Urban Planning
2025 • Volume 10 • Article 10631
https://doi.org/10.17645/up.10631

cogitatio

ARTICLE

Open Access Journal

Zero-Emission and Zero Demolition: Promoting Conservation Interests Through the Implementation of the Energy Performance of Buildings Directive

Anna Donarelli

Department of Archaeology, Ancient History and Conservation, Uppsala University, Sweden

Correspondence: Anna Donarelli (anna.donarelli@uu.se)

Submitted: 30 April 2025 **Accepted:** 10 September 2025 **Published:** 19 November 2025

Issue: This article is part of the issue "Aligning Heritage Conservation and Climate Mitigation Through Adaptive Reuse" edited by Liam James Heaphy (University of Galway) and Philip Crowe (University College Dublin), fully open access at https://doi.org/10.17645/up.i461

Abstract

To achieve "zero-emission" in buildings, "zero demolition"—keeping existing buildings in use—could be promoted to a greater extent. Continuous use can even prove to be beneficial for climate mitigation as well as for conservation of heritage values in the building stock. The Energy Performance of Buildings Directive (EPBD) has been revised and entered into force in the EU in May 2024. It gives member states the opportunity to adapt several central concepts, with the ultimate objective of achieving a decarbonised building stock by 2050. This study shows how conservation interests are conveyed and taken into account in the earliest stages of the EPBD implementation by two Swedish authorities with responsibility for heritage and built environment. The study aims to identify challenges and opportunities for aligning the implementation with conservation interests. Data have been collected through interviews with involved officials. An agnostic perspective is applied in the analysis, rejecting presumptions of conservation practices being intrinsically sustainable but highlighting the practices' potential to contribute to sustainability. The new EPBD allows for national implementation in line with conservation interests, which include exemption from energy requirements for heritage buildings and promotion of circularity. Results from this study show that the two authorities focus on the exemption as the main conservation interest, but in the discussions between them other interests are taken into account. The results aim to support clearer statements from the conservation sector and increased relevance, not only in this context but in others where climate mitigation is the objective as well.

Keywords

building conservation; Energy Performance of Buildings Directive; heritage values; historic buildings; sustainable renovation; zero-emission buildings

1. Introduction

With the aim of reaching "zero-emission" in buildings, "zero demolition"—the continued use of existing buildings—could be promoted to a greater extent. In the context of the preparatory work being done for Sweden's implementation of the new Energy Performance of Buildings Directive (EPBD), this study aims to provide an improved knowledge base on conservation interests and the possibilities to align them with the targets of the Directive. In Sweden, preparations for implementing the revised EPBD that entered into force in May 2024 are underway (Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024, 2024). The Swedish National Board of Housing, Building and Planning (Boverket, henceforth BV) has several government mandates linked to the implementation of the Directive. Some of them include conducting a dialogue with the Swedish National Heritage Board (Riksantikvarieämbetet, henceforth RAA). Specifically, RAA is to submit views on suggestions regarding "buildings formally protected as part of a designated environment or because of their special architectural or historic merit, or other heritage buildings" (Regeringen, 2024, p. 2).

The purpose of the present study is to show how the interests of conservation are conveyed, handled, and given meaning in a specific process of implementing new policy on renovation. It is limited to the preparatory work that took place between June 2024 and March 2025 on the government mandate to establish methodologies and definitions (Regeringen, 2024). During this critical process of determining directions for future implementation, the discussions between the involved agencies have been followed. So far, the outcomes from BV are two published interim reports with suggestions for definitions of central concepts and possible changes required in current legislation (BV, 2024, 2025c). In the following steps of the implementation, the suggestions from this first stage will be considered and possibly revised, based on a consultation process and political decisions. These following stages of the process are not part of the present study. The final national implementation of the EPBD will take effect in May 2026 (BV, 2025a).

1.1. Previous Research

As a field, building conservation involves preserving and using built heritage. It includes policy development, planning, selection, documentation, and on-site conservation and restoration of buildings. As an academic subject, it is interdisciplinary, encompassing knowledge from both the humanities and technical domains. Energy renovation and building conservation have been perceived as conflicting interests since the 1970s. Legnér and Leijonhufvud (2019) conclude, in a study on heritage values in previous energy policies, that the relationship between these issues has changed since the 1970s, in terms of how energy efficiency requirements are no longer about saving oil nationally but about a global concern for climate change, and what is treated as heritage has expanded. The renovations from the oil crisis are now considered to have distorted heritage values, as they resulted in thick additional insulation, reduced window areas, and the addition of modern materials to traditional buildings. They have been considered unsuitable renovations from a technical perspective as well. In Sweden, these renovations were subsidised by the government, today seen as an example of poor policy implementation. Although the climate crisis has increased the urgency of the matter, and there is consensus that the 1970s renovations created deterrent examples, the perception of conflict between heritage values and energy saving remains among experts in the conservation field (Legnér & Leijonhufvud, 2019). The concern is mainly with heritage values connected to materials and aesthetics, often only the exterior character-defining elements. This concern is applied to large

parts of the building stock, not only monuments or listed buildings. The aim in previous research has been to find ways of improving energy efficiency without damaging heritage values by finding a balance between different demands (Eriksson, 2021). Since the early 2000s, starting in the UK, energy efficiency in historic buildings and sustainable heritage have been researched as part of the conservation sector's engagement in climate issues (Barthel-Bouchier, 2015; Cassar, 2009). It has been shown in research that energy saving and conservation of heritage values can be combined. Aspects of life cycle assessments (LCAs) that link to circularity and the continued use of buildings, which contribute to lower climate impact than demolition and new construction, have been incorporated to promote a more holistic view on energy use (Lidelöw et al., 2019; Martínez-Molina et al., 2016; Webb, 2017). Some researchers have identified a need for clearer guidance on the implementation of existing legislation on heritage values in the Swedish building stock in light of new energy demands (Christiernsson et al., 2021; Geijer et al., 2022; Hagelqvist et al., 2024).

Different conservation perspectives coexist and can, in practice, both limit and promote climate mitigation. Avrami (2016) finds that many heritage authorities argue that heritage buildings are intrinsically sustainable, yet they maintain that these buildings need exemption from energy requirements. Like other claims on conservation practice and heritage assets as inherently sustainable, they appear contradictory and are not based on data and research. Such stands lead to conflicts and misunderstandings. Avrami concludes that in order for the conservation sector to actually contribute to a sustainable society, it is necessary to understand and confront these contradictions. Pendlebury (2009) notes that conservation policy today protects both the ordinary and the special, the monumental and the mundane, including buildings from the relatively recent past. At the same time, conservation's basic principle of "minimum intervention" has not changed, although the number of buildings for which conservation principles are applied has increased through new planning and building regulations (Pendlebury, 2009). The Swedish planning and building regulations show a similar development, described by Geijer et al. (2022). Reactions against industrially produced new constructions, increased demolitions, and incautious renovations led to new legislation in the 1980s. This legislation, still in use today, aimed to protect heritage values in everyday environments which had previously not been the object of conservation practices (Geijer et al., 2022).

Huuhka and Vestergaard (2020) argue that, in the context of renovation, minimum intervention and climate mitigation could be aligned, but formal protection might prove to be an obstacle in this alignment. The authors state that listing and arguing for preserving certain selected objects leads to the construction of non-heritage, where everything that is not selected has no value. They invite the conservation discipline to look beyond their current value-centred approaches rooted in the linear economy by expanding their concept of values and embracing true circularity. This will, the authors state, lead to the conservation of more built heritage, as well as minimise climate impact from the building sector. Baker et al. (2021) show how in decision-making where the options are demolition or preservation, the environmental impact is rarely the main reason for choosing retention, instead heritage policy plays an important role. The researchers found that regulations today protect buildings with heritage values from demolition, but not buildings with embodied carbon value, which points to a need for new policy. Yarrow (2019) looks into how increased efforts to save energy and renovate with environmental concerns in mind make buildings matter in new or different ways. Yarrow's study on homeowners' renovations "highlights how conservation is made to matter through practices of renovation, in the linked but distinct senses of having value and importance, and of taking material form" (Yarrow, 2019, p. 18).

1.2. Positioning

In the Swedish context, previous research has assessed specific aspects of legal implementation relating to energy saving and conservation (Christiernsson et al., 2021; Geijer et al., 2022; Hagelqvist et al., 2024) and evaluated former policy implementation (Legnér & Leijonhufvud, 2019; Legnér et al., 2020). This study aims to provide new perspectives, in which climate change mitigation and the conservation of buildings are not seen as conflicting interests that need to be balanced, but rather that the interests of conservation and the need for climate action can be aligned. Not only do different disciplines coexist within the field of conservation, but there are also different, sometimes conflicting, perspectives. Brumann (2014) identifies approaches within the heritage field that he calls "heritage belief" and "heritage atheism." Heritage belief is based on the notion that heritage in and of itself is a good thing, with intrinsic values that automatically contribute to society. With this perspective, conservation for conservation's sake is endorsed. Heritage atheism, on the other hand, does not see heritage and the preservation of it as naturally positive, but something that in practice serves more undesirable purposes than what is generally perceived or openly disclosed. This is mostly a vision of heritage scholars, who point out how heritage is created in the present based on different agendas, that it fails to represent diverse histories, groups, and cultures, and that it suppresses creative change. Brumann (2014) encourages instead "heritage agnosticism" as a way for reaching better alignment of theory and practice. The agnostic approach acknowledges the social construction of heritage and its related practices. It does not see heritage value as intrinsic, but still takes people's heritage experience seriously and accepts that some qualities used for ascribing heritage value may be connected to the history and materiality of objects. With this approach, determining conservation practice's positive or negative impacts on society requires empirical investigation, without a presumption of it being "good" or "bad" (Brumann, 2014). This present study is inspired by the agnostic approach and analyses a specific context of conservation practice, namely its efforts and narratives related to minimising the climate impact of buildings.

1.3. Aim and Problem Statement

This study covers the initial part of policy development, namely the preparations for the implementation of the EPBD. At this early stage, visions of aspired to outcomes guide decisions. The perspectives these visions represent can show differences in priorities related to minimising the climate impact of buildings. Such differences influence decision-making and can create both challenges and opportunities. It is a unique study of current policy development and is relevant to all EU member states.

The aim is to identify challenges and opportunities for aligning the implementation of the EPBD with conservation interests and provide insights that can be used to advise the subsequent steps of policy development. The possibilities of the EPBD to promote conservation interests are investigated by identifying the efforts and narratives related to the conservation and the climate impact of buildings.

2. Conservation Interests and the EPBD

The new EPBD aims to achieve a fully decarbonised building stock in the EU by 2050, and introduces new concepts and policy instruments for member states to interpret and implement on a national level (Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024, 2024). The main focus is on the renovation of existing buildings. Since 85–90% of existing buildings are expected to remain

until 2050, they need renovation in order to save energy for heating and cooling. But the climate impact of renovation needs to be considered as well (European Commission, 2020). In Sweden in 2022, new construction accounted for 21% of total emissions from the building and property sector, heating accounted for 28%, renovation for 28%, and property management for 24% (BV, 2025d). It is especially relevant for this study to note that heating and renovation have the highest climate impact and have equal impacts. Renovations serve to reduce carbon emissions, but they also produce them. It is necessary to make sure emissions are diminished in both categories. In terms of policy instruments, retroactive demands in the form of minimum energy performance standards (MEPS) for non-residential buildings, aimed to force the renovation of the worst-performing buildings, are new to the Directive. So are binding targets for diminishing the average energy performance of the residential building stock. Diminishing emissions from buildings, rather than just improving energy performance, is emphasised more in the new EPBD compared to the previous one (Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010, 2010; Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024, 2024).

Conservation interests are only explicit in the Directive as possible reasons for exemptions from energy requirements (Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024, 2024, Articles 5:2 and 9:6a). With the previous Directive, member states could decide not to set or apply energy requirements for "buildings officially protected as part of a designated environment or because of their special architectural or historical merit, in so far as compliance with certain minimum energy performance requirements would unacceptably alter their character or appearance" (Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010, 2010, Article 4:2a). At that time, Sweden chose not to officially exempt protected buildings but instead allowed for adapted requirements on energy saving in the building regulations (Geijer et al., 2022). Keeping and expanding the possibility to exempt historic buildings was called for by heritage organisations throughout the EU in responses to draft versions of the revised EPBD in 2021. Initially, only officially protected buildings were included for possible exemptions or adapted requirements, and it was emphasised that not all buildings with historic and local significance are officially protected. It was also stressed that buildings with heritage values can become more energy efficient, but that it is necessary to correctly assess their performance and to apply balanced and flexible approaches to the requirements (Directorate-General for Education, Youth, Sport and Culture, 2022; ICOMOS ISCES, 2021). According to the final version of the Directive, member states may adapt minimum energy performance requirements to "buildings officially protected at national, regional or local level, as part of a designated environment or because of their special architectural or historical merit, in so far as compliance with certain requirements would unacceptably alter their character or appearance" (Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024, 2024, Article 5:2). They may decide not to apply MEPS and its trajectories to "buildings officially protected as part of a designated environment or because of their special architectural or historical merit, or other heritage buildings" (Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024, 2024, Article 9:6a) to avoid alterations of character and appearance, and also "if their renovation is not technically or economically feasible" (Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024, 2024, Article 9:6a).

In Sweden, heritage buildings referred to in these paragraphs of the EPBD would be those protected by the Historic Environment Act (HEA) or the Planning and Building Act (PBA). The HEA protects buildings through listing (Sveriges Riksdag, 1988). In 2021, there were 2,270 privately owned and 286 state-owned listed built

environments in Sweden. Most of these sites contain more than one building and other kinds of built structures (Myndigheten för Kulturanalys, 2022); in total, there are about 11,000 listed individual objects in the registry (RAA, 2025). State-owned listed buildings are managed at the national level by RAA, and the privately-owned are managed at the regional level by the County Boards. This management involves the selection of the buildings, description of their heritage values, and the permitting for alterations (Myndigheten för Kulturanalys, 2022). Protection of heritage values according to the PBA is managed at the municipal level in the building permits for alterations and the zoning plan processes. The PBA provides two forms of protection for buildings and built environments: the requirement of caution and the prohibition of distortion. The requirement of caution applies to all existing buildings and requires all changes to be made "taking into account the characteristics of the building and recognising its technical, historical, cultural, environmental and artistic values" (Sveriges Riksdag, 2010, Chapter 8:17). The prohibition of distortion applies to particularly valuable buildings or built environments (Sveriges Riksdag, 2010, Chapter 8:13) and requires that heritage value be assessed based on aspects such as how the building represents past living conditions, architectural ideals, societal values, or important local functions. A building can be identified as particularly valuable during the processing of a building permit application, and a permit can be denied based on this prohibition even if the building had not been previously identified as such (BV, 2025b). Both the requirement of caution and the prohibition of distortion potentially protect heritage values in all existing buildings, but the processes connected to the PBA involve making expert assessments of what these values are and how the suggested alterations affect them on a case-by-case basis.

In the responses from heritage organisations to draft versions of the EPBD, circularity and life cycle perspectives were highlighted as beneficial for the preservation of heritage values in the building stock, as well as for climate mitigation. It is stated that historic buildings should be considered "resources" because of their long lifetime and their stored energy and carbon. Conservation practice should also be considered environmentally sustainable because the reuse and continuous repair of existing buildings and building elements are effective ways to minimise greenhouse gas emissions (Directorate-General for Education, Youth, Sport and Culture, 2022; ICOMOS ISCES, 2021; Potts, 2022). Research comparing the environmental impact of demolition and new construction with the preservation of existing buildings shows that preservation, generally, results in a lower impact (Berg & Fuglseth, 2018; Janson et al., 2022; Röck et al., 2020). However, there are several other choices between these two extremes that will be made during the course of any building's lifetime, connected to renovation and maintenance, that have different impacts. The studies also show how unknown future scenarios, such as the development of the energy system, make the results of LCAs very variable (Janson et al., 2022), and that there is little transparency and comparability in studies on embodied climate impact (Röck et al., 2020). The new EPBD allows for the consideration of life cycle perspectives and the climate impact of renovation, but requires the calculation of the global warming potential (GWP) only for new construction (Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024, 2024). Currently, in Sweden, the use of assessments of climate or environmental impact applies only to new construction, not to renovations.

3. Data and Method

Using a participatory method, data have been collected through semi-structured interviews with the officials directly involved in working with the EPBD implementation (three from RAA and two from BV; see Table 1). All except one interviewee have worked for several years with energy efficiency in buildings, being involved

in activities regarding the previous version of the EPBD as well. Questions covered the interpretation of the EPBD and government mandates, perceived risks, desired outcomes, views on minimising the climate impact of the building sector, and the potential for promoting circularity. The interviews lasted between one and one and a half hours. Quotes from the interviews are referred to with ID codes. Providing complete anonymity for professionals employed at public agencies and assigned specific mandates is, however, not possible. This limited anonymity was discussed with the participants, and they all gave their consent to participate with that in mind. Unpublished documents, including a project plan and three internal communications regarding priorities in the field of heritage values in municipal planning and climate adaptation and mitigation, were shared by RAA officials after the interviews and integrated into the dataset. As part of the government mandate, BV published one report in October 2024 and one in February 2025, in which it suggests ways forward (BV, 2024, 2025c). The written feedback to these reports, provided by RAA before their publication, was used in the analysis. Adding these written unpublished sources to the dataset served to verify the different perspectives of the agencies. Participation in two meetings organised by RAA with the purpose of discussing the consideration of conservation interests with participants from BV and the Swedish Research Institute helped to form an understanding of how the officials confer with each other. The data from these meetings were not coded for the analysis. Overall, this qualitative dataset forms a large, but not complete, picture of the discussions around the initial work with the EPBD implementation.

Table 1. Participants in interviews.

ID	Background/Title
IntRAA1	Architect/Adviser
IntRAA2	Conservation officer/Adviser
IntRAA3	Conservation officer/Adviser
IntBV1	National economist/Economist
IntBV2	Physicist/Project leader

Interviews have been transcribed verbatim. The transcripts and unpublished documents have been imported into a qualitative data analysis tool, NVivo 1.6, and analysed using thematic analysis (Braun & Clarke, 2022). The data were coded with an inductive, data-driven approach, in several steps. The themes were developed based on identified patterns that were considered meaningful for answering the research questions. The final themes are shown in Table 2. Thematic analysis is a subjective practice, and the process of coding and analysing data has involved continuous reflection on this subjectivity. Several systematic iterations of creating codes and themes occurred during the course of the analysis, in order to represent the meaning of the data. The final result is a description and an interpretation of the data, based on the data themselves (Braun & Clarke, 2022).

An agnostic perspective has influenced and guided the analysis (Brumann, 2014). Applying this perspective is not aimed at criticising, but at challenging accepted truths that might need to be re-evaluated in light of the climate crisis. In the context of this study, the agnostic perspective is used to identify ideas to challenge and assumptions to verify using increased knowledge. Further, the perspective helps to find and highlight the potentials of conservation practice.

Table 2. Themes used in the analysis.

Theme	Sub-theme	Meaning
Perceived risks	Lack of preparedness	The perception that there is a lack of awareness and preparedness among those who are to apply new regulations.
	Physical changes to the built environment	Risks involving physical changes in the building stock, which may lead to undesirable consequences.
Aspired outcomes	Increased awareness	New rules could lead to increased awareness about sustainable renovation and conservation.
	Conservation could lead the way	Conservation knowledge could inform the building sector in mitigation strategies.
Using the EPBD	Exemptions	Interpretations of the exemption for buildings with heritage values, and ideas about its implementation.
	Zero-emission building	Interpretations of the zero-emission building target, and ideas about its implementation.
	Circularity	Interpretations of the possibility of promoting circularity, and ideas about its implementation.

4. Results and Analysis

This section is based on data from the interviews and unpublished documents. It starts with a description and analysis of the agencies' perceptions of risks and aspired outcomes, then continues describing and analysing how the EPBD, at this early stage of the process, is interpreted and planned to be implemented. Quotes from the interviews are used throughout the text to present and analyse the different themes.

4.1. Perceived Risks

There may be risks involved in implementing new requirements, and different aspects connected to both legislation and practice need to be reinterpreted in a new context. In the interviews, the respondents were asked to express thoughts on challenges, opportunities, possible conflicts of interest, and expected changes in handling energy use and heritage values. These ideas are also expressed in published and unpublished documents.

4.1.1. Lack of Preparedness

RAA officials express fears about the municipalities not being ready to weigh the importance of different demands as more are added:

> It becomes problematic when something like this [EPBD] with such major consequences is to be implemented in a fairly short time. There is a risk that the result will not be well thought out and sufficiently processed. That the consequences will not be sufficiently clear. I feel that is concerning. (IntRAA3)

An overview of heritage values in the building stock and competence in conservation at the municipalities, where most decisions on changes in existing buildings are taken, is thought to be lacking. These observations

are related to earlier reports from RAA regarding how municipalities often fail to take heritage values into account in accordance with the PBA (RAA, 2017, 2018). There is also a concern that there is a lack of knowledge among energy consultants on which energy saving measures take heritage values into consideration. BV officials also express that there is a need to increase knowledge about the application of heritage protection in municipalities in light of new regulations. BV argued, in response to an earlier version of the EPBD, for amendments that would provide opportunities to continue using the requirement of caution and the prohibition of distortion in the PBA (BV, 2022).

4.1.2. Physical Changes to the Built Environment

If existing buildings cannot fulfil the energy requirements for technical or economic reasons, they could be demolished instead. This was stated in the BV interviews to be highly undesirable because replacing an existing building with a new one can be a major source of greenhouse gas emissions. BV has endorsed the possibility of exempting buildings from the highest energy requirements in situations where lower emissions from a life cycle perspective could be achieved with a lower degree of renovation. There was, and the interviews show there still is, a concern that the EPBD could lead to renovations that have negative climate impacts (BV, 2022).

In an internal communication on priorities in the field of heritage values in municipal planning from RAA, it is stated that the energy transition can be a risk for heritage values because it leads to changes in the built environment. At the same time, the text continues, this transition can provide an opportunity for the historic environment to be used as a resource for the sustainable development of society and for the conservation sector to have an impact. It is stated that reuse today only focuses on frames and building materials, a kind of reuse that requires partial demolition. RAA has identified a need to develop and publish arguments for reuse as on-site repurposing, and examples of heritage values and circularity. This is where the agency sees the potential to make a societal impact and promote sustainable renovation practices.

Huuhka and Vestergaard (2020) provide a theoretical consideration that relates to these aspects expressed by RAA. In a circular economy, conservation would be the conventional way of building, as it would always be a practice based on what already exists. According to Huuhka and Vestergaard, the conservation sector needs to challenge its reluctance towards partial reuse and the relocation of building elements. According to the authors, the linear economy of today limits how conservation is defined and understood—as a practice that is value-oriented towards a small portion of the building stock. Instead, the authors invite reflection on what there is to gain from a truly circular building sector.

Apart from demolition, the risks involving physical changes are mostly implicitly described by respondents in the interviews. It is formulated in the EPBD that energy saving measures may "unacceptably alter [buildings'] character or appearance" (Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024, 2024, Articles 5:2 and 9:6a). In an interview it was stated that the worry is that there will be "standardised renovations" with additional insulation and replaced windows using "modern materials," and the current situation was compared to the energy renovations of the 1970s (IntRAA2).

4.2. Aspired To Outcomes

Ideas about aspired to outcomes guide decisions at this preparatory stage of the implementation. These ideas were expressed in interviews and found in documents.

4.2.1. Increased Awareness

BV officials are hopeful that an increased awareness and a broader perspective on energy efficiency and climate mitigation will be the end result of the implementation of the EPBD, both through guidance and regulations:

> I think that if we succeed in the way I hope we will, we can increase awareness and focus on preserving what needs to be preserved for various reasons and utilise what exists….Above all, I think it's very important that we focus on not causing unnecessary demolitions or unnecessary renovations that are carbon-driving or harmful in any way. (IntBV2)

IntBV1 expresses that the general issue of minimising climate impact from buildings has become prioritised lately at the agency on account of the EPBD implementation. It is stated by the RAA officials in interviews that the lack of awareness of heritage values will need to be dealt with when developing guidance to municipalities based on the coming energy regulations. RAA officials hope that documentation on heritage values in the building stock could be improved through the agency's involvement in the implementation of the EPBD, as their current work highlights the lack of information they have identified in various other contexts. They express that it has recently become prioritised at the agency to work with guidance on the identification, registration, and protection of heritage values in the building stock. One important reason for this is the fast transition and developments in society towards climate neutrality that, in turn, require changes in landscapes and the built environment.

4.2.2. Conservation Could Lead the Way

In interviews, RAA officials have emphasised that buildings with heritage values could be considered more sustainable if the EPBD is implemented correctly. In this context, the statements relate mainly to listed buildings and those considered particularly valuable according to the PBA. In relation to the EU regulation on sustainable investments (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020, 2020), listed buildings could be considered automatically sustainable, because "they provide social values" (IntRAA1). LCAs, rather than energy performance, could also prove that "older buildings" are intrinsically sustainable from a climate perspective, because "their emissions have already been paid off" (IntRAA1). It would also be beneficial if economic incentives were directed at heritage buildings or specifically for energy-saving measures that are cautious, in the sense that they take the existing visual and material characteristics of a building into consideration (IntRAA3). Conservation and such cautious approaches to energy saving could set examples for the entire existing building stock (IntRAA2), and traditional passive technologies could be reinstated and used in new construction as well (IntRAA1):

> For us, it has been a given in building care to reuse, to preserve and care for, maintain, and manage what exists. Often using good materials that have a longer life than one thinks. (IntRAA3)

Through the implementation of the EPBD, RAA officials say that traditional building techniques can be used to demonstrate how repair of building elements instead of replacement is possible. The importance of using materials with long lives that are maintainable both in renovation and new construction is another issue raised by RAA. There are statements here that identify potentials of conservation practice to contribute to minimised climate impact, but that need to be developed further and verified in order to be useful in the implementation process. It is necessary to recognise and reject misunderstandings, contradictions, and generalisations in order to create solid and relevant evidence.

4.3. Using the EPBD

With the desired outcomes in mind, both agencies have organised their respective work with this mandate. Discussions have concerned the heritage exemption, the definition of the concept of zero-emission building (ZEB), and the overarching aim of decreased greenhouse gas emissions in the building stock. According to the mandate, BV is to interpret the formulations in the EPBD and suggest how these can be defined in a Swedish context. At this early stage, BV provides a preliminary analysis of how current national policy and legislation may need to change and different possible options for methodologies and definitions. BV officials state in interviews that the work with the EPBD implementation could be coordinated with other work at the agency, such as climate declarations and mandates on circular economy, but currently it is not.

RAA officials expressed hopes that the implementation of the EPBD will lead to increased registration of heritage values in the building stock. The agency coordinates the work on the EPBD with other initiatives and priorities within the organisation and with other collaborations they have with BV relating to the built environment. At this early stage of the implementation, RAA has a clearer view than BV on what they find necessary after the implementation, in terms of information to target groups. RAA is not officially involved in the new mandates BV has received from the government. Both agencies intend for RAA to be involved to some extent, through the agencies' other collaborations concerning the development of the built environment.

4.3.1. Exemptions Should Be Avoided

The main focus in discussions between the agencies is on the possibilities for exemptions. The official standpoint of RAA is that even listed buildings should be improved in terms of energy efficiency:

> I interpret that the exemption nowadays is to impose adapted requirements. Which is much more…not favourable…but more appropriate than just exempting these types of buildings. Because then they would be treated as something inferior or that they don't have the ability to meet modern requirements. And we know that's not true. (IntRAA1)

In interviews with RAA representatives, the new EPBD is described as "sharper" compared to the old one, because the exemption is not really an exemption, and the requirements go further by including retroactive energy requirements in existing buildings. They state there is disagreement within the agency on whether or not this is a problem, but the official statement is that exemptions should not be applied. In the new EPBD, buildings officially protected at the national, regional, or local level (Directive 2024/1275, Article 5§2) are mentioned as possibly qualifying for exemption, along with other heritage buildings as well. Exemptions can also be applied if a renovation is not technically or economically feasible (Directive 2024/1275, Article 9§6a).

These new formulations imply an expansion of what kind of official heritage protection may count, as well as a possibility to exempt heritage buildings without official protection. Measures can be deemed unsuitable based not only on their impact on character and appearance but also feasibility. Rather than being stricter than the former version, it could be argued that the new EPBD is more in line with the current national implementation as well as with conservation interests. The interpretation of the representatives from both agencies is that the current legislation on protection of heritage values will still be applicable, both HEA and PBA. Therefore, it is concluded that exemptions are not necessary, but clearer guidance is required. One important reason for RAA to endorse the inclusion of buildings with heritage values in the coming policy implementation is to not exclude them from grants that might be made available for renovations. BV strives to establish central definitions that take into account the feasibility of measures, and thereby exclude measures rather than buildings:

> [Exemptions] can become complicated and complex. It is better to write the rules in a way that makes them achievable and as precise as possible. It is only when the requirement is not entirely accurate that there is a need to make exemptions. So, in order to keep the rules relatively simple, we believe that we should include every building. (IntBV2)

RAA writes in a project plan for the EPBD implementation that they intend to improve the knowledge about heritage values in the building stock. The agency involved researchers at the Research Institutes of Sweden to investigate existing building data and relate them to energy requirements. The result includes a list of officially protected non-residential buildings, including all those protected by the HEA and those registered locally as protected in zoning plans. Local listings are not fully covered, and the researchers experimented with a method using artificial intelligence, combining large language models and decision-tree machine learning, to find aspects of heritage values in the rest of the building stock. The researchers concluded that the artificial intelligence method requires further studies. With a goal of avoiding exemptions, RAA's focus on identifying buildings for which adapted requirements should be established can seem futile. It is still unclear, however, what will be required for the coming mandates. For exemption from and calculation of MEPS, a description of which buildings are exempted might be necessary, according to BV. At this point in the implementation, concerning preliminary methods and definitions, information on heritage values in the building stock has not been used.

4.3.2. Defining ZEBs

Although the initial focus in the discussions between RAA and BV was on exemptions or adapted requirements, the final result is a suggestion on the definition of ZEB. BV interprets the EPBD as allowing a relatively large amount of flexibility in how the limits for energy performance can be established, which they state should be used to achieve the most realistic and balanced levels possible:

> What are we actually supposed to achieve by 2050? We have the concept of zero-emission buildings, which is central to the Directive. It actually says that we should achieve a building stock with zero-emission buildings. So, we still need to discuss exactly how we should calculate this. (IntBV2)

The suggestion is that specific levels will be set for different categories of existing buildings, but that it will also be possible to define an existing building as a ZEB "if it can be demonstrated that there are no other profitable measures that are feasible, provided that the other criteria for a zero-emission building are also

met" (BV, 2025c, p. 65). The definition is similar to Herrera-Avellanosa et al.'s (2019) suggestion for a definition of "lowest possible energy demand" in historic buildings. A building's heritage value does not determine its ability to save energy; instead, factors such as technical status and construction will. The authors suggest an approach applicable to any building, where energy-saving measures are negotiated between stakeholders based on heritage value and other factors. When all measures deemed compatible are implemented, the building has reached its lowest possible energy demand and thus the requirement has been met (Herrera-Avellanosa et al., 2019).

BV finds that this definition will be able to take each specific building's conditions into account. The heritage values, whether officially protected or not, would then be part of any building's condition, along with aspects such as technical circumstances, construction techniques, and renovation needs. What these conditions entail in terms of possible measures will be determined during the process of change. It is assumed that this approach could take into account the future development of the energy system and technologies yet to be invented, which cannot be predicted but will affect the possibilities for achieving a ZEB stock (BV, 2025c).

4.3.3. Circularity Can Be Promoted

RAA officials discuss finding other ways to calculate climate impact, which include the whole life cycle of buildings and not only the energy use:

> If you could get calculations based on a life cycle perspective more, then you would, for example, have fewer demolitions, I guess, greater circularity. Like reuse, recycling, and material recovery. (IntRAA2)

Life cycle perspectives are mentioned more in the new EPBD compared to the previous version, providing new opportunities beyond assessing merely kilowatt-hours per square metre. Ideas are expressed in interviews with RAA officials that by promoting this kind of calculation, "old buildings" would be able to meet requirements, because their embedded carbon would show they have a minimal climate impact. Existing or "older buildings," they state, contribute to climate mitigation by having been in use for a long time. This statement demonstrates a misunderstanding of buildings' climate impact. It is true that when comparing different scenarios for renovation or demolition and new construction, the embodied carbon could be part of the assessment as a kind of avoided impact if a building or building elements are kept instead of being discarded and replaced. However, buildings do not contribute to climate mitigation simply by existing, but through choices for renovation and maintenance made today (Avrami, 2016; Berg & Fuglseth, 2018; Huuhka et al., 2023).

BV emphasises in interviews and documents that it is even more important in Sweden to acknowledge the climate impact of renovations, because the use of fossil fuels for heating is less than in Europe as a whole:

> When it comes to carbon dioxide or climate, we have climate declarations and so on, where we have led the way, you could say, for the rest of Europe. And there is a fairly clear link in the issues, and Sweden is pushing quite a lot to be able to continue in the direction we have taken. So, it is closely interwoven. (IntBV2)

Building materials used in renovations, however, can be quite harmful to the climate. In an interview, it was stated that an LCA perspective could be applied to the suggested ZEB definition, which will be able to take

into account the remaining lifespan of various building components and installations. Since exchanging new components or installations would neither be cost-optimal nor feasible, such measures would not be endorsed with this definition of ZEB. The agency will need to determine at a later stage whether the desired promotion of circularity will require new regulations or if other policy instruments will suffice (IntBV2).

4.4. Aligning Objectives With Different Perspectives

The perceived risks and aspired to outcomes of the respective agencies show differences in their perspectives and mandates. RAA perceives a risk for undesirable visible changes in the building stock. BV sees a risk that the implementation of the EPBD can become counterproductive and will lead to more greenhouse gas emissions. The hopes expressed by RAA are that heritage values in the building stock will be documented to a greater extent and that existing buildings will be treated as resources. Promoting the idea of existing buildings and building elements as resources is something both agencies want, although they base it on different desired outcomes. For RAA, promotion of circularity is more connected to the will to preserve heritage values, and for BV, to the objective of climate mitigation. The objective of minimising greenhouse gas emissions is central to BV but peripheral to RAA.

Differences in the views of the involved agencies appear in the discussions on exemptions or adapted requirements and become evident when discussing how the objectives of the EPBD should be turned into recommendations for the direction of national policy. The divergencies can be related to differences in the knowledge of the officials and in the mandates they have. RAA's idea to not apply a complete exemption can seem ambiguous, since they still find it necessary to improve registries of heritage values in the building stock in order to protect them when new demands need to be met. BV does not want to create a need for exemptions, but aims instead for definitions that are flexible enough to take into account the various conditions of all buildings, amongst which heritage value is one of many. Although based on different objectives, an agreement has been reached on the final suggestions relating to exemptions and the definition of ZEB. The exemption is viewed from two different perspectives, where one strives to point out which buildings to set adapted energy requirements for, and the other focuses on how to exclude measures with undesirable effects in any building. One view is value-oriented and object-focused and would apply to a small portion of the building stock. The other focuses on measures and aims to protect the whole building stock from those measures deemed unsuitable based on assessments of heritage values as well as on other aspects.

5. Discussion

It is noticeable that the focus from RAA's side in working with the EPBD implementation is on the interpretation of the exemption or the possibilities for adapted requirements. Since they do not want to apply the exemption, the agency struggles to determine which buildings to apply adapted energy requirements to. Apart from buildings officially listed nationally, regionally, and locally, "other heritage buildings" can be exempted as well, and it is unclear which buildings these are. The agency's efforts to determine which buildings to set adapted requirements on result in an object-centred, top-down, and value-oriented approach. Huuhka and Vestergaard (2020) define such approaches as being rooted in the linear economy and instead suggest a reflection on the opportunities a promotion of circular practices in the whole building stock could provide. Knowledge about the existing built environment would be crucial in a

circular building industry, and the conservation sector could contribute with new ways of thinking about circularity, life cycle perspective, and zero demolition.

With promotion of circularity in mind, and with the aim of minimising carbon emissions, methods that describe the built environment, rather than assess the heritage values in it, could be developed along with value-based approaches. The value-based approach can be related to the perceived conflict between energy efficiency and heritage values, dating back to the 1970s. This perception of conflict is reflected in the EPBD itself, through the very possibility of exemptions. The notion of threat to heritage values in buildings in light of new energy demands has become a condition under which the conservation sector operates. The government mandate also limits RAA's assignment to submitting views on "buildings formally protected as part of a designated environment or because of their special architectural or historic merit, or other heritage buildings" (Regeringen, 2024, p. 2). This is not surprising, nor can it be criticised; it is in line with what the agency is expected to work with.

Although it is built into RAA's mandate to focus on protection from change, and the practical work so far has focused on determining the specific buildings to protect, the agency shows ambitions beyond that. RAA officials highlight in interviews the opportunities to promote reuse and circularity through the EPBD implementation. The EPBD opens up the application of a more holistic approach to energy use that takes LCAs into consideration, an opportunity that the conservation sector has also called for. These opportunities mostly focus on how protected buildings can contribute to climate mitigation by setting examples of management through continuous use and care. As noted in the analysis, some of the conservation sector's claims connected to buildings' climate impact show misunderstandings and others may need to be verified. RAA officials are not expected to provide concrete suggestions for how to do an LCA; however, increasing awareness in the conservation sector of what such assessments show and the climate impact of the different stages of a building's life span could be strived for. Officials from both agencies talk about treating existing buildings and building elements as resources, but it is only vaguely described what that would mean in practice and how to implement it in policy. Baker et al. (2021) showed that regulations on heritage values had an impact on decisions on demolition or retention, whereas the environmental benefits that were unregulated did not. This is something for the agencies to consider in the coming policy development.

RAA's generalisations concerning the sustainability of conservation practice and historic buildings become problematic when an agnostic approach is used and when conservation is considered an interest while climate mitigation is a necessity. Despite that, BV has taken some of RAA's arguments on LCA into account and turned them into recommendations for the direction of the implementation going forward. The suggested definition of ZEB is the most striking result of these discussions between the two agencies. A building's heritage value does not determine its ability to reach energy requirements; other conditions like technical status, heating system, and building materials will do so to a greater extent. There are many energy-saving measures that will have no impact on visible character-defining elements in buildings. The heritage values will need to be considered as one of many conditions, each of which might be more or less defining, when choosing energy-saving measures.

All conditions considered will need to be determined on a case-by-case basis. The suggested definition of ZEB aims to take this into account. This is an example of where the need for climate mitigation and the interests of conservation seem to be aligned. Despite their differences in aspired outcomes, knowledge, and mandates,

the agencies demonstrate how different perspectives can be understood in a new context and inform each other. Yarrow (2019) presents results on how conservation is made to matter in houseowners' negotiations and decision-making; the results presented here similarly show how conservation is made to matter in a specific process of implementing new policy. Buildings are abstractly discussed in the present study, yet the threatened materiality highlights how they are important, both as heritage and material resources, and the efforts to contribute to climate mitigation provide new ways of reflecting on how to make these values last.

6. Conclusion

The new EPBD provides opportunities for a national implementation in line with conservation interests, which include adapted energy requirements in buildings with heritage values, and a consideration of LCA to promote the continued use of existing buildings. Regulations to support these aspired outcomes will be necessary.

The results highlight a need to raise awareness in the conservation sector about greenhouse gas emissions, LCAs, and circularity. Potentials for conservation perspectives to contribute to climate mitigation in the building sector have been identified, but also ideas to challenge and assumptions to verify. Energy requirements are still perceived as threats to heritage values, and statements on embodied carbon in existing buildings expose misunderstandings. A shift in perspective towards finding opportunities rather than focusing on threats, and clarifications on how existing buildings are resources in the climate transition could contribute to increased relevance of conservation knowledge, in this context as well as in others where climate mitigation is the objective.

At this initial stage of the implementation process, its consequences are still unclear to the interviewees. Instead, ideas are expressed about policy changes to avoid and promote, which highlight different perspectives. Although the agencies show different approaches to climate mitigation, the result of the collaboration is a positive example of how a combination of different knowledges, mandates, and objectives can create new ways forward in the climate transition. Work at the agencies continues and will result in concrete actions. Further studies on the nexus between conservation and climate mitigation could address the identified knowledge gaps and evaluate forthcoming stages of the EPBD implementation and their effects.

Funding

This research was financed by Formas, the Swedish Research Council for Sustainable Development, within the research school Adaptation of Urban Space Through Sustainable Regeneration (ASSURE). Publication of this article in open access was made possible through the institutional membership agreement between Uppsala University and Cogitatio Press.

Conflict of Interests

The author has previously been employed at the Swedish National Heritage Board.

References

Avrami, E. (2016). Making historic preservation sustainable. *Journal of the American Planning Association*, *82*(2), 104–112. https://doi.org/10.1080/01944363.2015.1126196

Baker, H., Moncaster, A., Remøy, H., & Wilkinson, S. (2021). Retention not demolition: How heritage thinking can inform carbon reduction. *Journal of Architectural Conservation*, *27*(3), 176–194. https://doi.org/10.1080/13556207.2021.1948239

Barthel-Bouchier, D. (2015). Heritage and climate change: Organizational conflicts and conundrums. In D. Harvey & J. Perry (Eds.), *The future of heritage as climates change* (pp. 151–166). Routledge.

Berg, F., & Fuglseth, M. (2018). Life cycle assessment and historic buildings: Energy-efficiency refurbishment versus new construction in Norway. *Journal of Architectural Conservation*, *24*(2), 152–167. https://doi.org/10.1080/13556207.2018.1493664

Boverket. (2022). *Yttrande över "Remiss av förslag till revidering av EU-direktivet om byggnaders energiprestanda."*

Boverket. (2024). *Preliminära beräkningar av gränsvärden för energiprestanda i befintliga lokalbyggnader*. https://www.boverket.se/sv/om-boverket/publicerat-av-boverket/publikationer/2024/preliminara-berakningar-av-gransvarden-for-energiprestanda-i-befintliga-lokalbyggnader

Boverket. (2025a). *Direktiv för byggnaders energiprestanda, EPBD*. https://www.boverket.se/sv/byggande/uppdrag/direktiv-for-byggnaders-energiprestanda

Boverket. (2025b). *Förvanskningsförbudet*. https://www.boverket.se/sv/PBL-kunskapsbanken/teman/kulturvarden/kulturvarden-i-plan---och-bygglagen/krav-pa-byggnadsverk-och-tomter/forvanskningsforbudet

Boverket. (2025c). *Metoder, definitioner och krav inom solenergi i direktivet om byggnaders energiprestanda*. https://www.boverket.se/sv/om-boverket/publikationer/2025/solenergi-och-energiprestanda

Boverket. (2025d). *Utsläpp av växthusgaser från bygg—och fastighetssektorn*. https://www.boverket.se/sv/byggande/hallbart-byggande-och-forvaltning/miljoindikatorer---aktuell-status/vaxthusgaser

Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. Sage.

Brumann, C. (2014). Heritage agnosticism: A third path for the study of cultural heritage. *Social Anthropology*, *22*(2), 173–188. https://doi.org/10.1111/1469-8676.12068

Cassar, M. (2009). Sustainable heritage: Challenges and strategies for the twenty-first century. *APT Bulletin: The Journal of Preservation Technology*, *40*(1), 3–11.

Christiernsson, A., Geijer, M., & Malafry, M. (2021). Legal aspects on cultural values and energy efficiency in the built environment—A sustainable balance of public interests? *Heritage*, *4*(4), 3507–3522. https://doi.org/10.3390/heritage4040194

Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (recast). (2010). *Official Journal of the European Union*, L 153/13.

Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the energy performance of buildings (recast) (Text with EEA relevance). (2024). *Official Journal of the European Union*, L 2024/1275.

Directorate-General for Education, Youth, Sport and Culture. (2022). *Strengthening cultural heritage resilience for climate change: Where the European Green Deal meets cultural heritage*. Publications Office of the European Union. https://data.europa.eu/doi/10.2766/44688

Eriksson, P. (2021). *Balancing building conservation with energy conservation: Towards differentiated energy renovation strategies in historic building stocks* [Unpublished doctoral dissertation]. University of Gothenburg.

European Commission. (2020). *A renovation wave for Europe: Greening our buildings, creating jobs, improving lives*. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0662

Geijer, M., Christiernsson, A., & Malafry, M. (2022). Juridiken och praktiken—Energifrågor och hantering av kulturvärden i planerings—och byggprocesser. *Nordic Journal of Settlement History and Built Heritage*, *82*, 33–64.

Hagelqvist, S., Legnér, M., & Femenías, P. (2024). Energy efficiency and socio-cultural values in public policy in the city of Stockholm. *The Historic Environment: Policy & Practice*, *15*(4), 540–563. https://doi.org/10.1080/17567505.2024.2436044

Herrera-Avellanosa, D., Haas, F., Leijonhufvud, G., Brostrom, T., Buda, A., Pracchi, V., Webb, A. L., Hüttler, W., & Troi, A. (2019). Deep renovation of historic buildings: The IEA-SHC Task 59 path towards the lowest possible energy demand and CO_2 emissions. *International Journal of Building Pathology and Adaptation*, *38*(4), 539–553. https://doi.org/10.1108/IJBPA-12-2018-0102

Huuhka, S., Moisio, M., Salmio, E., Köliö, A., & Lahdensivu, J. (2023). Renovate or replace? Consequential replacement LCA framework for buildings. *Buildings and Cities*, *4*(1), 212–228. https://doi.org/10.5334/bc.309

Huuhka, S., & Vestergaard, I. (2020). Building conservation and the circular economy: A theoretical consideration. *Journal of Cultural Heritage Management and Sustainable Development*, *10*(1), 29–40. https://doi.org/10.1108/JCHMSD-06-2019-0081

ICOMOS ISCES. (2021). *Feedback from: ICOMOS ISCES*. European Commission. https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12910-Energy-efficiency-Revision-of-the-Energy-Performance-of-Buildings-Directive/F2012888_en

Janson, U., Farsäter, K., Fransson, V., & Johansson, D. (2022). Demolish, recycle, build new or renovate—Energy use throughout the life cycle. *IOP Conference Series: Earth and Environmental Science*, *1122*(1), Article 012048. https://doi.org/10.1088/1755-1315/1122/1/012048

Legnér, M., & Leijonhufvud, G. (2019). A legacy of energy saving: The discussion on heritage values in the first programme on energy efficiency in buildings in Sweden, c. 1974–1984. *The Historic Environment: Policy & Practice*, *10*(1), 40–57. https://doi.org/10.1080/17567505.2018.1531646

Legnér, M., Leijonhufvud, G., & Tunefalk, M. (2020). Energy policy and conservation planning in Sweden: A longitudinal evaluation. *International Journal of Building Pathology and Adaptation*, *38*(4), 555–572.

Lidelöw, S., Örn, T., Luciani, A., & Rizzo, A. (2019). Energy-efficiency measures for heritage buildings: A literature review. *Sustainable Cities and Society*, *45*, 231–242. https://doi.org/10.1016/j.scs.2018.09.029

Martínez-Molina, A., Tort-Ausina, I., Cho, S., & Vivancos, J.-L. (2016). Energy efficiency and thermal comfort in historic buildings: A review. *Renewable and Sustainable Energy Reviews*, *61*, 70–85. https://doi.org/10.1016/j.rser.2016.03.018

Myndigheten för Kulturanalys. (2022). *Kulturmiljöstatistik* (Kulturfakta No. 2022:6).

Pendlebury, J. R. (2009). *Conservation in the age of consensus*. Routledge.

Potts, A. (2022). *European cultural heritage green paper: Putting Europe's shared heritage at the heart of the European Green Deal*. Europa Nostra. https://openarchive.icomos.org/id/eprint/2552

Regeringen. (2024). *Uppdrag att fastställa metoder och definitioner enligt direktivet om byggnaders energiprestanda*.

Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending regulation (EU) 2019/2088 (Text with EEA Relevance). (2020). *Official Journal of the European Union*, L 198/13.

Riksantikvarieämbetet. (2017). *Kulturvärden i planerings—och bygglovsprocesser—En utvärdering om kommuners förutsättningar att ta hänsyn till kulturvärden*.

Riksantikvarieämbetet. (2018). *Kulturvärden förvinner i byggprocessen: Intervjuer och aktgranskning av bygglovsärenden*.

Riksantikvarieämbetet. (2025). *Bebyggelseregistret*. https://app.raa.se/open/bebyggelse

Röck, M., Saade, M. R. M., Balouktsi, M., Rasmussen, F. N., Birgisdottir, H., Frischknecht, R., Habert, G., Lützkendorf, T., & Passer, A. (2020). Embodied GHG emissions of buildings—The hidden challenge for effective climate change mitigation. *Applied Energy*, *258*, Article 114107. https://doi.org/10.1016/j.apenergy.2019.114107

Sveriges Riksdag. (1988). *Kulturmiljölag* (SFS 1988:950).

Sveriges Riksdag. (2010). *Plan-och bygglag* (SFS 2010:900).

Webb, A. L. (2017). Energy retrofits in historic and traditional buildings: A review of problems and methods. *Renewable and Sustainable Energy Reviews*, *77*, 748–759. https://doi.org/10.1016/j.rser.2017.01.145

Yarrow, T. (2019). How conservation matters: Ethnographic explorations of historic building renovation. *Journal of Material Culture*, *24*(1), 3–21. https://doi.org/10.1177/1359183518769111

About the Author

Anna Donarelli is a PhD student in conservation at Uppsala University, and part of the cross-disciplinary research school ASSURE (Adaptation of Urban Space Through Sustainable Regeneration). She has a background in building conservation, and works on energy use, climate mitigation, climate adaptation, and sustainable renovation in existing buildings and building stocks.