HEAT PUMP SYSTEM GRANT BY THE SUSTAINABLE ENERGY AUTHORITY OF IRELAND (SEAI)

Country/region	**Ireland**
Type of E1st approach	Behind the meter – Investment rules
Energy carrier(s) targeted	Electricity for heat pumps (and heating oil, natural gas or solid fuels to be substituted with heat pumps)
Sector(s) / energy system(s) or end-uses targeted	Residential buildings (heating)
Implementing bodies	Sustainable Energy Authority of Ireland (SEAI)
Decision makers involved	Irish Government (Department of housing, planning and local government), homeowners (or landlords)
Main objective(s)	General objective: to meet renewable heating targets in the residential sector Complementary objective related to E1st: decreasing the heat loss of a building / dwelling before installing a new heat pump system to allow for it to perform effectively and avoid outsized heating supply. The adaptation of the building envelope prior to an investment decision gives priority to the efficient use of the heating installation.
Implementation period	04/2018 (ongoing)
Authors of the example	Janne Rieke Boll (BPIE)

The Irish government through the Sustainable Energy Authority of Ireland (SEAI) subsidises the installation of heat pump systems under the condition of a minimum energy performance of the building verified by a mandatory Building Energy Rating (BER, Irish transposition of the Energy Performance Certificates on EU level). In case the homeowner did not issue a BER in the past, a technical pre-assessment calculates the BER prior to a grant approval to assure the building's energy performance allows for a heat pump system to perform efficiently.

The design of the scheme requires the heat losses of the building envelope to be lower than a maximum Heat Loss Indicator (HLI) for the dwelling to be eligible to the heat pump grant, thus considering energy efficiency aspects prior to supply-side investments. The conditional payment of the subsidy determines the consideration of the E1st principle.

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1. Background

As part of its climate and energy targets for 2020, Ireland has set a sub-target of 12% renewable heat (RES heat) to help deliver the overall mandatory target of 16% renewable energy by 2020[1]. By 2017, the progress was a share of RES heat of about 6.9%[2] (SEAI 2019). While this represents a doubling of the share of RES heat between 2005 (3.4%) and 2017, it is still not on track. In 2016, Ireland was 27th out of the 28 EU countries for RES heat, with close to 80% of RES heat coming from solid biomass (mainly in industry). The use of ambient energy (through heat pumps) has grown ten-fold between 2005 and 2017 to reach approximately 13% of the RES heat consumed in Ireland in 2017. While two thirds of the increase in the share of RES heat between 2005 and 2017 came from an increase in the supply of RES heat, one third came from a decrease in the heat consumption.

> "*This highlights that greater energy efficiency in buildings helps Ireland to meet the national renewable heat target, as well as the binding overall RES target*" (SEAI 2019)

Ireland has indeed been implementing ambitious energy saving programmes in its residential building sector which is responsible for 23% of the country's final energy consumption (SEAI, 2018) to reduce GHG emissions. Space heating in Ireland is still mainly provided by oil (47%), gas (25%) and solid fuels (21%) (SEAI, 2018). The heat pump grant was introduced in April 2018 to increase the share of renewable heat and phase-out fossil-fuel heating systems while reducing heating bills and increasing home comfort levels. Currently about 6% of heating supply systems (around 108,000 units) in Ireland are replaced or upgraded per year (Keogh et al., 2019), while around 30,000 homes are renovated according to the National Development Plan 2018-2027.

The Irish Heat Pump System Grant has been supporting the market and technological development of heat pump systems for the past two years and is currently operational in all 31 local authorities of Ireland. For installed heat pumps to work efficiently, dwellings have to undergo a mandatory technical assessment of the respective building envelop to assure the energy performance of the building is suitable for a heat pump installation and no outsized heating system is applied. This assessment of the Building Energy Rating (BER) prior to an installation of the heating systems is an example of the energy efficiency first principle put into practice in the residential building sector.

The eligibility of the subsidy is dependent on a building heat loss of ≤ 2.0 Watts/Kelvin/m² (or 2.3 with some caveats) leading to close to 548,000 "heat pump-ready" (HLI of < 2.3) homes built before 2011 according to the national BER registry (Burton, 2019a).

[1] The Directive 2009/28/EC on the promotion of the use of energy from renewable sources set a mandatory overall renewable target for each Member State, but no mandatory target for renewable heat by 2020. The new Directive 2018/2001 requires Member States "*to increase the share of renewable energy in that sector by an indicative 1,3 percentage points as an annual average calculated for the periods 2021 to 2025 and 2026 to 2030, starting from the share of renewable energy in the heating and cooling sector in 2020, expressed in terms of national share of final energy consumption*" (see article 23).

[2] This excludes the share of renewable electricity used for heating or cooling.

2. How has the E1st principle (or similar concept) been implemented?

The Irish Heat Pump Grant is part of Better Energy Homes, a comprehensive government programme, being operational since 2011, that supports homeowners to improve the energy performance of their houses by subsidising several energy efficiency improvements and the installation of renewable heating systems. The Irish Government aims at accelerating the upgrade of existing buildings to 45,000 renovations per year from 2021 (National Development Plan 2018-2027) to achieve nationally binding energy efficiency and climate targets. Ireland committed to the goal of improving energy efficiency by 20% in 2020 and 16% renewable energies target (non-ETS CO_2 emission reduction target of 20% based on 2005) contributing to a cost-effective transition to a low-carbon economy in line with EU targets (Burton, 2019b).

The heat pump subsidy incentivises the replacement of old fossil-fuel fired boilers while assuring a minimum energy efficiency of the building. The eligibility criteria of the grant assure an efficient use of the renewable energy system as the technical prerequisites of a heat pump include a BER certification and may require building insulation works prior to the heat pump installation. The implementing body, SEAI, provides a registry of BER assessors as well as a list of registered contractors to ensure a high quality of the installation works. The technical energy performance assessment is subsidised by another 200€ under the grant.

3. Effects / impacts

In its first year (April 2018-April 2019), the scheme received 550 applications, representing a small share of the overall market of 108,000 units of heating systems replaced per year in Ireland.

An initial monitoring from 2019 found that the heat pumps systems that have been supported by the subsidy are mainly installed in detached single-family houses (75%) with an average size of 190 m² (Burton, 2019a). The “early adopters” were homeowners with houses built in the 1970s on average – half of the cases carried out building insulation works at the same time to fulfil the grant requirements. The average costs amount to 11,250 € including the grant of 3,500€ (Burton, 2019b). This high cost might be linked to the large average size of the participant homes.

4. Changes over time, if any

The scheme was introduced only recently, so no changes have occurred so far.

5. Barriers and success factors

Burton (2019a) highlighted several barriers to the successful implementation of the scheme:

- The limited capacity of SEAI certified contractors. More skilled workers will need trainings on the pre-assessment of heat pump installations to ensure an increased number of granted subsidies (Burton, 2019b).
- The mindset of installers has to adapt to do comprehensive pre-assessments prior to the installation of a heat pump. The installers are responsible for the required assessment of the energy performance requirements though they also have the possibility to outsource the process to a technical advisor who

is a trained BER assessor and can calculate the Heat Loss Indicator (HLI) and possibly recommend energy performance improvements such as wall, attic or floor insulation or the installation of double or triple glazed windows. The costs of the technical assessment are supported by 200€ adding to the 3,500€ subsidy for most heat pump systems (with an exemption for air-to-air pumps).

This shows that implementing the E1st principle in practice might require more cooperation between different trades and/or for professionals to acquire new skills.

Stakeholders, like the Heat Pump Association of Ireland (HPAI), welcome the introduction of the grant as an answer to the already growing demand of heat pumps in recent years (Colley, 2018). Especially the extension of eligible homes to houses built before 2011 is seen as an improvement compared to other schemes under the Better Energy Homes programme (Colley, 2018).

6. Replicability and scalability potential

The replicability of the grant is theoretically possible in other countries.

In other EU Member States subsidies for heat pumps are currently not connected to an energy performance requirement or a specific EPC (Energy Performance Certificate) level. In Germany, only the performance of a hydraulic adjustment is a mandatory requirement, while the French government incentivises the exchange of fossil-fuel heating systems leading to a fast deployment of heat pumps without any particular requirement on the energy performance of the building envelope.

Depending on the energy saving targets or a target of renewable heating systems in a country, the scheme may be adapted to the goals of the authorities. A high minimum energy performance standard of the eligible homes might slow down the uptake of heat pumps in the country while it can on the other hand accelerate energy savings and achieve energy efficiency targets.

The subsidy scheme is replicable to countries having an EPC system and registry in place to identify the eligible buildings or monitor the energy performance upgrades. An alternative can be to require an energy audit of the building when applying for the grant. Additionally, a pool of certified skilled-workers and an established training and qualification system ensures the high quality of the insulation works and heating installation carried out.

This type of approach is also replicable to other types of RES systems. For example, SEAI requires for a grant for solar PV that the energy performance of the dwelling after installing the PV panels must be BER C or better. SEAI also recommends the following to applicants for grants for solar water heaters: "*Before considering an investment in solar technologies, it is also important to assess the energy performance of the whole home*"[3].

[3] https://www.seai.ie/grants/home-energy-grants/solar-water-heating-grant/

7. Sources and references

Web sources:

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ABOUT ENEFIRST

Enefirst is a 3-year project funded under the Horizon2020 programme, which gathers a consortium of partners from across sectors and regions: IEECP, BPIE, Fraunhofer ISI, CEU, RAP, IREES, TU Wien.

From definition to implementation, enefirst will help making the "Efficiency First" (E1st) principle more concrete and operational, better understand its relevance for energy demand and supply and its broader impacts across sectors and markets, focusing on the building sector. "Efficiency First" (E1st) is a fundamental principle applied to policymaking, planning and investment in the energy sector, gaining visibility in European energy and climate policy.

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