Introduction

RenoZEB is a H2020 EU-funded project aiming to unlock the nearly Zero Energy Building (nZEB) renovation market by increasing property value through a new systemic approach to retrofitting. This includes innovative components, processes and decision-making methodologies to guide all value-chain actors in the nZEB building renovation action. RenoZEB provides cost-effective 'plug and play' solutions for a large-scale deep nZEB rehabilitation scheme, ensuring the compatibility of all its components, methodologies, training, guidelines, and demonstration buildings.

This has been achieved through:

- New drivers of change for the Real Estate Industry creating fresh post-renovated property value schemes
- Innovative holistic, cost-effective and fast deep retrofitting methodologies for nZEB
- The transformation of buildings into Active Energy in order to increase the post-retrofitting property value
- Cost-effective and non-intrusive prefabricated multi-functional modular "plug and play" systems for the renovation of buildings
- The demonstration of market replicability of the holistic methodology and new technologies through real and virtual demonstration sites
- ICT tools to support the methodology for nZEB renovation
- Training and awareness of the value chain to boost the nZEB market
- New collaborative multi-value, multi-stakeholder methodologies and decision-making process for selecting the best energy efficient renovation strategy
- Smart control and monitoring system

Outputs and results

The project has been structured for giving response to the complex issue of **deep renovation of buildings in a sustainable way**, while providing the **maximum revalorisation of the property**.

To achieve the expected results, RenoZEB project followed a sequence of stages that cover the different activities requested to make the technologies ready for the market.

1. First Prototyping

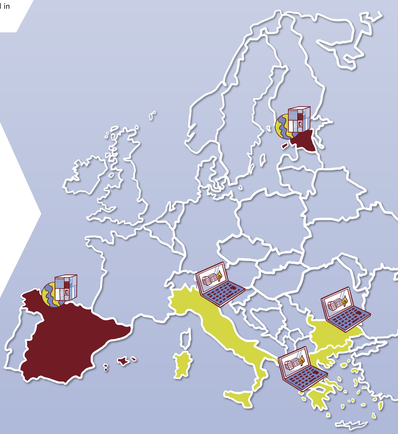
Although the baseline technologies are already available, a series of 'plug & play' modules, software and methods was developed to deliver a one-stop shop solution.

2. Demonstration in KUBIK experimental building

Once the prototype was available, it was validated in one of the testing cells of KUBIK, the experimental building of RenoZEB partner TECNALIA. This building provides a relevant environment to demonstrate the performances of the RenoZEB system from multiple points of view, such as easiness to install the façade and integrated building installations, thermal performances, and new building process, before being installed in the real demonstration buildings in Spain and Estonia.

3. Demonstration in real buildings in two different geo clusters

RenoZEB system was then demonstrated in two real buildings in Spain and Estonia, which are representative of two of the main geo clusters that are addressed as target market of RenoZEB solutions. This served as the main route to demonstrate the replicability and effectiveness of the methodology, the façade system, the platform and its integrated services, thus paving the way to market uptake. Also, the buildings have been used as a training resource for the design and construction sector.



4. Replication in three virtual demonstration buildings

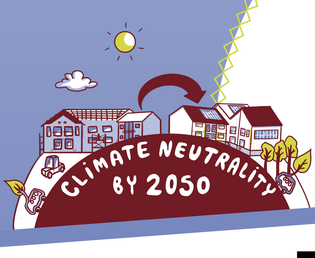
Through the demonstration of RenoZEB in the virtual buildings of Ravda (Bulgaria), Athens (Greece), and Stezzano (Italy) the coverage of the demonstration is extended to three additional geo clusters and reinforces the replication potential of RenoZEB. These buildings ensure the RenoZEB solution replicability in different building typologies and climatic zones, including the transformation of an office building into residential.

5. Business model

Considering that the financial and social barriers are one of the major hinders of the energy efficient renovation in buildings, RenoZEB proposes a business model to allow the funding of the renovation works and a social methodology to work with the tenants. This business model is complemented with the Investors Ready Business Plan, the keystone for the commercial launching of the RenoZEB solution.

6. Market deployment

The project has been designed to facilitate the market penetration of the results: the revalorisation of the property as the main driver of market success and a complete methodology for implementing the new solutions through all value chain by all their actors. On top of that, after the satisfactory completion of RenoZEB, and in order to reach higher levels of development, RenoZEB partners will proceed to complementary Research & Development, pilot implementations, and market penetration activities in regions where construction is envisaged as a market priority. In this sense, according to national/ regional innovation strategies for smart specialisation, many regions in Spain, Norway, United Kingdom, Italy, Belgium, Malta, Poland, Finland, Romania, Slovenia and Sweden, present a favourable market for the RenoZEB concept.



Conclusion

In September 2020, the European Commission presented its Green Deal plan to reduce EU greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. This level of ambition for the next decade will put the EU on a balanced pathway to reach climate neutrality by 2050.

Key points of the EC initiative are:

- revising and expanding the EU Emissions Trading System;
- adapting the Effort Sharing Regulation and the framework for land use emissions;
- reinforcing energy efficiency and renewable energy policies;
- strengthening CO2 standards for road vehicles;
- making EU buildings less wasteful, less expensive and more sustainable, in line with RenoZEB's underlying principles and objectives.

In this sense, RenoZEB's new systemic approach to retrofitting is key to ensure a modern and technological transition towards **a decarbonised economy and a more sustainable society.**