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Energy efficiency, cultural heritage values and the law – conflicts and potential solutions

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Abstract. The housing and service sector account for nearly 40 percent of the total energy usage in the European Union (EU). Improving energy efficiency in the building stock is therefore of vital importance to ensure climate goals. However, increasing the energy efficiency of existing buildings can lead to conflicts with other sustainability goals, such as the preservation of cultural heritage values of the built environment. How this conflict is handled in practice will depend on the design of the legislation and ultimately, the legal system. Not only is legislation on the protection of cultural values necessary, the legal system as a whole must be coherent and without deficits, loop-holes and conflicts contradicting goal fulfilment. Moreover, the norms must be effectively applied and complied with. Results of an interdisciplinary research project assessing the effectiveness of the Swedish legal system in reaching energy goals while preserving heritage values, show that meeting sustainability goals are jeopardized by not applying the law in accordance with the intent of the legislator. This paper elaborates on the deficits identified and how they can be improved in order to handle sustainability conflicts.

Keywords: legal system; cultural heritage; conflicting sustainability goals; energy efficiency; climate

1. Introduction

In the EU, the housing and service sector account for nearly 40 percent of the total energy usage. Improving energy efficiency in the building stock is therefore of vital importance to ensure climate goals, such as reaching a carbon neutral society in the EU by 2050 [1]. However, increasing the energy efficiency of existing buildings can conflict with the sustainability goal to preserve cultural heritage values of the built environment. The need to make the built environment more energy efficient as well as the importance of preserving our cultural heritage has been identified in policy documents and in legislation both within EU and in Sweden. Furthermore, both issues are of substantial importance if the goals of Agenda 2030 (goal 11.4) and the New Urban Agenda (NUA – Habitat III, call 38, 45, 60, 97, 124 and 125) are to be reached.

In a well-functioning *Rechtstaat*, with legality and predictability as fundamental legal principles, law is a necessary instrument to reach political objectives. However, the mere adoption and construction of legal provisions is in itself not sufficient. The legal system, and the laws that constitute it, may contain deficits, loopholes and conflicts contradicting goal fulfilment. Moreover, even if the legal instruments and legal norms are well crafted to meet their goals, lack of efficient implementation, application and enforcement can be obstacles in achieving the sustainability objectives.

In the interdisciplinary research project *Law, Sustainable Energy Use and Protection of Cultural Heritage* (RECO), funded by the Swedish Energy Agency, researchers in jurisprudence, art history and



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conservation science at Stockholm University and Uppsala University explore how the law, and its application, handles conflicts between energy efficiency and preservation of cultural heritage values of the built environment and how the law and its application can be improved to meet energy goals while preserving cultural heritage values. More specifically, this project assesses whether the legal system is sufficiently and effectively coordinated and if the laws are applied in accordance with the intention of the legislator. Moreover, the implications of different legal approaches and the need for legal, and other measures, to overcome potential goal conflicts and facilitate a holistic approach to sustainability is scrutinized.

This paper elaborates on some of the deficits identified and how they can be improved. The focus is on the land use planning and building processes. The paper provides the reader with the necessary legal context and the methodological approach of the interdisciplinary research used to assess the effectiveness of law in achieving conflicting sustainability goals. Although the paper discusses the Swedish legal system, the aim is to contribute to increased general knowledge on the role of law in handling conflicts between energy efficiency and preservation of cultural heritage values of the built environment.

2. Methodological approach

The effectiveness of valid law in achieving the two potentially conflicting sustainability goals is assessed by applying an internal and external environmental law methodological approach. The internal approach includes an assessment (*de lege lata*) of the legal sources (primarily legal texts, preparatory works and case-law and legal literature) based on legal theory on ideal design of laws and legal systems to achieve environmental objectives. It provides information on e.g. potential deficits in the coordination of the legal system and is thus used to identify deficits, conflicts and loopholes that may undermine the laws' ability to meet their goals.

To understand how the law functions in practice, three case studies, illustrating topical and urgent conflicting sustainability issues in the built environment, have been conducted. The case studies include solar cells, windows and heating systems. In studying how the politics of energy, building and preserving cultural heritage has developed over time, a more profound understanding of the legal situation has been brought about.

The external approach includes assessments of the legal system based on art and conservation science. This methodological approach has enabled us to discuss and understand the implications regarding technical aspects and cultural heritage values of the built environment of different legal approaches and applications.

On the basis of the internal and external assessments of the legal system, necessary measures to improve the effectiveness of the valid law have been identified (*de lege ferenda*).

The methodological approach has entailed interdisciplinary collaboration between researchers in jurisprudence and art and conservation science as well as a dialogue with legal experts and other professionals in the field of heritage preservation and representatives of central and local authorities.

3. The legal context

3.1 The central legislative acts and its objectives

Cultural heritage is included in many international and national policies concerning sustainability and the preservation of built heritage. However, there is no directive regarding the protection of built heritage within the EU to balance the obligations laid down in the Energy Efficiency Directive [2]. Member States therefore have considerable discretion to adopt legal measures to protect cultural heritage and preserve cultural values while meeting the demand for an energy efficient building stock [3].

Regulations of the distribution and consumption of energy have a long tradition in Sweden, a country that has been heavily dependent on imports of coal and oil for heating, as well as industrial production during the previous century. The development of regulations concerning energy consumption coincides with the gradual emergence of a national legislation for planning and building, as well as heritage protection, leading up to today's legal system. In Sweden, the effects of energy retrofits on buildings of cultural value have been observed in national surveys and debated within the legislative process since the 1970s, but the issues have never been fully resolved [5].

In Sweden, there are three main laws that aim to ensure the sustainable development of the built environment, and additionally, several implementing regulations and ordinances. One of these laws is the Planning and Building Act (2010:900) (PBA), which aims at promoting a societal progress with equal and proper living conditions and a clean and sustainable habitat, for people in today's society and for future generations. It deals with both spatial land use planning and the building permit process. Land use planning is entrusted to the 290 municipalities, each of which is requested to have a non-legally binding comprehensive plan and legally binding detailed development plans for densely populated areas (*local plans*). Each municipality has its own Board of Planning and Building and a Building Committee, which is a political body, consisting of democratically elected politicians at the municipal level. The Building Committee may delegate decisions to the officers of the Planning and Building Board. The municipalities have legal competence to issue building permits and responsibility to supervise the building process and its compliance with the requirements laid down in the PBA. They must have the specific competences needed to carry out its tasks in a satisfactory way. If the necessary competences are lacking, the municipalities can use a consulting expert.

The act aims at promoting several public and private interests, in order to achieve its overall objectives. These interests are laid down in the general rules of consideration and have to be taken into account when applying the act. According to these rules, planning must promote both cultural heritage values and long-lasting and effective management of land and water areas, energy resources and raw materials. Furthermore, the built environment must be designed and located in a manner that is suitable, with regard to *inter alia* the town- and landscape, natural and cultural values of the site and the need for energy, water and a good climate.

In other words, all planning and construction of buildings must be carried out sustainably, in a broad sense. However, both public and private interests must be taken into account. According to the principle of proportionality, a general principle of administrative law both in Sweden and in the EU, a measure to promote a public interest can only be justified if it is suitable and necessary to reach the intended objective. Moreover, a measure can never be proportional if there are less restrictive measures to reach the intended objective. The contextual balancing of the conflicting interest in a narrow sense (proportionality *stricto sensu*) leaves significant room for discretion to the authorities and the courts to strike a balance in each individual case between competing values and principles. In this context, the competing values, normally energy efficiency as a private interest and the preservation of cultural heritage values as a public interest, enjoy the same legal status and are both recognized as fundamental parts of a sustainable development, an objective laid down in the Swedish constitution and in the Treaty of the EU (TEU).

National guidelines for the balancing of interests in decisions regarding land and water use are also laid down in the Environmental Code (1998:808) (EC), the central environmental legislation in Sweden applicable to all human activities and measures which may affect the environment. The concept "environment" is broad and includes also cultural heritage values. The EC applies in parallel with the PBA, unless otherwise stated, and its national land use planning guidelines, including the so-called areas of national interest, are binding when taking decision and adopting plans under PBA. The County Administrative Boards have the responsibility for supervising the planning processes and must ensure that national public interests are taken into account in decisions on municipal plans. In the case of conflict with a national interest, the local plan can be reversed by the County Administrative Board.

Another act of importance is the Historic Environment Act (1988:950) (HEA) which aims at ensuring that all churches built before 1940, and about 2 200 additional listed properties, are safeguarded and maintained regarding their status as cultural heritage. Whereas PBA covers all buildings with any sort of cultural value, HEA only covers churches and properties of cultural heritage values, which is a narrower concept than cultural values used in the PBA. This law is enforced on the regional level by the 21 County Administrative Boards.

3.2 Protection of cultural heritage values

The urgent need to take measures to increase energy efficiency of the built environment to reduce greenhouse gas emissions and climate impacts has been identified both by the EU and Sweden. Whereas

the EU has made an exception from the duty to undertake energy declarations for buildings with cultural heritage values, Sweden has not generally excluded such buildings, listed or not. The requirements thus apply to most of the building stock.

Measures to meet energy and other technical requirements must, however, take cultural heritage values, among other cultural values, such as aesthetic and social, into account. Buildings and sites with cultural values may not be distorted and changes to existing buildings must be handled with precaution and consideration of historic, cultural heritage, environmental and artistic characteristics of the building. The obligations always apply, even when there is no building permit requirement and even if the building, or the site, has not been identified in a comprehensive plan, cultural program or any other policy documents. Moreover, the requirements apply both within and without areas with adopted local plans and in the planning process. There is no possibility to authorize derogations. However, as described above, there is a general requirement to follow the principle of proportionality.

As already noted, the preservation of the cultural heritage values is also a prerequisite in achieving sustainable development according to the EC and land areas can be listed as areas of national interest in regard to its built environment. As a main rule, measures that risk causing significant damage on cultural heritage values may not be taken within these areas.

3.3 Building permit and notification requirements

A building permit is only required for substantial changes of the exterior appearance of a building within areas with local plans. If only interiors are affected, normally there is no building permit requirement. In some cases a notification must be submitted to the Building Committee. One such case is measures to alter buildings with cultural heritage values covered by a protective provision in a local plan. The municipality then has the possibility to evaluate whether the measure complies with *inter alia* technical demands on energy conservation and the provisions aiming at protecting cultural values before issuing a starting clearance. One instrument to be used in this process is a control plan, which has the possibility to include consultation with experts in conservation.

In addition to requirements for a building permit or notification under the PBA, measures to increase energy efficiency of churches and listed buildings require a permit according to the HEA.

4. Energy management measures

4.1 Introduction

Most measures to increase the energy efficiency of a building will alter the appearance if not carried out with care. In some cases, retrofits also affect the interiors. Different types of measures will have different implications regarding a building's cultural heritage significance, for instance historic relevance, building techniques and environmental and artistic characteristics. Different measures are furthermore subject to different legal requirements, depending on *inter alia* their actual effects on characteristics of the building and its technical, historical, cultural, environmental and artistic values and the location of the building. Common measures to increase the energy efficiency or the use of renewable energy of buildings include changes or adaptations of windows and heating systems and installation of solar cells.

4.2 Windows

Windows are of great importance to a building's aesthetics, architecture and its capacity to reflect cultural heritage and artistic values. At the same time, a large part of a building's heat loss can occur through its windows. One of the most common measures in order to decrease the use of energy is to change old leaking wooden framed windows to more energy efficient windows made of aluminium or plastic. This might seem harmless if these energy efficient fittings have a similar appearance. Nevertheless, older windows are often of high quality, made by skilful carpenters. The glass in such windows is handmade and therefore reflect the light in a lively manner which adds certain qualities to the built environment. Whereas wooden windows demand regular maintenance and can be repaired over and over again, new windows can't be maintained and must often be replaced after 25–30 years. Moreover, without proper insulation and weather stripping around the windows, the reduction in the use of energy of the building may be insignificant.

Changing or adaptation of windows require a building permit if the measure alters the appearance of the building in a substantial way and the building is situated in an area that has a local plan [4]. Our study of recent case law illustrates a rather restrictive view of what constitute a substantial change [12]. Even changes from wooden framed windows to windows made of aluminium with new modern glasses, without functional sash bars, in a new colour, have been considered not to constitute a substantial change [4].

4.3 Heating systems

The climate in Sweden is cold and most buildings have some form of heating system. Since oil was cheap following World War II, oil dominated as fuel for decades. After the oil crisis in the 1970's many private homeowners changed to electric heating systems. As the price of oil as well as electricity rose considerably toward the end of the 20th century, the demand for alternative heating systems increased and different forms of heat pump systems became popular [5]. Installing a new heating system has a considerable energy saving potential. Nevertheless, such measures can alter both the interior and exterior of a building. Damage can also be caused to the building if piping is required. Panels and other carpentry details, wall paintings and other features of the interior may also be affected.

A building permit may be required if the change of heating system alters the building's exterior in a substantial way. This has been the case e.g. when installing heat pumps [6]. However, our study reveals that a building permit, e.g. in the case of installing long-distance heating and geothermal heating systems, is often not considered needed. Under certain circumstances, a notification to the Building Committee may nevertheless be required. Yet, a prerequisite for the obligation of notification is that the building has a cultural value that is covered by a local plan. Our study of the application of the rules within the municipality of Stockholm reveals that cultural values, particularly concerning interiors, often are at risk when property owners change heating systems.

4.4 Solar cells

Due to ambitious goals for renewable energy sources, lowered costs and extensive subsidization, the market for solar cells has exploded in recent years. In response to both these economic and environmental incentives, single family property owners, as well as large property companies and churches are pursuing solar cell installations [7]. However, solar cells can distort a building if they are located on the roof top where they are visible. If the addition conceals the surface material of the roof top it may damage the cultural heritage as well as the artistic value.

Within a local plan area, a building permit is always required when the solar cell installation causes a substantial change to a building that possesses particular cultural heritage, artistic or aesthetic values, or if the building is situated in building areas possessing such values. Our case law study illustrates that building permits have been denied for black solar cells on a red brick roof that are visible from the street. The measures were found to violate legal requirements to protect cultural heritage values. In cases where the roof is high and flat, installations are nevertheless often determined to not distort a building [7].

5. Results and discussion

5.1 Deficits in the planning instruments

Land use planning is a legal instrument to ensure a long-term sustainable use of land and water. Whereas planning could be a vital instrument for balancing the two interests and ensure both objectives, our assessments show that the design of the planning rules is inadequate. First of all, national guidance on land use is vague and the preservation of cultural heritage values is highly dependent on how active municipalities are in the design of plans. Even though the municipality should describe how areas of national interest for cultural environments are to be protected in its comprehensive plan, there is often a lack of implementation of protection provisions in e.g. local plans. This is likely to be a result of the lack of precise requirements for the content of the local plans and the lack of a legal requirement to identify buildings or sites in local plans and local area regulations; the municipality *may* identify such buildings and districts.

The legal grounds for the County Administration Board to reverse a local plan is limited to plans in conflict with national interests. There is thus a risk that plans in conflict with cultural heritage values outside such areas are adopted. In addition, only significant damage to areas of the national interest is prohibited. Nonetheless, the cumulative effect of many minor changes may be substantial.

Another identified problem is that many local plans are out-of-date and today such planning is usually adopted with exploitation as the main purpose [8]. The lack of mechanisms to ensure adaptation of plans to changes in the environment, new objectives or new knowledge is one explaining factor.

Lastly, a plan can only hinder activities that are in conflict with the plan. It is never possible to force property owners to take measures to achieve a certain objective, e.g. to increase energy efficiency of a building, or to restore a distorted building, through the adoption of a local plan.

Measures to increase the ability of the plans to achieve both targets are thus needed. Such measures could include more specific requirements on the content of plans and for the information used in the adoption of plans. Other examples include an obligation to identify buildings and sites with cultural heritage values in the adoption of new local plans and local area regulations as well as continuous reviews and adaptation of plans.

5.2 Insufficient legal mechanisms to hinder irreversible damages

Legal mechanisms to promote assessment of measures in advance of remodelling or retrofitting is important in ensuring compliance with the precautionary requirement and the prohibition of distortion, and thus the protection of cultural heritage values. This follows in particular from the fact that lost cultural heritage values can be irreversible. Permit and notification requirements as well as starting clearances are examples of legal instruments to ensure that measures are being evaluated in advance. More specifically, with these procedures, the Building Committee can ensure both technical demands and the protection of cultural heritage values before measures to increase the energy efficiency of buildings are carried out. When a measure is neither subject to a building permit requirement nor a notification obligation, the property owner can undertake measures without any review. Although the responsibility to ensure that the measure is in compliance with the precaution and distortion provisions rests on the individual, there is no general obligation to consult with a specialist. In the later stages of the building process the committee can nevertheless demand that the property owner consults with a specialist to ensure sufficient consideration to cultural heritage values.

Given that several measures are exempted and others seldom reach trial, the risk of irreversible damages is significant. In the case of windows, the risk will furthermore increase due to recent case law indicating that window replacements rarely require building permits because of their limited impact on a building's appearance [4]. In addition, cultural heritage and artistic values of the interiors are at an even more profound risk of being neglected. Our research on installations of heating systems in the municipality of Stockholm confirms this. It shows that notifications regarding these installations never result in actions from the Building Committee to ensure cultural heritage values. Moreover, merely 4 out of 30 inspection plans included cultural heritage values, despite the fact they concerned buildings with particular values [6].

Principally, effective supervision is an important supplementary legal instrument to hinder irreversible damage to cultural heritage values. This mechanism will however only work effectively if the property owners refrain from taking irreversible measures, e.g. due to the risk of an injunction on restoration to the former situation, or if supervision takes place prior to the measures. Given the lack of a requirement for a building permit for changes to buildings not situated in an area with an adopted local plan, effective supervision is particularly important in these areas. At the same time, resources for supervision are often limited and supervision mainly occurs due to complaining neighbours. In the case of interior changes, such complaints are probably very rare. It is moreover rather well known that the risk of inspections and injunctions on restoration in general is low [9].

5.3 Lack of conservation competence and requirements on documentation

Knowledge of architecture and cultural heritage is obviously necessary to determine whether an alteration is substantial, if it distorts the cultural heritage values and if there are alternative solutions to

achieve the objective without distortion to the cultural heritage values [10]. Nevertheless, despite the fact that the Building Committee must have the specific competence needed to carry out its tasks in a satisfactory way, a nationwide investigation by the National Heritage Board revealed that more than half of the municipalities lack adequate competence within their organisations, and matters concerning cultural heritage are often dealt with arbitrarily [11]. The study also shows that conservation specialists participate in only seven percent of the matters regarding cultural heritage. Our research shows that even within a municipality the application of the law varies due to *inter alia* differing knowledge levels of individual officers within the Planning and Building Board [6]. However, a lack of conservation competence is frequently present at all levels in the legal system.

Moreover, as there is no obligation to identify buildings of cultural heritage values in the municipalities and the vast majority of local plans are outdated, there is a risk that the potential cultural heritage values of a building or a built environment are not drawn to the attention of the building and planning board, or the property owner. If the local authorities do not recognise this value it may be lost forever. Even if the values are recognized by the municipality, case-law illustrates that the protective provisions can be difficult to enforce when there is no documentation to support the value of an individual building [4, 12].

An increased identification and documentation of buildings and sites, with cultural heritage values, in local plans, or other transparent information systems, could facilitate the building permit requirement and notification processes, increase legal certainty, reduce potential conflicts and improve the protection of cultural heritage values. National guidance on the adoption on cultural heritage programs could also be an important step to increase consistency between municipalities.

5.4 Lack of legal requirements on life cycle analysis

When the PBA was adopted in 1987, life cycle analysis of the building process and reuse of building materials was discussed in the preparatory works [13]. Nevertheless, there were never any specific provisions adopted on life cycle analysis. At the same time, the overall objective for sustainable development and the general rules of considerations have proven to be too vaguely formulated to guide decision making towards such holistic and long-term perspective. Thus, such assessments are not required in applications for building permits for changes to increase the energy efficiency of a building in practice. One illustrative example is the replacement of windows, where energy efficiency is often used as an argument in the application for a building permit. In these cases, the environmental effects, including the use of energy resources when producing and transporting new materials such as aluminium, plastics and new glass long distances are not taken into account. Neither is the short life span of 25–30 years of the new window, which is normally considered to be sufficient lifespan of separate construction parts of the buildings.

An important step in the right direction was taken in 2020, with new requirements on the reuse and recycling of building materials. In addition, the development of guidance on the implementation of life cycle analysis is needed in order to further contribute to a new understanding of the concept of sustainability and the balancing between private and public interests to achieve both sustainability objectives.

6. Conclusions

Like most countries, Sweden is striving to reach the goals of Agenda 2030 and the New Urban Agenda. The built environment constitutes a significant asset in the achievement of these objectives due to both its ability to contribute to a sustainable energy conversion through energy efficiency measures and its capacity to reflect different types of cultural heritage values. However, these two specific public interests frequently collide.

The research described in this paper shows that the two interests have equal legal status in the Swedish legislation and are clearly identified as vital aspects of sustainable development. Deriving from technical and conservation research it can moreover be concluded that it is possible to achieve both goals simultaneously [14]. Sustainable energy conversion is thus possible without risking cultural heritage, and the law is an important, and even necessary, instrument to achieve both targets. To a great, but not

full, extent, the necessary norms to meet the two objectives already exist. Nonetheless, the application and enforcement of the law impedes its intended protective impact and the adequate balancing of interests. Thus, there is an urgent need to improve the application and enforcement of the law.

Based on the constructive methodological approach of the research, numerous measures, both legal and non-legal, to improve the effectiveness of the law to overcome conflicts have been identified. These measures constitute important steps towards a holistic approach to the management of the built environment and thus – to the achievement of the sustainability goals laid down in the international, EU and national law.

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