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Deep renovation up to zero energy through Add-ons: the ABRACADABRA Project

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1 Abstract

Though housing is one of the most energy consumer sectors, it is currently extremely underestimated, because of a clear investment gap due to economic, social and legislative barriers. The EU project ABRACADABRA (Assistant Building to Retrofit, Adopt, Cure And Develop the Actual Buildings up to zeRo energy, Activating a market for deep renovation) is based on the idea that the real estate value increase given by the appropriate densification strategy in urban environments could be an opportunity to activate a market for deep energy renovation. To prove the effectiveness of the strategy more than 70 case studies throughout the EU cities have been assessed by means of a cost-effective analysis. Basing on the parametric variation of the different values involved (cost of construction, energy, etc.) the benefit of this strategy has been proved in the majority of the different building types and contexts.

More interestingly, the ABRA strategy has been simulated and tested outside Europe in order to verify its scalability and the possibility of considering other non-energy related benefits in the renovation of the existing building stock. A specific study on the NYC urban context has been conducted to effectively adapt the strategy and combine the global drivers of energy consumption reduction and CO_2 emission reduction with the local need of combating flood emergency and related flood-proofing measures.

The results reached by this work demonstrate how the energy retrofit trough add-ons reduces significantly the payback times of the investments, preserve soil consumption, while providing a extraordinary opportunity to enhance urban resiliency by challenging the local emergencies.

Keywords: de-carbonization, nearly zero energy buildings, densification, add-ons, safe and resilient cities

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