

Chapter 7

Policies for Smart and Sustainable Renovation of Urban Blocks: Guidelines for the Energy Efficiency of Cities

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ABSTRACT

The objective of this chapter is to recognize the fundamental issues for the low levels of efficiency of the strategies for the energy renovation of the building stock in Greece. The regulatory framework for the energy efficiency and energy renovation is analysed, and the main policies that have been adopted for upgrading the building stock are summarized. Strategies for the energy renovation of buildings have often led to the further deterioration of the built environment as the Greek city is still characterized by the low quality of life and the low energy efficiency of buildings. A tool for assessing the overall benefits of renovation strategies at the urban block scale is presented as a means for the optimization of the efforts and profits. A smart strategy of renovation including thermal insulation, passive design, and green roofs should be context based considering urban form, urban geometry, and climate.

INTRODUCTION

The development of contemporary cities has been performed under social, economic, or cultural influences and restrictions. The form and geometry of the urban tissues are often an overlay of many succeeding layers of continuous evolution which is not always easy to distinguish and to describe separately. However, an especially crucial factor defining the form of the city has always been the regulatory framework

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of each period. National regulations and legislation for the urban development have always played a significant role on the formation of the built environment. Building codes, regulations and guidelines have been used in each period to face the challenges of the urban development and provide specific rules for future or existing constructions.

The vision for a sustainable future of cities is often fostered by the recast of old regulations or the development of new ones. Building codes replace the older ones to promote a better oriented urban development. The environmental protection has become a synonym of energy efficiency and quality of life in cities and smart development is promoted as a new promising direction for sustainable cities including high tech instruments targeting on several sectors such as the operation of buildings, the transportation and the citizens' access on crucial information through the extensive use of ICT (Caragliu & Del Bo, 2019). The smart city definition has been extensively discussed in literature and several definitions have been provided by researchers (Angelidou, 2017) introducing different types of smartness (technologies, tools, and applications) (Stratigea et al., 2015). However, the term smart is not just the application of smart technologies but a shift to a smart thinking in designing the sustainable future of cities. Meanwhile, the EU aims to be climate neutral in 2050 by proposing a European Climate Law to turn this political commitment into a legal obligation, and actions in order to achieve a climate neutral future in cities and promote the citizens well-being are being promoted.

In this chapter, the efficiency of existing and new policies, regulations, and laws for the sustainable development of the building stock of contemporary cities will be analysed and discussed. It is a fact that, on the one hand there have been many efforts to create incentives for promoting smart and sustainable city development and on the other hand, there have been several adjustments on the national legislation of many countries in order to include smart and sustainable interventions in the urban tissues. The question is how much all these efforts have been able to promote sustainability and what are the ways they could be more efficient.

The Mediterranean cities face more challenges in the adaptation of sustainable policies mainly due to social, cultural and climatic particularities and in many cases it has been proved that strategies that might have been appropriate for other European cities might not have the same degree of efficiency in the Mediterranean cities.

In Greece there have recently been many updates of the building regulations and since 2010, when the Energy Performance of Buildings Regulation (KENAK) has been implemented, there has also been an update (*Greek Regulation for the Energy Performance of Buildings, FEK 2367, 2017*) and several additions in order to follow the directions of the recast of the European Energy Performance of Buildings Directive (EU) 2018/844. Both the building regulation and the energy performance regulation include restrictions and rules which intend to foster urban sustainability targets. Among them, there are articles for urban planning restrictions, and incentives for promoting building energy efficiency. Despite all the measures, laws, restrictions, and incentives it is a fact that the Greek city remains still unsustainable in many ways. Especially the building stock is in a very low-quality condition from many aspects such as energy, aesthetic, constructional etc.

Under this framework, this chapter focuses on the analysis of the existing regulatory framework, which is relevant to the development of the built environment in order to draw conclusions on how it can affect the sustainable development of the Greek cities. In addition to the analysis of existing codes and guidelines, this research aims to provide a knowledge on how new policies and guidelines embedded in the building codes could promote more energy efficient urban forms for future development and set the priorities for the sustainable renovation of the building stock.

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