

July 2022

Introduction

After the Commission published the EPBD recast proposal (2021/0426 (COD)) in December 2021 as part of the second package of Fit for 55, [REHVA responded to the feedback period in Q1 2022](#) by proposing amendments to the Commission's text with detailed justification. In the meantime, both the Council and Parliament have done considerable efforts to prepare their positions on the proposal for the inter-institutional dialogue. In the Council under the coordination of the French Presidency, with Czechia recently having taken over, the national delegations have been discussing amendment in recent months, while the members of the ITRE committee have tabled all their amendments in early July with the negotiations on amendments to start in September.

With both institutions being in a crucial phase to determine their negotiating position, REHVA - as a leading federation for heating, ventilation and air-conditioning associations across Europe - is releasing an updated overview of our position, taking into account the recent developments in both institutions.

On the following pages we've provided more in-depth comments on specific issues that are currently being discussed within the EPBD negotiations:

- [Definitions & requirements of 'zero-emission building'](#):
 - o [Inclusion of renewable energy from the grid into the requirements](#)
 - o ["Non-renewable primary energy" is a more meaningful indicator for energy calculation of ZEB than total](#)
 - o [Concerns on ITRE amendments 506 & 968](#) explained in detail in our [Annex](#)
 - o [Energy plus definition & requirements](#)
- [Common methodology for the calculation of energy performance indicators](#)
- [IEQ minimum requirements](#)
- [REPowerEU provisions and safeguarding the 'energy efficiency first' principle](#)

General Comments

REHVA acknowledges the efforts done in both the Council and Parliament (by ITRE) in preparation of the inter-institutional dialogue to find a compromise on the EPBD recast proposal and integrate provisions proposed under the REPowerEU plan. We see promising developments in terms of amendments in both institutions but are still concerned that some of the proposed amendments regarding the definition and requirements of ‘zero-emission building’ and primary energy use risk a fragmented implementation among MS which would hinder future comparison of energy performance requirements and monitoring of progress. As the association representing engineers and energy experts who will need to design buildings and conduct energy calculation in accordance with the EPBD recast, **REHVA wants to stress the importance of this issue on a holistic approach to the energy transition in Europe’s building stock** which should ensure that the requirements and used indicators should be in line with the following main principles in the energy transition in the building sector:

- Apply the **holistic energy efficiency first principle**, starting with **energy savings** in the building fabric, using **efficient technical systems** as heat pumps and **renewable energies** as a following step to ensure the lowest possible energy use;
- Consider that **buildings** are no longer only energy consumers but also **energy producers** (“energy positive” buildings), mainly based on PV production which could be **exported**;
- Buildings are not “**stand-alone**” objects but interacting with the grid. **Energy flexibility** and **storage** are main topics.

If these principles will not be elaborated by **appropriate, consistent, transparent** and **EU common** indicators this could result in **the lack of a common method**, and the related indicators, **not allowing** to determine **transparent thresholds**, the **share of best knowledge** and **expertise** and therefore **weaken the EU policy impact**. This is partly the case today, because the **type of primary energy is not specified**, or if specified as total primary energy in EED, it is not supporting efficient technologies such as heat pumps.

REHVA welcomes the ITRE amendments which aim to strengthen the IEQ & Health requirements in building, which was poorly addressed within the Commission’s original proposal. Buildings exist to provide a comfortable environment for people and to protect them from different types of weather circumstances. The continuous development and innovations in building service systems have increased the quality of life within buildings and we cannot go back to simply turning off our HVAC systems. The **decarbonisation of our building stock must have a double aim in mind: reduce CO₂ emissions** as much as possible on one side, while simultaneously maintain or **increase the comfort and health** of its inhabitants. This means that **the ‘energy efficiency first’ principle cannot apply without the clear setting of targets** which aims to improve the IEQ and health requirements in buildings.

Thematic Comments

Definition & requirements of ‘zero-emission building’

Inclusion of energy from renewable sources from the grid in ZEB requirements

REHVA supports the inclusion of renewable energy from the grid being taken into account in the requirements for ZEBs with the addition of *[in priority] to the text*, as it is requested in [amendment 968](#) that was tabled in ITRE. REHVA similarly proposed this inclusion during the feedback period.

“Non-renewable primary energy” is a more meaningful indicator for the energy calculation of ZEB than *total*

A key amendment proposed by [REHVA during the feedback round to Commission on the EPBD recast proposal in Q1 2022](#) considered replacing *total* primary energy use by *non-renewable* which we consider as a fundamental issue for the proper calculation of zero-emission buildings. Currently in the Commission proposal, and also in all the ITRE amendments tabled in July 2022, total primary energy is being used for the calculation of ZEBs in Annex III (point I). This indicator does not allow for a meaningful calculation of the energy use however, as it does not distinguish between the renewable and non-renewable energy that is being used. REHVA experts prepared a [EPBD primary energy calculator](#) which demonstrates that a gas boiler has the the lowest primary energy compared to a heat pump which shows very high values due to the inclusion of heat extracted from ambient, as you can see in the figure below which was taken from the calculator. This demonstrates that the thresholds in Annex III can't be met in some climatic conditions with heat pumps, like in the Nordic region.

Energy calculation	Energy need kWh/m ² a	Energy use kWh/m ² a			
		DH	Gas	GSHP	AWHP
space heating	25.9	29.7	28.1	10.8	12.8
DHW	30	33.3	31.6	11.5	15.0
supply air heating	4.4	4.4	4.4	4.4	4.4
fans and pumps	5.5	6	6	5.5	5.5
fixed lighting	1.4	1.4	1.4	1.4	1.4
PV generation	16				
PV self use, -		0.55	0.55	0.7	0.7
PV self use, kWh/m ² a		8.8	8.8	11.2	11.2
PV export ¹ , 0/1	0	0	0	0	0
➔ Non-ren. primary energy, kWh/m ² a		44.7	72.6	51.7	64.2
Total primary energy², kWh/m² a		91.9	82.0	100.9	109.0
Renewable energy³, kWh/m² a		53.8	16.0	49.5	44.1
➔ CO ₂ emissions, kgCO ₂ /m ² a		8.8	14.4	9.4	11.7

Figure 1 - Results from REHVA Primary Energy EPBD Calculator - illustrating the difficulty for heat pump-based systems to meet the thresholds in Annex III of the EPBD proposal as proposed by the Commission.

REHVA proposes to use non-renewable primary energy use, update the maximum thresholds accordingly so that there is only a very low amount of non-renewable energy in ZEBs where the CO₂ is compensated by renewable energy generated on-site, from a renewable energy community (described in Directive (EU) 2018/2001), district heating and cooling systems, or from the grid. This ensures a holistic and cost-optimal pathway towards making Europe’s building stock zero-emissions. The updated thresholds with their justification can be found in [our comments during the feedback period to the Commission](#) (p. 4 - 5).

Concerns regarding ITRE amendments 506 & 968 and compromise text of Presidency on ZEB definition & requirements

Using the *non-renewable* indicator over *total* becomes even more urgent to use if ITRE amendments [506](#) & [968](#) are being considered, which are also a part of the amendments discussed currently discussed within the Council. To add to the discussion that this approach wants to take we added our proposed changes to these amendments and justify why the use of the non-renewable indicator is even more important in that case in the [Annex](#) to this document.

Energy plus building definition & requirements

REHVA supports [amendment 528](#) by ITRE rapporteur Ciaran Cuffe for an A+ energy performance certificate class for buildings that are net-contributors in terms of energy and/or reduction of greenhouse gas emissions. However, we draw attention that proposed **energy need for heating, cooling and ventilation should depend on the climatic zone** (four climatic zone values are needed similar to the ZEB requirements). Also, if domestic hot water is included, 15 kWh/m²/year is not realistic in any climate zone as typical energy needs for domestic hot water are 20-30 kWh/m²/year. It would be better to consider the freedom of design and focus on one energy need indicators and not include a threshold on domestic hot water.

Need for a common European methodology for the calculation of energy performance indicators

The setting of maximum threshold values within the ZEB requirements create a need for more detailed technical definitions to ensure that the requirements would be understood and implemented in a similar fashion in MS. REHVA firmly considers this recast as a make-or-break moment to move towards a **common European performance calculation methodology and requirements in line with the EPB standards developed under Mandate 480**, otherwise we will fail to deliver on the European climate and energy goals in the building sector. We propose to include a mandate for DG ENER in Article 4 to develop a delegated act about a common European calculation methodology of energy performance indicators (similarly to what was previously done for the cost-optimal methodology) to support Annex I with a more in-depth elaboration of technical details in this calculation.

To facilitate this common calculation methodology REHVA supports the promotion and development of an **open-source software kernel** meeting the requirements of article 4 and Annex I, as well as **dynamic energy simulation software tools to promote the harmonised application of EPB standards** and the harmonisation of national EPC calculation methodologies. Hourly and dynamic simulation tools represent an important development step in energy calculations and are also suitable for flexibility, grid load and demand response analyses.

Strengthening of IEQ minimum requirements

REHVA strongly supports the addition proposed by rapporteur Ciaran Cuffe in [amendment 1038](#) for Member States to set minimum requirements on Indoor Environmental Quality based on a delegated act by the Commission and linking it to indicators in the Level(s) framework. Some minor comments that REHVA would have on this amendment is that “L/s per person” or “L/s per m²” may be more appropriate ways to express the ventilation rate instead of “air changes per hour”.

The requirements to be developed in such a delegated act could be made even more clear and in-depth if they use categories I - IV in [standard EN 16798-1](#) as the basis for different types of buildings. This also is true for [amendment 1032](#) as proposed by Morten Petersen.

REPowerEU provisions and safeguarding the ‘energy efficiency first’ principle

REHVA supports the implementation of REPowerEU plan but wishes to stress the need for setting safeguards in place here for the ‘**energy efficiency first**’ principle, especially if numerical targets are being considered such as in article 9a paragraph 4 in [amendment 967](#) by Ciaran Cuffe and the

new Rooftop Initiative proposed under REPowerEU. It's essential that we ensure first that buildings are sufficiently efficient before we generate large amounts of renewable energy in these buildings. Putting solar rooftop installations on buildings to meet the targets while they're not insulated will be a huge waste of the effectiveness of the uptake of solar energy. This principle is crucial for our future, even if renewable energy sources are not depletable, their potential remains finite (i.e. the max. available power is "fixed"), meaning that if we need more power in the future we cannot "waste" its potential to cover the energy requirements of inefficient buildings.

Annex: Comments on specific amendments proposed in ITRE

Article 2(2) on the definition of ‘zero-emission building’	
Proposed REHVA changes to ITRE amendment 506 (REHVA changes highlighted)	‘zero-emission building’ means a building with a very high energy performance, as determined in accordance with Annex I, <i>requiring zero or a very low amount of non-renewable primary energy, producing zero on-site carbon emissions from fossil fuels and producing zero or a very low amount of operational greenhouse gas emissions, where the very low amount of energy still required is fully covered by energy from renewable sources generated on-site, from a renewable energy community within the meaning of Directive (EU) 2018/2001 [amended RED] or from a district heating and cooling system</i> in accordance with the requirements set out in <i>Annex III Article 9a b</i> .
Justification	It is not possible to use any building service system without using (converting) energy, even if the used energy carriers are produced by exploitation of renewable energy sources. Thus, “requiring zero energy” is something physically not possible, while “requiring zero non-renewable primary energy” is physically possible and achievable. Because of the limitation to zero carbon emission is regarding only on-site production , this opens the possibility to have “a very low amount of non-renewable primary energy” use by distant energy carriers (i.e. grid electricity or district heating/cooling including non-renewable energy sources). Thus, for this “very low amount” a maximum threshold can be set as done in <i>Article 9a b</i> .

Article 9b replaced Annex III (point I) on ZEB requirements

Proposed REHVA changes to ITRE amendment 968 (REHVA changes highlighted)

*1. Member States shall take necessary measures to ensure that the **non-renewable primary** energy use of a new or renovated zero-emission building **comply** complies with a maximum threshold established at the Member State level **in their building renovation plans**. This maximum threshold shall be set with a view ~~of to~~ achieving at least cost optimal levels.*

Member States shall take necessary measures to ensure that the operational greenhouse gas emissions of a new or renovated zero-emission building comply with a maximum threshold established at the Member State level in their building renovation plans.

Member States may decide to adjust both thresholds as referred to in this subparagraph for renovated buildings.

*1a Member States shall ensure that the **total** annual **non-renewable** primary energy use of a new or renovated zero-emission building is covered [in priority], where technically and economically feasible, by:*

(a) energy from renewable sources generated onsite fulfilling the criteria of Article 7 of Directive (EU) 2018/2001 [amended RED];

(b) energy from renewable sources provided from a renewable energy community within the meaning of Article 22 of Directive (EU) 2018/2001 [amended RED]; or

(c) energy from renewable sources and waste heat from an efficient district heating and cooling system in accordance with Article 24(1) of Directive (EU) .../... [recast EED].

Justification

This article represents the most fundamental policy choice to define and set requirements for ZEB. We propose to add some small details to make them fully transparent which is important to achieve a similar understanding and implementation by all MS. REHVA has prepared calculation examples showing that without these small additions MS may implement the primary energy threshold with numeric values varying by factor 3.

Clause 1 works together with Article 2 (2) ZEB definition and says that a very low amount of non-renewable primary energy can be used in ZEB, and a threshold value should be set for this energy use. Clause 1a says that this very low amount of non-renewable primary energy should be fully covered with renewable energy.

We want to clarify that a very low amount of non-renewable primary energy refers to the use of grid electricity (and district heating/cooling) that could not be avoided by efficiency measures and on-site/community renewable energy production as there is not enough solar PV generation in the winter and a building must use the grid electricity. Therefore, in this threshold, all non-renewable primary energy delivered to the site should be accounted that means that only the 'self-used' and used in 'other on-site uses' PV electricity should be included in the non-renewable primary energy calculation (exported PV electricity compensation should not be calculated because this occurs mainly in the summer). In the requirement 1a, differently, the full amount of renewable energy production is accounted to cover the non-renewable primary energy. It is highly important that these two policy choices (1. threshold having no compensation with exported energy, and 1a covering with renewable energy) are transparent.