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Legal Aspects on Cultural Values and Energy Efficiency in the Built Environment—A Sustainable Balance of Public Interests?

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Abstract: Improved energy efficiency and increased use of renewables within the building stock is crucial to ensure the achievement of international and national climate goals, such as bringing about a carbon neutral society. The existing buildings needs to be retrofitted and heated by renewable energy sources. However, this may lead to conflicts with other sustainability goals, such as the preservation of cultural heritage values within the built environment. The design of the legal system can be assumed to have a decisive role in well-developed *Rechtsstaats* in how these conflicts are handled. One important criterion for the achievement of overall sustainability objectives is that the legal system as a whole is coherent and without deficits, loopholes, and conflicts contradicting goal fulfilment. Moreover, the norms must be effectively applied and complied with. This article presents and elaborates on deficits in the legal system and its application, in particular within the land use planning and building legislation and the heritage protection law, in handling the conflicts between reaching energy goals while preserving heritage values and achieving a sustainable development. The important deficits identified include the lack of legal requirements on the adoption of holistic approaches and the assurance of adequate knowledge in the planning and building processes. The analyses have been carried out through interdisciplinary cooperation within the research project *Law, Sustainable Energy Use and Protection of Heritage (RECO)*, funded by the Swedish Energy Agency.

Keywords: legal system; conflict of public interests; energy efficiency; cultural heritage; cultural values; preservation; planning and building

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1. Introduction

Anthropogenic climate change is widely recognized as one of the most important challenges to tackle in the pursuit of sustainable development. Energy consumption within the building and building construction sectors needs to decrease and the sources of energy production need to be converted to renewable sources. Internationally, the sectors accounts for more than 30% of the total energy usage and almost 40% of the direct and indirect CO_2 emissions [1,2].

As global living standards improve, energy consumption is constantly growing. In Sweden, however, energy consumption within this sector has been relatively stable during the last decades. Already following the oil crisis in the 1970s, a large part of the single-family house owners turned to electric or district heating [3]. Since then, there has been a continuous trend of decreasing the use of fossil energy sources in the housing sector [4–6]. While the energy needed for heating is decreasing, the use of electricity remains high and is even expected to increase. Thus, there is still a need to continue the improvement of energy efficiency and converting to fossil-free energy sources if we are to reach the international goals of the Agenda 2030, the European Union (EU) goals of a carbon neutral society by 2050, as well as the national environmental goals [7,8].

While CO_2 emissions must be targeted and the energy consumption and production need to be renewable, there are other values to consider in approaching sustainability

from a holistic perspective. Among many other issues, there are several goals addressing the social and cultural heritage, both internationally and in Sweden. On the global level, such goals can be found in Agenda 2030 (Goal 11.4) and the New Urban Agenda (NUA-habitat III). In Sweden, there are specific political goals for the built cultural heritage within the environmental quality objectives and the goals of architecture and design. If the objectives are to be achieved, the pursuit of energy efficiency and energy transformation of the building stock must thus be balanced by the preservation of cultural and cultural heritage values.

In a well-developed *Rechtsstaat*, such as Sweden, the legal system is a vital instrument for reaching political objectives, *inter alia* by prescribing guidelines for the balancing of energy efficiency, renewables, and cultural heritage values and laying down both material and procedural rules to steer human behavior towards goal achievement. However, the effectiveness of the instrument will depend on the design of the legal systems as a whole and the laws that constitutes it, as well as its application. Deficits, loopholes, and conflicts within the legal system can slow down or even contradict goal fulfillment. Nevertheless, even if the legal system as such has been well designed, a lack of consistent application and enforcement in relation to the intent of the legislator can also contradict the achievement of the objectives.

Within interdisciplinary research the project *Law, Sustainable Energy Use and Protection of Heritage (RECO)*, funded by the Swedish Energy Agency, researchers in legal science, art history and conservation have assessed the effectiveness of the legal system in Sweden in handling conflicts between energy efficiency and the preservation of the built cultural heritage, and thus achieving sustainability objectives. The assessments have not only included the norms as such, but also the application of law in Sweden, also on the local level. We have focused, in particular, on the mounting of solar cells, installation of heating systems, and replacements or improvements of windows. Some of the results from the research project have been presented as reports and articles in Swedish, while some work is still in preparation [3,9–16]. The purpose of this paper is to present and further elaborate on the identified deficits in the legal design and its application, in particular in the land use planning and building process and in heritage protection law, in handling conflicts and achieving a sustainable development.

There are only a few international studies on the legal aspects of the conflicts between sustainability goals that concerns cultural heritage values [17–20]. However, some research has been done on cultural heritage laws in general within the EU [21–23]. Although the focus of this article is on the Swedish legal system and its application, we believe that the results are relevant and valuable in other legislative contexts, particularly in countries with similar legal cultures that are aiming to decrease energy consumption of the built environment, without risking other sustainability objectives. The general applicability of the results is furthermore increased by our focus on *legal functions* to achieve sustainability objectives, rather than the description and clarification of valid law.

2. Materials and Methods

In order to scrutinize the effectiveness of the legal system in achieving the two sustainability targets, we have applied both an *internal* and *external* environmental law methodological approach to the assessments. In short, this means that legal sources, such as legal texts, legislative history (e.g., governmental bills), case-law, and legal literature, have been assessed based on the legal theories on the ideal design of legal systems to achieve environmental objectives [24]. By such assessments, deficits, conflicts, and loopholes in the legal system hindering the achievement of the intent of the legislator can be identified.

The external approach has included assessments based on art and conservation science. This approach has enabled the assessments of how well the legal system meets scientific standards of heritage protection and a deeper understanding of the effects of different legal constructs promoting different a technical solution used for energy retrofits when applied to buildings of cultural heritage values [25]. The interdisciplinary cooperation within the

research team has brought about discussions of cultural and cultural heritage values in order to better understand the values that the laws aim to protect. The interdisciplinary cooperation also made it possible to study the historical development of the energy policy and its relation to heritage preservation issues and the built environment.

As no laws are better than their applicability and enforcement, there is also a need to understand how well the laws perform in practice. There is thus a need to know if there is a gap between the law and its application and if so, why this gap occurs. To this end, assessments have been conducted of how the laws are applied in relation to the mounting of solar cells, installation of heating systems, and replacement or improvements of windows to increase the use of renewable energy and decrease energy use [9–13,16]. By including an assessment of different energy conservation measures and technologies, we have been able to assess and compare the effectiveness of different legal functions, such as permitting and notification procedures, in achieving both sustainability objectives. By including planning law, we were also able to assess the effectiveness of the planning system as such and in relation to the different legal functions ensuring prior control of energy conservation measures. By including different legislations, we were moreover able to compare the effectiveness of different laws and how they relate to each other.

Finally, an assessment of the effect on the representation and consideration of cultural values of non-governmental organizations' (NGOs) right to participate in legal processes was conducted by case law analyses [14,15]. The analysis included a comparison of the reasonings of the courts and the outcomes before and after the appeals by NGOs.

Our assessments have included the norms as such and how the norms have been applied by the courts (case law) and by the regional County Administrative Boards and local municipalities. The qualitative, rather than quantitative, methods used in these studies are motivated by the purpose to identify the deficits and barriers in the legislation and its application towards achieving both sustainability objectives, rather than to predict the outcome of future decisions. Given the limited number of relevant court cases, too far-reaching general conclusions should, however, not be drawn. In the NGO study, all of the cases moreover concerned areas of national interests for cultural values; thus, limiting the possibility to draw a conclusion on the effect on the safeguarding of cultural heritage values by providing access to justice for NGOs *outside* of the national areas of interests. In the assessment of the application of the laws on the regional and local level in relation to the installation of heating systems, the assessments of the application of decisions on the local level were limited to one municipality due to time constraints and methodological issues [13]. In the study of windows, the discussion and conclusions of how the law perform in practice were based on previous studies rather than firsthand assessments of the decisions [12]. Nevertheless, the generalizability of our conclusions is improved by the fact that deficits are identified in more than one study and some of the court cases studied are of principal interest. The general applicability of the results is furthermore increased by our focus on *legal functions* to achieve the sustainability objectives, rather than the description and clarification of valid law.

Finally, based on the results of our qualitative assessment of norms and decisions, we identified a need to obtain a more comprehensive understanding of the application on the local level. Therefore, a survey and semi-structured interviews were carried out with representatives from the municipalities in Sweden [16]. The purpose of the interviews was to enable a deeper understanding of if and how cultural values are considered. The survey was sent to all 290 municipalities in Sweden and addressed the different tasks of the three administrative departments under the Building Committee. There was a number of identical questions, to all of the departments, concerning among other things the size of the municipality and in what part of Sweden it is located. The second part of the survey contained a number of specific questions to each department. While not all of the municipalities answered, some sent more than one answer. This was the case when more than one of the three departments responded. The planning departments sent 141 answers, the building permit departments had 111 respondents, and the building

processes departments 68. Possible bias and reasons why the municipalities chose to, or chose not to, answer must also be considered when analyzing the results. In one case, a respondent returned the questionnaire with only one comment. She/he stated that *"[t]here are not many examples of cultural values within the municipality"* (free translation by the authors).

3. Results

3.1. The Legal Framework

The Swedish public administration is governed by several fundamental principles recognized by both the international community and the Swedish legislator. Sweden has not only ratified, but also incorporated the European Convention of Human Rights as a binding national law [26]. In addition, Sweden has adopted a written constitution and the so called instrument of Government (1974:152), stating the basic principles of the form of government as well as the fundamental rights and freedoms. There are thus two parallel systems of rights and freedoms in Sweden [27]. One of the basic principles is that all public power is exercised under the law. Others include the requirements of impartiality and objectivity and equal treatment of all persons before the law. Moreover, the property rights of individuals are protected against *inter alia* restrictions on the use of land or buildings. However, these rights may be restrained to satisfy pressing public interests. One such public interest is the protection and preservation of the *environment*; a concept that includes buildings and building environments with cultural values [14].

Cultural heritage protection is included in numerous national and international policy and legislative documents [17–20,22,23]. Sweden has a claim to the world's oldest heritage protection law. Even so, it was not until the first half of the 20th century that buildings and environments of cultural and historic value were included in the legislation [21]. Today, there are three main legislations that govern the use and preservation of the cultural environment. The Historic Environment Act (HEA) (1988:950) aims at the protection of a relatively small part of the total building stock: the listed buildings and older churches belonging to the former Swedish state church, today "the Church of Sweden". Although the HEA generally only protects churches built before 1940, the County Administrative Board can protect younger churches due to extraordinary high cultural heritage values. Any change that might interfere with the cultural heritage value requires a permit from the County Administrative Board. A permit can only be issued if there is a special reason, and such a reason must be of importance to the future use of the building or the church. Furthermore, alterations, for example, measurements to improve the energy efficiency, may not distort the cultural heritage values of the protected building.

The scope of the Environmental Code (1998:808) (EC) is broad. It aims at ensuring a sustainable development, including the preservation of cultural values. However, it does not aim at the legal protection of buildings *per se*. One of the most important instruments in the EC, from a cultural heritage value perspective, is its planning and land use rules. These rules provide the *national* guidelines for balancing cultural heritage values with other national interests, such as nature conservation, in decision making on the use of land and water. The provisions on environmental impact assessments in the EC, moreover, have an important function in ensuring that the effects on public interests are properly documented and evaluated in the adoption of plans and programs.

The Planning and Building Act (PBA) (2010:900), which applies simultaneously with the EC, aims at ensuring a sustainable development of the built environment. The 290 municipalities of Sweden are responsible for the enforcement of the PBA through the so called "planning monopoly". The local authorities enjoy a rather large amount of discretion in deciding on the planning and building issues. The legislative history preceding the law emphasizes the democratic aspects of the planning and building process, but also the importance of a holistic approach to environmental issues [28,29]. The act was extensively revised in 2011, the same year that Sweden ratified the European Landscape Convention (ELC) [30]. The protection of cultural values as a part of a sustainable built environment,

as well as sustainability at large, was emphasized. Today, there are clear legal requirements to consider the cultural values—both in planning and building processes.

The pursuit of reducing the energy use within the building stock through political decision making has a long history in Sweden, but it was not until the later part of the 20th century that legal measures were taken in order to meet the need for energy efficiency [3]. When Sweden entered the EU in 1995, the Swedish legislation needed to be harmonized with the EU law [3,31–33]. Even though Sweden had targeted improvements in energy efficiency, and the transition of energy sources was well underway, the EU requirements concerning energy use in the building stock led to some vital changes. Among other things, an act on energy performance certificates (2006:985) for buildings and an act on energy measurements in buildings (2014:267) were introduced to implement the requirements laid down in the EU Energy Performance of Buildings Directive 2010/31/EU (EPBD) and the Energy Efficiency Directive 2012/27/EU. The EPBD provides for the possibility to exempt protected buildings and designated environments because of their architectural or historical merit. In Sweden, a delegation to the government to adopt detailed rules on the buildings to be exempted has been adopted. So far, this delegation has, however, only been used for religious buildings. Nevertheless, the room to derogate under EU law mainly applies to officially protected buildings and areas and religious buildings, but not to cultural values in general. As a large part of the buildings stock in need of being retrofitted is built before 1980, and thus potentially carries cultural values, there is an obvious risk that the cultural and cultural heritage values are at risk of distortion [1,2,6]. This risk is even greater given that there is no EU directive specifically addressing the conservation of cultural heritage values [17,18]. Despite the legal requirements, the pace of renovation has been slow. As only about 1% of the building stock is annually renovated, it has been estimated that 75% of the European building stock is still energy inefficient [1,2,6]. A report from the Swedish National Audit Office states that measures to improve the energy efficiency rarely are implemented and that there is a lack of reviews of the effect of retrofit measurements [34]. Given the unsuccessfulness of the EPBD in achieving its objectives, it is presently under revision [35].

According to the PBA, the land use planning should consider the long-term sustainable use of energy, but the law itself does not regulate energy efficiency in detail [11]. Instead, such detailed norms are laid down in the Planning and Building Ordinance (PBO) (2011:338) and by provisions laid down in by-laws adopted by authorities by delegation (BBR-BBF 2011:6). In addition to the legal instruments, several energy programs have included financial assistance in order to improve energy efficiency, starting in the 1970s [3]. When it comes to reducing the CO_2 and shifting to other energy sources, the rapidly increasing price of petrol and oil taxation has been the most prominent influence following the international petrol crisis in 1973. The negative effects of energy retrofits on buildings of cultural value have been debated within the national legislative process since the 1970s, but the legal conflicts have never been fully resolved.

3.2. The Legal System of Planning and Building in Practice

The launch of the former Planning and Building Act (1987:10) (FPBL) in 1987 was preceded by a pervasive reorganization of the previous legislation of the built environment [28,29]. The first regulation aimed at preserving buildings with cultural values was introduced in the Swedish planning and building legislation in the 1930s [3,21]. This was in response to the threat of demolition to historical districts, such as the old city center of Stockholm, "Gamla stan", due to the poor living conditions and the general neglect of maintenance of the city district. The possibility to protect buildings and culturally valuable environments was rarely used by the municipalities, thus the effect of the gradually improved regulations of cultural values was limited in an era when modern town planning swept the world. With the FPBL, the prohibition of distortion and the requirement of cautiousness were introduced. It was up to the municipality to identify buildings and environments of cultural value. In several municipalities, inventories were made, often with the

regional museums as consultants [36]. Following a revision in the FPBL in 1996, cultural values within planned areas could be protected by the so called "detailed development plans", one of the land use planning instruments to be used by the municipalities. After the introduction of a national policy for architecture, another revision of the FPBL was made in 1999 [37]. After the revision, the concept of characteristics, i.e., aspects of a building or an environment that can constitute cultural values, were introduced to clarify how cultural heritage values could be determined. With the introduction of the present PBA in 2011, it was clarified that the provisions, in detailed development plans, could apply to the built environment, and not only to single buildings. In 2016, a non-legally binding, general recommendation was adopted (BFS 2016:6—BBR 23). This included a description of the aspects that constitutes cultural values and numerous examples of characteristics to be handled with caution.

It is the municipality which is responsible for preparing and adopting plans for the regulation of the land use within the municipality. The room for discretion is limited by *inter alia* provisions on the planning process. Each municipality must have a so called "comprehensive plan". This plan is not legally binding. However, it has an important function in presenting the long-term aims of the municipality concerning the use of land and water and thus to guide the more detailed planning in legally binding plans. Among other issues that the plan should deal with are the ambitions of preserving cultural valuable buildings and areas. This follows from the obligation to present how areas of national interest and international sustainability objectives are to be handled in the use of land and water within the municipality. Areas of national interest for the cultural environment must thus be considered in the comprehensive plan. Thus, the comprehensive plan is an important link between the national planning and land use rules under the EC and the legally binding detailed development plans.

While the rural areas can be left unplanned, all of the densely occupied areas should be regulated by legally binding detailed development plans. These plans are to be adopted when new exploitations are to be carried out, or when already existing buildings or blocks are to be transformed or preserved. The precise provisions of how buildings and other construction is to be placed and designed can be prescribed in the plan. Furthermore, provisions of aesthetic, cultural, and historical values can be adopted. Such provisions can include the preservation of the original features of a building and even how they should be maintained. There is also a possibility to issue so called "area regulations" for less densely developed areas with a similar content and function as detailed development plans.

The PBA makes distinctions between areas with and without adopted detailed development plans. One example is the obligation to apply for a building permit. This obligation includes all measures that leads to substantial alterations of the exterior of existing buildings, but only *within* districts with detailed development plans. If the plans are adopted before the FPBL, there might be less detailed provisions. This means that cultural values must be handled within the building permit process. Outside densely populated areas, area regulations can prescribe the requirements of a building permit in certain situations. This option can be used to safeguard cultural values within rural areas of national interest.

Nevertheless, some of the provisions in the PBA always apply, irrespective of the existence of detailed development plans, or a permit requirement. One example is the obligation to consider cultural values of buildings or built environments with particular cultural values from a historical, cultural heritage, environmental, or artistic point of view. For these buildings and environments, distortions are prohibited. Moreover, all of the alterations must be subject to caution. Presently, there is no obligation for the municipality to list such buildings or environments. If obtaining a building permit is not required, the cultural values are in the hands of the property owner. The municipality should review building activities to ensure that provisions in detailed development plans, conditions in the building permits and general obligations, including the rules of cautiousness and the prohibition of distortion, are complied with. Nevertheless, due to limited resources,

supervision is rarely initiated by the municipality and often only occurs after complaints by individuals, such as neighbors [16].

According to the Administrative Procedure Act, decisions with legally binding effects for individuals can be appealed by the individual affected by the decision. Hence, if a property owner finds a decision too far-reaching, considering precautions due to cultural values, the owner may appeal to higher instances. Moreover, under certain cases, NGOs may also appeal decisions [14]. When the municipally is the first instance, the final instance is, as a main rule, the Land and Environment Court of Appeal. The Court must however give a leave to appeal (review permit). Such permit is issued if, for example, a formal fault is detected in the previous process or if the case is of precedential value and thus of general interest for the enforcement of a law. If a case is of precedential value, and adopted under the PBA (and not the EC), it may be assessed by the Supreme Court given that this is enabled by the Land and Environment Court of Appeal. If the dispute concerns decisions following the HEA, the regional administrative courts and, ultimately, the Supreme Administrative Court will try the case, given that the courts leave a review permit.

3.3. Windows, Cultural Values, and Building Permits

Leaking windows are often pointed out as a source of energy loss. According to the Swedish Energy Agency, windows and doors can cause up to 30% of the heat loss [38]. Changing to new, energy efficient windows is a relatively low-cost method to address increased energy efficiency. However, the windows often express important characteristics of cultural heritage. This is also pointed out in the general recommendations from the National Board of Housing, Building and Planning on how energy declarations should be performed (BED 2007:4). Old and handmade windows are testimonies of the technical skills and knowledge of handling materials performed by wood workers and local wood workshops up to the middle of the 20th century. Modern glass has a perfectly flat surface and does not reflect light in the same way as old manually crafted glass. Hence, the aesthetic qualities of windows are crucial to the individual buildings, as well as the built environment. The effects of a window change can be drastic and, in the worst case, distort the cultural values of a building and its environment.

Normally, buildings in Sweden built before 1960 have double-glazed windows. In very old buildings, there can be a loose second frame that is removed during the summer. The Energy Agency recommends adding a third pane and sealing the leaks rather than shifting windows on a building of cultural value [38]. Still, as the renovation and retrofitting of windows is expensive in a short-term perspective, old wooden-framed windows are often replaced with modern energy windows where the frames are made by aluminum, aluminum-covered wood, or polyvinyl chloride (PVC) [12,19,39–42]. Most of these windows are of thicker dimensions than old windows. From a life cycle analysis (LCA) perspective, the long-term effect of window changes can be questioned if standard windows are chosen without consideration to the dimensions of the original windows. Modern windows are hard to repair, and changes are therefore likely within a few decades. The production of aluminum is energy intense, PVC is a petroleum based material, and the wood in modern windows is of inferior quality and more exposed to rot [43]. Furthermore, if the change of windows is the only measurement taken, and no sealing is done, it might not be beneficial to the indoor comfort at all [44].

Two main problems can be identified in relation to energy saving measures regarding windows and the enforcement of the prohibition to distort and the requirement on cautiousness. Firstly, numerous detailed development plans are obsolete, as they were issued long before the launch of the PBA. Hence, the older detailed development plans do not contain specific provisions of aesthetic and cultural characteristics of the existing buildings. As there is no obligation for the municipalities to keep inventories of culturally valuable buildings and environments, the administrators of the permits, as well as the property owner, may be unaware of existing cultural values [11]. As there is often a lack of expertise on cultural values in the permit process, where building measures are evaluated,

the technical aspects and energy perspective is often given more attention than the cultural values [16,45,46]. In addition, the renovation and retrofits measurements can be difficult to enforce given the increased costs and the requirement on proportionality if the cultural value is not properly evaluated in the permit process [9,12].

Secondly, given the construct of the requirement to apply for a building permit, there is a risk that the change of windows will take place without a previous application for a building permit [12]. Even if the property owner may be at risk of sanctions, if changes would not comply with the law, or a building permit was required, the risk of sanctions is relatively low [16]. The PBA also gives the municipality the right to issue a retrospective permit. However, it should deny permits if it is a case of distortion of cultural values and this cannot be avoided. In the fall of 2019, two court cases reached the Land and Environment Court of Appeal as the property owners appealed the lower instances' decisions to deny retrospective permits. The buildings were situated in the same town and within the same area of national interest due to cultural heritage values. Eventually, the Land and Environment Court of Appeal decided to overthrow the previous decisions. In the reasoning, the court stated that the distortion of the cultural value was not of such an extent that an average person, passing the buildings, would detect the change [9]. According to our analysis of the decision, the court clarified that a permit is always required if the change is to be considered a distortion. A change of windows, therefore, does not require a building permit only if the change does not constitute a distortion, the change complies with the obligation on cautiousness, and the change is not visible to the average person. This is, however, not how the case has been interpreted by the public. On the contrary, the case has been interpreted as to clarify that merely distortions detectable to an average person, and not only to experts, require permits. Given the risk that changes of windows will take place prior control has therefore increased further. This will not improve future possibilities to find holistic solutions. There is thus a need for further clarification from the Land and Environment Court of Appeal in this matter.

3.4. Heating and Cultural Values

Due to the rapid rise in the price of oil after the oil crisis in 1973, many house owners turned to electric heating. In the last few decades, the price of electricity has, however, risen. During the second half of the 20th century, several municipalities introduced and expanded district heating, and the systems have been rapidly expanded. This has led to a rapid decrease of CO_2 emissions from heating, and the building sector today only accounts for about 2% of the CO_2 emissions in Sweden [6]. Still, it is desirable to change the heating systems to more energy efficient alternatives. Heat pumps still need electricity, both to run and to balance periods of extremely cold weather.

One problem identified in relation to changing the heating systems is that the law does not clearly distinguish when the constructor needs to apply for a building permit, or when merely a notification is sufficient, as changes most often only affect the interior of the building [13]. Furthermore, if the cultural values are not identified in advance, it is difficult to know, both for the property owners and for the administrators, how the rules should be applied. Even if the cultural values of a building are documented in advance, it requires an administrator with knowledge of the cultural value or that such knowledge is within reach for the administrator to evaluate if and how cultural values are affected and whether any measures need to be taken in order to avoid distortion. The control of compliance by supervision is moreover even more unlikely to occur given that changes primarily occur on the interior of the building. The study, moreover, indicates that the routines of the building committees and its administrations are decisive for the identification and consideration to cultural values in the building process under the PBA and that the law may be applied differently even within a municipality. The comparison of the different processes according to the HEA and the PBA shows that cultural values were given more weight in the permit process under the HEA than under the permit and notification processes under the PBA, but that the decreased heating costs, rather than increased energy efficiency, was a key

motive for the authorizations of the permits under the HEA by the County Administration Board. The fact that cultural values were given more weight in the permit process under the HEA can probably be explained by the fact that the cultural values have been identified and documented in advance in these cases.

3.5. Solar Cells, Sustainable Contribution, or Intrusion in Cultural Environments?

The first solar cells were introduced in Sweden in the 1980s. Initially, they were expensive, invasive, and required additional, extensive installations in order to store the energy [3]. In recent years, the market for solar cells, mainly black photovoltaic panels (PV:s), has exploded, as they have become more available, cheaper, and the installations have become less complicated [47]. The surplus electricity can be sold and distributed to the electricity grid, thus cutting the energy costs of the single household. During the previous 10 years, it was possible to receive a national grant for a part of the installation cost. In 2021, an act on tax reduction (2020:1066) for the installation of "green techniques", including PV:s, integrated PV:s (BIPV:s), and storing devices, has been introduced. Even if most private homes no longer use fossil fuels for heating, the extensive use of electric gadgets and the desired replacement of petrol engines in tools and cars means that the solar cells on single-family houses can contribute to the transformation to renewables in a broader sense. As more electricity is demanded by the market and the production needs to occur near densely populated areas, PV:s are seen as an attractive solution. PV:s are also seen as a means to enable the population to engage in environmental improvements [48]. However, conspicuous installations can distort the cultural value of a building or even an building environment if the aesthetics of the buildings are not respected, the installations damages authentic materials, and/or the PV:s are widely visible and located in districts of cultural value.

In three court decision concerning PV:s under the PBA, the same municipality had denied building permits for installations due to the impact on cultural values [10]. In these cases, the cultural values of the buildings concerned were documented in advance in a local inventory of buildings and areas designated as culturally valuable. Only one of them was located within an area of national interest. The verdict of the first and second instance confirmed the denied permit and the appeals to leave were denied by the Land and Environment Court of Appeal. In the two other cases, the buildings were located within cultural environments identified in a local preservation document. Although such documents are not legally binding, the cases show that they can constitute important guidance. There is also a case where a denied building permit has been overthrown by the regional Land and Environment Court. As the municipality chose not to pursue the case in the Land and Environment Court of Appeal, the property owner received permission to install the PV:s.

Today, there are some successful examples of the mounting of PV:s on buildings and churches, all built after 1940. There are however only few court cases concerning churches protected under the HEA, all belonging to the Church of Sweden [10]. In recent years, the Swedish church has engaged in environmental issues arguing that taking care of the environment is a duty as the environment is God's creation [49]. Hence, to install solar cells on buildings belonging to the Swedish Church is often argued to be an expression of the church taking on a responsibility for the transformation toward a sustainable future for the present world. As the religious buildings are large, but intermittently used, the heating cost is considerable. The Church of Sweden has, during a period of years, worked intensely with the reduction of energy consumption. Different kinds of heating pumps are often installed, sometimes in combinations with direct electric heating that can be used intermittently. In order to get permission to make any substantial change to a church, a dialogue with the County Administrative Board is often necessary in practice. In this process, changes that are at risk of distorting the cultural heritage values may be avoided. If the applicant is not content with the decision, she/he can appeal to the regional administrative court. In 2007, the congregation of Fläckebo was denied permission to install solar cells on the church roof of a church with medieval origins. The decision was appealed and finally reached

the Supreme Administrative Court [50]. The court did not consider the environmental motive for the installation provided by the congregation. However, the economic aspects were considered a valid reason. Nevertheless, the court did not believe that the economic benefits of the installation had been sufficiently described. As it is the obligation of the applicant to prove such benefits, the permit was denied. As a result, it has been common to install solar cells on other buildings in the vicinity of the church in order to avoid conflicting with the cultural heritage value of church buildings.

In two more recent cases, Stugun and Virke, permits for installation of solar cells have been approved by the County Administrative Board [51,52]. Both churches had black tin roofs, just as Fläckebo. While Fläckebo is of medieval origins, these two were both built in the late 1800s. In Stugun, the County Administrative Board argued that the prohibition of distortion of the heritage value under the HEA applied simultaneously with the general rules of consideration in the EC, requiring *inter alia* that persons who pursue an activity or take a measure shall conserve raw materials and energy and reuse and recycle them wherever possible and that preference shall be given to renewable energy sources. As the solar cells would give a similar impression as the black tin roof, and the installations were to be made on a part of the roof facing towards a wooded area, the cultural heritage value would not be negatively affected, according to the County Administrative Board. In Virke, the County Administrative Board stated that the cultural value of the church was rather low. Hence, the effect of the solar cells would not have such a negative impact on the cultural heritage values that the installations should be denied. In both cases, the County Administrative Board considered the merits of renewable energy. In the case of Stugun, the consideration was based on requirements laid down in the EC, while in the case of Virke, the congregation's ambition to become eco-friendly was taken into account and balanced towards the cultural value of the 19th century churches. In the end, the PV:s were never mounted on the church of Virke, as the congregation found that they could not afford the investment.

The decisions made by the County Administrative Board imply that the cultural heritage value can be balanced against other values, as long as they are of public interest, in individual cases tried under the HEA. However, environmental and climate reasons are not included in the HEA and have not been accounted for by the higher courts as interests to be balanced against cultural heritage values.

In 2018, the congregation in Säffle received permission from the County Administrative Board to install solar cells on the flat copper roof of a modernist church, protected by a special decision due to their outstanding cultural heritage values despite being built after 1940. The National Heritage Board appealed to the Administrative Court in Karlstad, arguing that the church is widely visible and PV:s would cover the copper roof, which the board declared to be an important architectural feature [53]. The court repealed the decision of the County Administrative Board with the motive that the church's cultural value was considered high. It, moreover, stated that even though the environmental reason for installing solar cells may be considered, there are other means to reach the environmental objective. Hence, the installation was not permitted. In turn, the congregation appealed to the Administrative Court of Appeal. The case has not yet received leave to appeal.

Presently, the conclusion of the comparison of the PBA to the HEA is that it may be easier to receive permission to install PV:s on a church, or a listed building, according to the HEA than the PBA, if the applicant can prove that the PV:s are essential for the future use of a building under the protection of the HEA. However, in most cases, alternative measures to improve the overall sustainable energy consumption of a building or to express the environmental profile of the property owner will be available. Thus, distortion for those reasons should rarely be allowed. Climate reasons, as such, cannot be an argument for the distortion of cultural values. Nevertheless, the interpretation of the HEA should be clarified. This will be possible if the Administrative Court of Appeal chooses to appeal the case concerning PV:s on the church of Säffle.

3.6. The Application of the PBA According to the Municipalities

How the buildings and environments of cultural value are dealt with in the planning and building process is essential for achieving a sustainable environment. While city councils have the utmost responsibility, each municipality must have its own building committee where elected politicians are entrusted to represent the democratic power of the inhabitants in the municipality. To support the work of the building committee, there must be a supply of architectural competences. There must also be a sufficient supply of various expertise to handle all kinds of legal matters. In practice, however, the preparation and routine decisions are normally made by administrators belonging to the building permit, or the building process departments, to which the building committee can delegate decisions.

Our survey and semi-structured interviews reveal that representatives from the municipality consider documentation of and knowledge about buildings and environments with cultural values to be vital in ensuring that cultural values are given sufficient attention in all of the planning and building process [16]. A common response was that this knowledge can be represented by one or several administrators with training in building conservation and cultural history. It was also stated that such knowledge could be supplied by contracting local or regional museums or private consultants to whom the administrators can turn. A majority of the respondents stated that the professional knowledge was important in order to both identify the cultural values and to provide credible justifications as to why and how the cultural values should be handled. With such arguments, the final decisions, whether concerning a detailed development plan or a building permit, could be taken with confidence by the building committee. Moreover, the study confirms previous studies indicating deviations between the municipalities concerning to what extent cultural values are regarded at the local level, for example, if new detailed development plans include provisions of caution and protection or if the prohibition of distortion is regarded when issuing building permits [45,46].

Another identified problem with the enforcement was the lack of clarity concerning how to define and evaluate cultural values. If there is no expert knowledge to support the administrators in the evaluation of what effect a measurement will have on the cultural values in the individual case, the private interests of alterations cannot be met with firm arguments, alternative proposals or suitable measures of caution or protection. Some of the respondents also indicated that the size of the municipality matters, since *inter alia*, it can be more difficult for the politicians to resist the pressure from private interests in small municipalities. One of the representatives answered that "[w]hen everyone knows everyone, it is hard to say no" (free translations by the authors). The interviews confirmed that the preconditions differ between municipalities. A certain amount of distrust was also noticed towards the politicians in general. Some of the respondents answered that politicians sometimes prioritize the interests of exploitation and ignore the expert advice and the decisions proposed by the administrators. Finally, the land and environment courts were identified as a problem by some of the respondents. One explanation given was that it was hard to predict the outcome.

3.7. Access to Justice and Its Implications for the Safeguarding of Cultural Values

In 2005, Sweden ratified the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental matters, which handles the relationship between the government, its administration, and the citizens in processes concerning the environment [54,55]. One of the pillars deals with access to justice. The convention establishes a right for the public (both individuals and NGOs) to challenge public decisions not respecting *inter alia* environmental law under certain conditions. These provisions have not been fully implemented into Swedish law. However, the courts have taken an active role in extending the right to access, sometimes overruling the wording of the legal text. During the last years, the right to challenge environmental decisions has also been extended to decisions affecting cultural values and NGOs representing cultural

values, under certain conditions [14]. The PBA was also recently amended to codify the development in case law.

The cases concerned cultural values at risk, but the main point of interest is why the courts granted the associations the right of appeal and how successful the NGOs were when claiming cultural values as public interests by appealing to the land and environment courts [56–60]. One of the cases concerned an obsolete detailed development plan without provisions to protect the cultural value at hand. In another case, where an NGO was given the right to appeal, the City of Stockholm chose to withdraw the case. The political pressure and general resistance to the project had become too heavy. The assessments nevertheless showed that the possibility to add further information, in particular documentation and opinions by the National Heritage Board, were crucial to the outcome [15].

4. Discussion

The studies carried out within RECO has revealed numerous problems in the legal system and its application in achieving climate mitigation and preservation of cultural heritage values. One problem is a lack of a complete legal operationalization of a sustainability development ensuring a holistic approach to energy and climate mitigation measure. One example is the lack of the requirements for applying LCAs. The comparisons between the HEA and the PBA moreover indicate that there is a difference between how cultural values are handled in the permit processes under the two acts. While the Country Administrative Board continuously negotiates cultural heritage values when handling changes of listed buildings and churches, in order to adapt the buildings to further use, such approaches are often not used by the municipalities [10,11,13,16]. Another identified problem is thus that cultural values mainly are handled in legal process relating to monuments and old buildings. As the HEA only handles listed buildings and churches belonging to the Church of Sweden, a majority of the buildings and building environments with cultural values only enjoys protection by the PBA. In addition, on the whole, few building permits are appealed. How the PBA is applied, particularly at the local level, is, therefore, vital in the achievement of the sustainability objectives. In the PBA, cultural values are protected through a *prohibition* of distortion. Hence, it is not possible to balance the climate or environmental gain from energy retrofits or the installation of renewable energy sources against the culture value. The only exception is when it is necessary according to a proportionality assessment. The climate interest can then only be considered part of the individual interest, for example, the reduction of the energy cost following the retrofit or installation of PV:s. Neither the legal text nor other legal sources, such as the legislative history or case law from the precedent courts, support a general balancing between the climate or environmental aspects in the individual assessment. Thus, a measure to meet the climate goals will, and should, not always trump other public values. This follows, in particular, from the fact that other measures can often be taken to meet both the climate goals and cultural heritage values, but also the fact that the legislator already has determined on the conditions for balancing between conflicting interest.

The municipalities have a rather large room of discretion to plan the use of land and water. However, planning also comes with a responsibility to ensure the enforcement of the legal requirements and to achieve a sustainable development, including all of the aspects. The Building Committee executes its power to decide according to the PBA through delegation from the municipal council. The knowledge of cultural values as well as a political understanding and support on the local level is thus essential. In municipalities where cultural expertise is available, the cultural values are more likely to be respected and solutions can be found that are acceptable from several perspectives. However, as long as the law only states that architectural expertise must be available to the building committee and the cultural values are regarded as inexplicit and expendable, there is a risk that the cultural values will go unnoted. The lack of political understanding and support will moreover increase this risk. Our survey gives a deeper perspective on the depth of this problem.

Another risk is that national requirements can more easily, than requirements following from EU law, be overruled—even by precedential courts—given the risk of infringement procedures by the EU in the latter case, but not the former. While there are several legislative acts regarding the climate transition, there is no legally binding secondary act at the EU level handling the protection of cultural heritage value within the EU. A comparison of the case law dealing with species protected by Swedish law and species protected by EU law clearly illustrates this risk.

Still, the building stock, including buildings and areas of cultural value, needs to become energy efficient and energy sources need to be transformed to renewables to reduce CO_2. Further development of innovations and techniques that are applicable on buildings of cultural value is needed [61]. They also need to be available and affordable to be used in a wider range of buildings. The technical development of solar cells is a good example where such adoption is well on its way. Today, there are several examples of aesthetically acceptable PV:s in other colors than black, and BIPV:s are rapidly being developed. These innovations can, in many cases, be used even in historic environment, if located with caution [61,62]. The church cases shows that heat pumps and PV:s can be tolerated by using best practice solutions not distorting the cultural heritage values. There must also be an acceptance of the aesthetic aspects and the integrity of the historic fabrics and materials. Finally, the possibility to experience an authentic cultural environment must be respected in areas of particular cultural value. Thus, further research is also needed on how measures to increase energy efficiency and the use of renewable energy can be enforced without risking the cultural values, both in relation to single buildings and entire building environments. An important contribution is a new doctoral thesis on how the need for energy efficiency and renewables can be added with caution towards cultural values within the entire urban fabric [61].

To ensure that cultural heritages values are not lost in the transformation to sustainable energy, there is a need to improve the application of the laws, primarily on the local level. This includes amending the norms as such, as well as other measures. One important measure is the adoption of a legal requirement on the local inventories of culturally valuable buildings and areas or preservation plans and programs to avoid cultural values being unnoticed in the planning and building processes. To achieve a more holistic approach, it is also recommended to investigate if and how a legal requirement on LCAs could be implemented. Other important measures are the adoption of guidelines to steer decisions towards solutions providing sufficient energy efficiency and allowing for renewable energy sources, while at the same time not distorting cultural values and to further emphasize the cultural values of the environment in policy documents. Increased support by political representatives on all of the levels, from the international to the local, is needed.

A major revision of the building permit process is presently ongoing [63]. The committee has proposed several alterations in order to strengthen the consideration of cultural value in the building process. The most important proposals are that every municipality must document the cultural value in the comprehensive plan, through specific inventories where buildings and areas are designated as culturally valuable, and that building permits will be required outside of the planned areas. This means that buildings and building environments with cultural values will be known in advance. The property owner will then be able to predict if a building permit is needed due to cultural values. Furthermore, it will be easier for NGOs to predict when it is meaningful to appeal. Several of the proposals aim to meet problems identified in our studies; implementation is thus recommended. However, the need for expertise of cultural values within the planning and building process is only briefly touched upon in the proposal. Further measures are therefore needed.

There is no patent solution for how the material expression of cultural values can be ensured while adopting measures to increase the energy efficiency and installations of renewable energy techniques within built environments. However, there is a possibility that through a well-designed legal system and functioning legal processes, supported by documented values and expertise, well-established routines and, ultimately, with equal

respect paid to all aspects of sustainability, the path towards a sustainable built environment is possible to tread.

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References and Notes

1. IEA. Buildings, a Source of Enormous Untapped Efficiency Potential. Available online: https://www.iea.org/topics/buildings (accessed on 15 August 2021).
2. European Commission. In Focus: Energy Efficiency in Buildings. 17 February 2020. Available online: https://ec.europa.eu/info/news/focus-energy-efficiency-buildings-2020-feb-17_en (accessed on 18 September 2021).
3. Geijer, M. Energipolitik, Bebyggelse och Kulturvärden i 1900-Talets Offentliga Utredningar. 2021, Rekoforskning.se. Available online: https://img1.wsimg.com/blobby/go/9ac771ea-d620-467f-b048-917d5f8806fe/downloads/Energipolitik%20Rapport%20%2020210128.pdf?ver=1611906228465 (accessed on 15 August 2021).
4. Energimyndigheten. Energiläget 2020. Available online: https://energimyndigheten.a-w2m.se/Home.mvc?ResourceId=173928 (accessed on 15 August 2021).
5. Ekonomifakta. Available online: https://www.ekonomifakta.se/Fakta/Energi/Energibalans-i-Sverige/Energianvandning-utveckling/ (accessed on 15 August 2021).
6. Naturvårdsverket. Så Mår Miljön, Fakta och Statistik, Utsläpp av Växthusgaser Från Bostäder och Lokaler. Available online: https://www.naturvardsverket.se/Sa-mar-miljon/Statistik-A-O/Vaxthusgaser-utslapp-fran-uppvarmning-av-bostader-och-lokaler/ (accessed on 15 August 2021).
7. European Commission. Energy Efficiency Directive. Available online: https://ec.europa.eu/energy/topics/energy-efficiency/targets-directive-and-rules/energy-efficiency-directive_en (accessed on 18 September 2021).
8. Sveriges Miljömål. Available online: https://www.sverigesmiljomal.se/ (accessed on 18 September 2021).
9. Christiernsson, A.; Malafry, M.; Lalander-Malmsten, E. Skydd av kulturvärden vid fönsterbyte: En kommentar till MÖD 2019:25. *JP Miljönet* **2020**. Available online: https://www.jpinfonet.se/JP-Miljonet/Analyser-och-referat/Analyser-och-referat/kulturmiljo/analyser/d_4088544-skydd-av-kulturvarden-vid-strongfonsterbyte_strong-en-strongkommentarstrong-till-strongmodstrong?search=f%C3%B6nsterbyte:%20kommentar%20m%C3%B6d (accessed on 15 September 2021).
10. Malafry, M. Skyddet av kulturvärden i omställningen till ett koldioxidneutralt samhälle. En studie av det rättsliga skyddet av kulturvärden mot installation av solceller i plan- och bygglagen respektive kulturmiljölagen. *Nord. Environ. Law J.* **2020**, *2*, 77–98.
11. Christiernsson, A.; Geijer, M.; Malafry, M. Energy efficiency, cultural heritage values and the law-conflicts and potential solutions. *Sustain. Built Herit.-21.* (SBE-21). (post print in press).
12. Lalander-Malmsten, E. Fönster Öppnar upp för Hållbarhetsmål i Konflikt? Fönster, Energieffektivisering och Bevarande av Kulturvärden i Plan och Bygglagen. 2021, Rekoforskning.se. Available online: https://img1.wsimg.com/blobby/go/9ac771ea-d620-467f-b048-917d5f8806fe/downloads/F%C3%B6nster-%C3%B6ppnar-upp-f%C3%B6r-h%C3%A5llbarhetsm%C3%A5l-i-konfli.pdf?ver=1614670888242 (accessed on 15 August 2021).
13. Fransson, L. Byte av Värmesystem i Kulturhistoriskt Värdefulla Byggnader. 2021, Rekofroskning.se. Available online: https://img1.wsimg.com/blobby/go/9ac771ea-d620-467f-b048-917d5f8806fe/downloads/Byte%20av%20va%CC%88rmesystem%20i%20kulturhistoriskt%20va%CC%88rde.pdf?ver=1617110487772 (accessed on 15 August 2021).
14. Malafry, M.; Christiernsson, A. Kulturmiljöorganisationers talerätt enligt Århuskonventionen och svensk rätt. (manuscript in preparation).
15. Fransson, L. Den Utvidgade Tolkningen av Århuskonventionen—En Seger för Kulturmiljön, och i så Fall till Vilket Pris? 2021. Rekoforskning.se. Available online: https://rekoforskning.se/publikationer (accessed on 1 October 2021).
16. Lalander-Malmsten, E. Den byggda miljöns kulturvärden och kommunerna—En förstudie om kommunala förutsättningar, hinder och vägarna framåt mot en god bebyggd miljö. (manuscript in preparation).
17. Kozineń, A. The principle of Sustainable Development as Basis for Weighing the Public Interest and Individual Interest in the Scope of the Cultural Heritage Protection Law in the European Union. *Sustainability* **2021**, *13*, 3985. [CrossRef]

18. Mazzarella, L. Energy retrofits of historic and existing buildings. The legislative and regulatory point of view. *Energy Build.* **2015**, *95*, 23–31. [CrossRef]
19. Ginks, H.; Hons, B.A. *Slim Profile Double Glazing in Listed Buildings. Research to Identify and Approach of Conservation Officers across the UK*; Institute of Energy and Sustainable Development, De Montfort University: Leicester, UK, 2015.
20. Teller, J.; Bond, A. Review of present European environmental policies and legislation involving cultural heritage. *Environ. Impact Assess. Rev.* **2002**, *22*, 611–632. [CrossRef]
21. Geijer, M. Ett Nationellt Kulturarv. Academic Licentiate Thesis, KTH, Stockholm, Sweden, 2004.
22. Gŭstin, M.; Nypan, T. (Eds.) *Cultural Heritage and Legal Aspects in Europe*; Annales Mediterranea: Koper, Slovenia, 2010.
23. Ornelas, C.; Guedes, J.M.; Breda-Vázquez, I. Cultural built heritage and intervention criteria: A systematic analysis of building codes and legislation of Southern European countries. *J. Cult. Herit.* **2016**, *20*, 725–732. [CrossRef]
24. Christiernsson, A. Rättens Förhållande till Komplexa och Dynamiska Ekosystem. Academic Doctoral Thesis, LTU, Luleå, Sweden, 2011.
25. Riksantikvarieämbetet. Standarder. Available online: https://www.raa.se/lagar-och-stod/standarder/ (accessed on 18 September 2021).
26. Prop. 1993/94:117, Inkorporering av Europakonventionen och Andra fri- och Rättigheter. Available online: https://www.riksdagen.se/sv/dokument-lagar/dokument/proposition/inkorporering-av-europakonventionen-och-andra_GH03117 (accessed on 15 August 2021).
27. Ahlin, P. *Mänskliga Rättigheter i Sverige, Europa och Världen*; Stiftelsen Juridisk Fakultetslitteratur: Stockholm, Sweden, 2021.
28. SOU 1979:65-66, Ny Plan- och Bygglag. Available online: https://lagen.nu/sou/1979:65 (accessed on 15 August 2021).
29. Prop. 1985/86:1, Med Förslag till ny Plan- och Bygglag. Available online: https://www.riksdagen.se/sv/dokument-lagar/dokument/proposition/med-forslag-till-ny-plan--och-bygglag_G9031 (accessed on 15 August 2021).
30. The European Landscape Convention. Available online: https://www.coe.int/en/web/landscape/text-of-the-european-landscape-convention (accessed on 15 August 2021).
31. European Commission. Proposal for a Regulation of the European Parliament and of the Council Establishing the Framework for Achieving Climate Neutrality and Amending Regulation (EU) 2018/1999 (European Climate Law), COM(2020) 80 Final, 2020/0036(COD). Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0080 (accessed on 15 August 2021).
32. Sweden's Draft Integrated National Energy and Climate Plan. Available online: https://www.government.se/4a9ef2/contentassets/e731726022cd4e0b8ffa0f8229893115/swedens-draft-integrated-national-energy-and-climate-plan (accessed on 18 September 2021).
33. Sveriges Tredje Nationella Strategi för Energieffektiverande Renovering. Available online: https://ec.europa.eu/energy/sites/default/files/documents/se_2020_ltrs.pdf (accessed on 18 September 2021).
34. Swedish NAO. The Energy Performance Certificate System—Clear Purpose but Unclear Goals (RiR 2021:21), English Summary. Available online: https://www.riksrevisionen.se/en/audit-reports/audit-reports/2021/the-energy-performance-certificate-system---clear-purpose-but-unclear-goal.html (accessed on 18 September 2021).
35. European Commission. Energy Efficiency—Revision of the Energy Performance of Buildings Directive. Available online: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12910-Energy-efficiency-Revision-of-the-Energy-Performance-of-Buildings-Directive_en (accessed on 17 September 2021).
36. Björnstad, M. *Kulturminnesvård I Efterkrigstid. Med Riksantikvarieämbetet i Centrum*; Kungl. Vitterhets Historie och Antikvitets Akademien: Stockholm, Sweden, 2015.
37. Prop. 1997/98:117, Framtidsformer—Handlingsprogram för Arkitektur, Formgivning och Design. Available online: https://www.regeringen.se/49bb94/contentassets/5a2e4b3be7664587b5fde72211f2c707/framtidsformer---handlingsprogram-for-arkitektur-formgivning-och-design (accessed on 15 August 2021).
38. Energimyndigheten. Täta Fönster och Dörrar. Available online: https://www.energimyndigheten.se/snabblankar/lattlast/sa-har-kan-du-spara-energi/tata-fonster-och-dorrar/ (accessed on 15 August 2021).
39. Litti, G.; Audenaert, A.; Lavagna, M. Life cycle operating energy saving from windows retrofitting in heritage buildings accounting for technical performance decay. *J. Build. Eng.* **2018**, *17*, 135–153. [CrossRef]
40. Fossdal, S. *Windows in Existing Buildings—Maintenance, Upgrading or Replacement?* Riksantikvaren, Report 192; SINTEF Byggforsk: Oslo, Norway, 1996.
41. Asif, M.; Davidson, A.; Muner, T. Life Cycle of Window Materials—A Comparative Assessment; Millenium Fellow School of Engineering, Napier University, Edinburgh, UK. 2002. Available online: https://www.researchgate.net/publication/237446892_LIFE_CYCLE_OF_WINDOW_MATERIALS_-_A_COMPARATIVE_ASSESSMENT (accessed on 15 August 2021).
42. Menzies, G.F. Historic Scotland Technical Paper 9. Thermal Performance and Embodied Energy. Available online: https://pure.hw.ac.uk/ws/portalfiles/portal/645924/technicalpaper13.pdf (accessed on 20 September 2021).
43. Riksantikvarieämbetet. *Var Virket Bättre förr?: En orientering om Traditionellt Svenskt Virkeskunnande*; Nordiske Museet: Stockholm, Sweden, 1982.
44. Löfgren, E.; Hansson, P. (Eds.) *Energiboken. Energieffektivisering för Småhusägare*; Svenska byggnadsvårdsföreningen: Ängelholm, Sweden, 2011.

45. Riksantikvarieämbetet. Kulturvärden Försvinner i Byggprocessen. 2018. Available online: http://samla.raa.se/xmlui/bitstream/handle/raa/12482/Rapp2018_16.pdf?sequence=1&isAllowed=y (accessed on 20 September 2021).
46. Riksantikvarieämbetet. Kulturhistoriska Värden i Plan- och Byggprocesser: Redovisning av Regeringsuppdrag om hur Kulturhistoriska Värden Integreras och tas Tillvara. 2020. Available online: http://raa.diva-portal.org/smash/get/diva2:1430320/FULLTEXT01.pdf (accessed on 20 September 2021).
47. Energimyndigheten. Nätanslutna Solcellsanläggningar. Available online: http://www.energimyndigheten.se/statistik/den-officiella-statistiken/statistikprodukter/natanslutna-solcellsanlaggningar (accessed on 20 September 2021).
48. Government Offices of Sweden. Nytt Skatteavdrag nästa år för Privatpersoner som gör Gröna Investeringar. Available online: https://www.regeringen.se/pressmeddelanden/2020/09/nytt-skatteavdrag-nasta-ar-for-privatpersoner-som-gor-grona-investeringar (accessed on 20 September 2021).
49. Svenska kyrkan. Svenska Kyrkans Färdplan för Klimatet. Available online: https://www.svenskakyrkan.se/agenda2030/svenska-kyrkans-fardplan-for-klimatet (accessed on 20 August 2021).
50. RÅ 2007, ref 75, Fläckebo.
51. Länsstyrelsen i Jämtlands län 19-03-2018, dnr 433-4263-2016.
52. Länsstyrelsens i Skåne län 10-01-2019, dnr 433-28487-2017.
53. The regional Administrative court in Karlstad, 4859–19.
54. The Swedish Government. Remiss av Utkast till Rapport om hur Sverige Genomför Århuskonventionen. Available online: https://www.regeringen.se/remisser/2021/03/remiss-av-utkast-till-rapport-om-hur-sverige-genomfor-arhuskonventionen/ (accessed on 15 August 2021).
55. SÖ 2005:28, Konventionen om Tillgång till Information, Allmänhetens Deltagande i Beslutsprocesser och Tillgång till Rättslig Prövning i Miljöfrågor. Available online: https://www.regeringen.se/rattsliga-dokument/sveriges-internationella-overenskommelser/2005/01/so-200528/ (accessed on 15 August 2021).
56. Land and Environment Court of Appeal, 25-11-2019, P 10362-18.
57. Land and Environment Court of Appeal, 25-11-2019, P 12291-18.
58. Land and Environment Court of Appeal, protocol 11-12-2018, P 5338-18.
59. Supreme Court NJA 2020 s. 641.
60. Supreme Court 11-03-2020, NJA 2020 s. 190.
61. Eriksson, P. Balancing Building Conservation with Energy Conservation—Towards Differentiated Energy Renovation Strategies in Historic Building Stocks. Ph.D. Thesis, University of Gothenburg, Gothenburg, Sweden, 2021.
62. Lopèz, P.; Silva, C.; Lucchi, E.; Franco, G. Acceptance of building integrated Photovoltaic (BIPV) in heritage buildings and landscapes: Potentials, barrier and assessment criteria. *Constr. Pathol. Rehabil. Technol. Herit. Manag. Postprint REHABEND 2020 Congr.* **2020**, 1636–1644. Available online: https://www.researchgate.net/publication/344634017_Acceptance_of_Building_Integrated_Photovoltaic_BIPV_in_Heritage_Buildings_and_Landscapes_Potentials_Barriers_and_Assessment_Criteria (accessed on 20 August 2021).
63. SOU 2021:47, Ett Nytt Regelverk för Bygglov. Available online: https://www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2021/06/sou-202147/ (accessed on 15 August 2021).