



## Environmental Green Technologies in Architecture and Construction

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**Abstract:** The article deals with the problems of urban ecology associated with excessive concentration of transport and industrial enterprises in relatively small areas with the formation of anthropogenic landscapes that are very far from the state of ecological balance.

**Keywords:** green technologies, environment, ecological architecture.

**Introduction.** The environmental problems of cities have become the most acute global problem that needs to be addressed as soon as possible. In most cities of the world, environmental attempts were limited only to landscaping, improving ventilation systems, and slightly reducing the impact of industrial pollution on the environment [1].

The concepts of "environment", "urban environment" in their various modifications have recently become very common and have acquired key significance. This is a fundamental concept that expresses the deep essence of the city both as a place of concentration of large masses of people, and as a functional entity that plays such an important role in the life and development of society, in its territorial organization [2, 3].

In addition, the urban environment is an important part of the potential of the city, thanks to which it fulfills its historical mission as an engine of progress [4].

At the end of the last century, a sharp deterioration in the state of the environment became a serious problem. And only now the concept of ecological architecture began to emerge in the mass consciousness [5]. The concept of a viable architectural environment is not so new. Its roots go back to the beginning of the last century. At that time, there was already a theory that considered the issues of replacing traditional energy sources with alternative ones. Unfortunately, due attention was not paid to this theory and, as a result, it did not bring any results. The environmental efforts of most cities in the world have been only to landscaping the territory, improving ventilation systems and partially reducing the impact of industrial pollution on the environment [6, 7, 8].

The main goal of "green" technologies is the sustainable development of the environment, the elimination or minimization of the negative impact of the building on the environment, the improvement of air quality, the optimization of lighting and humidity levels, which minimize energy resources and water consumption during its operation.

The use of "green" technologies includes the processing and recycling of building materials, purification of water, air, sewage, collection, processing and reuse of waste, the use of alternative energy sources, as well as energy efficient technologies and materials [9, 10].

The most common "green" technologies:

I. Energy saving technologies.

Energy saving techniques:

➤ ensuring effective thermal insulation.

Among the most common and effective heaters and insulating materials used in "green building" are:

- ✓ expanded polystyrene boards;
- ✓ organic thermal insulation;
- ✓ other heat-insulating materials of inorganic origin: fiberglass boards, stone wool boards, mineral wool;
- ✓ reduction of heat losses in the ventilation system by installing recuperators;
- ✓ Ensuring the tightness of door and window openings;
- ✓ reduction of power consumption due to the use of modern economical devices [11, 12].

II. The use of solar energy.

III. Rain water collection.

The advantage of using environmental technologies in construction is energy saving. The solution of issues related to the reduction of energy consumption of buildings has been dealt with in the world for a long time and successfully [13, 14]. An ecological building is the result of design, which is based on three main aspects:

- increasing the efficiency of using limited resources (water, heat, electricity, land);
- reducing the negative impact of various factors on the health of people who live and work in these buildings;
- minimization of negative impact on the environment [15].

Currently, the environmental principles of architectural design are fully formed:

1. Environmentally friendly building materials [16].
2. Alternative energy-saving energy sources.

These include heat pumps, solar collectors, as well as boilers for energy-efficient and high-quality combustion of raw materials.

3. Proper waste disposal methods.
4. A heating (cooling) system that is comfortable and healthy for a person using radiant surfaces that transfer heat to a person directly through waves, without preheating the air.
5. Saving energy thanks to "warm" walls, that is, walls that are properly and well insulated.
6. Interior decoration of buildings and houses with clay plaster, wood, linoleum from natural materials. This finish provides sufficient humidity in the room (about 50%), which is necessary for the health of the human respiratory tract.
7. Creation of supply and exhaust ventilation, providing a constant supply of clean air without the effect of a draft.
8. Rational design, compactness of forms, corrects arrangement of light and heat-transmitting surfaces.

The construction of an eco-building, based on these principles, costs 7-10 percent more, but payback occurs on average in 7-10 years, since energy consumption in it is 90% lower than in a similar structure of a traditional type.

According to experts, the environmental friendliness of buildings in the conditions of Uzbekistan is not currently a decisive factor. In this regard, working according to the standards of eco-development in Uzbekistan can be considered a "controversial" decision. At the same time, experts express confidence that in some cities there are free spaces that can be built up using "green" technologies.

The practice of green building in Europe is regulated by a system of standards for design, construction, operation of buildings, business and life. The development and implementation of these standards stimulates business, stimulates the development of innovative technologies, stimulates the economy, improves the quality of life of society, and improves the state of the environment.

This approach helps to solve the following problems:

- ✓ reducing the level of consumption of energy and material resources of buildings;
- ✓ reduction of adverse impact on natural ecosystems;
- ✓ ensuring a guaranteed level of comfort in the human environment;
- ✓ creation of new energy-efficient and energy-saving products, new jobs in the manufacturing and operating sectors;
- ✓ formation of public demand for new knowledge and technologies in the field of renewable energy.

The thermal insulation of buildings and structures has several practical goals: increasing the level of comfort, heat and sound insulation, saving fuel resources and reducing operating costs. However, the concept of an energy-efficient house includes not only the insulation of structures using heat-insulating materials, but also specific engineering solutions for the ventilation and heat supply systems.

**Conclusions.** Today, the issues of energy efficiency and energy saving are relevant both on the scale of individual enterprises and on the scale of the state. Undoubtedly, the introduction of energy efficient technologies in industry is a matter of national importance. The main task of energy saving is to provide an opportunity to reduce energy consumption without harm to consumers and, most importantly, the environment.

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