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Comparative Summary

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This report covers legislation concerning climate change and the preservation of historic and cultural heritage in the selected jurisdictions of **Brazil, Colombia, Finland, Great Britain, Ireland, Italy**, **Spain**, and the **United Arab Emirates**. The report focuses on regulations addressing reuse and retrofitting of historic buildings to reduce energy usage, adaptation of historic buildings or historic districts to respond to climate change, and integration of indigenous or traditional knowledge or collaboration with indigenous communities in government actions to protect or adapt cultural or historic properties.

Although Brazil, Colombia, Finland, Spain, and the United Arab Emirates have legislation to protect historic buildings, their laws do not offer any specific regulation to promote reusing or retrofitting historic buildings to reduce energy usage or on the adaptation of historic buildings or districts to respond to climate change.

The legislation of Great Britain, Ireland, and Italy on the protection of historic buildings allow, to some extent, the retrofit of historic buildings to reduce energy usage. Great Britain and Ireland require permissions to perform works related to the improvement of the energy efficiency of historic buildings, but any construction that affects their character is not allowed. Italy has been implementing legislation and policies regarding the reuse or retrofitting of historic buildings to reduce energy usage while preserving their cultural and historical meaning. In the same way as Great Britain and Ireland, the general principle in Italy's legal framework for the protection of their heritage provides that when improving energy efficiency in historical buildings, work may be done if it does not substantially alter their character or appearance.

In the area of adaptation of historic buildings or historic districts to respond to climate change, in its pursuit to reach net zero by 2050, Great Britain has stated that historic buildings have a significant role to play in this transition. However, several obstacles related to the complexity of the requirements to obtain the necessary permits have made the adaption of their historical buildings difficult. Ireland's guidelines states that the purpose of any work should be to improve energy efficiency and should not damage the character of the building or cause its deterioration. While Italy is actively working on adapting to climate change, the country still lacks specific strategies for historic buildings and districts.

Colombia and Finland have legislation that promote collaboration with indigenous communities in government actions. In Colombia, the collaboration derives from the indigenous people's constitutional right of prior consultation when there is any intervention within their territory, while in Finland, a law specifically determines that the government must consult its indigenous population in the development of climate-related plans.

Brazil

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SUMMARY The Brazilian historical and artistic heritage is protected by law, which does not allow the destruction, demolition, or mutilation of protected properties, and somewhat impairs retrofitting to reduce energy usage.

Brazilian national policy on climate change and the national adaptation to climate change plan do not deal directly with the adaptation of historic buildings or historic districts to respond to climate change, but they are comprehensive and could be used to promote the adaptation.

Brazil has yet to engage indigenous knowledge to protect or adapt historic properties threatened by climate change.

I. Re-Use and Retrofitting of Historic Buildings to Reduce Energy Usage

A. Protection of National Historical and Artistic Heritage

Decree-Law No. 25 of November 30, 1937, provides for the protection of the national historical and artistic heritage of Brazil. Article 1 defines "national historical and artistic heritage" as the set of movable and immovable goods (*bens*) existing in the country and whose conservation is of public interest, either because of its connection with memorable events in the history of Brazil or because of its exceptional archaeological, ethnographic, bibliographic, or artistic value.[1]

The goods referred to in article 1 of Decree-Law No. 25 will only be considered as an integral part of the national historical or artistic heritage after being registered separately or grouped in one of the four Register Books (*Livros do Tombo*) referred to in article 4 of the Decree-Law.[2]

Goods registered cannot be destroyed, demolished, or mutilated, or—without prior special authorization from the National Historical and Artistic Patrimony Service—repaired, painted, or restored, under penalty of a fine of 50% of the damage done.[3] The legislation is silent regarding the retrofitting of historic buildings to reduce energy usage, and the ban on construction seems to prevent any type of retrofitting.

[1] Decreto-Lei No. 25, de 30 de Novembro de 1937, art. 1, https://perma.cc/HRH9-WY9W.

[2] Id. art. 1(§ 1).

[3] Id. art. 17.

B. State and Municipal Laws

Several states and municipalities have enacted laws and regulations that offer tax incentives to promote retrofitting of buildings for the purpose of rehabilitation of historic degraded areas. Although energy efficiency may, in some way, be included in the retrofitting of historic buildings, it seems that the main purpose of these initiatives is to contribute to the preservation of Brazilian cultural heritage rather than reduction of energy usage.[4]

II. Adaptation of Historic Buildings or Historic Districts to Respond to Climate Change

A. National Policy on Climate Change

On November 29, 2009, Brazil enacted Law No. 12,187, which established the *Política Nacional sobre Mudança do Clima* (PNMC, National Policy on Climate Change), its principles, objectives, guidelines, and instruments.[5]

The PNMC and the actions arising from it, carried out by political entities and public administration bodies, must observe the principles of precaution, prevention, citizen participation, sustainable development, and common but differentiated responsibilities, the latter at the international level. Regarding the measures to be adopted in its execution, the following must be considered:

> I - everyone has the duty to act, for the benefit of present and future generations, to reduce the impacts resulting from anthropogenic interference on the climate system;
>
> II - measures shall be taken to predict, avoid or minimize the identified causes of climate change of anthropogenic origin in the national territory, on which there is reasonable consensus on the part of the scientific and technical circles involved in the study of the phenomena involved;
>
> III - the measures taken must take into account the different socioeconomic contexts of their application, distribute the resulting burdens and responsibilities among the economic sectors and the populations and communities concerned in an equitable and balanced manner, and weigh individual responsibilities regarding the origin of the emission sources and the effects caused on the climate;
>
> IV - sustainable development is the condition for tackling climate change and reconciling the meeting of the common and particular needs of the populations and communities living in the national territory;
>
> V - national actions to address current, present and future climate change must consider and integrate the actions promoted at the state and municipal levels by public and private entities.[6]

[4] Daniel Borges, *Leis Municipais, Retrofit e Reabilitação dos Centros Históricos*, Consultor Jurídico (Nov. 11, 2023), https://perma.cc/E42P-6Q9P.

[5] Lei No. 12.187, de 29 de Dezembro de 2009, art. 1, https://perma.cc/FK5A-4MKT.

[6] Id. art. 3.

According to article 4 of Law No. 12,187, the PNMC aims to, among other things, implement measures to promote adaptation to climate change by the three spheres of the Brazilian Federation, with the participation and collaboration of interested or beneficiary economic and social agents, particularly those especially vulnerable to its adverse effects.[7]

The guidelines of the PNMC are listed in article 5 of Law No. 12,187, which include, but are not limited to

> (II) actions to mitigate climate change in line with sustainable development, which are, whenever possible, measurable for their appropriate quantification and verification a posteriori;
>
> (III) adaptation measures to reduce the adverse effects of climate change and the vulnerability of environmental, social and economic systems;
>
> (IV) integrated strategies for mitigating and adapting to climate change at the local, regional and national levels;
>
> (V) encouraging and supporting the participation of federal, state, district and municipal governments, as well as the productive sector, academia and organized civil society, in the development and implementation of policies, plans, programs and actions related to climate change.[8]

B. National Adaptation to Climate Change Plan

On May 10, 2106, the Ministry of Environment issued Administrative Act No. 150 that created the *Plano Nacional de Adaptação à Mudança do Clima* (PNAMC, National Adaptation to Climate Change Plan), which aims to promote the management and reduction of climate risk in the country in view of its adverse effects, to take advantage of emerging opportunities, avoid losses and damage, and "build instruments that allow the adaptation of natural, human, productive, and infrastructure systems."[9]

The objectives of the PNAMC are

> I - To guide the expansion and dissemination of scientific, technical, and traditional knowledge, supporting the production, management, and dissemination of information on the risk associated with climate change, and the development of training measures for government entities and society in general;
>
> II - To promote coordination and cooperation between public agencies for the management of risk associated with climate change, through participatory processes with society, aiming at the continuous improvement of actions for the management of risk associated with climate change; and

[7] Id. art. 4(V).

[8] Id. art. 5 (II–V).

[9] Ministério do Meio Ambiente, Portaria No. 150, de 10 de Maio de 2016, art. 1, https://perma.cc/WZ48-3NFT.

> III - To identify and propose measures to promote adaptation and reduction of risk associated with climate change.[10]

Notwithstanding the existence of a national policy on climate change and a national adaption to climate change plan, these initiatives do not directly address the adaptation of historic buildings or historic districts in response to climate change. However, it seems that these instruments are broad enough in scope that they could be used for that purpose. We found no other specific laws, regulations, or policies regarding the adaptation of historic buildings or historic districts in response to climate change.

III. Collaboration with Indigenous Communities in Government Actions

We were unable to identify any specific legislation promoting the integration of indigenous knowledge or collaboration with indigenous communities in government actions to protect or adapt cultural or historic properties threatened by climate change. In 2023, however, the current federal administration created the Ministry of Indigenous Peoples. The new ministry is headed by a member of the Guajajara People.

The act that created the new ministry defines its authority, which includes the development of indigenous public policy and the defense and management of indigenous lands and territories.[11] Nevertheless, it does not yet appear that the government has employed the environmental knowledge of indigenous communities in protecting or adapting historic properties by engaging the Ministry of Indigenous Peoples in such activities.

[10] Id. art. 2.

[11] Lei No. 14.600, de 19 de Junho de 2023, art. 42, https://perma.cc/8M9C-KU3X.

Colombia

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SUMMARY The Colombian Constitution mandates that the state protect the nation's cultural heritage and regulate archaeological sites, especially in areas where ethnic groups reside. The General Law on Culture (Law No. 397 of 1997) and its modification (Law No. 1185 of 2008) define cultural heritage in Colombia to include both material assets and intangible cultural manifestations. Cultural heritage sites are managed under special management and protection plans (PEMPs), which must be incorporated into regional land use plans to ensure protection and sustainable management. Any intervention at these sites requires authorization from the relevant government authorities, with a focus on maintaining the integrity of the site.

Nationally applicable laws dealing with tangible cultural heritage sites do not appear to include provisions regarding the retrofitting of historic buildings to improve energy efficiency. Likewise, local laws regarding sustainable construction are limited to new developments and appear to neglect issues around retrofitting historic buildings. Similarly, Law No. 1931 of 2018 provides guidelines for mitigating the impact of climate change that do not specifically deal with cultural heritage sites.

Regarding collaboration with indigenous communities, Law No. 397 of 1997 acknowledges the rights of ethnic groups to manage and protect archaeological heritage sites in line with their cultural identity, with technical assistance from the Ministry of Culture. The adoption of ILO Convention No. 169 through Law No. 21 of 1991 emphasizes prior consultation and the protection of property rights for indigenous and tribal peoples. The Colombian Constitutional Court has reinforced these rights, particularly emphasizing the need for prior consultation before any interventions in indigenous communities.

I. Re-Use and Retrofitting of Historic Buildings to Reduce Energy Usage

A. Constitutional Principles on National Cultural Heritage

Article 72 of the Colombian Constitution states that the cultural heritage of Colombia is under the protection of the State.[1] Additionally, this article establishes that the Colombian government must regulate archaeological sites where ethnic groups live that have been declared cultural heritage locations.[2]

[1] Constitución Política de Colombia [Const.], June 13, 1991, art. 72, https://perma.cc/Z9NK-H49A.

[2] Id.

B. Protection of National Cultural Heritage

1. General Law on Culture

In Colombia, the main legislation on the protection of national cultural heritage is Law No. 397 of 1997 or the General Law on Culture.[3] This legislation was partially modified by Law No. 1185 of 2008.[4] According to this legislation, Colombia's cultural heritage sites are all material assets (*bienes materiales*) and intangible manifestations and representations of culture that are an expression of Colombian nationality.[5] The declaration of cultural heritage may apply to a singular material asset, or a group of material assets that needs to be preserved as an indivisible unit.[6] Material assets can be monuments, and areas of historical, archaeological, or architectural conservation.[7]

Additionally, Law No. 1185 of 2015 stipulates that the body responsible for advising the government on the protection and management of cultural heritage sites is the National Council of Cultural Heritage.[8] In addition, this regulation creates department councils for cultural heritage sites in each department of Colombia, as well as district councils for cultural heritage sites.[9]

Cultural heritage sites are subject to special management and protection plans (*Plan Especial Manejo y Protección,* PEMP). The PEMP for a site establishes the necessary actions that guarantee the protection and sustainable management of the cultural heritage site.[10] These special management and protection plans must be incorporated into the land use plans of each department by their respective territorial authority. Furthermore, the PEMP may limit aspects of land use and construction on these sites.[11] The intervention of a cultural heritage site must have the authorization of the relevant government authority. If at the national level, it requires the authorization of the Ministry of Culture or the General Archive of Colombia.[12]

The authorization for intervention in a cultural heritage site must be issued by the competent authority and cannot be substituted by any other type of authorization or license.[13] If the intervention is in an area adjacent to the cultural heritage site, prior notification to the relevant

[3] Ley 397 de 1997, Aug. 7, 1997, https://perma.cc/3TY7-DD48.

[4] Ley 1185 de 2008, Mar. 12, 2008, https://perma.cc/FZE4-PHFJ.

[5] Id. art. 1.

[6] Id.

[7] Id.

[8] Id. art. 4.

[9] Id. art. 4(b) & (c).

[10] Id. art. 7.

[11] Id.

[12] Id.

[13] Id.

authority must be made.[14] Any intervention must be in accordance to the PEMP of the specific cultural heritage site.[15] The legislation is silent regarding retrofitting buildings of cultural importance to reduce energy usage or in cases of adaptations to climate change.

2. Decree No. 763 of 2009

Decree No. 763 of 2009 provides specific rules for cultural heritage sites that are material or tangible assets.[16] This legislation delineates the scope of authority that the bodies which compose the National System of Cultural Heritage Sites (*Sistema Nacional de Patrimonio Cultural, SNPC*) will have.[17] These bodies are the Ministry of Culture, the Colombian Institute of Anthropology and History (*Instituto Colombiano de Antropología e Historia, ICAH*), the National General Archive of Colombia, municipalities, districts, departments, Indigenous authorities, Afro-Colombian communities, the National Council of Cultural Heritage, and the department/district councils of cultural heritage sites.[18] In addition, this legislation establishes criteria and procedures for the declaration of tangible cultural heritage sites, the general contents of the PEMP, and intervention of cultural heritage buildings. The legislation is does not mention retrofitting cultural heritage sites to reduce energy usage or to adapt to climate change.

3. Unique Reglementary Decree No. 1080 of 2015

This reglementary decree is the regulatory decree of the culture sector in Colombia. Part IV of this legislation provides a set of rules for tangible cultural heritage sites.[19] Furthermore, it provides in-depth rules on how the PEMPs should be formulated.[20] This legislation provides two groups of tangible heritage sites: the urban group and the architectonic group.[21] The urban group is a part of a territory that has distinctive traits with all its sectors conforming to a unity, thus this group includes historical centers.[22] The architectonic group refers to residential, institutional, commercial, industrial, military, religious, transportation, and engineering constructions.[23]

This decree also provides levels of intervention for these sites, specifying the permitted interventions depending on the group to which a site belongs.[24] The interventions permitted for the architectonic group, depending on the level, are those related to emergency assistance, specific repairs, restoration, expansion, adaptation, modification, structural reinforcement, reconstruction,

[14] Id.

[15] Id.

[16] Decreto No. 763 de 2009, Mar. 10, 2009, https://perma.cc/9TL6-U22E.

[17] Id. art. 1.

[18] Id. art. 4.

[19] Decreto No. 1080 de 2015 Sector Cultura, May 29, 2015, https://perma.cc/FCU4-G26T.

[20] Id. art. 2.4.1.1.1.

[21] Id. art. 2.4.1.2.1.

[22] Id.

[23] Id.

[24] Id. art. 2.4.1.2.4.

enclosure, and partial demolition for buildings located on the same property but that are not covered by the PEMP. For the urban group, the interventions that can be done are related to emergency assistance, specific repairs, restoration, expansion, adaptation, modification, reinforcement of the building, reconstruction, enclosure, network intervention, installation of furniture, artistic modifications, landscaping, new construction for communal facilities, and the construction or reform of roads, pedestrian crossings, parks, squares, cycle routes, and ramps. There are no specific guidelines on retrofitting cultural heritage sites to reduce energy usage or in cases of adaptation to climate change.[25]

C. State and Municipal Laws

Several municipalities have enacted policies and regulations to promote retrofitting of buildings for environmental purposes in accordance with Resolution No. 549 of 2015.[26] Resolution No. 549 of 2015 establishes the minimum percentage and measures for saving water and energy in new buildings and the guidelines to adopt sustainable constructions.[27] Nevertheless, this is mainly for new constructions; there are no rules or guidelines on retrofitting historical buildings catalogued as cultural heritage sites for energy efficiency. Additionally, the Ministry of Environments has developed tax incentives for sustainable buildings, however, there is no specific mention of the implication those incentives may have on cultural heritage sites.[28]

II. Adaptation of Cultural Heritage Sites to Respond to Climate Change

Law No. 1931 of 2018 establishes the guidelines to manage climate change, focusing mainly on actions to adapt to climate change and to mitigate greenhouse gases.[29] This legislation creates the National Climate System (SISCLIMA), which is the set of policies, regulations, processes, plans, strategies, and instruments that are related to managing, adapting, and mitigating the effects of climate change. This legislation does not provide specific rules on the adaptation of cultural heritage sites to respond to climate change.

III. Collaboration with Indigenous Communities in Government Actions

Law No. 397 of 1997 provides that ethnic groups located in archaeological heritage sites retain the rights to manage and protect those sites in accordance with their cultural identity, although they must receive the advice and technical assistance of the Ministry of Culture.[30] Additionally, sites that currently belong to existing Indigenous communities and represent their cultural identity and traditions, that are declared cultural or archaeological heritage sites by the Ministry of Culture through the ICAH, must be maintained in coordination with the Indigenous

[25] Id.

[26] Documento CONPES 3919 [Política Nacional de Edificaciones Sostenibles] 19 (Mar. 23, 2018), https://perma.cc/GR2H-TZHS.

[27] Resolución No. 549 de 2015, July 10, 2015, art. 1, https://perma.cc/V524-BWHY.

[28] *Construcción Sostenible*, Ministerio de Ambiente, https://perma.cc/38E2-X4LX.

[29] Ley No. 1931 de 2018, July 27, 2018, art. 1, https://perma.cc/WN5E-JDY5.

[30] Ley No. 397 art. 13.

communities. Colombia, through Law No. 21 of 1991, adopted the ILO Convention No. 169 on the Rights of Indigenous and Tribal Peoples, which integrates prior consultation and the protection of the property rights of Indigenous communities.[31]

The Colombian Constitutional Court has defined and protected the right of Indigenous and Afro-Colombian communities to have their own territories and the fundamental right of prior consultation when there is any intervention within their territories.[32] The right of prior consultation derives from the Colombian Constitution, article 330, which specifies that Indigenous communities have autonomy to govern their territory according to their customs and cultural identity, therefore any intervention in their territory must be done regarding their cultural, social, and economic worldviews.[33]

Prior consultation of ethnic communities must be public and is mandatory for any process involving their land or territory. This consultation must be done prior to the adoption of administrative or legislative measures or decisions on projects that may affect these communities. Moreover, throughout the process, access to information must be guaranteed and provided in good faith. The information provided must be clear, truthful and given in a timely manner.[34]

[31] Ley No. 21 de 1991, Mar. 4, 1991, arts. 12, 14 & 17, https://perma.cc/7R8S-PWZ4.

[32] Alejandra Vega Rodríguez, Consulta Previa a Pueblos Indígenas y Tribales: Análisis y Propuesta de Legislación (2012) (LLM thesis, Universidad Nacional de Colombia), https://perma.cc/W7ZK-8P3Z.

[33] Const. art. 330.

[34] Alejandra Vega Rodríguez, supra note 32.

Finland

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SUMMARY Finland is a member of the European Union as well as UNESCO. As such, it has undertaken to protect its natural and cultural heritage for future generations.

Finland regulates the protection of historical buildings in the Act on Protection of the Building Heritage, which sets requirements for which historic buildings must be protected and how to best protect them. The protection of churches is regulated separately, and all churches built before 1917 are automatically protected. Neither law provides for how historic buildings can best be adapted to meet the challenges of climate change.

The Finnish government and local municipalities must consult with the indigenous Sámi population on matters related to climate change. The adoption of a long-term climate plan, the national plan for adapting to climate change, the short-term climate plan, and the climate plan for the land use sector all require prior consultations with the Sámi Parliament. Moreover, by law, the Finnish government is responsible for setting up a Sámi Climate Council where indigenous representatives with traditional Sámi knowledge work together with representatives from environmental and climate sciences to comment on national policies with respect to climate change, in particular how the policies will impact the Sámi community, and the exercise of their culture and rights. The current council was established in 2023 and members serve for a four-year term ending in 2027.

I. International Obligations

Finland is a member of the European Union (EU). As a member of the EU, Finland is bound by EU law. While the EU has not adopted specific regulations on the protection of historic building and climate change, the EU has adopted an EU Climate Adaptation Strategy.[1] In addition, Finland is a party to the Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO 1972).[2] As a party to the UNESCO convention, Finland has the responsibility of "ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage"[3] within its territory, and must also "take the appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage."[4] This

[1] *Forging a Climate-resilient Europe – The New EU Strategy on Adaptation to Climate Change*, COM (2021) 82 final (Feb. 24, 2021), https://perma.cc/8KK3-SRJ4.

[2] Convention Concerning the Protection of the World Cultural and Natural Heritage, Nov. 16, 1972, 1037 U.N.T.S. 151, https://perma.cc/VQ92-WWGQ.

[3] Id. art. 4.

[4] Id. art. 5(d).

arguably includes a duty to protect Finnish cultural heritage from the effects of, among other things, climate change. In 2014, UNESCO published "a practical guide" on how to adapt cultural heritage to climate change.[5] Finland has adopted a climate policy[6] and a national climate change adaptation plan.[7]

II. Re-Use and Retrofitting of Historic Buildings to Reduce Energy Usage

A. Act on Historic Building Protection

Historic buildings are protected by law in Finland; specifically, by the Act on Protection of the Building Heritage.[8] The purpose of the act is to

> secure the diversity of the built cultural environment with regard to time and space, to protect its uniqueness and characteristics and to promote culturally sustainable care and use of it. The built cultural environment is called built heritage.
>
> When cases concerning the protection of the built heritage are prepared, the parties must be given the opportunity to participate in the preparation [of the case].[9]

Under the law, buildings of historical significance may be afforded protected status.[10] The protective status may apply to the entire building, a part of a building, such as the interior, doors, windows, fireplaces, materials, technical devices, inventory, or similar design or décor.[11] Protected status is awarded to certain construction, building groups, building art, building techniques, or certain use, which have historic significance.[12] Classification of a building or part of a building as historic is based on written applications reviewed by one of the 15 Centres for Economic Development, Transport and the Environment (known as the "ELY Centres").[13]

Section 8 of the Act on Protection of Building Heritage specifies the conditions that must be evaluated to determine if a building should be protected.[14] Specifically, section 8 reads

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[5] Jim Perry and Charlie Falzon, *Climate Change Adaptation for Natural World Heritage Sites a Practical Guide*, World Heritage Papers No. 37 (2014), https://perma.cc/TT5V-WQ55.

[6] *Finland's National Climate Policy*, Ministry of Environment, https://perma.cc/6HTY-VFB9.

[7] Ministry of Agriculture and Forestry, *Finland's National Climate Change Adaptation Plan 2022* (2014), https://perma.cc/BS8P-2GWE.

[8] Act on Protection of the Building Heritage (Laki rakennusperinnön suojelemisesta 498/2010, https://perma.cc/537Z-WXH3 (in Finnish), Lag om skyddande av byggnadsarvet (FFS 498/2010), https://perma.cc/76ER-NXZN (in Swedish)).

[9] Id. 1 § (all translations by author).

[10] Id. 3 §.

[11] Id.

[12] Id.

[13] Id. 4-5 §§. For more information on the ELY centres, see *ELY Centres*, Ministry of Economic Affairs and Employment of Finland, https://perma.cc/239E-DCXJ.

[14] 8 § Act on Protection of the Building Heritage.

> Conditions for protection
>
> A building can be protected if it is of importance at the national level, at the regional level or at the local level.
>
> The significance of a building is assessed on the following grounds:
>
> 1) the building is rare or unique (rarity),
>
> 2) the building in historical terms is typical for the area (typical character),
>
> 3) the building has typical features that reflect a certain area or a certain time (representativeness),
>
> 4) the building's original or comparable use, construction method, architecture or style appears and persists (authenticity),
>
> 5) the building is important as testimony to a historical event or phenomenon or as such an example that describes and increases knowledge of the event or phenomenon (historical evidentiary value), or
>
> 6) different constructions, materials and styles that reflect the history and continuity related to the construction, the maintenance of the building and the use of the building are visible on the building (historic layers).

If a building is afforded historic protection it may not be torn down or altered and must be kept in the state which the protection requires.[15] Moreover, the use may not risk the historic importance of the building.[16]

Buildings that are afforded historic protection may only be restored and renovated in a way that does not jeopardize the purpose of the protection and must be done in contact with the Finnish authorities that oversee the protection of the particular building.[17]

The owner may be compensated by the Finnish state for costs associated with the care of a protected building.[18] Moreover, the State may oblige the owner, subject to monetary fines, to undertake necessary maintenance or repair work of the building.[19]

[15] Id. 10 §. 1.

[16] Id. 10 § 2

[17] Id. 10 § 3-4.

[18] Id. 16 §.

[19] Id. 17 §.

On January 1, 2025, an amendment to the Act on Protection of the Building Heritage will enter into force.[20] In accordance with those changes, certain protections will be regulated in the Act on Area Use (132/1999).[21] Moreover, the level of compensation from the state will also be amended.[22]

B. Protection of Churches

The protection of historic churches in Finland is regulated in the Church Act and the Orthodox Church Act.[23] All churches built before 1917 are automatically protected and newer buildings may be protected upon application.[24] Changes to protected buildings, including demolition, cannot be done without first receiving an opinion from the Finnish Heritage Agency.[25]

C. Adaptation of Historic Buildings for Energy Efficiency

Protected historic buildings are exempt from the energy efficiency rules that apply to non-protected buildings.[26]

While there are no specific guidelines for how historic buildings should be retrofitted to mitigate the effects of climate change, the Evangelical Lutheran Church of Finland, which owns most of the historic churches mentioned above in Part II(B), has adopted environmental policies that aim to make their activities carbon neutral.[27] In an attempt to facilitate this, electric vehicle charging stations were set up outside one church in Helsinki in 2019.[28]

III. Adaptation of Historic Buildings or Historic Districts to Respond to Climate Change

As mentioned above, the responsible government agency for cultural heritage is the Finnish Heritage Agency.

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[20] Act on the Amendment of Act on Protection of the Building Heritage (Laki rakennusperinnön suojelemisesta annetun lain muuttamisesta, https://perma.cc/VQ3X-QJCC (in Finnish), Lag om ändring av lagen om skyddande av byggnadsarvet (760/2023), https://perma.cc/8SV9-3K4J (in Swedish)).

[21] Id.

[22] Id.

[23] Church Act (Kyrkolag (FFS 652/2023), https://perma.cc/M6L3-HAWP (in Swedish); Act on Orthodox Church (Laki ortodoksisesta kirkosta (in Finnish) Lag om ortodoxa kyrkan (FFS 985/2006), https://perma.cc/WV55-CWE7 (in Swedish)).

[24] 14 ch. 5 § Church Act and 116 § Orthodox Church Act.

[25] 14 ch. 5 § Church Act and 116 § Orthodox Church Act.

[26] 29d § Energy Efficiency Act 1429/2014 (Energiatehokkuuslaki https://perma.cc/3FZF-V3DF, Energieffektivitetslag (FFS 1429/2014) (in Finnish), https://perma.cc/M7Y6-GZ3P (in Swedish)).

[27] Evangelisk-Lutherska Kyrkan i Finland, Kolneutral [Carbon Neutral], https://perma.cc/63MB-7FKG.

[28] Evangelisk-Lutherska Kyrkan i Finland, Första Församlingen med Laddningsstation för Elbilar är Malm i Helsingfors – Laddningen Bidrar till Insamlingen Gemensamt Ansvar, https://perma.cc/3UK3-7R8V.

Under law, protected buildings must adopt emergency plans to protect the cultural heritage in the event of crisis, including environmental.[29]

While Finland has not adopted specific laws dealing with climate change and historic building, the Finnish Heritage Agency is part of the International Climate Heritage Network that strives to "create and spread innovative climate actions and practices based on cultural heritage and raise awareness of how nature and culture are interwoven."[30]

IV. Collaboration with Indigenous Communities in Government Actions

A. Consultation with Sámi Parliament

By law, the Finnish government must consult its indigenous Sámi population in matters that affect them.[31] Specifically, the Climate Act provides that the Sámi Parliament must be consulted in the development of the Finnish long-term climate plan, the national plan for adapting to climate change, the short-term climate plan, and the climate plan for the land use sector.[32]

B. Sámi Climate Council

The Climate Act further provides that the Finnish Government must establish a Sámi Climate Council to aid the climate policy plans regulated by the Climate Act.[33] By law, the council must be made up of persons with "Sámi traditional knowledge" as well as representatives from central scientific areas.[34] The Sámi Climate Council was established by the Finnish Government on August 24, 2023, and has 12 members.[35] The first meeting was held on October 17, 2023.[36]

The purpose of the council is to comment on climate policy as it relates to the promotion of Sámi culture and in relation to climate change impact on Sami culture and rights.[37] The Decree on Sámi

[29] Räddningslagen, Statrådetsförordning om räddningsväsendet. See also Museiverket, Beredskapsanvisningar, https://perma.cc/H3KM-54Q5 and Kulttuuriomaisuudet uhat ja suojelu Työryhmän esitys Haagin vuoden 1954 yleissopimuksen toimeenpanosta Suomessa ja osana kansainvälistä kriisinhallintaa [Threats and protection of cultural property Presentation of the working group on the implementation of the 1954 Hague Convention in Finland and as part of international crisis management] (2007), https://perma.cc/KJ9E-XG7F.

[30] *Finnish Heritage Agency the First Finnish Operator to Enter the International Climate Heritage Network,* Finnish Heritage Agency (Mar. 22, 2021), https://perma.cc/B5SV-UFXP.

[31] Förordning om delegationen för sameärenden (FFS 988/1990), https://perma.cc/8PVL-ALFC (Swedish).

[32] 14 § Climate Act (Ilmastolaki 423/2022, https://perma.cc/3ZED-Y264 (in Finnish), Klimatlag (FFS 423/2022), https://perma.cc/THM4-L75L (in Swedish)).

[33] 21 § Climate Act, See also: Samiska klimatrådet, https://perma.cc/M8DX-E7CM.

[34] Id.

[35] *Statsrådet har tillsatt det samiska klimatrådet*, Statsrådet (Aug. 24, 2023), https://perma.cc/E9VB-5U8N.

[36] *Det Samiska Klimatrådet har Inlett Sin Verksamhet*, Statrådet (Oct. 17, 2023), https://perma.cc/9E75-SC8T.

[37] Id.

Climate Council regulates the work of the Council.[38] For example, the membership of the council must consist of no less than 50% of persons with traditional Sámi knowledge and the other members should have expertise in environmental science or other sciences within the climate measures area.[39] Members serve for four-year terms not to exceed two consecutive terms.[40] Members are paid EUR 1,500 (about US$1,667) while the vice chairperson is paid EUR 3,000 (about US$3,334) and the chair EUR 5,000 (about US$5,557).[41]

According to the Finnish government,

> [the w]arming climate has very particular impacts on the Sámi culture and traditional livelihoods that are based on the Arctic environment. This is why it is an absolute necessity to integrate the knowledge of the indigenous Sámi people strongly into the decision-making concerning climate policy. The Sámi Climate Council also has the potential to serve as a trailblazer in international contexts and lead the way towards a climate policy that takes the rights of indigenous peoples into account.[42]

[38] Decree on the Sámi Climate Council (Valtioneuvoston asetus saamelaisesta ilmastoneuvostosta, https://perma.cc/M892-QEJK (in Finnish), Statsrådets förordning om det samiska klimatrådet, https://perma.cc/CFH6-HRYA (in Swedish)).

[39] Id. 2 §.

[40] Id. 3, 5 §§.

[41] Id. 6 §.

[42] *Government Adopts Decree on Sámi Climate Council*, Finnish Government (Mar. 9, 2023), https://perma.cc/5EFB-QUPA.

Great Britain

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SUMMARY The government of England and Wales and Scotland has set a legally binding target to achieve net zero carbon emissions by 2050. There are a number of laws in place to help encourage energy efficiency in buildings, which contribute significant amounts to emissions. There are a large number of historic buildings across England, Wales, and Scotland, with a smaller number of these being listed buildings, which are subject to more stringent planning requirements due to their significance.

I. Introduction

The government of Great Britain has set a target to achieve net zero carbon emissions by 2050. This is enshrined in legislation by the Climate Change Act 2008,[1] and the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019,[2] which set legally binding targets to achieve net zero greenhouse gas emissions by 2050, with interim targets requiring a 75% reduction by 2030, and a 90% reduction by 2040. Reducing emissions from buildings forms an important part of meeting these targets, as they are the second highest emitting sector. In England and Wales, they account for 17% of total emissions,[3] and in Scotland, 22%.[4] Great Britain has the oldest building stock in Europe,[5] with around one quarter of buildings being over 100 years old, and thus, the ability to retrofit historic homes with energy efficiency measures plays a major role in reducing emissions.[6]

The historic building stock includes 10.2 million homes that were built prior to 1944, with 21% of these buildings being constructed prior to 1919 and 15% before 1944 in England and Wales.[7] In Scotland, one fifth of the buildings were constructed before 1919.[8] Of these buildings, 2.8 million

[1] Climate Change Act 2008, c. 27, https://perma.cc/2HJ4-KNRJ, as inserted by The Climate Change Act 2008 (2050 Target Amendment) Order 2019, SI 2019/1056, https://perma.cc/43EM-ADDK.

[2] Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, asp. 15, https://perma.cc/AA2H-3T4W.

[3] Climate Change Comm., *Progress in Reducing Emissions: 2023 Report to Parliament* 139 (June 2023), https://perma.cc/25JB-MSJZ.

[4] UK Gov't, *Policy Note, Building (Scotland) Amendment Regulations 2023, SSI 2023/177* 1, https://perma.cc/5VQV-MA9Y.

[5] Dep't for Levelling Up, Hous. & Cmtys. et al., *Adapting Historic Homes for Energy Efficiency: A Review of the Barriers* (Jan. 3, 2024), https://perma.cc/P2GH-NPCS.

[6] Historic England, Historic England Advice Note 18 (HEAN 18), *Adapting Historic Buildings for Energy and Carbon Efficiency* 1 (July 2024), https://perma.cc/QD7V-VBRT.

[7] Dep't for Levelling Up, Hous. & Cmtys. et al., supra note 5.

[8] Scottish Gov't, *Heat in Buildings Strategy: Achieving Net Zero Emissions in Scotland's Buildings* 21 (Oct. 2021), https://perma.cc/8JD4-EDSP.

homes are located in conservation areas, 400,000 are listed dwellings in England and Wales,[9] and 47,000 are in Scotland.[10]

Listed buildings have the most restrictions on developing or improving them. They are those classed as "buildings of special architectural or historic interest" and included in a list compiled by the Historic Buildings and Monuments Commission and approved by the secretary of state. The secretary of state is required to consider the following when determining whether to include a building in the list:

> (a) any respect in which its exterior contributes to the architectural or historic interest of any group of buildings of which it forms part; and
> (b) the desirability of preserving, on the ground of its architectural or historic interest, any feature of the building consisting of a man-made object or structure fixed to the building or forming part of the land and comprised within the curtilage of the building.[11]

In Scotland, listed buildings are selected by Historic Environment Scotland under the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997, and the criteria for inclusion in the list approximately mirrors that for England and Wales, stated above.[12]

Historic buildings are considered complex to decarbonize due to several factors, including the planning permission requirements, technical constraints posed by the buildings to energy efficiency measures, and the risk of damage to the heritage value of the home.[13]

II. Laws Enabling the Retrofit of Historic Buildings

A. Planning Permission

Planning permission is required for any work that constitutes development, but does not include internal alterations and work that does not affect the building's exterior. The planning permission framework is contained in the Town and Country Planning Act 1990,[14] the Town and Country Planning (Scotland) Act 1997,[15] and the regulations made under them. To help provide for an efficient planning framework for certain building work, the government established Permitted Development Rights (PDR), which are a national grant of planning permission from the secretary of state that enable owners to undertake a number of different works without having to apply for

[9] Historic England, supra note 6, at 11.

[10] Historic Environment Scotland, *Guide to Energy Retrofit of Traditional Buildings* (rev. Nov. 2023), https://perma.cc/83BK-TMUT.

[11] Planning (Listed Buildings and Conservation Areas) Act 1990, c. 9, c. § 1, https://perma.cc/2HCP-T2UW.

[12] Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997, c. 9, https://perma.cc/Y9X6-44L9.

[13] UK Gov't, *Defining and Identifying Complex-to-Decarbonise Homes and Retrofit Solutions* (Aug. 2023), https://perma.cc/MUJ6-NZ4L.

[14] Town and Country Planning Act 1990, c. 8, https://perma.cc/38NN-2YFR.

[15] Town and Country Planning (Scotland) Act 1997, c. 8, https://perma.cc/E9BW-9NAC.

planning permission.[16] Local development orders also provide permission for specific types of development within a local area.

B. Development of Listed Buildings

The Planning (Listed Buildings and Conservation Areas) Act 1990,[17] and the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997, set out additional requirements needed to obtain consent for the development of these buildings. Section 7 of the Planning (Listed Buildings and Conservation Areas) Act 1990 provides

> no person shall execute or cause to be executed any works for the demolition of a listed building or for its alteration or extension in any manner which would affect its character as a building of special architectural or historic interest, unless the works are authorised.[18]

Section 8 of the Planning (Listed Buildings and Conservation Areas) Act 1990 provides that the secretary of state or the local planning authority can deny planning applications or provide written consent to authorize the work.

To help streamline the consent process, section 26H of the act provides that individuals may make an application for a certificate of lawfulness from local authorities, which states that the work proposed in the application is lawful and would not affect the character of the listed building. This certificate means that listed building consent is not required and "that the lawfulness of any works for which a certificate is in force will be conclusively presumed, provided that the works are carried out within 10 years beginning with the date of issue of the certificate, and the certificate is not revoked."[19]

Section 16 of the Planning (Listed Buildings and Conservation Areas) Act 1990 provides that the local planning authority may either refuse or grant permission for works, and that any grant of permission can be subject to conditions. The law requires the local authority to have "special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses"[20] when deciding whether or not to grant an application. Any conditions attached to a consent can apply to the preservation of certain features of the building and include ensuring that any damage caused to the building by the work is rectified after the work is completed and that the building, or any part of the building, is reconstructed with original materials where practicable.[21]

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[16] Town and Country Planning (General Permitted Development) (England) Order 2015, SI 2015/596, sched. 2, pt. 14, https://perma.cc/NN73-L27W.

[17] Planning (Listed Buildings and Conservation Areas) Act 1990, c. 9, https://perma.cc/2SL9-2BYX.

[18] Id. § 7. This is approximately mirrored in section 7 of the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997, c. 9.

[19] Gov't UK, *Enterprise and Regulatory Reform Act 2013, Explanatory Notes* 62, https://perma.cc/CW4U-MJ8Y.

[20] Planning (Listed Buildings and Conservation Areas) Act 1990, c. 9, § 16.

[21] Id. § 17.

In 2013, the Planning (Listed Buildings and Conservation Areas) Act 1990 was amended to allow the secretary of state or a local authority to provide blanket consent for work that falls within categories specified in the order that involves the alteration or extension of listed buildings, such as minor work.[22] The amendment was based on the Town and Country Planning Act 1990, which provides for development orders and local development orders that apply to a limited area.[23] This blanket consent is referred to as a listed building consent order if made by the secretary of state, or a local listed building consent order if made by a local authority.[24] Conditions can be attached to these orders, including the requirement to apply to "the local planning authority to determine whether prior approval is required for certain details of works."[25] The consent order can include a provision that allows the secretary of state or local planning authority to disapply the order to specific buildings or buildings of a specific type within a specific area. The secretary of state is required to consult with English Heritage prior to making an order.[26] The secretary of state also has the power to require that a local listed building consent order be submitted to the secretary before its adoption, who can approve or reject any part of the order or require the local authority to modify it.[27]

C. Streamlining the Law for Energy Efficiency Improvements

The Town and Country Planning (General Permitted Development) (England) Order 2015 was recently amended,[28] as was the Town and Country Planning (General Permitted Development) (Scotland) Order 1992,[29] to provide blanket approvals for solar panels along with other energy saving measures through a General Permitted Development Order, or General Permitted Development Right in Scotland. There are exemptions to this order, which include the continued requirement for consent for solar panels to be installed on listed buildings.

These approvals allow the installation of some energy efficient improvements, such as double glazing and internal insulation, and wind turbines in Scotland,[30] to occur without the need to

[22] Planning (Listed Buildings and Conservation Areas) Act 1990, c. 9, § 26C, as inserted by the Enterprise and Regulatory Reform Act 2013, c. 24, § 60, https://perma.cc/8HYP-WKG7.

[23] Id.

[24] Planning (Local Listed Building Consent Orders) (Procedure) Regulations 2014, SI 2014/551, https://perma.cc/7DC5-4ADK.

[25] Gov't UK, *Enterprise and Regulatory Reform Act 2013, Explanatory Notes*, supra note 19, at 62.

[26] Planning (Listed Buildings and Conservation Areas) Act 1990, c. 9, § 26F.

[27] Id. § 26E.

[28] Town and Country Planning (General Permitted Development) (England) Order 2015, SI 2015/596.

[29] Town and Country Planning (General Permitted Development) (Scotland) Order 1992, SI 1992/223, https://perma.cc/S8EG-TEXZ.

[30] Planning (Listed Buildings and Conservation Areas) Act 1990, c. 9, § 26C. These orders were introduced by section 60 of the Enterprise and Regulatory Reform Act 2013, c. 24, and the Town and Country Planning (General Permitted Development) (Scotland) Order 1992, SI 1992/223, sch. 1, pt. 1A, as amended by the Town and Country Planning (General Permitted Development) (Scotland) Amendment Order 2024, SSI 2024/2012, https://perma.cc/SDJ2-D4WB.

obtain planning permission for some buildings.[31] For listed buildings and those in conservation areas, planning permission is required "to ensure that the impacts of those proposals can be properly assessed."[32] The assessment of these applications is

> subject to special heritage legal duties which require them to consider the desirability of preserving the listed building or conservation area when determining the application. These legal duties underpin the heritage planning policies in the National Planning Policy Framework, which emphasise the importance of identifying the heritage impacts, and set out the tests to be applied by local planning authorities in determining applications with impacts on heritage assets.[33]

The law of England and Wales was recently amended to permit the installation of stand-alone solar panels within the curtilage of buildings in conservation areas, provided they are installed closer to the highway than the house,[34] with prior approval required only "with regard to the impact of the appearance of the solar equipment on the character of the conservation area."[35] There continue to be additional requirements for listed buildings to install solar panels, and Historic England has noted that while listed building consent, discussed below, is required in all cases to install solar panels, the installation of these panels will be "acceptable in some cases."[36]

Scotland also recently amended its laws to provide more flexibility to install solar panels.[37] Class 6HA in the Town and Country Planning (General Permitted Development) (Scotland) Order 1992 provides a general permitted development right for the installation, alteration or replacement of solar panels that are mounted on dwellings.[38] Class 6HB provides for the installation of solar panels on outbuildings within the curtilage of a building, including those within conservation areas, provided they are not located in the front of the dwelling or attached to the principal elevation or side elevation that fronts a road. Class 6HA and 6HB does not apply to listed buildings, or to dwellings within the curtilage of listed buildings.[39]

In 2022, the Royal Boroughs of Kensington and Chelsea in London made a local listed building consent order, providing blanket consent for solar panels to be installed on grade II listed buildings provided the panels are installed on a sloping roof, facing away from the highway, do

[31] Dep't for Levelling Up, Hous. & Cmtys. et al., supra note 5.

[32] Id.

[33] Id.

[34] Town and Country Planning (General Permitted Development) (England) Order 2015, SI 2015/596, sched. 2, pt. 14.

[35] Gov't UK, *Explanatory Memorandum to the Town and Country Planning (General Permitted Development etc.) (England) (Amendment) (No. 2) Order 2023, SI 2023/1279* 3, https://perma.cc/7DJY-RMGQ.

[36] Historic England, supra note 6, at 30.

[37] Town and Country Planning (General Permitted Development) (Scotland) Amendment Order 2024, SSI 2024/102, amending the Town and Country Planning (General Permitted Development) (Scotland) Order 1992, SI 1992/223.

[38] Town and Country Planning (General Permitted Development) (Scotland) Order 1992, SI 1992/223.

[39] Id.

not protrude more than 0.2 meters beyond the plane of the roof or be higher than the highest peak of the roof, excluding chimneys, are located to minimize the impact on the external appearance of the housing and are maintained in good order. Consent from the local planning authority continues to be required for the position, size, color, finish, and equipment before any work starts.[40]

D. Tax Incentives for Energy Efficiency Improvements

There is a temporary zero rating of value added tax (VAT) on energy saving products that started on April 1, 2022, and continues until March 31, 2027. VAT is currently charged at 20% and is approximately equivalent to United States sales tax.[41] While new construction also has a zero-rating applied to help increase the housing supply, repair and maintenance services, such as those required to retrofit a home with energy efficient measures, do not have a zero rating and must charge 20% VAT.[42]

E. Building Regulations

In England and Wales, the Building Regulations 2010 provide that the energy efficiency requirements of the regulations do not apply to listed buildings if compliance "would unacceptably alter their character or appearance."[43] In Scotland, traditional buildings may be required to comply with the Scottish Building Standards when they are converted.[44]

F. Direct Emission Heating Systems

The Scottish government has stated that "we can't insulate our way to net zero,"[45] and it has committed itself to introduce legislation to prohibit the use of direct emission heating systems, which are considered high-polluting systems that rely on fossil fuels, in all homes by 2045.[46] Installation of such systems in new construction was recently prohibited,[47] and the government intends to introduce legislation requiring homes that use direct emission heating systems to replace them.[48] The government anticipates that this requirement will result in the costs of new

[40] *Listed Building Consent Order for the Installation of Solar Panels on Grade II Listed Buildings in the Royal Borough of Kensington and Chelsea* (May 18, 2022), https://perma.cc/TE2Q-4ZUZ.

[41] *VAT Rates*, Gov.uk, https://perma.cc/E8AN-AYJ4.

[42] Dep't for Levelling Up, Hous. & Cmtys. et al., supra note 5.

[43] Building Regulations 2010, SI 2010/2214, reg. 21, https://perma.cc/HZ8E-CDVV.

[44] Building (Scotland) Act 2003, asp. 8, https://perma.cc/UU2S-XMPG. See also Historic Environment Scotland, *Guide to Energy Retrofit of Traditional Buildings*, supra note 10.

[45] Scottish Gov't, *Delivering Net Zero for Scotland's Buildings* 2 (Nov. 2023), https://perma.cc/U49D-KNQ3.

[46] Scottish Gov't, *Heat in Buildings Strategy: Achieving Net Zero Emissions in Scotland's Buildings*, supra note 8, at 91.

[47] Building (Scotland) Regulations 2004, SI 2004/406, reg. 6.11, https://perma.cc/XE8L-BYVF, as amended by the Building (Scotland) Amendment Regulations 2023, SSI 2023/177, https://perma.cc/P3J9-VDNE.

[48] UK Gov't, *Policy Note, Building (Scotland) Amendment Regulations 2023, SSI 2023/177*, supra note 4, at 1.

systems dropping and an increase in the supply chain of these systems.[49] It is working with "Historic Environment Scotland to consider what specific support may be needed within regulations to take account of buildings which are designated as listed or in conservation areas, in meeting requirements for decarbonisation of their heat supply and reducing their demand for heat."[50]

III. Policies Encouraging the Retrofit of Historic Buildings

As noted above, the government has set targets for the United Kingdom to become net zero by 2050. The 2022 Autumn Statement set a further target of reducing energy consumption from buildings and industry to 15% by 2030 when compared to 2021 levels and provided 6.6 billion pounds (approximately US$8.5 billion) in funding for energy efficiency, with an additional £6 billion (approximately US$7.7 billion) to be provided for the years 2025 through 2028.[51]

A. National Planning Policy Framework

The National Planning Policy Framework was recently revised and includes a section that requires local planning authorities to "give significant weight to the need to support energy efficiency and low carbon heating improvements to existing buildings."[52] The National Policy Planning Framework provides

> [i]n determining planning applications, local planning authorities should give significant weight to the need to support energy efficiency and low carbon heating improvements to existing buildings, both domestic and non-domestic (including through installation of heat pumps and solar panels where these do not already benefit from permitted development rights).[53]

The framework notes that historical buildings "are an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations."[54] It sets out a number of criteria that should be considered in plans for these buildings, which include determining the historical significance of the building or location and

> a) the desirability of sustaining and enhancing the significance of heritage assets, and putting them to viable uses consistent with their conservation;
> b) the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;

[49] Id.

[50] Scottish Gov't, *Heat in Buildings Strategy: Achieving Net Zero Emissions in Scotland's Buildings*, supra note 8, at 98.

[51] Chancellor of the Exchequer, *Autumn Statement* 48 (Nov. 2022), CP 751, https://perma.cc/7K5U-6XR3.

[52] Ministry of Hous., Cmtys. & Local Gov't, *National Planning Policy Framework* 47 (Dec. 2023), https://perma.cc/G2ZL-68RA.

[53] Id. at 13.

[54] Id. 57.

> c) the desirability of new development making a positive contribution to local character and distinctiveness; and
> d) opportunities to draw on the contribution made by the historic environment to the character of a place.[55]

The Framework further provides several criteria that should be considered when granting planning permission for heritage assets, which include listed buildings. This criteria includes weighing the public benefits of a development proposal against any harm, where this is less than substantial, to the heritage asset.[56] Historic England has also provided a number of criteria to assist planners making decisions on whether to grant consent to the development of listed buildings. The criteria is designed to balance any harm that development could cause the building against the public benefit.[57] In addition to a set of criteria, Historic England has listed a number of common energy efficiency measures, such as window improvement, the installation of insulation, new heating systems, heat pumps and solar panels, and whether it is considered likely to be an acceptable improvement.[58]

The recently enacted Levelling Up and Regeneration Act 2023 created a new category of planning policies, to be known as national development management policies.[59] These policies will include one specifically for improvements to historic buildings and will be integrated into the national development management policies. The aim of this is to "help to ensure greater certainty and consistency about decisions on applications for energy efficiency improvements affecting listed buildings and buildings in conservation areas across England."[60]

The Scottish National Planning Framework states that the existing housing stock should be upgraded to reduce emissions from homes by 68% from 2020 levels by the year 2030.[61] With regard to historic buildings, it requires any development proposals for the alteration of listed buildings to preserve the buildings' character, special architectural or historic interest, and setting.[62]

B. Heat and Buildings Strategy

England and Wales published the *Heat and Buildings Strategy* that sets out how it aims to decarbonize homes and commercial industrial and public sector buildings to reach the 2050 net zero target.[63] The *Heat and Buildings Strategy* aims to upgrade "as many homes to Energy

[55] Id.

[56] Id. at 59.

[57] Historic England, supra note 6, at 30.

[58] Id.

[59] Levelling Up and Regeneration Act 2023, c. 55, https://perma.cc/44SA-CT4B.

[60] Dep't for Levelling Up, Hous. & Cmtys. et al., supra note 5.

[61] Scottish Gov't, *National Planning Framework 4* 133 (Feb. 2023), https://perma.cc/8D45-JZFM.

[62] Id. at 45.

[63] HM Gov't, *Heat and Buildings Strategy*, CP 388 (Oct. 2021), https://perma.cc/Z33R-ZWT8.

Performance Certificate (EPC) band C by 2035 as is practical, affordable and cost-effective."[64] Scotland's *Heat in Buildings Strategy* states that it is working to "develop more solutions to transition Scotland's historic buildings to zero emissions heating."[65]

C. Adapting Historic Homes for Energy Efficiency

The government has stated that improving the energy efficiency of homes is critical to achieving this target and that

> Historic buildings have a significant role to play in the transition to Net Zero by 2050, and we believe that improving the energy efficiency and protecting historic and architectural interest are compatible and complementary goals. Appropriate retrofit of historic buildings is part of the solution to achieving Net Zero. Indeed, improving the energy efficiency of historic homes is necessary for their long-term survival as it will ensure they continue to be desirable places to live and will ensure they are maintained as important heritage assets.[66]

A review found that there was confusion over planning requirements, which were often considered to be complex for listed buildings,[67] and this is "one of the key barriers for installing energy efficiency and low carbon heating measures (such as solar panels, heat pumps or double glazing) in listed homes and homes in conservation areas."[68] Part of the complexity stems from the requirement to obtain both planning permission and listed building consent orders for some energy efficiency work.

The review further noted that a barrier to adapting historic homes for energy efficiency was the lack of a dedicated conservation officer at many local planning authorities, combined with a high staff turnover, under resourcing, and a general lack of training. This has led to inconsistent decisions being made across areas, along with significant delays in decisions being made on planning applications.[69]

An advice note from Historic England sets out "advice on the acceptability of changes to historic buildings in response to climate change, as managed through the planning process."[70] It states that Historic England "believe[s] it is possible to improve the energy efficiency of all buildings to some extent without unacceptably harming their significance. We encourage interventions which are reasonably low risk (and often happen to be low cost), and do not always require planning approval, to be considered first, before more potentially harmful interventions are explored."[71]

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[64] Dep't for Levelling Up, Hous. & Cmtys. et al., supra note 5.

[65] Scottish Gov't, *Heat in Buildings Strategy - Achieving Net Zero Emissions in Scotland's Buildings*, supra note 8.

[66] Dep't for Levelling Up, Hous. & Cmtys. et al., supra note 5.

[67] HM Gov't, *British Energy Security Strategy* (Apr. 2022), https://perma.cc/4A28-UL5X.

[68] Dep't for Levelling Up, Hous. & Cmtys. et al., supra note 5.

[69] Id.

[70] Historic England, supra note 6, at 18.

[71] Id.

D. Great British Insulation Scheme

The Great British Insultation Scheme aims to help provide insulation to the least energy efficient households. It was established in 2023, runs until March 2026, and delivers one insulation measure per home. The measures taken by the plan are estimated to be worth up to £1 billion (approximately US$1.3 billion).[72]

E. Boiler Upgrade Scheme

The Boiler Upgrade Scheme was established in 2022 and will run through 2028. It provides £7,500 grants for heat pumps and £5,000 grants for biomass boilers (approximately US$9,600 and US$6,400 respectively).[73]

F. Local Authority Grants

Local authorities are provided with funding to help provide energy efficiency measures and low carbon heating to low-income households.[74]

G. Social Housing Grants

The Social Housing Decarbonisation Fund provides social housing landlords with funding to install energy efficiency measures and low carbon heating. Over £1 billion (approximately US$1.3 billion) has already been committed to these measures, and up to £80 million (approximately US$103 million) will be allocated from April 2024. The government is also allocating £1.25 billion (approximately US$1.6 billion) in funding for these measures from 2025 to 2028. [75]

H. Energy Efficiency Grant

The government has announced that it will launch a £400 million (approximately US$514 million) energy efficiency grant in 2025 to help individuals upgrade insulation or radiators to enable a heat pump to work effectively.[76]

I. Improving the Skilled Workforce

To build and improve the number of workers trained in energy efficiency and low carbon heating to help meet the net zero 2050 target, the government established the Home Decarbonisation Skills Training Competition, which provides support to 16,000 training opportunities. It is funded with £15 million, and an additional £5 million (approximately US$19 million and US$6.5 million,

[72] Dep't for Levelling Up, Hous. & Cmtys. et al., supra note 5.

[73] Id.

[74] Id.

[75] Id.

[76] Id.

respectively) was provided in 2023 to support a further 10,000 low-carbon heating training opportunities.[77]

[77] Id.

Ireland

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SUMMARY The Irish government has set a target to become net zero by 2050 and to reduce emissions by 51% from 2018 levels by 2030. Its Climate Action Plan commits to retrofitting 500,000 homes by 2030. Ireland has a number of historic homes, with a portion of those being protected structures that require additional consideration when undergoing development, including the installation of energy efficiency measures.

I. Introduction

The Irish government set a target to become net zero by 2050 along with a 51% reduction in emissions from 2018 levels by 2030.[1] The government's Climate Action Plan 2024 states that it is committed to retrofitting 500,000 homes by 2030[2] under its National Retrofit Plan.[3]

Sixteen percent of Ireland's private homes were constructed prior to 1945.[4] Buildings with special historic value can be designated as protected structures under the Planning and Development Act 2000. Any work that could affect the character of the structure or "any element of the structure which contributes to its special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest"[5] requires planning permission from the planning authority.[6]

II. Laws Enabling the Retrofit of Historic Buildings

Planning permission is generally required for the development of property, unless it falls within a specific exemption.[7] Individuals can write to the planning authority to request a declaration as

[1] Climate Action and Low Carbon Development Act 2015, No. 46/2015, https://perma.cc/6Y4S-7KYN, as amended by the Climate Action and Low Carbon Development (Amendment) Act 2021, N0. 32/2021, https://perma.cc/R9MY-32PB.

[2] Government of Ireland, *Climate Action Plan 2024* 20, https://perma.cc/M856-3YVC.

[3] Sustainable Energy Authority of Ireland, *National Retrofit Plan Full Year Report 2023*, https://perma.cc/KP42-BBAT.

[4] Government of Ireland, *Improving Energy Efficiency in Traditional Buildings* 11 (2023), https://perma.cc/3QPB-ZLFT.

[5] Planning and Development Act 2000, No. 30/2000 (Rev. to May 17, 2024), § 57, https://perma.cc/L5W4-89DM.

[6] Office of the Planning Regulations & Department of Housing, Local Government and Heritage, *Planning Leaflet No. 12: A Guide to Architectural Heritage*, https://perma.cc/AVB8-TLUK.

[7] Planning and Development Act 2000, No. 30/2000. Exemptions are contained in the Planning and Development Regulations 2001, SI 600/2001, https://perma.cc/TX2A-8FLP.

to whether a particular case requires planning permission for works, or is an exempted development.[8]

Permission is required in all circumstances where the work would "materially affect the character of a protected structure, a proposed protected structure or any element of the structure that contributes to its special interest."[9] Owners of protected structures can request a declaration of the planning authority as to whether the work they want to undertake would materially affect the character of the protected structure.[10] Guidance issued by the government of Ireland states that "[t]he aim [of any work] should be to improve the energy efficiency as far as is reasonably practicable. The work should not prejudice the character of the building or increase the risk of long-term deterioration of the building fabric."[11]

The European Union (Energy Performance of Buildings) Regulations 2019 set out energy performance standards for dwellings in accordance with the requirements of the Energy Performance of Buildings Directive.[12] Protected buildings are generally exempt from these provisions.[13]

The Building Regulations set minimum standards for energy performance for buildings that undergo substantial renovations. Protected structures may be exempt from compliance with these standards where the energy efficiency measures would materially alter their character or appearance.[14]

An exemption for planning permission for rooftop solar panels was introduced in October 2022,[15] however, restrictions on the installation of these panels continue for protected structures where the installation would materially affect the building's character.[16]

[8] Planning and Development Act 2000, No. 30/2000, § 5.

[9] Government of Ireland, *Improving Energy Efficiency in Traditional Buildings* 13 (2023), https://perma.cc/3QPB-ZLFT.

[10] Planning and Development Act 2000, § 57. See further *Improving Energy Efficiency in Traditional Buildings* (2023), supra note 9.

[11] *Improving Energy Efficiency in Traditional Buildings* (2023), supra note 9, at 15.

[12] European Union (Energy Performance of Buildings) Regulations 2019, SI 2019/183, https://perma.cc/X42F-PR4P.

[13] Id. See further Government of Ireland, *Building Regulations: Technical Guidance Document L 2022: Conservation of Fuel and Energy – Dwellings* (2022), https://perma.cc/B76P-QY98.

[14] Building Regulations made under the Building Control Act 1990, No 3/1990 (Rev. to May 16, 2024), https://perma.cc/B4NY-E9NZ.

[15] Planning and Development Act 2000 (Exempted Development (No. 3) Regulations 2022, SI 2022/493, https://perma.cc/8GJG-DL7B.

[16] Directors of Planning Services in Each Local Authority, Circular Letter: PL 07/2022 (Oct. 7, 2022), https://perma.cc/35WJ-UJT5.

III. Policies Encouraging the Retrofit of Historic Buildings

The Project Ireland 2040: National Planning Framework includes energy efficiency as one of its objectives. Objective 64 seeks the "promotion of energy efficient buildings and homes, [and] heating systems with zero local emissions."[17] This was replicated as objective 90 in the Draft First Revision to the National Planning Framework.

The Historic Structures Fund provides funding to help support works in historic buildings, including to "build resilience in our historic structures to enable them to withstand the effects of climate change."[18] The Built Heritage Investment Scheme provides funding for the maintenance and conservation of historical buildings.[19]

[17] Government of Ireland, *Project Ireland 2040 National Planning Framework* (2018), https://perma.cc/F2KE-SCTL.

[18] Government of Ireland, *Historic Structures Fund: Guidance Booklet for Applicants* 1, https://perma.cc/FY4V-C2JS.

[19] Department of Housing, Local Government & Heritage & the National Built Heritage Service, *Built Heritage Investment Scheme 2025: Guidance Booklet for Applicants*, https://perma.cc/U2UG-N9K2.

Italy

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SUMMARY Italy has adopted a legislative framework, policies, and incentives to respond to two main challenges: the retrofitting and reuse of historic buildings to limit energy consumption and the development of measures to protect historic buildings and districts from the impact of climate change. The national laws, such as the Code of Cultural Heritage and Landscape and legislative decrees on energy performance and climate change adaptation, provide a robust foundation for these efforts. Financial incentives like the National Fund for Energy Efficiency, Ecobonus, Superbonus 110%, and Green Bonus support energy-efficient retrofitting while preserving cultural heritage. Other incentives like tax deductions for population victims of flooding and Façade Bonus sustain rebuilding historic real estate damaged by climate change. Besides national laws and guidelines, regional and local initiatives are particularly relevant in emphasizing the importance of integrating environmentally friendly solutions with heritage conservation.

I. Introduction

With its vast and diverse cultural heritage, Italy faces the unique challenge of modernizing its infrastructure and historic centers to meet contemporary energy standards while preserving its architectural treasures' historic and aesthetic value. Italy is called to solve two main issues. The first relates to retrofitting and reusing historic buildings to reduce energy consumption. Retrofit solutions typically involve enhancing the building fabric, optimizing building systems, and integrating renewable energy sources. However, the complexity of historic buildings presents challenges in selecting retrofit solutions compatible with conservation goals.[1] The second challenge relates to developing and implementing effective actions for protecting cultural heritage from the threats imposed by climate change. The effects of climate change on cultural heritage and the landscape severely impact one of the main expressions of the country's identity, which is also one of the essential components of Italy's economy.[2] To face these matters, Italy implements a series of regulations, guidelines, policies, and financial incentives.

II. Laws, Regulations, and Policies for Reusing and Retrofitting Historic Buildings

Over the years, Italy has implemented a multifaceted framework of laws, regulations, and policies that encourage the reuse or retrofitting of historic buildings to reduce their energy imprint and mitigate their environmental impact while preserving their cultural and historical significance.

[1] Alessia Buda et al., *Existing Tools Enabling the Implementation of EN 16883:2017 Standard to Integrate Conservation-Compatible Retrofit Solutions in Historic Buildings*, 57 J. Cultural Heritage 34 (Sept.-Oct. 2022) (by subscription).

[2] Senato della Repubblica, L'Impatto dei Cambiamenti Climatici sui Beni Culturali e sul Paesaggio, https://perma.cc/79LK-BH23.

A. National Laws

1. Code of Cultural Heritage and Landscape

Legislative Decree 22 January 2004, n. 42, also known as the Italian Cultural Heritage and Landscape Code,[3] provides the framework for protecting and enhancing Italy's cultural heritage, including historic buildings.[4] The decree defines a general principle under which any work on cultural heritage can be done provided it does not impact conservation.[5] This principle can be applied to improving energy efficiency in historic buildings: interventions are allowed if they are compatible with conservation purposes.

2. Legislative Decree 192/2005 and Legislative Decree 311/2006

European Union (EU) Directive 2002/91/EC concerns the energy performance of buildings.[6] Legislative Decree 19 August 2005, n. 192 (Legislative Decree 192/2005)[7] transposes it into Italian law.[8]

The law establishes the criteria, conditions, and methods to improve the energy performance of buildings to promote the development, enhancement, and integration of renewable energy sources and energy diversification. It represents one of the major tools contributing to achieving the national goal of limiting greenhouse gas emissions set by the Kyoto Protocol,[9] and the goal of promoting the competitiveness of the most advanced sectors through technological development.[10]

In 2006, only one year after its enactment, Legislative Decree 192/2005 was integrated and reformed by Legislative Decree 29 December 2006 (Legislative Decree 311/2006).[11] The latter decree introduced a new article 3-bis, specifically referring to historic buildings. In line with the Code of Cultural Heritage and Landscape, art. 3-bis provides that the general rules defined in Legislative Decree 192/2005 for energy improvement do not apply to buildings of special architectural or historic merit identified under article 136 of the Code of Cultural Heritage and

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[3] Legislative decree 22 January 2004, n. 42 - Codice dei beni culturali e del paesaggio, https://perma.cc/LW7X-JT7U.

[4] For an overview of the main aspects of the code and the updates introduced in 2016, see Dante Figueroa, *Italy: New Code of Cultural Heritage and Landscape*, Global Legal Monitor (May 20, 2016), https://perma.cc/ZBA6-SBR7.

[5] Legislative decree 22 January 2004 art. 1.

[6] Directive 2002/91/EC of the European Parliament and of the Council, 2003 O.J. (L 1), https://perma.cc/Z7SA-L54N.

[7] Legislative Decree 19 August 2005, n. 192, enacted on Oct. 8, 2005, https://perma.cc/CU79-25DN.

[8] An EU directive is binding only with regard to the result that must be achieved; to become effective, a directive must be transposed into national law by the individual state, and in this case, Italy did that by enacting Legislative Decree 192/2005. (Consolidated Version of the Treaty on the Functioning of the European Union (TFEU), art. 288, para. 2, 2012 O.J. (C 326), https://perma.cc/9ZHZ-JA6S.)

[9] Kyoto Protocol to the United Nations Framework Convention on Climate Change, signed Apr. 29, 1998, 2303 U.N.T.C. 162, https://perma.cc/5QJ8-PWJB.

[10] Decree n. 192/2005 art. 1.

[11] Legislative Decree 29 December 2006, n. 311, enacted on February 2, 2007, https://perma.cc/WEA6-RZGE.

Landscape,[12] provided that, following the judgment of the competent authority, compliance with the requirements would entail a substantial alteration of their character or appearance, with particular reference to historical, artistic, and landscape aspects.[13]

3. Legislative Decree 102/2014

Legislative Decree 4 July 2014, n. 102 (Legislative Decree 102/2014)[14] establishes a framework of measures for promoting and improving energy efficiency that contribute to achieving the national energy savings target. The decree provides specific regulations for both public and private buildings. However, it does not include any regulations aimed explicitly at historic buildings.

With particular regard to public buildings, the decree provides that the Ministry of Economic Development, in agreement with the Ministry of the Environment and Protection of Land and Sea, prepares by November 30 of each year, starting from 2014, a program of interventions for the improvement of energy performance. This provision is particularly relevant in this analysis, as most historic buildings are public.[15]

Public administrations that are required to undertake actions to refurbish and improve their buildings' energy performance can access external financing. The decree establishes the National Fund for Energy Efficiency. Its purpose is to promote, based on periodically established objectives and priorities, the financing of interventions consistent with achieving energy efficiency targets, encouraging the involvement of financial institutions, both national and EU, and private investors based on an adequate sharing of risks. Among the interventions that can obtain such financing are those for improving the energy efficiency of buildings owned by public administrations.[16]

B. Guidelines and Best Practices for Improving Energy Efficiency in Cultural Heritage

Technical guidelines have been developed to help balance energy improvements with preservation. One of the most important documents is *Guidelines for Improving Energy Efficiency in Cultural Heritage*, issued by the Ministry of Cultural Heritage in October 2015 (the guidelines.)[17]

The document provides guidelines for evaluating and improving the energy performance of protected cultural heritage. As stated in Section II.A.1, above, Legislative Decree 192/2005 stipulates that if energy efficiency interventions on buildings protected under Legislative Decree 42/2004 would result in a substantial alteration of the character or appearance of a historic building, particularly concerning historical, artistic, and landscape aspects, the

[12] The special category of these buildings is defined in Legislative Decree 22 January 2004, n. 42, art. 136, para. 1(b).

[13] Id. art. 3, 3-bis.

[14] Legislative Decree 4 July 2014, n. 102, G.U. July 18, 2014, n. 165, https://perma.cc/8NW5-U6N4.

[15] Id. art. 5.

[16] Id. art. 15.

[17] *Guidelines for Improving Energy Efficiency in Cultural Heritage* (*Guidelines*), Italian Ministry of Cultural Heritage, https://perma.cc/62LG-MLAC (in Italian).

competent superintendency may exclude the obligation for intervention for the specific cultural asset under consideration.

Nevertheless, the guidelines limit the possibility of an exemption provided by the regulation. The guidelines set forth intervention criteria that allow for compliance with the objectives of energy savings and the reduction of greenhouse gas emissions while ensuring the protection needs of cultural heritage and propose a special procedure for energy consumption improvements tailored for historic buildings.[18]

First, the document suggests a particular approach for the preliminary phase of the process: the assessment of the energy performance of the building.[19] The energy performance of a building is the annual amount of energy consumed or that is expected to be necessary to meet the various needs associated with the standard use of the building, including winter and summer air conditioning, hot water production, ventilation, and lighting.[20] The evaluation of the energy performance must take into account a series of parameters, including the climatic aspects of the location, the level of thermal insulation of the envelope, the existence of own energy generation systems, the technical and installation characteristics of the system, and the microclimate of the indoor environments.[21]

According to the guidelines, the evaluation of the energy performance of a historic building must be carried out at least twice: the first time to define the current state of the building and the second time to assess the results obtained after improvements.[22] In proceeding to the evaluation, the operators must first assess whether the intervention planned to improve energy consumption is feasible in the particular case. This means that they must assess whether such an intervention would entail a permanent, substantial alteration of the historic and artistic character of the building. If such an impairment is excluded, they can implement the intervention planned. Then, at the end of the intervention, they must proceed with a dual evaluation to assess the results obtained after the improvement in terms of energy efficiency.[23]

The guidelines identify a series of potential improvement measures.[24] The document defines a series of advisable actions to improve the heating and cooling that use special materials and techniques without impairing the aspect of the building. The guidelines provide that, where possible, interventions can be proposed to improve the functioning of the building structure, for example, through the installation of skylights or ventilation chimneys or interventions that involve integrating active energy production systems. In almost all interventions that involve the removal of the roof covering to improve the performance of the underlying layers, such as the introduction of an insulating layer or a ventilated cavity, it is possible to consider the

[18] Id. para. 3.2.

[19] Id. para. 3.2.2.

[20] Id. para. 3.3.

[21] Id. para. 3.3.2.

[22] Id. para. 3.3.3-.4.

[23] Id. para. 3.4. See, e.g., the example provided on interventions proposed for improving energy consumption on the Galleria Borghese in Rome.

[24] Id. para. 4.

restoration and reintegration of existing finishing elements, typically tiles, an operation that allows the appearance of the building to remain unaltered.[25]

Winter heating can be optimized mainly by improving the insulation of horizontal closures. Usually, in historic buildings, roofs are made with materials of low thermal mass and reduced thickness, which can hardly ensure good thermal inertia, making it necessary to integrate a suitable insulating layer.[26]

To optimize the cooling of the building through the dissipation of solar radiation toward the sky, in harmony with the aesthetic characteristics of the building, it is good practice to use light-colored finishes for the roofs, especially in the case of flat roofs, which receive the maximum summer solar radiation. Alternatively, specific materials and pigments called "cool materials" (i.e., materials characterized by high solar reflectance)[27] can be used.[28]

Another essential aspect analyzed by the guidelines concerns the lighting improvement in historic buildings.[29] The document notes that proper design of the environment is necessary for daylighting to maximize the use and distribution of diffuse natural lighting within a building to reduce the demand for artificial lighting. Measures that contribute to enhancing natural lighting essentially focus on the position and size of windows and the configuration of spaces. However, in buildings whose artistic value does not allow for altering these characteristics, it is still possible to work on the distribution choices of new functions that consider the natural lighting performance of the available spatial elements.[30]

Among the proposed interventions is using materials with high albedo (i.e., the ability of a surface to reflect sunlight),[31] which mitigate thermal loads around the building and promote heat dissipation through ventilation or radiation. Some cool pavements, which have a very high albedo value, even with varying surface colors and treatments, are being used and tested.[32] Another measure is the insertion of special glass that balances the entry of light radiation and thermal radiation,[33] or, alternatively, the replacement of the glass or the entire frame with systems that have high control of solar radiation in terms of solar factor, light transmission factor, and thermal resistance.[34]

Using renewable energy production technologies in historic buildings to improve energy consumption is a complex issue.[35] One of the most delicate questions relates to using systems

[25] Id. para. 4.1.3.

[26] Id. at 47.

[27] Mattheos J. Santamouris et al., *Using Advanced Cool Materials in the Urban Built Environment to Mitigate Heat Islands and Improve Thermal Comfort Conditions*, 85 Solar Energy 3085 (2011).

[28] *Guidelines* at 49.

[29] Id. para. 4.1.8.

[30] Id. at 63-64.

[31] *Albedo*, Encyc. Britannica, https://perma.cc/66AT-UKPH.

[32] *Guidelines* at 64.

[33] Id. at 65.

[34] Id. at 66.

[35] Id. para. 4.4.

that capture, accumulate, and utilize solar radiation to produce electrical or thermal energy through photovoltaic or thermal plants included in the building structures.[36] As explicitly noted by the guidelines, one of the problematic points in the relationship between solar energy and historic buildings is connected to the impact the solar energy structures have on the image of the buildings: the alteration of the perception of the volume of historic buildings, materials, and surfaces. In this field, it is ultimately necessary to operate with the general principles of restoration, including the reversibility of the intervention and noninvasiveness concerning historic structures.[37]

The guidelines observe that, in individual cases, the impact can be mitigated through a reflection on these elements and the study of the arrangement of the panels so that the general lines of the building are not altered. However, in the case of a historic building, with the application on the roof, respecting the orientation and slope of the pitch, optimal situations from an energy point of view are rarely achieved. According to the guidelines, a great energy advantage is not always obtained in the face of significant alteration of the building's image.[38] Hence, such interventions are not incentivized.

The guidelines observe that historic buildings actually constitute a tiny fraction of the overall Italian building stock; thus—while applying all energy improvement measures compatible with them— in the context of a cost-benefit balance, it seems at least irrational if not shortsighted to compromise their characterizing features and landscape values given the insignificant and not decisive contribution they offer to the reduction, on a national scale, of energy consumption from fossil fuels and more generally nonrenewable sources.[39]

When these interventions are nevertheless implemented, the guidelines advise relocating photovoltaic energy production outside historic centers.

For the insertion of panels on the roofs of historic buildings, the guidelines indicate it is good practice to follow these instructions.

- Where possible, place the panels on the roofs of annexed buildings (pergolas over the parking lot, etc.) instead of on the roof of the historic building.
- Use integrated solutions to replace the roofing.
- Study the arrangement of the panels in a continuous strip, above the eaves line, along the entire length of the roof, or possibly covering the whole pitch with the best exposure; in this way, the panel surface is less invasive compared to the visual fragmentation of the pitch.
- Choose color solutions compatible with the surface of the panels, in the case of insertions on the roofs (gray of slate, brick red of tiles, etc.), retaining walls, and fences.[40]

[36] Id. para. 4.4.2.

[37] Id.

[38] Id. at 148.

[39] Id. at 156.

[40] Id. at 149.

The guidelines then discuss centers of traditional rural architecture, observing that the considerations made for buildings within a historic urban aggregate essentially apply, both concerning specialized and monumental buildings and minor and serial buildings that constitute the fabric of such an aggregate.[41]

A greater degree of freedom and a more comprehensive range of operational strategies can generally be available in the case of isolated buildings and complexes, as it is possible to use free spaces or secondary structures and avoid involving historic buildings. Garages, stables, barns, similar service structures, canopies, and pergolas can accommodate photovoltaic and solar panels.[42]

C. Policies and Incentives

The framework adopted to promote energy consumption improvement through building reuse and retrofitting identifies a series of financial incentives. Although no particular incentive is tailored explicitly for retrofitting historic buildings, the measures listed in the following analysis can be applied to them.

1. National Fund for Energy Efficiency

With Legislative Decree 102/2014, Italy created the National Fund for Energy Efficiency to finance intervention in energy consumption improvements.[43] As discussed in Section II.A.3, above, this financing system covers interventions for improving the energy efficiency of buildings owned by public administrations and the energy efficiency of entire buildings intended for residential use, including public housing. These can include retrofitting interventions in historic buildings.

2. PNRR

To address the challenges related to the pandemic crisis and the consequent slowdown of European economies, the EU has established a new financial instrument to support recovery in member states, the Recovery and Resilience Facility. Italy has received a substantial allocation, initially amounting to 191.5 billion euros (about US$209 billion), of which €122.6 billion (about US$133.9 billion) is in loans and €68.9 billion (about US$75.3 billion) is in grants. For the management of this allocation, a specific investment plan has been approved, the PNRR National Recovery and Resilience Plan.[44]

Among the objectives pursued by the PNRR is the energy efficiency of museums and the artistic and cultural heritage. The PNRR has allocated €300 million (about US$328 million) to the arts and culture sector with the M1C3 1.3 investment—"Improving energy efficiency in cinemas, theaters, and museums." The intervention aims to reduce the environmental impact of a large number of buildings in the cultural and creative sector.[45]

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[41] Id. at 4.4.8.

[42] Id.

[43] Legislative Decree 4 July 2014, n. 102.

[44] *PNRR, Gli Obiettivi e la Struttura*, Presidenza del Consiglio dei Ministri, https://perma.cc/T3H7-UMPY.

[45] *M1C3 – Investimento 1.3, Migliorare l'efficienza energetica in cinema, teatri e musei*, Ministro della Cultura, https://perma.cc/6W9S-PDDP.

3. Ecobonus

The so-called Ecobonus consists of a tax deduction for energy efficiency improvements in buildings, including historic ones. The measure was introduced by the 2007 Finance Law (Law 296/2006),[46] and it is currently regulated by article 14 of Decree-Law 63/2013.[47] The benefit consists of a tax deduction spread over 10 annual installments of an equal amount; the exact amount varying depending on whether the intervention concerns a single property unit or condominium buildings and the year in which it was carried out.[48]

A necessary condition is that the interventions are carried out on existing property units and buildings (or parts of buildings). The incentive can be claimed for expenses incurred by December 31, 2024.

The deduction can cover up to 65% of the expenses incurred for interventions such as insulation, window replacement, and installation of renewable energy systems.

4. Superbonus 110%

The Superbonus is a tax incentive governed by Article 119 of Decree-Law n. 34/2020,[49] which provides a 110% deduction for the expense of energy efficiency improvements in residential buildings.[50] The interventions eligible for this incentive are listed in article 16-bis(e) of the Consolidated Income Tax Act (TUIR),[51] including thermal improvement of the building, installation of solar and photovoltaic panels, and replacement of winter air conditioning systems. This deduction also applies to buildings of particular historical, artistic, cultural, or environmental value as defined in article 136 of the Code of Cultural Heritage and Landscape.

However, there are several limitations aimed at protecting the aesthetic and artistic characteristics of historic buildings. Circular 4/2021, published by the Ministry for Cultural Heritage and Activities and Tourism, specifies that for energy retrofit interventions involving the installation of external thermal insulation on buildings constructed before 1945, a specific authorization is required from the competent public authority and must be issued within 20 days.

5. Green Bonus

Article 1 of Law 205/2017 introduced the "Green Bonus" (*Bonus Verde*).[52] It is a tax deduction of 36% on expenses incurred for greening private open areas of existing buildings, residential units, outbuildings or fences, irrigation systems, well construction, and for creating green roofs and rooftop gardens.

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[46] Law 27 December 2006, n. 296, https://perma.cc/JS6J-AR9B.

[47] Law Decree 4 June 2013, n. 63, https://perma.cc/TSL3-JBHA.

[48] *Riqualifica Energetica – Che cos'è*, Agenzia delle Entrate, https://perma.cc/8C6G-K3MB.

[49] Law Decree 19 May 2020, n. 34, https://perma.cc/TSL3-JBHA

[50] *Superbonus 110%*, Agenzia delle Entrate, https://perma.cc/J9AN-QF6N.

[51] Decree of the President of the Republic 22 December 1986, n. 917 (also known as Consolidated Income Tax Act, or TUIR), https://perma.cc/6H62-YXTM.

[52] Law 27 December 2017, n. 205, https://perma.cc/TSR7-89FU.

D. Regional and Local Initiatives

Many regions and municipalities have regulations and incentive programs to promote energy-efficient building retrofitting. These can include grants and technical support tailored to local heritage and climatic conditions.[53] However, none of these measures specifically target historic buildings.

Promoting retrofitting for historic buildings at the local level follows the same principle as national laws and policies. Efforts to incentivize retrofitting and reusing historic buildings are supported so long as they do not substantially impact the aesthetics of the individual buildings and historic centers.

The provisions included in the Law of the Lazio Region, n. 7/2017, provide an illustrative example.

Provisions for urban regeneration and building rehabilitation encourage the rationalization of the existing building heritage, promoting the redevelopment of degraded urban areas and disorganized or incomplete building fabrics, and redeveloping residential and nonresidential buildings through demolition and reconstruction, seismic adaptation, and energy efficiency improvements.[54]

Article 5 of the law, in particular, regulates interventions for seismic improvement and energy efficiency of buildings. It provides that, to incentivize interventions for seismic improvement and energy efficiency of existing buildings, municipalities may include in their current general urban planning tools the possibility of carrying out expansion interventions of 20% of the existing volume or usable area of residential buildings, for a maximum increase of 70 square meters of surface area.[55]

The expansions must be carried out in compliance with the provisions of state and regional regulations regarding energy-environmental sustainability and green building, and, in particular, with Legislative Decree 192/2005.[56]

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[53] Some of the most recent regulations and policies adopted by regions and municipalities include: the Regional Program for Energy and Seismic Retrofitting of Public Buildings - 2022, for the Emilia Romagna Region (which provides financial incentives and tax deductions for counties and municipalities that undertake measures to improve energy efficiency and seismic retrofitting, see, e.g., Maria Giovanna Bosco & Elisa Valeriani, *Energy Retrofitting of Firms After a Natural Disaster: A* 'Build Back Better' *Strategy*, 179 Energy Pol'y 113634 (2023), https://perma.cc/9HXA-6VZS; the Call for Energy Efficiency and Renewable Sources in Public Buildings , for the Piedmont Region (which promotes investments to reduce consumption and related pollutant and climate-altering emissions of buildings through the implementation of energy efficiency projects and the promotion of the use of renewable energies, Press Release, Eur. Comm'n, First Italian Renewable Energy Community Created by the End of 2020 (Mar. 10, 2021), https://perma.cc/63DF-L9K4; and various regional financing initiatives from the Tuscany Region to support energy efficiency projects as identified in the Program FESR 2021-2027, *Regional Programme Toscana ERDF 2021-2027*, Eur. Comm'n, https://perma.cc/7LTK-XKL2.

[54] Legge num. 7 del 18 luglio 2017, Disposizioni per la rigenerazione urbana e per il recupero edilizio, n. 7, https://perma.cc/8AJ7-94U4.

[55] Id. art. 5.

[56] Id.

With regard to historic buildings, this means that such expansion can be done so long as it does not substantially impact the aesthetic of historic buildings of particular artistic and cultural value.

The law further specifies that the above-mentioned provisions do not apply to areas identified as historic urban settlements, as determined by the National Landscape Territorial Plan.[57] Historic urban settlements are defined as settlements that include ancient urban structures and centers that originated in contemporary cities and centers built in the 20th century. These include the building heritage, the road network, undeveloped spaces, villas, parks, and historic peri-urban gardens.[58]

E. European Framework

1. Energy Performance of Building Directive

On April 12, 2024, the revised Energy Performance of Building Directive (2024/1275/EU),[59] which replaced the directive previously in force (2018/844/EC),[60] was officially adopted.[61]

This legislation sets the framework for Member States to reduce emissions and energy use in buildings across the EU to achieve a zero-emission building stock by 2050, taking into account the outdoor climatic conditions, the local conditions, the requirements for indoor environmental quality, and cost-effectiveness.[62]

The revised directive sets ambitious targets to reduce the overall energy use of buildings across the EU, taking into account national specificities. Recognizing the differences across EU countries in factors such as the existing building stock, geography, and climate, the directive allows governments to decide on the renovation measures best suited to their specific national context.[63]

The directive indicates a few tools to develop. Namely, it provides that each Member State must establish a national building renovation plan to ensure the renovation of the national stock of residential and nonresidential buildings, both public and private, into a highly

[57] Ministero per i Beni e le Attività Culturali e per il Turismo, *Piano Territoriale Paesaggistico Lazio: Relazione*, (2021), https://perma.cc/57QX-4HN8.

[58] *PTPR Lazio NTA Articolo 44 Insediamenti urbani storici e relativa fascia di rispetto vigente (2021)*, carteinregola, https://perma.cc/5D2C-2DN8.

[59] Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the Energy Performance of Buildings, 2024 O.J. (L 1), https://perma.cc/2LQ4-GJTK.

[60] Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the Energy Performance of Buildings and Directive 2012/27/EU on Energy Efficiency, 2018 O.J. (L 156), https://perma.cc/2XSE-DK3J. The first directive was Directive 2010/31/EU of the European Parliament and the Council of 19 May 2010 on the Energy Performance of Buildings, 2010 O.J. (L 153), https://perma.cc/8CUV-R4AG, which has been substantially amended several times.

[61] Press Release, Eur. Comm'n, Energy Performance of Buildings Directive Adopted to Bring Down Energy Bills and Reduce Emissions (Apr. 12, 2024), https://perma.cc/ZAL8-AHFA.

[62] Directive (EU) 2024/1275 art. 1.

[63] Id. intro. para. 12.

energy-efficient and decarbonized building stock by 2050, to transform existing buildings into zero-emission buildings.[64]

It further requires that Member States take the necessary measures to ensure that minimum energy performance requirements for buildings or building units are set with a view to at least achieving cost-optimal levels,[65] and it sets minimum standards for calculating cost-optimal levels of minimum energy performance requirements.[66]

With particular regard to existing buildings, including historic buildings, the directive mandates that Member States take necessary steps to ensure that when buildings undergo major renovations, the energy performance of the entire building or the renovated part is upgraded to meet minimum energy performance standards. Furthermore, it requires Member States to ensure that when a building element that is part of the building envelope and significantly impacts its energy performance is retrofitted or replaced, the energy performance of that element meets minimum energy performance standards as long as it is technically, functionally, and economically feasible.[67]

2. Projects Funded Through Horizon 2020

Horizon 2020 (H2020) was the EU research and innovation funding program from 2014 to 2020, with a nearly €80 billion (about US$87 billion) budget.[68] Among the initiatives it supported were research and innovation in energy-efficient retrofitting of building projects. One of the most relevant is the H2020 RIBuild project, which specifically focused on retrofitting historic buildings by implementing internal thermal insulation.[69]

This is performed by investigating how and under what conditions internal thermal insulation can be employed without posing a risk to the façade due to thermal stress. Research activities include on-site case studies, simulations, and laboratory measurements of materials. The project produced guidelines for authorities, building owners, and professional practitioners within the building sector, such as consulting engineers and contractors.[70]

3. Efficient ENergy for EU Cultural Heritage

Another project was Efficient ENergy for EU Cultural Heritage (3ENCULT),[71] a European initiative to improve energy efficiency of historic buildings while preserving their cultural heritage value. The project ran from October 2010 to September 2014.[72]

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[64] Id. art. 3, para 1.

[65] Id. art. 5, para 1.

[66] Id. art. 6, para. 1.

[67] Id. art. 8, paras. 1, 2.

[68] *Horizon 2020*, Eur. Comm'n, https://perma.cc/7BAX-UEHF.

[69] *CORDIS - EU Research Results, Robust Internal Thermal Insulation of Historic Buildings*, Eur. Comm'n (Aug. 18, 2022), https://perma.cc/D6NG-QVUP.

[70] *Know Your Building*, RIBuild, https://perma.cc/9PGV-RZLX.

[71] *CORDIS - EU Research Results, Final Report Summary - 3ENCULT (Efficient ENergy for EU Cultural Heritage)*, Eur. Comm'n (Feb. 24, 2015), https://perma.cc/Y9AX-P25M.

[72] Id.

The project recognized that there is no "one-fits-all"-solution, as each historic building is too unique. The project instead proposed a "pool" of solutions and guidance on how to find the right one for the specific building. 3ENCULT developed various technological proposals, such as advanced insulation materials and energy-efficient windows, that are suitable for historic buildings.[73]

It also produced guidelines and tools for local governments as well as individual stakeholders, including architects, engineers, and policymakers, to support the energy-efficient renovation of historic buildings.[74]

III. Laws, Regulations, and Policies to Promote the Adaptation of Historic Buildings or Historic Districts to Respond to Climate Change

Italy has been proactive in developing measures to address the country's adaptation to climate change. However, the lack of detailed provisions on adapting historic buildings and historic districts, especially in national laws and regulations, suggests that the country is still in the early stages of developing a comprehensive approach.

A. National Laws

There do not appear to be any specific laws directly addressing the adaptation of historic buildings or districts to climate change threats. Conversely, relevant initiatives are found in national plans and policies.

B. National Plans, Guidelines, and Best Practices

1. National Adaptation Plan

In December 2023,[75] Italy approved its National Adaptation Plan (*Piano Nazionale di Adattamento ai Cambiamenti Climatici*, PNACC).[76] While not specifically focused on historic buildings, this plan provides a framework for addressing climate impacts across various sectors, including cultural heritage.

The plan includes a concise analysis of the most relevant aspects of climate change impacts and sectoral vulnerabilities that characterize the Italian territory.[77] The main objective of the PNACC is to provide a national framework for the implementation of actions aimed at minimizing the risks arising from climate change and improving the adaptive capacity of

[73] Id.

[74] Id.

[75] *Clima: Approvato il Piano nazionale di adattamento ai cambiamenti climatici*, Ministro dell'Ambiente e della Sicurezza Energetica, https://perma.cc/LY5L-P2NU.

[76] Ministero dell'Ambiente e della Sicurezza Energetica, *Piano Nazionale di Adattamento ai Cambiamenti Climatici*, https://perma.cc/DX4N-RWMV; *Clima: Approvato il Piano nazionale di adattamento ai cambiamenti climatici*, Ministero dell'Ambiente e della Sicurezza Energetica, supra note 75.

[77] Ministero dell'Ambiente e della Sicurezza Energetica, *Piano Nazionale di Adattamento ai Cambiamenti Climatici*, at 40.

socio-economic and natural systems as well as taking advantage of any opportunities that may arise from new climatic conditions.[78]

The PNACC divides adaptation measures into 18 sectors, including one specifically for cultural heritage.[79] The assessment of vulnerability and risks to which cultural heritage is subjected, the study of the different materials that constitute the assets spread across the territory, and the forms of degradation that affect them constitute the primary theme in developing strategies for the protection, control, and prevention of damage for the conservation of the cultural heritage itself.[80]

From the analysis, water is identified as a predominant factor of direct and indirect degradation of the materials constituting cultural assets. Extreme events, increasingly frequent, such as intense precipitation leading to floods and storms, are responsible for structural damage to historic buildings.[81]

According to the PNACC, Mediterranean regions, and especially the major islands, which are particularly rich in monuments and archaeological sites made of stone material, will continue to experience a high level of risk from thermal stress, with values sometimes exceeding 200 events per year by the end of the century.[82]

Another important factor of risk for cultural heritage is represented by landslide hazards. An estimate has been made that cultural assets at risk of landslides in Italy amount to 17.9% of the total cultural assets, and for the high and very-high hazard classes, the exposed cultural assets amount to 5.9% of all cultural assets.[83]

The cultural heritage located on the Italian coasts is and will be subject to an increase in the incidence of extreme events, sea level rise, and coastal erosion phenomena, with the probable loss of archaeological sites and coastal monument complexes.[84]

To counter the risks identified, the plan devises different strategies.[85] It classifies adaptation actions into the following two categories:

- Systematic actions—The PNACC aims to build an organizational framework that defines a structure and governance criteria and develops knowledge. It identifies a reference framework within which the planning and implementation of regional and local adaptation actions can develop.[86]

[78] Id. at 85.

[79] Id. at 78.

[80] Id.

[81] Id.

[82] Id.

[83] Id. at 79.

[84] Id.

[85] Id. at 85.

[86] Id. at 86.

- Guidelines—The second level of intervention for the PNACC is aimed at exercising a "guidance function" by identifying a reference framework within which the planning and implementation of regional and local adaptation actions can develop.[87]

2. Extraordinary National Plan for the Monitoring and Conservation of Historic Real Estate

The Extraordinary National Plan for the Monitoring and Conservation of Historic Real Estate was adopted by the Ministry of Cultural Heritage in 2022, under Decree Law 28 December 2018, n. 19.[88]

The plan defines the criteria for identifying the assets to be monitored and the consequent conservation interventions as well as the necessary priorities for controls, based on specific territorial hazard indices and the individual vulnerability of the buildings. It also establishes the instrumental control systems and methods for implementing security, conservation, and protection measures.[89]

The plan sets measurable objectives divided into phases.[90] The objective is to activate integrated monitoring systems—both remote and on-site—for monuments, archaeological sites, and cultural complexes in conditions of high vulnerability. The plan also seeks to provide supporting tools for monitoring and managing at-risk immovable cultural heritage, with particular attention to planning safeguarding, conservation, and preventive maintenance interventions.

The priority work phases are four, identified according to the principle of priority.

- Defining criteria for identifying the assets to be monitored and the subsequent conservation interventions.
- Identification of the necessary priorities for controls based on specific territorial hazard levels and the vulnerability of the assets.
- Identification of the instrumental control systems to be used.
- Determination of the methods for implementing security, conservation, and protection measures.

One of the most relevant aspects indicated in the plan is the development of a methodology for monitoring the impact of pollution, climate, and its changes, including extreme events, with a consequent assessment of the damage. Among the various degradation phenomena related to climate change, the following are analyzed:

- Biodegradation and fracturing due to salt crystallization resulting from the impact of climatic variables such as precipitation, temperature, solar radiation, and relative humidity.

[87] Id. at 88.

[88] Decree Law 28 December 2018, n. 19, art. 14, para. 4, https://perma.cc/5RXH-JXQB.

[89] Id. art. 14, para. 4.

[90] See Alessandro Bonazza, *Beni culturali e clima: ecco le priorità per il ministero della Cultura*, Agenda Digitale (Jan. 2023), https://perma.cc/K83T-644B.

- The impact that extreme climatic events can have on historic assets such as structural degradation; hydrogeological risk, including landslides following intense precipitation phenomena; heatwaves in urban areas; and fire risk in remote areas related to prolonged dry periods.
- Structural degradation from floods.[91]

3. Program for Adaptation to Climate Change in Urban Areas

In August 2021, Italy launched the first experimental program of interventions for adaptation to climate change in urban areas,[92] aimed at increasing the resilience of urban centers to risks generated by climate change concerning heat waves, extreme rainfall, and drought. In particular, the program has allocated about €80 million for implementing green and blue infrastructures in urban areas and grey adaptation measures.[93]

The program consists of a funding system dedicated to municipalities with a population of 60,000 inhabitants or more.[94]

The interventions eligible for funding include, in addition to creating green areas and climate-friendly buildings, vertical forests, water collection systems, and interventions aimed at recycling and reusing wastewater.[95]

Other interventions subject to funding include the creation, expansion, or renovation in urban areas of pedestrian zones, parking lots, squares, roadside edges, and pathways, with the removal of existing pavement and the restoration of soil permeability as part of urban regeneration.[96]

Finally, the program provides funding for educational tools to raise public awareness.[97]

Although the project does not explicitly refer to adaptation to protect historic centers, its financing provisions allow for adaptation in urban centers that can comprise historical sites.

4. MASTER ADAPT Project

Lastly, the development of the MASTER ADAPT Project is worth mentioning. The project aims to identify and test innovative tools of multi-level governance to support regions and local authorities in defining and developing adaptation strategies and policies.[98]

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[91] Id.

[92] Decreto Direttoriale 117 del 15-04-2021, https://perma.cc/HHR6-BEEV.

[93] Id. art. 1.

[94] Id. attachment 1, https://perma.cc/CD58-DHBE.

[95] Id. attachment 1, pt. I.

[96] Id. attachment 1, pt. II.

[97] Id. attachment 1, pt. III.

[98] *Strumenti*, Master ADAPT, https://perma.cc/BEB6-9GAN.

MASTER ADAPT aims to provide a common methodology to support regions in identifying the principal vulnerabilities and priorities, particularly in drawing up guidelines for the governance of adaptation in urban areas. The project started in October 2016 and ended in June 2020, leading to the creation of multiple plans and guidelines to guarantee the constant monitoring and improvement of climate change mitigation efforts.[99]

C. Policies and Incentives

1. Tax Relief for Populations That Are Victims of Flooding

The government adopted urgent measures to support the Emilia Romagna, Marche, and Tuscany populations, which were affected by flooding in the spring of 2023, with the Decree-Law June 1, 2023, n. 61 (Decree "*Alluvione*").[100]

The *Alluvione* decree provides for suspending tax obligations and payments due between May 1, 2023, and August 31, 2023. It also puts on hold the obligations and payments of social security and welfare contributions and premiums for compulsory insurance.[101]

In terms of tax benefits, the *Alluvione* decree also extends the possibility of taking advantage of the 110% Superbonus for expenses incurred until December 31, 2023, for interventions carried out on properties located in flood-affected areas.

The decree also stipulates that, in order to finance and initiate interventions for the protection and reconstruction of cultural heritage, both public and private, including museums damaged as a result of the flooding events starting from May 1, 2023, the cost of admission tickets from June 15, 2023, to September 15, 2023, is increased by €1.[102]

Furthermore, it establishes a special fund dedicated to interventions for protecting and reconstructing cultural heritage, both public and private, including museums affected by the flood.[103]

2. *Sisma bonus*

The Sisma bonus offers tax deductions for implementing anti-seismic measures for buildings, including historic structures. Deductions can be as high as 85% of the costs.[104] Given the increased risk of earthquakes in some areas, this incentive helps improve the structural resilience of historic buildings.

3. Façade Bonus

The Façade Bonus (*Bonus Facciate*) provides a 90% tax deduction for the restoration and renovation of building facades, which can include climate adaptation measures such as

[99] Id.

[100] Decree Law June 1, 2023, n. 61, G.U. July 31, 2023, n. 177, https://perma.cc/T3BZ-DDZJ.

[101] Id. art. 1.

[102] Id. art. 14.

[103] Id.

[104] *Sisma bonus: Che cos'è*, Agenzia delle Entrate, https://perma.cc/9B2B-ZAJX.

addressing water infiltration issues. Historic buildings are eligible if the work preserves their architectural integrity.[105]

D. Regional and Local Initiatives

Some of the most critical initiatives to protect cultural heritage and historic centers from the damages of events connected to climate change have been developed on a regional and local level. Below are some of the most notable examples.

1. Veneto Region and Municipality of Venice

The Veneto Region has implemented several initiatives to analyze the potential effects of climate change on its cultural heritage, monitor its conservation, and intervene to protect historic centers like Venice and its lagoon.

In July 2017, the region launched the LIFE Veneto ADAPT Project.[106] The project aims to develop and test a coherent approach to enhancing the regional capacity to respond to the impact of climate change, with a focus on hydro-geological risk, through a networking initiative developed across the territories of the cities of Venice, Padua, Vicenza, Treviso, Cadoneghe, Curtarolo, and Vigodarzere.

The project's objectives include developing climate adaptation plans for cities in the Veneto region, creating a network of cities to collaborate toward climate adaptation, and enhancing regional capacity to respond to climate change impacts.[107]

The Veneto region is working toward developing a Regional Strategy for Adaptation to Climate Change. A steering committee was established by decree of the Regional Council DGR no. 771 of June 27, 2023, for its implementation.[108] The document will outline strategic priorities to effectively integrate adaptation policies into regional and local planning, adopting a multi-sectoral and multi-level approach to involve the productive world, research, and civil society in joint management of climate impacts. The strategy that will be developed will be based on the results of various projects and studies.[109]

Among the practical measures adopted to protect its territory from the threat of climate change, Veneto implemented the Experimental Electromechanical Module (*Modulo elettromeccanico sperimentale*, MOSE).[110] MOSE consists of four barriers comprising 78 independently movable gates that can temporarily separate the lagoon from the sea and defend Venice from high tides and sea level rise. MOSE can protect Venice and the lagoon

[105] *Bonus Facciate: Che cos'è*, Agenzia delle Entrate, https://perma.cc/NL9M-HYCM.

[106] *Central Veneto Cities netWorking for ADAPTation to Climate Change in a Multi-Level Regional Perspective*, Veneto ADAPT, https://perma.cc/39RM-F2K5.

[107] Specific Objectives, Veneto ADAPT, https://perma.cc/7DAT-LNRL.

[108] Deliberazione Della Giunta Regionale n. 771 del 27 giugno 2023, https://perma.cc/A9J6-FVGT.

[109] *Cabina di Regia Regionale di Coordinamento per l'Adattamento ai Cambiamenti Climatici*, Regione del Veneto (May 16, 2024), https://perma.cc/2QCS-3L4P.

[110] *MOSE*, Mose Venezia, https://perma.cc/75S8-TEQL.

from tides up to three meters high and a sea level rise of up to 60 centimeters over the next 100 years.[111]

2. Region of Tuscany and Municipality of Florence

Florence has adopted different initiatives over the years to protect its urban center and cultural heritage, among which is the Management Plan for the Historic Center of Florence. This is a planning tool that is updated every eight years and aims to promote projects for the protection and enhancement of cultural heritage.[112]

The plan identifies the leading environmental risk factors for conserving artistic heritage and historic districts. In particular, the plan mentions the risk of flooding from the Arno River, the risk of hydro-geological instability, and the risk of fires. The document specifies that each of these risks is managed by programmatic plans and documents and ensured through synergies between local authorities and civil society.[113]

a. Risk of Flooding

With particular regard to the risk of flooding from the Arno River, Florence has enacted a memorandum of understanding (MOU) regarding the alert system for protecting Florence's cultural assets during an Arno River flood.[114]

The MOU identifies three distinct phases: an alert phase, a pre-alarm phase, and an alarm phase.

The alert phase involves the formal activation of a regional alert. Activities associated with this phase include strengthening constant monitoring of the event by operational rooms and starting preparatory activities within structures containing cultural assets, including assigning personnel to direct intervention on the assets.[115]

The pre-alarm phase for cultural assets consists of a preventive state preceding practical interventions from the Civil Defense. Specifically, this phase requires constant monitoring of the climatic phenomenon and the river's water level.[116]

The alarm phase follows. It involves adopting concrete actions for assets exposed to the risk of flooding. In particular, it prescribes that local authorities, in this phase, adopt the measures outlined in their internal emergency plans. Such actions include moving or relocating cultural assets, adopting precautionary measures to secure the assets, and placing assets in temporary storage.[117]

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[111] *MOSE: La Difesa di Venezia e della Laguna dalle Acque Alte*, Mose Venezia, https://perma.cc/UZ9T-2EYA.

[112] *Il Terzo Piano di Gestione e i Piani precedenti*, Firenzi Patrimonio Mondiale, https://perma.cc/PU8E-L2TN.

[113] Id. at 61-63.

[114] *Memorandum of Understanding (MOU) Regarding the Alert System Aimed at Securing Florentine Cultural Assets in Case of Flooding of the Arno River*, cittametropolitana (Nov. 12, 2020), https://perma.cc/H8GK-CEJB.

[115] Id. art. 4.

[116] Id. art. 5.

[117] Id. arts. 6, 7.

b. Risk of Hydro-Geological Instability

To counter the risks of hydro-geological instability, Florence has implemented a plan called the Hydro-Geological Planning Framework (*Piano di bacino stralcio Assetto Idrogeologico*, PAI).[118]

The PAI provides a constantly updated study of hazards to ensure sustainable levels of risk management from landslides, prioritizing the protection of human life and environmental, cultural, infrastructural, and residential heritage.[119]

In particular, the plan states that regions and cities should avoid new construction projects that expose people to risks in areas with very high hydro-geological hazards. New public works and works of public interest related to essential services should also be avoided. Instead, it allows the construction of new infrastructure, expansion of existing infrastructure, and new water containment facilities such as dams, provided they comply with risk management requirements.[120]

Regarding the protection of cultural assets, the plan specifies that actions aimed at preserving the natural morpho-dynamic evolution of landforms, landscapes, and hydrographic networks should be prioritized, provided that such morpho-dynamics do not pose a risk to the existing environmental, cultural, residential, infrastructural, and productive heritage.[121]

c. Risk of Fires

To mitigate the risk of fires, Florence adopted the plan developed by the Tuscany Region for the prevention of wildfire.[122]

The plan aims to ensure the protection of the forest heritage in Tuscany. It outlines five different strategic responses to the risk of wildfires: prevention,[123] planning,[124] forecasting,[125] specialized training of public forces,[126] and safeguarding and restoration.[127]

Forecasting is understood as the identification and mapping of the risk of wildfires in Tuscany, and the safeguarding measures include the cutting of burned or decaying vegetation material; construction of slope consolidation works, i.e., arrangement of trunks and branches of burned material to create palisades along contour lines, and construction and restoration of steps or

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[118] *Piano di Bacino Stralcio Assetto Idrogeologico del Distretto Idrografico Dell'Appennino Settentrionale per la Gestione del Rischio da Dissesti di Natura Geomorfologica (PAI Dissesti)*, Autorita' di Bacino Distrettuale Dell'Appenino Settentrionale (Mar. 2024), https://perma.cc/3QDN-JKFZ.

[119] Id. art. 1, para. 3.

[120] Id. art. 8, paras. (a)-(c).

[121] Id. art. 8, para. (d).

[122] Firenzi Patrimonio Mondiale, supra note 112.

[123] Id. at 25-51.

[124] Id. at 52-57.

[125] Id. at 58-71.

[126] Id. at 72-78.

[127] Id. at 79-83.

guard ditches or walls; construction of hydraulic forestry arrangements; and restoration and adaptation of the forest road network.

Restoration works consist of interventions that are not urgent but are useful for promoting the reconstitution of the forest. In planning these works, one of the aspects to be considered is the enhancement of the landscape and environmental characteristics of the area's natural heritage.[128]

E. International Framework

1. UNESCO World Heritage Guidelines

As a member of UNESCO, Italy adheres to international guidelines for conserving World Heritage Sites, including provisions for climate change adaptation.[129]

UNESCO has been at the forefront of exploring and managing the impacts of climate change on World Heritage.[130] In 2006, under the guidance of the World Heritage Committee, it prepared a report on predicting and managing the effects of climate change on World Heritage,[131] followed by the compilation *Case Studies on Climate Change and World Heritage*,[132] and a policy document on the effects of climate change on World Heritage properties.[133] In May 2014, it published a practical guide to climate change adaptation for natural World Heritage sites,[134] and it continues to build the capacity of site managers to deal with climate change.[135]

2. European Union Policies

Italy benefits from EU funding and frameworks for climate change adaptation and cultural heritage preservation. The EU Strategy on Adaptation to Climate Change provides resources and guidance for member states to enhance climate resilience in various sectors, including cultural heritage,[136] as does the EU Green Deal.[137]

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[128] Id. at 81.

[129] For a broad analysis of the topic, see Kathryn Lafrenz Samuels & Ellen J. Platts, *Global Climate Change and UNESCO World Heritage*, 29(4) Int'l J. Cultural Prop. 409-32 (2022), https://perma.cc/L65Z-2QT8.

[130] *Policy Document on Climate Action for World Heritage*, UNESCO, https://perma.cc/2RX4-G5C6.

[131] *Climate Change and World Heritage Series No. 22 – May 2007*, UNESCO, https://perma.cc/SR32-S5HX.

[132] UNESCO, *Case Studies on Climate Change and World Heritage* (2009), https://perma.cc/ETG3-TMSY.

[133] UNESCO, *Development of Policy Document on the Impacts of Climate Change on World Heritage Properties (2006)*, https://perma.cc/BR74-38DY.

[134] UNESCO, *Climate Change Adaptation for Natural World Heritage Sites – A Practical Guide, Series No. 37 – May 2014*, https://perma.cc/DME9-JXDA.

[135] All of these publications are available from UNESCO at https://perma.cc/M4ZB-UYG6.

[136] *European Green Deal*, Eur. Council (June 17, 2024), https://perma.cc/J649-3CA4.

[137] Eur. Comm'n, *Forging a Climate-Resilient Europe - the New EU Strategy on Adaptation to Climate Change*, https://perma.cc/U4SF-G96Z.

Spain

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SUMMARY No holistic policy or regulatory undertakings to respond to the effects of climate change concerning historic buildings in Spain was found. However, there exist several legislative and regulatory initiatives addressing the issue of energy consumption in buildings, which encompass historic buildings. Legislation from 1985 protects the Spanish Historic Heritage, which comprehensibly safeguards historic buildings. The 2006 Technical Building Code contemplates provisions on energy efficiency that apply to historic buildings' remodeling or retrofitting. Legislation from 2007 addresses the Certification of Energy Efficiency of Newly Constructed Buildings, which most likely applies to additions or modification works to existing historic buildings. Regional initiatives to tackle energy and climate change challenges at the regional level also exist in Spain. Finally, the Spanish cultural heritage expert community has produced guidelines aimed at confronting the many impacts on historic buildings caused by energy arrangements and climate change.

I. Introduction

Based on European Union legislation, Spain has implemented a series of measures aimed at limiting energy consumption and protecting historic buildings and areas from the impact of climate change.[1]

In this context, several initiatives have been implemented also at the regional level, including, for example, the "Energy Certification of Buildings" program administered by the Government of Castile and Leon[2] and the Institute for Energy Diversification and Savings.[3] The certification program allows business entities to develop renewable energy, energy efficiency, and sustainability activities with a view to obtaining high ratings for their buildings.[4]

II. Laws and Regulations concerning Historic Buildings

Spain has implemented a variegated framework of laws, regulations, and policies to encourage the reuse or retrofitting of historic buildings while preserving their cultural and historical relevance.

[1] Agencia Insular de Energía de Tenerife, *La Directiva Europea 2002/91 y su Transposición a la Legislación Española*, https://perma.cc/98M5-TNUP.

[2] *Consejería de Industria, Comercio y Empleo*, Gobierno de Castilla y León, https://perma.cc/4JPL-MUYZ.

[3] *Home page*, Instituto para la Diversificación y Ahorro de Energía (IDAE), https://perma.cc/3K8M-22RB.

[4] *La Directiva Europea 2002/91 y su Transposición a la Legislación Española*, supra note 1.

A. Law No. 16 of 1985, on the Spanish Historic Heritage

Law No. 16 of 1985 provides the general framework for the protection of the Spanish historical heritage,[5] for its transmission to future generations.[6] The Spanish historical heritage includes historic buildings and movable objects of artistic, historical, paleontological, archaeological, ethnographic, scientific, or technical interest.[7] The Spanish historical heritage is administered by the Historical Heritage Council, [8] which must prepare and approve the national information plans on the Spanish historical heritage.[9]

Law No. 16 affords solid legal protection for historic buildings, including the provision that a building declared to be of cultural interest is inseparable from its surroundings, and may not be moved or removed, unless due to force majeure or social interest.[10] However, Law No. 16 of 1985 does not contain express provisions addressing the use of energy or climate change impacts on historical buildings.

B. Royal Decree No. 314 of 2006, Technical Building Code

The Technical Building Code (CTE, in Spanish) [11] sets forth the fundamental quality requirements to be met by buildings so as to satisfy basic safety and habitability requirements,[12] and to comply with the Kyoto Protocol on Climate Change, namely

- limitation of energy demand,
- performance of thermal installations,
- energy efficiency of lighting installations,
- minimum solar contribution of domestic hot water, and
- minimum photovoltaic contribution of electrical energy.[13]

These basic requirements must be met in the design, construction, maintenance, conservation, and use of buildings and their facilities, as well as in interventions in existing buildings.[14]

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[5] Ley 16/1985, de 25 de junio, del Patrimonio Histórico Español [Law No. 16], https://perma.cc/BS84-A26L.

[6] Law No. 16 art. 1(1).

[7] Id. art. 1(2).

[8] Id.

[9] Id. art. 35(1) and (2).

[10] Id. art. 18.

[11] Real Decreto 314/2006, de 17 de marzo, Código Técnico de la Edificación CTE–(DB-HE) [Decree No. 314], https://perma.cc/8GZW-CR9Y.

[12] Decree No. 314 art. 1(1).

[13] *La Directiva Europea 2002/91 sobre Eficiencia Energética en Edificios y su Transposición a la Legislación Española*, https://perma.cc/ZV3X-DT9G.

[14] Decree No. 314 art. 1(4).

This decree does not specifically refer to historic buildings, but it expressly states that it applies to public and private buildings whose projects require the corresponding legally-required license or authorization.[15]

In interventions in existing buildings, the pre-existing conditions related to the basic requirements may not be reduced, when such conditions are less demanding than those established in the basic documents of the CTE.[16]

The CTE is organized into two parts: (a) the first contains the general provisions and conditions of application of the CTE and the basic requirements that buildings must meet; and (b) the second is made up of the so-called Basic Documents (BD) for compliance with the basic requirements of the CTE.[17]

1. Basic Energy Saving Requirements

The objective of the basic requirement "energy saving" is to achieve a rational use of the energy needed for the use of buildings, reducing their consumption to sustainable limits and also ensuring that part of this consumption comes from renewable energy sources, as a consequence of the characteristics of their design, construction, use and maintenance.[18] This basic requirement sets forth the minimum quality levels concerning the requirement of energy saving,[19] which, as stated, also applies to historic buildings.

2. Basic Health Requirements

The objective of the basic requirement "hygiene, health and environmental protection" is to reduce, among others, the risk of buildings deteriorating and damaging the environment in their immediate surroundings, as a result of the characteristics of their design, construction, use, and maintenance.[20]

3. Basic Energy Consumption Requirement

This requirement seeks to limit the energy consumption of buildings on the climatic zone of their location, the use of the building and, in the case of existing buildings, the scope of the intervention, aiming at an increased use of energy from renewable sources.[21]

4. Basic Conditions for Thermal Installations Requirement

Per this requirement, buildings must have a thermal imprint that achieves thermal comfort based on the climatic zone of their location, per the different seasons of the year.[22] The overall

[15] Id. art. 2(1).

[16] Id. art. 2(3), para. 5.

[17] Id. art. 3(1)(a).

[18] Id. art. 15(1).

[19] Id. art. 15(3).

[20] Id. art. 13.1(1).

[21] Id. art. 15.1.

[22] Id. art. 15.2, para. 1.

purpose is to avoid imbalances in the thermal quality of the different habitable spaces, so that the building's interior partitions limit the heat transfer between units of use, and between these and common areas of the building.[23]

5. Basic Conditions of Lighting Installations Requirement

Buildings must have lighting installations that are appropriate to the needs of their users and that are also energy efficient, with a control system that allows the adjustment of their operation to actual occupancy of the respective areas, as well as the optimization of the use of natural light.[24]

6. Basic Minimum Generation of Electrical Energy from Renewable Sources Requirement

Buildings must have generating electricity systems that draw from renewable sources for their own use or supply to the grid.[25]

C. Royal Decree No. 47 of 2007 on the Basic Procedure for the Certification of Energy Efficiency of Newly Constructed Buildings

The Decree No. 47 of 2007[26] contains the procedure for determining the methodology for the calculation of energy efficiency rating by newly constructed, modified, renovated, or rehabilitated buildings.[27] It also establishes the technical and administrative conditions for the certification of energy efficiency of projects and completed buildings and creates the energy efficiency label.[28]

In particular, the Basic Procedure applies to new buildings,[29] and to modifications, reforms or rehabilitations of existing buildings, with a useful surface area greater than 1,000 square meters where more than 25% of the total of its enclosures are renovated.[30] The following are excluded:

- buildings that due to their characteristics of use must remain open;[31]
- buildings and monuments that are officially protected, when compliance with the applicable environmental, architectural, or historical requirements could unacceptably alter their character or appearance;[32]

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[23] Id. art. 15.2, para. 2.

[24] Id. art. 15.4.

[25] Id. art. 15.6, para. 2.

[26] Real Decreto 47/2007, de 19 de enero, por el que se Aprueba el Procedimiento Básico para la Certificación de Eficiencia Energética de Edificios de Nueva Construcción (Decree No. 47], https://perma.cc/GH5J-CPCF.

[27] Decree No. 47 art. 1(1).

[28] Id.

[29] Id. art. 2(1)(a).

[30] Id. art. 2(1)(b).

[31] Id. art. 2(2)(a).

[32] Id. art. 2(2)(b).

- buildings used as places of worship and for religious activities;[33]
- temporary constructions with an expected period of use equal to or less than two years;[34]
- industrial and agricultural buildings, in the part intended for workshops, non-residential industrial and agricultural processes;[35]
- detached buildings with a total usable area of less than 50 square meters,[36] and
- buildings of technical simplicity and little construction entity that are not residential or public in nature, whether temporary or permanent, are developed on a single floor, and do not affect people's safety.[37]

The Basic Procedure must provide information to buyers and users on the energy characteristics of buildings, through the issuance of an energy efficiency certificate.[38]

Decree No. 47 contains several key definitions, as follow:

- Energy efficiency of a building: is the energy consumption estimated as necessary to meet the energy demand of the building under normal operating and occupancy conditions.[39]
- Energy efficiency rating of a building: is the expression of the energy efficiency of a building expressed with energy indicators using the energy efficiency label.[40]
- Energy efficiency certification of the project: is the process by which the conformity of the energy efficiency rating obtained by the project is verified, and which leads to the issuance of the energy efficiency certificate of the project.[41]
- Energy efficiency label: is the label that indicates the level of energy efficiency rating obtained by a building project or by the finished building.[42]

The energy efficiency certificate provides information exclusively on the energy efficiency of a building and is not proof of compliance with any other requirement for the building.[43] Upon obtaining the energy efficiency certificate, interested parties may obtain the energy efficiency label,[44] which must be included in all offers, promotions, and advertising aimed at the sale or

[33] Id. art. 2(2)(c).

[34] Id. art. 2(2)(d).

[35] Id. art. 2(2)(e).

[36] Id. art. 2(2)(f).

[37] Id. art. 2(2)(g).

[38] Id. art. 1(2).

[39] Id. art. 1(3)(a).

[40] Id. art. 1(3)(b).

[41] Id. art. 1(3)(c).

[42] Id. art. 1(3)(g).

[43] Id. art. 5(2).

[44] Id. art. 11(1).

rental of the respective finished building,[45] and must be clearly displayed in the respective building.[46]

D. Royal Decree No. 1027 of 2007, Regulation of Thermal Installations in Buildings

The Regulation of Thermal Installations in Buildings[47] establishes the energy efficiency and safety requirements that thermal installations in buildings must meet, during their design, execution, maintenance, and use.[48] Thermal installations must be designed, calculated, executed, maintained, and used in such a way as to reduce the conventional energy consumption of the thermal installations and, consequently, the emissions of greenhouse gases and other atmospheric pollutants, through the use of energy-efficient systems allowing energy recovery, and the use of renewable energies and residual energies.[49]

III. Guidelines and Best Practices for Improving Energy Efficiency in Historic Buildings

No particular incentives exist in Spain for particularly retrofitting historic buildings. However, several measures contemplated in existing guidelines and best practices in the Spanish construction sector can apply to historic buildings.

In 2023, ICOMOS-Spain, which is the local branch of an extensive international network of heritage experts, published its "Guidelines for the Installation of Renewable Energy-Related Infrastructures and Equipment and their Potential Impacts on Cultural Heritage,"[50] with the purpose of assisting

> legislators, decision makers, government department technical staff, facility developers and project planners advance towards the much sought after compatibility between renewable energy and the conservation and protection of our [Spanish] cultural heritage values, using the Heritage Impact Assessment Methodology (HIA), published in mid-2022 by UNESCO and its three advisory bodies, ICOMOS, IUCN and ICCROM.[51]

The Guidelines contain a reference to "Solar Panel Installations and their Impact on Historic Buildings and Ensembles." Per the Guidelines,

> 50. The rise in energy prices due to the current geopolitical situation and the promotion of a transition to renewable energies is leading to the request for solar panel installations on historic ensembles and buildings with different heritage protection levels.

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[45] Id. art. 11(2).

[46] Id. art. 12(1).

[47] Real Decreto 1027/2007 Reglamento de Instalaciones Térmicas de Edificios [Decree No. 1027], https://perma.cc/S94W-LJLW.

[48] Decree No. 1027 art. 1.

[49] Id. art. 1(2).

[50] ICOMOS-Spain, *Guidelines for the Installation of Renewable Energy-Related Infrastructures and Equipment and their Potential Impacts on Cultural Heritage* 5, https://perma.cc/QM8X-9NXT.

[51] Id.

> 51. Solar panels and collectors placed on sloping roofs cause an unavoidable visual impact on architectural ensembles. At the same time, it does not seem reasonable to deny the owner of a building with heritage protection access to renewable energies, since this could lead to the refusal to live in these types of buildings due to higher energy costs.
> 52. The HIA implementation methodology, published by ICOMOS in 2022, should be used to make an informed decision during the cultural authorization process. When the project deals with assets inscribed in the World Heritage List or its buffer zone, an HIA must be mandatory, while it is highly recommended for those declared BIC (Spanish legal protection category).
> 53. To prevent the proliferation of one-off installations, with no prior planning, we shall mention several successful initiatives to establish energy communities in municipalities where they have used, in a planned and orderly manner, the roofs of public buildings or handed over public ownership land close to protected areas to provide clean energy, thus minimizing, and even avoiding the visual impact on buildings and historic complexes.
> 54. Another area of interest for this purpose are investigations into virtual batteries or solar banks, so that culturally protected areas could be prioritized to use surplus energy produced in other less affected areas.
> 55. Although the insertion of discordant elements onto the monument category of cultural interest assets must be avoided, we find more and more installations on roofs of unique historical buildings and monuments, especially in northern Europe. Following HIA methodology, the building's views, the different options for possible installations, and its location, sometimes, on surfaces which are not visible from the outside or that do not significantly affect the view from different points are analyzed; always taking into account the preservation of heritage values and the reversibility criteria. Historic Environment Scotland has published a guide to good practice for the installation of the so-called "micro-renewables" in historic centers or monuments.
> 56. The identification of buffer zones, which enlarge the protected area for BICs and other, usually smaller, protected assets, helps enormously to limit the visual impact on cataloged landscapes. To define buffer zones, existing information such as landscape maps or other analysis tools, can be used to enable a more efficient and environmentally friendly decision-making.
> 57. The exploration of possible financial compensation for local communities through taxes or direct income as a fair transition fund is necessary, so they could use these resources to mitigate impact and for cultural and landscape heritage valorization.
> 58. An analysis of the long-term social and environmental profitability of marine infrastructure installation is necessary. This in many cases, could have a much lower impact.
> 59. The exploration of private and public energy management joint ventures is important, where municipalities can be participants and beneficiaries of this energy management.[52]

Additionally, per the Guidelines,

> the use of overarching solutions in the environment must be encouraged, to minimize impacts on the assets, their environment and the surrounding area. Where installations are authorized on roofs, the composition plan must be studied as if it were an elevation to protect the building's "fifth façade".[53]

[52] Id. at 26.

[53] Id. at 27.

IV. Laws, Regulations, and Policies to Promote the Adaptation of Historic Buildings or Historic Districts to Respond to Climate Change

As stated by cultural heritage experts, "most of Spain's World cultural heritage sites are architectural complexes that are widely distributed across various administrative regions, climate zones and elevations throughout Spain."[54]

Significant parts of Spain's historical and artistic heritage are UNESCO World Heritage sites, and are at risk of experiencing impacts due to extreme phenomena that are related to climate change.[55] In fact, "the accumulation and decay of biomass from fungi, algae, molds, lichens and insects have led to the degradation of wooden historical buildings."[56]

Growing concerns on the impact of climate change on the cultural patrimony exist at the regional level.[57]

Other than that, no holistic policy or regulatory undertakings to respond to the effects of climate change concerning historic buildings in Spain was found.

[54] Haisheng Hu & Richard J. Hewitt, *Understanding Climate Risks to World Cultural Heritage: A Systematic Analysis and Assessment Framework for the Case of Spain*, 12 Heritage Sci. 194 (2024), https://perma.cc/3GNP-PLVF.

[55] Digital.CSIC, Spanish National Research Council, *RESCUhE Project: Cultural Heritage Vulnerability in a Changing and Directional Climate*, https://perma.cc/TCL7-HXZB.

[56] Haisheng Hu & Richard J. Hewitt, supra note 54.

[57] For example, see the case of Valencia in R. M. Coll, *El Cambio Climático Amenaza el Patrimonio Histórico Valenciano*, Levante (July 1, 2024), https://perma.cc/E9ND-WK5W (by subscription).

United Arab Emirates

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SUMMARY To reduce the country's carbon footprint, Federal Decree promulgating Law No. 17 of 2022 allows the connection of renewable energy production units, including solar energy, to the country's main electrical grid. United Arab Emirates ensures the protection of historic buildings on federal and local levels from any type of environmental pollution. The concept of integrating the indigenous community to protect historic sites does not exist in the United Arab Emirates. The native population is not isolated. Native people are the rulers of the country and the policy makers.

I. Usage of Renewable Energy to Reduce Carbon Footprint

Federal Decree promulgating Law No. 17 of 2022 allows the connection of renewable energy production units, including solar energy, to the country's main electrical grid. The goal of this law is to protect the environment by reducing they country's carbon footprint.[1]

Law No. 17 of 2022 does not mention historic buildings or sites per se. However, it allows all service providers of electric energy in the United Arab Emirates to use clean energy production units, including solar energy, to produce electric power.[2] Its seems that this law targets all buildings in the United Arab Emirates and not just historic buildings.

II. Historic Building Preservation

There is no information concerning federal or local laws and regulations to promote the adaptation of historic buildings or historic districts to respond to climate change. However, United Arab Emirates ensures the protection of historic buildings on federal and local levels from any type of environmental pollution. For instance, Federal Law No. 11 of 2017 on the preservation of antiquities protects historic buildings from any potential environmental pollution by prohibiting the establishment of industrial facilities close to historic buildings. The law also forbids any usage of land surrounding historic buildings that may jeopardize the safety of these buildings.[3]

Furthermore, on the local level, Law 4 of 2020 of the Emirate of Sharjah, one of the emirates in the union, prohibits historic sites and areas surrounding historic buildings from being dumping

[1] Federal Law No. 17 of 2022, art. 2 (4), al-Jarīdah al-Rasmīyah (Official Gazette), vol. 736 (annex), Sept. 28, 2022, https://perma.cc/FMT8-J2KT (in Arabic).

[2] Id. art. 3.

[3] Federal Law No. 11 of 2017, art. 23, al-Jarīdah al-Rasmīyah, vol. 616 (duplicate), June 12, 2017, https://perma.cc/MLP8-CLLK (in Arabic).

grounds for rubble, waste, dust, sand, or dead animals.[4] Similarly, Law No. 4 of 2016 of the Emirate of Abu Dhabi protects historical buildings located in Abu Dhabi from agents of erosion or industrial pollution by forbidding any industrial, agricultural, commercial, scientific research, or investment activities.[5]

III. Promoting the Integration of the Indigenous Community

According to the CIA World Factbook, 11.6% of the population in the United Arab Emirates is native and called "Emiratis."[6] The concept of integrating the indigenous community to protect historic sites does not exist in the United Arab Emirates. The native population is not isolated. In fact, native people are the rulers of the country and the policy makers. The president of the country is Sheik Muhammad Al Nuhayyan. He has been the president of the country since May 14, 2022.[7] Sheik Muhammad belongs to the Nahyan dynasty, the ruling family of the emirate of Abu Dhabi, one of the seven emirates in the union. Sheik Muhammed's family was originally Bedouin of the Banū Yās confederation of Arabia, from around the oases of Līwā in the Rubʿ al-Khali desert.[8]

[4] Law No. 4 of 2020 of the Emirate of Sharjah, issued on Mar. 7, 2020, Emirate of Sharjah, https://perma.cc/SXY6-KD4F (in Arabic).

[5] Law No. 4 of 2016 of the Emirate of Abu Dhabi, issued on Sept. 25, 2016, Emirate of Abu Dhabi, https://perma.cc/EG9B-W95V (in Arabic).

[6] *United Arab Emirates: People and Society: Ethnic Groups*, CIA World Factbook, https://perma.cc/PW22-J63R.

[7] *United Arab Emirates: Government: Executive Branch*, CIA World Factbook, https://perma.cc/Y29A-3ALM.

[8] *Nahyan dynasty: Ruling Family of Abu Dhabi*, Britannica.com, https://perma.cc/6JZ5-AVQS.

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Jurisdiction	Type of Law	Citation	URL
Brazil	Statute	Lei No. 12.187, de 29 de Dezembro de 2009	https://perma.cc/FK5A-4MKT
		Lei No. 14.600, de 19 de Junho de 2023	https://perma.cc/8M9C-KU3X
	Decree-Law	Decreto-Lei No. 25, de 30 de Novembro de 1937	https://perma.cc/HRH9-WY9W
	Ordinance	Ministério do Meio Ambiente, Portaria No. 150, de 10 de Maio de 2016	https://perma.cc/WZ48-3NFT
Colombia	Law	Ley No. 21 del 4 de Marzo de 1991	https://perma.cc/7R8S-PWZ4
		Ley 397 de 1997, del 7 de Agosto de 1997	https://perma.cc/3TY7-DD48
		Ley No. 1931 del 7 de Julio del 2018	https://perma.cc/WN5E-JDY5
		Ley 1185 del 12 de Marzo del 2008	https://perma.cc/FZE4-PHFJ
	Decree	Decreto No. 763 del 10 de Marzo del 2009	https://perma.cc/9TL6-U22E
		Decreto No. 1080 del 29 de Mayo del 2015 Sector Cultura	https://perma.cc/FCU4-G26T
	Resolution	Resolución No. 549 del 10 de Julio del 2015	https://perma.cc/V524-BWHY
Finland	Statute	Act on the Amendment of Act on Protection of the Building Heritage (760/2023))	https://perma.cc/VQ3X-QJCC (in Finnish); https://perma.cc/8SV9-3K4J (in Swedish)
		Act on the Orthodox Church (985/2006)	https://perma.cc/WV55-CWE7
		Act on Protection of the Building Heritage (498/2010)	https://perma.cc/537Z-WXH3 (in Finnish); https://perma.cc/76ER-NXZN (in Swedish)

Jurisdiction	Type of Law	Citation	URL
		Climate Act (423/2022)	https://perma.cc/3ZED-Y264 (in Finnish); https://perma.cc/THM4-L75L (in Swedish)
		Church Act (FFS 652/2023)	https://perma.cc/M6L3-HAWP (in Swedish)
		Energy Efficiency Act (1429/2014)	https://perma.cc/3FZF-V3DF (in Finnish); https://perma.cc/M7Y6-GZ3P (in Swedish)
	Decree	Decree on the Delegation of Sami Matters (FFS 988/1990)	https://perma.cc/8PVL-ALFC (in Swedish)
		Decree on the Sámi Climate Council	https://perma.cc/M892-QEJK (in Finnish), https://perma.cc/CFH6-HRYA (in Swedish)
Great Britain	Legislation	Climate Change Act 2008, c. 27	https://perma.cc/2HJ4-KNRJ
		Levelling Up and Regeneration Act 2023, c. 55	https://perma.cc/44SA-CT4B
		Planning (Listed Buildings and Conservation Areas) Act 1990, c. 9	https://perma.cc/2HCP-T2UW
		Town and Country Planning Act 1990, c. 8	https://perma.cc/JJ78-CKUE
	Regulation	Building Regulations 2010, SI 2010/2214	https://perma.cc/HZ8E-CDVV
		Building (Scotland) Amendment Regulations 2023, SSI 2023/177	https://perma.cc/P3J9-VDNE
		The Climate Change Act 2008 (2050 Target Amendment) Order 2019, SI 2019/1056	https://perma.cc/43EM-ADDK

Jurisdiction	Type of Law	Citation	URL
		Planning (Local Listed Building Consent Orders) (Procedure) Regulations 2014, SI 2014/551	https://perma.cc/7DC5-4ADK
		Town and Country Planning (General Permitted Development) (England) Order 2015, SI 2015/596	https://perma.cc/NN73-L27W
		Town and Country Planning (General Permitted Development) (Scotland) Order 1992, SI 1992/223	https://perma.cc/S8EG-TEXZ
Ireland	Legislation	Building Control Act 1990, No 3/1990 (Rev. to May 16, 2024)	https://perma.cc/B4NY-E9NZ
		Climate Action and Low Carbon Development Act 2015, No. 46/2015	https://perma.cc/6Y4S-7KYN
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	Regulation	European Union (Energy Performance of Buildings) Regulations 2019, SI 2019/183	https://perma.cc/X42F-PR4P
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Italy	Law	Law 29 December 2017, n. 205 ("Green Bonus" Law)	https://perma.cc/TSR7-89FU
		Law of the Lazio Region on Urban Regeneration and Building Recovery, 18 July 2017, n. 7	https://perma.cc/8AJ7-94U4
	Legislative Decree	Code of Cultural Heritage and Landscape, Decree 22 January 2004, n. 42	https://perma.cc/LW7X-JT7U
		Legislative Decree 29 December 2006, n. 311, Implementing Directive 2002/91/EC on Energy Performance in Buildings	https://perma.cc/WEA6-RZGE
		Legislative Decree 4 July 2014, n. 102 on the National Fund for Energy Efficiency	https://perma.cc/8NW5-U6N4
		Ministry of Cultural Heritage, Decree Law 28 December 2018, n. 19 on	https://perma.cc/5RXH-JXQB

Jurisdiction	Type of Law	Citation	URL
		Approving the Extraordinary National Plan for the Monitoring and Conservation of Historic Real Estate	
	Regulation	Ministry of Environmental Transformation, Decreto Direttoriale 117, 15 April 2021	https://perma.cc/HHR6-BEEV
	Guidelines	Ministry of Cultural Heritage, Guidelines for Improving Energy Efficiency in Cultural Heritage	https://perma.cc/62LG-MLAC
Spain	Law	Law No. 16 of 1985, on the Spanish Cultural Heritage	https://perma.cc/BS84-A26L
	Royal Decree	Royal Decree No. 314 of 2006, Technical Building Code	https://perma.cc/8GZW-CR9Y
		Royal Decree No. 47 of 2007, Basic Procedure for Energy Efficiency Certification of Newly Constructed Buildings	https://perma.cc/GH5J-CPCF
		Royal Decree No. 1027 of 2007, Regulation of Thermal Installations in Buildings	https://perma.cc/S94W-LJLW
	Guidelines	ICOMOS-Spain, Guidelines for the Installation of Renewable Energy-Related Infrastructures and Equipment and their Potential Impacts on Cultural Heritage (2023)	https://perma.cc/QM8X-9NXT
United Arab Emirates	Federal Law	Federal Law No. 11 of 2017, al-Jarīdah al-Rasmīyah, vol. 616 (duplicate), June 12, 2017	https://perma.cc/MLP8-CLLK
		Federal Law No. 17 of 2022, al-Jarīdah al-Rasmīyah, vol. 736 (annex), Sept. 28, 2022	https://perma.cc/FMT8-J2KT
	Emirate Law	Law No. 4 of 2016 of the Emirate of Abu Dhabi, Sept. 25, 2016	https://perma.cc/EG9B-W95V
		Law No. 4 of 2020 of the Emirate of Sharjah, Mar. 7, 2020	https://perma.cc/SXY6-KD4F