nZEB in Warm/Mediterranean climates

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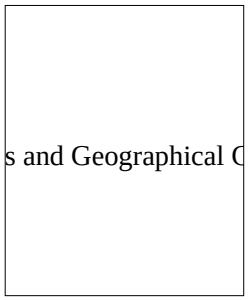
TaskForce Overview

Members and Geographical Coverage



Reaching nearly-Zero Energy standards in Mediterranean climates where energy needs are greater for summer cooling than for winter heating entails different technical and regulatory challenges to those faced in cold/continental climates. In addition, the global economic crisis has adversely affected Mediterranean countries and brought financial challenges to the energy sector in the region.

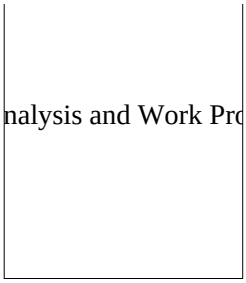
The TaskForce was coordinated by Federcasa, the Italian Federation of Public Housing Companies, and AVS, the Spanish Association of Public Social Housing and Land Providers, with the technical support of CasaQualità. The overall aim of the TaskForce was to help local housing companies to adapt nearly-Zero Energy principles to their climate conditions. The French Federation of Social Housing Providers, USH, also joined the TaskForce, given the interest of its members based in southern France, and contributed to the exchange on very low energy house technologies with a focus on construction and management costs, quality assurance, maintenance issues and monitoring of energy consumption. Moreover, CECODHAS Portugal, the Portuguese Association of National and Regional Social Housing Umbrella Organisations was invited to all meetings and kept informed of the TaskForce's activities and findings.

Objectives and expected Outcomes

- Identify obstacles and challenges that Housing Organisations are facing in reaching nZEB targets for existing housing stock and new build in Warm/Mediterranean Climates and define a common Work Programme;
- Define nZEB Basics for Warm/Mediterranean Climates: Technical key elements and solutions - Cultural, traditional, climatic and environmental features and specific needs - Legal and financial framework and market penetration;
- Produce Reports on Operating Costs, Usability and Cost Effectiveness and Guidelines and Recommendations for National nZEB 2020 Road Maps on the basis of the analysis of the identified existing low energy buildings in Warm/Mediterranean Climates.

Needs Analysis and Work Programme

Through a survey carried out during the first phase of the project, members of this



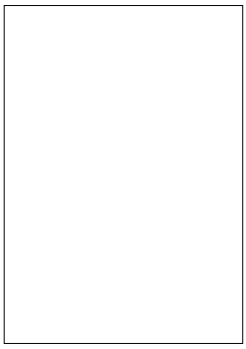
TaskForce identified key challenges that Housing Organisations are facing in reaching nZEB targets for existing housing stock and new built in Warm / Mediterranean climates. Based on its findings, Taskforce Coordinators shaped the WorkProgramme and defined the respective calendar of activities (see box on the right) in order to better address the issues at stake.

During the implementation of the WorkProgramme, alongside with exploring synergies and considering recent outcomes and key resources resulting from other running European/National projects, the TaskForce ensured that the knowledge produced had been disseminated to wider target groups, such as decision-makers, building chains stakeholders and financial institutions.

Furthermore, the members of the TaskForce also monitored the current Policy Framework in their respective Member States, bearing in mind that the ultimate goal of the POWER HOUSE nZEC! project was to help them in shaping nZEB definitions and helping Public, Cooperative and Social Housing organisations from all across Europe implementing the new nZEB obligations!

Download here the Taskforce Needs Analysis & Work Programme.

TaskForce key Findings and Conclusions



Attempting to summarise in a few words the results of this extensive work is far too ambitious, however, below are listed some of the key findings and conclusions elaborated by TaskForce Members:

Distinct characteristics of Mediterranean Housing
Nearly-Zero Energy Mediterranean homes should be designed taking into account local climatic factors and technologies/features that work effectively both in winter (heating) and – most importantly – in summertime (cooling). Moreover, the Passive House concept must be adapted to the Mediterranean social, cultural and geographical context as well as to the specific typologies of users. Air, sun, water and other climatic factors can become true allies. In order to achieve this, a careful design of the building preferably making use of local materials and bio-architectural principles is vital for the sustainability of the construction project and the comfort of its residents.

Quality assurance
Regarding refurbished buildings, a quality control system for the intervention is recommended (especially when innovative solutions are implemented) by enlisting an accredited expert to ensure proper execution. This is a necessary step in quality assurance since installers are often not the manufacturers and they do not have the experience necessary for their implementation, which could lead to subsequent system failures. Similarly, it is necessary to develop training courses that will enable construction workers to acquire knowledge and skills regarding innovative solutions in the field of energy retrofitting.

Maintenance
Systems maintenance in tertiary buildings such as offices, shops and hospitals is usually handled by companies offering specialised maintenance services within a certain price range. This type of service would also benefit residential buildings, particularly low energy buildings or nZEBs, as they may have specific devices or installations that require special handling or care. . In the social housing sector, there is a need to develop specific maintenance programmes for nZEBs. Clear guidelines should be produced to aid technicians in the proper maintenance / management operations of nZEBs as well as establish preventive maintenance measures and procedures to avoid damage to devices, over-consumption of energy or even

total system failure.

Operating costs
The analysis of operating costs is useful for setting the range of maintenance costs of innovative projects. Therefore, the Warm / Mediterranean climates TaskForce proposes to set up 'Regional Observatories for the nZEB' for collecting data on operational costs of nZEBs based on the criteria established within the POWER HOUSE nZEC. This database can help create a common reference and basis for defining standardised costs as part of the reference building calculation.

Usability
The analysis conducted on the case studies highlighted the limited usefulness of user manuals or handbooks; this is why automated scenarios that allow the building to automatically adapt to the external conditions and to generate the internal micro-climate accordingly to optimal indoor comfort level, are favoured in order to limit the manual use of devices.

Cost-effectiveness
The evaluation of cost optimal parameters related to the heating supply system are much more sensitive than those relating to the improvement of the thermal envelope. In general, it is difficult to assess the impact of user behaviour, a variable not included in the calculation method. The experience of the TaskForce has shown that tenants' incorrect use or misuse of installed devices or systems may lead to differences in energy consumption compared to cost optimal values calculated between 10 and 30%.

Download here the TaskForce Final Report "nZEB in Warm/Mediterranean climates: Findings and Conclusions" and its version available in Italian, French and Spanish.

Source: http://www.powerhouseeurope.eu/nearly_zero_taskforces/nzeb_in_warmmediterranean_climates/overview/