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A technique for economic and sustainable high-rise buildings An Analysis of the Shanghai Tower's Technical Features

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Abstract

A growing number of "green construction, bioclimatic houses, and eco-friendly techniques such as collecting and recycling rainwater and wastewater are becoming popular. The mainstream acceptance of these tendencies has increased dramatically over the last decade. Sustainable design is cost-effective because it benefits both human and environmental health, as well as the building's bottom line, throughout its lifecycle. Simply put, a green building minimizes its impact on the natural environment and human health by utilizing as little water, raw materials, energy, and land as possible. Governments should work with business leaders and other stakeholders to implement measures that increase construction industry efficiency, as well as incentivize sustainable construction projects with tax breaks and other benefits. Carbon emissions, greenhouse gases, pollution, and natural resources and the environment "The effort to address environmental and long-term concerns has resulted in improved gas and waste management."

Keywords: Waste Management, Life Cycle Structure, And Green Building.

INTRODUCTION: The late nineteenth century saw the emergence of high-rise structures in the United States. These structures have become a worldwide architectural phenomenon. Even more so in Asian countries such as Japan and China. As the world's population grows, high-rise construction is an unavoidable trend in the development of major metropolitan areas, particularly so-called megacities. According to United Nations population estimates and projections, cities will house 66 percent of the world's population by 2050. According to the United Nations Development Programme (UNDP), China is expected to add 292 million urban people by 2050, putting enormous strain on the megacity of Shanghai.

As a first step, high-rises will most likely be used in city centers to limit the impact on land. usage. Despite the numerous benefits that buildings have provided to society, they are also among the largest energy consumers and environmental polluters. Stone, gravel, and sand account for 40% of world raw materials and 25% of raw lumber. As a result, buildings consume 40% of global energy, 25% of global water, and almost one-third of global greenhouse gas emissions. According to the United Nations Environment Program (Shams et al., 2011), residential and commercial buildings consume 60% of global electricity. Buildings also generate 40% of landfill waste and 40% of air pollution (Davies, 2007). Buildings consume a lot of energy and resources, which the world cannot keep up with.

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LITERATURE REVIEW

According to the People's Republic's Ministry of Housing and Urban-Rural Development (MOHURD), more than "two billion square metres are built every year in China, with 80 percent being high-energy-consumption buildings." Furthermore, nearly all of China's 40 billion square meters of domestic buildings are high-energy-consumption structures (Wang et al., 2014). To provide a better future for the next generation, the environment must be improved by reducing traditional building methods that are driven by short-term economic concerns. Begin allocating funds towards long-term quality, affordability, and efficiency in sustainable construction processes.

Several field trips to the Shanghai Tower will be made as part of the thesis research. This paper aims to identify building regulations and orientations. to high-rise sustainable constructions in Shanghai and examine the sustainability of the recently completed world's second-tallest building, the Shanghai Tower, which features a double-skin façade, ice storage air conditioning system, energy-efficient elevator, tri-generation system, and numerous other environmentally friendly features. These strategies will improve a building's performance over its entire lifetime.

STATEMENT OF THE PROBLEM

Shanghai is known for its abundant water resources, accounting for 11% of its total area in water space (Shanghai, 2014). The Huangpu River is the primary tributary to most rivers in Shanghai. The city's water system is one of the most comprehensive and well-developed in China. There are several rivers and lakes in the city that provide adequate water for transportation and irrigation. There is an abundance of fish and salt along. the coast as well.

However, the region lacks other natural resources. Furthermore, Shanghai has no mineral or energy resources. Crude oil and natural gas are the only resources discovered near the East China Sea and the South Yellow Sea (Shanghai, 2014).

None of Shanghai's natural resources are suitable for traditional energy generation. It relies on energy imports from neighboring regions. However, Shanghai produces a variety of high-quality second-energy products, such as electricity, oil products, coal, and gas (including liquefied petroleum gas). Potential energy sources include methane, wind power, tidal power, and solar energy.

THE STUDY AIMS

to learn about China's Green Building Evaluation Standard and evaluation method, known as the Green Building Evaluation Label (GBEL).

Research Questions: • How is the Green Building Evaluation Label (GBEL) implemented?

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RESEARCH METHODOLOGY

For this reason, "a brief introduction to Shanghai and the fundamentals of high-rise development are used. 2) The environmental impact of the building industry. Carbon dioxide emissions, energy consumption, and other environmental issues exist both globally and in China, specifically in Shanghai. After that, review China's green construction policies and assessment systems. A case study of the Shanghai Tower, the world's second-tallest building, has been conducted. Examine examples of sustainable techniques used in the building, such as energy efficiency, water conservation, and the structure's carbon footprint. , in order to gain a better understanding of the structure's design.

RESEARCH DESIGN:

This "study investigates the evolution of global building rating systems, with a focus on tall structures." Each country's ranking systems for environmentally friendly construction are taken into consideration. There is a lot of discussion here about how rating tools have evolved over time, as well as which countries and rating tools have contributed to their global adoption. Following this research, the methods and framework for TPSI development will be established. The general strategy of a new rating system is determined by the research questions that must be addressed throughout the development process. This approach will shape the TPSI's research methods and framework.

DATA ANALYSIS

One of the most common research designs, especially in the social sciences, is correlational design. Case studies are known as "naturalistic" research because they thoroughly investigate an event or phenomenon in its natural setting. This is in contrast to a "experimental" design (such as an RCT), which looks into a subject in a controlled setting. Case studies are an effective way to gain a comprehensive understanding of a complex topic (such as an experimental design).

CONCLUSION

China's "This study investigates green construction policies and strategies for reducing a building's environmental impact, with a focus on high-rise buildings. However, while the case study focuses on Shanghai, the sustainable strategies described in this thesis can be applied to other cities with a subtropical monsoon climate, with some modifications.
An integrated cooling, heating, and power system. System, ice storage. The mix includes air conditioning, grey water and rainfall recycling, an energy-efficient elevator, Building Information Modelling (BIM), and a material-saving architectural form. Using these methods, we can reduce our environmental impact, greenhouse gas emissions, and use of renewable resources "when compared to other skyscrapers over the course of the building's entire lifespan.

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