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## **ECO-ARCHITECTURE, FUTURE OR UTOPIA?**

**Abstract.** *The article is devoted to the problems of Eco-Architecture at present. It is noted that natural resources should be used to protect the health of the people. The ecological principles of architectural design are presented.*

**Key words:** *ecological architecture, natural forms, to protect the health, pollution of the environment, natural resources, ecological principles, architectural design.*

Ecological architecture is a trend that originated in the West in the last third of the twentieth century and due to the human desire to fit harmoniously into the environment, to be closer to nature. In the design it implemented natural forms, materials and technologies.

Today, architecture finds itself at crossroads. Building materials and new construction, along with the operation and maintenance of buildings, account for a significant sum of the world's greenhouse gas emissions. Faced with this fact, how are architects to pursue responsibly the act and art of building without further

deteriorating the planet's environmental make-up or depleting its resources? What forms of high and low technology can be developed to curtail the injurious side of building? Can good or even great architecture be sustainable [2]?

A key factor in green architecture is that starting with the germination of the idea, planning, execution, maintenance, and repair, to the point of destruction, by using environmentally friendly technologies and resources. Factors in green architecture of construction are concentrated in such a way that natural resources can be used effectively to protect the health of the home owner, to reduce the impact of waste, degradation and pollution of the environment and to provide all the necessary things that are needed in the construction, without affecting the plant world [3].

In the whole eco-architecture can be divided into two main areas: "simple solutions" and "eco-tech". "Simple" eco-architecture remains true to the traditions and decisions tested by time. It is characterized by the use of wood, natural stone, rain water and abundant "green corners". "Eco-tech" includes complex engineering solutions, environmentally friendly materials and technological energy of natural means (wind turbines, solar panels and so on) [4].

Today, "green architecture" is the most fashionable trend in the design world, but in Russia it was born not so long ago. Except in rare cases here it is expressed only by using environmentally friendly materials. Green buildings are designed, constructed and provided with the light to make them as viable with minimal impact of the environment. The main focus is on efficient use of natural resources, reducing the impact of waste and pollution on the environment, ensuring all materials necessary for the construction, without affecting the natural world.

The beginning of the formation of "green" architecture is considered to be 70-80-ies of XX century. After the next energy crisis the Western world began seriously thinking about environment and conservation of natural resources and began working on the idea of "green" construction [1]. At first glance it may seem that "Green" architecture is the only architecture with integrated natural components, but if we consider this concept more thoroughly, we can come to the conclusion that it is

energy efficient, economical and ecological architecture that is created by the interaction of engineering and architectural and landscape solutions.

The eco-architecture in the world is innovative technology. Eco-architecture becomes persistent trend, that communication will evolve in the future. Here are a few famous examples: residential building Bosco Verticale in Milan, designed by Studio Boeri Studio - the world's first vertical forest. Two towers, each with a height of 26 floors, is about 17 thousand plants covering the facade of the building. In addition, such vertical forest makes the building incredibly beautiful, it absorbs carbon and dust and also cools the complex [1].

Now fully formed ecological principles of architectural design are:

- Environmentally friendly building materials.
- Energy saving alternative energy sources. These include heat pumps, solar collectors and boilers that are energetically favorable and high-quality burning material.
- Correct methods of disposal.
- Comfortable and healthy for person heating cooling with radiating surfaces that transmit heat directly through the waves, not pre-warming the air.
- Energy savings with "warm" walls, i.e. walls that are properly insulated.
- Inside finishing of buildings and houses with clay plaster, wood, linoleum from natural materials. This finish provides sufficient humidity in the room (about 50 percent), which is essential for the health of the respiratory tract.
- The creation of controlled ventilation ensures constant fresh air without the effect of drafts.
- Rational design, compact forms, the correct position of the light and warmth crossing surfaces.

Thus, the construction of eco-stone, based on these principles is 7-10 percent more, but the payback occurs in an average 7 – 10 years, as the consumption in it is 90 percent lower than in the same construction of traditional type. Our generation is a generation of mankind, which has entered a new era – the era of Solar energy. Let's

hope that the concept of the Earth as a single living organism will continue to grow, penetrating deeper into the minds of millions of people and forming there environmental consciousness [5].

Unfortunately, Russia in terms of development of eco-architecture is still lagging behind Western countries. Although we have separate projects that are close to international standards and tailored to local climatic conditions. Eco-friendly house in the Central latitudes of our country recommends putting "deaf backs" to the North winds and revealing the stained glass in the sun, used as a seasonal thermal barrier space. Even these simple rules are to save heating from 30 to 50%. One thing is certain — the construction of eco-homes will cost 10-30% more expensive than conventional, but in 5-10 years it will fully pay for itself. Therefore, eco-architecture is considered not only safe, but also profitable.

Nowadays, the introduction of high technologies in the construction ceased to be something new. Technological equipment of buildings is widely promoted. Now, buildings are calculated for about one third of carbon dioxide emitted into the atmosphere, and are consuming about 40 percent of the world's energy resources, and, in general, have a devastating impact on the ecosystem of the planet. But, nevertheless, modern technology can still reduce the magnitude of the situation. At the moment only the development of environmentally friendly buildings and eco-cities, with minimal environmental pollution, which have renewable energy and the technology is practically wasteless. The fact that a person is able to solve the problem of environmental pollution and that green architecture is a concept of the future is no longer in doubt.

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