

POLITECNICO DI TORINO
SECOND SCHOOL OF ARCHITECTURE
Master of Science in Architecture for Sustainability
Honors theses

A NEW SUSTAINABILITY FOR *NUEVA PROSPERINA*. A PRIMARY SCHOOL IN GUAYAQUIL, ECUADOR

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Nowadays the challenge to promote a sustainable model of development is becoming more and more urgent. A deeper understanding of the sustainability concept in architecture and urbanism could be one of the means to reach this goal. The impact of architecture in this regard may vary, depending on the context in which it is practised. In developing countries social and environmental issues are of particular concern, especially in problematic areas as illegal settlements and *slums*. The higher “construction rates” that characterise those countries lead to an enormous consumption of natural resources and to the use of materials bearing a high environmental impact. In this light, illegal settlements represent one of the crucial challenge to worldwide sustainable development.

Considering this situation, the thesis focuses on the project of a primary school in the city of Guayaquil, Ecuador. The country is facing deep political and socioeconomic changes that bring along with them dramatic consequences as the migration of a large part of the population from the countryside towards the main urban areas.. Due to this reason, in Guayaquil endless areas of illegal settlements (called *barrios*) continue to sprawl in the suburbs of the Guayaquil. *Barrios* are characterized by extremely precarious conditions of life, due to the almost total absence of basic services.



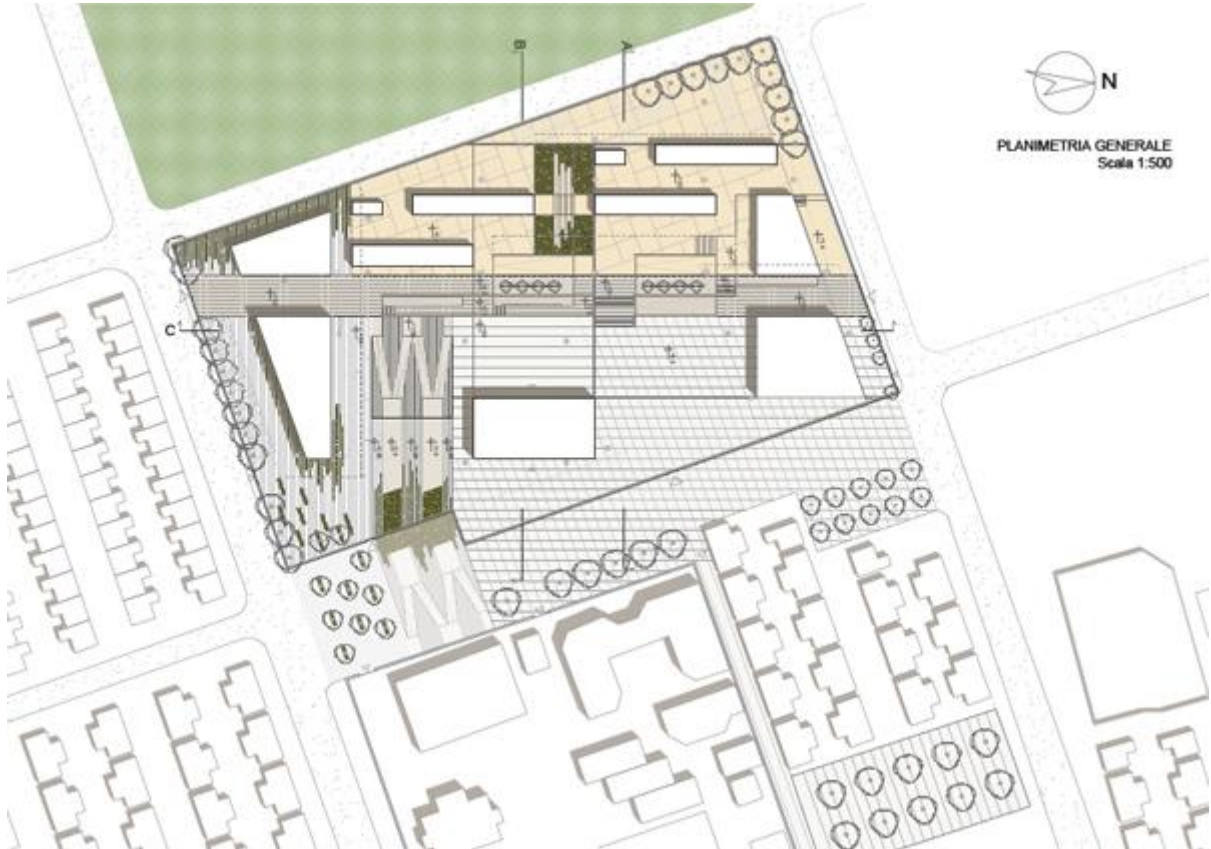
Nueva Prosperina barrio, panoramic view

The main problems that emerged during the analysis of the *Nueva Prosperina barrio* could be summarised as follows: the lack of adequate education structures, the almost total lack of public spaces, the lack of any “sense of community”, the lack of protection services supporting the vulnerable segments of the population as for instance people with disabilities.

At the same time, a number of climatic and environmental factors that characterize the context were taken into account, such as high temperatures and different solar paths, constant winds and high humidity, the conformation of the soil and precipitation rates.

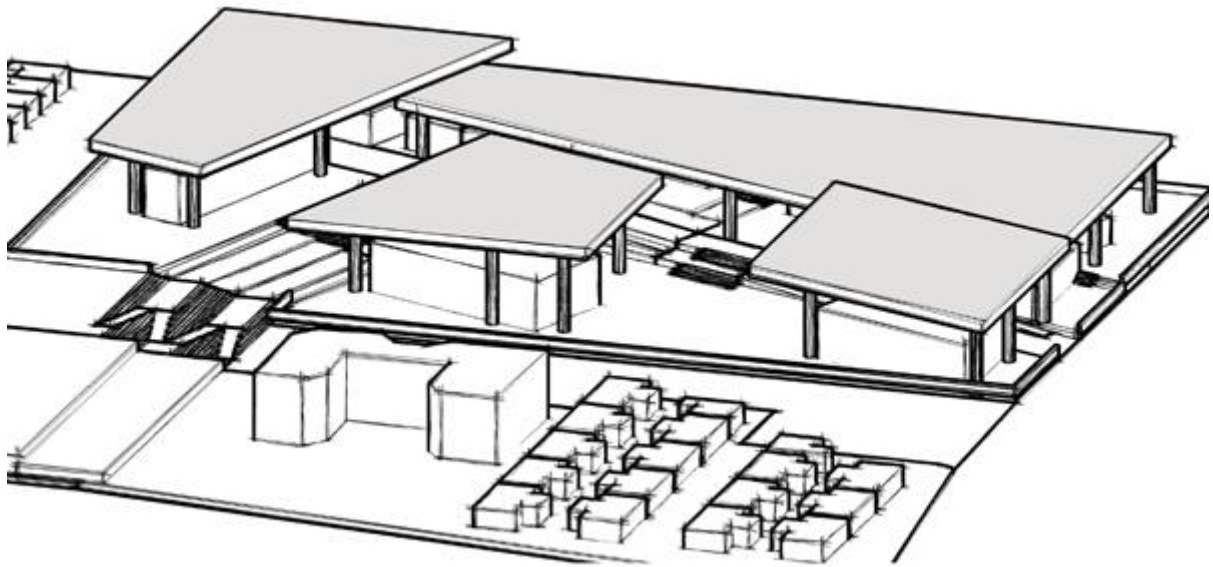
The main themes developed for the project (which consists in an educational compound featuring different buildings located under four large independent roofs), are:

- **the location of the project in a particularly complex context, the creation of a new catalyst of identity for the local population and the definition of a system of new public spaces** (consisting of new squares, pedestrian streets, green areas and semi-public spaces). The location of the school and its functional distribution try to promote a rational use of the area and the urban and architectural integration of the new development with the surroundings;



Masterplan, scale 1:500

- **the management of the natural elements in relation to the particular climate conditions that characterizes the area of Guayaquil:** peculiar design and construction solutions, as the edification of large roofs not directly connected to the buildings, protect the latter from natural elements, at the same time creating protected open spaces;



Roof covers, axonometric view

- **the use of technological solutions, building technologies and materials that meet the requirements of environmental sustainability, and the rational use of renewable resources available *in situ*** (e.g. the use of bamboo as the main material, the use of systems of opening wood walls to promote ventilation and natural cooling, the use of protective systems shielding from both precipitations and the direct rays of the sun;
- **the development of a high level education structure, and the introduction of incentives favouring the social inclusion of all segments of the population, especially the most vulnerable.**

The project has been developed following a multi-layer approach, from the urban scale, through the compositional one, to the technological one. Similarly, it follows an integrated approach to development that takes into account the themes of the social, environmental and economic sustainability. In this way, it aims at developing a new identity catalyst for the local community, in-so-doing favouring the activation of new social dynamics that may lead to substantial changes in terms of quality of life perspectives.

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