



Sustainable retrofitting of existing buildings in peripheral residential districts of big European cities

Marina Traykova

University of Architecture, Civil Engineering and Geodesy, Sofia, Bulgaria

Vesela Traykova

Universitat Politecnica de Catalunya, Escola Tecnica Superior d'Arquitectura de Barcelona, Spain

Contact: marina5261@abv.bg

Abstract

Construction and operation of buildings have a serious contribution to the environmental impact. That is the reason to consider the building retrofit as a good demonstration of sustainable development. The contemporary trends in the construction sector include the increasing rate of rehabilitation and strengthening of existing structures compared with construction of new structures. The design approaches for retrofit of existing buildings have an important contribution to guaranteeing the high quality of the life with respect of the contemporary requirements. Analysis of two of the most popular structural systems in the peripheral European residential districts: "Large-panel system" and "Large area formwork", are presented. Based on the conclusions of this analysis and on the presented realized projects for rehabilitation, some general considerations and recommendations for sustainable retrofit of residential buildings are given.

Keywords: Existing buildings, "Large-panel system", "Large area formwork", retrofit, sustainability.

1 Introduction

The presented study on the sustainable retrofitting of existing residential buildings in the peripheral districts in two big European cities (Sofia, Bulgaria and Barcelona, Spain) could be considered as a study on trends and practices in Western and Eastern European cities in order to build a new profile of cities, to adapt and respond to the contemporary challenges in urban development with regard to provide one new environment. The rehabilitation and the strengthening of buildings have decisive role for the durability, for the extension of the working life and for the adequate adaptation and reuse of old buildings. Adopting design approaches could be an important contribution to guaranteeing the high quality of urban life by respecting and keeping in

the same time the socio-cultural identity of the cities. The benefits of the sustainable adaptation and reuse of existing buildings include: minimizing consumption of energy; reusing existing materials; avoiding negative environmental impacts; reducing construction waste; accommodating human needs; meeting performance requirements; preserving historical buildings; reviving urban areas; creating economic advantages; time saving for new construction; maintaining of traditional standards. The industrialization of the construction process starts in Europe in the 30s of last century, but the real development of the industrialization starts after the Second World War. Many countries used various precast building systems during this period to provide low-income housing for the growing urban population. They were very popular after the Second World War, especially in Eastern