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HVACR manufacturing in Taxonomy Climate Delegated Act

In a nutshell

The Taxonomy Climate Delegated Act recognises that the manufacture of energy efficient HVACR equipment is a sustainable activity that contributes to climate change mitigation. However, many HVACR products do not have Substantial Contribution Criteria because not covered by an EU Energy Labelling measure. In this paper, we put forward alternative energy efficiency benchmarks for products not covered by an EU Energy Label, so they can be assessed for Taxonomy-alignment as well.

Background

The most important aspect of environmental sustainability for most Heating, Ventilation, Air Conditioning and Refrigeration (HVACR) technologies is their (impact on) use-stage energy consumption. This is reflected in the Climate Delegated Act (Annex I – Mitigation, section 3.5), according to which the manufacture of energy efficiency equipment for buildings (including HVACR equipment) can be considered an enabling activity.

The Substantial Contribution Criteria in section 3.5 notably cover the following HVACR manufacturing activities:

> *(h) space heating and domestic hot water systems rated in the highest two populated classes of energy efficiency in accordance with Regulation (EU) 2017/1369 and delegated acts adopted under that Regulation; [...]*
>
> *(i) cooling and ventilation systems rated in the highest two populated classes of energy efficiency in accordance with Regulation (EU) 2017/1369 and delegated acts adopted under that Regulation; [...]*
>
> *(k) heat pumps compliant with the technical screening criteria set out in Section 4.16 of this Annex;*

For some energy efficiency equipment, numerical thresholds are written directly into the legal text, such as specific U-values for windows and doors. As seen above, for HVACR equipment, the Substantial Contribution Criteria (h) and (i) refer to the EU Energy Label for thresholds.

HVACR equipment with an EU Energy Label includes:

- air conditioners <12kW (Regulation (EU) 626/2011)
- residential ventilation units (Regulation (EU) 1254/2017)
- refrigerators with a direct sales function (Regulation (EU) 2019/2018)
- water heaters (Regulation (EU) 812/2013)
- space and combination heaters (Regulation (EU) 811/2013)

Problem statement

The reference to Energy Labelling leaves a lot of HVACR equipment without Substantial Contribution Criteria, as they are not covered by an Energy Labelling measure. Energy labels are usually reserved for B2C products. B2B products cannot be assessed against these criteria.

There is otherwise no reason why the manufacture of these B2B technologies should not be considered an enabling activity, according to the logic of section 3.5, as long as they meet high energy efficiency thresholds analogous to the top EU Energy Label classes. These alternative energy efficiency thresholds could be written into, or referred to in, the revised Climate Delegated Act. They should be based on well-established, recognised and credible references, including, where available:

- EU Ecodesign requirements
- ISO or EN standards
- Pan-European third-party certification programmes
- Any other benchmarks or classifications

Below, Eurovent puts forward alternative energy performance benchmarks for selected products to be included in the Climate Delegated Act so they can be assessed for Taxonomy alignment as well.

It is important to better cover HVACR manufacturing activities in the Climate Delegated Act, as the potential for energy savings and emission reductions from using more energy efficient HVACR equipment is significant. To help steer the market towards more energy efficient solutions and stimulate investment in energy efficiency innovations, HVACR manufacturers need ways to valorise these activities in their sustainability reporting.

Suggested efficiency metrics and benchmarks for HVACR equipment not covered by EU Energy Label

Product category	Ecodesign measure	Efficiency metric(s)	Efficiency benchmark(s)
Non-residential ventilation units	Regulation (EU) No 1253/2014	As per Regulation (EU) No 1253/2014: - thermal efficiency (η_{t_nrvu}) of the heat recovery system - internal specific fan power of the ventilation components (SFP_{int}), in W/(m^3/s) Assessed in accordance with EN 13053.	TBD. Alternatively, the Eurovent Certified Performance (ECP) programme for Air Handling Units defines Energy Efficiency Classes (A+ to E). The top two classes set the benchmark.
Fans	Regulation (EU) 2024/1834	As per Regulation (EU) 2024/1834: - fan efficiency (η) in relation to the fan type and corresponding minimum efficiency grade (N) Assessed in accordance with EN ISO 5801.	Recommended efficiency benchmarks are defined in Eurovent 14/1, table 3.
Cooling-only rooftop units; Cooling-only air conditioners >12 kW; Cooling-only comfort chillers.	Regulation (EU) 2016/2281	As per Regulation (EU) 2016/2281: - seasonal space cooling energy efficiency ($\eta_{s,c}$) Assessed in accordance with EN 14825.	TBD.
High temperature process chillers	Regulation (EU) 2016/2281	As per Regulation (EU) 2016/2281: - seasonal energy performance ratio (SEPR) Assessed in accordance with EN 14825.	TBD.

Low temperature process chillers	Regulation (EU) 2015/1095	As per Regulation (EU) 2015/1095: - seasonal energy performance ratio (SEPR) Assessed in accordance with EN 14825.	TBD
Condensing units	Regulation (EU) 2015/1095	As per Regulation (EU) 2015/1095: - seasonal energy performance ratio (SEPR) Assessed in accordance with EN 14825.	TBD
Cooling towers	No	Thermal energy efficiency, which is the ratio of heat rejection over fan power at standard conditions. Assessed in accordance with Eurovent 9/12 and EN 14705.	Recommended thermal energy efficiency benchmarks are defined in Eurovent 9/12, tables 1 to 3.
Refrigeration heat exchangers	No	Energy ratio (R), which is the ratio of nominal capacity over fan power at standard conditions. Assessed in accordance with Technical Certification Rules of the Eurovent Certified Performance Mark for Heat Exchangers (ECP 02 HE), and based EN 327, EN 328, and EN 1048.	The Eurovent Certified Performance (ECP) programme for Heat Exchanger defines Energy Efficiency Classes (A+ to E) based on the energy ratio. The top two classes set the benchmark.
Air filters for general ventilation	No	Annual energy consumption (W) related to the filters' pressure drop, in kWh.	The Eurovent Certified Performance (ECP) programme for Air Filters defines Energy Efficiency

		Calculated in accordance with Eurovent 4/21 or Eurovent 4/24, based on ISO 16890 test results.	Classes (A+ to E) based on annual energy consumption. The top two classes set the benchmark.
Fan coil units	No	Fan Coil Energy Efficiency Ratio (FCEER) in cooling mode and Fan Coil Coefficient of Performance (FCCOP) in heating mode. Calculated in accordance with Technical Certification Rules of the Eurovent Certified Performance Mark for Fan Coil Units (ECP FCU), based on EN 1397 test results.	The Eurovent Certified Performance (ECP) programme for Fan Coil Units defines Energy Efficiency Classes (A to E) in cooling or heating based on FCEER and FCCOP. The top two classes set the benchmark.
Air distribution components	No	Air leakage flow rate per unit surface area, in $m^3/(s \cdot m^2)$. Air leakage and energy efficiency are inversely related: the lower the air leakage, the lower the impact on energy consumption of the system, and the more energy efficient the component.	For ducts and ductwork components, air tightness classes are defined in EN 12237, EN 1507, EN 17192 and EN 15727. The top air tightness class sets the benchmark. For dampers and valves used in air distribution systems, air tightness classes are defined in EN 1751. The top two air tightness classes set the benchmark.

Clarification on the top two populated Energy Label classes

As seen above, for HVACR equipment, the Substantial Contribution Criteria (h) and (i) refer to the EU Energy Label for thresholds. To meet the criteria, the product manufactured must be in the "*highest two populated classes of energy efficiency*" of the Energy Label.

This criterion is unambiguous insofar as the highest populated classes can be easily identified on EPREL. Moreover, it is important that the TSC clarify that classes have to be *populated*, as new and rescaled energy labels will usually leave the top class(es) deliberately vacant to make room for innovations and improvement.

That said, the current wording poses a challenge: if even a single new product model is declared in a higher, previously unpopulated class, that class may thereafter have to be considered populated. This means that a single product declaration can trigger a complete revaluation of Taxonomy reporting for the whole sector, even if this new product has no significant sales or market presence.

We therefore propose to amend the wording to "*highest two significantly populated classes of energy efficiency*". This is the wording used in the Energy Labelling Regulation (EU) 2017/1369 itself, where it obliges Member States to target financial incentives for products at those with the "*highest two significantly populated classes of energy efficiency*" in Article 7(2).

Clarification on the scope of section 3.5

Currently, HVACR equipment manufacturing is included in Annex I – Mitigation, section 3.5 – 'manufacture of energy efficiency equipment for buildings'. However, the same equipment can also be used in other applications, e.g. in industry, data centres, etc. The products are the same and the efficiency metrics are mostly the same, only the application is different.

Moreover, the most relevant NACE codes for HVACR equipment manufacturing are not listed in the description of the activity in section 3.5. These could be added.

Relevant NACE codes:

- **28.21** Manufacture of ovens, furnaces and permanent household heating equipment, incl.:
    - manufacture of household cooling and ventilation equipment
    - electric household-type heat pumps
    - non-reversible heat pumps, used for space heating or for domestic hot water supply

- **28.25** Manufacture of non-domestic air conditioning equipment, incl.:
    - refrigerating or freezing industrial equipment
    - air-conditioning machines
    - non-domestic fans
    - heat exchangers
    - evaporators and condensers for non-domestic refrigerators
    - reversible heat pumps
    - devices for changing both the air temperature and humidity

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