

## Joint Eurovent-REHVA Position Paper: How to strengthen IEQ in the EPBD

### In a nutshell

**Eurovent and REHVA make 5 policy recommendations to make the EPBD review deliver on IEQ:**

- **Require Member States to set binding IEQ requirements**
- **Further strengthen IEQ safeguards for renovations**
- **Broaden inspection requirements and include IEQ aspects**
- **Include IEQ indicators in the EPC and its recommendations**
- **Improve public data on IEQ**

### Preamble

Indoor Environmental Quality (IEQ) is a cornerstone of building sustainability: the provision of healthy and comfortable indoor spaces is why we spend energy on buildings in the first place<sup>1</sup>. Yet IEQ is typically sidelined in renovation policies and their practical implementation. This has left many buildings in the EU unable to meet generally accepted benchmarks of IEQ conducive to comfort and health – a concern which has crystallised during the COVID pandemic.

The review of the EPBD presents an opportunity to rectify this. We make 5 simple, interlinked policy recommendations, which would mainstream IEQ in the Directive and its national transpositions and help achieve the dual aim of both healthier and more energy efficient buildings.

### Recommendation 1: Require Member States to set binding IEQ requirements

Buildings must meet minimum IEQ requirements to protect the health and well-being of occupants. Such requirements are assumed to exist at the national and regional level. Yet existing requirements are limited, tremendously heterogenous, often inadequate, and poorly enforced. This was already showcased by the JRC in 2017<sup>2</sup> and has not substantially improved with the latest transpositions<sup>3</sup>.

Essential requirements like minimum ventilation rates and CO<sub>2</sub> concentration limits fall well short of best practice in certain Member States. Indoor pollutant limits are typically limited in scope. Thermal comfort and humidity requirements are haphazard at best. Several Member States refer to voluntary standards or guidance documents for crucial IEQ requirements. The legal status of such references – are they legally binding, used as a tool for the presumption of compliance, or merely recommended? – is not always unambiguous.

This situation shows the need for a much more consistent use of existing EN standards and other IEQ benchmarks<sup>4</sup> and to make references to such benchmarks unequivocally binding. To this end, the EPBD should provide a framework requiring Member States to set enforceable minimum IEQ requirements for all buildings intended for human occupancy (instead of assuming they exist) and the Commission should identify best practice and issue guidance to the Member States regarding appropriate indicators, evaluation methodologies, and limit values.

<sup>1</sup> See the EPBD definition: “*building* means a roofed construction having walls, for which energy is used to condition the indoor climate.”

<sup>2</sup> <https://publications.jrc.ec.europa.eu/repository/handle/JRC99434>

<sup>3</sup> Appendix I provides a condensed overview of some IEQ requirements in selected Member States and the UK.

<sup>4</sup> The main reference for the evaluation of indoor climate conditions is EN 16798

## **Recommendation 2: Further strengthen IEQ safeguards for renovations**

If the coverage and consistency of IEQ requirements in national building codes are poor for new buildings, the situation is even more precarious for renovations. IEQ requirements commonly apply only to 'significant' renovations. The conditions under which a renovation is considered 'significant' varies but in practice some of the more common energy efficiency renovations like improving insulation or replacing windows do not trigger specific requirements to maintain let alone improve IEQ. Yet such interventions – designed to make the building more airtight and well-insulated to minimise thermal losses – can lead to insufficient air renewal, high pollutant concentration levels, and overheating. If proper IEQ safeguards during renovation are not put in place, a real ventilation crisis looms: 60% of the EU building stock relies on natural ventilation for air exchange<sup>5</sup> and will require a fundamental redesign of their ventilation strategy upon renovation.

The EPBD (in Articles 4 and 7) does contain general IEQ and ventilation safeguards for renovations but these are vague and not well transposed by most Member States. In some cases – like the UK and Denmark – there are legal requirements not to worsen ventilation during refurbishment, but there are no requirements to meet the evolving ventilation needs of the building as it is renovated. This inadequacy must be remedied by further specifying and strengthening Articles 4 and 7 so that minimum IEQ requirements apply to all renovations which are likely to have an impact on IEQ.

## **Recommendation 3: Broaden inspection requirements and include IEQ aspects**

Many buildings across the EU suffer from substantial gaps between design expectations and actual IEQ performance due to insufficient and subpar commissioning, inspection, and maintenance of technical building systems (TBS). Closing that performance gap requires rigorous mandatory commissioning when a new or revamped TBS is handed over, and regular mandatory inspections over the course of its lifetime.

This would benefit both IEQ and energy efficiency, as demonstrated in Sweden. The Swedish Obligatory Ventilation Control (OVK) is a mandatory inspection of ventilation systems, which must be carried out regularly by a certified inspector in all buildings and checks whether the indoor climate is good. Surveys in Sweden have shown that property owners cite the fact that their OVK was not approved as a much more frequent reason for replacing or improving their ventilation system than energy efficiency reasons. This failed OVK then usually leads to ventilation system refurbishment which improves both IEQ and energy efficiency.

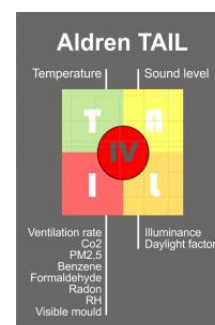
In line with the above, the European Commission should amend Article 8 of the EPBD to require that not just the energy performance but also the impact on IEQ is assessed by a qualified professional when a TBS is installed, replaced, or upgraded. Moreover, regular system inspection and reporting requirements in Articles 14 to 16 should be amended to include IEQ aspects: the IEQ performance of the TBS should be assessed, and the resulting report should recommend or require improvement. These requirements should apply to all TBS, including stand-alone ventilation systems.

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<sup>5</sup> Review study on the Ecodesign and Energy Labelling of Ventilation Units. Ref. Ares(2021)1548522 – 01/03/2021

### Recommendation 4: Include IEQ indicators in the EPC and its recommendations

The EPBD should require Member States to include IEQ aspects in all energy audits, certificates and resulting recommendations. Examples of how this could be done already exist: consider for example the ALDREN-TAIL indicator and its associated protocols as a starting point<sup>6</sup>. The energy audits according to ALDREN protocols include an assessment of the building's IEQ based on both measured and modelled data. This assessment results in a simple and easily understood visual IEQ scoring and global performance indicator (see Figure 1) which is included in the certificate. This also allows the auditor to make recommendations on how to further improve IEQ.



**Figure 1: ALDREN-TAIL IEQ indicator**

Portugal required large service buildings to undergo mandatory joint IAQ and energy audits every 6 years. However, this system was unfortunately abolished with the transposition of the 2010 recast EPBD. In Greece, the auditor ticks the relevant boxes indicating that indoor air quality, lighting, thermal comfort, and acoustics are met but there are no nuanced assessments or recommendations.

### Recommendation 5: Improve public data on IEQ

The absence of good data on energy efficiency and other building characteristics can constitute an obstacle to renovation. The EPBD has proven to be a catalyst for the availability of building data across Europe, not least thanks to the EPC framework. At the national level, energy audits and EPC databases have allowed Member State to measure the impact and verify the effectiveness of policies. When made public, these databases can also help other stakeholders – building professionals, investors, and owners – make better decisions and carry out independent research.

Whereas data on energy efficiency and renovations have somewhat improved, data on IEQ and ventilation in the EU building stock is still heavily lacking. To remedy this, the EPBD should require Member States to set up public EPC databases which consistently report on IEQ aspects as per policy recommendation 4 above. The EU Building Stock Observatory should also be improved with data on IEQ and ventilation.

Given that many other policy initiatives orbit around the EPC, this would have spill-over benefits as well. For example, financial incentives (Art. 10), information campaigns (Art. 20), Long-Term Renovation Strategies (Art. 2a) and the cost-optimal methodologies (Art. 5) could all consistently include IEQ aspects by linking improved EPC databases with IEQ data. This would result in more funding opportunities, better understanding and decision-making, and improved planning towards building renovation, all of which could boost renovation rates and make interventions more successful.

<sup>6</sup> ALDREN-TAIL is based on EN 16798 and compatible with WELL, LEED, BREEAM, Level(s) and the WHO air quality guidelines: [https://aldren.eu/wp-content/uploads/2019/07/ALDREN-D2.4\\_Methodology\\_Note\\_Health\\_Wellbeing.pdf](https://aldren.eu/wp-content/uploads/2019/07/ALDREN-D2.4_Methodology_Note_Health_Wellbeing.pdf)

## About Eurovent

Eurovent is Europe's Industry Association for Indoor Climate (HVAC), Process Cooling, and Food Cold Chain Technologies. Its members from throughout Europe represent more than 1.000 organisations, the majority small and medium-sized manufacturers. Based on objective and verifiable data, these account for a combined annual turnover of more than 30bn EUR, employing around 150.000 people within the association's geographic area.

## About REHVA

REHVA, The Federation of European HVAC Associations, founded 1963, joins European associations in the field of building engineering services representing more than 100.000 HVAC engineers and building professionals in Europe. REHVA is an independent professional organisation dedicated to the improvement of health, comfort and energy efficiency in all buildings and communities. It encourages the development and application of both energy efficiency and renewable energy technologies.