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# Paving the way towards a sustainable and digitalised European building sector

## DIGITALEUROPE's views on the revision of the EPBD

### Executive Summary

DIGITALEUROPE welcomes the European Commission's revision of the **Energy Performance of Buildings Directive (EPBD)**, published on 15 December 2021. Net-zero emission buildings require major changes in the way we design, build, operate and renovate buildings. Digitalisation has the potential to ensure a sustainable building sector in the European Union. The digitalisation of the entire building life cycle is critical to achieving Commission's ambition to cut greenhouse gas emissions in the building sector by 60% by 2030.<sup>1</sup>

Digital technologies can accurately record, assess, simulate, measure, track and cut emissions over the entire life cycle of a building. More than before, the European Union's quest for resilience in the energy market is and will continue to be a challenge. Digital can deliver alternative solutions for scarcity and decarbonisation. In our view, the requirements and incentives for the rollout of digital technologies through the proposal for a revised EPBD must go a step further.

We believe that connecting digitally the various phases of the entire building life cycle for new and renovated buildings is key to achieving the roadmap for a sustainable building sector. Digitalisation enables stakeholders to design, build and operate high-performance buildings, conduct energy analysis at key project stages, reduce material waste and rework during construction by leveraging clash detection<sup>2</sup> during design, reduce embodied carbon through design and material specification, plan for smart decommissioning and materials recovery,

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<sup>1</sup> European Commission (2020). *Stepping up Europe's 2030 climate ambition. Investing in a climate-neutral future for the benefit of our people*, <<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0562&from=EN>>.

<sup>2</sup> Clash detection is the technique of identifying if, where, or how two parts of the building (e.g., plumbing, walls etc.) interfere with one another.

optimise HVAC system design and part load variable conditions,<sup>3</sup> improve structural material efficiency, or optimise site planning among others.

Many of the ways to reduce carbon emission and improve building sustainability occur during the design phase of a building. For example, by using recycled materials for a building – most heavily influenced during the architecture, engineering, and construction phases, energy requirements and emissions can be lowered by up to 90 percent.<sup>4</sup> At the operation phase, building automation and controls constitute the brain of the building. They generate 30% energy savings on average, with a return of investment of 3 to 5 years.<sup>5</sup> It supports factor screening<sup>6</sup> across distinct areas that contribute to the energy performance of buildings, helping teams uncover the interventions or areas for investment with the highest impact.

The proposal for a revised EPBD should also incentivise assessing and addressing lifecycle carbon emissions from buildings for all new and renovated buildings. To enable this transition, the proposal should serve to foster a data-centric approach. Data is paramount to describe the system and its use (i.e., master data/system data for Building Information Modeling (BIM), digital twins).

Furthermore, we encourage institutional stakeholders to ensure consistency across all building-related provisions in the “Fit for 55” legislative package during the upcoming negotiations on the EPBD recast. We need a coherent and robust framework in place for buildings to meet the EU’s 2030 and 2050 targets.

## Definitions (Article 2)

*DIGITALEUROPE welcomes the introduction of zero-emission buildings in the proposal for the revised EPBD. At the same time, we suggest adding “carbon-free electricity” and “heat waste sources” to the current definition. Further*

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<sup>3</sup> The optimisation of heating, ventilation and air conditioning (HVAC) systems in buildings requires to look at how heating and cooling/ventilation is distributed from the central generator to points of end use. Hydronic systems operate through the distribution of a warm or cool water, around the buildings. “Balancing the system” at part load (when the need is not uniform in the building) means to ensure that warmth or coolth is distributed around the system to satisfy the building’s heating or cooling demand as effectively and efficiently as possible, according to user behaviour.

<sup>4</sup> Autodesk (2013), *Save Money and the Planet: Green Building Infographic*, <<https://redshift.autodesk.com/build-green-infographic/>>.

<sup>5</sup> Eu.bac (2020), *Renovating European buildings with cost-effective, active energy efficiency solutions*, <<https://eubac.org/news/eu-bac-3-pager-renovating-european-buildings-with-cost-effective-active-energy-efficiency-solutions/>>.

<sup>6</sup> Factor screening means searching for the most important factors (or inputs) among the many factors that may be varied in an experiment with a real or simulated system.

*attention should also be given to how the definition impacts the use of renewable and carbon-free power purchase agreements.*

- ▶ The introduction of zero-emission buildings (ZEB) is a vital step towards the decarbonisation of buildings. However, DIGITALEUROPE would welcome further clarifications in regard to Article 2, §1, as **the current definition does not explicitly exclude data centres** from the scope of the directive. In addition, we would strongly recommend adding carbon-free electricity from the grid and heat waste sources to the definition of a ‘zero-emission building’ in Article 2, §2. The current definition foresees that the very low amount of energy still required for a zero-emission building should be covered only “by energy from renewable sources generated on-site, from renewable energy community (...) or from a district heating and cooling system.”
- ▶ At the same time, we believe that this definition **risks discouraging the use of renewable and carbon-free power purchase agreements (PPAs)**. We would welcome further clarifications in the proposal to allow companies to be able to attribute the power generated by virtual PPAs to buildings in so far as those buildings are considered zero-emission buildings. Many companies in electro-intensive sectors, particularly in the technology sector, have been pursuing corporate renewable and carbon-free energy purchasing through the use of virtual PPAs. Even though oftentimes the power generated from these energy projects is not physically delivered to the building, the owner of the building should still be able to claim credit for the renewable or carbon-free energy generated from these projects as they signed a PPA to enable this electricity in the European Union.

## New and existing buildings (Articles 7 and 8)

*We think that the revision of the EPBD should consider the capability of the Building Information Modeling (BIM), whilst encouraging 3D digital representation.*

- ▶ **Building Information Modeling (BIM)** has been recognised as a **strategic enabler for cost, quality, and policy goals**. Its wider adoption is supported by the work of the EU BIM Task Group. The recent European Commission’s Staff Working Document on scenarios for a transition pathway for a resilient, greener, and more digital construction sector equally acknowledges its role.<sup>7</sup>

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<sup>7</sup> European Commission (2021), *Commission staff working document: Scenarios for a transition pathway for a resilient, greener and more digital construction ecosystem*, <<https://ec.europa.eu/docsroom/documents/47996>>.

The proposal for a revised EPBD should address the capability of BIM for building and renovating nearly net-zero and net-zero buildings. BIM can help optimise energy usage by presenting and visualising system components and consumption, by predictive maintenance and by enabling real-time facility management.<sup>8</sup> In addition, by linking BIM with life cycle assessment databases and tools, it would be possible to analyse and evaluate energy and resource consumption throughout all phases of the life cycle of a building i.e., design, construction, use, deconstruction.

- ▶ We propose that a new provision is added to Article 7 on *New Buildings* to **encourage the development of 3D digital representation** of a building or part of a building, including the use of BIM-based energy modelling in the initial design phases. This would enable the study of more efficient design alternatives based on energy analysis. Furthermore, it would facilitate the implementation of solutions based on the simulation results. An additional provision could be added to Article 8 on *Existing Buildings* to encourage the use of digital technologies for buildings undergoing major renovation.
- ▶ In addition, we believe that the revision of the EPBD should drive further significant improvements in the energy performance of buildings in their operational phase. Moreover, for the optimal use of technical building systems throughout their entire life cycle, the continuous monitoring and optimisation of their operation is paramount.

## Technical Building Systems (Article 11)

*DIGITALEUROPE welcomes the additional requirements for optimising the energy use of technical buildings systems.*

- ▶ We welcome the introduction of additional requirements under Article 11 for all ZEB buildings and major renovations, where technically and economically feasible, to be “equipped with measuring and control devices for the monitoring and regulation of indoor air quality”. The introduction of a requirement to ensure monitoring capability will ensure that the data set on the IAQ performance of the building stock is improved. This is the first step on the road to better understanding the IAQ problem in the EU and thus to inform policy at the EU level to drive improvements in the IAQ performance of the building stock.

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<sup>8</sup> Mott MacDonald (2022), *BIM advances sustainability*, <<https://www.mottmac.com/views/bim-advances-sustainability>>.

## Smart readiness of buildings (Article 13)

*DIGITALEUROPE welcomes the provision on Smart readiness of buildings. We encourage a common calculation methodology for Member States and the inclusion of the*

- ▶ DIGITALEUROPE welcomes the boost that this measure will give to the deployment of smart Technical Building Systems (TBS), particularly heating, ventilation, and air-conditioning (HVAC) systems and Building Management Systems (BMS) in schools, leisure facilities, hotels, hospitals, and office buildings. We want to emphasise that an optional common Union scheme for rating the smart readiness of buildings risks leading to asymmetric approaches across Member States. Therefore, DIGITALEUROPE would strongly support a requirement in Article 13 for the European Commission to revise the SRI Delegated Regulation to remove the flexibilities given to Member States to adjust the common calculation methodology. We also recommend making it **mandatory for Member States to include the indicator in the Energy Performance Certificate** when it is available under a Member State's national implementation.

## Data exchange (Article 14)

*DIGITALEUROPE supports the aim for more data transparency. At the same time, we emphasise the need for interoperability, proportionate costs and integration in the Digital Building Logbook.*

- ▶ We agree that data plays an essential role in the optimisation of the energy efficiency of buildings over their life cycle. The data of a building should be structured to enable **interoperability** among technologies and better use of the data collected. Further attention should be dedicated to ensuring that the **costs of collecting data are proportionate**. Having a **structured approach to data** is vital to ensuring that the information can be used efficiently, whilst being integrated into a future Digital Building Logbook.
- ▶ Article 14 requires building systems data related to the energy performance of building elements, building services, building automation and control systems, meters and charging points for e-mobility. 3D models are not only a critical tool for planning and optimising high performance building solutions, but they are also a valuable data source for the implementation of Article 14 to ensure that owners, tenants, and managers fully understand the building, its design and its system performance throughout the life of the asset.

Following a renovation or construction of a new building, 3D models can be used to build a descriptive digital twin, which brings together all the data created about the project's design, construction, and intended operational performance and makes it available and accessible to building owners, landlords, and real estate developers as well as architects, engineers, building contractors etc. A digital twin is a digital "as-built" representation of a building that is connected to operational data; it inherits and structures all relevant information for building operations and upkeep in a digital format, contextualised by a 3D model.

## Energy Performance Certificates (Articles 16 to 19)

*In our view, real measured performance metrics should be mandatory in the Energy Performance Certificates. New metrics going beyond energy performance only, a digitalised approach and an integration with other databases and tools should be considered.*

- ▶ The implementation of national Energy Performance Certificate (EPC) regimes has led to a diverse set of instruments, varying in terms of scope and available information, in some cases resulting in limited reliability, compliance, market penetration, and acceptance at the country level. On top of this, building-related data i.e., EPC data, sustainability, environmental performance information, digitalisation of buildings continues to be scarce, of unreliable quality and limited accessibility.
- ▶ To ensure comparability between calculated and metered values we urge including **real measured performance metrics as a mandatory element in the EPC template**. The energy performance of an existing or new building should always be determined based on metered energy use. The metered final energy consumption metrics would indicate the extent to which the Energy Efficiency First principle is applied.
- ▶ New metrics should be integrated into the EPC to trigger buildings decarbonisation beyond energy performance only, alongside a digitalisation of EPCs to make them more dynamic and informative. The EPC should be integrated with other existing databases and tools, such as the Smart Readiness Indicator (SRI), through Digital Building Logbook, which could overcome value chain fragmentation. Additionally, the EPC should be made available for a group of buildings (district buildings) when the cost-optimum energy performance is to be found at the district level and when the group of buildings is willing to participate to a collective scheme.

## Digital Logbook (Article 19)

*DIGITALEUROPE welcomes the introduction of national databases for energy performance of buildings. They are key to enhancing the role of digital for sustainable buildings.*

- ▶ The introduction of national databases is a major step forward in making the building stock climate neutral. Since the building sector is characterised by many different stakeholders, it is necessary to bundle and structure disparate information. National databases can be an important basis for decision-making on all aspects of buildings management and can be **key to unlock the digital potential for making buildings sustainable**. The Product Environmental Footprint (PEF) performance of building elements should be included in the digital building logbook for additional transparency.

## Inspections (Article 20)

*DIGITALEUROPE strongly recommends that inspections are conducted using digital tools, including virtual inspection schemes.*

- ▶ Existing methods to estimate the energy performance of buildings require highly trained engineers and a significant amount of time for putting together energy analysis and simulations. Virtual energy performance assessments quickly capture and utilise information on building use, geographic orientation, weather, and materials, generating three-dimensional (3D) models in order to assess the environmental footprint of the building and estimate the energy use patterns. With this in mind, we believe that future inspections should also cover the electrical installation that enables the green transition as a fundamental base layer of any building. Therefore, we encourage Member States to create **virtual energy performance inspection schemes**.

## Building automation and control systems

*Our members strongly support the improved requirements for building automation and control systems. For consistency purposes, all non-residential buildings should be in their scope, including those under 70 kW.*

- ▶ Certain monitoring and control functionalities will be mandatory from 2025 for all new and 'major renovated' residential buildings. The installation of building automation and control systems (BACS) in large non-residential buildings

(>290 kW) is already mandatory, but the implementation of this requirement is to be expedited to 2025, whilst the scope will be lowered to 70 kW from 2030. DIGITALEUROPE would note an apparent inconsistency in that all residential buildings, most of which will be under 70 kW, will be covered by BACS requirements. That will mostly be fulfilled by BACS incorporated in TBS, while small non-residential buildings under 70 kW would be exempt. An amendment to ensure that all non-residential buildings are in scope would be consistent.

- ▶ Whilst DIGITALEUROPE is supportive of the extension of the scope of the BACS provisions in the revision of the EPBD, it makes it an imperative that tangible progress is forthcoming from the Commission's work under the Ecodesign Directive (ErP) in the near future. In particular, a vertical approach to regulating 'BACS incorporated in TBS' needs to be confirmed in the context of the [ENER LOT 38 preparatory study on BACS](#). Elements related to interoperability must also be solidified, please see [ENER LOT 33 Smart Appliances](#) and Article 14 of the EPBD revision proposal.

## Data centres


*DIGITALEUROPE would welcome further clarifications for data centre operators in regard to backup generators, whilst emphasising that these are already subject of EU regulations.*

- ▶ The current requirement that new commercial buildings are zero-emission after 2030 does not clearly exempt backup generators. Data centres rely on backup generators not as a primary power source, but as an emergency backup power supply to maintain operations during unexpected power outages on the electricity grid. In fulfilling this function, backup generators do not alter the day-to-day energy performance of the building itself (the intended focus of the revised EPBD). However, back-up generators are critical infrastructure for data centre operators and some other industries that require uninterrupted power supplies (e.g., certain healthcare facilities). Such backup generators are already subject to EU regulations, including the Industrial Emissions Directive and the Emissions Trading Scheme, and should not be further regulated under the revised EPBD.


In conclusion, DIGITALEUROPE is committed to continue supporting the European Commission on the revision of the Energy Performance of Buildings Directive (EPBD). We stand ready to provide additional feedback during the next legislative steps of the proposal.



FOR MORE INFORMATION, PLEASE CONTACT:

 **Claudia Gherman**  
**Manager for Digital and Green Transformation Policy**  
[claudia.gherman@digitaleurope.org](mailto:claudia.gherman@digitaleurope.org) / +32 493 25 40 67

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 **Ray Pinto**  
**Director for Digital Transformation Policy**  
[ray.pinto@digitaleurope.org](mailto:ray.pinto@digitaleurope.org) / +32 472 55 84 02

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## About DIGITALEUROPE

DIGITALEUROPE represents the digital technology industry in Europe. Our members include some of the world's largest IT, telecoms and consumer electronics companies and national associations from every part of Europe. DIGITALEUROPE wants European businesses and citizens to benefit fully from digital technologies and for Europe to grow, attract and sustain the world's best digital technology companies. DIGITALEUROPE ensures industry participation in the development and implementation of EU policies.

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## DIGITALEUROPE

Rue de la Science, 14A, B-1040 Brussels

T.+32 (0) 2 609 53 10 / [www.digitaleurope.org](http://www.digitaleurope.org) / [@DIGITALEUROPE](https://twitter.com/DIGITALEUROPE)

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