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# Towards Nearly Zero-Energy Buildings in Mediterranean Countries: Challenges for Real Estate Professionals from the Latest European Regulations

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**MSc in Real Estate**

Dissertation

Towards Nearly Zero-Energy Buildings  
in Mediterranean Countries:  
Challenges for Real Estate  
Professionals from the Latest  
European Regulations

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## Abstract

The Energy Performance of Buildings Directive 2010/31/EU demands that all new buildings are nearly zero-energy (NZEBs) by the end of 2020, thus requiring from European countries to draw up national plans and develop their first NZEBs.

According to the EU Directive, after December 31<sup>st</sup>, 2020, building projects that do not meet the requirement of “nearly zero (fossil) energy” consumption, will not be granted a construction permit. However, only a limited number of zero-energy consumption buildings do exist nowadays, while their design, construction and operation constitute a great challenge for a variety of reasons.

The purpose of this study is to examine the Cyprus case study. More specifically to identify the most critical sustainability design and construction parameters for NZEBs, through a thorough analysis of the European Directives, National legislation and international scientific resources, to highlight the main differences between conventional and NZEB developments in Mediterranean countries such as Cyprus and evaluate the principles and techniques for a more sustainable construction industry in Cyprus. The main focus is to investigate and highlight the barriers faced by various construction industry practitioners and professionals, in the application of the underlying legal and technical framework for NZEBs.

Through this process, several conclusions were drawn, which were also affirmed by the findings of the empirical quantitative research conducted via an online questionnaire addressed to construction and real estate professionals across Cyprus. First, the necessity of applying the principles of sustainability and NZEBs to maximize energy efficiency is undeniable and unanimously recognized by industry professionals. In terms of compliance to the European Directives on Energy Efficiency, the current policy framework in Cyprus and other countries has made relatively little progress towards providing effective and efficient solutions to existing barriers because little focus has been drawn on solving them.

The government does not offer sufficient incentives to citizens for home upgrades although refurbishing costs are significant. The state has also failed to meet its own targets on bringing government buildings up to speed with the EU directive.

There are also challenges in the research and development of NZEBs, as well as technical, financial, social, environmental/health-related and organizational/legal barriers to the implementation of new NZEB developments and NZEBs retrofit. From the limited range of technical solutions that can be used because of existing building structure and technical systems, the excessive investment costs, the lack of knowledge and interest for energy efficiency among residents and building owners to the sensitive balance between comfort and efficiency as criteria for selection of materials and waste management and the necessity of communication and consensus in NZEB refurbishments involving multiple homeowners, these challenges must be addressed for sustainable NZEB developments to be the new norm. To this end, industry professionals can and should play a key role in raising awareness and promoting the principles of sustainability and NZEBs, although this entails their own adequate training to remain up to date with the latest technical and regulatory requirements.

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