In recent years, the tourism sector and the residential construction sector have shown increasingly significant interconnections, particularly with respect to the energy efficiency of housing. The increase in tourist arrivals observed in the post-pandemic years—especially in some highly attractive areas—may in fact represent an important stimulus for improving the energy performance of the housing stock.

On the one hand, growing tourist flows generate greater demand for accommodation, both in traditional hospitality facilities and in private dwellings used for short-term rentals. This phenomenon encourages owners to upgrade properties in order to make them more competitive on the market.

The study investigates the role that a territory's tourism attractiveness may play as an incentive to improve the energy efficiency of the building stock. In particular, it aims to assess whether the tourism supply influences decisions to carry out energy retrofits, with specific attention to the residential sector and to dwellings used for short-term rentals or second homes. The underlying hypothesis is that, where tourism generates greater income opportunities, owners and investors may be more inclined to intervene in the housing stock to increase quality, reduce operating costs, and improve comfort—thereby turning tourism attractiveness into an indirect driver of energy efficiency improvements. At the same time, it is not self-evident that this relationship is always positive: areas under high tourism pressure may also exhibit a high prevalence of historic or heritage-protected buildings, higher renovation costs, and intermittent (seasonal) use of properties, which can reduce the economic incentive for structural interventions.

The study relies primarily on administrative and technical data contained in Energy Performance Certificates (EPCs), which provide a comprehensive and standardized basis for describing the energy quality of buildings and their construction and system characteristics. EPCs allow observation of the energy class, performance indicators, energy carriers used, the presence and type of systems (heating, cooling, domestic hot water production), envelope characteristics (windows, insulation, materials), as well as the date of issuance and information on any renovation. These elements make it possible to construct comparable indicators of energy efficiency and to identify systematic differences between buildings located in areas that are more or less attractive from a tourism perspective.

First, the study presents maps and summary statistics to highlight the status of Tuscan housing units in terms of deposited certificates, associated energy classes, and performance indices. Next, it estimates models in which the outcome of interest is the number of buildings undergoing major renovation or an energy-efficiency intervention, as a function of local tourism intensity and a set of control variables.

The expected contribution of the research is twofold. From a scientific standpoint, it clarifies a channel that is often overlooked in the debate on the energy transition and urban regeneration: the role of tourism demand and local rents as a potential lever for upgrading the quality of the building stock. From a public policy perspective, the results may help design more targeted instruments. If tourism attractiveness emerges as a factor that fosters efficiency improvements, incentives and regulations could be calibrated to mobilize private resources—for example, by promoting minimum standards for tourist rentals or retrofit programs in the most touristic destinations. If, instead, the relationship proves weak or negative, this would suggest the presence of specific barriers (architectural constraints, short investment horizons, seasonality) and the need for dedicated policies, such as technical and financial support for historic buildings or demand-aggregation tools for condominium-level interventions.

To assess whether tourism pressure may play a role—at least partially—in driving energy efficiency upgrading in housing, we conduct an empirical analysis. This is implemented by estimating a multivariate linear regression model (OLS) aimed at identifying the main territorial factors associated with the energy performance of the housing stock. The dependent variable is defined, for each municipality, as the number of EPCs referring only to dwellings that have undergone major renovation works or energy retrofit interventions, normalized by the resident population.

Estimation results show that the energy performance of the housing stock is significantly associated mainly with economic, real estate, and structural variables, while purely institutional or demographic variables are less relevant once the other dimensions are controlled for. In particular, IRPEF income per taxpayer displays a positive and statistically significant coefficient, indicating that territories characterized by higher income levels tend to show higher values of the dependent variable. This result is consistent with the hypothesis that greater economic resources foster investments in renovations, energy retrofits, and improvements in housing quality.

Hotel tourist overnight stays per resident are also positively associated with the dependent variable. This suggests that areas with a strong tourism vocation tend, on average, to have a more energy-efficient building stock. Moreover, the regression results indicate that beds in non-hotel accommodation are likewise positively associated with the number of EPCs referring to renovated or energy-retrofitted dwellings.

However, the two variables appear to operate through different channels. In the case of hotel tourist overnight stays, the effect on the number of EPCs referring to renovated dwellings seems to be attributable mainly to an indirect mechanism. High levels of hotel overnight stays reflect greater tourism attractiveness and local economic activity, which may translate into higher income and increased investment in the real estate sector. Rising local income may be associated with more real estate transactions and with renovation or energy retrofit interventions, which in turn generate greater demand for energy certificates.

By contrast, the number of beds in non-hotel accommodation seems to exert a direct effect on the number of EPCs referring to renovated dwellings, consistent with the hypothesis that tourism demand can directly stimulate upgrading and valorization interventions in the residential building stock. Moreover, in a context of strong competition, property owners may have stronger incentives to improve the energy characteristics of dwellings in order to increase the attractiveness of their offer. In this case, the estimated relationship therefore reflects an immediate link between using the property for accommodation purposes and the issuance of EPCs.

Average house prices also show a positive and significant coefficient, confirming a relationship between property values and energy performance. In this respect, housing prices appear to reflect—at least in part—the structural quality and energy efficiency of buildings.

Particularly relevant is the effect of the share of dwellings in excellent maintenance condition, which is positively and significantly associated with the dependent variable. Finally, the share of more recent buildings has a positive coefficient, consistent with the hypothesis that newer construction—subject to stricter energy regulations—contributes to improving the overall performance of the local building stock.

Institutional and territorial variables, such as being a provincial capital and therefore a large urban area or, conversely, being located in an inner area, are not statistically significant. This suggests that, once economic and structural conditions are controlled for, such characteristics do not exert an independent effect on buildings' energy performance.

Similarly, net migration, building typology (one- or two-storey buildings), and simple demographic size do not show a statistically significant impact in the estimated model.

Overall, the findings indicate that the dependent variable is mainly influenced by factors related to territorial wealth—including the level of tourism intensity—by the functioning of the real estate market, and by the structural quality of the building stock, rather than by strictly institutional or demographic characteristics.