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EPB Center contribution to Commission Notice C/2024/6206[1] 18.10.2024 on phasing out financial incentives for stand-alone boilers powered by fossil fuels under the recast EPBD

Expert opinion formulated by EPB Center's group of EPB experts
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1. Introduction

The Commission notice provides guidance on Article 17(15) of the recast EPBD. It aims to support a **better understanding** of the EPBD provisions and to facilitate a **more uniform and coherent application**. **Only the recast EPBD itself has legal force**. The Member States have **flexibility** to interpret and specify the EPBD provisions **within the legal frame of recast EPBD**. This document is a contribution to the Commission's notice. It contains a **summary analysis** of the Commission notice, **comments** and **recommendations.**

2. Summary analysis of the Commission guidance proposal

The EPBD requires in **Article 17(15)** that "**Stand-alone boiler powered by fossil fuels**" should **not be subsidised** from January 2025 onwards. **Recital 14** states that "**hybrid heating systems with a considerable share of renewable energy**" should still **have the possibility to get financial incentives**.

The Commission guidance propose that:

- ✓ **A stand-alone boiler** is **powered by fossil fuels,** if the **fuel mix in the gas grid,** at the **moment of installation** of the boiler **contains predominately fossil fuels.** For **off-grid boilers** the Member States need to verify in a **robust** and **credible manner** that the unit will operate on renewable fuels at the time of installation and also over its lifetime.
- ✓ For **hybrid heating system** the **considerable share of renewable energy** should be **defined by the Member States.**

2.1 Comparison of CO_2 emission for 1 kWh energy input of the different heat generators

The CO_2 emissions of several heat generation systems are as follows (from most emitting to less emitting):

1) **Boiler coal fired**
   Efficiency 80%, CO_2 emission 360 gCO_2/kWh (source EN ISO 52000-1): gCO_2/kWh = (1/0,805) x 360 = **450,0 gCO_2/kWh**
2) **Boiler oil**
   Efficiency 90%, CO_2 emission 290 gCO_2/kWh (source EN ISO 52000-1): gCO_2/kWh = (1/0,90) x 290 = **322,2 gCO_2/kWh**
3) **Boiler electrical (not covered by Article 17(15))**
   Efficiency 100%, CO_2 emission 251 gCO_2/kWh (source EU average 2022): gCO_2/kWh = (1/1,0) x 251 = **251,0 gCO_2/kWh**
4) **Boiler natural gas**
   Efficiency 95%, CO_2 emission 220 gCO_2/kWh (source EN ISO 52000-1): gCO_2/kWh = (1/0,95) x 220 = **231,5 gCO_2/kWh**

[1] https://energy.ec.europa.eu/news/commission-issues-guidance-phasing-out-financing-stand-alone-fossil-fuel-boilers-2025-2024-10-17_en

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5) **Hybrid system (fossil fuel coal boiler + heat pump) with a considerable share of renewable energy (50%)**
   Fossil fuel coal boiler 30% of energy input, Heat pump 70%: gCO_2/kWh= 0,3 x 450,0 + 0,7 x 69,7 gCO_2/kWh= **183,8 gCO_2/kWh**
6) **Boiler gas mix**
   (50% Bio methane, 50% natural gas): gCO_2/kWh = 0,5 x 46,3 + 0,5 x 231,5 = **138,9 gCO_2/kWh**
7) **Hybrid system (fossil fuel gas boiler + heat pump) with a considerable share of renewable energy (50%)**
   Gas boiler 30% of energy input, Heat pump 70% of energy input: gCO_2/kWh= 0,3 x 231,5 + 0,7 x 69,7 gCO_2/kWh= **118,2 gCO_2/kWh**
8) **Heat pump electrical (not covered by Article 17(15))**
   Efficiency 360%, CO_2 emission 251 gCO_2/kWh (source EU average 2022): gCO_2/kWh = (1/3,6) x 251 = **69,7 gCO_2/kWh**
9) **Boiler bio methane**
   Efficiency 95%, CO_2 emission 44 gCO2/kWh (source France): gCO_2/kWh = (1/0,95) x 44 = **46,3 gCO_2/kWh**
10) **Target 2050? 30 gCO_2/kWh?**

Table 1. CO_2 emissions of several heat generation systems in brief (from most emitting to less emitting

1) Boiler coal fired	2) Boiler oil	3) Boiler electrical	4) Boiler natural gas	5) Hybrid system	6) Boiler gas mix	7) Hybrid system	8) Heat pump electrical	9) Boiler bio methane	Target 2050?
450,0 gCO2 /kWh	**322,2 gCO2 /kWh**	**251,0 gCO2 /kWh**	**231,5 gCO_2 /kWh**	**183,8 gCO_2 /kWh**	**138,9 gCO_2 /kWh**	**118,2 gCO_2 /kWh**	**69,7 gCO_2 /kWh**	**46,3 gCO_2 /kWh**	**30 gCO_2 /kWh?**

This shows the **CO_2 emissions mostly depend on the energy carrier** and not on the technology. The **most CO_2 emitting heating device** is the **coal fired boiler.** The **100% bio methane boiler** has the **lowest CO_2 emissions**.

According to the Commission draft guidance document, the **bio methane boiler**, emitting the less CO_2 (46,3 gCO2/kWh), might **not be subsidised**, whereas the **electrical boiler** (251 gCO_2/kWh), or a **coal boiler - heat pump hybrid system 5** (183,8 gCO_2/kWh), might **be subsidized**.

These provisions are questionable with regards to the **decarbonisation target**.

The examples also show that by **applying the draft Commission guidance rules** with the **same share of renewables** (50% of minimum part of renewable energy) **different CO_2 emission** may be reached:

- Hybrid system: fossil gas boiler (30%) – heat pump (70%) **118,2** gCO2/kWh
- Stand-alone boilers: gas mix 50% renewables, 50 fossil fuel **138,9** gCO2/kWh
- Hybrid system: coal boiler (30%) – heat pump (70%): **183,8** gCO2/kWh

Therefore, when dealing with financing schemes, not only the part of renewables (ratio renewables / fossil fuels) should be considered, but also the CO_2 emissions.

2.2 How to determine the "minimum part of renewable energy" in the fuel mix?

For **stand-alone boilers** the draft Commission guidance states, "*Whether a gas boiler is considered as powered by fossil fuels depends on the **fuel mix in the gas grid** at **the moment of installation** of the boiler*".

If this rule is applied, **only few bio methane boilers could be subsided** because at this moment the % of bio methane in the gas grid is still low.

The consequence would be that the less emitting technology, and an important renewable energy source potential, would be excluded from the decarbonisation of heating systems.

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In **recast EPBD there is no requirement** how the **energy should be delivered and counted**. For example, delivered via the public grid, via a dedicated distribution network, via road transport (oil, LPG), from an energy community via a contractual agreement, etc.

Article 11 (7b) states that energy from renewable sources provided from a **renewable energy community** are contributing to fulfil the requirement of zero emission buildings. The energy from the **renewable energy community** is **not delivered** to the end user via a **dedicated grid** but based on a **contractual agreement.** This is also the **case for off-grid boilers (oil, LPG)**.

In some countries, e.g. Germany, the **contractual agreement** between the building owner and the energy supplier is admitted fulfilling the requirements on renewable fuels (e.g the 65% of renewables requirement). In France, contractual agreements are worked out to ascertain the **traceability,** the **sustainability over time** and to **avoid double counting.**

The **contractual agreement** is in **line with the draft Commission guidance** stating, "*Member States need to verify whether a boiler is "powered by fossil fuels" on the basis of a **robust, credible and forward-looking monitoring** to **ascertain that the unit operates on renewable fuels at installation and over its lifetime"*. Such monitoring could be part of the **regular on-site heating system inspections, bills** or other types of verifications.

3. Comments and recommendations on the draft Commission guidance

In the following the **proposed changes** to the **draft Commission guidance are summarized**:

1) In the EPBD the term "**predominantly" is not used**. EPBD uses "**considerable**" which allows a **wider interpretation** of the minimum part.

- ✓ **The Commission guidance should use the term "considerable". The Member States should fix the percentage, but a preferred target value or target range (e.g. 50-60%) could be proposed in the Commission guidance. The same rule should apply to stand-alone boilers, on-grid and off-grid, hybrid systems and all energy carriers.**

2) In the EPBD there is **no requirement** on how the **renewable energy** should be **delivered** or **counted,** e.g. dedicated distribution, public grid, contractual agreement (energy community, off-grid boilers, etc.). The draft guidance proposes the fuel mix in the grid, which cannot be used for off-grid boilers.

- ✓ **The Commission guidance should allow the contractual agreement for counting the delivered renewable energy in the energy share, if traceability and the sustainable use over time is ascertained and double counting is avoided.**

3) In the EPBD is stated "…**for** the installation of hybrid systems". **"At** the moment of installation" is not mentioned. Also, a "**forward looking** perspective" for the minimum share **is possible**. The Commission applied this approach to update the electricity primary energy factors.

- ✓ **The Commission guidance should indicate the possibility of "forward looking" to determine the part of renewables. It is agreed that "at the moment" is more save and should be proposed as preferred option.**

Overall, the **Commission guidance** should **present** the **possible interpretations** for the national transposition**, explain** the "pro and cons" underlining **the flexibility** given to the Member States while **proposing** a **preferred** choice.

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