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Introductory Chapter: Sustainable Housing – Introduction to the Thematic Area

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1. Introduction

One of the most critical phenomena in the real estate sector to reduce the environmental impact and climate change is sustainable houses. “All nature strives for self-preservation,” said the philosopher Cicero. And residents of megalopolises, too, increasingly began to think about the future of cities and how to improve the environmental background around their place of residence. One of the most innovative urban developments in the twenty-first century is the design of buildings and entire neighborhoods in sustainable architecture. Ebenezer Howard, whose 1902 book was entitled *Garden City of Tomorrow* and whose political and social agenda has recently made a comeback [1]. The idea of sustainability involves enhancing the quality of life, thus allowing people to live in a healthy environment with improved social, economic, and environmental conditions [2]. In addition, this type of building facilitates the most respected lifestyle with the territory, reducing the ecological footprint.

Sustainability is an essential subject in the housing research area, and it is a challenging theme for city inhabitants, builders, and architects around the world. And it is a complex theme for city inhabitants, builders, and architects around the world. In general, a sustainable building is environmentally friendly high-tech architecture. It strives to minimize the negative impact on the environment through the efficient and thoughtful use of materials, energy, space, and the ecosystem. Sustainable housing design focuses on energy conservation, environmental protection, and many other supporting factors. Sustainable housing aims to provide affordable, sustainable housing for all city inhabitants. Therefore, sustainable housing provides and discusses sustainable housing in the context of affordability. Housing costs include initial construction costs and building operation and maintenance costs. Therefore, low-cost housing based on the entire life cycle is the real low-cost housing; high-quality housing means that the housing needs to have good building quality and focus on providing users with high-quality living conditions. In the final analysis, the house is for the occupants [3]. A healthy and livable indoor and outdoor environment is more conducive to the physical and mental health of the occupants.

A sustainable house is not just a fashion trend or a trend from the West. In today's world, rising energy prices and the finite nature of these resources raise the acute problem of the operating costs of housing. The development of energy-efficient buildings is now being actively pursued in Europe, where government programs have been developed to bring all facilities to a low level of energy consumption. The sustainable house has ecological materials, uses recyclable systems, and is supplied by clean energy. Sustainability is a broad and complex concept,

which has become one of the significant issues in housing buildings. In the process of developing ideas in the field of sustainable housing design, dozens of specialists, such as architects, urban planners, ecologists, sociologists, and others, calculate how houses will interact with the surrounding architectural environment, for example, whether a building will cast a shadow on nearby buildings. In the present day, sustainable homes are invariably linked to making buildings as comfortable and convenient as possible worldwide. The building sector is increasing by investing 30–40% of total global essential resources [4]. Buildings and users consume energy and resources that create waste on a large scale, and we are tied to the current construction methods about resource and energy consumption, waste emissions, and environmental damage. The primary objective of sustainable design and construction is to minimize buildings' negative ecological, social, and economic impacts. Fast development in many countries across the globe has made significant uncontrollable construction waste, thus creating considerable adverse effects on the environment such as increased soil, water, and air pollution, which contribute to climate change, health hazards, and ecological imbalance [5]. The concept refers to buildings planned with a sustainable development concept, including building materials. Buildings, the size of urban areas, etc., to the functional, economic, social, cultural, and ecological factors related to these. When our housing is poorly designed, it leaves a legacy with adverse social, economic, and environmental side effects for the next generation. The complex and challenging plan of sustainability requires a fundamental change in our understanding of nature, the purpose of the buildings, the architects and the builder's role, and the users of the facilities. Users' habits, behavior, and lifestyle in everyday practice are topics for discussion due to the environmental challenges facing the world. It becomes at once our own culture that is the focal point of the debate. If our own culture can change because of environmental problems, it will sooner or later influence the architectural design to reflect inhabitants' cultural and social values. One of the most critical phenomena in the housing sector to reduce the impact on the environment and climate change is the sustainable housing concept: houses that use ecological materials, use a recycling system and are supplied with clean energy.

Additionally, these housing types promote the environment and the most respected lifestyles, reducing their ecological footprint. The house is a living space, home, room, or apartment in which one or more people permanently live [6]. A house usually contains areas for cooking, hygiene, and sleep. In addition, often spaces for socializing, family life, and solemn occasions. The house not only fills the requirements, but it is also a pleasure. From the child's stacking of bricks to learning how to master the heavens and space to self-expression, construction is something that concerns us all deeply [7].

A residential building is usually defined as a house where at least half of the area is intended as a living space. Housing can be defined as an "industry of protection and comfort." In the first place, it protects humans from various aggressions against which they feel the need to defend themselves. In a history of societies that have made human settlements (unequally) safer, the essential requirement of shelter is outweighed by comfort and well-being. During the 1980s, the assumption that development and the environment were incompatible was increasingly questioned [8]. Views that a future growth based on sustainable utilization of natural resources was an option gradually emerged. Therefore, it was decided in 1983 at the UN that a World Commission on Environment and Development should be set up. Since the Rio Declaration, which is also the origin of the Environmental Summit, the term sustainable has referred to economic activities that consider the global environment [9]. Sustainable housing is a long-lived housing that is easy to live in and will be passed down to the next human generation.

2. Sustainable housing concept and designs

Housing is a shelter that provides primary living conditions such as safe housing, drinking water, and healthy food for humans [10]. Even in developed countries, low-income families often have no housing for economic reasons or face health and safety problems caused by poor housing quality [11]. Sustainable architecture is mainly embodied in the overall planning of ecological, economic, and social and cultural sustainability. Sustainable housing is guided by the concept of sustainable development, carries out reasonable planning and design, effectively utilizes resources in the process of construction and use, minimizes the impact on the environment, and provides residents with health and comfort. A safe space, a living carrier that enables people to be satisfied in an elegant environment [12].

The new housing design concerns the thoughtful activity of the actor who creates the artifact providing man with the place of his protection and comfort. This acceptance of the term conception, thus understood as cognitive activity, can admit another, broader one, making it possible to also understand this cognitive activity within a framework of thought specific to a given period. We will approach the design of housing by examining how it went from the self-design of its inhabitant to a complex elaboration, both in terms of the resources it calls on, the knowledge and techniques it uses, and the skills cooperation it uses. Sustainable housing has an important role to play in ensuring an adequate quality of human life [13]. The positive impact of housing can be enhanced by applying conservation principles, economic efficiency, social inclusion, and public participation, and adequacy in terms of culture. Sustainable housing development in the EU region faces many challenges, driven primarily by globalization, demographic change, climate change, and the economic crisis. The challenges are that sustainable public housing is typically different from ordinary construction. Sustainable construction can be different in heating, venting, technologies used, etc. [14]. This implies that these houses are too different regarding the necessary knowledge and handling of the operational conditions. Without using petroleum energy, which causes global warming, we will create homes that use natural clean energy such as solar heat and wind power. In addition, because it is a residence that considers the cycle of tree growth and regeneration, it also leads to the effective use of recycled materials such as dismantled old folk houses [15]. In addition to making the house last longer, sustainable housing is also characterized by consideration for building a house that can reduce waste when dismantled and reuse building materials. Sustainable housing where people can live comfortably forever. In future home building, the idea of sustainable housing will be strongly required. In sustainable housing, it is considered to create a house that is friendly to people and the earth everywhere, such as the structure, floor plan, equipment, and building materials used. By being conscious of building a house where you can live for a long time, you will not only have the advantage of not damaging the environment, but you will also be able to build a house that is kind to the residents [16]. This time let us think about sustainable housing that is kind to both people and the earth. To talk about sustainable houses, it is required to build using sustainable materials. It should also be able to generate its own energy and use its own resources. One of the main features of sustainable energy is the use of solar generators. Solar panels allow you to use solar energy. Sustainable houses are those that, being respectful of the environment, take advantage of all available resources to reduce energy consumption and, therefore, help save on household bills, something that is always appreciated [17]. These types of houses are integrated into nature and are in such a way that they make the most of their environment: light, water. Another aspect of sustainable housing is the reuse of rainwater. You can also build a generator that can store energy from the wind. But it's not very pretty. There

are several problems with sustainable rates. Perhaps the most important is the price of the material. And this price is much higher than that of traditional materials. Even so, the cost is not always high. Some architects and designers have recycled materials, so they do not cost too much. It should also be considered that sustainable housing begins to reduce supply costs. Energy efficiency is essential when building this type of house [18]. It is also important to include the use of renewable resources. Construction and materials used must be completely ecological. Water must be managed intelligently. It is important to achieve comfort in both ventilation and air conditioning in a sustainable house. Recent environmental issues have attracted worldwide attention. This has stimulated a response in many countries, which has led to a more in-depth review of energy conservation strategies for traditional fossil fuels. One way to reduce the energy consumption of buildings is to design buildings that are more economical in their use of energy for heating, cooling, ventilating, and lighting [19]. Comfortable lighting conditions can be achieved, and the highest level of sound insulation can be achieved without the use of many consumables. That is why a sustainable house must account for energy efficiency and savings in supply and construction costs over its entire service life. After obtaining the first building materials, a house can have many years of service life and maintenance until it is reused. In addition to all of this, it is essential to enjoy a sustainable home based on its architecture. At the heart of maintaining sustainable homes are the three R's of sustainability: reduce, recycle, and reuse. Resource utility and technical efficiency must be maximized. However, it's not all that beautiful. Sustainable rates have several problems. Perhaps the most important is the price of the materials. And this is because the price is much higher than that of traditional materials. The costs should not always be higher. There are some architects and designers who have managed to recycle materials so that the expenses are not too high. In addition, it must also be considered that sustainable homes start saving supply costs the principle compared with a traditional home. In the long run, this is a big saving economically and environmentally [20]. To create a competitive advantage using environment-friendly construction practices, the whole life cycle of buildings should, therefore, be the context under which these practices are carried out.

3. Sustainable housing under EU platform

The principles and strategies for standard urban policies in the EU countries, including guidelines for affordable and sustainable housing and social housing, are set out in the Leipzig Charter on Sustainable European Cities [21]. As part of the EU Housing Agenda Partnership on Housing, EU countries and cities work with the European Commission and other stakeholders to promote good quality, affordable housing. Among the measures proposed are those in public housing support, funding opportunities, and general housing policies and knowledge. To talk about sustainable houses, it is required to build using sustainable materials. It should also generate its energy and use its resources. One of the main features of sustainable energy is the use of solar generators. Solar panels allow you to use solar energy. Sustainable houses are those that, being respectful of the environment, take advantage of all available resources to reduce energy consumption and, therefore, help save on household bills, something that is always appreciated. These types of houses are integrated into nature and are in such a way that they make the most of their environment: light, water. Another aspect of sustainable housing is the reuse of rainwater. You can also build a generator that can store energy from the wind. But it's not very pretty.

4. Conclusion

This chapter, directly or indirectly, deals with the problem of housing and sustainable housing requirements. Several priorities have been identified among the wide range of specific tasks, conditions, and means of implementing Sustainable Development. These include promoting the sustainable development of human settlements (solving the housing problem). There are several problems with sustainable rates. Perhaps the most important is the price of the material. And this price is much higher than that of traditional materials. Even so, the cost is not always high. Some architects and designers have recycled materials, so they do not cost too much. It should also be considered that sustainable housing begins to reduce supply costs. Principles compared with traditional assumptions. This is a great long-term economically and environmentally friendly savings. For sustainable housing to be attractive to the public, the cost factor is very important. The consumer knows that he will recover the investment in a certain number of years, so he can bear higher construction costs. It should reflect the amount of electricity and water bills that will be saved over time.

Despite all the points discussed, the economic aspect is paramount. Here an excellent architectural and design management comes into play so that the cost may not be very high. In addition, it is interesting that the design of the house is quite attractive. Creating such an optimal building concept with minimal energy consumption and environmental impact represents a complex optimization task of elaborate planning, where partial aspects are pushed to the background in favor of the overall performance of the building or used in the whole context correctly: such integrated planning, resp. The design offers a real chance to reduce material costs and mainly operating costs because, e.g., the planning of the technical equipment of buildings does not begin with the planning of the building but with the planning of its external space. Therefore, it becomes essential to select technologies that can be used to create sustainable housing by an objective process. This applies not only to individual houses but also to settlements of any scale. Living in such houses and settlements will create the preconditions for the formation of ecological consciousness and give an additional chance for a sustainable healthy life of our civilization.

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