

## **Impact of urban forms in the thermal performance of the buildings according to method of the RCCTE**

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The purpose of the thesis comes from the interest in investigating the problematic issues of how and how much the arrangement of the buildings of the determined urban morphology intervene with the levels of thermal comfort for the habitat itself, which therefore results in the prevention of the consumption of a great amount of energy and the intention of arising awareness of how certain decisions regarding the urban design, can influence the thermal behaviour of the buildings, and coincidentally the usage of energy necessary to maintain proper level of comfort within the internal environments, as well as the release of CO<sub>2</sub>, related to the energy usage.

To demonstrate the proposal goal, in accordance with the characteristics of each urban form, such as the dimensions and disposition of the streets and the buildings constructions characteristics - height, form, shape factor and location - will be related with its potentials of the thermal protection, ventilation and amount of sunlight allowed through the development of a series of hypothetical cases of study, on which if it applies the methodology imposed for the current legislation of thermal behavior of the buildings in Portugal, RCCTE (Regulation of the Characteristics of Thermal Behavior of the Buildings), considering the typical climate of the city of the Porto.

This approach aims to provide the knowledge to support architects and city planners, responsible for the conception of cities and their buildings with the ability to produce, ad initium, environments with high thermal standards and the capability of reducing the necessity of energy consumption for climate control of the buildings therefore contributing for a bigger sustainability of urban environments.

**Keywords:** Urban forms, sustainable urbanism, urban climate, thermal behaviour of buildings and energy efficiency.