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A Vision for Green Architecture and Sustainability

Dr. Abdel Wahed Abed El Gabry

PHD researcher –the faculty of engineering –Mohamed V University in Rabat

Abstract:

In recent years, the concept of sustainability has become the common interest of many disciplines. The reason for this popularity is the performance of sustainable development. also known as "sustainable architecture" or "green building", green architecture strives to reduce the number of resources consumed in the construction, use and operation of the building, as well as the damage done to it through the emission, pollution and waste of its components. Green architecture is a contemporary trend in architectural design, to balance the surrounding environment by better employing skills. The study addresses through sustainability, green architecture, climate considerations, social values concepts, promoting environmental awareness in general, raising awareness of sustainability culture in particular, and studying, recognizing and developing local traditions to support sustainability foundations and culture.

Keywords: Green Architecture-Green building -Green Walls-Sustainable Development-Sustainable Design

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Introduction:

Sustainable and environmentally friendly architecture is one of the main goals of creating a better life to move towards a greener structure and constantly strive to achieve this goal. Green architecture has environmental, social and economic benefits. Green infrastructure helps reduce pollution, conserve natural resources and prevent economic environmental degradation. Sustainability depends on it in the process of change from less sustainable to more sustainable, or so-called "weak" to "strong" sustainability. Sustainable architecture is therefore a subsystem of a whole system of sustainable practices. It overlaps and interconnects with other subsystems, such as the construction industry, education, the economy, politics and society. Essentially, sustainable architecture reduces environmental impacts and improves quality of life. It also provides positive environmental conditions for other sustainable practices to occur in these buildings. At the same time, in order to create and maintain conditions, sustainable architecture requires cooperation with sustainable practices in other disciplines. ‹. Architects, engineers, specialists, developers, project managers, builders and users can share their knowledge and expertise to solve problems and create sustainable conditions. Sustainable approaches to local policy often lead to policies that require and support sustainable practices, including sustainable architecture and planning. Innovations in the construction industry for sustainability, such as eco-labelled materials and products, ecosystems, as well as environmental design and operational guidance and standards, can guide sustainable practices and enhance the participation of different stakeholders in the process. Sustainable architecture requires sustainable management and sustainable users.

Green Architecture:

Green architecture, or green design, is a construction approach that reduces the harmful effects on human health and the environment. An architect or designer tries to protect air, water and land by choosing an environmentally friendly building.

To better understand green architecture, we must remember some basic concepts of

Green architecture is as follows:

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- Green architecture from an environmental perspective. is a design process in terms of the designer?

- Significantly reduces the negative impact of materials used in the design that it will not affect the ecosystem or disrupt the system.

- Green buildings have been identified as designed structures, constructed and operated in an environmentally compatible manner, by reducing the disparity between buildings and the surrounding environment and minimizing production and construction costs.

Characteristics of green architecture:

Green architecture has several characteristics, including:

-Ventilation systems designed for efficient heating and cooling.

-Energy-saving lighting and appliances.

-Water-saving plumbing fixtures.

-Planned landscape to maximize negative solar energy.

- Minimal damage to natural habitats.

- Alternative sources of energy such as solar or wind.

-Non-synthetic and non-toxic materials.

- Wood and building materials obtained locally.

- Adaptive reuse of old buildings.

Green building materials:

Green building materials consist of renewable resources rather than non-renewable resources and are environmentally responsible because their effects are taken into account over the life of the product. In addition, a green building that reduces maintenance costs over the life of the building, conserves energy, and improves the health and productivity of citizens. Green building materials can be selected by assessing properties such as reuse, recycled content, harmful air emissions, sustainably and rapidly renewable, high recycling capacity, durability,

longevity, and local materials. Common materials in many types of natural construction are clay and sand. When mixed with water, hay or other fibers, the mixture may form clay blocks. Other materials commonly used in natural construction are: ground (as a broken ground or ground bag), wood (wood or wooden frame/post-package), straw, rice structures, bamboo, and stones.

The design of green buildings depends on natural construction for availability locally, ease of use, lack of toxic components, increased energy efficiency, and many other materials are avoided due to adverse environmental or health effects. These include unsustainably cut wood, wood preservative toxins, Portland cement-based mixtures, paints and other coatings containing volatile organic compounds outside gas and some plastics, in particular polyvinyl chloride (PVC or "vinyl") and those containing harmful plastics or hormone simulation formulations (Woolley).

Green Surfaces:

It serves several purposes of the building, such as absorbing rainwater, providing insulation, creating habitat for wildlife, increasing benevolence and reducing people's stress around the roof by providing aesthetically satisfying landscapes, helping to lower urban air temperatures and mitigate the impact of thermal islands.

There are two types of green ceiling:

1. Condensed ceilings, thicker, can support a variety of plants but heavier and require more maintenance.

2. Wide ceilings, lighter than condensed green surfaces.

The term green ceiling can also be used to refer to surfaces that use some form of green technology, such as cold ceiling, solar thermal ceiling or photovoltaic panels. Green surfaces are also referred to as environmental surfaces, plant surfaces, living surfaces and green surfaces

Green Walls:

It is also known as vertical greenery in fact by bringing plants into the front of the building. Compared to the green ceiling, walls can cover more hard surfaces exposed in the built environment where skyscrapers are the prevailing construction

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style if the ratio of the skyscraper plant is one to seven, the facade area is roughly three times the area. Therefore, if the building is covered by two thirds of the facade, this has contributed to doubling the extension of the site's vegetation. So the skyscraper can become green, thereby increasing the organic mass on site.

There are three types of green walls:

Green walls can be divided into three basic species according to plant types; and growing types of media.

1. Green wall is a common and traditional green wall method. Although it is a time-consuming process, climbing plants can naturally cover construction walls.

2. The green wall hanging is also another popular approach to green walls. It can easily form a full vertical green belt on a multi-storey building by planting in each story compared to the wall climbing type.

3. Unity is the latest concept compared to the previous two types. It requires a more complex design and planning considerations before vertical system comes into place. It's probably also the most expensive way for green walls.

Sustainable development:

The first definition of sustainability was taken into account for the first time as discussed at the World Conference on Environment and Development, known as the World Conference on Environment and Development, as meeting today's needs of society without affecting the future in meeting its future needs. This means using multi-nature without reducing them or their renewable entitlements in the future, and this protects the stock of consumable natural resources such as: water.

Dimensions of sustainable development:

Includes three specific and interactive dimensions: economic, social and environmental. This is a sustainability framework based on content interconnected with economic schemes.

Basic principles for sustainable environmental architecture:

- Healthy indoor environment.

- Energy efficiency.

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- Good structural material.

- Environmental form

-Design the process with the site.

- Good design.

Sustainable Design:

It is defined as the mental integration between architecture and both the integration of engineering disciplines (electrical, mechanical and construction) and concepts of beauty, proportionality, assembly, light, shadow and integrated studies such as the future cost of various aspects (environmental, economic and human). Sustainable design is a design that is consistent with the surroundings by applying the principles of sustainability, strength, longitude, building materials as well as a sense of place. This design deals with resources in a comprehensive manner.

The design process has been defined as follows:

- Study the site.

- Communication with Nature

- Achieving natural processes.

- Environmental impact study.

- Integrate climate design and support processes.

- Study of human nature.

The design process depends entirely on unsustainable (non-renewable) energy sources and depends on natural ventilation and very little lighting compared to artificial methods of lighting and ventilation. Many names have been given to sanitary buildings, which are designed in accordance with sustainable design principles such as solar buildings, green, environmental buildings and sustainable smart buildings but differ in the way sustainable principles are interpreted or built.

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Architecture and Sustainability:

Characterized by sustainability, it is defined as a transformative architectural process towards sustainability and as part of a whole process leading to sustainability. Architecture as sustainability includes processes from pre-design, design, construction, operation, renovation and demolition to the creation of new projects. Operations are regarded as a periodic, dynamic, interdependent, contextual, comprehensive and integral system, expanding the boundaries of care and attention to social, environmental, non-human and future dimensions. and to deal with a complex and dynamic system. Sustainability is based on the fact that construction is essentially an open system based on the import of energy and resources from the environment. Sustainable architecture usually aims to create systems, sustainable structure depends on measurements with ecosystems as living, effective, self-reliant, closed and periodic processes, which oppose linear, ineffective, certified and open systems of traditional buildings. Moreover, with regard to time-related dimensions, contemporary sustainable architecture can shape the patterns of subsequent projects. While knowledge and skills derived from a project will contribute to the design and building of future project actions, sustainable conditions provided by the project, such as healthy environments and positive attitudes towards sustainable practices.

Sustainability depends on sustainable design strategies and components, which are at the core of sustainability. Talk about architecture is about sustainability and sustainability at the same time. Meanwhile, some buildings, such as traditional and public architecture, revolve around sustainability by absorbing sustainable components (such as natural and non-toxic materials and sunshade) and the use of sustainable design strategies (such as natural ventilation and appropriate orientation to respond to solar pattern and wind trends), they may not seem to aim for sustainability, but because they support sustainable behaviors, environments and sustainable local culture can be recognized as a sustainability architecture. In addition, to create a structure as sustainability, stakeholders should aim to create at least a sustainability architecture.

The sustainable structure is concerned with its components, objectives and processes. In particular, the interpretation of sustainable architecture as a sustainability architecture refers to a multidisciplinary approach that helps to improve the quality of design and sustainable conditions. It also stresses the fact that

sustainable architecture goals are not only close to the goal of sustainability, but the architecture of their own interest, sustainability. Supported by a sustainable environment, the structure can be part of sustainability or, better, sustainability. This transformative process will change the meaning of both sustainable architecture and architecture itself. In the end, there will be no sustainable structure, but only architecture is sustainability.

The concept of sustainability within the scope of architectural work:

Two key points should be focused on:

Work on old rehabilitation and architectural conclusions and improve their performance efficiency for certain purposes.

Production of new models considered successful in modern-day, multi-knowledge standards for education and science.

6 should respect key determinants as follows:

1. Respect the features of the site.

2. Reduce energy consumption.

3. Adapt to the climate environment.

4. Economizing the use of resources.

5. Reduce garbage and contaminants.

6. Using local building materials.

Minimize energy consumption:

This principle refers to reducing or even disposing of energy use, replacing it with natural energy resources, and some processes can be undertaken, such as:

- Tight thermal design to reduce the use of air conditioning devices.

- Economizing the installation of buildings with luxury appliances such as refrigerators, heaters and stoves and replacing them with natural means.

- Installation of the building with devices that can absorb natural energy and convert it into electricity.

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- Adaptation to the climate environment:

Adaptation to the site's climatic environment plays a major role in the work of green design through the design of the built environment, where the impact of the building on nature is minimized.

- Economizing the use of resources:

Economic resources represent all that can be extracted from natural resources, wind energy and water. With regard to intellectual development in dealing with the environment, there has been a trend towards preserving the surrounding biological natural environment; Most resources are handled in a more economical manner through their reuse through various recycling processes.

Sustainability structure and mechanism:

The structural shape of relations within them depends on the persistence and frequent consumption of negative phenomena (such as poverty in backwardness circles). The characteristics of diversity, inclusiveness, continuity and balance apply to these circles but lack the characteristics of renewability and non-energy consumption, so they have returned to study the environmental circuit because it is a circle (sustainable or unsustainable). In this way, phenomena involving a similar circular system and from a sustainable (sustainable) viewpoint can be explained if they are positive and (unsustainable) if they are negative. The First Circuit cause and effect principle is based on terms such as (retention, claim, conversion, renewal, investment, presence, etc.), while the Second Circuit has terms such as (consumption, attrition, waste, reduction, non-existence... etc.) as in the samples of vicious poverty circles.

Recommendations:

- Raising environmental awareness in general and raising awareness towards a culture of sustainability in particular.

- Study the natural environment and determine its components by means of both sides' potential and determinants.

- Study local traditional architecture and learn what to look forward to and develop from it to support the foundations and culture of sustainability.

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- Setting environmental standards for architectural projects; This thing depends on the second and third terms.

- Distribution of the application of sustainability assessment in private and public projects and identification of the offices responsible for this.

- Economic support for sustainable applications at all levels of development and economic and architectural development is part of it.

- Supporting innovations (economically and culturally) and guiding them to enter into design process steps that depend on the use of local environmental potentials and determinants.

The principles of green architecture are: water characteristics and management; design of natural buildings; passive solar design; green building materials; Living architecture. These principles are applied in a sustainable manner to achieve an environmentally friendly environment

- Any architect has the ability to change the whole construction process by identifying materials with low CO2 emissions.

- Green building standards are available for almost every type of building on a global basis and are developed and regularly updated; It covers all stages of the building's life cycle from design to demolition.

- Buildings designed according to sustainability standards should be operated and maintained in accordance with these standards. Buildings built before these sustainability standards are enacted can also be upgraded to meet the standards they have later.

- Green buildings must contain a number of common components: these include a focus on energy efficiency, in some cases, renewable energy; effective water use; the use of environmentally desirable building materials and specifications; To minimize the waste and toxic chemicals resulting from the building's construction and operations; good indoor air quality; Taking into account so-called "smart" growth and sustainable development.

- Lack of understanding of the sustainability phenomenon among local architects, attention to the direct artisanal sense of sustainability and green architecture, viewed through climate considerations and the concepts of traditional social values.

- The local architect's unclear vision and contradiction of changes related to environmental issues affecting the local environment and architecture, particularly when the sustainability perspective is taken into account.

Applying sustainability principles to local architecture will affect the ideologies (ideas and practices) of modern local architecture, by influencing design considerations and the handling of building materials and surrounding environment data.

- A culture of sustainability (awareness and knowledge) has been an important factor in the application of sustainability, and its absence has shown a significant impact on the lack of clarity of many indicators. Increased knowledge of the clarity of cost-effectiveness and distribution (initial, operational and sustainability costs) has also proved to have a significant impact on understanding the relationship between the energy variable and the sustainability economic factor.

- Ensuring the principle of the need to find solutions to the realities of modern local architecture. and the need for proper and comprehensive knowledge feeding to inform the local architect's vision of the nature of the problems and prospects for possible solutions within the framework of sustainability.

- Because architectural sustainability issues replicate themselves cumulatively, each variable is the cause and effect of the situation as in the concept of the circle of unsustainability in the previously mentioned local environment.

- There is no planning to study the emergence of these housing projects, which are characterized by high costs that do not solve the problem of housing need.

- Reduce the design and treatment of environmental considerations on temperature and thermal comfort (although not effective for sustainability standards), which have been applied through the building's upper deck, artificial ventilation systems and unsustainable air conditioning. The same is apparent in the issue of rain and precipitation using country roofs, for example, without taking into account the effectiveness of directing fallen water.

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