Submission to the Draft National Energy and Climate Plan 2021-2030

Report prepared by Codema - Dublin's Energy Agency

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Background

Codema is Dublin's Energy Agency and was founded in 1997 as a not-for-profit limited company. We are the energy adviser to the Local Authorities in Dublin; our role is defined around the core function of supporting the local authorities in their own sustainable energy use. A second role is engaging with EU and nationally funded energy programmes to bring innovation to the Dublin region. A third and increasingly important role is to increase energy awareness among the citizens and energy stakeholders in Dublin. Over the years, these three strands have become increasingly intertwined and integrated into a comprehensive local and regional service for energy and climate change. Examples of Codema's work include district heating system analysis, energy performance contracting, management of European projects, energy saving behavioral campaigns, detailed energy reviews and energy masterplanning. Codema is well networked in Europe and has been very successful in bringing European projects to Dublin with a local implementation for the Local Authorities.

Context

Codema welcomes the opportunity to make a submission to this consultation process. Codema's interest in the National Energy and Climate Plan stems from our ongoing analysis of energy use and climate change in the Dublin region, our experience in reducing energy, fossil fuel use and associated costs, and particularly our work on **district heating, energy masterplanning and climate change mitigation and adaptation planning**. We have 20 years' experience in the climate change and energy sector, specifically in how EU and national legislation will affect the DLAs activities and how they can future proof their areas of governance to both mitigate and adapt to the effects of climate change. Codema is currently in the process of finalising Climate Change Adaptation and Mitigation Action Plans for each DLA and creating the first regional Energy Masterplan in Ireland for the Dublin Region.

Codema are the leading agency in the area of District Heating in Ireland, in terms of both research, technical knowledge and practical planning, contracting and implementation of large scale schemes. We are working directly with the Dublin local authorities to roll out the largest schemes in the country, and we hope our knowledge of this sector can help to positively shape the NECP heating sector policy and targets.

Response to Consultation

Codema's response to this consultation will concentrate on our areas of expertise in energy and climate change, and therefore a response to every section or every topic is not intended.

General Comments

Firstly we would like to outline the difficulties following the structure of the Draft NECP report; it was very difficult to follow the structure of the report without a summary, introduction or table of contents, and we had to establish our own table of contents in order to coordinate our submission response. While we understand the department is currently under-resourced, the ad-hoc way the report is structured will certainly limit the ability for coherent responses from the public to this consultation, not to mention making the DCCAE's job more difficult to incorporate submissions into the final plan.

This plan is a gathering of all actions and policies from other already published plans. The purpose of the National Energy and Climate Plan is to set out a roadmap with trackable actions that will bring Ireland up to both 2030 and 2050 commitments. It sets out and describes in detail different plans, but doesn't seem to include information on the actual NECP itself, therefore it is quite difficult to understand what the NECP aims to do. It also does not explain how or if the NECP will overlap with the recently announced "All of Government Plan for Climate Disruption" or the Joint Oireachtas Committee's work with the Citizens Assembly.

Given the plan is supposed to include both Energy and Climate policy, **we feel there is a distinct lack of *climate* policy**, and a concentration only on the energy sector. All leading EU research and best-practice points to integrating energy and climate change planning; this is the reason why it is not called the National Energy Plan.

Given that the NECP is simply an amalgamation of all existing policies already sanctioned by government, it is difficult to see how the submissions from this consultation will effect the development of the NECP or how it will outline Ireland's plan to actually reach 2030 targets, unless there are plans for the introduction of new policies before the NECP is to be finalized by end December 2019.

Heat Sector Targets and Policy

Realistic price of Carbon

One of the biggest barriers, when evaluating the feasibility of any CO_2 saving energy projects is the price of the alternative fossil-fuel based system. **An effective levy on CO_2 that reflects the actual costs to society needs to be introduced immediately**. We would also urge DCCAE and the government to ensure this is introduced and delivered with consumer acceptance as the highest priority; the IIEA have produced many studies on the potential ways a carbon levy could be introduced, and importantly how the revenue from such a levy can be distributed.

Underestimation of District Heating potential

The NECP uses the results of **one** national level study[1] on the viability of district heating and cooling in Ireland as the basis of their assumptions on the potential for district heating in Ireland. There is no other energy policy in the NECP that has been based solely on the results of one, non-peer reviewed report. **The decision on how an energy technology should be supported to 2030 cannot be based solely on the results of one report**.

The ambition of 0.12 TWh from DH should be substantially increased under the "National Targets in the NECP" and the potential should be updated in Section ii of "4.3 Dimension Energy efficiency" entitled "Current potential for the application of high-efficiency cogeneration and efficient district heating and cooling.

This section states that "In virtually all areas, alternative low carbon technology options at a building scale, such as heat pumps, can provide a more cost effective heat source than heat networks".

[1] AECOM report carried out to comply with Article 14 of EE Directive

Codema feasibility studies have shown this is not true for schemes examined in Dublin and also in areas outside of Dublin.

Codema, along with 13 other companies, are founding members of the Irish District Energy Association (IrDEA). IrDEA is currently developing **Ireland's first All-Island heat atlas** and preliminary results show that ~30% of buildings in Ireland are located in areas suitable for district heating.

This heat atlas is being developed by Europe's leading researchers in the field of heat demand and heat source mapping, which uses peer-reviewed methodologies that have been developed and refined for over 5 years through the Heat Roadmap Europe project, and corroborated using actual measured heat demands in cities & towns across the EU. The results of the Irish Heat Atlas will be available before summer 2019. The results of this study need to be considered in the NECP.

Previous Codema heat mapping has found that "Using the same thresholds for DH viability typically used by Danish energy planners in their own municipality areas, over 75% of the small areas in Dublin City would be classified as suitable for DH"[2]: this equates to approximately 4 TWh which shows there is scope to grow well beyond the 0.12 TWh target in the NECP.

This type of planning policy is already outlined and supported in the Eastern and Midland Regional Assembly's Draft Regional Spatial & Economic Strategy; e.g. policy RPO 7.34 "**EMRA shall, in conjunction with Local Authorities in the Region, identify Strategic Energy Zones** as areas suitable for larger energy generating projects, the role of community and micro energy production in urban and rural settings and the potential for renewable energy within industrial areas" and RPO 7.37 "Local Authorities shall consider the use of **heat mapping to support developments which deliver energy efficiency and the recovery of energy that would otherwise be wasted**. **A feasibility assessment for district heating in Local Authority areas shall be carried out and statutory planning documents** shall identify local waste heat sources."

Waste Heat – huge resource currently completely ignored in Irish energy policy

A recent peer-reviewed scientific paper estimated that there is 102 PJ/year of excess heat in Ireland, which is a by-product of power plants, waste incineration, and industrial processes. In comparison, the total heat demand in all Irish buildings was calculated in the same paper as 117 PJ/year.[3]

This excess heat study is also limited to sources of high temperature waste heat, when there are also multiple sources of lower exergy heat available in close proximity to heat demands, such as waste water treatment plants, data centres and service sector buildings, that can be utilised, particularly when looking at heat supply of buildings with improved energy efficiency. For example, the first DH scheme in Dublin will be heated from waste heat from a Data Centre in Tallaght, which is supplying 4MW of waste heat just from its latest extension. The data centre sector in Ireland is growing substantially, and as an example a midsize data centre with 1 MW IT load releases 3,700 MWh thermal energy per year into the atmosphere (equivalent to around 0.46 MWhth of waste energy/MWh of electricity consumed by the data centre)[4]. Codema research has shown that, **there is 343MW of**

[2] http://www.codema.ie/images/uploads/docs/Dublin_City_Spatial_Energy_Demand_Analysis_June_2015.pdf
[3] U. Persson, B. Möller, and S. Werner, "Heat Roadmap Europe: Identifying strategic heat synergy regions," Energy Policy, vol. 74, no. C, pp. 663–681, Nov. 2014.
[4] Source: ReUseHeat project at https://www.reuseheat.eu/data-centres/

waste heat available just from planned and existing data centres in Dublin alone, and these centres run 24/7.

From Codema's research into the waste heat potential in the Dublin region, there is **2,358 MW of zero-carbon waste heat already available that is currently not being used**, over half of this is available from existing power stations and industrial processes. The **equivalent annual market value of this heat is €1.2 billion**. The potential value to the heat suppliers for their **waste product is €410m**. This is money that will be paid to local business for indigenous energy that will **off-set the equivalent gas import dependency and increase security of supply**.

Waste heat needs to be considered in the NECP, as it is in most other European countries, as a way to reduce emissions in the heating sector, and reduce reliance on imported fossil fuels.

Individual small-scale Heat Pumps

When evaluating the cost effectiveness of heat sources, all costs of delivery need to be taken into account in order for fair comparison, which is particularly relevant when comparing the costs of full DH schemes (energy centre plus network plus customer heat substations). Heat pumps for instance will electrify heat but moving the thermal demand to the electrical grid from gas or oil supply has a cost to the wider electrical network such as new substations, HV networks, generation capacity etc. The additional cost of these electrical grid upgrades is significant and should be included in any economic comparison of HPs implementation on a large scale compared to district heating.

We agree that large scale deployment of small-scale domestic heat pumps are needed, in areas where other low-carbon systems like DH are not suitable. In order to get closer to meeting the 2030 CO2 reduction targets, the NECP proposes 170,000 heat pump retrofits to households under 'additional measures'. Given the 16 heat pumps installed in the first 8 months of the better energy homes program, we feel the assumption that 20,000 heat pumps installed by 2021 is hugely optimistic with current programs and delivery mechanisms.

For further enquiries regarding this submission, please contact Donna Gartland, Senior Energy Planner at Codema, at donna.gartland@codema.ie