Better buildings for climate neutral cities

The 'Fit for 55' revision of the Energy Performance of Buildings Directive

Key messages:

- The EPBD should define a clear roadmap to achieve zero emissions buildings by 2050, with milestones and progress indicators for the building sector. It should ensure a progressive increase in minimum energy performance standards (MEPS) to achieve the targets in 2030 and carbon neutrality in 2050. Successive and predictable increases in the standards will help local and regional governments, industry, and households to adjust.
- MEPS can only work if every level of government does its part. They must be introduced with a robust legislative and financial support framework. The EU framework needs to establish binding targets at national level, clear obligations for member states to support local authorities, and enforcing mechanisms as well as earmarking of funding.
- Increased technical assistance for cities is necessary to set up and develop one-stop-shops and mobilise the right expertise; while direct funding should be available to overcome economic barriers to renovation, especially for vulnerable and at-risk households.
- A revised definition of Nearly Zero Energy standards for new buildings should plan a trajectory towards climate neutral and positive energy buildings, also introducing elements to reduce the whole life-cycle impact of buildings and for the integration of nature-based solutions.
- A deep renovations standard, if accompanied by adequate support and information including technical assistance and training, can achieve higher emission reductions, but it must allow for flexibility at the local level to decide on the best approach depending on local markets and conditions.
- The revised directive must include mandatory deployment targets for privately accessible charging points on residential and commercial properties, for semi-accessible charging points, and a 'right to plug' in residential buildings.

Our long-term vision is that new buildings do not produce any carbon emissions throughout their entire life cycle. They are constructed and refurbished in zero emissions construction sites,[1] include shares of renewable energies at the building or district level, ultimately developing into positive energy buildings. Cities manage an extensive portfolio of buildings. Cities have urban planning competencies, and as the closest level of

[1] Cities are piloting low carbon construction materials and zero emission construction sites, for example in the Big Buyers Initiative. Such pilots can be a blueprint for a zero-carbon building sector powered by zero-emission heavy duty vehicles and construction sites, with financial support to build and renovate: https://bigbuyers.eu/

government to citizens, we support building owners and help match demand and supply. Together with public housing companies, owners associations, and the building sector, cities translate the broader objectives for the building sector into real projects.

The Energy Performance of Buildings Directive (EPBD) has supported cities to deliver energy renovations and ensure that new buildings meet nearly zero energy standards. The forthcoming revision of the EPBD represents a major opportunity to address energy efficiency, embodied carbon, affordability, and standards for old and new buildings to meet the objective of climate neutrality by 2050.

The EPBD revision must promote a shift in policies and lead to a profound change towards low and zero emission buildings, at both the construction and the management phase, and define a clear roadmap for zero emission buildings by 2050. The review should take into consideration the following:

Minimum Energy Performance Standards (MEPS) for existing buildings

Currently, national frameworks for MEPS introduced as part of the EPBD are enforced at local level, but the targets and timeline for implementation vary across member states. Cities are crucial for the effectiveness of building policies such MEPS and renovation standards. We can channel support, ensure uptake of solutions, inform the supply chain about skills and investments needed, and collect the local data on which the MEPS are based. The revision of the EPBD should include an obligation for member states to provide an adequate framework and the means for the design and implementation of standards to ensure cities can fulfil this key role.

The benefits of having a progressive standard to be achieved for the energy performance of buildings is that it allows owners to have a clear view on the performance to be achieved and to undertake renovation works gradually if needed, but keeping in mind the final decarbonisation objective. Paired with a trajectory to decarbonisation, it also allows to carry out deep renovation projects when it is more efficient and effective (for example in multi-apartments buildings), depending on the type of building and support available.

MEPS should be introduced with a medium- and longer-term timeline for enforcement, allowing building owners and managers to set a clear trajectory and plan investments at the best time in a building lifecycle or the family cycle. Trigger points, i.e. when a building changes owner, are important, but since on average European homes will be sold only once between now and 2030, compliance dates should to be introduced in addition to trigger points. Despite current differences in metrics used to assess the improvement of a building's energy performance in national schemes (i.e. EPC rating or energy consumption), the results should be comparable across the EU and ensure that renovations funded by public means are leading by example.

MEPS should apply to all residential and non-residential buildings. However, considering the difficulties with specific ownership structures, there should be a roadmap starting with single-family homes, service and commercial buildings to speed up the renovation and achieve minimum energy standards, while also setting milestones for the other types of buildings. Public buildings with a total floor area of more than 250 m2 can (should?) be targeted, with exemptions for certain constructions, such as cultural heritage sites and public transport stations.

The involvement of the local level in drafting these roadmaps will make sure they fit the different contexts and help harness untapped potential. For example, improving the efficiency of certain service buildings, such as stations, can be challenging, but integrated strategies for local production and consumption of renewable energy can significantly lower their emissions. City authorities are well placed to appreciate the impact of MEPS

on improved energy efficiency and on housing affordability, and to integrate objectives and achievements with other local strategies.

The increased ambition in the Effort Sharing Regulation and the EU Emission Trading System for the energy sector will give incentives to move to renewable energy and enhanced energy efficiency. However, to avoid that increased carbon costs are passed on to consumers and households, member states need to play an active role in creating improved building standards. MEPS need to be included in robust national long-term strategies.

MEPS and affordability of housing

When considering support policies for MEPS, special attention should be given to in-need and at-risk households, particularly to tenants whose security of tenure might be put at risk. The EPBD should already foresee safeguards to be implemented at national level, such as obligations for member states to set up social support mechanisms.

The energy transition represents an opportunity to improve access to better quality housing, if renovation costs are balanced as much as possible with energy savings and security of tenure is ensured. It can also help lift households out of energy poverty if subsidies and public funding are made available to those with reduced access to market-price loans.

Also, for public housing and rented buildings, participative models are essential for tenants to work together with the housing companies, landlords and owners associations on the scope and cost of renovations. It can help balance costs and reinforce security of tenure. Capacity building opportunities for local housing providers should be created for better uptake of participative models and a more coordinated approach across sectors at national or local level.

The current energy poverty obligations in member states' National Energy and Climate Plans (NECP) and Long-Term Renovation Strategies (LTRS) are insufficient as the key instruments to identify households at risk of energy poverty. More tailored and dedicated public funding opportunities need to be deployed alongside private financing options for renovations, such as direct grants to low- and middle-income citizens, ESCO financing, low interest loan paybacks through on-bill recovery, tax incentives, technical assistance facilities that support building renovation projects in cities in addition to tailored advice and support through local or regional one-stop-shops.

Nearly Zero Energy Buildings (NZEB) definition for new buildings

The revision of the EPBD represents an opportunity to consider buildings as part of a broader system. A revised definition should indicate a path towards climate neutral and positive energy buildings, introducing elements to reduce the whole lifecycle impact of buildings and the integration of nature-based solutions.

Harmonisation of the NZEB definition at the European level would make it easier to compare between countries, explaining how the nearly zero standard is assessed and which elements it must incorporate (i.e. renewables, insulation, heating & cooling, ventilation). However, the definition should consider the climate zone factor when establishing minimum thresholds for primary energy use and renewable energy sources, alongside existing approaches at the national level. In the longer term, CO_2 emissions from building materials should also be included. There should be a regular update of the requirements in Annex I (for example, every five years), and it should be possible for member states and cities to be more ambitious in applying the requirements.

Also, the definition can already include a reference to whole life carbon, which soon will have to be further defined while building the construction sector's capacities and cities to carry out whole life carbon monitoring.

A standard for deep energy renovations

A deep renovations standard, if accompanied by adequate support and information, including technical assistance and training, can be a way to achieve higher emissions reduction, but it needs to offer flexibility to consider local circumstances. Local policy makers play an enabling role in designing the energy renovation market through local regulations, driving phase-out of inefficient heating and cooling systems, managing public procurement processes, and developing public-private partnerships. Renovations must be done to a high standard to effectively reduce emissions and avoid performance gaps that can make the targets harder to reach in the medium term.

A legal definition will also have to consider the different climatic zones and the average performance of the building stock.

It is important for cities, to have flexibility, especially concerning deep energy renovation, to decide the best approach, whether a staged-pathway or a single renovation process, depending on their local market, information and financial support available. Whole life carbon emissions should be introduced progressively once conditions - support and information, technical assistance and training - are met. Different elements should be part of the standard: a consideration of the different climatic zones and average performance of the building stock; the use of renewable energy, and broader aspects that have an impact on the quality of renovations, such as health and environmental standards, climate resilience, air quality and biodiversity.

Moving to zero carbon in all or most of the building stock by 2050 represents a significant challenge in the renovation of existing buildings. For building owners that have been conducting progressive renovations over time and already reached a level of energy savings, it will be harder to achieve further improvements through renovations in a short time. A step-by-step approach should be considered, giving sufficient time for successive renovations.

Information tools

Energy Performance Certificates (EPCs) have been valuable tools to get a picture of the performance of the building stock, point towards energy improvements, prioritise buildings, and target portions of the stock. However, the framework has not been implemented in a comparable way in all member states and currently the different EPC levels are not understood in the same way across the EU.

A harmonisation at EU level of the EPC system would be useful to support the implementation of MEPS and draw a clear trajectory for progressive improvement of the building stock, keeping the key elements from the current framework model or extending the validity of current EPCs.

City authorities will need a series of measures such as improved training, qualification schemes and labels to improve the quality of EPCs. Additional indicators that go beyond energy consumption can provide information to owners on emissions, consumption-based on energy destination (heating, cooling, lighting), and support interoperability with other (digital) tools. EPC recommendations to owners should go beyond minor renovations and be targeted at deep renovations for the worst performing buildings.

Currently, property owners are required to comply with EPCs every ten years by EU legislation (EPBD & EED) and every four years by Energy Audits (EED). This leads to a mismatch between reporting and compliance periods, which is unnecessary heavy for public authorities. There should be a harmonisation between the

timelines foreseen by EU legislation to avoid double reporting to the EU. This is the case, for example, for housing companies in some countries, which are required to carry out both EPCs and Audits on the same building.

Building Renovation Passports (BRPs) can provide owners with a renovation pathway to zero energy buildings, inform of the benefits of energy improvements and help develop a staged approach to renovation and pathways to zero energy buildings. For the review of the EPBD, the Commission should assess the implications of a BRP scheme at EU level, either as a legal requirement or a voluntary measure, which could be phased in starting, for example, as a scheme targeting deep renovations in the worst performing buildings.

Charging infrastructure

The EPBD revision must introduce mandatory deployment targets for privately accessible charge points on residential and commercial properties, semi-accessible charge points, and explicitly mention a right to plug in residential buildings.

Alternative fuels infrastructure is essential to decarbonise the transport sector. Without adequate recharging and refuelling infrastructure, the transition towards clean vehicles will fail. Publicly accessible infrastructure will serve as a backbone of charging but will not meet demand alone. The greatest proportion of infrastructure is needed in privately and semi-publicly accessible areas, such as garages, car parks, and residential and commercial buildings.[2]

EU policy makers should also look at ways to incentivise active mobility in relation to housing. Gothenburg, for example, is working with housing companies on the design of new housing projects by giving priority to biking and by reducing the number of parking places usually allocated to residents.[3] The initiative has reduced car ownership of residents below the average rate in the city. The new EPBD should also introduce new requirements for bike parking and e-bike charging infrastructure to accompany the necessary modal shift.

One-stop-shops

Direct EU or national funding should be made available to energy poor, at-risk and in-need households to overcome economic barriers to renovation for certain types of buildings. Increased technical assistance is necessary to set up and develop one-stop-shops and mobilise the right expertise. Access to trusted advice and information increases confidence and eases the process to improve energy efficiency in existing buildings, especially for private citizens.

Locally operated one stop shops play a key role in ensuring coordination of supply and demand. They can help building owners and managers and help integrate individual projects into the broader strategy of the city. They can also help prioritise worst performance buildings by establishing timelines and providing targeted support to different portions of the building stock based on construction years.[4] One-stop-shops are also important to encourage citizens to start renovation projects through advice, research options, look for contractors, navigate through tenders and quotations, and provide support during the renovations.[5]

[2] More information on Eurocities position on alternative fuels infrastructures deployment : https://eurocities.eu/wp-content/uploads/2020/08/Eurocities_Better_alternatives_for_city_authorities_FINAL.pdf

[3] See Living (almost) car-free in Gothenburg, https://eurocities.eu/latest/living-almost-car-free-in-gothenburg/

[4] This is the approach adopted by Grenoble Metropole in the MurMur One Stop Shop https://www.grenoblealpesmetropole.fr/265-mur-mur.htm

[5] These services are offered by Ghent in the Energy Hub One Stop Shop https://stad.gent/nl/energiecentrale. Breda is taking similar actions through the Interreg TripleA project https://www.triple-a-interreg.eu/

For their set up and operation, there should be dedicated EU, national and regional funding. The ELENA model can be replicated if the model is adapted to smaller investment packages, making it accessible for city authorities. With implementation taking place at the local level, there should also be investment packages that are specifically targeted to cities, beyond competitive calls for EU funding support.

Whole life carbon

11% of building emissions come from embodied carbon in construction at the global scale, i.e. the emissions created from the construction, demolition, and the wider supply chain of a building. The most significant opportunity to address operational and embodied carbon in a project occurs during the design stages, making it essential to address whole life impact for new buildings. Robust and reliable datasets are crucial together with multi-stakeholder involvement, market development and integrated policy approaches at local, national and EU level.[6]

Closed-loop planning has a higher degree of complexity and requires more time. Capacity building for the public sector is also needed, with training materials for municipal staff and construction workers to increase understanding of the co-benefits of circular materials. Some cities[7] are already taking the initiative and are working together in the 'Dramatically Reducing Embodied Carbon in Europe'[8] project to carry out a technical assessment of the existing city policies to identify recommendations on reducing embodied carbon and promote bio-based materials.

The revised EPBD should pave the way to reporting on WLC emissions from buildings, for example, with a gradual approach starting with new private and public buildings and private non-residential buildings with a commercial purpose, such as shopping and data centres.

Long-term renovation strategies (LTRS)

Most of the current national LTRS fall short of delivering on their objectives to ensure public and stakeholder inputs on the plans, address the broader benefits of energy performance of the building stock, tailor actions to deep renovations, and establish a trajectory towards 2050.[9] The EPBD provisions should be revised to strengthen the obligations to set out a roadmap to fully decarbonise building stock by 2050 including measures, progress indicators and milestones.

The participatory mechanisms in the LTRS must be strengthened. Beyond an obligation to consultation, there is no requirement to involve city authorities in drafting the plans to facilitate the inclusion of local actions plans or investments. The revision must include an obligation for member states to consult with local governments and their stakeholders and establish multi-level dialogues based on the model of the Governance regulation of the Energy Union package.

Member states should also be required to monitor their progress on achieving the objectives of the LTRS, with a five year revision of the strategies, linking them to other policies such as heating and cooling, renewables and construction products. There should be more stringent requirements on energy poverty and assistance to vulnerable households, ringfencing funds for renovation to support MEPS.

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[6] https://eurocities.eu/latest/build-back-better-decarbonise-construction/

[7] Amsterdam, Copenhagen, Glasgow, Hamburg, Helsinki, London, Stockholm, Oslo, Tampere

[8] https://carbonneutralcities.org/european-cities-launch-ambitious-effort-to-reduce-embodied-carbon-with-grant-from-laudes-foundation/ - funded by the Laudes Foundation

[9] https://www.bpie.eu/publication/a-review-of-eu-member-states-2020-long-term-renovation-strategies/

Policy coherence with other legislative initiatives

The Fit for 55 Package, including the revised EPBD Directive, will promote and accelerate a shift to renewable energy and energy efficiency, which will have significant implications for the building sector and cities.

Energy Efficiency Directive (EED)

Article 5 of the EED requires 3% of the floor area of central government buildings to be renovated annually to meet a minimum, cost-optimal efficiency standard. Buildings owned and occupied by local governments are already, in many member states, subject to more stringent requirements. They can kickstart renovations, as they are easier to target, have simpler ownership structures, attract investments, and act as a demonstrator. We support the approach of the EED to achieve more ambitious levels of energy efficiency progressively.

In the proposal for a revised Energy Efficiency Directive,[10] article 5 stresses that member states should make sure regional and local governments include energy efficiency in their plans, carry out consultations, and target support to groups in energy poverty or at risk. The strong focus on local action must be accompanied by appropriate support. The article mentions key tools to boost local action such as capacity building, guidelines, and cooperation. With the strong focus on the role of the public sector, and the requirement on member states to ensure local and regional implementation, the targets for energy efficiency must be made binding at the national level. Making the building stock climate neutral by 2050 will require a tremendous effort. Without nationally binding targets it will be even harder to ensure that all necessary funding and supporting instruments will be put in place to comply with the requirements, and an appropriate allocation of resources for the implementation.

Coherence between the two directives must be ensured on EED article 6, which refers to a nearly-zero energy building standard that has yet to be revised in the EPBD proposal. It is essential that the two directives are coherent in their provisions, to avoid any loopholes or unreasonable additional burden risking to undermine implementation at the local level. Examples of the need for harmonisation include the NEZB standard and the reference to the EPC framework to establish the minimum rate of a building occupied by public bodies.

Existing exemptions for heritage and temporary buildings must be maintained for harder to renovate public buildings such as conservation and heritage buildings while new innovative solutions are developed and tested. Technical assistance will be essential to boosting the renovation of public buildings, including financial support for replication and upscaling of pilots and demonstration projects, building on experiences developed with Horizon 2020 funding for smart cities.

Renewable Energy Directive

Buildings should be considered as part of a system at the district or neighbourhood level, given that primary energy savings can be made at both the building and system levels. This creates a more integrated energy system where district heating and cooling networks using waste heat and renewable energy sources are considered as part of the overall solution for decarbonising buildings. The community level approach can also help incentivise the installation of renewable energies in buildings without high consumption, which can be used in other buildings in the district.

[10] https://ec.europa.eu/info/sites/default/files/proposal_for_a_directive_on_energy_efficiency_recast.pdf

In the proposed Renewable Energy Directive, member states are required to ensure that all public buildings including those of local and regional governments fulfil an exemplary role, promoting the use of renewable heating and cooling systems. An ambitious and realistic timeline for member states should be developed to phase out fossil fuels from public buildings gradually and to consider projects and investments already made at the local level. This should be seen in conjunction with the overall energy transition and matching the wide variety of building types with the appropriate solutions. This is particularly an issue in dense urban areas with multi-storey buildings, where the available space for renewable installations does not meet the energy demand, even with high energy efficiency.

We need more technological improvements and new financial arrangements to decarbonise heating and cooling, making it feasible and affordable to locally produce and consume renewables, working with citizens and associations of homeowners and housing companies to gain trust and co-create projects for fossil free buildings. More funding should be targeted to support sustainable heat networks and enable grid connection when renovations occur. In some cities, households living in energy renovated homes lose part of the advantages of lower energy bills due to high fixed duty costs, and one-off connection costs to the heat grid.

EU and national climate adaptation strategies: anticipating the likely impacts of climate changes

The built environment is vulnerable to the impact of climate changes, with risks of collapse, declining state, loss of value, and reduced lifetime.[11] In the EU Climate Adaptation Strategy, the Commission announced support for integrating climate resilience in the criteria for construction and renovation of buildings and critical infrastructure. The revised EPBD should require that the likely impact of climate change be considered when planning new buildings and major renovation projects, at district level or for a single building. This is already the case for public buildings in many cities. As the impact of climate changes are likely to increase in frequency and intensity but remain hard to predict, this should be introduced at least for all new private and public buildings in the planning phase (i.e. standards for water storage). As climate adaptation requires integration of strategies, member states must also address the resilience and adaptive capacities of the building stock in their national adaptation strategies.

[11] https://climate-adapt.eea.europa.eu/eu-adaptation-policy/sector-policies/buildings