

Expert opinion formulated by Johann Zirngibl, EUPAG leader, REHVA Vice-President.

This document is a contribution to the Commission's guidance on Phasing Out Financial Incentives for Stand-alone Boilers Powered by Fossil Fuels [https://energy.ec.europa.eu/news/commission-issues-guidance-phasing-out-financing-stand-alone-fossil-fuel-boilers-2025-2024-10-17\\_en](https://energy.ec.europa.eu/news/commission-issues-guidance-phasing-out-financing-stand-alone-fossil-fuel-boilers-2025-2024-10-17_en). It contains a summary analysis of the Commission document and present possible interpretations for the national transposition, underlining the flexibility given to the Member States.

# Contribution to Commission Guidance on Phasing Out Financial Incentives for Stand-alone Boilers Powered by Fossil Fuels



**JOHANN ZIRNGIBL**  
EUPAG leader,  
REHVA Vice-President  
[johannzirngibl@t-online.de](mailto:johannzirngibl@t-online.de)

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. But 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.

**Keywords:** EPBD, fossil fuel boiler, CO<sub>2</sub> emission, bio fuel boiler, heat pump.



## 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 document 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.

### Comparison of CO<sub>2</sub> emission for 1 kWh energy input of the different heat generators

The CO<sub>2</sub> emissions of several heat generation systems are as follows (from most emitting to less emitting):

- 1) Boiler coal fired  
Efficiency 80%, CO<sub>2</sub> emission 360 gCO<sub>2</sub>/kWh  
(source EN ISO 52000-1):  $\text{gCO}_2/\text{kWh} = (1/0,805) \times 360 = 450,0 \text{ gCO}_2/\text{kWh}$
- 2) Boiler oil  
Efficiency 90%, CO<sub>2</sub> emission 290 gCO<sub>2</sub>/kWh  
(source EN ISO 52000-1):  $\text{gCO}_2/\text{kWh} = (1/0,90) \times 290 = 322,2 \text{ gCO}_2/\text{kWh}$
- 3) Boiler electrical (not covered by Article 17(15))  
Efficiency 100%, CO<sub>2</sub> emission 251 gCO<sub>2</sub>/kWh  
(source EU average 2022):  $\text{gCO}_2/\text{kWh} = (1/1,0) \times 251 = 251,0 \text{ gCO}_2/\text{kWh}$
- 4) Boiler natural gas  
Efficiency 95%, CO<sub>2</sub> emission 220 gCO<sub>2</sub>/kWh  
(source EN ISO 52000-1):  $\text{gCO}_2/\text{kWh} = (1/0,95) \times 220 = 231,5 \text{ gCO}_2/\text{kWh}$
- 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%:  $\text{gCO}_2/\text{kWh} = 0,3 \times 450,0 + 0,7 \times 69,7 \text{ gCO}_2/\text{kWh} = 183,8 \text{ gCO}_2/\text{kWh}$
- 6) Boiler gas mix (50% Bio methane, 50% natural gas):  
 $\text{gCO}_2/\text{kWh} = 0,5 \times 46,3 + 0,5 \times 231,5 = 138,9 \text{ gCO}_2/\text{kWh}$
- 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:  $\text{gCO}_2/\text{kWh} = 0,3 \times 231,5 + 0,7 \times 69,7 \text{ gCO}_2/\text{kWh} = 118,2 \text{ gCO}_2/\text{kWh}$
- 8) Heat pump electrical (not covered by Article 17(15))  
Efficiency 360%, CO<sub>2</sub> emission 251 gCO<sub>2</sub>/kWh  
(source EU average 2022):  $\text{gCO}_2/\text{kWh} = (1/3,6) \times 251 = 69,7 \text{ gCO}_2/\text{kWh}$
- 9) Boiler bio methane  
Efficiency 95%, CO<sub>2</sub> emission 44 gCO<sub>2</sub>/kWh  
(source France):  $\text{gCO}_2/\text{kWh} = (1/0,95) \times 44 = 46,3 \text{ gCO}_2/\text{kWh}$
- 10) Target 2050? 30 gCO<sub>2</sub>/kWh?

**Table 1** shows that the CO<sub>2</sub> emissions mostly depend on the energy carrier and not on the technology. The most CO<sub>2</sub> emitting heating device is the coal fired boiler. The 100% bio methane boiler has the lowest CO<sub>2</sub> emissions.

According to the Commission draft guidance document, the bio methane boiler, emitting the less CO<sub>2</sub> (46,3 gCO<sub>2</sub>/kWh), might not be subsidised, whereas the electrical boiler (251 gCO<sub>2</sub>/kWh), or a coal boiler – heat pump hybrid system 5 (183,8 gCO<sub>2</sub>/kWh), might be subsidised.

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<sub>2</sub> emission may be reached:

- Hybrid system  
Fossil gasboiler (30%) – Heatpump (70%):  
118,2 gCO<sub>2</sub>/kWh
- Stand-alone boilers  
Gas mix 50% renewables, 50 fossil fuel:  
138,9 gCO<sub>2</sub>/kWh
- Hybrid system  
Coal boiler (30%) – Heat pump (70%):  
183,8 gCO<sub>2</sub>/kWh

Therefore, when dealing with financing schemes, not only the part of renewables (ratio renewables / fossil fuels) should be considered, but also the CO<sub>2</sub> emissions.

**Table 1.** CO<sub>2</sub> emissions of several heat generation systems in brief (from most emitting to less emitting).

Heat generation system	CO <sub>2</sub> emissions, gCO <sub>2</sub> /kWh
Boiler (coal fired)	450
Boiler (oil)	322,2
Boiler (electrical)	251
Boiler (natural gas)	231,5
Hybrid system	183,8
Boiler (gas mix)	138,9
Hybrid system	118,2
Heat pump (electrical)	69,7
Boiler (bio methane)	46,3
Target 2050?	30

### 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 subsidized 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.

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.

### 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. 30-60%) 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. ■