WORLD GREEN BUILDING COUNCIL

EPBD implementation case studies

How life cycle GWP measures are being implemented by governments

Measures taken in Denmark, France, Sweden and London

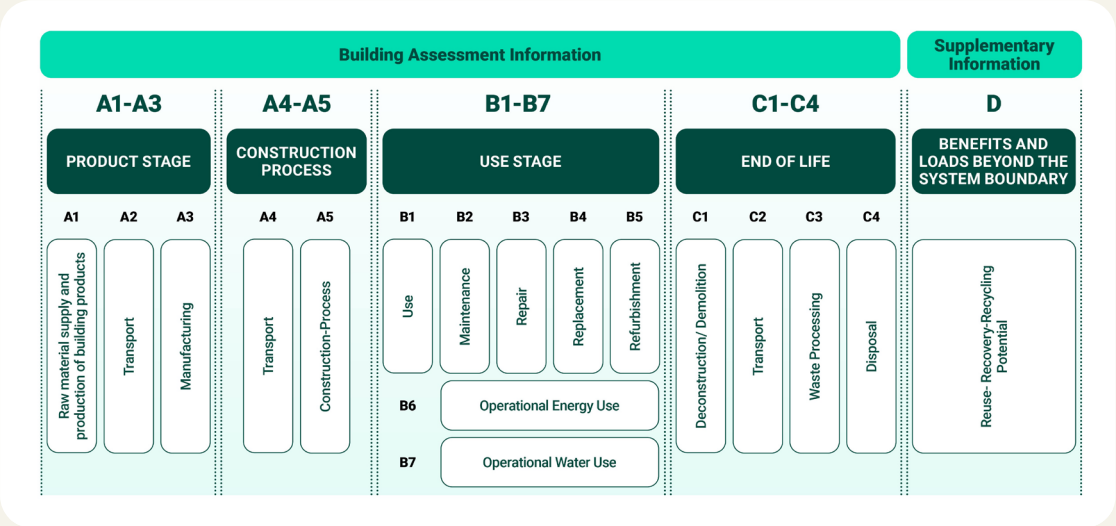
This report examines measures taken by three European countries and one city in relation to life cycle Global Warming Potential (GWP), and provides inspiration and learning for governments developing their own life cycle GWP policies. It is part of the World Green Building Council's work to support EU Member States as they implement the EU's Energy Performance of Buildings Directive (EPBD).

Background

The EU has embraced a life cycle approach

The latest revision of the Energy Performance of Buildings Directive (EPBD) was published in May 2024. It contains new provisions to encourage the decarbonisation of the EU's building stock, such as Minimum Energy Performance Standards, a Zero-Emission Building definition, and measures to phase out fossil fuel heating systems.

The EPBD revision also for the first time introduces measures on life cycle Global Warming Potential (GWP), an indicator that allows the building sector to measure emissions from across the life cycle of a building, from raw materials and construction to maintenance and end of life (see diagram).



European standard EN 15978 breaks down the life cycle of a building into 17 phased modules.

These requirements, which we have mapped out in detail in our EPBD life cycle GWP factsheet, include mandatory calculation and disclosure of life cycle GWP for all new buildings from 2030. EU Member States also need to create life cycle GWP roadmaps with limit values and targets for all new buildings from 2030.

These measures are vital if we are to transition to a truly Whole Life Carbon (WLC) approach and decarbonise our sector, but a large amount of capacity building and policy support is needed to make this happen in countries across the EU.

Sharing experiences to share success

The good news is that some countries and local governments have had successful life cycle GWP measures in place for several years. This case study report looks at four examples — Denmark, France, Sweden and London — so others can learn from their varied approaches and experiences.

The World Green Building Council (WorldGBC) has created this report to provide an overview of the measures these governments have put in place, focusing on how they tackle three key topics related to life cycle GWP policy implementation:

- consulting with industry stakeholders
- approaching the data requirements of life cycle GWP regulation
- monitoring and enforcing compliance

The role of WorldGBC

WorldGBC and our network of Green Building Councils have been campaigning for the introduction of life cycle GWP policy for many years. Now that the EPBD has introduced such measures in Europe, we have begun a new phase of work aimed at helping countries implement the EPBD as practically, effectively and efficiently as possible.

Our EPBD implementation support initiative, of which this report is a component, is part of our #BuildingLife programme. #BuildingLife aims to deliver on the European Green Deal aim of a climate-neutral Europe by 2050, by working to eliminate the whole-life carbon impact of all buildings.

#BUILDING LIFE

The case studies

What life cycle GWP policy measures have different governments introduced?

Denmark – The Danish government simultaneously introduced mandatory declarations and binding limit values in its national building regulations in January 2023.

Since then, all new buildings required by the EPBD to issue an Energy Performance Certificate (EPC) have had to calculate and disclose their life cycle GWP impact through a life cycle assessment (LCA) over a reference study period (the assumed building life expectancy) of 50 years.

This LCA covers EN 15978 modules A1–A3, B4, B6, C3, and C4 (see graphic on p1). From July 2025, it will also cover the A4 and A5 modules.

In addition to this mandatory LCA, new buildings above 1,000 square metres must comply with a limit value of 12 kg CO_2e/m²/year, which covers the same modules as the LCA.

From July 2025, limit values will be tightened to an average of 7.1 kg CO_2e/m²/year, with levels differing according to building type. More stringent limit values are also planned for 2027 and 2029 (Nordic Sustainable Construction, 2024).

France – The French government introduced a mandatory energy and climate declaration with limit values, known as Environmental Regulation 2020 or RE2020. RE2020 was adopted in 2021 and took effect in 2022, covering residential, office and primary and secondary school buildings.

When carried out, the declaration must take into account a building's entire life cycle over a reference study period of 50 years, including the production, construction, use and end-of-life phases, as well as impacts related to recovery, reuse and recycling potential (the equivalents of modules A–D under standard EN 15978; see diagram on p1).

> ***"The French declaration covers every phase of a building's life cycle over a reference study period of 50 years.***

RE2020 differs slightly from other countries in that it requires a dynamic LCA. This approach weights emissions in the future less heavily than emissions in the present day, implicitly favouring materials or products deemed to have greater carbon storage potential since it is considered that they can delay the release of carbon into the atmosphere.

RE2020 sets limit values for emissions from greenhouse gas (GHG) energy consumption, which are separated from the limit values set for construction-related emissions, both of which developers must achieve for their project to be compliant. For example, a new apartment building in France must be within a maximum threshold for GHG emissions from energy consumption of 14 kg CO_2/m²/year, and within a maximum construction-related emissions threshold of 740 kg CO_2/m²/year (Agora Energy Transition, 2022). All these limit values are planned to be tightened every three years, with the next such adjustment set for 2025.

Sweden – The Swedish government introduced a mandatory climate declaration for new buildings in January 2022. This requirement was set out in the Swedish act on climate declarations for new buildings (2021: 787).

Under this, developers must declare the climate impact of products and construction activities in EN 15978 phases A1–A5.

A private individual who is not constructing a building as a business does not need to carry out a climate declaration. Buildings below 100 square metres are also excluded. A legal proposal has been submitted to the government by Boverket (the Swedish National Board of Housing, Building and Planning) for the introduction of limit values for GHG emissions in July 2025 covering A1–A5, followed by the expansion of the climate declaration from 2027 to cover modules A1–A5, B2, B4, B6 and C1–C4. The government put forward the legal proposal on limit values for industry consultation in the spring of 2024 but there has not yet been a decision about the introduction of limit values.

London (United Kingdom) – In London, WLC assessments are required for all major developments that are 'referable' to the Mayor of London. These are buildings considered to be of 'potential strategic significance' to the city based on criteria such as size or location. This requirement was set out in the 2021 London Plan, which establishes a framework for how London will develop over the next 20–25 years.

In practice, referable buildings comprise developments of more than 150 residential units, those over 30 metres in height (if outside the central financial district known as the City of London), and developments on Green Belt land, though WLC assessments are also supported and encouraged for major planning applications not referable to the Mayor.

These assessments are required at three stages: pre-application, construction, and post-construction. They must cover operational emissions, embodied emissions, and emissions from after the end of a building's life span, encompassing all modules A–D in the standard EN 15978, over a reference study period of 60 years.

In their assessments, developers must compare their WLC values against WLC benchmarks (set out in Appendix 2 of the London Plan Guidance for Whole Life Cycle Carbon Assessment). Developers are encouraged to set WLC targets at the outset and track progress against them throughout the project.

How have governments consulted with industry ahead of the introduction of these policies?

New policy measures, such as those requiring the construction industry to start carrying out LCAs and ensuring that building emissions fall within limit values, can impact projects and industry professionals at many stages of the building value chain, depending on the specific measures in place.

This impact can include the time and monetary cost of carrying out the calculation and hiring a consultant, as well as the cost and time associated with changes to a building's design, procurement, and product development that may be needed to remain within limit values or targets.

For these reasons, it is important that governments preparing to introduce such measures do so in consultation with industry stakeholders and provide them with clear information in advance.

Denmark – The Danish government's approach to developing and introducing WLC limit values has involved extensive stakeholder consultation and collaboration over a decade.

In 2014, the Danish government funded the development of a national building life cycle assessment tool called LCAbyg by the BUILD department at Aalborg University. This tool aimed to increase awareness of the built environment's climate impact and facilitate understanding of where carbon reductions could be achieved.

In 2017 Aalborg University's BUILD department developed the country's first public voluntary sustainability requirements for buildings. These requirements turned into a voluntary sustainability standard for buildings, which was eventually introduced in 2020 for a test phase until 2022. The test phase was crucial as it increased national industry familiarity with WLC reporting and also allowed the collection of data from specific building projects.

Another pivotal moment was in 2019 when the newly formed Danish government initiated public-private Climate Partnerships across sectors including construction. These partnerships were tasked with developing recommendations on how to meet Denmark's ambitious climate goals, in particular the target of a 70% reduction in carbon emissions by 2030.

The Climate Partnership for Construction consists of more than 100 companies and organisations from across the Danish construction value chain. Among its recommendations was the introduction of WLC limit values, seen as essential for achieving significant carbon reductions in construction.

The Danish government drew on the Climate Partnership as well as the voluntary sustainability requirements in the development of its National Strategy for Sustainable Construction. Launched in the spring of 2021, the strategy included the phasing in of mandatory limit values alongside developing tools that help incorporate LCA into earlier stages of the building design process.

The government also performed a cost–impact analysis in 2022 in advance of the introduction of limit values. This analysis found that the impact of the limit values on the construction cost of new projects would likely be negligible, since the initial limit value is generous and would likely not require substantial changes. The cost would be limited to hiring a consultant to perform the LCA in order to comply.

This meant that by the time the mandatory limit values and reporting requirements were introduced in January 2023, the industry was relatively well prepared to comply with them.

Indeed, there has been a high level of industry enthusiasm for the introduction of limit values, which has been exemplified since by the Danish "Reduction Roadmap" initiative. Launched by advisors, research institutes, architects and NGOs within the building industry, this group has petitioned for construction legislation to align with the Paris Agreement and impose a WLC limit value of 5.8 kg CO_2e/m²/year for new buildings from 2025, a big increase on the current 12 kg CO_2e/m²/year. In the end, a slightly higher but still ambitious limit value was set to apply from 2025. It differs by building type but averages 7.1 kg CO_2e/m²/year.

Most of the partners involved in the Climate Partnership have continued to be involved in the development of the 2025 limit values via a coordination steering group.

> ***By the time the mandatory limit values and reporting requirements were introduced in Denmark in January 2023, the industry was relatively well prepared to comply with them.***

France – Prior to the launch of France's mandatory energy and climate declaration, Environmental Regulation 2020 (RE2020), France was already a frontrunner in addressing building operational carbon emissions. RT2012, the precursor law to RE2020, established thermal regulations for new buildings, including minimum energy performance standards and a maximum average primary energy consumption of a building of below 50 kWh/m²/year. This meant that developers were gradually becoming accustomed to emissions reporting requirements for new projects.

In 2015, the French "Law on Energy Transition for Green Growth" set a requirement for the development of a methodology for calculating life cycle greenhouse gas emissions from 2018, before a 2018 amendment to the French Building Code stated that new constructions would need to start carrying out an LCA in the coming years.

This provided a significant legislative signal to the industry to start preparing for the introduction of this requirement. This was complemented by the launch of the national trial of a national assessment method called Énergie Positive & Réduction Carbone (E+C–) in 2016. This was designed to ease the industry into performing LCAs, building skills in the process while providing the government with invaluable feedback to refine the process. The data that was collected during this trial, from over 1,000 anonymised live projects (Ramboll, 2022), was important in helping to set the limit values that would ultimately be introduced in 2022. The launch of E+C– was accompanied by a signal that WLC limit values and reporting would become mandatory in the next few years.

The voluntary E+C- phase was supported by a steering committee and a technical advisory group, which included members from public agencies, industry, NGOs, and Alliance HQE-GBC France. It was led by a state-owned research centre, the Scientific and Technical Centre for Building (CSTB).

In 2018, 16 expert groups and four consultation groups were established, which helped develop key aspects of the LCA methodology, such as the calculation method; the physical scope; defining what environmental data should be captured and from where; and supporting tools for the industry.

In 2020, these groups were complemented by an additional Modelling Working Group, which involved further consultation with industry stakeholders until RE2020 was eventually enforced in 2022. This group worked on selecting indicators, further adjustments to the calculation methodology, and defining appropriate regulatory thresholds.

Key to gaining the support of French industry behind RE2020 was the clear timeline the government set out for its implementation. The requirement applied to residential buildings upon RE2020's introduction in January 2022, before being expanded to offices and primary and secondary school buildings in July 2022; small extensions and constructions in January 2023; and temporary constructions in July 2023. In addition, 2025, 2028 and 2031 have been set as the next dates when the limit values will be strengthened, a process which involves continuous feedback from various stakeholder groups that have already been assembled.

"Key to gaining the support of French industry behind RE2020 was the clear timeline the government set out for its implementation.

Sweden – In Sweden, government-funded research in 2015 found that the national industry already had relatively extensive knowledge of performing life cycle assessments. The government has also been supporting the development of LCA knowledge in the industry since at least 2013, funding studies and pilot projects that explored the climate impact of building materials.

Pressure for greater policy action on the WLC impact of buildings had also intensified because, in infrastructure bills from 2008 and 2012, the Swedish Transport Administration had begun to emphasise the importance of considering the full life cycle climate impact of infrastructure projects when making decisions about their viability. This created a discrepancy between the building and infrastructure sectors, motivating the government to level the playing field by introducing similar requirements for buildings.

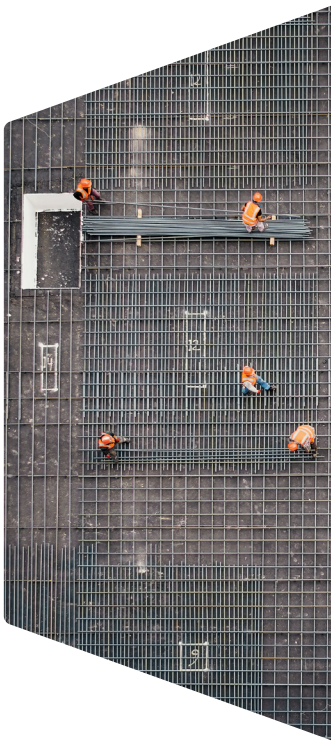
Amid increasing calls from both industry and politicians to introduce WLC policy for buildings, the government in 2017 assigned Boverket (the Swedish National Board of Housing, Building and Planning) to develop a legislative proposal for mandatory climate declarations as well as proposed limit values. With little existing knowledge in this area at the time, Boverket collaborated closely with researchers, legal experts and economists, in particular those who had been involved in earlier LCA studies. Industry leaders, including large national construction companies

like Skanska, Peab and NCC, who had already begun using a voluntary LCA methodology developed by Boverket several years earlier, were also important contributors to this proposal, which was eventually released in 2020.

The final legislation eventually came into force in January 2022, mandating climate declarations for new buildings covering EN 15978 modules A1–A5.

During the consultation process for developing the 2020 proposal, Boverket was in close dialogue with small and medium-sized enterprises (SMEs) via focus groups, recognising that the requirement to deliver a Climate Declaration could be disproportionately difficult and costly for them, especially when it would be expanded to cover smaller buildings in the future.

In addition, Boverket supported the development of a generic database for building materials. This database, managed by Boverket and sourced from the Swedish Environmental Institute (IVL), provides standardised data for developers to use in their LCA calculations (see more detail in the next section). This means that generic data could be used as values for SME product manufacturers if, for example, they deemed the cost of performing an Environmental Product Declaration (EPD) to be too costly.



The decision to begin introducing limit values in Sweden followed extensive industry consultation on Boverket's 2020 report, which proposed the introduction of limit values in 2027. The report was sent to 136 consultation bodies, of which 67 responded. Many of these bodies called for the introduction of limit values earlier than 2027, with two-thirds either supporting the proposed date or calling for an earlier introduction. In addition, a number of stakeholders called for limit values to be based on the entirety of a building's life cycle.

This reaction in part led to the proposal in a subsequent 2023 Boverket report that limit values covering A1–A5 should be introduced in July 2025, followed by the expansion of the climate declaration from 2027 to cover modules A1–A5, B2, B4, B6 and C1–C4.

Boverket has proposed developing information and guidance on the limit values once they have been agreed, and Sweden's National Agency for Public Procurement has proposed developing procurement criteria aligned with the new limit values.

London – Prior to the introduction of mandatory WLC reporting, the Greater London Authority's London Plan had already achieved success in addressing operational carbon and required developments to exceed national building regulations in reducing these emissions.

However, over time it became evident that – partly as a result of London's effectiveness in tackling operational emissions – embodied carbon was becoming a more significant proportion of the overall carbon footprint of new developments. This coincided with the development of the Royal Institution of Chartered Surveyors' (RICS) guidance on measuring whole life carbon, which provided a methodological framework that

ultimately supported the inclusion of WLC assessments in the London Plan (the name for the city's spatial development strategy).

Given the emerging importance of embodied carbon, the Greater London Authority (GLA) decided to mandate WLC assessments for referable schemes only (large developments that meet specific criteria, such as size or location). This approach allowed the GLA to focus its resources on the most significant developments, recognising that local boroughs would not yet have the resources or skilled employees to process WLC assessments for all incoming planning applications.

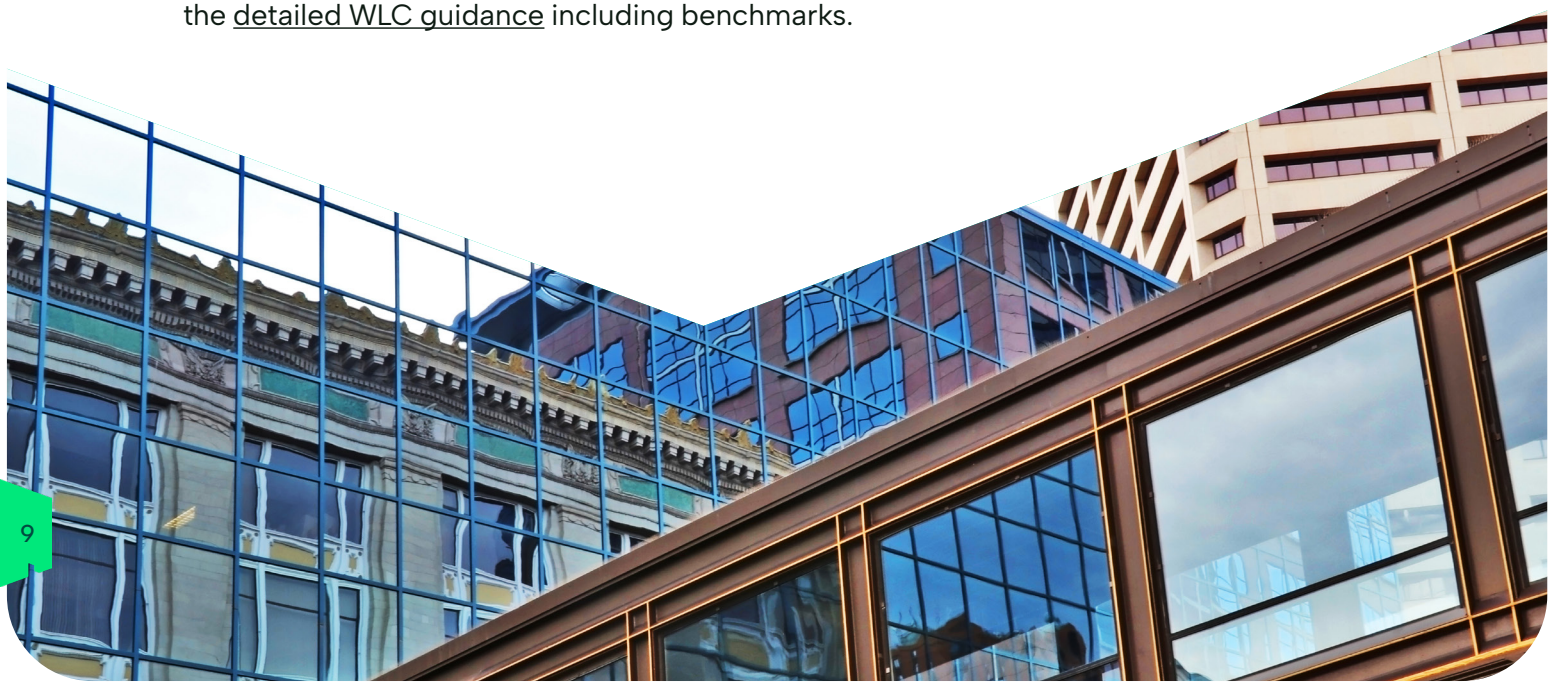
Furthermore, the GLA deliberately chose to first introduce a reporting requirement without hard targets for WLC reductions. This approach allowed the policy to act as a tool for building an evidence base, which could inform more stringent regulations in future. The phased approach helped minimise resistance from developers, who are often cautious about new requirements that could increase costs.

While drafting the new policy under the London Plan, the GLA simultaneously began drafting supporting guidance, including details on what the WLC reporting requirement should be and what should be covered, as well as (non-binding) WLC benchmarks that they would expect different developments to achieve, which were sourced from work carried out by industry consultants. As part of this process, technical meetings were held with London boroughs and industry representatives, as well as a technical seminar with planning inspectors and members of the public to make them aware of the plans.

Subsequently, in October 2020, a three-month consultation on a draft of the Whole Life Cycle Carbon (WLC) Assessment London Plan Guidance (LPG) and WLC assessment template was launched. During this time, an online seminar was also held. The feedback was gathered and used to make the template and guidance more user friendly, provide additional guidance on data sources, and add clarity around the provided benchmarks.

The final London Plan, including the WLC reporting requirement, was published in March 2021, followed a year later in March 2022 by the detailed WLC guidance including benchmarks.

> ***"In London, the GLA began with a focus on the most significant and central developments only, recognising that local boroughs would not yet have the resources to process WLC assessments for all incoming planning applications.***



How have governments approached the data needs of life cycle GWP measures?

Life cycle GWP measures require the collection of a large amount of data across a building's life cycle, and on its varied physical components.

Several important aspects of this process covered in this section include where and in what format a developer submits an LCA or climate declaration; where developers source climate data when no measured data is available; and how governments use data to inform WLC limit values or targets.

Denmark – When developers perform an LCA under the Danish building requirements, they submit it along with the building completion certificate application to the relevant municipal building archives, most of which are now digitised. The government recognises that a centralised national database would be a valuable resource, both to enable analysis of incoming LCA data and to streamline the LCA submission process (which is not currently nationally standardised) but at the time of writing, this has not yet been developed.

To aid developers with their LCAs, the Danish government has developed two Excel spreadsheets. One of these contains the full definition of the physical scope, allowing developers to see what should be included. The other contains generic data for different building products, the majority of which is copied from the German government's ÖKOBAUDAT platform.

However, the government is sourcing more Danish generic data ahead of the tightening of requirements in 2025, including generic emission factors for the most nationally used 20–25 construction products. This generic data will be updated every second year, aligned with when limit values are tightened. These generic data points are based on the 75% percentile of values found within an EPD sample, rather than a corrected average like the method used in Sweden.

The government has commissioned regular reports that examine buildings' climate impacts. The first of these was published in 2020 and covered 60 buildings, which formed some of the basis for the limit value introduced in 2022. The latest report, published in 2023, covered 292 buildings and has facilitated the development of the limit values that will be differentiated according to building type in 2025, as well as the collection of more Danish generic data.

Denmark uses a static approach to calculating a building's life cycle, meaning that its environmental impacts are assessed based on a fixed set of assumptions and data points that do not change over time.

France – In France, the RE2020 law sets separate limit values for operational carbon and embodied carbon, rather than an overarching WLC limit value.

To comply with RE2020, building developers must use software recognised by the French Ministry of Ecological Transition. This software allows them to retrieve data from a national database called INIES. France divides environmental data into three main categories: specific data, which consists of an EPD equivalent for construction products and equipment, default or generic environmental data for products without an EPD equivalent, and conventional service data, which covers mandatory environmental data on energy impacts and services.

The software then calculates the building's environmental performance. Once done, the data is submitted to another national database. The government uses this database to monitor compliance with RE2020 limits and assess whether future adjustments to these limits are necessary. If no specific data is available for products used in a project, developers must use ministry-provided default data with a penalty factor applied.

> ***France differs from other countries in that it has implemented a dynamic LCA approach, which accounts for the timing of emissions in a building's life cycle.***

One of the main challenges faced by the French government was the initial lack of measured product-level data, which has improved significantly since the regulation's introduction. This improvement is largely due to the positive feedback loop created by RE2020 itself, encouraging more manufacturers to produce and declare EPDs.

France differs from other countries in that it has implemented a dynamic LCA approach, which accounts for the timing of emissions in a building's life cycle. In practice, this means that carbon emitted in the present day is weighted more heavily than carbon that will be emitted later, which generally favours the use of materials and products with greater carbon storage potential.

Sweden – When developers submit a climate declaration in Sweden, it is stored in the Climate Declaration Register held by Boverket (the Swedish National Board of Housing, Building and Planning), a centralised repository for these documents. Boverket has a mandatory template for developers to use when they register a climate declaration. But if Boverket requests that a developer submits the calculation basis for a climate declaration, the template provided for this is only voluntary, which means that Boverket receives detailed data in a variety of formats. This can make the supervision of climate declarations challenging. When limit values are introduced in 2025, Boverket has proposed the requirement to use a harmonised format for the calculation basis, which would need to be submitted at the same time as the climate declaration is registered.

To help developers with their climate declarations where data gaps exist, Boverket developed a database containing climate data on a building's construction phase (A1–A5). The database contains data from the public-private Swedish Environmental Research Institute (IVL), who in turn receive the data from product manufacturers.

As of July 2023, when their limit value report was released, the database contained over 200 generic climate data points. This climate data is set conservatively for products, at about 25% higher than the average. This is intended to incentivise designers and constructors to choose product-specific EPD data where possible and for manufacturers to produce more EPDs and to develop products with a lower climate impact.

In practice, if a climate declaration is being developed at an early stage of a project, Boverket deems it reasonable that the developer would not know exactly what products would be used. In this scenario, developers can also use generic climate data for their climate declaration initially before submitting an update with product-specific climate data at a later stage if available. The only condition is that when using generic data developers must use data from Boverket's own database and not from other sources.

Boverket has set out various ways in which its generic database will need to be developed to implement limit values from 2025. These limit values will apply to additional building elements including technical equipment, interior finishes, and fixed interior design, which means that default values will need to be added for these elements. Climate data will also need to be uploaded for the construction products contained in these elements.

A more substantial change to Boverket's database will be undertaken before 2027, with the addition of life cycle modules B2, B4, B6, and C1–C4 necessitating new generic climate data.

London – In London, developers must submit their LCA data in an Excel spreadsheet, for which the Greater London Authority (GLA) has developed an Excel template accessible on their website.

This template includes tabs on the different stages at which WLC assessments are required. At the pre-application stage, developers must provide details on the WLC principles that are informing the project and confirm details about the site. At the outline planning or detailed planning stage, a more rigorous baseline WLC assessment is required for each life cycle module. Finally, at the post-construction stage, developers need to update the figures submitted in the planning stage and provide actual WLC data based on material quantities and site construction emissions.

As part of the process above, developers must measure their emissions for different life cycle modules against benchmarks, which can be taken from a separate tab in the assessment template. If assumptions are made or generic data is used in their calculation, this is expected to be justified and explained in the submission.

Developers submit this template to the GLA, and they can also either submit it to the Built Environment Carbon Database (BECD) themselves or give the GLA permission to do so. The GLA does not currently have its own database, so the public-private BECD currently serves as an online repository for LCA information.

The GLA is analysing all data received as part of the LCA requirement over the past two years to determine its quality and consistency. This could determine whether any WLC targets or limit values are introduced in the future, which in turn would require further consultation with key stakeholders across the industry.

Like the Danish government, the GLA asks for a static approach to calculating a building's life cycle.

How have governments monitored compliance and what penalties are there for non-compliance?

As we have already seen, the introduction of life cycle GWP policy measures often involves close collaboration with national industry and a well-structured lead-in or trial period. When the policy becomes mandatory for new projects, whether this means achieving limit values or simply submitting an LCA, governments must then consider how they ensure that the industry complies with their requirements.

Given the relatively recent introduction of such measures, as well as the lenient limit values currently in place in France and Denmark, this is an emerging topic. However, some of the ways that governments approach the issue of compliance include embedding WLC requirements as an integral part of the planning process to ensure that applications can only progress when the right submissions have been made. Other measures include spot checks on applications by planning officials, ongoing education and information provided to stakeholders, and, as a last resort, fines or legal action.

Denmark – In Denmark, when developers complete an LCA for a building, the results are submitted to the relevant municipal authorities along with the 'as built' application — a necessary step before the building can be officially used.

These submissions are part of the normal process of finalising a building's compliance with various technical and regulatory requirements. However, Denmark currently lacks a centralised database to store and analyse these LCA submissions, meaning the data remains within the municipal archives. This decentralised approach limits the government's ability to track compliance trends across the country.

The enforcement process relies heavily on trust and goodwill rather than extensive government monitoring. Municipalities are required to perform random checks on 10% of new building cases to ensure they meet the WLC requirements. If a building is found to exceed the carbon limits, fines could be imposed on the developer.

However, given the nature of carbon emissions — once released, they cannot be reversed — this approach raises concerns about the effectiveness of enforcement. If fines are too low, there is a risk that developers may simply absorb these fines as a business cost, especially since the building is likely to remain in use even after it has been deemed non-compliant.

The Danish government acknowledges that there can be challenges with the existing setup and has focussed on this issue in the ongoing review of the building code and the development of a new building code.

At present, these issues are largely academic, since the current limit values are not very stringent and would not require many developers to make substantial changes to their projects in order to comply.

France – In France, when submitting a construction permit to local authorities, developers must set out how they will achieve compliance with the requirements of the RE2020 environmental regulations, and submit an initial assessment of the embodied carbon impact of the project.

Once they receive approval and eventually complete the project, they must submit evidence for calculating the project's WLC against the limit values, as part of a document to request final approval, which is then granted by the local authority.

Since the requirements are embedded into the planning process, projects that fail to adhere to RE2020 face delays in obtaining the necessary building permits. This could result in substantial project delays and increased costs, which serve as powerful incentives for compliance.

In practice, however, because the current phase of the requirements is more focussed on continuing to help the industry acclimatise to the concept of limit values in construction, these values have been set at a low level, meaning that the majority of projects are able to be built without significant changes. In 2025, when stricter limit values are set, this is likely to change, meaning that more focus may be placed on penalising projects which don't comply with the legislation.

The Danish government acknowledges these challenges and has tasked relevant authorities with reviewing the effectiveness of current enforcement measures. This review includes assessing whether fines are a sufficient deterrent, and exploring potential changes to the process that could prevent non-compliant buildings from being constructed in the first place.

At present, these issues are largely academic, since the current limit values are not very stringent and would not require many developers to make substantial changes to their projects in order to comply.

Sweden – In Sweden, when a building is constructed, the developer must register a Climate Declaration with Boverket (the Swedish National Board of Housing, Building and Planning). This registration is essential for obtaining final clearance from the municipality so that the building can be occupied. The municipality is responsible for verifying that this registration has been completed, which ensures that the climate impact has been formally registered. Without a submitted climate declaration, the municipality cannot issue final clearance and can only give an "interim" final clearance.

Boverket has the authority to request the calculation basis for the submitted declarations. This allows them to check whether the reported climate impacts are accurate and reasonable. Developers are given the opportunity to provide explanations or make corrections if their data appears to be inconsistent or incomplete. This approach reflects an emphasis on education, particularly in the early stages of implementation, so that building sector stakeholders become more familiar with the regulation. However, if Boverket finds significant discrepancies in a declaration and an appropriate explanation is not provided, Boverket has the authority to adjust the reported climate impact values in its registry and impose a sanction fee.

> ***"To ease the process of verifying Climate Declarations, Boverket is developing standardised templates for data submission.***

The government reports that it has encountered challenges in supervising the enforcement of the LCA requirement. The process for verifying and correcting Climate Declarations is quite complex and time-consuming, which makes effective oversight of the implementation challenging at present.

To address these challenges, as mentioned in the previous section, Boverket has proposed to the government that it should request standardised templates for the calculation of climate declarations to ensure that the required data is provided in a consistent format.

Boverket is improving its internal processes to speed up supervision and make it more efficient. It is also continuously evaluating the regulation's impact, including publishing an annual report that will assess compliance and the overall effectiveness of the Climate Declaration requirement. This report will be made publicly available on Boverket's website to ensure transparency and inform future policy adjustments.

London – In London, developers must submit a WLC assessment together with their planning application for any referable development.

This assessment is submitted to the Greater London Authority (GLA) using an Excel template which includes all information that applicants need to submit at each stage.

The GLA then scrutinises assessments against several key criteria, such as:

Completeness of the assessment: The GLA checks that the assessment covers all required aspects, including embodied and operational carbon and end-of-life emissions. Missing or incomplete data can lead to requests for additional information.

Technical quality: the assessment must use appropriate baselines, tools and methodology. Developers should use industry-standard methodologies such as the RICS Whole Life Carbon Assessment (WLCA) guidance.

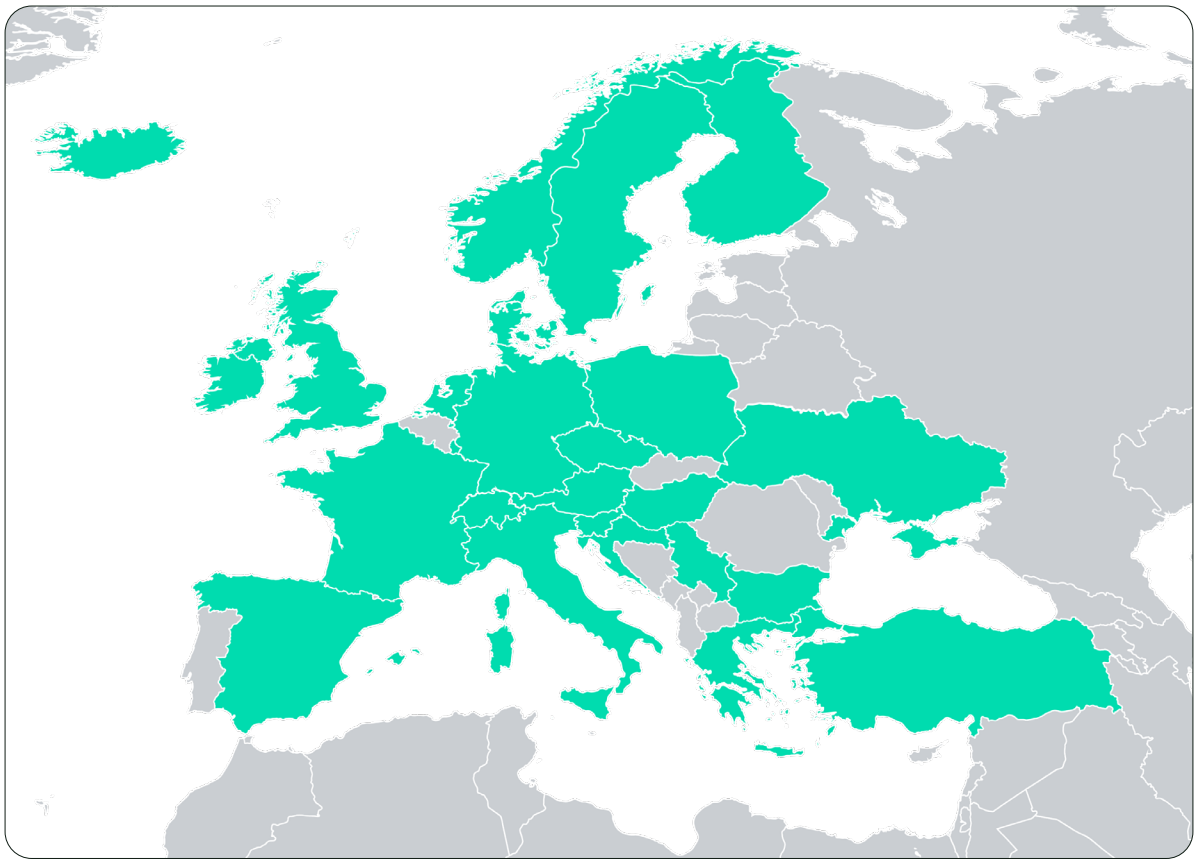
Reduction measures: the GLA assesses whether the applicant has shown that appropriate actions have been taken to reduce WLC emissions. This ideally includes a proactive approach to such factors as design choices, materials and products and construction methods.

Level of ambition: the assessment is compared against the benchmarks provided in the London Plan Guidance, and developments would preferably meet or even exceed these benchmarks.

If the GLA identifies issues during its review — whether related to data completeness, technical quality, or insufficient carbon reduction measures — it engages in an iterative process with the developer. This often involves back-and-forth exchanges where the GLA provides feedback and requests revisions to ensure that the WLC assessment meets the required standards.

Ultimately, the GLA provides final comments on the WLC assessment, which are taken into account to inform the final decision made by planning officers. While WLC reduction measures are a significant factor in the decision-making process, they are balanced against other considerations such as viability, the provision of affordable housing, and overall design quality.

About WorldGBC and our Europe Regional Network



The World Green Building Council (WorldGBC) is the largest and most influential local-regional-global action network leading the transformation to sustainable and decarbonised built environments.

Our Europe Regional Network represents over 20 national Green Building Councils (GBCs) and seven regional partners, working to put sustainable buildings at the heart of a prosperous and equitable future for Europe.

European GBCs are committed to supporting Member States with the timely implementation of the Energy Performance of Buildings Directive to:

- set the EU on track to achieve its climate goals
- boost energy security and tackle energy poverty
- create large numbers of long-lasting green jobs
- deliver high-quality, affordable and healthy buildings

WORLD GREEN BUILDING COUNCIL

For more support implementing the requirements of the EPBD, contact your local **Green Building Council**, or visit **worldgbc.org/europe**

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