aid engagement with stakeholders for TDHS and other SDDH Co schemes in the future	HeatNet NWE	Brochure disseminated online
	TUD Tallaght plant room visit and heat meter installation	HeatNet NWE	Heat meter installed in TUD Tallaght to ascertain boiler efficiency and heat demand profiles
	Delivered HeatNet NWE webinar titled The Public Sector's Role in Developing 4th Generation District Heating	HeatNet NWE	87 attendees
	Delivered presentation at 5th International Conference on Smart Energy Systems in Copenhagen	--	Presentation delivered to 20 attendees
October	Kick off meeting and study tour in Brussels	TOMORROW	Kick off meeting for TOMORROW project, attended by 18 participants
	Sustainable Energy and Climate Action Plans uploaded for all 4 DLA signatories to the CoM	--	4 x SECAPs submitted to the Covenant of Mayors
October - December	Developing a Multi-level Energy Renovation Impact Framework - Ireland's National Steering Group	--	2 meetings

03. WORK PROGRAMME 2019



PROJECT MANAGEMENT

EU Projects

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.

TOMORROW Project

In 2019, Codema became a project partner in the Horizon 2020 TOMORROW (TOWards Multi-stakehOLdeRs transition ROadmaps With citizens at the centre) project, which aims at empowering local authorities to lead the transition towards low-carbon, resilient and more liveable cities by engaging citizens and stakeholders in the development of 2050 transition roadmaps.

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

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



Photo courtesy of Vision Communication

Codema attended the kick-off meeting in September 2019 and the project will build on key concepts of transition management that focus on the development process of transition roadmaps, i.e. establishing multi-stakeholder transition structures, which ensure mutual responsibility amongst all actors and ensure a large audience of beneficiaries. Subsequently, Dublin and the other pilot cities will be supported during the transition roadmapping process, based on principles and experiences from transition management.

HeatNet NWE

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

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

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

As part of HeatNet NWE, Codema carried out the following tasks for the project in 2019:

- Lead partner - day-to-day project management and supervision of communications within the project
- Financial management - successfully submitted the fourth and fifth financial claims and received requested grant funding
- Continued to lead the Long-Term work package, which involves the creation of business cases, transition roadmaps and promotion of 4DHC
- Continued input into the Evaluation work package
- Ongoing input into developing the HeatNet NWE Model, which will help municipalities to begin implementing 4DHC projects
- Supported SDCC in developing Dublin's first large-scale public district heating network in Tallaght, with waste heat coming from a large local data centre

Codema also ran two HeatNet NWE partner meetings in 2019 to discuss progress on the project, visit pilot sites, and discuss any outstanding issues or work packages. The first meeting took place in Plymouth in the UK and the second meeting was held in Dublin.

03. WORK PROGRAMME 2019

PROJECT MANAGEMENT (CONTINUED)

GuarantEE

Codema was a project partner in the Horizon 2020 project GuarantEE, which began in April 2016 and ran until March 2019. The GuarantEE project fosters the use of Energy Performance Contracting (EPC) in the public and private sectors across Europe. It was funded by the European Union's Horizon 2020 research and innovation programme and involved 13 partners from across Europe.

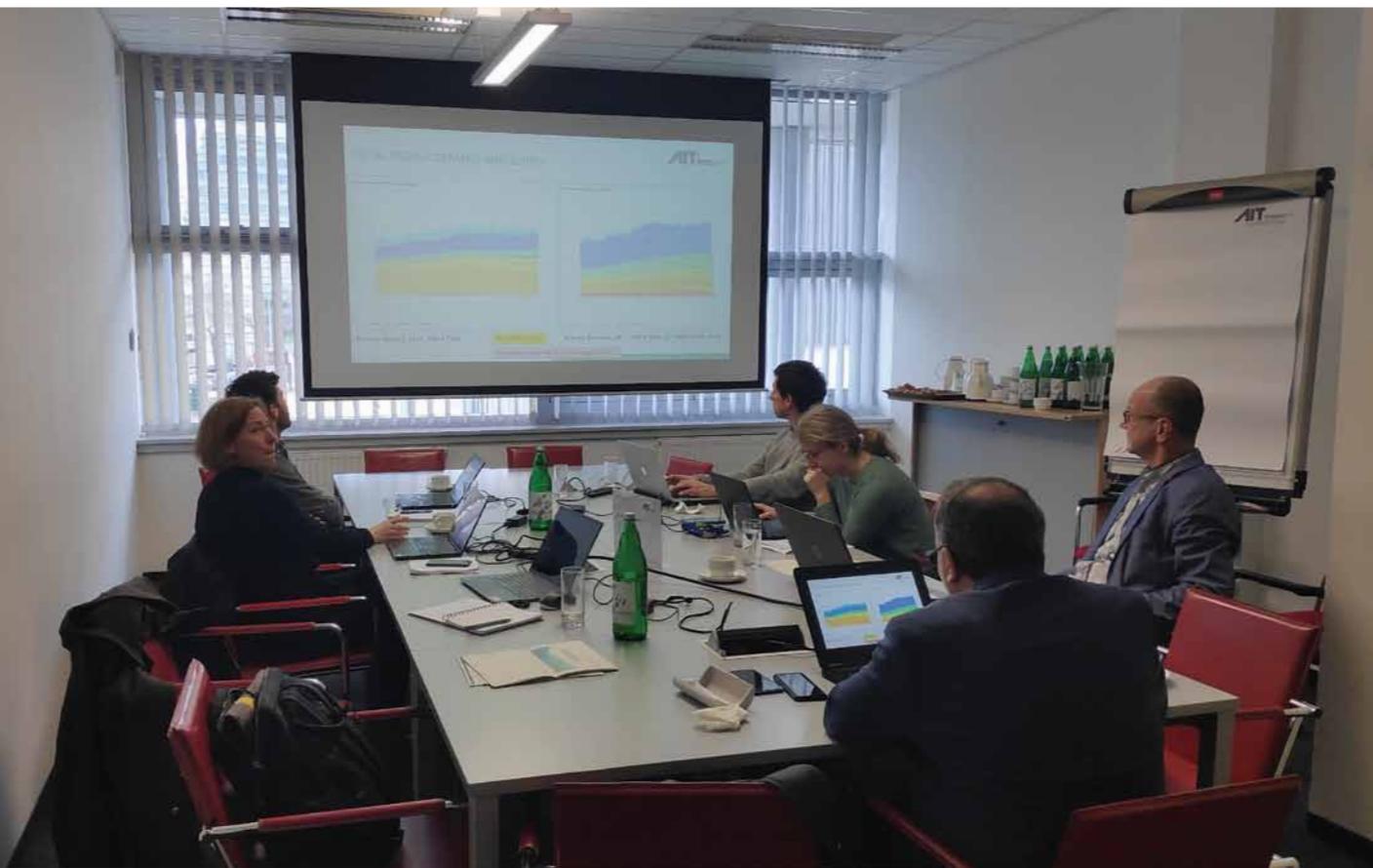
In 2019, Codema prepared an EU Policy Recommendation Report based on analysis of the 35 EPC projects completed by the project partners during GuarantEE. This report presents three main recommendations relating to (1) clear communication of the EPC concept, (2) recognition and training of project facilitators and (3) the value and importance of including guaranteed energy savings in public and private sector energy efficiency projects. These results were presented at the "Unlocking the Energy Contracting Opportunity" seminar at the SEAI Energy Show in March.

Through our involvement in the GuarantEE project, Codema continues to develop and promote the role of the EPC facilitator in Ireland and the use of performance-based contracts. In 2019, GuarantEE supported Codema's work in identifying and initiating EPC projects in the DLAs. Projects facilitated by Codema in 2019 include a Fingal County Council

EPC project for three office buildings, a Dublin City Council EPC project for seven sports and fitness buildings and an Energy Performance Guarantee project for the O'Brien Institute, a fire brigade training centre in Dublin City.

REDAP - ERA-Net Smart Energy Systems Programme

In 2019, Codema received official approval for the REDAP (Regional Energy Demand Analysis Portal) project, under the ERA-Net Smart Energy Systems programme, with the first virtual kick-off meeting taking place in the first week of December. This was the first time all the project partners were gathered together to discuss the project work packages and deliverables. REDAP builds upon the work already carried out by Codema on the Spatial Energy Demand Analyses (SEDAs) to help the DLAs integrate energy planning into their practices. The project will build a live online energy and emissions map for the Dublin Region, using GIS, energy modelling and computer programming expertise from partners in Ireland, Sweden and Austria. Codema will use the output portal developed through REDAP to update the SEDAs and to provide greater insight into the energy use of the Dublin Region. The outputs from this project will also be used to update the baseline energy data for both the DLAs' Climate Change Action Plans and the Covenant of Mayor's Sustainable Energy and Climate Action Plans.



EUCAN

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

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

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

DeCarb City Pipes 2050

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

We will explore pathways suitable for Dublin's local challenges and build up skills in the use of data, planning tools and instruments, techno-economic as well as process and transition management know-how. In a participatory process with stakeholders, such as DCCAE which has committed to being involved, we will develop tangible transition roadmaps, building up trust and commitment for its implementation along the way. In deep peer-to-peer exchanges, cities and utilities share knowledge to benefit from other perspectives, stages of advancement and planning traditions. Together, they will advocate for the needed changes to framework conditions. Codema joined the bid for this project in September 2019 and the project will officially begin in May 2020.



Photo courtesy of Cultural Adaptations

03. WORK PROGRAMME 2019

PROJECT MANAGEMENT (CONTINUED)

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.

Local Project Management

EPC Facilitation

In 2019, Codema worked with DCC, DLRCC and FCC in the development of their EPC projects. DCC signed its second EPC contract in August 2019 to upgrade to the existing lighting, heating and ventilation systems across seven council sports facilities. Works started in October 2019 and are due to be completed in early 2020, resulting in 35% energy savings.

Dún Laoghaire-Rathdown County Council is currently exploring the option of an EPC for a number of its significant energy users. These include Loughlinstown, Meadowbrook and Monkstown Leisure Centres, County Hall and Harbour Square. Codema is currently working with DLRCC in order to identify the most suitable contractual approach for this project.

In September 2019, Codema assisted FCC in the first stage of procurement of an EPC for County Hall in Swords, along with its Civic Offices, the Draíocht Arts Centre, and public library in Blanchardstown. The Pre-Qualification stage of the project is now complete and the shortlisted ESCOs have been identified. These ESCOs will now be invited to complete site surveys and to participate in the competitive dialogue process. Codema will continue to facilitate the process in 2020.

Photo courtesy of Noel Lawler Green Energy Solutions



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

Dublin Region Energy Master Plan

In 2019, Codema continued its work on the development of an Energy Master Plan for the Dublin Region, funded by SEAI's RD&D programme. This master plan will create evidence-based, realistic and costed pathways for the Dublin Region to achieve its carbon emissions reduction targets to 2030 and beyond, up to 2050. The plan will focus on the energy areas where actions can be taken to introduce energy efficiency measures and reduce CO₂ emissions.

As part of the development of the plan, Codema's Spatial Energy Demand Analysis (SEDA) methodology was applied to more recent Building Energy Rating (BER) data, in conjunction with 2011 Census data, to create a model of Dublin residential hot water and space heat demand using Python in place of Excel. This new model framework enables better adaptability to model or data input changes, quicker model run-times, easy connection to GIS to display demands spatially and also the integration of freely available open-source software.

Examples of National and European Projects



Decarbonising Heating & Cooling



Stakeholder Engagement



Energy Master Planning



Project Applications



Energy Performance Contracting



Climate Change

European Network



Learning from experienced EU partners



Showcasing Dublin's achievements to international audience



03. WORK PROGRAMME 2019

PROJECT MANAGEMENT (CONTINUED)

PROJECT MANAGEMENT - KEY OUTPUTS FOR 2019



**WP1 OF DUBLIN REGION
ENERGY MASTER PLAN
NEAR COMPLETION**



**2 X HEATNET NWE
PARTNER MEETINGS HELD**



**2 X KICK OFF MEETINGS
FOR NEW EU PROJECTS**

Project Management - Actions and Outputs 2019

Date	Actions	Project Support	Outputs
January	H2020 TOMORROW project approved	H2020	Project commenced in September 2019 with a budget of €234,352 for Codema
February	Co-ordinated and organised public consultation events for the 4 DLA Climate Change Action Plans	DLA special project	734 attendees in total
March	EUCAN transnational meeting in Scotland	Creative Europe	Supporting Ballymun Axis Centre as an adaptation partner
	ERA-Net "REDAP" proposal approved for funding	ERA-Net SES RegSys	Project commenced in December 2019
	HeatNet NWE partner meeting in Plymouth	HeatNet NWE	30 participants attended
	Participated in a tender bid in response to DG Energy (ENER) call for Overview of DHC Markets & Regulatory Frameworks under the Revised Renewable Energy Directive	--	Bid submitted
	4th HeatNet NWE financial report submitted	HeatNet NWE	Claim submitted and grant drawn down and distributed to partners
May	Preparation of the final Technical Progress Report and financial claim for GuarantEE	GuarantEE	Final Technical Progress Report and financial claim submitted
	Second stage grant for Tallaght District Heating Scheme applied for, approved in June	HeatNet NWE	Grant approved in June (on behalf of SDCC)

Date	Actions	Project Support	Outputs
July	Climate Action Team meeting	--	Attended meeting in SDCC
	CARO regional meeting	--	Attended meeting in DCC
September	Interviews held for appointment of embedded artist	Creative Europe	Appointment of EUCAN embedded artist
	HeatNet NWE partner meeting in Dublin	HeatNet NWE	28 participants at partner meeting
	Application made to SEAI for PAG funding for DLRCC EPC	--	Application submitted to SEAI
	Joined an EU consortium for a bid in the H2020 programme called "DecarbCityPipes 2050"	--	Bid submitted
	Joined IERC in a H2020 bid for Project Delivery Assistance for SimPro (Simplified Procurement of Energy Performance Contracts)	--	Bid submitted
	Joined an EU consortium in a bid under the ERA-Net Geothermica Programme for a project called GET-DH to facilitate a district heating feasibility study at Tallaght	--	Bid submitted
	October	5th progress report and financial claim submitted	HeatNet NWE
Project identification and initial appraisal form completed on potential for EPC in DLRCC buildings		SEAI	Documents submitted for approval
November	Participated in the EU project EUCAN's meeting	Creative Europe	Attended EUCAN Cultural Europe partners meeting in London
	Climate Team Meeting	--	Meeting held in FCC
	Dublin CARO Regional Meeting	--	Meeting held in DCC
December	Project grant approved	HeatNet NWE	Grant received and distributed to partners
	Project extension request submitted and approved	HeatNet NWE	Documents submitted

03. WORK PROGRAMME 2019



PROJECT FUNDING

European Funding

In 2019, Codema was project partner on four European projects which are listed as follows:

- HeatNet NWE: Supports the roll-out of 4th-generation district heating and cooling and is funded under the Interreg North-West Europe programme. A total net grant of €276,736 was drawn down in 2019 from HeatNet NWE, enabling Codema to provide better services and expertise to the Dublin Local Authorities to advance district heating in their areas.
- GuarantEE: Supported through the Horizon 2020 programme and aims to advance Energy Performance Contracting across Europe (ended in March 2019).
- TOMORROW: Began in September 2019 and aims to empower local authorities to lead the transition towards low-carbon, resilient and more liveable cities. Supported by the Horizon 2020 programme.
- REDAP, ERA-Net Smart Energy Systems programme: REDAP began in December 2019 and aims to build a live online energy and emissions map for the Dublin Region, using GIS, energy modelling and computer programming expertise from partners in Ireland, Sweden and Austria.

A total net grant of €276,736 was drawn down in 2019 from HeatNet NWE, enabling Codema to provide better services and expertise to the Dublin Local Authorities to advance district heating in their areas.

Funding Programme	Project	Aim	Project Timeline	Net Grant Drawdown 2019 (€)
INTERREG NWE Programme 		<p>To promote the roll-out of 4th Generation District Heating and Cooling (4DHC) across North-West Europe</p> <p>www.nweurope.eu/heatnet</p>	September 2016 - February 2021	€276,736 (60% funded)
Horizon 2020		<p>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</p> <p>www.citiesoftomorrow.eu</p>	September 2019 - August 2022	€175,764 (pre-payment, 100% funded)
Total EU Funding				€452,500

04. FINANCIAL REPORT

Profit and Loss Account 2019

Codema

PROFIT AND LOSS ACCOUNT

For the year ended 31 December 2019

2019

€

Turnover	
Republic of Ireland	809,194
Europe	2,160,463
	2,969,657
Cost of sales	-1,831,901
Gross profit	1,137,756
Administrative expenses	-1,096,789
Operating profit	41,579
Interest payable and similar charges	-614
Profit on ordinary activities before taxation	40,965
Tax on profit on ordinary activities	-5,647
Profit for the year	35,318

Balance Sheet 2019

Codema

BALANCE SHEET

For the year ended 31 December 2019

2019

€

Current Assets	
Debtors	79,515
Cash and cash equivalents	439,616
	519,131
Creditors: Amount falling due within one year	-272,361
Net Current Assets	246,770
Total Assets less Current Liabilities	260,271
Capital and Reserves	
Called up share capital	127
Profit and Loss account	260,144
Equity attributable to owners of the company	260,271

05. APPENDICES

Abbreviations

4DHC	4th Generation District Heating and Cooling	GIS	Geographic Information System
AA	Appropriate Assessment	GMIT	Galway-Mayo Institute of Technology
CAF	Climate Action Fund	GPRN	Gas Point Reference Number
CARO	Climate Action Regional Office	H2020	Horizon 2020
CCAP	Climate Change Action Plan	IERC	International Energy Research Centre
CHP	Combined Heat and Power	ISFT	Invitation to Submit Final Tender
CMVP	Certified Measurement and Verification Professional	LED	Light-emitting diode
CO ₂	Carbon Dioxide	M&R	Monitoring and Reporting
CRU	Commission for Regulation of Utilities	M&V	Measurement and Verification
CSO	Central Statistics Office	MPRN	Meter Point Reference Number (Electricity)
DCC	Dublin City Council	NDFA	National Development Finance Agency
DCCA	Department of Communications, Climate Action and Environment	NEEAP	National Energy Efficiency Action Plan
DDHS	Dublin Docklands District Heating System	NWE	North-West Europe
DEC	Display Energy Certificate	PAG	Project Assistance Grant
DLAs	Dublin Local Authorities	PMP	Project Management Professional
DLRCC	Dún Laoghaire-Rathdown County Council	PV	Photovoltaic
DRIFT	The Dutch Research Institute for Transitions	RD&D	Research, Development and Demonstration
EMRA	Eastern and Midland Regional Assembly	REDAP	Regional Energy Demand Analysis Portal
EPC	Energy Performance Contracting	RSES	Regional Spatial and Economic Strategy
EPO	Energy Performance Officer	SDCC	South Dublin County Council
ERA-Net	European Research Area Network	SDDH Co	South Dublin District Heating Company
ESCo	Energy Service Company	SEA	Strategic Environmental Assessment
ETS	Emissions Trading Scheme	SEAI	Sustainable Energy Authority of Ireland
EU	European Union	SECAP	Sustainable Energy and Climate Action Plan
FCC	Fingal County Council	SEDA	Spatial Energy Demand Analysis
GHG	Greenhouse Gas	SEU	Significant Energy User
		TDHS	Tallaght District Heating Scheme





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