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JOINT ACTIVITIES OF ARCHITECTURE AND ECOLOGY IN MODERN URBAN PLANNING

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Abstract: The article examines the ecological approach in architecture, explores the need for interaction with the environment and highlighting the prospects of "green" design. At the moment, the environmental situation in the world is deteriorating due to the use of materials and technologies in architecture that do not meet environmental requirements, architects are thinking about environmental aspects in design as a framework for creating a favorable environment for humans.

Keywords: ecology, "green" architecture, environment.

Architectural ecology, first of all - interaction with nature, as it is nature that forms an environmentally friendly environment, and it is natural resources that preserve the energy efficiency system of buildings. There should also be a connection with the natural environment, which will integrate architecture into nature. "Green" architecture is a current trend in modern design and is one of the elements of ecological approach in architecture. "Ecology" comes from the Greek "oikos" - "house", which proves the connection between ecology and the human home and the desire for nature and nature, this trend to date, gaining momentum.

At present, half of the Earth's inhabitants live in the city. The main condition of the life process of the inhabitants is the environment of the city. The state of the climate affects people's health, time of life and working activity. A favorable environment will ensure the physical, mental and social comfort of city dwellers. Urbanization leads to a strong impact on the ecology: air, water, soil and the surrounding area are polluted, the natural landscape is changed. The city is the epicenter of environmental problems.

The main sources of pollution of water bodies are insufficient treatment of wastewater from industrial and municipal enterprises, pesticides, etc. Polluting substances that get into water bodies lead to changes in water, which are manifested in its chemical composition.

In some regions the sources of fresh water were underground water, they were considered the cleanest. Now, due to human economic activities, many sources are also subject to pollution.

The concept of sustainable development concerns not only the interaction between man and nature, but also the preservation of living conditions for posterity.

The increase in urban population is due to the attraction that is associated with centers of work activities. Cities provide many of people's needs for existence. But most cities have negative properties:

- intensive pollution of the environment by the products of economic activity concentrated in one place;
- violation of the balance in the use of labor resources of the indigenous population, changes in the properties of the "ecological niche" occupied by the natives;
- insufficient level of housing, medical and sanitary-hygienic services caused by overpopulation and overcrowding;
- expansion of urban areas, which entails the removal of population's points of attraction from each other and related deterioration of transport services, if the problems of traffic intensification and organization are not solved;
- inadequate water and energy supply, wastewater disposal and solid waste management.

Challenges of sustainable development in cities:

1. Long-term planning of economic and production-economic activity.
2. Formation of urban planning base is related to the environmental safety of the habitat.
3. Development of engineering infrastructures of life support of the population.

Sustainable and ecologically optimal urban habitat can be created only with a rational combination of economic activity with environmental protection measures.

In the last decade, the population growth of cities is very rapid, due to which the environment cannot meet the needs of people. The city is changing all components of the natural environment. In cities, there is an increasing outflow of inhabitants to quieter and cleaner rural areas, where they surround themselves with forests, fields and lakes. The reason for the attraction to nature, not only in the desire to breathe fresh air, but to admire the scenery around you. Also, man and nature are united by a spiritual connection. Thus, the architecture surrounding the man should be maximally, harmonize with nature.

Studies of the relationship between architecture and nature have identified the main elements. The first is philosophical and attitudinal, consists in the need of people to be surrounded by nature. Another element solves the issues of elegance of architecture.

Originally, architecture is the personification of the perfect forms of nature. It is in it that people have found inspiration since ancient times. The elements of decoration are also natural in nature and color and natural forms were put into the architecture of the building.

The philosophy of the philosophical and attitudinal element is the imitation of nature in form and facades, the relationship of the building with the environment, the interaction with topography and the use of natural materials.

These design principles are reflected in many directions of architecture.

Direction of organic architecture appeared in the 30s, laid the foundation of this direction of architect Frank Lloyd Wright. His architecture was a philosophy about the harmony of man, the natural world and architecture. The designed building should reflect the inner world of its inhabitants and represent a whole with its surroundings.

Ecological architecture is conditioned by natural factors to form an architectural and spatial environment:

- maintaining ecological balance between natural and artificial components;
- limiting population density in accordance with the ecological characteristics of landscapes;
- transition to low- and zero-waste industrial and construction-operation technologies, contextual (relative to the natural environment) volumetric-spatial and constructive solutions;
- reduction of consumption of exhaustible energy and other natural resources, as well as high-energy-intensive materials;
- improvement of urban planning, volumetric-planning, structural, engineering and technical solutions, optimization of operation terms of facilities in accordance with their functional and moral aging;
- Increasing the psycho-physiological comfort of people's life activity by means of qualitative improvement of functional;
- sanitary-hygienic, microclimatic and aesthetic parameters of the living environment.

Bionic formation of architectural and spatial environment puts such principles in the foreground in architectural design:

- the principle of harmonious connection of the laws of formation of architecture and living nature;
- the principle of architectural-bionic modeling
- expression of one image through another form, which has structural similarity (isomorphism) in relation to the first;
- the principle of ecological compensation for the discomfort of the external and internal environment;
- principle of dynamic equilibrium of the internal environment;

- principle of bionic construction; principle of structurality, principle of compactness;
- principle of directionality;
- principle of flexibility (response to external and internal conditions, building adaptation).

Factors in green building architecture are centered so that natural resources can be effectively utilized to protect the health of the homeowner, reduce the impact of waste, degradation and pollution, and provide all the necessary things needed in construction without affecting plant life.

Principles of Green Architecture:

- The principle of energy conservation - refers to designing and building in such a way that heat consumption, both for heating and cooling, is minimized.
- The principle of "cooperation" with the sun - involves using the sun's energy as the main source of light and heat.
- The principle of reducing the amount of new construction - the less new buildings are built and the more old buildings are used, or at least the materials of old buildings are used to build new ones, the better, as this reduces pollution.
- Respect for the occupant - a building does not exist to be sold, it is a place where people's lives are lived, where they live, learn, work. For all its capacity, the building should be oriented to each visitor individually.
- The principle of respect for place - an architectural object should not oppose its environment, it should harmoniously fit into it.

  Special attention should be paid to the staging of the building in the natural environment - architecture should not be hostile to the living world, as it is created for humans.
- The principle of integrity - means that all the above principles should work interconnectedly with each other.

"Green" trend in architecture is gaining momentum. Many countries have created "green standards" to improve energy efficiency and environmental friendliness, the most popular of them is the American LEED (The Leadership in Energy & Environmental Design), also known and English - (BRE Environmental Assessment Method - Method of assessing the environmental performance of buildings), which emphasizes the consideration of environmental requirements. There are also other systems such as: Green Star, NABERS, NatHERS, Passivhaus.

The designed "green" buildings provide maximum living conditions with minimal impact on the environment. The architectural environment affects the human being and is the background of life activity. The deterioration of ecology makes the society pay attention to energy saving and preservation of natural resources, and the formation of ecologically clean spaces.

At the same time, the deterioration of the ecological situation makes society turn to innovative directions in energy saving and conservation of natural resources, and the formation of ecologically clean spaces. Thus, it can be seen that only an integrated approach to the design, covering both the philosophical and ideological and ecological components of the relationship between architecture and the natural environment, can provide the most favorable basis for human life.

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