RECO (1) (https://rekoforskning.se) recognises that improving the energy efficiency of the building stock is of vital importance to ensure climate goals, such as reaching a carbon neutral society in the EU by 2050. However, increasing the rate of energy efficiency measurements of existing buildings can conflict with other sustainability goals, for example goals that aim to preserve the built cultural heritage. Such sustainability goals can be found in policy documents both within EU and on the international level. Some examples are Agenda 2030 (goal 11.4), the New Urban Agenda (NUA – Habitat III) and the Granada convention of 1985 (ETS 121). According to the Faro Convention all general technical regulations need to take account of the specific conservation requirements of cultural heritage (ETS 199, art 9.c). However, there is no EU directive that protects the architectural heritage as an environmental, economic, and social resource. Therefore, all protective legislation is to be found on the national level, and the variation of such legal systems and their enforcement varies throughout Europe. This might lead to an inadequate balancing of sustainability perspectives.

The built heritage of Europe shows a great variety in building techniques and age. Therefore, the vulnerability to physical transformation due to retrofits differs. Today there are numerous renovation methods that makes it possible to respect cultural heritage values, while improving the energy performance of buildings. A further development of affordable and well adaptable solutions is needed, for example concerning integrated solar cells. This development depends partly on the legal enforcement, as higher demands for adaptive solutions goes hand in hand with the legal demands on respect of the cultural heritage.

Although Sweden has a far-reaching legislative system, with strong emphasis on preservation of cultural values within the built environment, the research carried out by the RECO-project verifies that architectural heritage is at risk when alterations to improve the energy efficiency of buildings are carried out. The legal mechanisms on the national level have proven to be insufficient to hinder irreversible damages on existing buildings. We have good reasons to believe that the same experiences have been made throughout Europe. Existing buildings must be handled with precaution and consideration of historic, cultural heritage and artistical characteristics. Therefore, to prevent further damage on the built heritage there is a strong need for a clear statement within the EPBD that deep renovations must consider the effects on cultural values on each building as well as the effect on the town- and landscape.

In order to hinder further distortion of cultural heritage due to precarious retrofits, we strongly recommend that any form of energy efficiency measures concerning buildings and sites of cultural value, must be presided by evaluation both regarding cultural values and a technical conditions. Such evaluation should include also long and holistic perspectives e.g through life cycle analysis (LCA).

Finally, regulation on the EU-level needs to underpin the value of the built heritage as well as the need of energy efficiency to reach the international goals of sustainability. Measures to meet energy efficiency needs to take a holistic approach to sustainability perspectives into account.

- We therefore recommend additions to article 7**, Existing buildings**:

Member States shall take the necessary measures to ensure that when buildings undergo major renovation, the energy performance of the building or the renovated part thereof is upgraded

in order to meet minimum energy performance requirements set in accordance with Article 4 in so far as this is technically, functionally, and economically feasible *and does not distort heritage of artistic characteristics of the building and the built environment. The calculations shall take Life cycle analysis in account.*

Those requirements shall *normally* be applied to the renovated building or building unit as a whole. *The requirements shall take in to account that parts or elements of cultural of artistical value may be exempt. Alternative requirements may be applied to the renovated buildings and elements of cultural or artistic value. Additional requirements may be applied to other parts or elements to fulfill the overall effect.*

Member States shall in addition take the necessary measures to ensure that when a building element that forms part of the building envelope and has a significant impact on the energy performance of the building envelope, is retrofitted or replaced, the energy performance of the building element meets minimum energy performance requirements in so far as this is technically, functionally and economically feasible *and does not distort heritage of artistic characteristics of the building and the built environment.*

Member States shall determine these minimum energy performance requirements in accordance with Article 4.

Member States shall encourage, in relation to buildings undergoing major renovation, the consideration and taking into account of high-efficiency alternative systems, as referred to in Article 6(1), in so far as this is technically, functionally and economically feasible *and does not distort heritage of artistic characteristics of the building and the built environment*.

(1) The interdisciplinary research project *Law, Sustainable Energy Use and Protection of Cultural Heritage* (RECO), is funded by the Swedish Energy Agency. Researchers in jurisprudence, art history and 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.