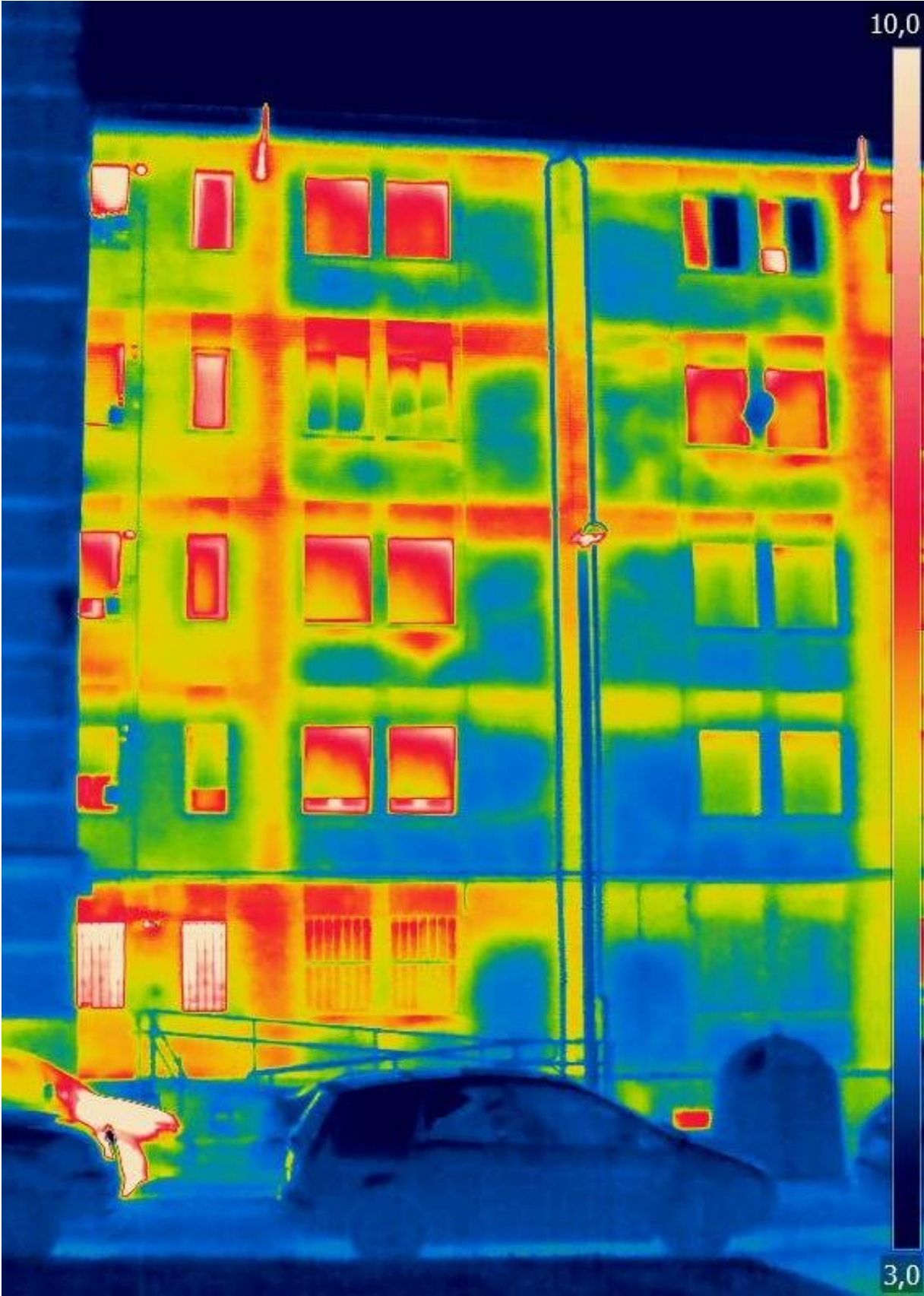


# Nearly zero-energy buildings remain a difficult challenge for Southern Europe

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Thermal image of a Basque Country building in the 70s, where heat loss is evidenced due to lack of insulation. Credit: (Juan María Hidalgo / UPV/EHU)

In coming years, there is a legal commitment for all the countries of Europe to improve the energy efficiency of buildings, which boils down to constructing nearly zero-energy buildings (nZEBs), buildings that consume the minimum energy. The EU Directive 31/2010 establishes two key deadlines: All public buildings must be nZEBs from 1 January, 2019, and by 1 January 2021, all new buildings must be nZEBs. "It is only one year until the first commitment, and yet many countries are a long way from meeting this level of energy efficiency in buildings. The countries that have made the most progress in this challenge are in central and northern Europe," explained Juan María Hidalgo, co-author of the study.

This research led by the Université de Liege was carried out by over a dozen European researchers, and analyses the construction situation in seven countries in Southern Europe (Cyprus, France, Greece, Italy, Portugal, Romania and Spain). Each country has subtle differences in the technical definitions that make it very difficult to directly compare the nZEB regulations and impulse programmes. "We participants in the study made an effort to reach agreement on a common methodology. It was the only way of making real comparisons on a like-for-like basis," said Hidalgo.

## **Social and technological barriers**

The research focused on the comparison of the social and technological barriers hampering the development of nZEBs with respect to both new buildings and the retrofitting of existing properties. Until now, many

studies justified the south-north delays by citing the economic context. Yet this work has shown that there are other barriers that greatly affect the construction of nearly zero-energy buildings, such as sociological issues and the climate conditions of each country.

"The poor training of practically all the players, including the administration, construction workers and citizens, constitutes a huge human chain in which there is still a lack of understanding about what nZEBs are and how to achieve them," said Hidalgo. "Building design has to be studied in greater detail to resolve the changes of season such as winter and summer. The Basque Country could be a good test bench for that, as it has nearly the whole range of climates in the study. Despite being a small region, we have to apply very different design criteria in coastal areas, mountainous areas, areas in the south, etc.

"If these barriers are not overcome, there will very likely be dissatisfaction with the actual result, since problems of thermal comfort could arise, such as overheating, along with unnecessary additional costs in the [building](#), often exacerbated by the poor functioning of the buildings," said the researcher. "The study is proposing improvements in the regulations, design, construction and use for buildings of this type."

The researcher also stressed that because of the location and orientation possibilities, the use of new materials and technologies integrated into the design, it is more difficult to build a new nZEB than to transfer this concept to the sphere of retrofitting, since there is less room for manoeuvre and the costs also rise. Hidalgo says, "We are hoping that this study will help to solve the main difficulties in the sector and enable us to get to 2020 with a better-prepared building sector, with better tools and greater awareness. Thus, it will be possible to build nZEBs that meet the needs of everyone, at the lowest cost and with the least environmental impact possible."

**More information:** Shady Attia et al. Overview and future challenges of nearly zero energy buildings (nZEB) design in Southern Europe, *Energy and Buildings* (2017). [DOI: 10.1016/j.enbuild.2017.09.043](https://doi.org/10.1016/j.enbuild.2017.09.043)

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