

Consultation on the Introduction of a Renewable Heat Obligation

Response by the Irish District Energy Association - 29/10/21



Background

The Irish District Energy Association (IrDEA) is the trade organisation representing the district heating and cooling (DHC) sector in Ireland. We act on behalf of our members to support and promote the growth of the DHC industry, creating a new heating market for Ireland which offers greater opportunities to utilise indigenous low-carbon and renewable sources of heat.

Dubbed 'central heating for towns and cities', district heating is a network of insulated pipes that delivers heat from a central energy source to provide space heating and hot water to buildings. It has the flexibility to combine multiple locally-available, renewable heat sources and it can also recycle surplus heat from applications such as electricity generation, industrial processes, data centres and breweries.

District heating has many economic, environmental and social benefits, such as carbon reduction, reduced maintenance costs, increased comfort and reduced fuel poverty. Local authorities, building developers, building managers and customers can all benefit from the development of a district heating network in their area, as illustrated below:

- Easier integration of renewable and low-carbon heat sources without disruption to customers/home owners as access to each individual dwelling is not required
- Lower local air pollution as buildings fossil fuel boilers would no longer be required
- Facilitates utilisation of indigenous low-carbon resources which would not make sense at a smaller (individual building) scale such as deep geothermal and industrial waste heat resources – leading to more efficient operation of both industrial plants and heat production and supporting a more circular economy
- Provides storage and demand side response for the electricity grid at a fraction of the cost of battery storage when supplied by large-scale heat pumps, electric boilers etc. This also facilitates greater production of renewable electricity (e.g. curtailment of wind turbines can be reduced) due to the flexibility provided by this thermal storage capacity.
- Increased customer safety as there is no risk of gas leaks or carbon monoxide due to on-site combustion of fuels

- Benefits local economy by providing low-cost heating to customers (reduced overheads) and residents (reduced fuel poverty), potential revenue from waste heat for local industries and providing new local employment in the construction, operation and maintenance of the network
- Efficient operation of heat production plants is ensured by constant monitoring, operation and maintenance being carried out by trained professionals – this is not possible with solutions located in individual homes where equipment is often not maintained to regularly achieve high operating efficiencies



Context

IrDEA and its members fully support the introduction of a Renewable Heat Obligation in Ireland and welcomes the opportunity to respond to this consultation. Supporting investment and development in renewable heat energy is a policy imperative for the national transition to a low-carbon, climate resilient and circular economy. Our interest in the proposed Renewable Heat Obligation scheme stems from our ongoing analysis of energy use and emissions from heating systems, and our conviction that district heating leveraging harnessing renewable and surplus heat sources is a key pathway for the development of cost-optimal heating technology pathways in urban centres in Ireland.

While renewable electricity supply will play a significant contribution in achieving net zero emissions by 2050, as stated in the current Programme for Government, it is clear that a significant gap exists when it comes to the decarbonisation of heat. Currently, heat represents circa 20% of all GHG emissions in Ireland and the share of renewable heat supply is only 6.3% compared to a 12% target for 2020, making it the worst performing sector behind both electricity and transport. Ireland is also the worst performing country in the EU in terms of renewable heat share .

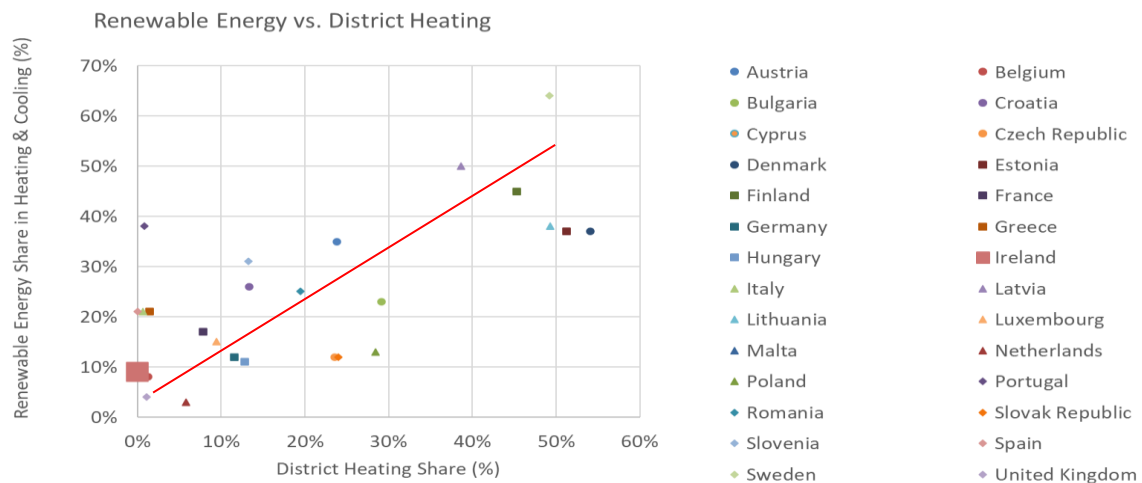
The IrDEA, under the umbrella of Renewable Energy Ireland, commissioned the '40 by 30' study which set out an ambitious and feasible target of 40% renewable heat share by 2030 – in line with the national 51% GHG reduction target by 2030. By displacing imported fossil fuels with renewable and sustainable energy resources, this development will not only tackle climate change but also provide a strong economic stimulus (+23,000 new permanent jobs). A copy of the report is available here:

<https://renewableenergyireland.ie/2021/05/renewable-energy-ireland-launches-countrys-first-heat-plan/>.

The '40 by 30' report shows that district heating is set to play a key role in decarbonising heat supply in Ireland and it calls for 10% of the heat requirement in buildings to be supplied by district energy networks by 2030. Longer term, the study indicates that 35% of the heat demand is at a sufficient heat density for district heating to be feasible with current technology, and another 21% would be feasible with the deployment of the most advanced heat network technology. Naturally, this submission focuses primarily on one of the cornerstones of a smart energy system, district heating and cooling (DHC) networks.

In our view, this can be achieved more cost-effectively than decarbonising the natural gas network with anaerobic digestion (which has limits based on feed stock availability) and other renewable gas options such as green hydrogen which is currently expensive to produce. This is evident from the progress made decarbonising heat in other EU countries: as outlined in the figure below, the EU countries with the highest shares of district heating are also the ones with the highest shares of renewable heat (Source: Heat Roadmaps Europe). This is something which Ireland urgently needs to replicate.

In the context, IrDEA encourages the Irish Government to strengthen its commitment and policy-framework to support the deployment of renewable and surplus heat¹ with district heating. This response was prepared in coordination with CODEMA, a founding member of IrDEA, and Renewable Energy Ireland, of which IrDEA is a member.



¹ Surplus heat resources include excess heat from power generation plants, data centres, industrial plants' thermal processes, waste-to-energy plants, etc. as well as excess renewable electricity available when intermittent resources such as wind energy are curtailed. Surplus heat has 'equivalent' status as renewable heat under the EU Renewable Energy Directive (REDII).

General Comments

Eligibility District Heating Networks to Earn RHO Credits

We welcome the approach outlined in the consultation where “it is not proposed that district heating systems using waste heat/renewable heat would be subject to the obligation”. However, as an enabling infrastructure which supplies homes and businesses with renewable and/or waste heat that can contribute to Ireland's renewable heat targets, district heating pipe networks themselves are currently not supported under any existing support schemes outlined in this consultation (certain types of heat production plants are supported through the SSRH but the network installation, heat substations, thermal energy storage, or waste heat collectors etc. of a DH system are not). **Were DH networks able to earn credits for the renewable heat or waste heat they supply to their customers, this could provide a supplementary means of financing this critical low-carbon infrastructure through private rather than public investment.**

The Renewable Heat Obligation should allow credits to be earned by DH systems which utilise waste heat that cannot be used on site and therefore is normally lost to the environment (typically dumped into waterways or vented to atmosphere). This waste heat can be reused to heat nearby local homes and businesses via district heating network infrastructure. **Waste heat is often lower carbon than renewable heat sources such as heat pumps and should be considered eligible for credits.** This would also bring the RHO in line with the EU Renewable Energy Directive² (RED) Articles 15 and 23 which acknowledges waste heat as being on a par with renewable heat and allows waste heat use via heat networks to contribute to member states renewable heating targets.

These DH networks are ready for investment. DH networks **are already being developed in Ireland, are a proven technology (providing more than 90% of heat in cities like Copenhagen and Stockholm) and have more of the structures in place to facilitate scaling of renewable heat roll-out sooner and are more efficiently than alternatives** such as a green hydrogen.

Eligibility of Deep Geothermal Heating

Greater clarity should be provided regarding the eligibility of Deep Geothermal heat to earn RHO credits. Unlike shallow geothermal, deep geothermal does not require heat pumps to achieve usable temperatures. Deep Geothermal is not currently supported under the SSRH scheme which supports only heat pumps and biomass installations. Also, Deep Geothermal systems have a much higher heating efficiency (typically ten times more efficient than heat pumps) and would not experience any material support from electricity-based supports. Therefore, **Deep Geothermal systems should be eligible to earn RHO credits in the absence of support from other existing support measures like the SSRH.**

Clarity About How the RHO Market Will Operate

It would be beneficial to understand how this market may operate in practice:

- Are there advantages for potential bulk credit earners like DH networks in terms of covering the admin cost of engaging in such a market compared with smaller individual renewable and waste heat traders

² <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001&from=EN>

- What verification is required to earn credits?
- A certain level of assurances will need to be in place in relation to securing RHO credits in order to leverage investment in renewable and waste heat technologies. What level of verification is required for credits to be assured?
- It should be noted that the process of tracing and verifying renewable and waste heat sources is much easier when these sources are located within Ireland, as is the case with a local heat system that utilises indigenous sources like a district heating network.

Responses to Consultation Questions

Q1: Do you think that a Renewable Heat Obligation is an appropriate measure to introduce?

The RHO is a welcome measure, but is not a silver bullet for the sector, and has to be only one of the ways the Government should support and incentivise the increase in renewable heating in Ireland. It is well-known and proven by other member states that increased carbon taxes on fossil fuels used for heating is a key driver, increasing the business case to switch to alternative renewable energy sources.

The RHO will need more ambitious targets that reflect the targets set in relevant policy such as the Programme for Government, Carbon Budgets, National Heat Studies, etc. in order to contribute significantly to the uptake of renewable heating. Appropriate targets are discussed as part of questions 9 and 10.

Q2: If not, what alternative measures would you consider appropriate to increase the use of renewable energy in the heat sector?

The eligibility of district heating networks which utilise renewable and waste heat sources to earn credits provides a significant opportunity. These networks are already being developed and are further ahead in terms of delivery and scalability when compared with solutions like green hydrogen. This can be seen through the number of heat networks already operating in Europe (more than 5,000 networks) and the systems already being delivered in Ireland. These systems can also contribute significantly to Ireland's renewable heating targets as set out in the Renewable Energy Directive.

Q3: Do you agree that the obligation should apply to all non-renewable fossil fuels used for heating as set out above?

Yes

Q4: It is intended that electricity used for heating purposes and renewable/waste district heating systems would be exempt from this obligation, do you agree with this approach?

We agree with this approach where “it is not proposed that district heating systems using waste heat/renewable heat would be subject to the obligation”. See ‘General Comments’ above for relevant observations.

Q5: Do you agree that the portion of fossil fuel input used in CHP plants to generate heat would be considered to be part of the obligation?

Yes, this cost should then be passed on to the consumer via the primary product of the power plant, the electricity.

Q7: Is the 400 GWh of energy supplied an appropriate level for a supplier to become obligated?

It is important to include requirements that all parent companies need to be included when calculating the quantity of fossil fuels supplied. This would prevent large fossil fuel companies from splitting into subsidiaries for the purpose of avoiding this threshold. Also need greater clarity around whether this energy threshold is referring to the energy in the fuel based on the Gross Calorific Value. The assumption is that this 400GWh figure is an annual figure, it may be good to confirm this in the RHO consultation text.

This threshold of 400GWh roughly translates to the heating provided to approximately 27,000 Irish homes³. This could have the potential to exclude many heating oil suppliers. With heating oil having a larger carbon emissions factor and representing the largest proportion of the fossil fuel mix for heating in homes (at 37% compared to the next biggest, gas at 21%) it seems that a significant proportion of the fossil fuel market for heating may not be subject to this obligation. Further research may be done in this area in relation to the size of heating oil suppliers in Ireland and whether they would be subject to this obligation.

Q8: Do you agree with the 2023 start date for the obligation?

Given the urgency of the action needed to remain within our carbon budgets and ensure the greatest impacts of climate change are mitigated, this date should be brought forward as much as possible. We have technology now that can be invested in in the short term. District heating networks which utilise renewable and waste heat sources is one such technology. Delaying obligations in the short term kicks the can down the road when there are technologies ready to invest in now.

Q10: In terms of ambition for a 2030 target, what level of ambition do you think is appropriate?

The Renewable Energy Ireland (REI) '40By30' report details that Ireland has the renewable resources to meet more than the entire Irish heating demand. This report outlines that a 40% renewable heat target is achievable by 2030, therefore the levels of ambition for the RHO should reflect this target.

Q11: Do you agree with the first obligation period being multiple years 2023-2025 to give the industry time to develop supply lines?

The majority of renewable heat technologies are already proven, and the market is ready to react to such an incentive which is less burdensome in terms of bureaucracy compared to other existing incentives. Consideration should be given to supporting renewable heating from any installation which has been built in the last 5 years, to improve economics and encourage expansion.

³ Assuming 14.8MWh of heating fuel consumed per dwelling

Q12: Once the first period 2023-2025 expires, do you agree with the obligation then becoming an annual obligation?

The obligation should become annual as soon as possible and should follow trajectories in line with national heat plans such as the 40 by 30 report developed by Renewable Energy Ireland.

Q13: Do you agree with suppliers being able to trade credits in order to meet their obligation?

Yes, but only trading of credits from within Ireland. Also these companies should be allowed to purchase credits from DH companies which use renewable or waste heat to provide heat to customers for the reasons outlined previously.

Q14: Do you agree with allowing 10% carry over of renewable credits to be used in the following year's obligation?

Allowing some carry over can be beneficial in the early life of the RHO scheme to provide a certain amount of flexibility when looking at step changes in terms of renewable heating roll out.

Q15: What are the sustainable energy sources likely to meet the Renewable Heat Obligation at an obligation rate of (i) 3%, (ii) 5%, (iii) 10% by 2030?

In the near term, DH networks which supply renewable and waste heat to customers via super insulated pipe networks will be available for fossil fuel suppliers to purchase renewable heat credits from. Biomethane also represents an opportunity in the medium term albeit at a higher cost than DH. Green hydrogen is unlikely to play a significant role within this time period due to multiple challenges it faces in terms of technical, efficiency, safety and production cost. Allowing waste heat supply credits to be eligible to meet the scheme's obligations would greatly incentivise the use of this largely untapped indigenous sustainable energy source.

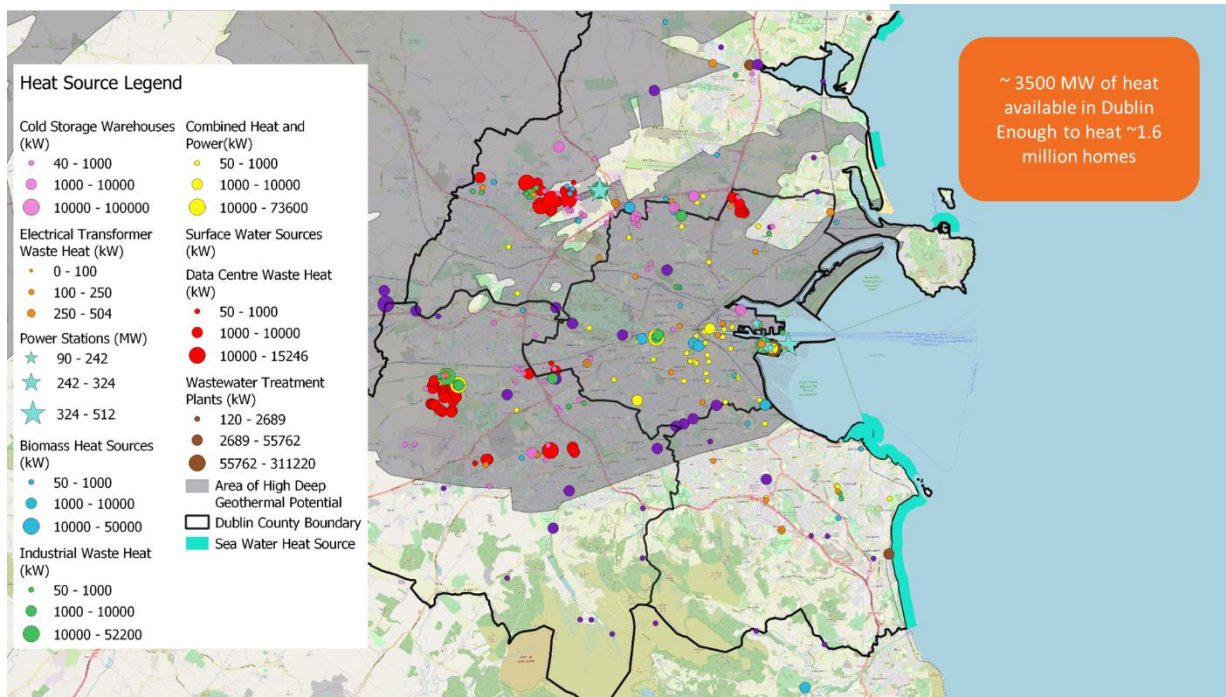
Q16: Will there be enough sustainable indigenous supply to meet this demand?

A recent report by Gas Networks Ireland and KPMG⁴ suggests that up to **17% of the current gas demand could be supplied by biomethane in the future. Between 50% and 60% of Ireland's heat demand could feasibly be supplied by DH networks** based on a 2019 study performed by Heat Roadmaps Europe⁵ and provisional results from SEAI's National Heat Study⁶. These DH networks will utilise renewable and waste heat which can contribute to Ireland's renewable heat targets as set out in the RED. **In Dublin alone there is enough waste and renewable heat - that is only viable for widespread use through DH networks - to heat 1.6 million homes (as shown in the map below).**

⁴ <https://www.gasnetworks.ie/biomethane-sustainability-report-2021.pdf>

⁵ <https://www.districtenergy.ie/heat-atlas>

⁶ SEAI National Heat Study final results are not currently published



Heat Source Map for District Heating (Source: Codema)

Q17: Do you agree that for renewable fuel delivered directly to a consumer that this will be the point of supply?

The RHO should not just cover fuel alone but also cover renewable and waste heat delivered to customers via insulated distribution pipes in a heat network which is transferred into their buildings via heat substation (heat exchanger).

Q18: Which option do you think should be applied for renewable energy that is indirectly supplied (e.g. via the natural gas grid)?

The option chosen should be equitable for the consumer i.e. whoever is paying for the RHO should receive the benefit. It comes back to how well can the renewable content be ensured at the point of delivery. It may not be possible to ensure different renewable contents for different consumers in line with their RHO payment contribution. If this is the case then Option B seems to more accurately reflect what is happening in reality. If with some fuels it's easier to ensure the renewable content then option A may be possible and in many cases may be preferable.

Q21: Do you agree with the intended position in relation to penalties for non-compliance?

Broadly agree with the approach. However, it may be useful for the fossil fuel price to also be considered in this calculation. If for example the spot gas prices are low for a period and the penalty is linked to the renewable fuel cost alone it could still be cheaper to not be involved in the RHO scheme from a fossil fuel companies perspective.

Q23: How best could the impacts on energy poverty be minimised?

The RHO obligation can be used to reduce energy poverty through initiatives such as the development of DH networks, fabric upgrades for dwellings where residents are most at risk to fuel poverty. Further

protections can be given to vulnerable consumers via alternative means via tax alleviation or social welfare payments.

Q24: Do you agree with the outlined approach for additional support for green hydrogen?

Green hydrogen should only be supported for use in certain applications where the heat supply cannot already be supplied more efficiently and more cost-effectively through renewable and waste heat sources. The use cases where green hydrogen may be supported are likely to include: Industry where it is used as a feed stock, high temperature heating where required temperature is greater 120°C, heavy transport (particularly shipping), long-haul aviation, and seasonal power storage. When it comes to lower temperature heating (less than 120°C) there are better alternatives already existing to providing heat at this temperature which are not subject to the same uncertainties around viability that green hydrogen.

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