



Evaluation of the Sustainability Level in Real Estate Buildings in the City of Lima, Peru

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Abstract

The research is about the assessment of the sustainability level of residential buildings in the city of Lima (Peru) during the occupancy stage of their life cycle, thus generating a proposal for a national sustainable certification methodology adapted to the real situation of the country (main problems, regulations, standards, among others), which allows the most appropriate improvement plans to be proposed. First, the diagnosis of the sustainability characteristics that need to be assessed in buildings in Lima is made. Then, the assessment and scoring method of a situation with such characteristics is presented, which shall be part of the sustainable certification proposal called GREEN UNI. Finally, the certification is applied to a sample of 20 buildings in different areas of Lima, thus recognizing the sustainable situation of buildings in the city.

Keywords: Sustainability; certification; residential; Lima; GREEN UNI.

1. Introduction

Today, the planet faces problems such as resource depletion, climate change, loss of biodiversity, degradation of agricultural land, among others¹.

Residential buildings account for 40% of energy consumption and 36% of CO₂ emissions in Europe². On the other hand, in the U.S., the building sector accounts for 40% of primary energy use and associated greenhouse gas emissions³. In addition, the building industry generates approximately 30% of total waste in the U.S., equivalent to 136 million tons per year⁴.

In 1987, the term “sustainable development” was created, defined as development that meets the needs of the people of the present without negatively compromising future generations⁵. This development has 3 pillars: Environment, society

and economy⁶. Thus, people, habitats and economic systems are interrelated with each other.

Applying the concept of sustainability to the building sector, certification models for sustainable buildings are created. One of them is LEED⁷ certification, created in the USA, which aims to transform the way buildings and communities are designed, built and operated, allowing for an environmentally and socially responsible, healthy and prosperous development that improves the quality of life. Moreover, the BREEAM⁸ certification, created in England, aims to incorporate better environmental practices in the planning, design, construction and operation of buildings, thus reducing their negative impact on the environment.