POLITECNICO DI TORINO

Honors thesis

COURSE OF DEGREE IN ARCHITECTURE

CONSTRUCTION CITY

Abstract

SmartBulding & LivingRoofs: regeneration project of public housing Fucine ITEA in Rovereto and socio-economic evaluation

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The thesis work, developed in a team of four people, aims to frame and explore themes related to acts of regeneration of existing buildings and “Living Roofs” in the perspective of “Smart Building”, conceived as a set of sustainable actions that can address issues of quality, sociability, functionality and efficiency.

The aim was to achieve a regeneration of existing buildings, in particular public housing, through the exploitation of roofs with operation of raising and use of building systems of precast lightweight wood (thus allowing an increase in the living space without the consumption of ground, with improved performances and an increase of the content’s value).

In this optics, we have performed a real and detailed study on the various factors entering into the design of a raising. We have carried out a survey on the working procedures on the existing buildings in Italy and Europe, managing to build an overview of general strategies for redevelopment to be taken as guidelines.

In this regard, we have developed a project for a real site in the Trentino Alto Adige, in the city of Rovereto, a residential complex of the '70s, owned by ITEA SpA (Istituto Trentino di Edilizia Abitativa/Trentino Institute of Housing Construction). We have proposed four scenarios (two of which are entirely designed and two only kept at a conjecture level, as well as the retrofit of existing buildings and a redesign of the ground floor, while including in the design points of socialization currently not present.

The project

We have identified intervention strategies to be adopted to carry out the regeneration of built, including: the raising and prefabrication in Xlam; the payback period; control of the building's life cycle through the use of environmentally friendly materials; the social, environmental and economic sustainability.

The two designed scenarios provide two raised floors, defining a contrast to the existing, based on colors and different coating materials. One can distinguish two types of

buildings: “block” and “tower”. In the first ones there is a differentiation of the population, as the first raised floor is devoted to social residences, while the second floor to temporary residences in both scenarios. The “tower” buildings provide in the first scenario the presence of only social housing and in the second one the mere presence of temporary residences.

The difference in the typology of the apartments and, therefore, in the housing supply in both raised floors is resumed and underlined in the design of the reports, both from the architectural point of view and from the composition, through the use of cladding panels having different colors and shades. Continuity is searched on the first floor, being characterized by the same users already established in the complex, while the second floor is separated from the architectural language point of view, because the audience is different.

Plan and territorial section

In order to verify the financial and social feasibility of the developed project, we have faced a socio-economical analysis (Analysis of Costs and Revenues and Multicriteria Analysis), through which we have defined the better performing scenario among the four analyzed. The selected project, corresponding to the cheaper (and best) socio-economical rating, proved to be those which were entirely designed in the thesis.
In this way it was possible to demonstrate that the intervention was able to meet the areas that define sustainability, achieving quality performance architecture, without losing sight of the social, economic, environmental and technological innovation along the entire route of design.

The new settlement

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