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JOURNAL FOR EUROPEAN ENVIRONMENTAL & PLANNING LAW 22 (2025) 271–324

JOURNAL FOR EUROPEAN ENVIRONMENTAL & PLANNING LAW
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Implementing the Green Energy Transition in a UNESCO World Heritage City: a Case Study of Visby, Sweden

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Received 7 August 2024 | Accepted 27 November 2024 |
Published online 11 June 2025

Abstract

Over 300 cities are inscribed on the World Heritage List. While each site has its unique challenges and opportunities, in each of them a balance must be achieved in protecting heritage values and meeting demands of modern life, including the demand for energy efficiency and the reduction of greenhouse gas emissions. This article uses Visby (Sweden) as a case study to examine how conservation laws implementing the World Heritage Convention in light of international commitments to mitigate climate change can influence the balance between cultural heritage preservation and energy measures in historic sites. International laws must be implemented by states. But these national laws must be applied locally, in each heritage site. It is therefore important to examine how regional and local decision makers, including individual property

Published with license by Koninklijke Brill BV | DOI:10.1163/18760104-22030004
 | ISSN: 1613-7272 (print) 1876-0104 (online)

owners, navigate and understand their obligations stemming from international laws in order to understand the impact and challenges in meeting sustainability goals in heritage sites. We find that while Visby's World Heritage status promotes a high level of cultural heritage protection, restrictive laws alone fall short in achieving sustainability. Supportive factors such as funding, planning tools, knowledge support and dissemination, and community engagement help bridge these gaps. We recommend further support for financial incentives, place-based technological solutions, and collaboration amongst experts and others to help officials and property owners make choices that are sustainable from both energy and heritage perspectives.

Keywords

World Heritage cities – green energy transition – environmental law – Multilateral governance – local implementation

1 Introduction

Laws and policies at the international, national and local levels seek to both conserve cultural heritage and reduce the emission of greenhouse gasses. While these challenges are global, measures must be taken nationally, regionally and locally. Finding the balance can be particularly challenging in historic cities and districts. Our study centers on the local implementation of heritage conservation and climate change mitigation measures in the Hanseatic town of Visby (Sweden), a UNESCO World Heritage site. The particular challenges and considerations in balancing energy measures with the preservation of the historic built environment are shaped by the specific building traditions, social practices, and legal and regulatory frameworks unique to Visby. Reducing energy consumption and greenhouse gas emissions connected to historic cities is however a challenge worldwide.[1]

A note on terminology is in order. We use the term "energy measures" to mean both measures intended to reduce the overall use of electricity or other energy sources, and measures to transition to renewable energy and other energy sources that result in less greenhouse gas emissions. We use the terms "sustainable energy measures" or "sustainable conservation measures" to refer to measures that promote both the reduction of greenhouse gases and

1 UNESCO *World Heritage Centre*, Renewable Energy Transition and World Heritage. Available at: https://whc.unesco.org/en/renewable-energy/ (Accessed 6 August 2024).

heritage conservation. We use the terms "historic preservation" or "heritage preservation" to mean the protection and maintenance of historic buildings or sites to keep them as close to their original state as possible.[2] We use the term "heritage conservation" to refer to an approach that manages and sustains both tangible and intangible heritage, often inclusive of preservation, to ensure its cultural and historical significance is preserved for future generations.[3] Historic preservation focuses on protecting historical integrity and authenticity, while heritage conservation emphasizes sustainable management and future relevance.[4]

Within the European Union (EU), the building sector is a significant source of greenhouse gas (GHG) emissions.[5] These emissions arise from both the direct use of fossil fuels and other burnable material in buildings and from the production of electricity that is used in heating and cooling systems within them.[6] Older buildings, typically consisting of low-performance buildings and energy systems, constitute a substantial portion of Europe's building stock; therefore, energy retrofits and other measures offer an opportunity to make a substantial contribution to the EU's transition towards green energy.[7]

In Visby, and Sweden more broadly, great strides have been made in transitioning away from fossil fuels in the last decades.[8] In Sweden, electricity

2 *House Museum*, Difference Between Conservation & Preservation. Available at: https://www.house.museum/learn/featured-articles/difference-between-conservation-preservation/ (Accessed 6 August 2024).

3 *Id.*

4 *Id.*

5 *See European Commission*, In Focus: Energy Efficiency in Buildings, 2020. Available at: https://commission.europa.eu/news/focus-energy-efficiency-buildings-2020-02-17_en (Accessed 6 August 2024).

6 *See European Environment Agency*, Greenhouse Gas Emissions from Energy Use in Buildings in Europe, 2024. Available at: https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emissions-from-energy (Accessed 6 August 2024).

7 *E. Vieites, I. Vassileva & J.E. Arias*, European Initiatives Towards Improving the Energy Efficiency in Existing and Historic Buildings, Energy Procedia 2015 (75) p. 1679; *G. Tsoumanis et al.*, The Smart Evolution of Historical Cities: Integrated Innovative Solutions Supporting the Energy Transition While Respecting Cultural Heritage, Sustainability 2021 (13) p. 9358; *I. Artola et al.*, Boosting Building Renovation: What Potential and Value for Europe?, Directorate General for Internal Policies European Parliament 2016; *A. Buda et al.*, Conservation-Compatible Retrofit Solutions in Historic Buildings: An Integrated Approach, Sustainability 2021 (13) p. 2927; *G. Nair, L. Verde & T. Olofsson*, A Review on Technical Challenges and Possibilities on Energy Efficient Retrofit Measures in Heritage Buildings, Energies 2022 (15) p. 7472.

8 *Swedish Energy Agency*, Energy in Sweden 2022: An Overview, Swedish Energy Agency 2022. Available at: https://www.energimyndigheten.se/en/news/2023/new-publication-presents-overview-of-energy-in-sweden/ (Accessed 6 August 2024).

production comes mainly from hydroelectric, nuclear and wind power.[9] Buildings in the historic parts of Visby are mainly heated through district heating, heat pumps and electric heating systems. There may still be a few oil burners used as a backup for air-to-air heat pumps, but their energy use is negligible. The district heating is largely fueled by wood chips. However, as in the rest of Europe, historic buildings in Visby are often energy inefficient. This leads to demand for energy measures, such as adding insulation, energy efficient windows, or heat pumps. As will be discussed below, various laws impact whether property owners will be allowed to take these measures. Renewable energy installations, such as solar panels, are almost never allowed within the historic site due to their visual impact.[10]

The goal of reducing the use of energy and GHG emissions in historic sites such as Visby comes with complex considerations, particularly the distinction between energy needs versus wants, and the risk of rebound effects. As both Mathis and Saey-Volckrick explain, improvements in efficiency can sometimes lead to unintended increases in energy consumption due to economic and behavioral factors.[11] The rebound effect, described by Mathis, occurs when improvements in energy efficiency lead to increased energy consumption rather than the intended reduction.[12] This is often because the efficiency gains enable additional energy use, either directly through increased usage of efficient systems or indirectly by reallocating savings to other energy-consuming activities.[13] Saey-Volckrick further emphasizes that these effects can influence entire sectors and resource markets at a macroeconomic scale.[14]

Despite various measures to reduce energy use, electricity consumption has not decreased in the region. Statistics show that in 2012, Gotland County consumed 873 GWh, and in 2022, it consumed 884.[15] As the population also grew during this time, stable energy consumption does indicate a reduction

9 *T.H. Trulsrud & J. van der Leer*, Towards a Positive Energy Balance: A Comparative Analysis of the Planning and Design of Four Positive Energy Districts and Neighbourhoods in Norway and Sweden, Energy and Buildings 2024 (318) 114429.

10 *A. Henning*, Solar Collectors in a Roof Landscape: Balancing Change and Preservation in a World Heritage Site, in: T. Broström & L. Nilsen (eds.), Energy Efficiency in Historic Buildings: Postprints from the conference: Visby, February 9–11, 2011, 2012, pp. 151–164, 156.

11 *K. Mathis*, Sustainability Strategies and the Problem of the Rebound Effect, in: K. Mathis & B. Huber (eds.), Energy Law and Economics. Economic Analysis of Law in European Legal Scholarship, vol. 5, 2018, pp. 3–17; *J. Saey-Volckrick*, What Does the Rebound Effect Tell Us? Reflection on Its Sources and Its Implication for the Sustainability Debate, in: V. Mauerhofer, D. Rupo & L. Tarquinio (eds.), Sustainability and Law, 2020, pp. 103–118.

12 *K. Mathis*, *supra* note 11.

13 *K. Mathis*, *supra* note 11.

14 *J. Saey-Volckrick*, *supra* note 11.

15 *Regionfakta*, Electricity Energy, Consumption by County, 2024. Available at: https://www.regionfakta.com/vastra-gotalands-lan/in-english-/energy/electricity-energy-consumption-by-county/ (Accessed 6 August 2024).

in energy use per inhabitant. Another possible contributing factor is that, while energy retrofits aimed at reducing energy consumption are necessary, such measures might inadvertently support non-essential or luxury amenities, including tourism-related infrastructure, which ultimately increase overall energy consumption. For instance, installing advanced thermal systems or switching to renewable energy may reduce emissions initially, but reduced energy costs can lead to higher overall energy use (e.g., adding air conditioners in hotels), negating the savings and diverging from the primary objective of reducing consumption. This scenario complicates efforts to achieve a net reduction in energy use and emissions, as the lower costs of renewable energy solutions could drive further consumption or development activities that undermine sustainability goals. Addressing these challenges requires policies that not only incentivize energy measures but also regulate and manage escalating consumption driven by increased energy wants to ensure that efficiency gains translate into actual reductions in energy use and emissions.[16]

Recent studies have contributed to the academic and policy debates on renewable energy use and energy efficiency in historic buildings. Fouseki and Cassar, for example, explore the contentious relationship between enhancing energy performance and preserving heritage values in the United Kingdom, Italy, and Sweden.[17] They advocate for an interdisciplinary approach to future research and practices.[18] Fouseki and colleagues, based on 59 semi-structured interviews conducted in Greece, Mexico, and the UK, argue that the process of decision-making on energy efficiency, thermal comfort, and heritage conservation is a "socio-cultural, dynamic practice," influenced by the interconnection or disconnection of various factors, including materials, competencies, resources, values, space/environment, sense, and time.[19]

In the Scandinavian context, Loli and Bertolin review the state of knowledge on sustainable refurbishment of historic buildings, highlighting a paradox in Scandinavian countries.[20] Despite excelling in reducing emissions and developing sustainable energy measures, these countries have low visibility in international journals, as well as limited dissemination potential of existing publications due to language barriers.[21] There are several notable exceptions.

16 *K. Mathis*, *supra* note 11; *J. Saey-Volckrick*, *supra* note 11.

17 *K. Fouseki & M. Cassar*, Energy Efficiency in Heritage Buildings – Future Challenges and Research Needs, The Historic Environment: Policy & Practice 2014 (5) pp. 95–100.

18 *Id.*

19 *K. Fouseki et al.*, Energy Efficiency, Thermal Comfort, and Heritage Conservation in Residential Historic Buildings as Dynamic and Systemic Socio-Cultural Practices, Atmosphere 2020 (11) 604.

20 *A. Loli & C. Bertolin*, Towards Zero-Emission Refurbishment of Historic Buildings: A Literature Review, Buildings 2018 (8) 22, pp. 1, 11–12.

21 *Id.*

Eken and colleagues invited approximately 400 property owners and tenants in Visby to participate in a survey on the regular maintenance of historic buildings, of which 45 responded.[22] They propose implementing a systematic preventive conservation policy through collaboration between non-profit and governmental organizations.[23] Investigating the local application of laws and implementing a model of community-based maintenance can be replicated in Visby and other similar historic cities to improve local implementation and ensure long-term conservation and energy sustainability. Christiernsson and colleagues have analyzed Swedish laws regulating built cultural environments in relation to energy transitions.[24] Their work has identified shortcomings in the Swedish legal system, emphasizing the necessity to improve the application of laws at the local level.

Our research builds on this literature.[25] We expand on the examination of the interaction of laws taken by Christiernsson and colleagues with an examination of how these laws are implemented and applied by decision makers at the regional and local levels. Despite the acknowledged need for sustainable energy practices in World Heritage cities, there is limited understanding of how existing legal frameworks including soft law influence local implementation, particularly in balancing energy transition with cultural heritage preservation. This study contributes to addressing this gap with an examination of Visby's regulatory landscape and decision makers' perspectives on implementing sustainable energy measures in this World Heritage city.

Our study uses legal analysis, case study and semi-structured interviews with public officials, heritage professionals, consultants, and property owners to address the following research questions: (1) How are the international and national obligations to preserve cultural heritage interpreted and applied in

22 *E. Eken, B. Taşci & C. Gustafsson*, An Evaluation of Decision-Making Process on Maintenance of Built Cultural Heritage: The Case of Visby, Sweden, Cities 2019 (94) pp. 24–32.

23 *Id.*

24 *A. Christiernsson, M. Geijer & M. Malafry*, Legal Aspects on Cultural Values and Energy Efficiency in the Built Environment – A Sustainable Balance of Public Interests?, Heritage 2021 (4) pp. 3507–3522; *M. Malafry*, The Preservation of Cultural Values in the Transition to a Carbon-Neutral Society – A Study of the Legal Protection of Cultural Values Against the Installation of Solar Cells in the Planning and Building Act and the Historic Environment Act' Nordic Environmental Law Journal 2020 (2) pp. 77–98, https://nordiskmiljoratt.se/onewebmedia/NMT2020nr2_5_Malafry.pdf (in Swedish, English summary); *M. Geijer, A. Christiernsson & M. Malafry*, Law and Practice: Energy Issues and Management of Cultural Values in Planning and Construction Procedures, Nordic Journal of Settlement History and Built Heritage 2022 (82) pp. 33–64, http://mesam.se/wp-content/uploads/2023/02/Juridiken-och-praktiken-2022.pdf (in Swedish, English summary).

25 *A. Loli & C. Bertolin*, *supra* note 20.

relation to building and renovation permits in the Visby World Heritage site, in light of obligations to reduce energy use and greenhouse gas emissions? (2) How do these laws shape the perception, decision-making processes, and practices of different stakeholders in the site? (3) What obstacles and potential solutions are encountered by local decision makers in mitigating climate impacts and transitioning to greener energy in historic cities such as Visby? Through this approach, we aim to contribute globally relevant insights to the discourse on advancing sustainable energy transitions in World Heritage cities.

2 Materials and Methods

2.1 *Description of the Study Site*

This case study was conducted in the Hanseatic Town of Visby UNESCO World Heritage site situated on the island of Gotland in the Baltic Sea. For the purposes of this paper, this site will be referred to as "Visby" or "Visby inner city." In 1995, Visby inner city was inscribed on the World Heritage List as a "… unique example of a northern European medieval walled trading town with a preserved and notably complete townscape and assemblage of high-quality historic structures."[26] Together, these attributes constitute the Outstanding Universal Value (OUV) of this site.[27] The urban town's functional continuity is evident through its ruins, churches, residences, medieval structures, wooden and stone houses, restaurants, hotels, businesses, and other culturally and environmentally valuable areas.[28]

Presently, the whole town of Visby is home to nearly 23,800 inhabitants, with around 2,500 residing within the Visby inner city World Heritage site.[29] While housing costs are high, incomes are relatively low amongst residents.[30] This is likely due to a relatively high percentage of residents who are retirees, students, part-time residents, and seasonal employees, at least some of whom

26 UNESCO World Heritage Centre, Hanseatic Town of Visby. World Heritage Site, 1995. Available at: https://whc.unesco.org/en/list/731/ (Accessed 6 August 2024).

27 *Id.*

28 *Id.*

29 *Region Gotland*, What is Included in the World Heritage?, 2024. Available at: https://gotland.se/bygga-bo-och-miljo/varldsarvet-hansestaden-visby/hansestaden-visby/vad-ingar-i-varldsarvet (in Swedish) (Accessed 6 August 2024).

30 *J. Evaldsson*, Regional Bostadsmarknadsanalys – Gotlands län 2023, Länsstyrelsen i Gotlands län 2023, pp. 1–54. Available at: https://www.boverket.se/contentassets/e9809d5193d140a697352fdbe54c86bf/gotlands-lan-regional-bostadsmarknadsanalys-2023.pdf (in Swedish) (Accessed 6 August 2024).

have other means of support. At the regional level, Gotland is one of the poorest in Sweden, and salaries are well below the national average.[31]

Tourism is an important part of Visby's economy. Visby currently attracts around one million visitors annually, primarily during the summer months.[32] Tourism is a vital part of the local economy, providing around 4700 jobs county-wide, but mainly in Visby, particularly in hospitality, retail, and cultural services.[33] This amounts to approximately one in six people in the county employed in tourism.[34] In 2019, tourism in the county contributed about 485 million Swedish crowns (about €42 million) to state revenues and 157 million crowns (about €13 million) to the local municipality.[35] While tourism brings significant financial benefits, it also incurs expenses, including road maintenance and increased personnel expenses for inspections and sanitation.[36] Despite these costs, tourism remains a significant net positive force for the economy, which supports healthcare, education, and social services.[37] However, the economic situation of Visby's inhabitants varies, and is still influenced by the seasonal nature of tourism, resulting in income variations based on time of year.[38]

2.2 *Case Study*

Given our focus on "how" laws are implemented, we employ the case study method,[39] which can be particularly effective for exploring the reasons behind certain phenomena, describing their nature, and providing explanations for observed patterns.[40] The article employs all three modes of inquiry with an aim of providing a comprehensive exploration of the research questions. Using this approach allows us to examine the implementation and interplay of the global

31 *Statistics Sweden*, Kommuner i siffror: Gotland Municipality. Available at: https://kommunsiffror.scb.se/?id1=0980&id2=null (in Swedish) (Accessed 6 August 2024); *Regionfakta*, BRP per invånare, län, available at: https://www.regionfakta.com/gotlands-lan/regional-ekonomi/brp-per-invanare-lan/ (in Swedish) (Accessed 6 August 2024).

32 *Region Gotland*, Facts About the Island's Business Life, 2024. Available at: https://gotland.se/region-och-politik/regionfakta-och-statistik/fakta-om-ons-naringsliv (Accessed 6 August 2024) (in Swedish).

33 *M. Klingvall et al.*, Besöksnäringens betydelse för Gotland – en analys av turistekonomiska intäkter och kostnader, WSP 2021, pp. 1–44, 15.

34 *Id.*

35 *M. Klingvall et al.*, *supra* note 33, at p. 3.

36 *Id.*

37 *M. Klingvall et al.*, *supra* note 33, at pp. 1–44.

38 *Id.*

39 *R.K. Yin*, Case Study Research Design and Methods, 6th ed., Sage Publications, 2018.

40 *L. Webley*, Stumbling Blocks in Empirical Legal Research: Case Study Research, Law and Method October 2016 (1) pp. 1–21.

and EU legal frameworks related to energy transition and historic preservation in national law, and how national law is applied by public officials in Visby. It also enables us to understand how these regulations are experienced by individual stakeholders at the site.

2.3 *Interviews*

In order to understand how stakeholders in different positions apply or perceive the legal framework on the local level, semi-structured interviews were conducted. This interview method was chosen for its flexibility, allowing participants to describe opinions and personal experiences. Purposeful sampling targeted individuals with substantial expertise or decision-making authority regarding heritage conservation and energy measures within the World Heritage site.[41] We included representatives of each of the public authorities within the region with responsibility for heritage conservation. In addition, the snowball sampling method allowed us to identify additional public officials and individual property owners with relevant knowledge or experiences.[42] A total of 12 in-depth semi-structured interviews with public officials, heritage professionals, consultants, and property owners were conducted onsite in Visby in 2023. These included 11 oral interviews, each lasting an average of about 65 minutes, and one written response to interview questions.[43]

2.4 *Laws and Decision Makers*

UNESCO World Heritage conservation governance engages a diverse array of actors, from international organizations to local custodians.[44] In Visby, the regulatory landscape is shaped by a wide range of actors including national, regional and local authorities, as well as consultants and individual property owners, each playing a role in shaping Visby's built environment. This section explains the legal framework impacting heritage conservation and energy transition in Visby, and the decision makers who apply it.

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41 *L.A. Palinkas et al.*, Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research, Administration and Policy in Mental Health and Mental Health Services Research 2015 (42) pp. 533–544.

42 *C. Parker, S. Scott & A Geddes*, Snowball Sampling' in: P. Atkinson et al. (eds.), SAGE Research Methods Foundations, Institute of Mathematical Statistics, 2019.

43 *See* Table 2.

44 *C. Cave & E. Negussie*, Governing World Heritage' in: World Heritage Conservation: The World Heritage Convention, Linking Culture and Nature for Sustainable Development, 1st ed., Routledge, 2017), pp. 76–104.

2.4.1 The International Legal Framework

The 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage, known as the World Heritage Convention (WHC), is a treaty ratified by 196 countries, including, since 1985, Sweden.[45] Scholars such as Roders and Oers identify the WHC as a crucial tool in shaping international heritage conservation to integrate sustainability.[46] It is one of the most widely ratified instruments in international environmental and cultural heritage law, and is recognized for its role in conserving natural and cultural heritage of Outstanding Universal Value.[47] One of the key outcomes of this treaty is the World Heritage List (WHL),[48] currently comprising 952 cultural, 231 natural and 40 mixed heritage sites, 15 of which are in Sweden.[49]

The connection between heritage conservation and climate action is addressed in the WHC Operational Guidelines, which recognize the relevance of the United Nations Framework Convention on Climate Change (UNFCCC) in safeguarding cultural and natural heritage.[50] This recognition underscores the importance of global efforts to reduce greenhouse gas emissions and mitigate climate change impacts. The 2015 Paris Agreement, building on the UNFCCC, aims to limit global temperature increases to well below 2°C, with efforts to cap it at 1.5°C above pre-industrial levels.[51] Key provisions in the Paris Agreement include goals for mitigation, adaptation, and sustainable development. It has been signed by 195 parties.

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45 UNESCO, Convention Concerning the Protection of World Cultural and Natural Heritage (1972) 11 ILM 1358; *See* also *UNESCO*, World Heritage, States Parties: Ratification Status. Available at: https://whc.unesco.org/en/statesparties/ (Accessed 6 August 2024).

46 *A.P. Roders & R van Oers*, Editorial: Bridging Cultural Heritage and Sustainable Development, Journal of Cultural Heritage Management and Sustainable Development 2011 (1) pp. 5–14.

47 *H.V. Bhati & Y. Epstein*, Protection of Biocultural Heritage in the Anthropocene: Towards Reconciling Natural, Cultural, Tangible and Intangible Heritage Journal of Environmental Law 2023 (35) pp. 353–375.

48 *UNESCO World Heritage Centre*, The Operational Guidelines for the Implementation of the World Heritage Convention (45 COM 12) 2023, paras. 45–119. Available at: https://whc.unesco.org/en/guidelines (Accessed 6 August 2024).

49 *UNESCO World Heritage Centre*, World Heritage List. Available at: https://whc.unesco.org/en/list/ (Accessed 6 August 2024).

50 *UNESCO World Heritage Centre*, *supra* note 48, para. 44.

51 United Nations, Paris Agreement to the United Nations Framework Convention on Climate Change, 12 December 2015, T.I.A.S. No. 16–1104. The Paris Agreement, a legally binding global climate treaty, signed by 195 Parties, including Sweden. Parties to the UNFCCC adopted the Paris Agreement during the UN Climate Change Conference in Paris, France, on December 12, 2015, and became effective on November 4, 2016.

The World Heritage Center, the arm of UNESCO which coordinates and provides advice on matters relating to world heritage, has made a number of recommendations on reconciling the goals of climate and other environmental agreements and heritage conservation. The 2015 "Policy Document for the Integration of a Sustainable Development Perspective into the Processes of the World Heritage Convention" emphasizes the significance of strengthening environmental sustainability, including social and economic development among state parties in implementing the WHC.[52] Further, and in line with the Agenda 2030 for Sustainable Development,[53] the World Heritage Centre asserts that "protection of the world cultural and natural heritage and renewable energy projects could go hand in hand if these projects are planned, evaluated and implemented in ways that assure the safeguarding of the Outstanding Universal Value of World Heritage properties."[54] The updated 2023 UNESCO Policy Document on Climate Action for World Heritage urges parties to implement climate action measures – such as adaptation, mitigation, resilience building, innovation, and research – at World Heritage sites.[55] This Policy Document aims to synchronize the objectives and processes of the WHC with those of the UNFCCC, the Paris Agreement, the 2030 Agenda for Sustainable Development, the 2016 New Urban Agenda, among others.[56]

The EU has worked to both mitigate climate change and protect cultural heritage as it implements its international commitments.[57] Notable reductions in GHG emissions from buildings are attributed to the EU's comprehensive legal framework and higher energy efficiency standards aiming for climate neutrality and promoting environmentally sustainable buildings.[58] The Open Method of Coordination (OMC) group, comprising experts from 25 EU Member States and 3 associated countries, recommends including historic buildings in efforts

52 *UNESCO World Heritage Centre*, World Heritage and Sustainable Development. Available at: https://whc.unesco.org/en/sustainabledevelopment/ (Accessed 6 August 2024).

53 *Id.*

54 *UNESCO World Heritage Centre*, *supra* note 1.

55 *UNESCO*, Policy Document on Climate Action for World Heritage, 2023. Available at: https://whc.unesco.org/en/documents/204421 (Accessed 6 August 2024).

56 *Id.*

57 *G. Tsoumanis et al.*, *supra* note 7; *C.S. Polo López et al.*, Risk-Benefit Assessment Scheme for Renewable Solar Solutions in Traditional and Historic Buildings, Sustainability 2021 (13) 5246; *E. Lucchi*, Integration Between Photovoltaic Systems and Cultural Heritage: A Socio-Technical Comparison of International Policies, Design Criteria, Applications, and Innovation Developments, Energy Policy 2022 (171) 113303.

58 *See European Environment Agency*, Greenhouse Gas Emissions from Energy Use in Buildings in Europe, 2023. Available at: https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emissions-from-energy (Accessed 6 August 2024); *See* also Table 1a.

to reduce greenhouse gas emissions and ensuring financial resources for their renovation.[59] Additionally, various EU-funded and other multi-partner projects related to reducing energy use and promoting renewable energy use in historic buildings have advanced research and continue to make progress in the EU.[60]

However, binding EU law on heritage protection is lacking. The EU laws that set energy standards for buildings generally have exceptions for culturally valuable buildings.[61] Although current EU law encourages energy efficiency measures in historic buildings, they do not impose mandatory requirements.[62] The revised directives on the energy performance of buildings, energy efficiency, and the promotion of energy from renewable sources continue to allow Member States the flexibility to exempt historic buildings from their otherwise more stringent requirements, or to adapt the norms so that damage to buildings and built areas with cultural heritage values can be avoided.[63] The EU OMC group noted that scientifically based exceptions in EU directives are strengths, as they allow standards to adapt to on-the-ground realities and achieve the most effective results.[64] The implementation of the new directives is presently in process in Sweden.[65]

59 *European Commission*, Strengthening Cultural Heritage Resilience for Climate Change – Where the European Green Deal Meets Cultural Heritage, Directorate-General for Education, Youth, Sport and Culture, Publications Office of the European Union, 2022 at pp. 24 and 26. Available at: https://data.europa.eu/doi/10.2766/44688 (Accessed 6 August 2024).

60 *See G. Tsoumanis et al.*, *supra* note 7; *E. Lucchi*, *supra* note 57; *See* also Table 1a.

61 *See L. Mazzarella*, Energy Retrofit of Historic and Existing Buildings: The Legislative and Regulatory Point of View, Energy and Buildings 2015 (95) pp. 23–31; *A.L. Webb*, Energy Retrofits in Historic and Traditional Buildings: A Review of Problems and Methods, Renewable and Sustainable Energy Reviews 2017 (77) pp. 748–759; *N. Jahed et al.*, Policy Framework for Energy Retrofitting of Built Heritage: A Critical Comparison of UK and Turkey, Atmosphere 2020 (11) 674.

62 *See* European Parliament and Council of Europe, Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on Energy Efficiency and Amending Regulation (EU) 2023/955 (Recast) http://data.europa.eu/eli/dir/2023/1791/oj (Accessed 6 August 2024); European Parliament and Council of Europe, Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 Amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as Regards the Promotion of Energy from Renewable Sources, and Repealing Council Directive (EU) 2015/652 http ://data.europa.eu/eli/dir/2023/2413/oj (Accessed 6 August 2024); European Parliament and Council of Europe, Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the Energy Performance of Buildings (Recast) http://data .europa.eu/eli/dir/2024/1275/oj (Accessed 6 August 2024).

63 *Id.*; *See* also *European Commission*, Commission Welcomes Political Agreement on New Rules to Boost Energy Performance of Buildings Across the EU, 2023. Available at: https ://ec.europa.eu/commission/presscorner/detail/en/ip_23_6423 (Accessed 6 August 2024).

64 *European Commission*, *supra* note 59, at p. 55.

65 *Swedish National Board of Housing, Building and Planning*, Så arbetar Boverket med EU-direktivet för byggnaders energiprestanda, Boverket 2024. Available

Various additional regional conventions and EU laws, which cannot be elaborated here due to space constraints, are also valid norms that impact heritage conservation and energy practices in Sweden.[66]

The World Heritage Convention and the Paris Agreement are legally binding international law. Sweden is a dualist legal system in which international laws must be implemented by the legislature before they are given legal effect domestically.[67] Officials and courts therefore generally speaking do not apply international law directly, but rather the national laws that implement them. In any case, neither the Paris Agreement nor the World Heritage Convention contain the type of clear, precise or unconditional types of obligations that would require states to take specific actions with regards to energy measures in historic buildings.[68] Swedish laws must nevertheless be interpreted in light of international legal obligations.

2.4.2 The National Legal Framework

Sweden implements international agreements for heritage conservation and energy transition into its national legislation. Environmental protection is also mentioned in the Swedish Constitution, which mandates public institutions to promote sustainable development to ensure a good environment for present and future generations.[69] The key laws governing Swedish environmental and heritage protection are The Historic Environment Act,[70] The Environmental Code[71] and The Planning and Building Act.[72]

The Historic Environment Act (HEA) governs ancient monuments and remains, listed buildings and built environments, and religious sites owned by the Church of Sweden.[73] In its opening chapter, HEA emphasizes shared responsibility for safeguarding cultural heritage among both citizens and governmental bodies.[74] Ancient monuments and remains, including burial

at: https://www.boverket.se/sv/byggande/bygg-och-renovera-energieffektivt/nyheter-inom-energiomradet/sa-arbetar-boverket-med-eu-direktivet-for-byggnaders-energiprestanda/ (Accessed 6 August 2024).

66 *See* Table 1a; *A. Christiernsson, M. Geijer & M. Malafry*, *supra* note 24.

67 *J. K. Schaffer*, The Self-Exempting Activist: Sweden and the International Human Rights Regime, Nordic Journal of Human Rights 2020 (38) pp. 40–60, 52.

68 *See L.* Lixinski & V. P. Tzevelekos, The World Heritage Convention and the Law of State Responsibility: Promises and Pitfalls, in: A.M. Carstens & E. Varner (eds.), Intersections in International Cultural Heritage Law, Cultural Heritage Law and Policy, 2020, pp. 247–266, concluding that international heritage law does not 'clearly articulat[e] legal obligations'.

69 SFS 1974:152, Constitution of Sweden, Chapter 1 Article 2.

70 SFS 1988:950, Historic Environment Act (Kulturmiljölagen 1988:950).

71 SFS 1998:808, Environmental Code (Miljöbalken 1998:808).

72 SFS 2010:900, Planning and Building Act (Plan- och bygglagen 2010:900).

73 SFS 1988, *supra* note 70.

74 SFS 1988, *supra* note 70, Chapter 1 § 1.

TABLE 1A Relevant charters, EU laws, and other initiatives aimed at heritage preservation, climate neutrality, sustainable energy use, and energy efficiency.

	Description
Charters and documents	The Athens Charter for the Restoration of Historic Monuments (ICOMOS 1931) International Charter for the Conservation and Restoration of Monuments and Sites (Venice Charter) (ICOMOS 1964) European Charter of the Architectural Heritage (ICOMOS 1975) The Australia ICOMOS Charter for Places of Cultural Significance (Burra Charter) (Australia ICOMOS 2013) The Nara document on Authenticity (ICOMOS 1994)
Conventions and declarations	The Declaration of Amsterdam (ICOMOS 1975) Convention for the Protection of the Architectural Heritage of Europe (Granada convention) (Council of Europe 1985) The European Landscape Convention (Council of Europe 2000) Convention on the Value of Cultural Heritage for Society (Faro Convention) (Council of Europe 2005)
EU laws, programmes, and reports	The European Green Deal (European Commission 2019) Clean Energy for all European Package (European Commission 2019) Fit for 55 Package (European Commission 2021) The Energy Efficiency First principle (European Commission 2018) The European Climate Law [Regulation (EU) 2021/1119] (European Parliament and Council of Europe 2021) The Effort Sharing Regulation [Regulation (EU) 2023/857] (European Parliament and Council of Europe 2023) The Governance of the Energy Union and Climate Action [Regulation (EU) 2018/1999] (European Parliament and Council of Europe 2023) REPowerEU Plan [COM(2022) 230 final] (European Commission 2022)

TABLE 1A Relevant charters, EU laws, and other initiatives aimed at heritage preservation, climate neutrality, sustainable energy use, and energy efficiency (*cont.*)

	Renewable Energy Directive [Directive (EU) 2023/2413] (European Parliament and Council of Europe 2023)
	Energy Efficiency Directive [Directive (EU) 2023/1791] (European Parliament and Council of Europe 2023)
	Energy Performance of Building Directive [Directive (EU) 2024/1275]
	Energy Performance of Buildings Directive [Directive (EU) 2018/844] and [Directive 2010/31/EU] (European Parliament and Council of Europe 2018; European Parliament and Council of Europe 2021)
	A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy /* COM/2015/080 final */ (European Commission 2015)
	EN 16883:2017 Conservation of cultural heritage—Guidelines for improving the energy performance of historic buildings (European Committee for Standardization) (Comité Europeen de Normalisation 2017)
	European framework for action on cultural heritage (European Commission 2019)
	New European Bauhaus (European Commission 2021)
	A Renovation Wave for Europe—Greening our buildings, creating jobs, improving lives (European Commission 2020)
	Strengthening cultural heritage resilience for climate change—Where the European Green Deal meets cultural heritage (European Commission 2022)

TABLE 1A Relevant charters, EU laws, and other initiatives aimed at heritage preservation, climate neutrality, sustainable energy use, and energy efficiency (*cont.*)

EU and international projects and other research initiatives	**POCITYF:** An EU-funded project that collaborates with multiple European cities to create positive energy districts by transforming historic cities into smart, sustainable, and energy-efficient environments. It focuses on developing and integrating renewable energy sources, enhancing energy efficiency, and improving residents' quality of life by producing more energy than these historic districts consume.	(https://pocityf.eu/)
	EFFESUS: An EU-funded project that focuses on the energy efficiency of historic urban districts in the EU and developing strategies for improvement.	(https://cordis.europa.eu/project/id/314678 & https://www.imw.fraunhofer.de/en/research/technology-transfer/innovation-acceptance/projects/completed-projects/effesus.html)
	RENFORUS: Mobilizes and promotes UNESCO sites (UNESCO Biosphere Reserves and World Heritage Sites) for practical learning on renewable energy solutions and commitment to efficient energy use.	(http://renforus.com/)
	3ENCULT: An EU-funded project that aims to bridge the gap between conservation of cultural heritage and climate protection by developing appropriate retrofit solutions.	(http://www.3encult.eu/en/project/welcome/default.html)

TABLE 1A Relevant charters, EU laws, and other initiatives aimed at heritage preservation, climate neutrality, sustainable energy use, and energy efficiency (*cont.*)

	RIBuild: An EU-funded project that investigates and develops guidelines for decision-making and practical installation of internal insulation in historic buildings.	(https://www.ribuild.eu/)
	IEA-SHC Task 59: Develops a knowledge base and identifies compatible retrofit solutions in a whole building perspective and potential use of solar energy in historic buildings.	(https://task59.iea-shc.org/)
	Spara och Bevara: A research and development program initiated by the Swedish Energy Agency to increase knowledge about energy efficiency in buildings of cultural and historical value. It aims to develop and convey knowledge and technology solutions that contribute to energy efficiency in these buildings without distorting their value.	(https://sparaochbevara.se/)
	Interreg Europe VIOLET Project: An EU-funded project that aims to improve regional public policies to enhance energy efficiency in traditional buildings, addressing both low carbon and cultural preservation actions.	(https://projects2014-2020.interregeurope.eu/violet/)
	EEHB conference series: An international conference series focused on enhancing energy efficiency in historic buildings.	(https://www.eehb2022.org/ & https://www.eehb2024.org/)

TABLE 1B Swedish and Local Regulations

National Swedish Laws		Applies to
	Environmental Code	Natural and cultural environments, areas of national interest.
	Planning and Building Act	Planning and building activities.
	Historic Environment Act	Ancient monuments and remains, listed buildings and built environments, religious sites owned by the Church of Sweden.
Local Regulations	The Detailed Development Plan for Visby Inner City	Planning and building activities within the World Heritage Site.
	Building Order for Visby Inner City	Gives detailed but non-binding guidelines for property owners about maintaining heritage values and allowable building measures within the World Heritage Site.

grounds and ruins, are protected under Chapter two of the HEA. To disturb, remove, excavate, cover, alter or damage an ancient monument or remains, a permit must be obtained from the County Administrative Board.[75]

Chapter three of HEA focuses on privately owned listed buildings and built environments with particularly high cultural-historical value. When a decision is made to protect a building or group of buildings under HEA, the County Administrative Board issues specific rules unique to each property.[76] These rules can cover the building's general architecture and characteristics, as well as specific details such as windows, doors, and materials, and how the listed building should be maintained to preserve the cultural heritage value.[77] The specific rules for each listed building are normally developed in agreement with each property owner. However, as properties change hands over time, the

75 SFS 1988, *supra* note 70, Chapter 2 §12.
76 SFS 1988, *supra* note 70, Chapter 3 § 1.
77 SFS 1988, *supra* note 70, Chapter 3 § 2.

understanding and adherence to these agreements may diminish. Property owners must apply to the County Administrative Board's permission for a permit for any changes that could impact the cultural values.[78] This permission may be granted if there are "special reasons" and if the measure does not "distort" the cultural integrity of the building.[79] The County Administrative Board may impose reasonable conditions for the permit based on the circumstances prompting the changes, including how the changes should be performed and the required documentation.[80]

While the Gotland County Administrative Board is the primary responsible authority for deciding what changes may be made in listed buildings in Visby, listed buildings owned by the Swedish state and managed by state authorities such as the National Property Board can be listed under the Ordinance on State-Owned Listed Buildings.[81] Procedures for changes are similar to those under HEA, with the government responsible for listing decisions and the National Heritage Board overseeing permissions.

The Swedish Environmental Code (EC) emphasizes the protection and preservation of both valuable natural and cultural environments, consistent with the principles of sustainable development. Its first chapter defines the environment to encompass cultural and natural aspects. Cultural heritage environments are explicitly considered among various general public interests that the law aims to protect and balance.[82] The EC allows for various types of areas to be designated as areas of national interest for various reasons, including their natural or cultural value. Visby has been designated of national interest for its cultural value.[83] Actions within areas of national interest may not cause significant damage to the specific values that are the reason for the designation.[84] This must always be taken into account by the authorities making any decision that affects an area of national interest.

78 SFS 1988, *supra* note 70, Chapter 3 § 14.

79 SFS 1988, *supra* note 70, Chapter 3 §§ 14–15; Prop1987/88:104, p 93; *Swedish National Heritage Board* (*Riksantikvarieämbetet*), Byggnadsminnesförklaring (3 kap 4–9 §§): Vägledning för tillämpning av Kulturmiljölagen, 2014. Available at: https://pub.raa.se/dokumentation/0f18ae02-eef5-4f97-963d-decb12c914fa/original/1 (in Swedish) (Accessed 6 August 2024).

80 SFS 1988, *supra* note 70, Chapter 3 §§ 14–15; *See* Table 3.

81 SFS 2013:558, Ordinance on State-Owned Listed Buildings.

82 SFS 1998, *supra* note 71, Chapter 1 § 1.

83 *Swedish National Heritage Board*, Riksintressen för kulturmiljövården Gotlands län (The National Interest for Cultural Environments Gotland County) (2024). Available at: https://www.raa.se/app/uploads/2024/05/Gotland-I_riksintressen.pdf. (Accessed 6 August 2024).

84 SFS 1998, *supra* note 71, Chapter 3 § 6 and Chapter 4; *see Region Gotland*, note 94, at p. 7.

The Planning and Building Act (PBA) governs planning and building activities in Sweden. Like the EC, its goal is to create a sustainable living environment for present and future generations.[85] According to Chapter 1 § 2 of PBA, municipalities hold the responsibility to plan land and water usage within their geographical area. All planning actions must consider "natural and cultural values, environmental and climate aspects."[86] PBA operates in conjunction with the Environmental Code, particularly when municipal decisions affect areas of national interest.[87] Though not legally binding, the mandatory "comprehensive" plans issued by the municipalities must include statements on how areas of national interest are to be safeguarded through municipal planning and building activities.

The municipalities are responsible for the local application of the PBA. PBA considers a broader range of cultural environmental values than HEA.[88] Further provisions and guidelines for the interpretation and management of cultural values within the planning and building process are given in both mandatory provisions and general recommendations.[89]

In general, the PBA requires a "detailed development plan" in all densely populated areas.[90] By issuing such plans, a municipality can regulate the level of protection of cultural values within the planned area. Such regulations can range from general to specific, including specifications on maintenance materials, preservation of original building details and colors, and even prohibition against demolition.[91] According to the general regulation in PBA chapter 9 § 2, a permit is required for measures that can substantially change the appearance of a building. However, the municipality can specify more concretely when a building permit is needed in its detailed development plans. To protect cultural values, the PBA includes regulations that must always be considered. Chapter 8 § 13 prohibits the "distortion" of culturally valuable buildings, while §§ 14 and 17 mandate their maintenance and require that alterations are made "cautiously" to preserve their characteristics and values.

2.4.3 Local Regulations in Visby: the Detailed Development Plan and Building Order for Visby Inner City

Around 280 buildings are listed according to HEA in Visby. Therefore, the protection of the cultural environment, which encompasses around 1900

85 SFS 2010, *supra* note 72, Chapter 1 § 1.
86 SFS 2010, *supra* note 72, Chapter 2 § 3.
87 SFS 2010, *supra* note 72, Chapter 2 § 2.
88 SFS 2010, *supra* note 72, Chapter 1 § 1 and Chapter 2 §§ 2, 3 and 6.
89 BBR 2011:16, § 1:221. In English https://www.boverket.se/globalassets/publikationer/dokument/2019/bbr-2011-6-tom-2018-4-english-2.pdf (Accessed 6 August 2024).
90 SFS 2010, *supra* note 72, Chapter 4 § 2.
91 SFS 2010, *supra* note 72, Chapter 4 § 16.

buildings within the World Heritage Visby inner city, extends beyond HEA. The whole of Visby inner city was designated as an area of national interest under a precursor to the EC in 1987.[92] Since the cultural heritage values that motivated the designation might be affected even by small changes in the built environment, the municipality's responsibility to provide sufficient protection requires careful attention.[93] A detailed development plan,[94] including the entire inner city, was adopted in 2010 in order to maintain the cultural values and manage change in a sustainable way. Simultaneously, the Building Order for Visby inner city was issued. The Building Order defines cultural values and provides detailed guidelines for applying planning and preservation regulations, laid down in the Detailed Development Plan.[95] It also provides guidance to property owners on how to manage, develop, and implement energy measures in a sustainable way within Visby inner city.[96]

As mentioned above, the Detailed Development Plan can be used to establish specific regulations, including when a building permit is required, beyond the floor established in the PBA. An example is that any change that could alter the building's appearance requires a building permit by the Region Gotland.[97] This also means that the enforcement of the rule against distortion is clarified at the local level – no measures that could potentially harm cultural values are permitted within the walled city.[98] Thus, applications for permits cannot be approved if they pose a risk to Visby's cultural identity.

The Detailed Development Plan mandates that any updates to meet modern housing standards and technological advancements, such as energy efficiency, ventilation, and accessibility, must be carefully executed to preserve the city's distinctive character and architectural integrity. This may entail that in certain situations, requirements may need to be reduced in favor of preserving cultural values.[99]

92 *Region Gotland*, Byggnadsordning för Visby innerstad [Building Order for Visby Inner City], 2010 pp. 1–83, at p. 7. Available at: https://dokument.gotland.se/IntegrationService.svc/doc/content/16383 (Accessed 6 August 2024) (in Swedish) (hereafter Building Order).

93 *Boverket*, Kommunalt planmonopol, 2023. Available at: https://www.boverket.se/sv/kommunernas-bostadsforsorjning/kommunens-verktyg/kommunalt-planmonopol/ (Accessed 6 August 2024).

94 *Region Gotland*, Detaljplan för Visby Innerstad [Detailed Development Plan for Visby Inner City], 2010 pp. 1–24. Available at: https://gotland.se/bygga-bo-och-miljo/samhallsplanering/oversiktsplan-och-detaljplaner/detaljplan-for-visby-innerstad (Accessed 6 August 2024) (in Swedish).

95 *Region Gotland*, Building Order, *supra* note 92.

96 *Id.* at pp. 78–79.

97 SFS 2010, *supra* note 72, Chapter 9 § 2.

98 *Region Gotland*, Building Order, *supra* note 92, at p. 10.

99 *Region Gotland*, Building Order, *supra* note 92, at p. 35.

Together, these laws and regulations prohibit changes that would damage or distort the cultural value of certain buildings or areas, except in very limited circumstances. Interpreting whether changes to improve energy efficiency or reduce greenhouse gas emissions, such as adding insulation, solar panels or heat pumps, damage or distort cultural value, and if so, whether their use can nevertheless be legally justified, has been at the crux of the legal conflict between heritage conservation and the energy transition. Modifications to different buildings, protected by different laws for different cultural values, are decided under different laws by different decision makers. Although both the PBA and HEA prohibit changes that would "distort" cultural values, what this means may be interpreted differently by different decision makers under the different laws. Decisions made under the PBA and EC are appealed to Sweden's unique Land and Environment Court system, whereas decisions made according to the HEA are appealed to the administrative court system. This means that different sets of precedents interpreting these terms can develop, although so far there have been few court cases considering these questions that would pertain directly to Visby. Therefore, it is important to consider how local decision makers in fact view the distortion of heritage values in relation to energy retrofits, within the broader context of balancing cultural and natural environmental concerns.

2.4.4 Decision Makers

In Visby, actors at the state and municipal levels implement and apply laws pertaining to heritage preservation and sustainable development.

2.4.4.1 *The Swedish National Heritage Board (NHB)*

NHB monitors cultural environment matters nationwide, as mandated by the Historic Environment Act.[100] As Sweden's central administrative agency for cultural heritage, NHB is responsible for preserving, using, and developing the cultural environment in close collaboration with county administrative boards, county museums, municipalities, and the public.[101] NHB's work promotes sustainability, integrates cultural heritage into community planning, maintains the national register of listed buildings, supervises some aspects of cultural heritage management, conducts research, and engages with both academic and international partners. NHB serves as the central expert authority for matters and implementation concerning HEA, issuing regulations and providing expert opinions for legal proceedings related to cultural environments.

100 SFS 1988, *supra* note 70, Chapter 1 §2.

101 *Swedish National Heritage Board,* https://www.raa.se/in-english/swedish-national-heritage-board/ (Accessed 6 August 2024).

2.4.4.2 *The Swedish National Property Board (NPB)*

NPB manages state-owned heritage properties and sites, including castles, royal palaces, museums, ruins, and more.[102] NPB plays a role in managing eight of Sweden's 15 UNESCO World Heritage sites.[103] On Gotland, NPB is responsible for managing various heritage properties and ruins, such as the county governor's residence and Visby church ruins in Visby inner city. Its mission is to maintain the historical essence of these properties while adapting them to modern needs for the benefit of tenants and the public.

2.4.4.3 *The Gotland County Administrative Board (CAB)*

The County Administrative Board represents the Swedish government on the county level. It executes national objectives and government decisions locally, acting as an intermediary between the public, local government, and the national authorities.[104] It also provides planning guidance and has the authority to overrule municipal decisions on Detailed Development Plans if they are not in compliance with the cultural values that justified the designation as areas of national interest.[105]

The CAB of Gotland is responsible for applying the HEA and EC within the county. Permits to make changes to listed buildings must be obtained from the CAB. The CAB is also responsible for monitoring areas designated of national interest under the EC. It also is the first instance of appeal for permits for maintenance, modification, or construction of non-listed buildings, which are granted by Region Gotland under the PBA.

2.4.4.4 *Region Gotland (RG)/Gotland Municipality*

In Sweden, regions and municipalities are typically two different types of administrative body with different functions. The situation is unique in Gotland, where Gotland municipality (Gotlands kommun) also serves as the region and refers to itself as Region Gotland. In its function as municipality, RG oversees public space and urban planning.[106] RG, following PBA, is responsible for regulating land use and enforcing the detailed plans that govern construction and changes in culturally valuable areas. According to the provisions in the Detailed Development Plan, local residents must apply to

102 *Swedish National Property Board*, https://www.sfv.se/ (in Swedish) (Accessed 6 August 2024).

103 *Swedish National Property Board*, English Version, https://www.sfv.se/om-oss/other-languages/english/ (Accessed 6 August 2024).

104 *Gotland County Administrative Board*, https://www.lansstyrelsen.se/gotland (Accessed 6 August 2024).

105 SFS 2010, *supra* note 72, Chapter 11 § 11.

106 *Region Gotland*, https://gotland.se/ (Accessed 6 August 2024).

RG for a building permit when they wish to maintain, modify, construct, or renovate. When evaluating permit applications, RG must consider whether the measures applied for would "distort" historically, culturally, environmentally, or artistically significant buildings in Visby inner city. Like most World Heritage Cities, Visby has a World Heritage coordinator.[107] Visby's World Heritage coordinator works to coordinate internal and external World Heritage issues for the municipality/region.[108]

2.4.4.5 *Energicentrum Gotland*

Operated by Region Gotland, the goal of Energicentrum Gotland is to help Gotland transition to a fully renewable energy system by 2040.[109] It collaborates with local energy companies, Uppsala University, and other stakeholders to plan and implement energy projects and offers free advisory services to the community.

2.4.4.6 *Visby World Heritage Council*

This council coordinates the efforts of regional and local stakeholders involved in managing Visby inner city.[110] It includes representatives from RG, CAB, Gotland Museum, NHB, NPB, Uppsala University Campus Gotland, and various associations, ensuring integrated management and preservation efforts.

2.4.4.7 *Local Residents and Consultants*

Local residents and consultants also play a crucial role in interpreting and applying the laws related to heritage preservation and energy conservation. We consider local residents and property owners to also be a type of decision maker, and perhaps the most important ones, in that they make decisions about what changes they want to make to their buildings and homes. Consultants offer practical advice and support to property owners and other

107 *Swedish National Heritage Board,* Responsibilities and roles in World Heritage work, 4 November 2019. Available at: https://www.raa.se/aktuellt/aktuella-fragor/regeringsuppdrag/uppdrag-till-riksantikvarieambetet-att-utarbeta-en-nationell-varldsarvsstrategi/ansvar-och-roller-i-varldsarvsarbetet/ (In Swedish). (Accessed 6 August 2024).

108 *Region Gotland*, Organization for World Heritage work, 2 February 2024. Available at: https://gotland.se/bygga-bo-och-miljo/varldsarvet-hansestaden-visby/organisation-for-varldsarvsarbetet (In Swedish). (Accessed 6 August 2024).

109 *Region Gotland*, Energicentrum Gotland, https://energicentrum.gotland.se (Accessed 6 August 2024).

110 *Region Gotland*, Visby World Heritage Council, https://gotland.se/bygga-bo-och-miljo/varldsarvet-hansestaden-visby/organisation-for-varldsarvsarbetet (in Swedish) (Accessed 6 August 2024).

decision makers, helping to align local actions with national legislation and international objectives.

Our research participants, described in Table 2, are drawn from this pool of decision makers.

TABLE 2 Research participants

Role/Job	Reference in text
Climate Adaptation Investigator, Swedish National Heritage Board and researcher in energy efficiency in historic buildings (Riksantikvarieämbetet)	NHB1
Architect, Swedish National Heritage Board (Riksantikvarieämbetet)	NHB2
Cultural heritage specialist at Swedish National Property Board (Statens Fastighetsverk); Visby World Heritage Council	NPB1
Cultural Environmental Manager (Kulturmiljöhandläggare) Decides permits for changes in listed buildings, County Administrative Board of Gotland (Länsstyrelsen i Gotlands län); Visby World Heritage Council	CAB1
World Heritage Coordinator, Municipality of Gotland (Region Gotland) Visby World Heritage Council	RG1
Regional Antiquary, City Architect Unit (Regionantikvarie, Stadsarkitektenheten), Municipality of Gotland (Region Gotland)	RG2
Spatial planner (Stadsarkitekt), Municipality of Gotland (Region Gotland)	RG3
Building inspector, Municipality of Gotland (Region Gotland)	RG4
Consultant at Engergicentrum (Region Gotland)	RG Energy Consultant
Private building conservation consultant	Consultant1
Owner of a listed property in Visby inner city	Owner1
Owner of a listed property in Visby inner city and board member of Visby Innerstadsförening, an organization that promotes residential life within the World Heritage site.	Owner2

3 Results

3.1 *Impact of World Heritage Listing on Cultural Heritage Protection in Visby*

Inscription as a World Heritage site has, unsurprisingly, led to increased preservation of cultural heritage in Visby, at least when it comes to historic buildings themselves. In pursuit of UNESCO recognition, Swedish authorities designated over 200 buildings within the Visby inner city.[111] According to RG1, these listings were crucial for qualifying for inclusion in the bid, explaining, "There's no other county in Sweden that has so many listed buildings on the national level because that's the only way we could do it to become World Heritage."

Inscription in the WHL has particularly augmented the legal protection of the physical exterior appearance of Visby's built environment. The newly listed buildings in Visby became protected under the HEA. Inscription also led to the adoption of the Detailed Development Plan and Building Order for Visby inner city in 2010 (RG3), which shifted the focus from protecting individual buildings to conserving the entire area. The World Heritage Coordinator (RG1) highlighted local initiatives post-inscription aimed at restoring buildings with medieval and 17th-18th-century characteristics. Restoration practices, such as removing plastic-based paint and plaster to reveal medieval features, have notably shaped the present-day appearances of certain buildings. The fact of international protection also provides a justification for officials to apply conservation laws strictly even though the same laws may be applicable elsewhere: As stated by NHB1, Visby's World Heritage status provides "a lot of arguments to … preserve how the place looks and require … that any sort of … changes are not visible. You can use that as an argument to preserve harder."

Crucially though, World Heritage status extends this protection beyond mere structures, preserving the entire cultural landscape of Visby. This comprehensive approach ensures that streets, public spaces, and even the surroundings, such as the medieval city wall, are conserved. Local officials recognize the significance of this expansive framework. As RG2 observed, "[I]f you want the whole and the different parts to be protected, like the streets and the area around the wall and everything, then it's better to have World Heritage protection."

Inscription resulted in greater accountability, also potentially inspiring officials to interpret the law strictly and carefully. RG2 noted, as an official, "[Y]ou have more eyes on you, I mean, you can't just do things and not

111 *UNESCO World Heritage Centre*, *supra* note 26.

think about the rest of the world." Official actions applying cultural heritage protection laws have to be documented in reports to national authorities and in periodic reporting to UNESCO. Listing in WHL also has benefits for the improved implementation of international and national laws in the form of technical guidance documents from UNESCO, such as those on mitigating climate change impacts at heritage sites.

But even with "harder" legal protection, there are many challenges in implementing conservation laws in heritage sites such as Visby. A study examining a block within the Visby World Heritage site between 1977 and 2015 showed that contrary to expectations, granted permits to make external changes to buildings increased after the site's inscription, which the authors speculated was in part due to rising property values and gentrification.[112] This observation is in line with broader trends; new research shows not only increasing tourism but also increasing urbanization in World Heritage properties.[113]

RG1 observed that tourism had already been increasing prior to listing but accelerated afterwards. RG3 voiced concerns about the potential "threat to the social values" in Visby due to the shifting ownership from residential to commercial uses of buildings over the past three decades. RG2 remarked, "It's interesting to see the buildings changing functions, but it's very fast now and … they change owners in shorter periods." RG3 added that many properties are now summer homes, with fewer year-round residents, further altering the city's living character. RG1 noted that escalating property prices challenge locals seeking year-round residency, as businesses acquire and convert properties to meet tourism needs and wants, further affecting "the socio-economic map of the city." These types of changes, according to RG3, have deepened societal divisions and threaten Visby's historical inclusivity.

To ensure that cultural values are maintained as ownership changes, the Gotland County Administrative Board conducts a review of property ownership every 10 years. While some new owners proactively reach out, the Board often becomes aware of ownership changes during these regular reviews. RG2 stressed the need to "slow down the pace of change" and emphasized that local, long-term residential ownership helps preserve heritage and cultural

112 *M. Legnér & M. Tunefalk*, It's Not the End of the World (Heritage Site): Impacts of an Energy Savings Programme on Historical Values in Visby, Sweden, in: T. Broström, L. Nilsen & S. Carlsten (eds.), The 3rd International Conference on Energy Efficiency in Historic Buildings: Visby Sweden, 26–27 September 2018, Uppsala University 2018, pp. 444–452 http://eprints.sparaochbevara.se/909/.

113 *M. Katontoka et al.*, No Report, No Densification? A Spatiotemporal Analysis of Urban Densification and Reporting Practices in World Heritage Properties, Land 2024 (13) 1646.

values of the buildings, as "you only change because you have to, because it's a need."

The shift in property uses and ownership that accompanies increased tourism has far-reaching consequences for the city's living character, including the energy demands placed on its buildings. RG2 worried that Visby inner city could turn into a "big hotel area," with fears that it might become a "ghost town in winter" (RG4) when the tourist season ends. Consultant1 compared Visby's struggles with those of other World Heritage sites[114] and popular tourism destination towns,[115] noting similar patterns of tourism and development pressures. RG2 advocated for conserving and maintaining Visby as a "multi-functional" and "socially diverse" living space, reminding that heritage conservation is about more than just the preservation of physical structures – it's about the local people and the life they bring to the city.

3.2 *Complexity of Applying and Implementing Laws in Visby*

World Heritage and international law constitute a background against which Swedish officials apply Swedish laws. As described above, decisions about changes to buildings in the Visby World Heritage site are made by various property owners and officials, who must consider multiple national laws and regulations, as well as local rules and policies, concerning building, cultural heritage protection, and environmental law. These laws can be complex.

According to NPB1, the number of different laws and actors led to increased difficulties in implementing sustainable energy solutions in heritage buildings, noting various types of decisions concerning various types of properties are made by the National Property Board, or the National Heritage Board, or the County Administrative Boards, each applying "quite a number of different legislations that don't always go hand in hand." RG1 also noted that heritage values sometimes come into play during the permitting process, causing setbacks and frustrations for applicants. As they explained, "[Individuals] might have advice from Region Gotland several months [in advance] .... that they should do something and then they apply for a permit to do it and then the cultural heritage experts say, sorry, that doesn't work because ....." RG1 emphasized the need for a comprehensive approach that aligns advice,

114 *A. Markham et al.*, World Heritage and Tourism in a Changing Climate, UNEP and UNESCO 2016. Available at: https://whc.unesco.org/en/activities/883/ (Accessed 6 August 2024).

115 *E. Negussie & M. Frisk*, Towards a strategy for sustainable tourism for the Hanseatic Town of Visby, Sweden, in: K. Luger & M. Ripp (eds.), World Heritage, Place Making and Sustainable Tourism: Towards Integrative Approaches in Heritage Management, 2020, pp. 233–245, 238.

policies, and regulations to balance between sustainability and cultural heritage preservation.

Even within the different authorities, a number of different actors representing different interests may have responsibility for making decisions about a particular property: while NPB1 worked for the National Planning Board's unit specialized in cultural heritage, they noted that other specialists focused on the environment, electrical systems, air solutions and other building aspects. According to NPB1, "[E]veryone looks at it from their own point of view, and I think they should." Nevertheless, NPB1 argued, an additional law that would harmonize management of World Heritage Sites could help coordinate the management of these sites and keep things from falling "between the cracks," which may harm their OUV. Without such a law, according to NPB1, it can be difficult to have heritage prioritized "at the level you would love to have it." Still, the various regulations and multiple organizations such as Visby's World Heritage Council each contribute to protecting Visby's cultural values.

3.3 *Conflict and Balance: World Heritage Priorities and Energy Sustainability*

Potentially, each actor seeking to maximize particular values can lead to overall value maximization, but competing interests represented by different authorities can also lead to wasted resources and loss of credibility amongst owners. Owner2 gave an example of the National Property Board seeking to install solar panels to provide electricity to illuminate St. Olof's Ruin, a site that they managed. The County Administrative Board rejected the permit application on the grounds that solar panels would impermissibly change the ruin and harm its authenticity. In its decision, it noted that environmental experts within the County Administrative Board also opposed the permit on the grounds of potential harm to bats, which, it explained, were protected under environmental laws including the EU Habitats Directive and Swedish implementing legislation.[116] Owner2 found this conflict between different types of authorities "rather funny." Less funny to this owner was their perception that the multitude of laws and authorities regulating what can be done in a building made it difficult to understand what they were, in fact, allowed to do with their property. It seemed to this owner that the environmental laws, building laws, and heritage laws were written from the perspectives of different interests. "I don't think the laws are talking to each other," they complained.

Indeed, the various laws impacting building and renovation in Visby do to varying extents stem from international laws that promote different

116 *See* Table 3, Permit Decision 2020 S:t Olof's Ruin.

interests. As this article has emphasized as its central example, Sweden has international obligations to reduce energy consumption as well as to conserve the Visby World Heritage site. Perhaps not surprisingly, though, the laws on heritage conservation have often taken precedence for the officials tasked with making decisions on heritage conservation in Visby. NPB1, for example, named environmental concerns as an important value promoted by the National Planning Board, but stated that World Heritage status may lead to the prioritization of cultural heritage over other competing values. As noted, Sweden is a dualistic legal system, in which international law is implemented at the national level, and officials apply only the Swedish laws, not the international laws themselves. However, the Detailed Development Plan and Building Order, enacted at the municipal level, extensively discuss world heritage, and the fact that it impacts how national law is interpreted. The officials interviewed indeed tended to mention world heritage, authenticity and outstanding universal value, expressions from international law on world heritage conservation without prompting, but none named the Paris Agreement or its constituent parts as a reason for any sort of decision-making.

In Visby, public officials and experts generally agree that achieving sustainable energy goals can be challenging due to World Heritage status. This designation adds an additional layer of protection to the historic environment, necessitating permission from the County Administrative Board[117] and Region Gotland[118] for many types of changes. This adds increased complexity for locals seeking to make changes to their energy use.

In Visby inner city, the district heating network utilizes biofuel-derived heat, a relatively environmentally friendly option. District heating is used in about 25% of buildings in the inner city.[119] Some buildings in Visby inner city use geothermal heating via drilled wells, as the area is not part of the water protection zone.[120] Other property owners still resort to costly direct electric

117 *Länsstyrelsen Gotland*, Byggnadsminnen. Available at: https://www.lansstyrelsen.se/gotland/samhalle/kulturmiljo/byggnadsminnen.html (in Swedish) (Accessed 6 August 2024).

118 *Region Gotland*, Bygglov i Visby innerstad. Available at: https://gotland.se/bygga-bo-och-miljo/bygga-nytt-andra-eller-riva/bygglov-i-visby-innerstad (in Swedish) (Accessed 6 August 2024); *Region Gotland*, Bygglovsguide, Available at: https://gotland.se/bygga-bo-och-miljo/bygga-nytt-andra-eller-riva/bygglovsguide (in Swedish) (Accessed 6 August 2024).

119 *P. Eriksson, V. Milić & T. Brostrom*, Balancing Preservation and Energy Efficiency in Building Stocks, International Journal of Building Pathology and Adaptation 2019 (38) pp. 356–373, 358.

120 *See* Table 3, Permit Decision 2020F. It is important to note that the Visby inner city area is not covered by the Water Protection Zone on Gotland, allowing for

heating systems due to limited alternatives or the high cost of connecting to district heating (RG Energy Consultant). Regardless of the source of heating, some owners apply to make renovations that would reduce energy use, with goals such as saving money, improving thermal comfort or reducing their environmental impact. The World Heritage designation of the Visby inner city means the entire area is subject to stringent protection regulations, making energy retrofits challenging for property owners and users, including those with non-listed and modern buildings that possess cultural value.

Although heritage officials generally acknowledged the importance of reducing GHG emissions, some argued that the applicable laws required that cultural heritage protection take precedence within the World Heritage site. RG3 explained that the PBA prioritizes cultural values over energy efficiency. Many energy measures require a permit, and if these measures would threaten cultural values "then you're not supposed to get the permit." This view was confirmed by CAB1, who said "[W]e do try to give permits for the changes as much as we can, but it's all about the authenticity." Noting that the installation of solar panels was not allowed on Visby inner city rooftops, CAB1 explained that the prohibition was not specifically about the solar panels, but rather about maintaining the use of authentic heritage materials for the rooftops. The focus is on preserving the historical character of the buildings by not allowing changes to the original rooftop materials. According to CAB1, this requirement did not preclude the use of renewable energy within the World Heritage site, but that renewable energy should be produced somewhere else rather than on heritage properties.

Changes of materials can only be allowed if there is a special reason, CAB1 further noted, giving examples of security or availability of materials. According to CAB1, the reduction of greenhouse gases or promotion of renewable energy alone did not constitute special reasons. However, reducing energy use, improving indoor climate and efficiency, and implementing environmentally friendly thermal systems have been named as "special reasons" in decisions to permit certain energy measures, such as heat pumps.[121] Some types of changes are routinely allowed, such as double-glazed windows on the interior, heat pump installations, and enhanced internal insulation, as they are often judged to be able to be used without compromising cultural and historic values. These measures are allowed provided they have limited visibility and limited impact

geothermal installations without conflicting with water protection regulations. See Water protection areas: https://gotland.se/bygga-bo-och-miljo/vatten-och-avlopp/dricksvatten/vattenskyddsomraden#h-Upphavdavattenskyddsomradenochforeskrifter and Map of water protection areas on Gotland: https://gotland.maps.arcgis.com/apps/webappviewer/index.html?id=289c08dcaf9140608c1f01109a16e45c.

121 *See* Table 3.

on the cityscape and cultural-historical values.[122] Our review of sample of permit decisions in listed buildings by the Gotland County Administrative Board showed that factors considered in the decisions include the reversibility of the installations, partial visibility, minimal exterior damage, and potential for future adjustments to further reduce visual impact.[123]

Both the County Administrative Board and Region Gotland tend to be restrictive regarding changes that could impact the visual or cultural integrity of the World Heritage site. The authorities prioritize the preservation of the historical character of Visby, and installations, such as solar panels,[124] are subject to strict scrutiny. The Country Administrative Board, in particular, is required by the HEA to deny permits that could alter the cultural landscape, even if the renovation would be desirable for other reasons. As a result, many property owners anticipate that their applications will face challenges or rejections and choose not to apply or to withdraw their applications after initial discussions.

3.4 *Shifting Attitudes and Managing Change*

There are indications of a shifting attitude among some heritage officials regarding environmental and energy concerns in evaluating the legality of certain measures. While the NHB continues to oppose – and sometimes appeal to court – changes such as the installation of solar panels on the roofs of historic buildings, its employee NHB1 noted that the heritage sector has, in some ways, grown more accepting of sustainable energy measures. Still, they argued, the heritage sector should be more open to change in light of climate and other environmental challenges, saying, "[I]f we want to be part of this

122 For more examples, *see* Table 3.

123 *See* Table 3: The examples listed in Table 3 represent a selection of decisions made by the Gotland County Administrative Board (CAB), as provided by a CAB official. Additional decisions exist beyond those included in the table. A register of applications for to CAB during the time period January 2012-November 2024 included more than 700 applications to make changes to listed buildings on Gotland under the HEA. However, it was not possible to know without reviewing all of them what percentage concerned changes to energy systems. Additionally, a list provided by Region Gotland officials shows approximately 1,800 permit applications under the PBA concerning changes and maintenance of buildings (2010- October 2024) in Visby inner city. Many of these likely involve modifications or renovations to historic buildings, reflecting the enforcement of heritage conservation laws, which require permission for any changes in Visby inner city. The high volume of permit applications and appeals for changes in Visby inner city suggests significant interest in maintaining or adapting properties, potentially driven by factors such as tourism, urban development, or modern usage needs.

124 *Region Gotland*, Solpaneler, solfångare, solceller. Available at: https://gotland.se/bygga-bo-och-miljo/bygga-nytt-andra-eller-riva/bygglovsguide/solpaneler-solfangare-solceller (in Swedish) (Accessed 6 August 2024).

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
2012	A	Air Source Heat Pump	Granted Retroactive permission	- CAB found mounted air source heat pump during their inspection in 2012. - Permit applies to the existing air source heat pump mounted on the base of the house. - Any future replacement or model change requires new approval from the County Administrative Board.	- The pump is visible from limited angles as a modern element in the cityscape. - Considered reversible and does not cause lasting damage to the listed building's exterior. - The CAB noted the possibility of identifying a more suitable placement or design in the future.
2012	B	Air Source Heat Pump	Granted	- Changes must be carried out according to the application details. - CAB considers the changes simple enough that conservation officer supervision is not required, provided that the wall penetration does not exceed two holes of 40 mm diameter as specified in the application. - Notify the County Administrative Board after completion for final inspection and approval.	- The outdoor unit will be placed at ground level in a fully enclosed courtyard and is therefore not visible from the public streetscape. - Minor drilling required. - Intervention to be so minor that it can be accepted.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
				- The permit expires if the work is not started within two years or completed within five years of the decision date.	
2014	C	Air Source Heat Pump	Granted	- Installation as per the information and drawings in application. The outdoor unit must be mounted on the eastern short side of the porch of the main building. A single hole (maximum 60 mm in diameter) may be drilled in the lowest plank under the hall window. - Outdoor unit must be encased in custom-built box/trellis made of tar-treated wood to match the historic courtyard environment. - No conservation officer is required, but the CAB must be contacted in case of uncertainties regarding the enclosure design.	- Reduces energy consumption. - The intervention (drilling and exterior installation) is minimal and reversible. Alternative drilling locations were found impractical. - Minimal visual impact due to encasing.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
				- The permit expires if the work is not started within two years or completed within five years of the decision date.	
2015	D	Air Source Heat Pump	Granted	- Installation as per the information in the application. - Outdoor unit encased in custom-built box/trellis made of tar-treated wood to minimize intervention and impact on the courtyard environment. Drilling (max. 60 mm in diameter) should be done either on the damaged section of the back wall or through the stone foundation at the eastern gable. - No conservation officer is required, but the CAB must be contacted in case of uncertainties regarding the enclosure design. - The permit expires if the work is not started within two years or completed within five years of the decision date.	- Reduces energy consumption. - Drilling is reversible and minimized by placing it in already damaged or less intrusive locations. The visually most discreet location (back side) was deemed impractical; the chosen placement minimizes impact through visual screening. - Minimal visual impact due to encasing.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
2016	E	Air Source Heat Pump	Granted	- Installation as per application and cultural impact assessment prepared by Boman Restaurering AB. - Minimal drilling for ducting. - The work must be performed with the involvement of a cultural heritage consultant approved by the CAB and appointed by the owner. - Cultural heritage consultant documentation must be compiled in a final inspection report and submitted in archival form to both Gotlands Museum and the Swedish National Heritage Board, as well as digitally to the property owner and the CAB. - Final inspection and approval by the CAB is required. - The permit is valid for five years from the date of the decision.	- Considered preventive for better indoor climate year-round. - Reversible addition on southern façade. - More discreet placement is not possible due to how the house and yard are used. - Encased in wood and painted to match façade. - Acceptable visual change due to partial concealment by vegetation.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
2020	S:t Olof's Ruin	Solar Panels	Rejected	*Proposal*: The Swedish National Property Board (NPB) wanted to install accent lighting via a solar panel system. The lighting was intended to accentuate and highlight the unique features of the ruin. The installation involves: - Mounting 10 solar panels on top of the ruin's arches and other required technical installations. - Placing light fixtures around the ruin and in the tower room. - Mounting solar panels in recent joints, avoiding direct attachment to the stone. - Visibility of solar panels from at least three nearby areas, including the entrance to the Botanical Garden where the ruin is located.	- Installation alters and partially covers the ancient monument. - Lack of historical context and integration. - Negative impact on the visual experience and authenticity of the ruin. - Not proportionate with Ruin's significance in the World Heritage site and national interest area. - The information on the impacts bats is added in general, considering the whole of Sweden. - Agenda 2030 goals and Climate Impact: the installation of solar panels would not contribute to reducing climate impact in this case, as it would not replace any existing lighting.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
				- Lighting operational every summer night, with uncertain operation in spring and winter depending on sunlight hours. *Region Gotland* (*Building Permit Application*) - Compliance with the HEA to protect the historical value of the church ruin and surrounding World Heritage area. - Acquisition of a building permit from the Environmental and Building Committee under the PBA.	While CAB appreciated NPB's initiative to promote renewable energy, it remains generally restrictive toward solar panels in culturally historic environments, particularly within Visby inner city.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
				- Approval from the Gotland County Administrative Board for any changes to the protected historical site. - The solar panels must be installed discreetly so they are not visible to the public, in accordance with the visual impact assessment. - No damage should be caused to the original masonry, plaster, or stonework; all installations must be reversible. - Electrical wiring and other equipment must blend into the background, and all interventions on the structure should use existing joints to avoid damage to original materials. - The project is classified as a pilot and will be reviewed post-installation to evaluate its impact on the historical structure.	The CAB's overall assessment is that the solar panel installation would have a negative impact on the ruin, which is not justified given the ruin's cultural significance. Therefore, the CAB had rejected the permit application, and the applicant NPB was informed by the RG that both a building permit and permission from the CAB were required. Consequently, the NPB withdrew its building permit application from RG.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
				- All maintenance of the solar panels and lighting system must be planned to ensure long-term preservation of both the new installations and the church ruin.	
2020	F	Heating system replacement (Geothermal)	Granted	- Permission granted with specific conditions and proposals. - Instructions on piping. - Installation involves minor and necessary drilling. - Dismantling and reinstallation of part of kitchen floor and bedroom ceiling. - Careful removal of tiled floors and walls; if older surfaces are found, CAB and cultural heritage consultant must be informed immediately.	- Improved efficiency and environmentally friendly heating system. - Measures will partly have a negative impact on the historic building, but designed to minimize the impact. - Installation involves minor and necessary drilling. - Reversible changes to the building. - Careful documentation and skilled craftsmanship to minimize impact.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
				- Work by experienced craftsmen with experience in similar work. - The work must be performed with the involvement of a cultural heritage consultant approved by the CAB and appointed by the owner. - Final inspection and approval by County Administrative Board is required. - The permit expires if the work is not started within two years or completed within five years of the decision date.	
2021	G	Air Source Heat Pump	Granted	- Installation as per application and previous application. - Limited drilling in door frame and ceiling beam if necessary. - Outdoor unit to be concealed with a box, wooden lattice, or equivalent. - Work by skilled craftsmen with experience in similar work.	- Minor exterior change and minor drilling required. - Acceptable intervention without affecting the cultural-historical values. - Exterior change is reversible and partially indirect, as the outdoor unit is ground-mounted.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
				- Any changes in placement or design must be approved by the County Administrative Board. - Owner responsible for ensuring all parties understand the protection regulations. - Modification to be documented in text and photographs. - County Administrative Board to inspect and approve the final work. - The permit expires if the work is not started within two years or completed within five years of the decision date.	- Minimal visual impact due to concealment measures.
2022	H	Air Source Heat Pump	Granted	- Installation as per application and plan drawing. - Outdoor unit placed on the ground. - Drilling is permitted only in modern planks (from the 1970s renovation), as specified in the plan.	- Minor external change and acceptable minor drilling. - Reversible and partially indirect due to the ground-mounted placement.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
				- Work by skilled craftsmen with experience in similar work. - No additional canopy or extension allowed. Any deviation from the approved placement or design must be approved by the CAB. -Owner responsible for ensuring all parties understand the protection regulations. - The installation must be conducted with the involvement of a cultural heritage consultant, consistent with previous renovation work, and included in the same documentation report.	- Minimal visual impact due to placement and encasing. - Ensures cultural and historical value remains intact.

TABLE 3 Examples of permit decisions by Gotland County Administrative Board in World Heritage Visby inner city (*cont.*)

Year	Property	Type of modification	Decision	Conditions	Justification and Special reason
				- Cultural heritage consultant documentation must be compiled in a final inspection report and submitted in archival form to both Gotlands Museum and the Swedish National Heritage Board, as well as digitally to the property owner and the CAB. - Final inspection and approval by County Administrative Board is required.	

work and this collaboration, I think we need to also stand back sometimes." RG1 went even further, arguing that the heritage sector should be proactive in seeking a compromise between historic preservation and changes to promote sustainable energy. According to RG1, cultural heritage specialists should study both sides of the issue in formulating their positions about what changes can be made for environmental reasons, where it is "maybe worth losing a little bit [of protected heritage] to gain something else." Heritage officials, according to RG1, must be "brave enough to have that discussion."

Still, several participants noted that energy measures were not necessarily in conflict with mandates for historic preservation. Despite arguing for more openness to change, NHB1 also argued that there were many opportunities to improve energy sustainability in historic properties without compromising their cultural values, stating "I know there is a great possibility to both save energy and preserve buildings." Similarly, NPB1 argued that energy measures and the preservation of culturally valuable buildings "go hand in hand" because there are many energy measures that "can improve the building and can improve the longevity of the building." Empty buildings are more vulnerable to environmental threats that jeopardize their structural integrity, as well as the vitality of a city. If well done, according to NPB1, energy measures can help preserve a building and thus also be positive for heritage conservation. These officials pointed to technical developments, rather than legal developments, as being the solution to resolving conflicts. On the other hand, according to RG Energy Consultant, plans and programs that were designed based on old technologies should be updated in light of technological developments in the form of "integrated solar cells, new material and technical solutions" so as to allow the use of these technologies in compliance with the law.

3.5 *Limits of Law*

As pointed out by multiple participants, there are limits to what the law can do to either encourage sustainable energy measures or heritage conservation. RG1 used the Swedish term "skälig" or "reasonable" – the law has to be reasonable in mandating what people can do with their property. Standards of "reasonableness" permeate Swedish law, in both criminal and civil law. The PBA uses the word many times, in particular mandating that detailed plans have to balance the public and private interest, taking reasonable considerations of owners' property interests.[125] Both requirements for energy measures and heritage conservation must be reasonable. In other contexts, costs to

125 SFS 2010, *supra* note 72, Chapter 4 § 36; MÖD 2021:35.

homeowners must be reasonable,[126] and required building measures must be reasonable.[127] As in other legal systems, these standards must be interpreted on a case-by-case basis, but how judges decide in individual cases can be guiding or binding on future evaluations.[128]

RG3 commented that if someone applies for a renovation permit, the requirements placed on the owner for energy efficiency must be relative to the significance of the renovation applied for – "Small changes, small demands; bigger changes, bigger demands." Demands made by authorities can never go beyond what the law prescribes. Likewise, while limits are made on what can be done physically to historic properties, it has been more difficult to prevent people from changing the use of their properties from residences to hotels or summer houses,[129] that is, to prevent Visby from becoming a dead city. According to NPB1, a constant "pulse" of activity is vital to maintain a town's liveliness; otherwise, it risks becoming a desolate "ghost town." But: "There seems to be no way to regulate that …. The physical development seems to be more something that gets protection but not the life of the town" (NHB1).

3.6 *Voluntary Measures, Policy-driven Challenges and Future Considerations*

Sweden's longstanding emphasis on personal responsibility has favored voluntary approaches over compulsory regulations regarding the use of one's own property (RG2). RG2 argued that "you can't have laws about everything," and rather, that officials should focus on supporting desirable choices with education and other tools. This sentiment was echoed by RG4, who argued that economic carrots were more useful than legal sticks: "[Y]ou can't demand people choose things … in Sweden we have free will … and a responsibility on every person to do the right thing." NHB2 emphasized the need for a multisectoral approach, stating, "I think what needs to be improved is the communication, guidelines, examples, and dialogue between the legal experts, cultural experts, and citizens."

Regulations alone cannot achieve the necessary balance between safeguarding the OUV and adapting to meet "the [sustainability] standards that we demand today" (RG3). According to RG4 and other participants, economic incentives, new

126 SFS 2010, *supra* note 72, Chapter 6 § 33.

127 E.g., SFS 2010, *supra* note 72, Chapter 8 § 8.

128 Important decisions from the Swedish Land and Environment Court of Appeal on the "reasonableness" of detailed development plans include MÖD 2021:35 concerning housing development in Upplands-Bro, and MÖD 2020:3 concerning Malmö's harbor.

129 *See Region Gotland*, *supra* note 94, p. 11, on the application of rules pertaining to changing land uses.

technologies, and education initiatives, rather than additional laws, are the keys to solutions that properly balance energy sustainability and historic preservation in Visby. These types of measures are often also legal, in that they can be provided for in laws. Participants referred specifically to economic incentives (such as grants, subsidies, or tax breaks) grounded in law, clearly expressing a preference for government-driven support. This focus on legally provided for incentives underscores the participants' belief in the need for a structured, policy-backed approach to incentivize sustainable energy practices in heritage conservation.

CAB1 highlighted the often-costly challenges property owners face in adapting energy measures within Visby's historic environment. This includes finding specialized professionals and specific installation methods to preserve architectural integrity, which could be more expensive and challenging for property owners due to limited access to specialized professionals and space limitations in smaller historic buildings and streets. In many cases, integrating energy measures adapted to the cultural value of a historic building is expensive, with limited grants available to cover these added expenses. Permit conditions can also drive-up costs, as they frequently mandate custom solutions, such as outdoor units encased in materials suited to the historic environment, adherence to cultural impact analyses, and involvement of skilled craftsmen experienced with heritage sites.[130]

These financial burdens on property owners and tenants (NPB1) make energy retrofits less likely. The challenge lies in reconciling cost-effectiveness with the preservation of cultural heritage values, highlighting the need for innovative solutions amidst financial limitations (RG2). However, short-term financial considerations often outweigh a comprehensive evaluation of costs (NHB2). Therefore, while life-cycle costs of energy measures may be lower than maintaining the status quo, incentives may be required to encourage change.

Integrating modern technologies into historic buildings is challenging, as it requires developing systems that remain discreet to preserve cultural values and architectural integrity – a factor that often increases costs (NHB1). For instance, previous research conducted in Visby revealed that the cost of connecting to district heating within the city walls is three times higher than outside the walls.[131] Further hindering progress is limited knowledge and capacity regarding emerging renewable and energy-efficient techniques, affecting both governmental agencies and the public sphere (RG1). Frequent advancements and changes in technology create a dynamic landscape that can make it difficult to establish recommendations that remain relevant and effective

130 *See* Table 3.

131 *A. Henning*, *supra* note 10, at 156.

over time (RG1). The rapid evolution of technical solutions adds complexity, necessitating careful assessment and anticipation of future developments to balance technological advancement with historic preservation effectively (NPB1).

Interviewees identified various problems and potential solutions. Many emphasized the need for thoughtful adaptation and innovation to preserve cultural heritage values while modernizing historic buildings to meet contemporary sustainability standards (CAB1, Owner1, RG Energy Consultant). In addition, aggressive marketing of particular solar panels and energy-efficient windows, which may not be environmentally superior considering their life-cycle impact, can overshadow expert recommendations (RG2). Overcoming resistance from property owners, sometimes stemming from a lack of awareness about the historical and cultural significance of their newly acquired properties, demands concerted efforts in knowledge dissemination and community engagement (RG3). Moreover, effective communication is critical as public interest in sustainable energy solutions grows due to rising energy costs (RG1), as well as public concern about the environment (NHB2). RG4 proposed a collective solution – a "solar energy park" for the World Heritage area, located elsewhere – but coordinating and financing such an effort poses challenges. Additionally, NHB1 underscored the difficulty of timely communication of research findings, noting that the time-intensive nature of scientific processes often delays actionable results, which can impede the distribution of crucial information to site managers, owners, and residents. And as argued by both interviewed property owners, additional financial incentives would go a long way towards promoting sustainable energy solutions in Visby inner city (Owner1, Owner2).

While improving energy efficiency through technological innovations, education and financial incentives can help meet energy goals, relying solely on these measures may not yield the desired sustainability outcomes and resource use may continue to grow despite improvements due to the rebound effect. Lowering energy costs in one place can lead to greater energy expenditures in others, for instance due to the demands of the tourism industry. As noted, despite extensive energy measures, the overall use of electricity has stayed constant on Gotland. This reality calls into question the feasibility of relying solely on efficiency measures for energy conservation. Instead, a more integrated approach is needed, combining efficiency strategies with sufficiency measures and regulations that limit resource use. As noted by Mathis, sufficiency measures – such as prioritizing essential energy needs and limiting non-essential consumption – must be integrated alongside efficiency strategies to counteract these effects.[132] As Saey-Volckrick further

132 *K. Mathis*, *supra* note 11.

argues, without regulatory interventions that directly cap resource use or manage energy demand, even efficiency improvements can backfire, leading to increased overall consumption and compromising sustainability goals.[133]

4 Conclusion

Our study underscores that while Visby's World Heritage status provides a strong framework for cultural heritage protection, the integration of energy measures requires additional support mechanisms. Traditionally, the focus has been on preserving the physical aspects of the built environment. However, there is a growing recognition of the importance of integrating social, cultural, economic and environmental dimensions of heritage conservation. This requires adapting current policies, developing creative and sustainable conservation measures, encouraging open dialogue, and offering essential expertise and financial assistance. These actions can help to balance the adoption of energy measures with historic preservation, allowing Visby and other historic cities to become climate-resilient, living cities that respect their past while moving towards a sustainable future.

The designation of Visby as a World Heritage site has undoubtedly led to enhanced protection of its cultural heritage, leveraging Sweden's existing legal frameworks to comply with UNESCO's goals. The rigorous application of heritage conservation laws and increased accountability post-inscription have enhanced the preservation of Visby's historic built environment. As some of our respondents noted, however, while the World Heritage status promotes stringent conservation of the physical appearance of buildings, it also introduces additional bureaucratic and legal hurdles for those wishing to make energy improvements. In Visby, the protection of cultural heritage takes precedence over energy transition due to its cultural significance. While the officials acknowledge energy efficiency and use of renewable energy as reasons to allow certain changes, approval for such measures hinges on their minimal visibility, reversibility, discreet placement, and respect for cultural-historical values.[134] This is not dissimilar to how courts have interpreted legal requirements; Geijer and colleagues noted that in the very limited available case law (all outside of Visby), the PBA's prohibition on distortion of culturally valuable buildings can lead to the rejection of some energy retrofit measures, particularly the installation of solar

133 *J. Saey-Volckrick*, *supra* note 11.
134 *See* Table 3.

panels, although other energy measures have been handled differently by the court.[135] The stringency of Visby's Detailed Development Plan, in light of World Heritage designation, would likely lead courts to allow local decision makers to enforce even stricter regulation of energy measures in Visby.

The UNESCO World Heritage Centre takes a proactive stance on climate change adaptation and mitigation at World Heritage sites.[136] Scholars have also urged that improving energy efficiency and transitioning to green energy in historic sites is not only possible but also important for their long-term conservation.[137] Our research shows that some Swedish decision makers have been slower to embrace this view. However, some of our research participants noted an emerging recognition among heritage officials in Visby of the need to integrate energy concerns into heritage conservation decision-making. The concept of "special reasons" that allows for energy measures under strict conditions, even in nationally protected buildings, suggests that with careful planning and consideration of both cultural and environmental factors, solutions that meet dual objectives are feasible.[138] Strategic plans and policy updates at the local level could also substantially enhance these efforts. For example, Cocciolo suggests that local energy communities can provide a more coherent and integrated approach to managing energy solutions in buildings.[139] This approach could potentially simplify the regulatory landscape, address some of the bureaucratic hurdles identified in our study, improve coordination between conservation and energy transition objectives, and enhance the feasibility of sustainable energy projects in heritage sites such as Visby inner city.

Our interviewees additionally underscored the limitations of legal mandates, and the desirability of regulatory frameworks that include incentives as well as limitations in order to be able to drive significant changes towards a sustainable environment. The implementation of energy measures in historic buildings in Visby encounters typical obstacles: the absence of sufficient funding, the

135 *M. Geijer, A. Christiernsson & M. Malafry*, *supra* note 24, pp. 47–52.

136 *UNESCO World Heritage Centre*, *supra* note 1; *UNESCO World Heritage Centre*, *supra* note 52; *UNESCO*, *supra* note 55.

137 *L.F. Cabeza, A. Gracia & A.L. Pisello*, 'Integration of Renewable Technologies in Historical and Heritage Buildings: A Review' (2018) 177 Energy and Buildings 96; *P. Eriksson, V. Milić & T. Brostrom*, *supra* note 119; *A. Buda et al.*, *supra* note 7; *G. Tsoumanis et al.*, *supra* note 7; *European Commission*, *supra* note 59; *E. Lucchi*, Renewable Energies and Architectural Heritage: Advanced Solutions and Future Perspectives Buildings 2023 (13) 631; *C. Panakaduwa, P. Coates & M. Munir*, Identifying Sustainable Retrofit Challenges of Historical Buildings: A Systematic Review, Energy and Buildings 2024 (313) 114226.

138 *See* Table 3.

139 *E. Cocciolo*, The Role of Energy Communities for Thermal Networks: An EU Legal Perspective, Review of European, Comparative & International Environmental Law 2024 pp. 1–13.

substantial expenses associated with retrofitting, a lack of awareness regarding the latest technologies, and inadequate proactive communication among stakeholders, meaning that actors – such as public officials, consultants and property owners – are not consistently engaged in open, forward-looking dialogue to anticipate challenges, manage change, coordinate efforts, and discover heritage-friendly solutions that align with both conservation and energy sustainability goals. These challenges emphasize the potential for policy-driven incentives to play a more significant role. A balanced approach that includes more dedicated financial incentives, innovative technical solutions, educational initiatives, and enhanced collaboration can help overcome these obstacles and support officials and property owners in making sustainable choices.[140] Establishing dedicated financial grants and rebates, for example, can make energy retrofits in historic buildings more feasible and less burdensome for owners and users, as pointed out by NHB1 and NPB1.[141]

The potential for energy measures to enhance rather than detract from the conservation of heritage buildings suggests that conflicts between modern energy interventions and historical aesthetics may be more perceived than real. Technical solutions that are heritage-sensitive, visually sympathetic, and technologically advanced offer a pathway for such interventions, as pointed to by NHB1's call to look to technology for heritage-friendly means towards green transition.[142] Moreover, collecting and disseminating best-practice guidelines based on results from various EU projects and research, along with employing multidisciplinary methods and multisectoral approaches, as highlighted by NHB2, could enable sustainable energy retrofits in Visby and beyond.[143]

140 *F. Berg et al.*, User-Driven Energy Efficiency in Historic Buildings: A Review, Journal of Cultural Heritage 2017 (28) 188–195; *P. Eriksson, V. Milić & T. Brostrom*, *supra* note 119; *E. Eken, B. Taşci & C. Gustafsson*, *supra* note 22; *A. Christiernsson, M. Geijer & M. Malafry*, *supra* note 24; *A. Buda et al.*, *supra* note 7; *European Commission*, *supra* note 59; *G. Nair, L. Verde & T. Olofsson*, *supra* note 7; *C. Panakaduwa, P. Coates & M. Munir*, *supra* note 137.

141 *Berg & A. Donarelli*, Energy Performance Certificates and Historic Apartment Buildings: A Method to Encourage User Participation and Sustainability in the Refurbishment Process, The Historic Environment: Policy & Practice 2019 (10) pp. 224–240; *A. Buda et al.*, *supra* note 7; *G. Battista et al.*, Retrofit Analysis of a Historical Building in an Architectural Constrained Area: A Case Study in Rome, Italy, Applied Sciences 2022 (12) 12305; *European Commission*, *supra* note 59; *C. Panakaduwa, P. Coates & M. Munir*, *supra* note 137.

142 *L.F. Cabeza, A. Gracia & A.L. Pisello*, *supra* note 137; *G. Tsoumanis et al.*, *supra* note 7; *E. Lucchi*, *supra* note 57; *G. Battista et al.*, *supra* note 141; *E. Lucchi*, *supra* note 137.

143 *K. Fouseki & M. Cassar*, *supra* note 17; *T. Broström et al.*, A Method to Assess the Potential for and Consequences of Energy Retrofits in Swedish Historic Buildings The Historic Environment: Policy & Practice 2014 (5) pp. 150–166; *T. Yarrow*, Negotiating Heritage and Energy Conservation: An Ethnography of Domestic Renovation, The Historic Environment: Policy & Practice 2016 (7) pp. 340–351; *P. Eriksson, V. Milić & T. Brostrom*, *supra* note 119; *K. Fouseki et al.*, *supra* note 19; *see* also Table 1a.

Education and capacity building are also important, as suggested by Owners 1 and 2 and their difficulty understanding what renovations were permissible. In the same vein, RG1, RG2, and RG3 emphasize the importance of improving efforts in sharing information and involving the community to address issues such as aggressive marketing of less environmentally or heritage friendly products and resistance from property owners. Such capacity building might involve greater opportunities for public participation in policymaking, regular consultations and enhancing knowledge and skills through training programs that focus on the intersection of heritage conservation and energy measures among public officials, heritage professionals, property owners, academic institutes, and the local community.[144] This multidisciplinary collaboration can help preserve the Outstanding Universal Value of heritage sites such as Visby despite evolving external pressures and internal complexities.

The interviews also highlight some tourism-related difficulties in effectuating the green energy transition in this UNESCO site. Addressing these difficulties may involve introducing more cohesive policies or legislation tailored for World Heritage sites. Locally, in Visby, this would mean resisting pressure to accommodate additional energy demands driven by convenience, luxury, or tourism pressures. Tourism can be a source of economic stability in mature World Heritage sites but can also bring a shift in land use that can sideline environmental concerns as well as local needs and living heritage.[145] Long-term sustainable conservation should ensure that Visby remains a living community where locals engage in mixed-use activities within the historic city spaces, keeping the city vibrant and its built environment sustainable, rather than allowing it to become a seasonal tourist destination or a museum city.[146] Policies should also incorporate sufficiency strategies that prioritize essential energy needs – for heating, hot water, and building preservation while limiting energy use for non-essential, convenience or tourism-driven demands.[147] The

144 *K. Fouseki et al.*, *supra* note 19; *A. Christiernsson, M. Geijer & M. Malafry*, *supra* note 24; *European Commission*, *supra* note 59; *G. Nair, L. Verde & T. Olofsson*, *supra* note 7; *E. Lucchi*, *supra* note 57; *E. Lucchi*, *supra* note 137; *E. Cocciolo*, *supra* note 139; *C. Panakaduwa, P. Coates & M. Munir*, *supra* note 137.

145 *A. Amore & B.A. Adie*, Global importance, local problems: degrowth in Italian World Heritage destinations, in: C.M. Hall, L. Lundmark & J.J. Zhang (eds.), Degrowth and Tourism: New Perspectives on Tourism Entrepreneurship, Destinations and Policy, 2021, pp. 85–99, 89 and 93.

146 *A. Ijla & T. Broström*, The sustainable viability of adaptive reuse of historic buildings: the experiences of two World Heritage old cities; Bethlehem in Palestine and Visby in Sweden, International Invention Journal of Arts and Social Sciences 2015 (2:4) pp. 52–66, 63 and 64.

147 *K. Mathis*, *supra* note 11; *J. Saey-Volckrick*, *supra* note 11.

focus should remain on meeting the necessary energy requirements of historic buildings without compromising their cultural values.

Balancing the need for energy measures with the protection of cultural values in World Heritage cities preserves these cities' urban heritage and positions them as leaders in sustainable practices. When challenges can be solved in World Heritage sites, it becomes clear that they can be solved everywhere. UNESCO's commitment to conservation, living heritage, sustainability, and climate resilience aligns with the World Heritage Convention, emphasizing the importance of enabling natural and cultural sites to adapt to global threats while maintaining their local identity. For mixed and natural sites, Bhati and Epstein have argued for the importance of allowing Indigenous and local practices and heritage to evolve and adapt in light of climate change.[148] This argument is equally relevant for cultural sites and historic cities, where cultural heritage, closely linked with local identity and urban needs, should also be permitted to evolve and adapt in light of this global threat. In the case of built environments, some local communities would adapt their practices to the threat of climate change by embracing sustainable energy measures. Indeed, doing so may be crucial for the long-term conservation of these culturally significant environments.

Competing Interests

Bhati and Epstein have no competing interests. Geijer is employed as a conservation officer at the Örebro County Administrative Board, a Swedish public authority. She contributes to this article in her capacity as an academic researcher, and the opinions expressed do not reflect the views of her employer.

Ethics Declarations

This research study upholds the ethical standards essential for empirical research involving human participants and holds approval from the Swedish Ethical Review Authority (Dnr 2022-03761-01) and is registered at Uppsala University (JUR 2022/945). Prior to interviews, all participants received detailed project information and informed consent forms, emphasizing their right to decline participation or withdraw from the study without facing

148 *H.V. Bhati & Y. Epstein, supra* note 47.

repercussions. All the data is securely stored on Uppsala University's data storage system.

Acknowledgements

Our greatest thanks go to our research participants and the related government departments in Sweden. Special thanks to Region Gotland, the County Administrative Board of Gotland, and the Visby inner city community. We would further like to express our thanks to Editor Lorenzo Squintani, Associate Editor Endrius Cocciolo and anonymous reviewers for their very helpful advice and guidance. We would also like to thank the participants in the Uppsala Higher Seminar in Environmental Law for their generous feedback and advice on a draft of this article, as well as Sonja Karlsson of Uppsala University for very helpful comments on a draft, and Knut Stahle for sharing his art and expertise about Visby. The authors express thanks to Anna Karlström and Tor Broström for their assistance in establishing initial contacts with the municipal and regional authorities of Gotland, as well as for introducing us to heritage conservation and sustainable energy practices in Visby inner city and critical heritage studies scholarship. We are also thankful to Marita Jonsson for sharing her lived insights into the UNESCO nomination of Visby inner city, based on her role as County Antiquarian at the County Administrative Board of Gotland at the time. This research is part of the Väga Rätt? project, and we are indebted to Jenny Helin and Ph.D. researchers for their support at the UU Graduate School in Sustainability Studies (GRASS). The authors gratefully acknowledge funding from the Swedish Energy Agency for the project 'Law, sustainable energy use and preservation of cultural heritage values', and from Riksbankens Jubileumsfond. All responsibility for opinions and errors remains with the authors.