Revision of key EU directives to spur building decarbonisation and the renovation wave

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Overview

With the European Green Deal the EU committed to stronger action on climate change to reduce GHG emissions by at least 50% to 55% by 2030. This was strengthened for the building sector by the Renovation Wave Strategy which announced the revision of the EPBD along EED and RED to reach ambitious goals: reducing the energy use of heating and cooling by 18% while increasing the share of renewables to 38-42%, leading to a 18% decrease in the total energy demand of buildings and a 69% decrease in CO_2 emission by the deep energy renovation of 35 million buildings. This article provides an overview analysis of the revision of these three key directives.

The requirement of decarbonising the building sector put a strong focus on heating and cooling. The revision of the REDII and EED directives started in 2020, the European Commission published its proposal of both revised directives in July 2021 expecting comments from stakeholders by beginning of November. The EPBD revision process started in 2021 with the Commission proposal expected to be released by end of 2021.

Revision of the Renewable Energy Directive

The review process [**1**] started in March 2020 with the aim to strengthen the renewable heating and cooling target, introduce a requirement for minimum proportions of renewable energy in buildings and facilitate access of waste and renewable heat and cool into energy systems. The revision explores a toolbox of measures to promote advanced heating and cooling, including highly efficient low-temperature renewable and waste heat and cold technologies. After the online feedback period on the Inception impact report by September 2020 a public consultation followed from November 2020 till February 2021. Based on the results, the Commission released the proposed revision of the RED (COM(2021)557) [**2**] on 14 July 2021. The proposal is open for feedback until early November [**3**].

Main changes relevant for the HVAC/building sector in the RED proposal:

- A new Article 15 on renewable heating & cooling (H/C) with the **indicative target of RES in buildings increased to 49% by 2030**. This should be supported by a binding baseline for annual increases in the national share of final energy consumption of renewable energy for the H/C sector.
- Higher **obligation on MS to increase the share of RES in the H/C sector by 1.1% per** year (from 0.8%).
- For **district heating and cooling (DHC)** the **mandatory annual target** for energy form RES + waste heat and cold increases **2.1%** (from 1%)
- MS shall require in their building regulations and codes the use of **minimum levels** of energy from renewable sources in buildings
- MS shall introduce measures in their building regulations and codes to increase the share of electricity in heating and cooling from renewable sources in the building stock, including

national measures relating to substantial increases in **renewables self-consumption**, **renewable energy communities and local energy storage**, in combination with energy efficiency improvements
- MS are obliged to **enhance system integration between DHC systems and other energy networks**, by developing efficient DHC to promote heating and cooling from RES. MS must ensure that **third party suppliers of energy from RES and waste heat & cold can connect** to heating & cooling systems with a capacity of above 25MWth. MS are obliged to ensure that the consumer rights and the **revised rules for operating DHC systems** are **clearly defined, publicly available and enforced**.
- **Qualification and certification of installers**: the proposal is obliging MS to put in place measures to support participation in training programs and make the list of qualified installers public to ensure sufficient installers are (Article 18(3) REDII).

EC studies on renewable heating and renewable cooling for a Delegated act

DG Energy commissioned 2 technical studies to assess the renewable aspects of space heating and cooling. The studies should serve as input for policy development to increasing the share of RES in H/C, including methodologies for accounting these shares. The 2 studies are developed by 2 expert teams, both led by TU Vienna, with limited stakeholder involvement. The studies were presented on 14 and 15 July 2021 in two online stakeholder workshops for member state representatives and invited industry stakeholders.

The study on Renewable space heating aims to provide a better information basis for policy design targeting decarbonisation of the space heating sector. It contains a set of country fact sheets on RES potential, energy consumption, energy carriers, technologies, and the regulatory framework. The study will model alternative decarbonisation pathways to understand the long-term perspectives and costs of different decarbonisation technology scenarios in different climatic and geographical settings in Europe. It will also give recommendations for policy design to developed and discuss with relevant stakeholders from EU and the Member States. The study will focus on heat consumption in buildings and will cover space heating and the supply of sanitary hot water. The final report will be submitted to the Commission end of August and is expected to be published in October 2021.

The study on Renewable Cooling covers a new topic for EU policy makers that is not yet integrated in the EU energy policies. Compared to heating there are still many open questions relating to cooling, to date even a clear definition for renewable cooling is missing and only a limited amount of market and technological data is available. The objectives of the study are to provide the baseline information and calculation methodologies to the Commission, specifically:

- Quantify current final energy consumption for cooling (and development by 2030 and 2050)
- Overview and a taxonomy of technologies for cooling and related technological trends
- Investigate how much various cooling technologies can deliver renewable cooling
- Deliver the equations concerning the recommended methods
- Impacts as well as benefits and costs of the proposed definitions
- Provide recommendations on how to use statistical reporting for renewable cooling

The study was finished and submitted to the EC by the study team at the end of August 2021. Based on the study on renewable cooling, the EC will adopt by end of 2021 a delegated act establishing a calculation methodology of RES used for cooling and DHC district cooling. The draft of the Delegated Act will be consulted with Member States and stakeholders in accordance with the legal requirements for the adoption of such acts.

It's important to note that the studies ignore ventilation technology and heat recovery ventilation as a renewable energy source. This was pointed out by the participating industry stakeholders at the meetings.

Revision of the Energy Efficiency Directive

Following the feedback period on the Inception Impact Assessment roadmap in 2020 and the online public consultation closed in February 2021, the EC released the proposed EED revision [**4**] on 14 July 2021. Key changes relevant to the HVAC/building sector:

- New **binding EU level targets** by 2030: decrease primary energy consumption by 39%, final energy consumption by 36%.
- **Mandatory application of the Energy Efficiency First principle** in planning and investment decisions: energy efficient products, services and solutions must be considered as the first option in policy, planning

and investment decisions, when setting new rules for the supply side and other policy areas.

- **Annual savings obligation of EU MS** remains 0.8% for 2021–2023 but will increase to 1.5% from 2024 to 2030.
- A new annual target of **1.7% reduction in total energy use of the public sector.**
- **Broadened scope of renovation obligation: min. 3% mandatory annual renovation rate** of the total floor area **of all public sector buildings to at least NZEB level**. The scope is extended from central government building to all public buildings & sectors, including healthcare, education, and public housing, etc. MS are obliged to publish an **inventory of public buildings over 250m²** with a minimum information of the floor area and the EP certificate of the buildings and update it one a year. The possibility to count alternative measures to renovation to reach these saving is deleted.
- As part of the exemplary role of the public sector Article 7 also includes a provision that contracting authorities may require that tenders disclose a Global Warming Potential of new buildings (**numeric indicator in kgCO_2e/m²** (of useful internal floor area) for each life cycle stage averaged for one year of a reference study period of 50 years), in particular for new buildings above 2000 square meters.
- The **energy audit and energy management system requirements** change from type of enterprise to average annual energy consumption. An obligation to monitor the energy performance of data centres is introduced.
- Comprehensive **heating and cooling assessments** will become part of the national energy and climate plans. Furthermore, local authorities above 50,000 inhabitants are encouraged to prepare local Heating and Cooling plans.
- New, gradually increasing **minimum requirements for efficient district heating and cooling (DHC)** systems will be introduced, with broader requirements and obligations on reuse of waste heat and reporting the share of RES & statistics regarding DH and cogeneration.
- Additional requirements to promote **energy performance contracting** (ECP): Non-residential buildings with the useful floor area above 1000 m² should be required to assess the feasibility of **using EPC for renovation**, MS should encourage public bodies to **combine EPC with energy services** including demand response and storage.
- Member States must ensure the availability **qualification, accreditation and certification** schemes for different energy service providers, energy auditors, energy managers and installers. These schemes must be **assessed every 4 years and updated** according to the identified skill needs starting from December 2024.
- **Conversion factors & PE factors:** to calculate savings in kWh electricity, MS shall apply a default coefficient of 2.1 unless they don't due to justified national circumstances. If they establish their own coefficient it shall happen through a transparent methodology based on national circumstances affecting primary energy consumption and notify the Commission along with the calculation methodology and underlying data in the update of their integrated National Energy and Climate Plans.

The consultation is supposed to end in early November to current state, however, the Commission has been postponing the deadlines from mid-September till November in the past weeks. The trialogue and final approval of the two directives will probably run in the first quarter of 2022.

Revision of the Energy Performance of Buildings Directive

The EPBD revision mandated by the Renovation wave started later, REHVA followed and actively contributed at each step of the process, collecting inputs from REHVA members The review opened on 22 February 2021 with a feedback period on the Inception Impact Assessment roadmap. REHVA submitted its feedback along 242 stakeholders. The second step was a public consultation by 22 June 2021 based on a targeted online questionnaire.

REHVA in its feedback supported the amendment of the EPBD for the effective implementation of the Renovation Wave. Summary of the submitted opinion:

1. **Mandatory minimum energy performance standards** for different building categories should contain IEQ and ventilation criteria ensuring indoor climate improvement by energy renovation. Stricter MEPS for non-residential and public buildings prioritized by the renovation wave may be a start, but ventilation criteria should be defined also for residential buildings where IAQ is often deteriorated by energy renovation. MEPS can be developed from existing NZEB requirements for major renovation and shall be defined for both deep and step-by-step renovation with clear performance targets. Incentives should be linked to comprehensive IEQ and energy performance requirements.

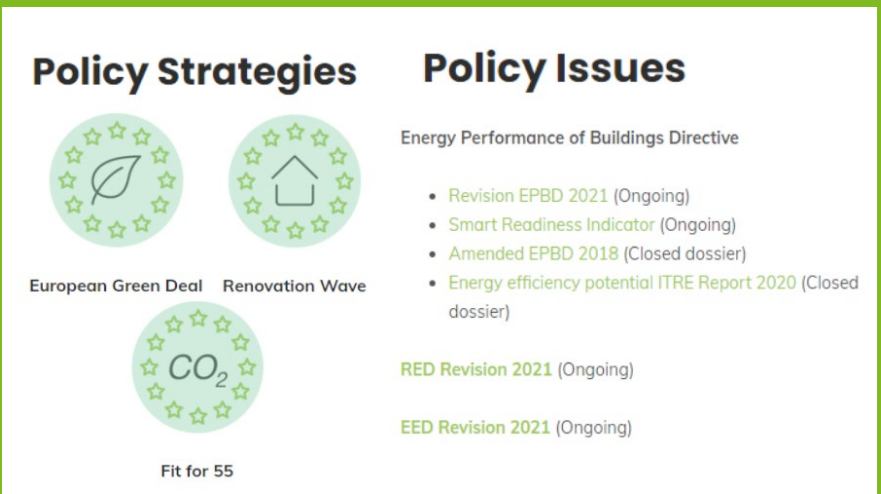
2. **Updating the EPC framework**
   - Current EPCs are not consistent with actual energy use and this has decreased end-users' trust. EPCs should provide relevant data for end users who, when selling or renting, prefer energy-use information that relates to energy bills. Including measured energy use and cost data connected user behaviour data (user patterns, occupancy schedules as in EN 16798-1) would make EPCs meaningful for end users and strengthen credibility.
   - The EPBD should define non-renewable primary energy as main performance indicator in line with the energy efficiency first principle. Additional minimum safeguards may be added in line with the EU taxonomy.
   - Existing minimum requirements may lead to buildings with similar energy cost causing very different power load to the grid. Adding an HVAC and lighting electricity power indicator (W/m^2) would suit the balancing of energy demand and supply, in line with the SRI flexibility criteria.
   - **EPCs should contain an IEQ indicator** like in the EN/ISO EN 16798–1 standard [**5**] and a certificate of ventilation system performance. REHVA recommends the ALDREN-TAIL indicator [**6**] to rate IEQ of buildings undergoing deep energy renovation.
   - REHVA supports the development of an open-source software kernel and dynamic performance calculation tools meeting Art. 3 requirements of the EPBD. The EPBD review should mandate the development of a delegated regulation on a common energy calculation framework.
   - REHVA supports a common EU voluntary certification scheme as developed by ALDREN.

3. REHVA supports **a deep renovation standard** in the context of financing. Performance based and descriptive technical requirements should be a prerequisite for finance. Reporting in-use performance by EPC after 1-year operation and digital technical monitoring, quality management [**7**] during the renovation lifecycle should be part of the standard.

The detailed submitted opinion is available in the EU Policy tracking section of the REHVA Knowledge Hub [**8**].

Follow the REHVA EU Policy tracking for regular updates

To better present the many ongoing policy developments and revisions under the EU Green Deal and the Renovation wave, REHVA revamped its EU policy tracking service in the REHVA Knowledge Hub [**8**]. The issue tracking provides expert briefings, a well-structured coverage of technical meetings with insider information, as well as REHVA internal documents about specific advocacy actions. Find tailored briefings and regular updates about the current revisions of EPBD, REDII, EED and other EU legislation; an overview of EU policy strategies like the EU Green Deal, Renovation wave, Fit for 55; information on ongoing technical studies relevant to the HVAC and building sector and more.



Between 31 March and 3 June 2021, DG Energy organised 5 online stakeholder workshops coordinated by a consultancy company team. The workshops focused on selected topics using online polls with predefined answers, which were not always fully comprehensive or meaningful. Up to 250 participants attended the individual sessions which made moderation extremely challenging and led to parallel discussions in the chat field and orally. The issue of integrating IEQ criteria in the EPBD was repeatedly raised and demanded by several stakeholders, including REHVA. Unfortunately, no public records are published about the outcomes and the discussions, and it is not clear whether and how the Commission or the contracted consultancy company will use the outcomes.

The Commission is supposed to publish its proposal for the third EPBD revision by end of 2021, however it seems that there is a delay in the revision processes, due to the many parallel dossiers and other EU policy challenges. It is likely that the process is delayed, like in the case of the two pervious directives. After the final directive is tabled, the European Parliament and the Council of the European Union will discuss and amend the proposal (so-called "trialogues"), until an inter-institutional agreement can be found for the final text. ■

References

[1] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12553-EU-renewable-energy-rules-review_en.

[2] https://www.actu-environnement.com/media/pdf/news-37896-proposition-commission-directive-energie-renouvelable.pdf.

[3] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12553-EU-renewable-energy-rules-review_en.

[4] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2021%3A0558%3AFIN.

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[6] https://www.rehva.eu/rehva-journal/chapter/application-of-aldren-tail-index-for-rating-the-indoor-environmental-quality-of-buildings-undergoing-deep-energy-renovation.

[7] https://www.rehva.eu/hvac-guidebook-repository/rehva-guidebook-29.

[8] https://www.rehva.eu/about-us/join-rehva/why-to-subscribe.