

The 2nd recast of the Energy Performance of Buildings Directive (EPBD)

Member States' confirmed the political agreement on the revised EPBD on 31 January 2018, so the legislative process reached the run-in phase more than 1 year after the European Commission (EC) unveiled its proposal within the "Clean Energy for All Europeans"¹ Package November 2016. The European Parliament (EP) will approve the formal legal text in April 2018, Member States will have 20th months for the transposition. This article summarises some important changes, and the position that REHVA has been advocating during the legislative process and will continue to promote in the national level implementation phase.

Over the course of the past year EU institution and stakeholders conducted long negotiations on the 2nd review of the EPBD. REHVA has worked with its Member Associations to define its position about the draft legislation and contributed with its comments during the legislative process. As expected, the EP proved to be more ambitious and listened to the voice of EU level stakeholders in key issues for REHVA, including the strengthening of IEQ requirements, ensuring proper maintenance supported by effective inspections schemes and committing to ambitious EU energy efficiency targets. Members States (MS) were reluctant to approve additional binding requirements, the difference in the positions even resulted in a temporary collapse of the trialogue talks between Council and EP end of 2017. Finally, the parties reached an agreement just before Christmas in an 8-hours intense 3rd negotiation round. This agreement was confirmed by the ambassadors of MS on 31 January 2018, so the compromise directive text can be approved in April 2018.

Novelties of the 2nd EPBD recast

National renovation strategies and the quality of energy renovation

The recast EPBD integrates many requirements regarding the acceleration of deep energy renovation of buildings in Europe. A major success of the political negotiations was that MS agreed to develop **national renovation strategies** to achieve an energy efficient and decarbonised European building stock by 2050 reducing the EU greenhouse gas emissions by 80–95% compared to 1990. The strategies shall set mid-term goals for 2030 and 2040 and define milestones with measurable progress indicators.

The consideration shows that MS's are seeking the cost-efficient equilibrium between a decarbonised energy supply and reducing the final energy use of buildings, implying an average 3% renovation rate towards nearly zero energy level, where "nearly" is understood as cost-

effective and therefore depends on the costs of a non-renewable energy unit (the carbon emission part of the energy supply) and the cost of measures to reduce the energy use of buildings.

The strategies shall also address healthy indoor climate conditions, fire safety and risks related to intense seismic activity.

National renovation strategies should address the following aspects:

- an overview of the national building stock and expected share of refurbished buildings in 2020;
- identification of cost-effective approaches to renovations relevant to building type and climatic zone, considering potential trigger points in the building life-cycle
- policies and actions to stimulate cost-effective deep renovations, including staged deep renovations or building renovation passports;
- policies and actions to target the worst performing segments of the national building stock, split-incentive dilemmas, market failures, and actions to alleviate energy poverty;
- policies and actions to target public buildings; national initiatives to promote smart technologies and communities, as well as skills and education in the construction and energy efficiency sectors;
- an evidence-based estimate of expected energy savings and wider benefits, such as those related to health, safety and air quality.

The directive advises MS to ensure that the measures to improve energy performance don't focus only on the building envelope but include all relevant elements and technical systems. When buildings undergo major renovations, MS shall encourage that technical building systems are replaced or upgraded to high efficiency ones as far as technically and economically feasible. Technical building systems play an important role in reducing costs and maintaining or improving the IEQ in our buildings.

¹ http://europa.eu/rapid/press-release_MEMO-16-3986_en.htm

The directive puts more emphasis on the quality and compliance of energy renovation and encourages that financial measures related to energy efficiency are linked to quality, and to certified performance improvements, which should be assessed by comparing EPCs issued before and after the renovation, or by adequate energy audits.

Inspection of heating, ventilation, and air conditioning systems

Inspection was another tough part of the talks and here the Council set through its position. The EP proposed mandatory regular inspections and cancelled “adequate advice” as an alternative, a position strongly supported by REHVA and several EU level stakeholders. Both requirements were modified in the final compromised version.

The articles 14 and 15 on inspection of heating and air-conditioning systems have been changed on mayor points. The threshold for inspection of heating systems is changed from 20 to 70 kW rated effective output (ventilation included). MS have the sole competence to decide on the appropriate measures and frequency, including “advice, so even avoid having inspection schemes. MS can opt for not requiring repeated inspection until the systems or the buildings heating and cooling requirements have changed. For small scale installations, the documentation of the system performance by installers is approved as sufficient support of compliance with performance requirements. Technical building systems of buildings that are part of an energy performance contract are exempted from regular inspection.

To directive states the importance of inspection in achieving building energy performance improvements and improve the operational energy performance of HVAC. Inspections should assess the sizing and the capabilities of the equipment to improve system performance also under part load operating conditions and encourage the upgrade and replacement of inefficient HVAC systems.

Building automation and control (BAC) systems are considered as the most cost-effective alternative to inspections in large non-residential and multi-apartment buildings. The directive requires that non-residential buildings above an effective rated heating or combined heating and ventilation system output of 290 kW are equipped with BAC-s by 2025, where technically and economically feasible. Buildings with BAC installed are exempted from regular inspection. REHVA had a different position regarding the role of BAC and their capacity to replace inspection, advocating for mandatory third-party testing.

The Directive also mandates the Commission to conclude, by 2020, a feasibility study about the possibilities and timeline to introduce the inspection of stand-alone ventilation systems and an optional building renovation passport complementary to Energy Performance Certificates (EPCs) providing long-term, step-by-step renovation roadmap for specific buildings to improve energy performance. This can support the development of a possible Indoor Environmental Quality declaration as part of the EPCs.

A voluntary smart readiness indicator

The Council has agreed on the establishment of a voluntary Smart Readiness Indicator (SRI) promoting digitalisation and smart technologies. The Commission shall adopt a delegated act by 31 December 2019 establishing an optional common European Union scheme for rating the smart readiness of buildings. This rating shall be based on assessment of the buildings’ or building units’ capabilities to adapt its operation to the needs of the occupant, and the grid, and to improve its energy efficiency and overall performance, including indoor comfort and health.

The SRI shall cover features for enhanced energy savings, benchmarking and flexibility, enhanced functionalities and capabilities resulting from more interconnected and intelligent devices. The methodology shall consider features such as smart meters, building automation and control systems, self-regulating devices for indoor temperature, built-in home appliances, recharging points for electric vehicles, energy storage and detailed functionalities and the interoperability of these features, as well as benefits for the indoor climate condition, energy efficiency, performance levels and enabled flexibility.

Three key functionalities are listed:

- the ability to use energy from renewable sources in a flexible way,
- the ability to adapt its operation mode in response to the needs of the occupant in a user-friendly way, to maintaining healthy indoor climate conditions and to report on energy use,
- the flexibility of a building’s overall electricity demand, including demand-response in relation to the grid.

The methodology shall not negatively affect existing EPC schemes and build on related national initiatives, while considering occupant ownership, data protection, privacy and security. It shall set out the most appropriate format of the SRI parameter, be simple, transparent,

and easily understandable for consumers, owners, investors, and demand response market participants.

Currently a consortium of consultants contracted by DG Energy is working on a study defining the criteria and a calculation methodology based on related international and European standards, and a feasibility study about the SRI indicator. REHVA follows the process and provides inputs to the work of the experts.

Health aspects and IEQ

REHVA has been advocating for strengthened IEQ requirements and health aspects in the EPBD, supported also by the European Parliament. The compromise legislation contains some improvements, although it doesn't set binding European IEQ criteria. The IEQ related relevant point of the directive are the following:

- For new buildings and buildings undergoing major renovations, MS should encourage high-efficiency alternatives while also addressing healthy indoor climate conditions. MS should support that energy performance upgrades of existing buildings contribute to achieving a healthy indoor environment.
- The directive refers to the 2009 WHO guidelines concerning indoor air quality, and better performing buildings that provide higher comfort levels and wellbeing and improve health.
- The Annex I of the directive indirectly mandates MS-s to define comfort and indoor air quality levels to safeguard the health of the building users by requiring that the energy needs for space heating, space cooling, domestic hot water, lighting, ventilation and other technical building systems shall be calculated in order to optimise health, indoor air quality and comfort levels defined by Member States at national or regional level.
- Long-term renovation strategies shall contain evidence-based estimate of expected energy savings and wider benefits, such as those related to health, safety, and air quality.
- The feasibility study on the inspection of stand-alone ventilation systems that shall be carried out by the EC before 2020 can support the development of a possible Indoor Environmental Quality declaration as part of the EPCs.

Energy performance calculation and EPB standards

The energy performance of a building shall be determined based on calculated or actual energy use reflecting the typical energy use for heating, cooling, domestic hot water, ventilation and built-in lighting and other technical building systems. The energy performance shall be expressed by the numeric indi-

cator of primary energy use in kWh/(m².y). The calculation methodology shall be transparent and open to innovation. MS shall describe their national calculation methodology following the national annexes of the overarching standards (EN- ISO 52000-1, 52003-1, 52010-1, 52016-1, and 52018-1.) developed by CEN under mandate M/480. However, this doesn't constitute any legal codification of standards in the MS.

Member States have the competence to define **primary energy factors** or weighting factors to calculate primary energy be energy carrier, which may be based on national, regional or local annual, and possibly also seasonal or monthly weighted averages, or on more specific information made available for an individual district system. In the application of these factors MS shall ensure that the optimal energy performance of the building envelope is pursued. MS may consider renewable energy sources supplied through the energy carrier and generated on-site when calculating the primary energy factors if the methodology applies on a non-discriminatory basis. MS may also define additional numeric indicators of total, non-renewable and renewable primary energy use, and greenhouse gas emission produced in kg of CO₂ equivalent per m² per year.'

CENTC371 is currently developing the standard "Energy performance of buildings — Determination and reporting of Primary Energy Factors (PEF) and CO₂ emission factors procedure — Part 1: General Principles and Methodological approach". This standard could become a good basis for the harmonisation of these procedures throughout Europe in the future.

The new set of EPB standards should be implemented in all EU member states. Using the same energy performance assessment procedures throughout Europe would stimulate innovative energy saving solutions that can be applied everywhere in Europe, because they will be awarded according to the same principles in a transparent way. Sticking to separate national procedures in the EU countries crates and a market barrier for energy saving products, systems and technologies.

REHVA has been advocating for the harmonised and ambitious application of EPB standards in MS-s and promotes the harmonization of national calculation methodologies to ensure the reliability and transparency of the energy performance assessment. REHVA is committed to further actions to convince and support national regulators to follow this route. ■